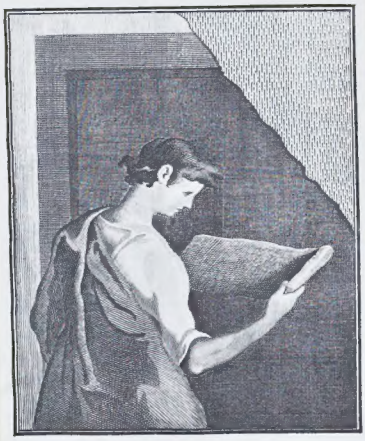


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The Builder

AN

ILLUSTRATED WEEKLY MAGAZINE,

FOR THE

ARCHITECT, ENGINEER, ARCHÆOLOGIST, CONSTRUCTOR,

SANITARY REFORMER, AND ART-LOVER.

CONDUCTED BY

GEORGE GODWIN, F.R.S., F.S.A.

"Every man's proper mansion-house, and home, being the theater of his hospitality, the seate of selfe-fruition, the comfortablest part of his own life, the noblest of his sonne's inheritance, a kinde of private princedome, nay, to the possessors thereof, an epitome of the whole world, may well deserve, by these attributes, according to the degree of the master, to be decently and delightfully adorned."

"Architecture can want no commendation, where there are noble men, or noble mindes."—SIR HENRY WOTTON.

"Our English word TO BUILD is the Anglo-Saxon Býlðan, to confirm, to establish, to make firm and sure and fast, to consolidate, to strengthen; and is applicable to all other things as well as to dwelling-places."—DIVERSIONS OF PURLEY.

"Art shows us man as he can by no other means be made known. Art gives us 'nobler loves and nobler cares,'—furnishing objects by the contemplation of which we are taught and exalted,—and so are ultimately led to seek beauty in its highest form, which is GOODNESS."

VOLUME FOR 1875.

OFFICE: No. 46, CATHERINE STREET, COVENT GARDEN, LONDON, W.C.

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The Builder

Robert Hooke, Architect.

ROBERT HOOKE assisted at the birth of Science in England, and initiated inventions that are still unsuperseded. He is allowed, by all who are capable of giving an opinion, to have been the greatest philosophical mechanic that ever lived, yet his name is only known to the few, and by the many who are advantaged by his inventions he is almost totally disregarded. We are indebted to him for indispensable instruments in nearly every branch of science, but some of his inventions have been re-discovered by other men, and have since received their names. He gave accuracy to the art of watchmaking by inventing the balance spring and duplex escapement, and the watch-wheel cutting-engine. He invented a method of grinding spectacle lenses, by means of which more than 100 could be ground at once to the same focal power. He made the barometer a weather-glass, and the air-pump an efficient instrument. He invented a hearing-trumpet, and hinted at the stethoscope, a hint that was not appropriated until 1816, when it was applied by Laennec. He invented the circular pendulum, which was applied by Watt to the steam engine, and is familiar to us as Watt's governor, the spring balance, now known as Salter's spring balance, the sextant, the first fixed transit instrument, and the spirit level. Here, however, we must stop, not for lack of material, but to save our article from being merely a catalogue of Hooke's inventions.

Hooke had the misfortune to be outshone by two most illustrious contemporaries in two different departments, viz., Newton and Wren, but as a second wrangler of one year may be a better man than the first wrangler of another year, so the man who could stand at all by the side of such men as these must be worthy of great honour. Mr. Alexander Bryson sums up his valuable "Exposition of the Mechanical Inventions of Dr. Robert Hooke,"* in these words, "Hooke stood very near Newton. They are twin stars, forming, when casually seen, but one luminary, but when more carefully observed differing in their brightness, 'as one star differeth from another star in glory.'" Dr. Tyndall concludes his first lecture on "Sound" with an extract from Hooke's works, and says, "I do so the more willingly, because I fear his contiguity to Newton has too much dimmed the name and fame of this extraordinary man."

Hooke, however, has not merely been neglected, he has been maligned. Biot most unjustly said of him, "Hooke est mort; c'était un homme de génie et un mauvais homme; la société y gagne plus que la géométrie n'y perd." This epigrammatic dictum is perfectly untrue, and is merely founded on the fact that he was jealous and irritable. It would be meting out peculiarly hard measure were we to gibbet as bad men all the great who have been unamiable. Hooke had some excuse for his irritability in that he was often right in his quarrels, and for his jealousy in that he was often robbed of his ideas. Aubrey hints that even the great Dr. Wallis "steals feathers from others to adorn his own cap. For example, he lies at watch for Sir Christopher Wren's discourse, Mr. Robert Hooke, Dr. William Holder, &c.; puts down their notions in his note-book, and then prints it without owning the authors."

It is said that at first Hooke was very communicative of his discoveries and inventions, till as he affirmed some persons, improving upon his hints, published them for their own, which at last rendered him close and reserved.

We have on a former occasion* drawn attention to some of Hooke's scientific claims, and shall, therefore, now confine ourselves more particularly to his work as an architect, giving, however, at the same time a short sketch of his life. Robert Hooke was the son of John Hooke, minister of the parish of Freshwater, in the Isle of Wight, where Robert was born on the 18th of July, 1635. For the first seven years of his life he was so weakly that his parents had little hopes of rearing him. He was willing to learn anything, but his father gave up teaching him on account of his frequent fits of headache. Being left to himself, he spent his time in making little mechanical toys, and discovered as a child the same taste that possessed him through life. He took an old brass clock to pieces and made a wooden one that would go; he constructed a little ship that would sail, and copied several prints with pen and ink. At the time of his father's death he was twelve years of age, and on account of his fancy for drawing he was placed with Sir Peter Lely, but the smell of the oil colours increasing his headaches he was obliged to leave the painter's studio. He now went to Westminster, and was a scholar in the great Dr. Busby's house. He advanced so rapidly in his studies that he was sent to Christ Church, Oxford, in 1650 or 1653, as a servitor to Mr. Goodman. About 1655 he began to attract the attention of the knot of philosophers then living at Oxford. He assisted the celebrated physician Dr. Thomas Willis in his chemical researches, and Dr. Seth Ward advised him to apply himself to astronomy. He attended the meetings of the select society that afterwards grew into the Royal Society, and became assistant to the Hon. Robert Boyle. In 1659 he invented and communicated to Dr. Wilkins thirty different modes of flying, and contrived artificial muscles to fly with. In 1662 his life's work was commenced by his appointment, on the motion of Sir Robert Moray, as curator of experiments to the Royal Society. Sir Edward Hyde, chancellor of the University of Oxford, conferred on Hooke the degree of M.A. in 1663, the same year in which the Royal Society was established by royal charter, and Hooke was nominated by the council one of the original fellows. Now his duties continually increased. He was appointed keeper of the Society's repository or museum, to which was added in 1664 Daniel Colwall's collection of natural and artificial rarities. Soon afterwards he had the care of the library thrust upon him. He succeeded Dr. Dacres as professor of geometry in Gresham College, and had an annual stipend of 50*l.* for life settled upon him by Sir John Cutler, on the condition that he delivered certain lectures. Dr. Ward might well observe, in his "Lives of the Gresham Professors," that "a person of less abilities than he would have found it difficult to discharge the duty of these several employments at once with reputation, but so great was his industry, so accurate his skill in every province he undertook, and his mind so fruitful of new inventions, that he went through them all with general approbation." The council of the Royal Society always found Hooke ready to obey their wishes. One day the Duchess of Newcastle expresses a desire to attend a meeting, and Hooke is directed to prepare some experiments. At another time the Queen requires a thermometer, Hooke can supply one. No subject seems to have come amiss to him, be it the transfusion of blood, the structure of the muscles, or theories as to the contagion of the plague. He was able to take his part in all the questions as they arose, and he turned to architecture because circumstances made it the question of the day. On the 19th of September, 1666, he exhibited his model for rebuilding London to the council of the Royal Society, who were well pleased with it. Sir John Laurence, the late Lord Mayor, addressed himself to the Society, and expressed the Lord Mayor's (Sir Thomas Bludworth) and Alder-

* "Edinburgh New Philosophical Journal," vol. iv. (1856).

* *Builder*, November 28, 1868.

men's approbation of the said model, and their desire that it might be shown to the king, they preferring it much to that which was drawn up by the City surveyor. The president answered that the Society would be glad if they or any of their members could do any service for the good of the City, and that Hooke should wait upon the king with them and his model if they thought fit to present it. Waller had not seen this model; but he had heard that all the chief streets, as from Leadenhall-corner to Newgate, and the like, were designed to lie in an exact straight line, and all the other cross-streets turning out of them at right angles. All the churches, public buildings, market-places, and the like, in proper and convenient places. Hooke's scheme came to nothing, because two others, viz., those by Wren and Evelyn, had been previously brought under the king's attention. Although the chief responsibility of rebuilding the whole city devolved upon Wren, that great man recognised the advantage of obtaining the skilled assistance of Hooke, and for several years the two worked together. On February 6th, 1667, experiments were tried for raising weights by the force of gunpowder, preparatory to those which were afterwards used in throwing down the masses of masonry in the ruins of St. Paul's. In these Wren was assisted by Hooke, Boyle, and Moray. Hooke's model drew the attention of the Corporation to him, and obtained for him the position of City surveyor. He laid out the ground of the several proprietors in the rebuilding of the City, and had no rest, early or late, from persons soliciting him to set out their ground for them at once. In this occupation he made a considerable sum of money, which he locked up in an iron chest, and did not touch. Hooke drew the attention of the Royal Society, in 1666, to the fact that those earths which will vitrify make the more lasting bricks, and it was ordered that he should make trials of several earths, by burning them in a wind-furnace, to see which kind would yield the best brick. He afterwards proposed an expeditious way of making bricks. In 1668 he presented to the Council a design for the Society's new house, or college, to be built on a piece of ground given them by Henry Howard, of Norfolk; but it does not seem to have been approved, for Dr. Wilkins was desired to procure Dr. Wren's design for the building. Not only was Hooke's plan neglected, but he was ordered to get a model made of the design that superseded it, and to consider of buying materials, of contracting with workmen to be paid by measure, for so much a rod and square, as also to find out a person to be constantly present, and to see the workmen do their duty. Hooke was the architect of three important buildings in London, which have, however, long been swept away,—viz., Bethlem Hospital in Moorfields, old Montague House, Bloomsbury, and Aske's Hospital at Hoxton. In 1246 Simon Fitz-Mary, one of the sheriffs of London, founded Bethlem Hospital in Bishopsgate Without, and at the dissolution of religious houses Henry VIII. gave it to the City of London, who converted it into a mad-house. This building was taken down in 1675, and the hospital removed to Moorfields. Hooke was chosen to design this second Bedlam, a view of which may be seen in Strype's edition of Stow's Survey. No time was lost in the construction as the large building, which cost 17,000*l.*, and accommodated 150 patients, was finished in 1676. The old hospital would only hold about fifty or sixty patients. In 1814 the Moorfields Hospital was pulled down, the first stone of the present one in St. George's-fields having been laid on April 18, 1812. Montague House, Bloomsbury, was built by Hooke for Ralph Montague, third Baron Montague of Boughton, Master of the Great Wardrobe in the reign of Charles II., and Duke of Montague in the reign of Queen Anne. Evelyn went to see the house in 1679, the year after it was built, and he describes it as "somewhat after the French." When he went again in 1683 he set down in his "Diary" a much fuller account of both outside and inside. He writes,—"It is a stately and ample palace. Signor Verrio's fresco paintings, especially the funeral pile of Dido, on the stayre-case, the Labours of Hercules, Fight with the Centaurs, Effeminacy with Dejanira, and apotheosis or reception amongst the gods, on the walls and roofe of the greate roome above, I think exceedes anything he has yet done, both for designe, colouring, and exuberance of invention, comparable to the greatest of the old masters, or what they so celebrate at Rome. In the rest of the chamber are some excellent paintings of Holbein and other masters. The garden is large, and in good aire, but the fronts of the house not answerable to the inside. The court at entrie and wings for offices seeme too neere the streete, and that so very narrow and meanly built that the corridore is not in proportion to the rest, to hide the court from being overlook'd by neighbours, all which might have been prevented had they plac'd the house further in the ground, of which there was enough to spare. But on the whole it is a fine palace built after the French pavilion way, by Mr. Hooke, the Curator of the Royal Society." This house did not last for eight years, for on January 19, 1685 6, it was entirely destroyed by fire, while in the occupation of the Earl of Devonshire, to whom Lord Montague had let it for 500 guineas per year. The Countess of Devonshire and her children escaped to Southampton House in Bloomsbury-square, where Lady Rachael Russell was living at the time. Lord Montague's loss by the fire was estimated at 40,000*l.*, besides 6,000*l.* in plate, and the Earl of Devonshire's loss in pictures, hangings, and other furniture was very considerable. The second Montague House was built by Monsieur Poughet, and it was in this building that the British Museum was established in 1753.

In 1691 Hooke was chosen, at the instigation of Archbishop Tillotson, to design a building for the almshouses founded by the Haberdashers' Company, at Hoxton, pursuant to the will of Robert Aske, who left 30,000*l.* to that Company for building and endowing a hospital for the relief of twenty poor members of the Haberdashers' Company, and for the education of twenty boys, sons of decayed freemen of the Company. The architect proposed that there might be instituted a mathematical school for boys to be instructed in the principles of astronomy and navigation, which at first was well approved of by the persons concerned in the management of the affair." Hooke was blamed for exceeding the sum allowed for the building, and thus lessening the revenue of the hospital, but he asserted that this was not his fault, as alterations were made in his design, and he was not allowed to procure and agree with the workmen. The hospital was pulled down early in the present century, and rebuilt from the designs of D. R. Roper, so that we cannot tell what it was like, but Waller refers to the "due proportion of its parts and beauty of the whole."

The brilliancy of Hooke's career as a philosopher has thrown his genius as an architect into the shade, and his biographers, Waller and Ward, have paid little or no attention to his works in that capacity. Although we do not possess much material for an estimation of the opinion in which his powers were held by his contemporaries, we cannot doubt that his advice was much sought after. His judgment must have been highly esteemed by Wren, or that great architect would not have put the confidence in him he did as his acting lieutenant. Had Hooke's name not stood high as an architect, it is unlikely that the projectors of great buildings such as Bethlem Hospital, Montague House, and Aske's Hospital would have come to him at such different periods of his life as the years 1675, 1679, and 1692. Other large buildings may have been designed by him, and it is supposed that he assisted Wren in many of his celebrated works.

Hooke's last days were not happy. In 1687 his brother's daughter Grace, who had lived with him for some years, died, and he was left alone. His grief did not soon wear away, and he became less active, and more melancholy and cynical. In 1691, Archbishop Tillotson gave him the degree of Doctor of Physic, and on the 18th of July, 1696, which was also his birthday, his Chancery suit against Sir John Cutler, and that knight's executors, was decided in his favour. Sir John founded the lecture for Hooke in 1664, and, after receiving a deputation from the Royal Society to thank him for "his particular favour to a worthy member, and for that respect and confidence he hath hereby expressed towards their whole body," he neglected to pay the salary of 50*l.* a year. Cutler has not received the severe reprehension that his conduct in this case deserves, but if we compare it with his conduct towards the College of Physicians we shall see how mean and contemptible he was. In 1674, he expressed himself as desirous of defraying a portion of the expense of the new building of the College in Warwick-lane. He was thanked for his kindness, and a statue in his honour was voted by the members. After his death it was found that his supposed gift had been set down in his books as a loan, and his executors sent in a demand for this sum, as well as for an actual loan, and interest on both.

In 1697, Hooke began to write his own life, which was to contain a full account of his inventions, &c., when and how made, and by what means; but he only commenced this interesting work. One day he fell down-stairs from giddiness, cutting his head, bruising his shoulder, and hurting his ribs. He grew blinder and blinder, and for more than twelve months before his death he was almost helpless. He lived a dying life for a considerable time, and departed on the 3rd of March, 1702-3, in the sixty-eighth year of his age. His body was buried in the Church of St. Helen, Bishopsgate, all the Fellows of the Royal Society then in London attending his funeral. He had the greatest objection to making a will, and, therefore, although he had often given it to be understood that he intended to leave his property to build a handsome house for the Society, with Library, Museum, Laboratory, &c., and to endow a physico-mechanical lecture, he had done nothing towards carrying out these intentions. His property, which consisted of many thousand pounds in gold and silver, enclosed in an iron chest, locked up thirty years before his death, went to distant relations.

No portrait of the philosopher is known to exist, and this is perhaps not strange when we learn from Waller that "as to his person he was but despicable, being short of stature, very crooked, pale, lean, and of a meagre aspect." Such were the infirmities of the outer man, brought on in early life by frequently using a turner's lathe, and in later life by turning night into day. He seldom went to bed till two or three o'clock in the morning, and frequently not at all. He pursued his studies all night, and took a short nap in the day. What the inner man was we have seen, and Waller adds that he had a piercing judgment into the disposition of others, and would often give shrewd guesses and smart characters.

When Hooke died, a mathematician, an astronomer, a meteorologist, a physiologist, and a mechanic, of unusual powers left this world. The followers of all these branches of science look up to him as a master, and for the credit of our profession, we are proud to be able to add his name to the roll of distinguished English architects.

THE DESIGNS FOR INDUSTRIAL DWELLINGS, GOSWELL ROAD.

THE result of the offer of premiums (250*l.* and 150*l.*) for the first and second best designs for dwellings to be erected in Goswell-road for the Improved Industrial Dwellings Company has been already published. Some few particulars of the competition will doubtless interest our readers. The site is a somewhat awkwardly-shaped plot of land, at the point where King-street meets Goswell-road, running into it very obliquely: it adjoins Compton Buildings, belonging to the Company, and includes a printing-ink manufactory, the site of which is at present not available.

Observance of the following particulars relating to construction was prescribed:—

"1. The dwellings must be self-contained, with the entrance door-openings to the external air.

2. Each dwelling must be so arranged that a free current of external air can be passed through the dwelling by opening the doors and windows.

3. The staircases must be external.

4. The roofs are to be flat, and access to the same is to be provided.

5. The buildings must not be carried to a greater height than five stories above the basements, if any, and no rooms are to be less in height than 8 ft. 6 in. between floor and ceiling.

6. Dwellings of three, four, and five rooms each are to be provided, including kitchen or scullery. Shops with rooms attached are to be provided on the ground-floor in the Goswell-road frontage, having the principal entrance from Goswell-road, and separated from the dwellings over by a fireproof ceiling. Each dwelling is to be provided with separate domestic conveniences.

7. As a moderate return upon the cost of the buildings must be obtained, economy of construction, combined with strength and durability, will be one of the principal points to be considered in judging the merits of designs. Economy of repairs and good sanitary arrangements are absolutely essential."

The programme said,—"The directors do not undertake to carry out either of the two designs which may be selected, nor do they bind themselves to employ, in the execution of the works, either of the persons whose designs may be so selected." In response to their offer, twenty sets of designs were sent in, and were hung in the following order, in the first instance at the

Mansion House, and afterwards in the great hall of St. Bartholomew's Hospital, where they still are:—

1. "Fiat."
2. "Salutaris."
3. "Semper Paratus."
4. "Comfort."
5. "Work hard for a laudable object."
6. "Domus amica, Domus optima."
7. "Hygiene."
8. "Aspiro."
9. "250."
10. "Omne tulit punctum qui miscuit utile dulce."
11. "Palmam qui meruit ferat."
12. "Usui Civium."
13. "Ex sorde, dare munditiem."
14. "Efficiency with economy."
15. "Au Bon Droit."
16. "Deus nobis."
17. "Beta."
18. "Strive."
19. "Self-contained."
20. "Vi et Virtute."

The last design did not arrive within the time named in the instructions, and was, consequently, placed out of the competition. After the drawings had been received, Sir Sydney Waterlow, on the part of his brother directors, invited the assistance of Messrs. Charles Barry, George Godwin, and Alfred Waterhouse, in awarding the premiums, and the two first named (Mr. Waterhouse being detained abroad) made the following report:—

"*London*, 18*th December*, 1874.

To the Directors of 'The Improved Industrial Dwellings Company.'

Gentlemen,—In accordance with your instructions, we, the undersigned, have examined the twenty sets of plans sent in for competition for the premiums offered by you for designs for buildings to be erected on the estate purchased by the Company in Goswell-road, under 'Instructions to Architects,' dated the 14th May, 1874.

While several of these designs show evidence of the devotion of much time, ability, and thought on the part of their respective authors, we regret to notice, nevertheless, that no very striking and original treatment is developed in any of them. This may perhaps partly be the result of the very precise conditions by which all the competitors were bound as to height of buildings, requisition that the roofs be flat, definite number of stories, &c.; and lastly the necessity to occupy the site very fully in order to produce an anticipated satisfactory commercial result to the company from the number of rooms producing rents placed on the land.

We have agreed to recommend for the first premium the design marked 'Salutaris,' as to which we deem it fair in reference to our observations above to remark that the total number of rooms provided is small in comparison with some of the other designs, because the author has thought it necessary to provide ample means of external light and air from internal courts and open spaces, and so has not occupied the site so fully as others have done.

We recommend for the second premium the design marked 'Self-contained,' and as to this the opposite remark we think applies—the site being in our opinion somewhat too fully occupied.

We need hardly say that our selection has been guided from a careful study of the instructions issued to the competitors, and of the arrangements and accommodation (as dwellings to be separately occupied) which the designs indicate. We have also necessarily had carefully to balance advantages against defects which each plan respectively exhibits.

In addition to the two designs recommended for the premiums, we think it right to say that in our opinion the plans marked 'Strive,' 'Usui Civium,' 'Hygiene,' also deserve commendation in the order in which we place them.

CHARLES BARRY.
GEORGE GODWIN."

The directors afterwards awarded the first premium to the author of the design marked "Salutaris" (Mr. Henry Macaulay, Elm Bank, Kingston-on-Thames), and the second premium to the author of the design marked "Self-contained" (Mr. Banister Fletcher, of No. 32, Poultry).

The design marked "Salutaris" provides about 650 rooms, at an average cost, according to the author, of 50*l.* per room. The arrangement of the domestic conveniences is good, the w.c. being in an open lobby; separate access is provided to each room, and the size of the rooms is good, without being excessive. The author proposes to cheapen construction by the use of walls formed with concrete within brick facings,—an arrangement which would require care to ensure success. There are not so many shops on the ground-floor as there might be.

"Self-contained" is a good plan, well studied, and full of information, contrasting very strongly in this respect with several of the other designs, which barely explain themselves. The author proposes a total of 1,044 rooms, at a cost called by him about 67*l.* per room, which, as it seems to us, is somewhat in excess of what would turn out to be the case. The w.c. is external; the stairs sufficient, and so arranged that each tenant is entirely private, and has a balcony wholly his own. The site is somewhat overcrowded. A covering is provided to the flat roof, so as to make it available at all times.

"Usui Civium" gives a staircase back and front, scarcely necessary; there is some waste of room in passages; and the w.c. opens into the scullery, which is very objectionable; otherwise it is not a bad plan, and the site is well utilised by a bisecting street. It proposes 807 rooms at a cost of 52*l.* per room.

"Hygiene" gives good domestic offices, a compact plan (with some waste in passages), and a bad elevation; 666 rooms, no cost given.

The plan of "Strive" is ingenious, and in many respects suitable; but would place some of the rooms in constant shadow. The entrance doors are brought objectionably close together. 1,038 rooms are proposed, at a cost of 42*l.* 8*s.* per room.

"Deus Nobis" has some good features; but rooms are entered only from living-room. The w.c. is external. He proposes 864 rooms, at 56*l.* per room.

The chief objections to be observed, more or less, in the other designs are,—want of separate approach to every dwelling; want of privacy, one tenant having to pass the windows of another; the opening of one room into another; and connexion of the w.c. with the interior of a room.

The directors of the company, after awarding the premiums, came to the following resolution, which they,—somewhat hastily, perhaps,—made public at the same time that they announced the result of the award:—

"In soliciting the designs in respect of which the premiums have been now awarded, the Directors made 'economy of construction, combined with strength and durability,' a primary condition. The Directors are however of opinion that the cost of construction, if any of the plans sent in were carried out, would much exceed the general cost to which the Directors have hitherto felt themselves restricted, regard being had to the means of the working classes."

The *Times*, making this the text for a leading article, said:—

"We can scarcely congratulate the Directors of the Improved Industrial Dwellings Company upon the result of their attempt to secure proper plans for the houses they are proposing to erect in Goswell-road, though we may at least observe with pleasure that they are not themselves under any delusion as to the extent and nature of their failure. Their Company has been started so successfully that it is the more curious to observe the point at which its difficulties have begun. It has got land, capital, and, in fact, everything its projectors have asked for as necessary for their philanthropic purposes, but, in spite of all, they cannot find an architect who will be sufficiently modest in his aims to design for them the one sort of building which they require. The qualities the Directors ask for are not only strength and durability of construction, for these, we may hope, it would not be hard for them to secure. They ask also, very properly, that the plan sent in shall be economical, and the task becomes at once too hard or too demeaning for the profession to which their appeal is made."

Adding in conclusion:—

"We could wish that the ingenious gentlemen who have lately sent in their designs for the erection of new houses on the Goswell-road estate had given us better reason to believe that the profession of which they are members was at all aware of the absolutely vital importance of the condition which they have been so generously pardoned for disregarding."

The inference from this would certainly be, that the architects who had responded to the advertisement of the directors had allowed their fancy, such as it was, to run away with them, and that they had wasted money in misplaced ornament and indulgence in grandiose ideas; and the probability is that the writer in the *Times* himself thought so when he penned the words in question.

It is only fair and proper to say that this is really not the case. Many of the architects who have sent in designs may have made their probable cost greater than the cost of the houses which have been heretofore erected for the company by enlarging the size of the rooms, making the staircases more expensive in the attempt to secure additional privacy, and so on; but scarcely one of them has spent 20*s.* more on the outside than the strictest economy would assent to. The gentle scolding to which, under their garb, the profession has been subjected, is in this case quite undeserved. And, moreover, we may say, in a parenthesis, that the competitors here must not be regarded as representing the more experienced portion of the profession. If the directors in their instructions, instead of assuming that they would not undertake to carry out either of the two designs which might be selected, and would not bind themselves to employ, in the execution of the works, either of the persons whose designs might be so selected, had adopted the precisely opposite course, and had announced that they *would* carry out one of the selected designs if found suitable, and *would* employ the author of it to see it properly carried out, they might have enlisted more experienced talent than has been the case. Going back for an instant to the question of cost. We have understood that 45*l.* per room is about the sum usually expended by the Company, but it by no means follows that this might not wisely in some cases be increased. The cost estimated by the author of the premiated design, "Salutaris," is 50*l.* per room, or about 10 per cent. more. By this plan, larger rooms are given; for example, the total area of the three rooms in a three-roomed dwelling in the Company's model plan appears to be about 325 ft.; whereas, in the rewarded design, the three rooms have an area of about 394 ft., which is more than 20 per cent. larger. This would have to be looked into more carefully, of course, than we can do it. We have the fullest confidence in the right intentions and good desires of the Company, and have no doubt the directors will discuss carefully the whole question of improved plan and enlarged accommodation.

KUGLER'S HANDBOOKS OF PAINTING.

THE four volumes which, within their neat and distinctive white covers, include the latest form in which Kugler's handbooks to the study of the ancient schools of painting in Northern Europe and in Italy have been given to the English reader, though brought out by the same publisher and in uniform binding, and based on the same original author, are so far distinct in regard to editorship and manipulation as to form two distinct works,* rather than one four-volume treatise. The "Handbook of Italian Painting" in its original form, by Herr Kugler, of Berlin, was published in Germany in 1837, and an English translation by a lady, edited by Sir Charles Eastlake, was produced in this country in 1841. A succeeding German edition was followed by second and third English editions, under the same editing, in 1851 and 1855. The present edition, by Lady Eastlake, contains numerous alterations and extensions, with the intention mainly of bringing it up to the standard of knowledge of the present day. The fresh matter imported into it is derived from Messrs. Crowe and Cavalcaselle's exhaustive work, and from notes collected by Sir Charles Eastlake during frequent visits to Italy. The memoranda of Mündler, Burckhardt, and others, as contained in the "Cicerone for Italy," translated by Mrs. A. H. Clough, and noticed at some length in our columns† at the time of its publication, have also been consulted. The work in its present form, therefore, lays claim less to originality than to correctness and fulness of information within certain limits imposed by the necessity of keeping the volumes to a convenient size.

To those of our readers who are acquainted with the previous editions of the Handbook in its English form it is sufficient to say that the present edition is, in its general appearance and typography, entirely uniform with those which preceded it, and the careful and distinct outline illustrations (the best method of illustrating large pictures on a small scale in engraving) are retained, with some additions in the same style. To those to whom the book is new (and there is a continually "rising generation" of art students and travellers to each new edition of such works) we may mention that the Handbook affords a complete historical and critical sketch, in a condensed form, of the progress of Italian painting from what we may term the earlier post-Roman period down to the eighteenth century; not only the progress of the art being indicated, but every artist of note mentioned by name, with indications where to look for the most important and best examples of his genius. The Handbook is divided into sections, under the headings, "Early Christian Art,—Romanesque Style," "Second Stage of Development," "Third Stage," "Period of Highest Development and Decline," and "Restoration and Second Decline." Under the second stage of development are included Giotto and his followers, and the Sienese and other minor schools

* Handbook of Painting: The Italian Schools. Based on the Handbook of Kugler. Originally edited by the late Sir Charles Eastlake, P.R.A. Fourth edition: Revised and remodelled from the latest Researches, by Lady Eastlake. London: John Murray. 1874.

Handbook of Painting: The German, Flemish, and Dutch Schools. Based on the Handbook of Kugler. Remodelled by the late Professor Waagen. A new Edition, thoroughly revised and in part re-written by J. A. Crowe. Same Publisher and Date.

† See *Builder* of June 7, 1873.

of upper Italy; the third stage is represented by "masters of the fifteenth century and followers," commencing with Paolo Uccello, and ending with the præ-Titianic Venetians; and what the "period of highest development" is every one knows who has heard of painting at all. In dealing with the position and influence of Giotto in art, Kugler does full justice to his elevation of aim and intensity of feeling, while a note of "C. L. E." draws attention to the character of the man, and his "freedom from the superstitious enthusiasm of his time," as accounting in great measure for the superior dramatic interest of his groups, and his contempt for the formal style of his predecessors. In the same note (p. 120) it is well observed, in reference to the allegorical character of many of Giotto's subjects (upon which Kugler lays a good deal of stress) that "the habitual employment of allegory characterises an epoch, not an individual; for a system of conventional personification must of necessity be the gradual result of a general understanding and common education." In fact, nothing could be more alien from the spirit of a formal ecclesiastical and allegorical art than was the character of Giotto, judged from all the traces of it which survive, and which present him to us as a man having far more natural affinity with such a poet as Chaucer than with his friend Dante,—possessing at least the same high spirit, naïve humour, and healthy freshness of feeling which characterise the English poet.

In the chapter on Raffaelle well-deserved blame is given to that untrustworthy, entertaining, and garrulous writer, Vasari, for his mingled adulation and defamation of Raffaelle, including statements which modern investigation has refuted. Accordingly, "we omit the florid paragraph with which the life of this great man was introduced in a former edition. There was no need to depreciate other painters in order to exalt Raffaelle." The characterisation of the master of Urbino, as it stands in the present edition, rests on true critical grounds, and is enthusiastic without being hyperbolical or overbalanced. The weakness (if one may call it so) of Leonardo, arising out of his universality of mind and genius, by which "even in his art he was pulled in opposite directions," is rightly estimated and pointed out; and there can be little doubt of the correctness of the conclusion that "with fewer gifts there would have been more results." As it is, one must admit the justice of Kugler's remark that "nothing is stranger in history than the fact of so great a reputation resting on so shattered and uncertain a basis; on a single work long reduced to a shadow; on, at the most, half a dozen pictures, for which, or for parts of which, his hand is alternately claimed and denied; and on unfinished fragments which he himself condemned."

"The only real solution of the life and art of Michelangelo lies," says Kugler, "in the grand and independent character of the man himself": and the following passage in relation to his genius as a sculptor may be quoted:—

"Michelangelo's merits as a sculptor will ever elicit most varied opinions. To those who bow before the purity and majesty of the antique he will always be what John Gibson called him—'a great barbarian.' But all such comparison and criticism must be interdicted while judging him. In avoidance of the accidental and the individual, in a certain sense, he may be said to occupy common ground with Phidias himself; but all community of character ceases there. Having evidently no sympathy with the qualities predominant in the antique, he took the only alternative open to an original mind, by departing as far as possible from them. Beauty, repose, symmetry, and grace he eschewed; expression and individuality he aimed not at; detail of drapery or ornament he scorned. We arrive, therefore, at some estimate of the stupendous nature of that power and subjective instinct which, in the absence of all these qualities, still takes our admiration by storm."

It is always interesting to compare judgments upon the great masters of art by an able critic, nor is there any better test of the critical value of a work of this kind than the tone adopted in characterising the greatest names in painting. The secret of the peculiar magic of Titian again is ably and comprehensively stated in the remark that "the beings he creates seem to have a high consciousness and calm enjoyment of existence. An harmonious sense of dignified well-being, removed from the accidents of common life, and which may be compared to the principles which governed the antique, characterizes them all." And again—"The intellectual, the noble, and the splendid—the well-formed, the well-fed, and the well-dressed,—were the natural objects of his art: he scarcely turned the other side of the shield to view." This is most true; and hence it may be that Titian seems to want something that appeals to the tenderer and holier feelings of our nature; he does not touch our hearts, and he has always been regarded with suspicion and half dislike by the school of critics and thinkers who wish to see a moral or a religion in art; he is as thorough a Pagan, in fact, as any Greek artist could be: but look at his art from the purely intellectual point of view, and it stands supreme in its combined power and serenity. To the mention of one other painter we may refer; one whose real greatness has been recognised only by more recent critics. "No more remarkable painter than Mantegna has lived," says Kugler. "He combined an intensely realistic tendency with an ardent love of the antique, adding to these" (qualities?) "great power of invention, a solemn poetry of feeling, the grandest expression of passion, and a mastery of hand which is almost unique. Whoever has learned to relish this great master will never overlook a scrap by him"—all which, strictly within the truth as it is, will be news to many of the race of picture-gallery tourists. They may learn lessons on this, as well as on many other points, from the Handbook; meantime, it is really pleasant to come across such a thorough appreciation of a painter who appeals only to the most educated class of minds, and who has combined classic repose, stateliness, and purity of design, with Gothic fervour and romance, to a degree perhaps scarcely attained by any other painter.

It is a strange contrast of association to go from the Handbook of Italian Painting to the companion volumes on the German, Flemish, and Dutch schools. From Titian to Dürer, for instance,—what a universe of feeling seems to lie between the two; and how strange, uncouth, grisly (almost), seems the Northern art, as compared with the serene repose and voluptuous grace of the South. Yet here we find an interest sometimes scarcely inferior to that of the greatest Italian paintings, in the intense meaning and earnestness of the greater of the Northern painters. It were perhaps "to consider too curiously" to question whether such a work as Dürer's "Melancholia" was, in regard to its intellectual effect, of more or less value to mankind than such an exquisite realisation of physical beauty as the Venus of the Uffizii Gallery. The point would probably be decided by most people in accordance with the bent of their own nature, rather than on any principle; and perhaps the two things are hardly subjects of comparison. The handbook of these Northern schools has passed through more transformation and editing, since it was published by Kugler, than is the case with that of the Italian school. Dr. Waagen, in 1860, remodelled Kugler, and now Mr. Crowe has remodelled Waagen, and added copious notes and comments of his own, generally distinguished by brackets. Among the alterations from the previous editions, Mr. Crowe points out that he discards Dr. Waagen's theory of a "Teutonic school," whilst he endeavours to throw new light on the origin of painting in the Netherlands. "Some interest is for the first time given to the painters who were the precursors of the Van Eycks in Flanders. . . . . Of Rembrandt and his pupils the lives have been remodelled or re-written, to satisfy the claims of the public to an accurate knowledge of their style and productions. Almost all the data illustrating the history of the later Dutch painters have been subjected to a necessary revision. Changes of no less magnitude will be found in the accounts of German schools. Hans Holbein, the grandfather, has disappeared from the Handbook—his existence proved to be a myth. Hans Holbein, the father, is welcomed back to the rank which he had lost, and we assign to him seven of the pictures which critics had learned to attribute to his son." These and other revisions made in the new edition we must content ourselves with calling attention to; to enter into the questions involved in them would be going beyond our present limits; and the name of Mr. Crowe, as one of the most learned and conscientious students of the history of painting, scarcely needs any recommendation to our readers, and is itself a guarantee that the new edition of this part of the Handbook is up to the standard of information of the present moment.

Institution of Surveyors.—The next meeting will be held on Monday evening, January 4th, when a paper will be read by Mr. J. E. Knollys, entitled, "The Landlord and Tenant Question."

WORKING OF THE SANITARY ACT.

SIR,—I have been much pleased with your article "On the First Principles in Sanitary Work," contained in your issue for Dec. 12. Evidently you are well acquainted with the internal working of the Sanitary Act, as well as with many of the faults and failings of members who constitute these recently-formed Boards.

There are, however, one or two other matters which militate against the working of the Act, which you have overlooked. Perhaps you may not be aware of their existence. The one to which I wish particularly to draw your attention is the private connexions of sanitary officials with the Board that employ them, and their connexions with the private property of the district over which they may have control. Take for example a rural sanitary district, made up of farmers, the village rector, and the local landowner. Arrange them as follows:—

Local Landowner...	*Chairman.*
Village Rector.....	*Vice-Chairman.*
Farmers.....	*General Members of the Board.*
Landowner's Agent	*Clerk to the Board.*

And you have a Board powerful enough for anything but carrying out the Sanitary Act. This may seem to you a strange medley for a public Sanitary Board; yet, unfortunately, a state of things very similar to this actually exists.

Here the position of the farmer is merely nominal,—almost self-elected. He stands responsible to no party save the landlord or his agent. What this means we all know. He may have leanings. Probably he has. Friend Jones's house is quite out of repair; the wind and weather come through the walls and roof, and he has no closet which is fit to be used. These are all matters Mr. Hodge would like to see made right; but what can he do?—his agent is clerk to the sanitary authority, and poor Mr. Hodge finds it prudent to think the matter over. It will never do for him to hazard a complaint, or to risk a vote, when his own agent is the culprit.

Take another case, that of Farmer Tomkins. He is a member of the sanitary authority, and lives on his own farm, and might, for that matter, be considered independent; but Mr. Tomkins has four or five grown-up sons, whom he expects to make into farmers, and is himself looking out for a larger farm, having made arrangements for his own to be managed by one of his younger sons. He knows good farms are difficult to obtain, and, like "kissing," a good deal goes by favour. This makes him very circumspect at the Sanitary Board, and especially courteous in his bearing towards the clerk, who he expects may have a good farm to let shortly.

Matters now take another turn. Mr. Broadlands has received a visit from the sanitary officer, and knowing the bad state of his property, consults Friend Brown, who advises him to put himself at once into the hands of the clerk to the authority, who is an estate agent, and will be best able to take care of his interests. This Mr. Broadlands does, and finds himself well repaid for his pains. I think, Mr. Editor, I have said sufficient for the present, and beg to subscribe myself T. F.

SCHOOL-BOARD SCHOOLS.

Leeds.—New schools have been recently opened at Saville-green, also at Burley-road. The Saville-green schools are the largest, and accommodate 1,035 children. Two junior departments occupy the main block, and the boys and girls are placed in detached buildings on either side of the front. The architects were,—Mr. George Corson for those at Saville-green, and Messrs. Henman & Harrison for those at Burley-road. The schools are fitted up with Moss's patent school-board desks, and the warming and ventilating by Messrs. Shillito & Shorland's patent Manchester school grate.

Rillington (*E. R. Yorkshire*).—This School Board is about to erect a new school, having secured a most eligible site in the centre of the village. It is to be erected from plans prepared by Messrs. John Gibson & Son, architects, Malton.

Street Indicators.—We are glad to see that the suggestions we have from time to time given as to the names of the streets being indicated, either on the street lamps or on the lighted up postal pillars, are having some practical effect. In Piccadilly it is already done, and the Parish of Lambeth are advertising for plans and tenders for the same, which will no doubt lead to some relief of the present confusion of darkness.

BUILDINGS FOR THE VIENNA EXHIBITION.

WE have already referred to the valuable Reports on the Vienna Exhibition, recently published. The third volume contains, amongst other matters interesting to our readers, a paper on the characteristic features of the buildings of the Vienna Exhibition of 1873, as compared with the buildings erected for previous International Exhibitions, by Sir Digby Wyatt; and another, called a Technical Paper on the Exhibition Buildings, by W. H. Maw and James Dredge. We cannot attempt to give an abstract of the 103 closely-printed pages which form these reports. The amount of information which they convey is so varied, as well as so exact, that no engineer or architect, for many years to come, would be justified in attempting to design a building for exhibition purposes, without a careful study of the volume in question. But it can hardly fail to be of interest to our readers to point out some of the most salient features of this remarkable work, and to indicate some of the chief points of comparison between its structure and that of its various predecessors.

We early illustrated and described the building for the Vienna Exhibition. It may be roughly described as a nave of nearly 3,000 ft. in length, intersected by sixteen transepts (that is, sixteen on each side of the nave), and passing, in the centre, under an enormous rotunda. The two eastern, the two central, and the two western transepts were each connected by aisles at their extremities, so as to form three rectangular courts. The height of the central nave was 22 ft. 6 in.; its width, 82 ft. 10 in.; the length of each transept, north or south of the line of the nave, was 246 ft. 3 in. The square formed by the central transepts, around the rotunda, had the dimension of 676 ft.

The roof of the rotunda must be first imagined as a cone, of a diameter of 340 ft., and an altitude of 180 ft. Concentric with the great outer ring (of which we shall have to say something further), at a distance of 50 ft. from the centre, and thus of 120 ft. from the circumference, a gigantic louvre arose, from the surface of the cone, to the height of 34 ft.; the outer circle of the cone being itself raised 80 ft. above the floor. The roof, continued above the louvre, at a slope parallel to that of the lower portion, ran on till it reached within 12 ft. of the centre; in which position, from a ring of 24 ft. diameter, a straight-sided and domical cupola, surmounted by an imperial crown, rose to the further height of 60 ft., making a total elevation of 280 ft. from the ground.

Under this enormous shed, which had a diameter of 354 ft. to the face of the iron and brick pillars, 80 ft. in height, from which it sprang, the dome of St. Paul's Cathedral might be placed, with ample room to spare. Indeed, the report is illustrated by a diagram, which shows first the dome of St. Paul's (as it springs from the top of the drum), with a diameter of 112 ft. Above, or around this, is figured the dome of St. Peter's,—

> "The dome, the vast and wondrous dome,
> To which Diana's marvel was a cell;
> Christ's mighty shrine above His martyr's tomb,"—

with its diameter of 156 ft. Slightly exceeding this, in its diameter of 160 ft., and in the somewhat pointed curvature of its outline, is the dome of the London International Exhibition of 1862. It would have been instructive to add that of the Albert Hall, with its major diameter of 219 ft., and minor axis of 185 ft. Clear above the three profiles which are figured, towers the lantern of the Vienna roof. Had the outer, or lower, cone been continued, without a break, to the apex, it would still have cleared the summit of the dome of 1862 by more than a fifth part of its height; while the radius of the Vienna roof exceeded, by 34 ft., the diameter of the Kensington dome.

The primary constructive feature of this roof is the ring which receives the thrust of the girders that support the cone, and which, by its circular tension, enables the architect to dispense with visible tie-bars. The principle is, of course, known as that proper to all great domical constructions. In St. Peter's, the abutment of the dome was formed by a continuous iron chain. The strength of the circular tie must be in the same proportion to that of the horizontal tie-bars that would be required by the thrust of a wagon-headed roof, of the same span, that the weight of the dome bears to that of the vault. The circular area covered by the one is, of course, nearly four-fifths of that which would be roofed by the other, when the diameters are equal. Making the proper allowance for area, it is obvious that the power of throwing all the tension into a ring, which may be rendered ornamental as a true structural feature, and thus dispensing with all internal visible ties, is one which enables the architect to achieve his most magical triumph.

There is one point which, unless it has escaped us in our examination of these richly-filled volumes, it would be very desirable to have brought to light. We have been told, by the designer himself, of the cost of this engineering triumph. The figure cited per cubic foot was so low that we should hesitate to write it down, unless we either found it officially stated, or had before us details sufficiently minute to assure us that we were not losing sight of some element of cost. It will be very desirable, if it can be attained, to have some account of the cost of the different parts of the building. The English building of 1851, the original Hyde Park Crystal Palace, cost 193,000*l.*—less 32,000*l.*, the value of the old materials; that of Paris, in 1855, Sir M. D. Wyatt states at little, if any, short of a million sterling; that of 1867, at Paris, the same writer only describes as "enormous." The area of the 1851 building was 90,000 square yards; that of 1862, 109,777 square yards; that of the main central building at Paris, in 1867, was 183,333 square yards; that of Vienna, exclusive of covered passages and courts, 136,606 square yards. We should be glad to be enabled to compare the respective prices of these buildings, both per square yard of area covered and per cubic yard, or foot, of bulk enclosed. This is the more desirable because the preceding figures, which we have calculated from data given in this report, differ from those which, in the year 1867, were published in the daily journals. These were as follow (we leave the price in francs per square yard, as it was stated at the time):—London, 1851, 71,000 square yards, 7,500,000 francs; Paris, 1855, 115,000 square yards, 11,000,000 francs; London, 1862, 120,000 square yards, 15,000,000 francs; Paris, 1867, 146,588 square yards, 20,000,000 francs.

It is evident that a great domical or conical roof, depending on its own tension ring for unity, might be poised, mathematically considered, on any circular wall, or ring of columns or piers, that was able to sustain its weight. But in such a case the slightest difference of level would be fatal to the structure, as throwing a side thrust against the lower piers. Again, the force of the wind on the roof, or the unequal weight of snow, if in a northern part of the world, would have a similar effect. To support the Vienna cone, therefore, it was necessary that the piers should be strong enough, in combination with other parts of the building, to act, to some extent, as abutments; not against the tendency of the cone to open at its base, which was counteracted by the tension ring, but against the danger of the whole roof coming bodily in either direction.

The great tension-ring in question is formed of a circular box of wrought iron, the length or circumference of which is 1,080 ft.; the top and bottom width, 11 ft. 7½ in.; and the sides, 5 ft. The bottom of the box forms the lowest ring segment of the cone. The upper side is also the lower segment of an exactly similar and parallel cone, and the two sides stand at right angles to the roof. All four sides of this ring girder are available in resisting the tension caused by the outward thrust of the roof.

This great ring was supported by thirty-two wrought-iron box-girders, placed vertically. Each was 10 ft. by 4 ft. in section, and was made in five lengths, of 20 ft. each, the bottom length resting on wrought-iron plate bedded on concrete. The lower tier was cased in wood, and then plastered, the portion facing inwards being decorated with Corinthian pilasters. Above this was a cornice, formed of zinc sheeting, on a framework of iron, which formed a gallery running completely round the rotunda. Above the cornice, at the commencement of the second tier, was a large ornamental cone, and over this the conical roof was covered beneath with canvas, stretched as a *velarium* over the whole of the under surface. The canvas was divided into thirty equal parts or gores, each compartment being decorated with borderings, and with an angel, 21 ft. high in the centre, painted in oil.

As seen externally, the building was composed of a central block, with two symmetrical wings, all in the Italian Renaissance style after the manner of Palladio. A great triumphal arch was in the centre; flanked by a pair o Corinthian pilasters on each side; between which were a pedimented niche, a band carved in figure-subjects, and medallions of the Emperor and Empress. Above all the building towered the gigantic conical dome, which was treated, externally, with perfect simplicity. The upper part of the rotunda showed itself above the top of the roof of the circular alley of the main structure which surrounded it; and the lower roof had the appearance of a continuous abutment to the great cone.

The planning and decoration of the Exhibition buildings were directed by a committee of architects, at the head of whom was Herr Hasenauer, of Vienna. The engineering work was designed by Herren Engerth and Schmidt; with the exception of the dome, which was introduced to the commissioners by Mr. Scott Russell. The work for this feature of the building was supplied and fixed by Herr Harkert, of Westphalia, who modified many of the details of the original design.

Of the buildings in the park, in general, erected for the various purposes of the Exhibition, a lucid and readable account will be found in the report by Mr. Hugh Willoughby Sweny. Of the general aspect of the exterior of the main building, Mr. Sweny speaks as highly satisfactory; although but one point of view commanded the structure in its entirety. The spirited execution of the "arms" of each country, which were executed in stucco, and placed over the entrance to each "hof," or court, is also described as worthy of admiration. No fewer than sixty exits to the main building were provided from these "hofs," added to the originally-designed *vomitoria*. It seems, however, that the police arrangements were such as to render practically useless, for half an hour before the time of closing each day, nearly all the doors, except those of the south portal. While pointing out how far the controllers of the Vienna building were from making the best of so many former experiences, as to the accommodation of vast crowds, and the rendering splendour of detail subservient to magnificence of *ensemble*, Mr. Sweny rightly describes the independent buildings, for distinct purposes, such as agricultural halls, as leaving little to desire.

A primitive wooden village, the *fac simile* of one of those in the Styrian Alps, displayed the simplest and rudest form of construction that is applied to contemporary human habitation,—at all events, south of the Arctic regions. These cottages are formed of rough pine trunks, with pent-house roofs, covered with shingles, held down by heavy stones. Under the eaves are fixed bars to hold the utensils of the dairy. The winter store of firewood is piled close by, and a pump, formed of the unbarked trunk of a tree, is ready for use when frost will allow. Windows are unknown luxuries; the walls are no higher than the doorway; and chimney there is none. The East Galician peasant-house, on the contrary, has windows on either side of the door, as well as at the sides of the house, and a thatched roof with a wooden chimney. The peasant-houses of Northern Hungary rise a step higher in architectural dignity, having walls of planed planks, a porch to the door, and a projecting balcony round the upper story. The shingled roof is carried down over the balcony, and supported on wooden pillars, adorned by clustering hop-bines, and brilliant scarlet runners.

The Vorarlberg peasant-house is so elaborate as to be something much superior to a cottage. Built on a rubble foundation, the first story is protected by a verandah, ascended by several steps. On each story,—of which there are three, counting a sort of attic in the roof,—there is a balcony, all of which are supported by pillars carried up to the roof. The covering of the roof was of fine shingles, that of the walls of a kind of wooden scales. The whole edifice looked like one of those tiny toy Swiss cottages that are kept under glass shades, if seen through a powerful magnifying glass. More picturesque still was the Siebenburger Szekler house, with a deeply-eaved overshadowing roof, a capacious and hospitable porch, a gateway like the "lich gates" still to be found in some of our rural churchyards (as, for example, at Shalford, near Guildford), and quaintly-carved devices mingled with painting in red and blue. A long verandah ran round one side of the house, the pillars of which were hung with festoons of maize,—a vegetable which, together with the tobacco plant, the peasant cultivated in his garden. The hall, entered by a quaintly-carved doorway, adorned by those ancient marks of dignity,—

substantial door-posts,—was hung with pottery. The beams of the principal room were adorned with maize. Shelves and presses, trophies of arms, and stacks of wooden pipes, carved and painted chairs and tables, and the brightly embroidered dresses of the inhabitants, rendered the Szekler Haus one of the most novel and attractive features in the whole Park. We have referred to the presence of the door-posts, which, in Early French architecture, were jealously-guarded attributes of ancient nobility. Mr. Sweny mentions the fact that the rude magnificence of the Szekler Haus is a symbol of the dwindled wealth of the ancient aristocracy of Hungary, reduced, by constant subdivision of estate, with maintenance of equal rank for each child, to such narrow limits as to have given rise to a proverb, to the effect that "If a dog is placed in the centre of a *Slachcics* estate, his tail would hang over the boundary."

There is a special interest attending the consideration of these wooden houses from the fact that, not more than 200 years ago, the structure of the grange, the farmhouse, and the shop, in those parts of England in which stone was not accessible, was essentially wooden. In those places where the good practice of inscribing the date on the face of a building generally prevailed, we are able to trace the gradual transformation of style, from the house with projecting stories, to that which, though still framed of timber, has vertical walls, which took place in the seventeenth century. Fine gabled houses, bearing the date of 1615 and thereabouts, hang, story after story, their broad and picturesque casements over the street. Fifty years later, in the same locality, we find a house, bearing the date of 1663, with like gables, like framing, like windows, but the framework perpendicular. Bricks are used, in each case, as filling-in between the secondary timbers; but they are generally set obliquely, and not in horizontal courses.

The Saxon architecture, displayed in what was called the Sieben-bürger Saxon house, contrasts strangely with the picturesque framework of Hungary. This was a plastered and white-washed, or rather yellow-stained, building of two stories, the upper contained in a red-tiled roof. The windows had green jalousies, and the basement served as a storehouse. The principal room was the kitchen, richly furnished with all sorts of cooking utensils. The Croatian house was a cube, containing two stories, built of planed planks, with no projections, except on one side, where the roof descended to form a small penthouse.

The champion wooden building was the house of the Chevalier de Mlodecky. Mr. Sweny says correctly that no description in pen and ink can do it justice. The projecting roof was rich with carvings. The sills of the windows were painted to resemble damask cloths. An exquisite porch was approached through a gateway of elaborate construction. The work was executed entirely by the hatchet, and its cost amounted to 30,000 guldens. The furniture was Russian in design and execution, and of a sumptuous taste. Chairs, tables, and settees were of walnut-wood, "carved clock-cases, quaint shelves, covered with quainter earthenware, or glass of Muscovite design, presses filled with linen, remarkable for rich embroidery," are all of the same highly ornamental character. Space fails us even to enumerate the various national styles of building illustrated in this extraordinary collection. A Swedish dairy; an Austrian school-house and gymnasium; the tent-like form of the ambulance establishment; an iron church; a model stable; oaken vats, exquisitely carved, and enough to put the great tun of Heidelberg to shame; are among the specimens exhibited of that craftsman-like use of timber, which is still the pride of our Northern cousins, although amongst ourselves it has gradually become extinct, owing to the result of the introduction of mineral fuel. It was but the other day that the warden of one of the City Companies was lamenting the non-existence of workmen who could produce carvings like those in which the heraldic bearings and flowing mantlets that decorate the ancient civic halls, were lovingly wrought by the carvers of Tudor time.

It is some comfort to those of us who lament the loss of one of the main motives of the picturesque character of old English scenery, to hear how our foreign neighbours pay tribute to our national power of comfort. Comfort is an especially English word. The French have had to borrow it from our language. "*Les Anglais*," an Imperial personage is said to have remarked, *apropos* of the British Commission House, or Prince's Pavilion, in the Park, "*sont absolument sans rivaux à l'égard de tout ce qui concerne le confort et la propreté.*" The building which drew forth this expression, although built of the specially unarchitectural material of corrugated iron, was so tastefully designed and decorated, with its tiled fireplace, its light verandah, and its encaustic floors, as to combine the maximum of comfort with the minimum of show. Turn where we like, at Vienna, we are sure to encounter well-known English names. Minton & Hollins, the Coalbrook Dale Company, Jackson & Graham, Elkington, Cooper & Nott, and Pavey, were the manufacturers whose combined efforts gave such thorough comforts, not uncombined with elegance, to the "Prince's Pavilion."

One feature of the Exhibition buildings should not be omitted from my notice, however general or partial. It is that of the provision made to supply water. The waterworks, which now supply Vienna at a high pressure, were unfinished at the date of the Exhibition. Thus the conductors of the building had to do their own engineering in that important branch. A water-tower 143 ft. high was erected near the western end of the machinery hall. It consisted of eight stories, framed in iron, on a basement of stone. The reservoir at the top was constructed of wrought-iron plates. It was 25 ft. in diameter, and 19 ft. high; so as to contain about 9,000 cubic feet of water. The pumps were capable of delivering into this reservoir 1,600 cubic feet of water per hour, and the head thus obtained was adequate to the delivery of a jet of water at any part of the building, with the exception of the lantern of the rotunda. The tower was erected without scaffolding, and without accident. The total weight thrown on the base, including structure and full charge of water, was about 480 tons. Nine fountains and 180 hydrants, were fed from this lofty water chamber. The well was 22 ft. deep, and 18 ft. in diameter; and the pumping was effected by a steam engine of 100-horse power.

Nothing is more calculated to impress the mind as to the manner in which the great rotunda dominated this æsthetic and industrial city of a dream, than a comparison of its diameter, of 344 ft., with the dimensions of some of the most famous buildings in the world. It was much larger than the arena of the Coliseum, which is 281 ft. by 176 ft., although the exterior wall of that building surrounds a space of 615 ft. by 510 ft. It approaches the size of the amphitheatre of Nismes, 400 ft. by 320 ft. It exceeds that of Mons, of 200 ft. by 185 ft. What would the Emperor Vespasian have said to an engineer who should have proposed to roof the Coliseum with a *velarium* of iron and of glass?

ARCHITECTURAL LECTURING.

DURING the season of meetings of societies there is a large amount of architectural lecturing done amongst us. Between the Institute of Architects and the Association, we are bound to have upwards of thirty lectures or addresses on architecture, or on something connected with it, except in instances where discussion takes the place of lecturing. These lectures may deal with various classes of subjects: they may concern the architect's social relations or education, or they may refer to scientific or to artistic problems; but nearly the whole body of addresses of this kind is reducible, from one point of view, into two classes, the literary lecture and the illustrative lecture. Under the former head are comprised all lectures which consist of pure talking, and under the other head those the chief interest of which consists in drawings or diagrams, in regard to which the lecture is mainly a commentary or explanation.

These thirty and odd lectures per annum are a rather serious concern, in one way or another. They either produce some effect, or they do not: under the latter supposition, they would involve a very serious waste of human energy on the part of lecturers and listeners alike; and under the former supposition, that they are effective in one way or another, they must be a formidable means of injuring or benefiting the profession. The influence of the two classes of lectures we have referred to differs very much in kind and in degree; and the marked predominance of one or the other is a sort of indication of the prevalent feeling of the audiences to which they are addressed. In days when architecture was almost exclusively a system of dilettante copying, the literary lecture had full play, as affording a pleasant opportunity for lecturer and lectured to assure each other that all were on the right path, and had only to follow it to arrive at perfection. But in times when architectural practice ceases to some extent to be mere copying, and takes the form of an active and experimental research after the best and truest methods of building artistically and scientifically, then the illustrative element is naturally brought more into use, and lectures may, and often do, become matters of much labour and research, and affording real practical information. And under such circumstances the literary lecture sinks more into abeyance, and comes to be spoken of sometimes with rather scant respect.

It may be taken as one sign that we really are at present in a far more healthful state of honest hard work in the architectural field than some critics would make out, that the practical and illustrated lecture is much more in demand at present than it has been for some time. The large proportion of the "papers" announced for the ordinary meetings of the Institute for the present session are, so far, of the practical type; and there is a pretty widespread feeling that enough talking has been done. At the same time, it must be admitted that the literary lecture, as an occasional contribution, has its value, as giving opportunity for looking back to and setting forth afresh abstract principles, which should not be forgotten even by the most zealous workers; perhaps, we might also say, for stimulating enthusiasm for some special branch of the art, though deeming that in general such enthusiasm is better stimulated by example than precept.

Of the literary lecture as an opportunity of setting forth principles, we have just had an admirable, we may say a typical, example, in the paper read by Mr. W. H. White at the Institute last meeting, and which we printed in full. We point to this as exemplifying the best elements of the literary lecture, both in what was included and in what was omitted. The occasion, the systematic attack on the profession by an anonymous reviewer, justified the reading of the paper, or at least gave an opportunity for looking up again the records of our professional history, and examining the basis on which the status of the architect has rested, in the past as well as in recent times. And the manner in which the subject was dealt with was in almost every way praiseworthy. The argument was continued logically from the opening to the close; not ostentatiously brought forward at every sentence, but so kept before the writer's mind that every attentive hearer could perceive the bearing of each point in the discourse, and its relation to what preceded it. The language was concise and dignified without being dull; little shafts were directed, here and there, against contemporary fallacies, with a quiet irony much more effective than any more open ridicule, and the whole lecture was delivered with clearness and point. But we wish also to draw the attention of paper-readers to what was omitted on this occasion. There was none of what our American friends describe as "tall talk," and there were no poetical quotations. These two tendencies are too often the bane of the literary lecture. The first is scarcely ever defensible, except in the case of an orator, who professedly works by rhetoric and not by logic. Poetical quotations may be introduced, no doubt, so as to give additional point and force to an argument; but the architectural mind has not usually been happy in its poetical tastes. We should be afraid to speculate how often we have read or listened to certain venerable and threadbare extracts (we will not repeat them here even by way of illustration) which the majority of literary lecturers on architecture seem to think themselves bound to introduce on some pretext or other; and as to eloquence of the "tall" kind, the masses of magnificent verbiage which exist in print and in manuscript on the subject of "the noblest of the arts," "the music of the eye," "the noble masterminds of the middle ages," and other such war-paint of the literary architect, one cannot think of without a shudder. In Mr. White's paper there was not a word of such things; and we commend it on that account especially as an example to persons who feel a predisposition to literary enthusiasm on architecture.

The same week presented us with an excellent and in one respect, at least, a remarkable exampl

of the other class of architectural lecture, the illustrated paper. Most of the hot and crowded audience who sat (or stood) for three hours and a half at the Architectural Association meeting at Willis's Rooms, on the 18th inst., to hear Mr. Sharpe's commentaries on the drawings which lined the walls, and the commentaries upon his commentaries, would admit that one of the speakers was pretty well justified in describing the occasion as an era in architectural lecturing. Probably there has seldom or never been a lecture of the kind delivered, in connexion with which so profuse and fine a series of illustrations has been devoted to one branch of architectural decorative treatment. The success of the lecture in this respect was due (in addition to the knowledge and geniality of the lecturer) to two causes: in the first place, the restriction of subject proposed and kept to. The excursion in France, which gave rise to the lecture, of course led to sketches of all classes of detail among the industriously-filled books of the sixty companions who made the tour. In selecting from these drawings to illustrate his lecture, Mr. Sharpe wisely determined to keep to one branch of his subject, and illustrate it thoroughly; the speciality chosen being French Gothic decorative carving. The drawings enlarged from the sketch-books of the party formed an almost complete history of the development of this class of detail in French Gothic, besides recording not a few exceptional curiosities of treatment. This is the way to make a lecture of this kind valuable; not by running over a wide field and collecting a few illustrations from every corner of it, but by taking up a limited portion of the subject and treating it exhaustively; because this is just what architects in ordinary practice have little time to do; they are frequently compelled to notice and learn everything at once, instead of going systematically through special subjects. And the other element of success lay in the co-operative system brought into action through the goodwill and enthusiasm of some of the members of the Association, in getting up a number of drawings beyond what any one pair of hands could have afforded time for, but upon a common plan and method of execution. Mr. Sharpe's directions for the enlarging of the sketches we published in part, and the success of his scheme was proved by the really splendid collection of sketches which were got together, and which had quite sufficiently the appearance of being by one hand, or, at least, the result of a common method of execution. In regard to the effect of the process adopted and recommended for such diagrams, viz., cutting out the outline of the objects drawn, and mounting the whole on a dark background, there may be two opinions; the realistic effect aimed at was not quite achieved, partly in consequence of the curling more or less of many of the drawings, and the difficulty of hanging so many pieces of paper of varied and irregular outline with anything like order or parallelism was evident. The experiment was a very interesting one, but we are not sure that we should record it as the most effective way of arranging lecture diagrams, the total effect upon the eye being rather scrappy and heterogeneous. If the aim is to make the object stand out light from a darker background, this may be obtained by using darkly-toned paper, and bringing out the lights in white,—a method which, on the whole, produces more effect with less trouble, and is somewhat more artistic in appearance and style. The drawings at the lecture were, in fact, an imitation of Mr. Sharpe's own style of illustrations in his published works, and, as book illustrations of architecture, nothing could be clearer and more useful; but in a large lecture-room a somewhat broader and heavier treatment in regard to light and shadow is necessary to make the drawings effectively visible to a large audience, unless the scale be very much increased, which again involves loss of space.

Methods of drawing, however, are secondary considerations; and no form of architectural lecture tends so much to stimulate the interest of the hearers, or to arouse it in those to whom the subject is new, as one consisting of practical comment on the development of architectural beauty as illustrated in drawings; unless it be a lecture at the buildings themselves. And this being the case, perhaps the time devoted, before the main subject of the lecture, in explaining the lecturer's particular system of Gothic nomenclature, and after it to complimentary speeches, might reasonably have been a little grudged. Nomenclature, though useful in systematising study, is not a point of the first importance; and even if it were much more so than it is, we may be pardoned for hinting that every one to whom it is a matter of interest must surely by this time be fully acquainted with Mr. Sharpe's system of nomenclature, and that it is superfluous to go over a matter of that kind on every occasion. A further extension of the lecturer's interesting and graphic remarks on the drawings exhibited would have filled up the time in a more profitable manner; and it is also desirable that the complimentary element on such occasions should be cut shorter than it generally is, or than it was on this occasion. But in spite of these partial drawbacks, most of those who were present will remember this as a remarkable effort in illustrative lecturing, and the least we can do is to hope that other similar celebrations may be possible, under the conviction that lectures on architecture carried out in such a manner as this one, are important and very pleasing agents in the professional education of the rising generation of architects.

ART-SERIALS.

THE December number of the *Gazette des Beaux Arts* contains a somewhat extended article on Asiatic architecture, the text of which is Texier's work on Asia Minor, of which the article is ostensibly a review. Those who have made this subject a speciality may be interested in this notice of it in an art periodical which always deals thoughtfully and adequately with architectural subjects.

The illustrative department of the leading French architectural papers is rather deficient in special interest in the last month or two; the most important illustration in the last number of the *Revue Générale de l'Architecture* being the Hôtel de Figaro, of which M. Sauffroy is architect, and which may be praised for showiness, but certainly not for refinement. The November number of the *Encyclopédie d'Architecture* brings us an illustration of an effort in monumental design which is, at any rate, startling enough. This is a monument "*Aux Morts en combattant*," 14th September, 1870, by M. Bartholdi, sculptor, and consists of a large headstone with inscription, and a massive slab occupying the usual position of the sarcophagus, but which is represented as tumbled down in two blocks, which have fallen half on one another, and from between which emerge the head and arms of a man who has been crushed between them, and is vainly struggling to free himself. Anything more ghastly, and more at variance with a reverence for the solemnity of death, it would be difficult to imagine: it is painfully indicative of the unhealthy state of feeling of those who could order and execute such a work for such an object. A novelty of a less startling description in the *Encyclopédie* is an elevation and plans of a building for a chocolate-mill (M. Saulnier, architect), in which brick and terra-cotta are employed in working out the architectural features. There is some originality in the design, which is a good example of the architectural treatment of a building of this class.

Among the special illustrative works which are being brought out in serial form at present, *L'Art Arabe*, edited by M. Morel, and now at its "second part," deserves attention as a very fine work, illustrating in splendid coloured plates the detail of Saracenic art. The last number is chiefly occupied with wall decorations in inlay, weapons, and ornaments of dress, &c. A lamp in enamelled glass (fourteenth century), is remarkable for its fanciful ingenuity of design and richness of colour, which is reproduced in the chromolithograph with great brilliancy. A kind of companion work to this is *Architecture et Décoration Turques*, edited by M. Leon Parvillée, also largely occupied with illustrations of wall decoration and ceilings, but including besides, as its title implies, illustrations of architectural detail in the more usual sense, and drawn with all the care and finish possible. The surprising thing in regard to all this elaborate illustration of Eastern art by French artists and architects, is that there should be so little evidence in contemporary French work of anything being suggested or derived from it; not only as regards detail, but even in regard to general feeling, the favourite style of French decoration seems to owe nothing whatever to these glories of Oriental design which are so largely illustrated in French publications. Perhaps it may be this very consideration which induces these publications, however, and we shall see their effects in time.

The *Histoire de la Céramique*, to which we referred a little time since in some former notes, keeps up its interest, for those to whom the subject has special interest, as a medium for the illustration of curiosities and beauties of the ceramic art, chiefly in the illustration of relics of old date and unique character; which latter quality, according to *Punch's Almanac*, is the great desideratum among amateurs of china.* Another special class of decorative design has its own publication to illustrate it, in the German *Ein-gelegte Marmor-Ornamente des Mittelalters und der Renaissance*, by Herr Valentin Teirich, the December number of which contains many wall inlays and pavements, of marble inlay only, from the churches of North Italy chiefly, Siena Cathedral, Santa Croce, Florence, and other well-known buildings. The collection, in one publication, of specimens of this now not much used class of work brings out forcibly the peculiar character, so entirely different from that of tile decoration, which belongs to it. A book of details of *La Capella di S. Pietro, nella Reggia del Palermo*, drawn by Andrea Terzi of Palermo, is a very good monograph of a building, interesting historically as well as artistically, as a relic of the temporary foothold of the Arab on the shores of Sicily. As a monograph of an exactly opposite kind of interest, we may mention that of the *Königliche Schloss* at Berlin, by Dr. R. Dohme (December, 1874), consisting of plans and large photographs of this bare and cold-looking structure.

The "sketch-book" of the Architectural Association seems to be kept up with great diligence and a continued excellence of draughtsmanship. The recent numbers indicate the prevalence of the Queen Anne epidemic among the members; among some good and careful drawings of work of this date may be mentioned a double page of drawings of sundry iron work in different parts of London; the value of which has been pointed out in earlier volumes of the *Builder*. In many of the iron gates, railings, and lamp standards of this period may be found much very good and sensible design, precisely suited to the nature of the material, and really often more pleasing and effective than the spike and elbow style of wrought iron lately so much affected. This is a point in regard to which we may fully admit a considerable excellence in the Queen Anne period.

In turning over the English art-serials of December, we may mention an illustration in the *Portfolio*, which is of interest in more than one respect, being an etching by Gaucherel of Inchbold's view of "Charing-cross." This is not, as the title would lead one to expect, a perspective street scene, but a view from the opposite side of the river, in which the Charing-cross Railway Station, and the chimney and roofs of the hotel in the rear, form the central object against a summer evening sky. It is worth while for the artist and amateur to note how it is possible to obtain a highly poetic and suggestive composition from materials which might be thoughtlessly regarded as hopelessly commonplace and prosaic; and also how finely and suitably the art of etching lends itself to the representation of an effect of this kind.

ON THE ORNAMENTATION OF THE ROMANESQUE, TRANSITIONAL, AND LANCET PERIODS IN THE NORTH OF FRANCE,

As exemplified in the Churches visited in the French Excursion.†

THE church at Montmartre had not yet been either painted or restored; and they therefore saw it, Mr. Sharpe said, under favourable conditions of study, although partially in ruin. It contained amongst its capitals some fragments apparently of Roman work, which had been taken from some building situated on the same site, which was the summit of the high ground that overlooked Paris from the north. The church belonged almost entirely to the Transitional period, and contained some interesting examples of ornamentation. At St. Denis they were received by two members of the chapter; its church, as it stood at present, belonged to two periods, principally the Transitional and the Geometrical. The works of both were of paramount interest. Of the earlier building, the west end and the choir, with its crypt, alone remain. It possessed throughout all the strongly

* See the touching delineation of the lady collector, who has broken a valued saucer, and has "nothing to live for," not even her little girl: "You, child! You are not unique; there are six of you, *a complete set!*"

† See vol. xxxii., p. 1067.

marked Transitional features that they found in so many churches of this district; but there was one circumstance in which, as the representative of their northern buildings, it required especial notice. A large number of its contemporaneous windows were not circular, as they would expect to find them, but pointed. As these buildings were by no means to be reckoned amongst the later works of this period, this exceptional circumstance seemed to justify the conclusion that the pointed arch made its appearance in arches of decoration earlier in the north of France than in any other part of Europe; but they were by no means thereby justified in assuming, as many French architects did, that St. Denis was the earliest Gothic building in Europe, for in all other respects its treatment was very far removed from that which they were accustomed to look upon as characteristic of true Gothic work. Upon this building a great inroad was made in the Geometrical period, when the nave and transepts were taken down, and the magnificent design which now occupied their place was interpolated between the western towers and the choir. He was disposed to consider the *main idea* of the design of the nave and transepts of this church, as presented in a single compartment of these members of the cross as amongst the very finest, if not the very first, example of Gothic work in Europe. The church of Gonesse had a very interesting Transitional choir, with a circular aisled apse and tower, and with original flying buttresses, very like those of Canterbury Cathedral. It had also a characteristic nave and west front, of the Lancet period. At Louvres they found an interesting Flamboyant Church, with a well-preserved late Romanesque doorway, and a picturesque detached south-west tower, of somewhat later date. At Senlis they found the archiprêtre of the cathedral and a deputation of the Archæological Society of the Department awaiting their arrival in the cathedral, the essential parts of which belonged to the Transitional period. The transept ends were remarkable examples of the profuse manner in which the Flamboyant architects lavished their ornamentation, in clothing and overlaying the work of their predecessors. The upper part of the west front, with its remarkable spire, belonged to the Lancet period. The central west doorway was a good example of the remarkable sculptured doorways of the Transitional period, of which the west doorway of Chartres Cathedral was one of the earliest in the north, and that of the south porch of Le Mans Cathedral one of the richest. St. Pierre was now a desecrated church, and was occupied as the stable of a cavalry regiment. It had an interesting early tower attached to its north transept, and a very pretty Flamboyant west front, with much elegant though late detail in its three doorways. At St. Frambourg there was to be found a vaulted apteral chapel, of a single span, of the Lancet period, with an eastern apse, and a large circular west window, possessing some details of interest. St. Vincent was a plain, broad, lofty apteral cross church, which was covered throughout with quadripartite vaulting, resting on half shafts on the walls. It belonged entirely to the Transitional period, and had pointed arches of construction, and the circular arches of decoration. A plain tall tower on the west side of the north transept appeared to have been added at a somewhat later date. The church of St. Vaast had a very narrow Transitional nave, with characteristic pier capitals of varied design, several of which were on the walls. It had also two doorways of the same period, one under a west porch, and the other with a very remarkable tympanum of figures and arcades on the south side. The rest of the church,—transept, crossing, central tower, and apse,—belonged to the Lancet period, and was extremely picturesque, whether seen from the interior, or outside from the east end, where the pyramidal group, crowned by the saddle-backed central tower, was very striking. At Cirés-les-Mello they had in its nave another interesting example of a north French church of the Lancet period, which, compared with that of Montataire, and afforded them a well good opportunity of perceiving how great a difference there was between the work of this period in France and that of the same period in England. There were a west door and a north porch, both containing interesting features, and a well-buttressed south-west tower, forming, with the west front, a very picturesque design. The church at Mello, formerly collegiate, had been so thoroughly restored as to have lost much of its authenticity and primitive value, scarcely a single piece of ornamentation having escaped the modern chisel. It was a cross church of some interest, with a very short nave, and transepts, which had lost its choir. It belonged to the very close of the Transitional, or the commencement of the Lancet period, and had a south doorway, which, before it was restored, must have been very interesting. Mr. Sharpe thought that few would hesitate to admit that if the choir of Beauvais Cathedral be not the most beautiful, it was certainly the most sensational Gothic interior that existed. Its height from the floor to the top of the vault was 154 ft., which was that of an ordinary Lincolnshire tower and spire. It was 13 ft. higher than Amiens Cathedral, the design of which had been favourably compared with that of Beauvais, by Professor Whewell, who apparently preferred the former, and graphically illustrated the effect produced on his mind by comparing Amiens to "a giant in repose," and Beauvais to "a tall man on tip-toe." The church of St. Etienne had been a very important transitional structure, of which the main portions still remained. There was a great deal in rich carved work on the north front of the north transept, and on the north doorway of the north aisle. The choir was a Late Flamboyant design. At Beaumont-sur-Oise there was a noble five-aisled church, commenced at the close of the Transitional period, and completed in the Lancet period. He ought not perhaps to say "completed," for the clearstory of the nave was wanting, and whether it was ever constructed or not it was difficult to say; but the nave was lofty even without it. There existed no better illustration than this church presented of the affinity between the styles of the two periods. Students not knowing where to look for the indications which distinguished them might easily suppose the building to be altogether in one style, and built from the primitive design, which, however, was not the case. Perhaps the most picturesque church in the valley of the Oise was that of Champagne, with its tall, central tower, which, however, was unfortunately covered with scaffolding, preparatory to one of those fatal restorations to which the French were so prone. It belonged to two epochs—the Transitional and the Lancet, with a clearstory to the nave of Geometrical date, and a south porch of Renaissance work. Having referred in detail to what the members of the Association learned, Mr. Sharpe went on to say that he would tell those present what they learned. He had devoted his efforts that evening to the treatment of one particular branch of the great art of building during the Middle Ages in the North of France; and he had no hesitation in selecting the carved work of these early buildings as the particular subject to bring before them that night; first because the progress of art in this district was more readily traced by its ornamentation than by any other of its features; for they had not in this country the infallible test of the date of a building, and of this progress in art, that they had in their country. He meant the changing profiles of its moulded work. Secondly, because there could be no doubt, that if they were to select that part of a building in which was centered the chief character of the building and spirit of the design, it was that point where the descending arches fell upon the capital that crowned the piers. Lastly, it was one which, for this reason, most artists sought to fix in their minds, and transfer to their sketch-books. In making his selection, then, from the sketches which were kindly placed at his disposal, he chose those drawings which best illustrated this subject. They presented a very complete series of illustrations of two Periods of French art in the north, the Transitional and the Lancet; they were all enlarged, chiefly by the artists themselves, on a system, and in a manner which he suggested to them, in order to fit them as wall diagrams. These drawings spoke for themselves, and the whole of them on the walls were from sketches made by members of the party during the excursion. He then described in detail the various works which represented the Transitional period. Referring to the acanthus, he said that it was a curious leaf, and they scarcely went anywhere but what they saw some specimens of it, some of them being very elaborately done, while others were of a clumsy character. In Chalons there was a series of magnificent capitals with the same type of ornament, and in the Hôtel Dieu there was a great variety of these capitals, Beauvais showing another example. Another curious feature of the Transitional period was the volute, which was carved the reverse way, and it was noticeable how the little volute was differently used in buildings. They came to another ornamentation, which was contemporary with it and the acanthus, which resembled something like the ace of spades, which was to be seen at Nantes. In Le Mans there was a shaft, with some beautiful ornamented capitals, with an overlapping leaf. Alluding to the Lancet period he said that there was very little difference between it and the Transitional period. It was a fact, he maintained, of which they ought to feel proud, that they had artists who seized the features of the Gothic work earlier than any other artists. There was a leaf, which was somewhat similar in character to the acanthus, the idea that suggested it really coming out of the acanthus; the leaf was attached somewhat clumsily to the capital, and did not grow out of it as their English Lancet work did, which was in the form of a single sprout. In some instances it resembled a great sprawling leaf, but it certainly was not elegant. Mr. Sharpe then drew attention to the curious manner in which the French almost universally finished their bases by a fishhook or spur at the angle of the base, which was an ornament that covered the space that was left between the circular and square base. In referring to the fine specimens which were exhibited on the walls, representing several figures exemplifying the singular manner in which the French treated their doorways, which drawing, he said, was taken from the south porch of the Cathedral at Laon, he said the French had the art of carving human figures before they were attempted here; and in France they found great dignity, simplicity, and quaint treatment of them.

In conclusion, Mr. Sharpe made a few remarks of a general nature. In the first place, no one, he thought, could have gone home from this excursion without having been greatly impressed with the vigour, the originality, and the fertility of invention displayed in the buildings which belonged to that period of art to which it was only of late years that they had accorded a separate classification. He meant the buildings of the Transitional period. They were, moreover, far more numerous and important, as a whole, in the district that they traversed than those of any other period, and they appeared to have exercised in this country a far greater influence over the style and character of the works of the succeeding period than was the case in England. Indeed, so few were the changes introduced into the architecture of the north of France during the period, that corresponding with the Lancet period in England, it might be almost regarded as a continuation of the style of the Transitional period, whilst the earlier use of the pointed arch in arches of decoration in the Transitional period still further reduced the points of difference that in this country distinguished the two periods. In the next place, they could not fail to be struck with the manifest difference that existed between the work of their own country and the contemporaneous work of the north of France during the Lancet period. Here we have the clustered pier, with its light, detached, banded shafts; the circular capital, with its round-edged abacus, and elegant bulbous conventional foliage; and the deeply-moulded pier-arch of several orders. There they had the single columnar pier; the square capital, with its square-edged abacus, and its plain crocketed capital, varied, perhaps, with a plain, flat, foliated leaf, and the plain pier-arch of two orders, carrying uniformly a single relieved roll at the corner of each order. Here in England they had a tall hooded lancet window, of which the window-arch was enriched with deep mouldings; while in France there was a plain, broad-pointed window, without mouldings or ornamentation of any kind. The one was the earliest embodiment of the spirit of what they were accustomed to look upon as Gothic work; the other breathed throughout the spirit of the style from which it took its origin, without its richness, its variety, and its inventiveness. Thus the easy and natural transition, by which their own architecture gradually passed at the end of the twelfth and the beginning of the thirteenth century, from the earliest into the fully-developed Gothic of the middle of the latter century, could hardly be said to have had any existence in France. French architecture, in fact, passed almost directly from that of the Transitional period to that of the Geometrical period. As to the direction of the Geometrical period in France, he would not then offer any opinion, but he was disposed to believe that Geometrical tracery, introduced as it was into French work some

fifteen or twenty years sooner than it was into English work, continued in use long after curvilinear tracery was practised in England. Of the work of the Curvilinear period in France, whatever might be thought of the work of the latter part of the period, when its essentially Flamboyant character became strongly developed, it was impossible not to recognise in the work of the earlier part of the period all the essentials of a great national style. But of all the designs of the Curvilinear period, either in France or in any other country, there were few superior to that of the west front of the cathedral of Abbeville. Its great height and its extreme richness were of themselves sufficiently striking; it had also the advantage which the west front of few French cathedrals possessed,—with its two towers, its three great porches, and its large west window,—of being symmetrical and complete. The architectural student who would lay down for them a correct geometrical elevation of this fine front would render a great service to all those who were interested in the study of the richer forms of Gothic art. To an English student nothing was more remarkable than the extreme poverty of the moulded work of these two great periods of French art: from the commencement of the Transitional period down to that of the Geometrical period, they had, almost invariably, one mode only of ornament, viz., the pier arch,—that, namely, of placing a roll at each edge of the order. In the earlier period this was relieved, as in the Norman period, by a simple quirk. In the Lancet period the same form occurred, only the relief was greater.

Before Mr. Sharpe sat down, he proposed a resolution to the following effect:—That the thanks of the Association be given to the bishops; to the authorities of the Cathedral, both ecclesiastical and civil; and to the clergy of the parishes through which the Association passed, for their great courtesy and kindness in vieing with each other to see who could be the most attentive to meet the requirements of the members.

The Rev. Mr. Hutchinson, in seconding the resolution, said that it was very noticeable, considering the feverish state of France at the time the Association went through the country, that they were always met with attention and courtesy. The clergy, at the different places through which the Association travelled, had referred to the quietness in which this great Association pursued their work, and at the same time expressed the honour they felt at being allowed to show over their churches the members. In their journey, the Association had impressed upon them feelings which they could never regret; and for five years he (the speaker) had enjoyed the pleasure of accompanying the Association in their visits; and he trusted that their great work would be extended in this country in a manner which some people did not think it capable of.

Mr. Penrose proposed the second resolution, which he considered it a privilege to do. He had for two years joined in their interesting and profitable excursion, under the able leadership of Mr. Sharpe, and he most heartily reiterated the remarks made by the Rev. Mr. Hutchinson. The proposition was one, he thought, which they would gladly accept:—That the thanks of this Association are due to those gentlemen of the profession who helped us in our pursuits." In many cases, he said, the help was offered to them at a great sacrifice of time. The Association was kindly received at Senlis by the Archæological Society, as also it was by the architects at Beauvais, and one gentleman, an eminent architect, came expressly down from Paris to assist them. At Euvres, too, they were received by the archæological authorities of the town, who had reason to deplore the sad destruction of the older part of Euvres Cathedral, under the so-called restoration, which, in many cases, meant the entire removal of an old work, in order to show how well it could be put back again. At Laon they were shown the cathedral, which had been restored most conscientiously in every single part, so that there was no atom of the old work injured. They were charmed at what they saw, and any Association that might visit Laon would be pleased at the manner in which the work was executed.

Mr. Robins formally seconded the resolution, which was, along with the former resolution, carried.

Mr. Sharpe then thanked gentlemen for putting the diagrams on the walls in the form they were now exhibited, and was obliged to those of the members who had carried out the suggestion that he had made, that the sketches that they took in their sketch-books should be enlarged and put into the form which would render them useful as wall-diagrams, for the instruction of those members of the Association who were not with them in France. Amongst those gentlemen who had carried out their instructions in an able manner, he might mention the names of Messrs. Penrose, Clarkson, Paice, Fowler, Drew, Robins, Henman, Johnson, Kersey, Vacher, Eales, Brown, Waddington, Barlow, Baldwin, Avern, Cutler, and Hayes.

Professor Donaldson said, that nothing of late years had afforded him so much pleasure as finding himself in the presence of so many young men connected with architecture, for their works were drawn accurately, as could be seen by the perspective, giving a full idea of what the French architecture was like. Referring to the lecture, he thought that Mr. Sharpe had hardly done sufficient justice to the Byzantine works, for they owed much to the East, Professor Donaldson thought, for the introduction of the Pointed arch into Europe by the Crusaders. M. Guizot, in one of his works, dwelt much upon this topic, and showed them how the Crusaders, going abroad when the arts were little known in this country, brought with them, as evidence where they had been, artists who introduced that luxuriant style in order to show that the Crusaders had been in foreign parts; they, therefore, owed very much to the Crusaders. It was a great delight, the Professor went on to say, to see the great advance which the young men had made in drawing all those details of French architecture now exhibited on the walls. The school was one which had been growing up under Mr. Street, Sir Gilbert Scott, and others, and which Mr. Sharpe had helped to bring to perfection.

Mr. Sharpe then proposed a resolution to the effect that the Association generally should return its thanks to those of the officials who were interested in the preparation of the drawings and diagrams which had been exhibited.

Mr. Watkin seconded the resolution, which, having been carried, Mr. Flint Clarkson responded. The Chairman then called upon,—

Professor Kerr, who said that if he were to talk all night he could not express the feeling of esteem which he entertained for his friend Mr. Sharpe. They saw in him an amateur, who was not of a very hysterical order. He retired some twenty-five years ago, still he had retained all the associations of the artist-architect of the pure and simple designer. When they had a gentleman, like he was, coming forward at a period like the present, as he had done that night, they saw what it was to be an architect, as distinct from the amateur. Mr. Sharpe was still an architect, although he had laid down the pencil.

Sir Henry Dryden said that he only had one point to allude to in reference to the chair. He held that an amateur had quite a right to speak on it. It was well known to everybody it was not absolutely necessary that an architect should be an antiquary, or that an antiquary should be an architect; but when they came to deal with an old building, then the architect who was not an antiquary, was not a right person to put to the work; but Mr. Sharpe had been leading the profession of architects to be antiquaries. They could not go into a county in England without seeing numerous and perfectly irretrievable damage done by architects, because they were not antiquaries. He felt very grateful to Mr. Sharpe, not so much for his teaching drawing, but he knew of no professional architect who was such an antiquary. Whenever they obliterated a single bit of old building, he said, they obliterated one of the lines of their own country's history. Generally, the preservation of the old buildings was much more due to the amateur than it was to the professional architect.

The President, in thanking Mr. Sharpe for his excellent lecture, caused much laughter by saying that at the time the Association made their visit, it was generally reported in some of the French newspapers that the Association was a large body of English *savants*.

Mr. Spiers said the present occasion was the first time Mr. Sharpe had favoured them with a paper relating to the occasion of their excursion, that had now become annual, and he hoped that it would not be the last.

Mr. Sharpe having replied, the proceedings terminated.

A Builder's Benevolence.—The late Mr. Thomas Jump, builder, of Liverpool, has left 45,000*l.* for charitable purposes.

ON PROFESSIONAL ETIQUETTE.

"ETIQUETTE!" I cried, as Pilgrim uttered the word, "its mere full-dress sound torments me! What is etiquette to me? A good bold, honest, open-minded fellow, who does not know the meaning of the word, is the man I want, not the most punctilious observer of ceremonial that ever crushed an opera-hat under his arm at an evening party."

"And yet," exclaimed my friend and neighbour, Pilgrim, softly, "etiquette may be a good make-weight, a good temporary stop-gap for your honest man. While the law of 'the survival of the fittest' reigns in professions as elsewhere, he may soften the rigour of the combat, and even somewhat direct and guide the subject-matter of the struggle."

I did not answer directly; but, after a moment's pause, I continued, "the law of 'the survival of the fittest!' But who and what is the fittest? that is the question. Fifty men may enter into a competition, or thirty become candidates for an appointment, and no doubt the 'fittest' for the combat, as we know it, must come out victor; but what we want is to so alter the nature of the struggle that the fitness required is not the capacity to bring underhand influence to the judges, nor the ability to blind them with the brilliant blue of a sky, nor the cunning which wins the support of the electors by a note from my lord or an invitation from my lady. By the bold honest man whom I seek (who reverences the only admirable fitness) such courses as these are unknown. He will go into a competition, or become a candidate for an office, sparing no pains with his drawings and report, avoiding no trouble in making known qualifications which he thinks fit him for the office; but his honest heart, if you search it, while coveting victory for himself, desires with still greater earnestness that the best design, the candidate best fitted to perform the duties of the office sought, may be the victor. While despairing in no way of his work or himself, the honest man I seek is eager that the design and the candidate most truly desired by the wise and good side of the seekers should prevail. The question of victory for himself is, with him, second to the desire of victory for the best."

Pilgrim laughed long, and low; at last he said, "But while we wait for this bold, honest man, who may be long in coming, let us not forget to cultivate professional Etiquette, who is already with us. I'll illustrate my meaning. An architect out in the fields, we will suppose, advertises himself by putting his name on the upper part of the sentry-box before the house he is building, with the name of his clerk of the works under it."

"In the place, you mean, where the builder has advertised himself of late?" said I. "Well, what of that if it pleases the man? They must be delicate-winged flies he catches in such a web; but that is his affair."

"Truly," answered Pilgrim, a little amazed. "And if I must not talk of professional etiquette——"

"Confound!" I cried, rising.

"Well, then, we will suppose the case of which I speak, goes beyond this," he continued quickly. "We will suppose the sentry-box to have matured and burst, and re-appeared as a crop of boards on the adjoining ground, bidding inquirers to seek the terms on which "this desirable building land will be let or sold, of the aforesaid architect."

"No mention of the clerk of the works, I presume, on this more perfect development, the written boards?" I interrupted, with a grin.

"No, surely," said Pilgrim, looking at me, and then continuing, "And we will suppose an employer of yours or mine calls upon us, and saying he has seen a plot of this land which pleases him, inquires what the cost of such-and-such a house will be. We look at the ground, make rough plans and estimates, and in a day or two our would-be employer calls again. All preliminaries seem swimming fairly off; and our would-be employer goes to inquire about the 'desirable land,' promising a further call in a few days. A few days pass; a week; three weeks, and then a message reaches us through the solicitors (let us suppose) that our would-be employer deeply regrets,—he wishes it were otherwise, for his trust and confidence in us are great,—but the architect will let or sell none of the plots except he is to be himself employed as architect."

"And so?" I said, turning round.

"And so," continued Pilgrim, "through the power of some lien on the ground our employer is compelled out of our hands into those of the

architect of the boards. Should not etiquette help us here?"

"Etiquette!" I cried. "Honesty."

"No; etiquette," he replied; "professional etiquette. A man in trade sells articles, and makes his profit by increasing the price of the article sold above cost-price, in any way satisfactory to himself and acceptable to us. At the same time, however much we may be willing to accept conditions tending to the tradesman's personal advantage, we should at once demur if he endeavoured to tack his son or his nephew upon us as our architect. He might recommend him to us; but we should think that a strange condition which required us to employ him. Much less ought we to agree to the professional man himself thus endeavouring to foist his own services upon us; and much less ought he to endeavour to do so. And why is all this? Because the professional man stands on a distinctly different footing from the tradesman. He is paid a known fee for his services, and the object of the fee is to insure his placing himself, not hostilely to the employer, but as far as possible in the position of the employer, for the purpose of supplying the employer's want of technical knowledge. A tradesman, on the one hand, or he who sells and makes his own personal gains out of the sale, is one of a needful, and therefore an honourable, body of men in society, as we know it; and he is loyal to his functions in society, or, in other words, to the body of traders, when, being honest and straightforward in his dealings, he competes with the trader in qualities which allow him to stand hostile to the purchaser. A professional man, on the other hand, is loyal to the professional body when he competes with the professional man in these perfectly different qualities for which society cultivates professional men; and in the name of etiquette is this professional loyalty demanded. Fully recognising the law of the survival of the fittest, professional etiquette demands that the struggle within the professional body should be a struggle tending to the survival of the architect who possesses most, not of the pushing, self-advancing employer,—opposing qualities desired and allowed in the tradesman, but of the professional qualities, a skill and ability which inspires trust and confidence,—a skill and ability and consideration for the employer's wishes and desires which best enable the professional man to become another self to him, and thus distinctly forbid his foisting his own services upon him as part of a bargain."

Pilgrim looked at me while I said,—"You draw on your imagination, friend. You would introduce etiquette among us, that cringing image of a man, and pass him off as a living creature containing bone and sinew."

"No, indeed," answered Pilgrim, "I introduce neither the image nor the reality. I would simply disclose that professional etiquette who is already among us. Doctors do not force patients out of each other's hands by means outside their legitimate professional influence; and whether or not they are really withheld by the fire-gleams of your honesty, they will say they forbear in obedience to professional etiquette. And while a competition among tradesmen, which tends to reduce their profits to the lowest, is one main social reason for their existence, so completely would competition within a professional body be confined by etiquette to competition in the skill and ability which produce trust and confidence, that to compete with your brother architect on the charges made to employers, is frowned upon as unprofessional. To undertake, at the sole request of the employer, work on which some other architect is at the time engaged, displays disloyalty to the architectural body (as forming a living integral part of society), and is thus unprofessional; but to undertake the same work after your predecessor's engagement has been entirely closed, and your employer thus completely disengaged from the architectural body, is professional. The former course were internecine warfare in the architectural body, which is deadly; the latter is healthy, social action, in the supply of a living member for one actually dead."

"Very far fetched!" I exclaimed, putting my hand on Pilgrim and stopping him. "Why, professional etiquette, my friend, can but embody the expression of a respect (twice real to ninety-eight times feigned) of one professional man for another or others."

"Yes and no," he answered.

"And respect is for the honest living qualities; if expressed by the honest and living——"

"You do not see my meaning," he replied; "I would point out that the social feeling of the body of professional men, as manifest in the code of etiquette we find prevailing among them, forbids, to the body, the exhibition of the tradesman's qualities, and encourages the skill and ability which inspire trust and confidence,—those good and living qualities, through the possession of which alone the body has a social status. While thus we wait the coming of your honesty, we should not treat etiquette with rudeness, but rather encourage and cultivate him in his good ways."

"Well, Pilgrim," I said, "you have shown more good in etiquette than most men could find out. Let us hope he may be all you describe, and grow daily in strength and heartiness, and then, at last, strange as the transformation may be, we shall see him give a final crush to his opera hat, and (depend on it) prove himself none other than the very honest man I seek."

DIOGENES.

THE CRYSTAL PALACE SCHOOL OF PRACTICAL ENGINEERING.

THE examiners on the last occasion were Messrs. W. R. Galbraith, M.I.C.E., and R. C. Rapier, A.I.C.E. The certificates were presented to the students by Mr. E. A. Cowper, M.I.C.E., who presided at the meeting in the Lecture Theatre.

The chairman, after an address, concluded by commending the scope of the course of instruction given in the school, the discipline maintained, and the superior character of the students' work throughout, the whole of which were highly creditable to Mr. Wilson, and his son and assistant, who had charge of the civil engineering section.

Of the fifty-one students on the roll, thirty-six received certificates, including fourteen doubles. Mr. P. W. Britton, who has attended the school since it was opened, and who has taken high honours in every department, was first in merit for "calculation of strains, and the preparation of general and working plans, specifications, and estimates of a railway, and of clockwork." Mr. H. C. Dent, another very successful student, was second in merit in the same department; the remaining certificates being awarded to Messrs. W. Michels, A. Wortham, and J. Hampton. For "general surveying, and preparation of plans and estimates for Parliament," certificates were awarded to Messrs. C. S. Smith and E. Hayes.

The students to whom two certificates were awarded, one for answers to lecture questions, enabling the students to go in for examination upon the subject of "Materials and their Manufacture," were as follow (highest number of marks attainable, 232):—Messrs. A. H. Turner, 221 marks, and second, for work in fitting-shop; M. Harding, 179, and for fitting; G. D. Marston, 179, and for fitting; A. Brook, 176, and second in fitting; L. Kinder, 161, and for fitting; E. A. Thomson, 154, and for drawing; F. Fitzherbert, 152, and for drawing; J. B. Cowdy, 147, and for patterns; H. J. Saunders, 146, and second for patterns; W. J. Bean, 140, and first for drawing; H. Solly, 140, and for patterns; C. J. Swears, 132, and for patterns; R. J. Glanville, 129, and first for fitting; W. H. Fisher, 117, and for fitting; J. Adams, 103, and for drawing; and H. B. Dutton, 101 marks, and for work in the drawing-office.

For work in the drawing-office certificates were awarded to Messrs. J. H. Preston, J. N. Paton, C. Dyson, and F. A. Wythes; in the pattern-shop to Messrs. H. F. Gay, first, E. A. Brine, G. E. Bokenham, S. P. Sheraton, T. S. Tilley, and H. Edwards; in the fitting-shop to A. H. Wilson, A. E. Needham, and H. C. Cummins.

On the motion of Mr. Jacomb Hood, seconded by Mr. H. S. Bicknell, two of the Crystal Palace Company directors, thanks were voted to the examiners, and to Mr. Wilson, principal of the school.

Mr. Galbraith said that he had been particularly struck with the excellent railway drawings turned out by the pupils, which would be a credit to any engineer's office. He and his colleague had scrutinised the whole of the students' work keenly, and had been much pleased with all that they had seen. He had himself felt very much the want of such opportunities as the students enjoyed here. He counselled them not to lose chances of advancement through neglecting preliminary work, and assured them that continuous hard work was essential to future success.

Mr. Wilson stated that a number of former students, whom he named, who were now in large engineering and manufacturing establishments, had been taken either without premium, or with reductions of 100 guineas, because of the training they had received in the school, and the certificates they had earned. He paid a high testimony to Mr. Britton as an earnest worker and respectful student, who was certain to make rapid progress in his profession. Extra prizes given by Mr. Jabez Church for essays on the Enfield Rifle factory had been gained by Messrs. A. Brook and W. J. Bean.

A vote of thanks to the chairman closed the proceedings.

THE JUNIOR NAVAL AND MILITARY CLUB, PALL MALL.

THIS building, which forms the subject of our present illustration, is now rapidly approaching completion. Great difficulties have presented themselves owing to the want of lateral light, but they have been overcome. The accommodation will consist in the two basements of the necessary offices, lavatories, and secretary's apartments, the kitchen occupies the height of the two stories. There is also extensive cellarage.

The ground-floor consists of smoking-room, two dining-rooms, waiting-room, lavatories, and so on.

On the first floor are placed the reading-room, billiard-room, private dining-room, and retiring-room.

The second floor consists of private billiard-room and members' card-room, the other portions of this floor, with the three floors above, are occupied by members' bedrooms, back rooms, and sanitary conveniences. There is a chief staircase covered with a domed ceiling; a staircase for servants, and three lifts.

The greater portion of the ground-floor will be paved with tiles, manufactured by Ludwig Oppenheimer.

The style of the building is Renaissance, and the elevations are distinguished by some very bold carving. The female figures over the entrance are holding medallions representing England's greatest heroes, Nelson and Wellington. The carving throughout is symbolical of matters connected with the Navy and army. The central dormer is surmounted by large figures of Neptune and Mars.

The entrance to the building is peculiar, being semicircular on plan, the dome of which will be elaborately sculptured with life-sized figures carrying laurel wreaths surrounding the name of some distinguished officer, the bust of whom will be placed below: this superstructure is supported by serpentine columns. The object of this method of treating the entrance was to obtain additional light to the smoking-room, as also to prevent the entrance to Marlborough House being overlooked.

The building has been erected from the designs and under the superintendence of Mr. Thomas Dudley, architect. The clerk of the works is Mr. W. T. Sams; and the contractors are Messrs. G. H. & A. Bywaters. The whole of the carving has been satisfactorily executed by Mr. T. Plows, of Brixton, from the architect's designs.

The club was founded in August, 1870, in temporary premises, No. 19, Dover-street, Piccadilly, and promises to be a flourishing establishment.

In May, 1871, their Royal Highnesses the Prince of Wales and the Duke of Edinburgh consented to become patrons and honorary members of the club. His late Imperial Majesty Napoleon III. was an honorary member, and H.I.H. Prince Louis Napoleon is also an honorary member. Captain H.S.H. the Prince of Leiningen, R.N., and Captain H.S.H. the Count Gleichen, R.N., were original members of the committee.

In August, 1872, the site, next to Marlborough House, was secured, and the building commenced. It will be completed, and the members will take possession of it, next spring.

At the present time the total number of members exceeds 700, and there cannot be much doubt that when the transfer to the new house takes place, the numbers will rapidly increase, until the maximum of 2,000 is reached. It will then become exclusive, for no more members will be elected until the number is reduced to 1,600, which is to be the final complement.





THE JUNIOR NAVAL AND MILITARY CLUB, PALL MALL.—Mr. Thomas Dudley, Architect.

NEW-CROSS PUBLIC HALL.

LONDON is the living centre of the United Kingdom; but London (City) proper falls very much short of being London real. The core of the metropolis is made up of warehouses, banks, exchanges, offices, markets, and other structures, in which commercial, monetary, professional, and consuming interests are concerned. These are all busily occupied during the day; but at night are silent and deserted.

There are two influences at work to compel citizens in business to become suburbans in residence; the high rents of house property in London and Westminster, on the one hand, and the superior attractions, for residential purposes, of suburban localities on the other; and so, what may be called numerous suburban towns have sprung into existence; such as Croydon, Hammersmith, Hampstead, Camberwell, Clapham, Blackheath, New-cross, and the like. At present we have only to deal with New-cross, which is legally and formally a portion of the parish of St. Paul, Deptford. The remarks that apply to it will apply with equal propriety to numerous other suburban districts of London.

There are few parishes in which the population is more varied and contrasting in the character and qualities of its component parts than in the parish of St. Paul, Deptford. There are districts in what may be called Old Deptford that are the haunts of the lowest of the low. In some of the principal streets, again, there are numerous respectable, well-to-do tradesmen: and then, in the southern portion of the same parish of St. Paul there is a large population composed of people who do their daily business, or get their living, in "the City"; but the City does not absorb their entire energies, or provide the local conditions necessary for the highest pleasures of family or for the proper discharge of the duties of public and social life.

The population of the City proper, at the last census was 74,732, being a decrease of no less than 37,331, upon the census of 1861. New-cross, amongst other suburbs, contributes largely to the residential accommodation of the denizens of London. In Deptford there are two parishes, St. Nicholas's and St. Paul's. The former includes the portion of the town next the river, which embraces the Foreign Cattle Market, that was erewhile the Royal Dockyard, in which Peter the Great worked as a shipwright. In this parish, according to the last census, as compared with that of 1861, there has been a decrease of 168 houses and 1,652 in population; whereas the increase in the parish of St. Paul has been 2,619 houses, and 15,862 inhabitants, the whole of the increase having been in the New-cross and Brockley districts, lying to the south of the town of Deptford. The increase in these districts since the census was taken is in even a much higher proportion.

The parish is well supplied, thanks to religious zeal, with places of worship for the various religious denominations; and, thanks to the powers of the London School Board, conferred by the Act of 1870, there has been large, almost abundant, provision made for elementary education by the erection of numerous new school buildings. But the population need a species of accommodation of various kinds that cannot be supplied by churches, chapels, or school buildings, such a desideratum as only a public hall, with connected suites of rooms, can supply. This has been at last provided by the spirited inhabitants of the district, who recently had their hall publicly opened with a *conversazione*, although, sooth to say, it was not quite ready for opening. Notwithstanding this drawback the large audience seemed to be well pleased with the arrangements.

This structure is the work of a Joint Stock Company, Limited. The hall, and adjoining suites of rooms, are built on the "Ivy Cottage Estate," Upper Lewisham-road, and are approached by a descending covered way of some length, that is well lighted and covered by semicircular galvanised and corrugated plates. At the end of the principal entrance the visitor reaches the covered corridor of the main building, and turning to the left passes on each side cloak-rooms, with lavatories attached, each of these rooms being about 39 ft. long. Another turn has to be made and the hall is entered, as regards the principal entrance, by an archway in Portland stone, the entrance being enclosed by curtains. The passages to the hall are about 10 ft. wide. The hall itself is 100 ft. long by 45 ft. wide, and 28 ft. high from floor to ceiling, and there are seven windows with semicircular heads in each side wall. The external walls are relieved by pilasters between the windows. At one end of the hall there is a movable platform, that may be adjusted to fill the whole or part of the width of the room. Movable partitions are also provided, with the intention of making the hall available for family or other parties, for hosts who may prefer the accommodation thus provided to using their own houses. The ceiling is panelled, and has a large cornice. The artificial lighting is by three sun-burners, close to the ceiling, with sixty-three jets in each. Annular chimneys are provided, by which the products of combustion from the burners and the heated air from the room are conveyed to the ridge of the roof, and there discharged. The warming appliances of the room, as now provided by two open fires, are inadequate. It should be mentioned that there are two side doors, for ingress and egress, in addition to the arched entrance before referred to. At the end of the hall there are retiring-rooms.

A side building has on the upper floor three additional rooms, 34 ft. by 20 ft., 30 ft. by 16 ft., and 26 ft. by 20 ft. respectively. In a portion of this accommodation the local Young Men's Christian Association will have their home for the next five years, at an annual rent of 35*l*. The hall is occupied almost every evening, and filled with audiences, a very small proportion of whom ever visit the Deptford Lecture-hall, or the more distant Lecture-hall at Greenwich.

The buildings are from the designs of Mr. A. B. Hutchings, architect; and the contractor is Mr. J. T. Hodson.

THE FLOATING SWIMMING BATH.

A SHORT time since a company was formed,—called The Floating Swimming Bath Company, Limited, having their offices at Queen-square, Westminster,—to construct swimming-baths for the London public, at the old depôt of the Fire Brigade, on the west side of Hungerford Railway Bridge, on the Victoria Embankment, permission being obtained for that site from the Metropolitan Board of Works. This site is well selected for the purpose, having in and out access by means of steps, and is one of the extra steamboat piers. The engineers, Messrs. Whitaker & Co., of Great George-street, Westminster, were instructed to furnish the necessary plans, sections, and specifications for the carrying out the works. Their first impulse was to form a gridiron or cradle to carry the bath 8 ft. or 9 ft. below low-water mark. The work is being carried out in the following manner. It includes a row of whole timber piles, 28 ft. long, thirty-two in number, driven by a powerful steam-engine and gear, extending east to west 178 ft. outside of the present granite apron built by the Metropolitan Board of Works; uprights to correspond, well bolted to the side of the Embankment by means of lewis-bolts, let well into the granite, longitudinal whole timbers running from end to end, well bolted through outside piles and inside uprights; cross transoms being fixed from out to out 6 ft. apart from centre to centre, well bolted through longitudinals, and two rows of hard wood packing under cross transoms, well bolted, and resting on the apron. This portion of the works was given under contract to Mr. John Chapman, the pile-driver and water-side contractor, of Stangate-street, Lambeth, who has given his whole attention night and day in carrying out the works, in conjunction with his officers and men, to the entire satisfaction of the directors and engineers of the company, without the least accident or mishap, considering that all this part was entirely done under water. When the works were started, it was found that large quantities of mud and silt had accumulated; and before the cross-transoms were laid, some hundred tons had to be dredged and barged away.

Mr. Chapman called in the services of the divers, Messrs. Smith & Sons, of Battersea, who have done all the diving operations, fixing timbers, lewis-holes, balls, screwing up in complete darkness, and have given great satisfaction. The greatest drawback and danger were the passing of the steamboats, which had orders to ease when passing, but did not do so, although a red flag was flying during the time the diver was down.

The floating-bath is finished, and lying in the West India Docks. All the ironwork attached is in the hands of the Limited Iron Company. The cradle or gridiron is nearly finished.

THE VALUE OF TIMBER ON LAND.

THE importance of forests or woodlands in enhancing the value of an estate can hardly be over-estimated. Trees, like hills, are known to affect the rainfall to a certain extent, and their presence or absence will materially change the sanitary condition of a locality. From an æsthetic point of view, too, the judicious arrangement of timber is very important. A piece of land, however well cultivated it may be, will always command a higher price if, instead of being a mere succession of pasture and arable fields, it presents the appearance of majestic beauty, with which only the existence of well-arranged and well-grown trees can endow it. A cold, bleak hill-side, impossible of profitable culture, producing a feeling of abhorrence and giving the idea of sterility, may be made both an ornament and a source of profit by being planted with suitable trees.

It is, however, rather from the commercial point of view that the subject is most important; and it is open to discussion whether this side of the question has received proper attention at the hands of landowners and others interested in the management of land,—whether sufficient consideration has been given to the probable requirements of future generations. Ornamental trees and those used for the purposes of pleasure are increasing both in number and variety, but the still more important point of planting trees with the object of affording a supply of useful timber for those who are to come after us must not be forgotten.

Out of sixty-nine forests, which at one time covered large tracts of land in different parts of England, only a very few now exist, except in name; and these, just as they were in the first instance formed or maintained for sporting purposes, are still governed by laws whose principal object is the preservation and increase, not of wood, but of game. In Germany the gradual diminution of the forests, and, consequently, the increased scarcity of wood, long since attracted the attention of Government; and the forest laws, passed with the primary object of preserving the timber, are very strict. Academies for the instruction of the science of forest management have sprung up, and great importance is attached to the subject of the preservation of timber.

Newer countries, like Canada and the United States, are already feeling the effects of the diminution in the number and extent of their forest-trees, and prudent persons are taking steps to supply the wants of the future by planting extensively.

Have we been sufficiently mindful of the requirements of posterity in making use of every opportunity to increase our stock of trees? The increased price of timber and the largely increased imports would seem to answer in the negative. The quantity of timber brought to this country from abroad is annually increasing, and in the year 1872 it appears that more than fourteen million pounds' worth of deals, battens, poles, railway sleepers, and various kinds of timber were imported for home use. Our fathers and grandfathers in the early part of this century and during last century set us an example which we should do well to follow in making plantations of useful trees. The noble trees which are the pride of many a fine estate in England and Scotland, and whose existence so greatly enhances the value of the land on which they stand, we owe to the forethought of generations long gone by. The last century is celebrated for the number of plantations that were made by such landowners as the Duke of Athol, the Duke of Portland, the Duke of Northumberland, the Duke of Montrose, and, later on, Sir Walter Scott. By judicious planting, many barren wastes, not worth a shilling an acre, have been transformed into magnificent forests, lending beauty to the scene, and increasing a thousand-fold the value of the land. The second Duke of Athol planted 6,500 Scotch acres of mountain ground—useless for other purposes—with larch. The cost is not given, but with larch at 26s. per 1,000, and planting 3,422 to the acre, the cost at the present time would be about 30,000*l*. Seventy-two years afterwards this plantation, calculated at 400 trees, or 1,000*l*. per acre,—a low estimate—is valued at more than six millions sterling. Besides this actual capital value, a large return may be made from a plantation by judicious thinning, which may be calculated at 1*l*. an acre per annum at least. Trees too thickly planted naturally stunt and kill each other.

But it is not our intention here to enter into the question of the management of woodlands. The point we wish more particularly to refer to is, whether we are planting enough trees to give future generations an opportunity of managing them at all. A good timber property is not the creation of a day, or of a lifetime even. An oak takes many years to arrive at maturity. Omitting the last few years, during which an impetus has certainly been given to arboriculture, it is a fact that sufficient attention has not been paid to planting during the last half-century. This is a point which intimately affects both individual and public interests, for the sake of both of which we must not allow such a momentous question as the permanent growth of timber, and the creation of a stock for its supply to future generations to escape our notice.

It is said that in the Island of Mauritius, the indigenous supply of timber had been so neglected that during the last ten years nearly 200,000*l.* worth of timber had to be imported for building, firing, and other purposes. The United States, on which we partly depended for our supply of timber, are now, in their turn, obliged to look to Canada to make up the exhausted yield of their forests, and such a fate may befall us unless we imitate the wisdom of our forefathers, and profit by the experience of the past and by the lessons of the present. Here, we no longer require the oak of old England to build our wooden walls: iron is taking the place of wood in many building operations: black diamonds have in nearly every instance superseded the use of wood as fuel; but black diamonds may fail us, and ironclads become obsolete. In any case, however, new demands for timber will always arise. Our railways yearly consume an enormous amount of timber for "sleepers"; increased mining operations demand a larger supply, and in a thousand-and-one various ways wood will be brought into requisition. With these considerations before us we cannot do better than repeat, and follow the advice of the old Laird of Dumbiedikes,—"Jock, when ye hae naething else to do, ye may be aye sticking in a tree: it will be growing, Jock, when ye're sleeping."

REGULATIONS FOR CONSTRUCTION OF CHIMNEYS.

THE Syndical Chambers of Paris, each chamber representing a trade or group of trades, and the whole meeting at certain periods in general assembly and having its officers and a journal of proceedings both of the separate and the United Chambers, do excellent service, especially now that they have the ear of Government and are not regarded with suspicion, under the fear of their being political societies in disguise.

A short time since the Prefect of the Seine issued an order respecting the construction of chimneys in private buildings; the Chamber of Masons, considering that the regulations laid down by the authorities would at times create insurmountable difficulties, appointed a Commission to report upon the subject, which report has been received and adopted unanimously by the Council.

The following are the regulations proposed by the Chamber, which cannot fail to have an interest for all engaged in construction:—

1. No chimney-shaft shall be formed in stone walls of less than forty centimètres (16 in.) thick, plaster included, or in brick walls of less than thirty-seven centimètres.

2. Chimney-shafts in the interior of walls shall only be constructed of bricks or of terra-cotta, which shall key into the materials of the wall itself. The use of the *boisseaux* or *pots* of burnt clay (short quadrangular tubes with a lip now in common use) is absolutely prohibited.

3. The tongues of the pipes engaged in the brickwork of the chimney shall never be less than eight centimètres in length.

4. Between the interior surface of the chimney-shaft, and that of any bays formed in the wall, there shall always be twenty-five centimètres of solid masonry, plastering included.

5. Chimneys built against piers in masonry, walls in ashlar work being at least forty centimètres in thickness, brick walls of at least twenty-two centimètres in thickness, or, in garrets against brick partitions, of eleven centimètres in thickness, may alone be constructed by means of tongue-pieces in plaster, or with burnt clay *boisseaux*, covered with plaster.

6. The tongue-pieces, or the *boisseaux*, covered with plaster, above referred to, shall never be less than 65 millimètres, 2½ in., in thickness, over all.

7. Isolated chimney-shafts, or group of such shafts, must be constructed in the same manner and of the same materials as shafts constructed within walls.

8. Every chimney-shaft ought to have a section equal to three square décimètres, or three-tenths of a mètre. The smallest side of such rectangular shafts not to measure less interiorly than 15 centimètres (6 in.), and the angles to be rounded off with a radius of 2 in.

9. In every new building the necessary arrangements must be made in the roof to afford easy access to the top of the walls against which chimney-shafts are constructed, and, when the chimneys are engaged within the walls, way shall be made near the chimney-shafts themselves, so that the mouths of the chimneys shall be accessible without difficulty.

EDINBURGH.

IN a recent article upon the eccentricities of Scotsmen, *The World* says, "We can put up with the aggressive bumptiousness of their nationality for the sake of their warm hearts and sturdy self-respect. And they are truly noble in giving." That there is some truth in the latter statement will appear when the magnitude and number of the public works and monuments in hand in this comparatively small city is considered. No sooner is the subscription of 100,000*l.* for a new infirmary completed, than a call for a similar sum for extending the university buildings is made, and already three-fourths of the amount are contributed, and a limited competition set on foot. The competing architects were to have given in their designs by the 1st of December, but they have joined in a request for an extension of the time allowed, which has been granted.

Amongst the public monuments in hand the Albert Memorial stands conspicuous, but it is long since the project was set on foot, and it should have been realised years ago. There are four other monuments in hand which are to take the form of statues in honour of the following Scottish worthies:—Dr. Chalmers, Professor Simson, Dean Ramsay, and Dr. Livingstone; and now a movement has been inaugurated for the erection of yet another memorial in honour of the late Adam Black, publisher, who was thrice Lord Provost of the city, thereafter its representative in Parliament, and a gentleman who earned the esteem and regard of all who knew him. The form which this memorial is to take has not been decided upon, the position occupied by Mr. Black was hardly such as to call for the erection of a statue to his honour. It has been proposed to associate his name with the erection of a town-hall, but it is to be feared that in the present state of matters a sum sufficient for the erection of such a structure in a manner worthy of the city could not be raised. When we look at the splendid town-halls recently raised in several cities and towns in this country, it is to be hoped that when a similar building is designed for Edinburgh it will be second to none of these. Looking to Mr. Black's eminence as a publisher, no more appropriate memorial could be raised to him than a free library, an institution which is a desideratum in the city.

Two schemes of considerable magnitude have been mooted, the first and greatest contemplates the formation by a company of a vast structure on the vacant ground in Castle-terrace, combining an opera-house, aquarium, and winter garden. The site is free on three sides, and is most conveniently situated, both as regards the west end and the old town. The second project, which may in some sort be considered a rival to the first, is for the formation of a garden and aquarium upon the ground laid out for building, to the west of Trinity Church, and to the south of Belgrave-crescent.

The old Clarendon Hotel in Princes-street has been demolished, preparatory to the erection of a new hotel on the same site.

In St. Andrew-street an ugly and pretentious building has been acquired by the Young Men's Christian Association, and this is now being erased for the purpose of substituting a new and appropriate building for the uses of the Association.

The two new churches on the London-road, formerly referred to, are progressing towards completion; and at Dalry a new Presbyterian Church has been commenced. The new Holy Apostolic Church is completed to the wall heads, and presents a most remarkable appearance from without. Those who admire extreme severity and great breadth of wall surface will certainly find it here.

At Norton-place a large new school, having all the rooms on the ground-floor, has been completed for the governors of Heriot's Hospital; other two new schools have been designed for the same body, by their architect, Mr. Chesser, one for the southern district at Dane-street, and the other for the northern district, at St. Bernard-crescent. In designing these schools, Mr. Chesser has followed the rule adopted by his predecessor in giving to the buildings a character similar to that of the parent institution,—a bust of George Heriot forming a conspicuous feature in most instances. We cannot say, however, that any of the designs are remarkable for their artistic qualities.

TREATMENT OF THE INTERNAL WALLS OF CHURCHES.

AT the last annual meeting of the Northampton Architectural Society the report said,—"Your committee have given leave to your secretary to make a few remarks on the vexed question of the treatment of internal surface of church-walls. They invited, last year, a discussion on the subject of plaster or no plaster; but, as no one of our members has volunteered to take up either side of the subject, the following few remarks are offered, not by the whole committee, but they agree with what your secretary believes to be the opinion of a large majority of its members. Without travelling beyond the boundaries of our own county, we may find churches in abundance,—in the restoration of which very liberal sums of money have been expended, many portions of which have been admirably restored, whose windows are richly adorned with colour, and where there is enrichment in wood and stone and metal, but whose wall-surfaces resemble the rudest barn or stable. It is said by the advocates of this treatment that there is no concealment of the real construction of the walling; that the varied colour of stone is far more picturesque, and warmer, than plaster; and that the original builders did not intend to lay on thick coverings of mortar, such as are now commonly adopted. It is not strange that persons can see nothing to admire in a large unbroken surface of plaster, which is commonly poor and meagre to a degree. It is not, perhaps, strange that there should be a strong re-action against that universal face of whitewash which, thirty years ago, covered wall-surface and stone-dressings alike of all interiors; but surely uniformity of whitewash may be departed from without adopting in the most precious, and commonly the most costly of buildings, a treatment which we do not tolerate in the meanest cottage. Plaster does not always mean concealment, and plaster invites ornamentation of colour and design, which are not possible in rough wall. And the picturesque in design and the warm in colour may be obtained by some other treatment than the rude and barbarous. Some large town churches might be mentioned, at no great distance, in which the interior walling is treated exactly in the same manner as an exterior wall—the same pointing to keep out the rain where rain can never come (almost as great a want of truth as some attribute to plaster); the external wall neatly and fairly dressed, and laid in even, closely-jointed courses of selected stone, and the internal walls of the rudest unharmonised material, laid windowways, with large open joints, and apparently with a designed roughness, the better to hold the thin coating of prepared plaster, to which decoration was almost universally applied. A quotation may be permitted here from a paper printed in the last number of the 'Associated Volume,' and read before the Lincoln Society by Mr. G. G. Scott. He says:—'There are some principles common to all periods of art which modern architects, in mere caprice, or in fretful striving after novelty, sometimes venture to depart from. Ever since civilisation commenced, it has been the rule to finish the interior of a building with all possible care. Every ancient building, whether of Egyptian, Greek, Roman, or Mediæval times, was carefully faced internally with wrought stone or plaster, and decorated in colour, or it might be encrusted with marbles or mosaic. The notion of leaving the interior of the building as rough and rugged as an exterior generally must be and has been from a very early date abandoned by civilised man. It has now been revived. The

fashion to which ignorance and necessity obliged our rude forefathers is now adopted by many of us by choice. This queer reaction against modern refinement would perhaps be intelligible, as a mere reaction, if it were not, oddly enough, confined to church architecture. It is very difficult to see why the interior of a church should be made, as it often is, to resemble an ancient cairn or a modern grotto. We see new churches, whose interiors are faced with rough stock brickwork, relieved, perhaps, with lines of red and black, after the manner of the so-called Turkish baths; and others where the rudest rubble is pointed with the blackest of artificial mortar, ingeniously combining the harshness of barbarism with the disingenuousness of civilisation. It is a duty to protest against making our churches the field for the exhibition of such vagaries. Let those who, satiated with feeble refinement, can find no relief but in still weaker affectation of barbarism, confine their tastes to their own drawing-rooms. Let them build their own rooms with rough bricks or uncovered rubble, if they like it, but let our churches be spared. Unfortunately, the evil is not confined to new buildings. Numbers of fine old churches have been stripped internally, and reduced to a nakedness compared with which Puritan white-wash is decency. It is true that among ourselves decorative art in the treatment of church walls is far from being in an advanced state, and among those who have not studied the use of colours there is often a strong prejudice against it; but it cannot be doubted that there is a growing appreciation of mural ornament.' Your Secretary had the opportunity, not long since, of inspecting two experiments of different treatments of church interiors in a western county, which seemed very effective, and he may be permitted to read here an account of the two experiments as they are given in an appendix to a very able paper on the treatment of the inner face of a church wall, written by an old friend, the Rev. W. T. A. Radford, the rector of Downe St. Mary, and under whose auspices both experiments have been conducted:—'Since this paper was written I have been intimately connected with the restoration of two churches, both under the direction of Mr. Gould, as architect. In both cases an attempt has been made to treat the inner faces of the walls in a manner that is unmistakably inside and not outside work, although the materials, used in the two, are widely different, the one from the other. I will say a few words on each. 1. At Winkley, Mr. Gould, after having seen the effect of Sgraffito plastering, when tried on a small scale by Mr. Vickery, the clerk of the works, at once adopted it, as most suitable to his purpose, painting being impracticable within the time prescribed. The process is briefly as follows:—First, mix with the mortar some colouring substance of the tint desired for the pattern of your design; then apply a thin coat of the tinted mortar to the surface of the wall; next, when this coat is nearly dry, apply on it another coat similarly prepared, but of the colour intended for the grounding, and then, having prepared a mould in zinc of the exact outline of the pattern, apply this mould to the wall, mark round its outer edge, and, finally, with a sharp tool, cut away so much of the upper coat of plaster as comes within the pattern, down to the face of the lower coat. By carefully ranging your pattern, you may, by this method, employ a considerable variety of colouring, or you may even apply three successive coats of different colours, cutting through, sometimes one coat, sometimes two, as you wish to exhibit the colour of the intermediate or of the lowest coat respectively. The result is really bold and effective; and, although Sgraffito work is, of course, very inferior to a well-painted wall, still it is, on the other hand, a vast improvement on unrelieved plaster, all of one colour. It has, moreover, two very strong points to recommend it. First, its safety, on account of the colour permeating the whole of each coat of plaster, from any serious injury from scaling; secondly, its comparative cheapness, which would bring it within the reach of many to whom painting would be an impossibility; besides, painting cannot be successfully applied to freshly-built walls, so that even in cases where hopes are entertained of ultimately using paint, Sgraffito, would offer a most convenient present resource, for it could easily be so arranged as to be sufficient greatly to relieve the monotony of same-coloured mortar for the present, and yet to leave large spaces for painting hereafter. 2. The work on the new south wall of Downe St. Mary is of an altogether different character. Here we have endeavoured to arrange the facing-stones themselves of the inner surface of the wall in a pattern that shall satisfy the specific requirements of wall, as distinct from floor treatment. We did not attempt that kind of merely surface ornamentation, so prevalent at All Saints, Margaret-street, which, however costly and beautiful in itself, would be as suitable for a floor as for a wall surface. Our object was not to gain a little artistic effect, by introducing here and there a mere patch of mosaic face-work, which, obviously, could not be structural, but rather to produce a continuous pattern on the wall, such as would satisfy an observer, at a glance, that it was a legitimate part and parcel of a vertical surface.' If large quotations have thus been made from others, it is because one has expressed in a very able manner the views on this subject held by many of your committee; and the other suggests very effective alterations from the rudeness of a bare wall. It is well known that there are architects of repute, who commonly recommend the course which is here deprecated; but it would seem that, having alone the question what is the best mode of ornamentation in itself, or as applicable to this or that style of building, there must be 'some definite principles, which should regulate the treatment of the insides of our church walls, as distinct from that which is suitable to their outer faces.'"

In a discussion of the matter which occurred on another occasion, Sir Henry Dryden remarked with reference to the subject of plastering that he agreed with the secretary and the committee on certain points. He thought if a man built a rubble wall in a new church, it was allowable for him to plaster it. But he protested against plastering old walls, as by so doing they obliterated the history of the building. In St. Sepulchre's Church a great deal of history was obliterated by its being plastered. So in Kingsthorpe Church, if he recollected aright.

With reference to the use of the method of plastering mentioned by the secretary, Mr. Law saw some difficulties in its practical adaptation. He thought the layers of different coloured plaster would be liable to interfusion. The pointing of the inside of a church was ridiculous. He should never think of building a new church with stone on the inside, unless ashlar work. He wished the society would take up the question of colouring. It would have the effect of filling churches if the walls were covered with a warm colouring.

Sir H. Dryden said if he could draw people into church with colouring, he was the cleverest fellow out.

GLASGOW INSTITUTE OF ARCHITECTS.

AT a special general meeting of the members of the Glasgow Institute of Architects held within the office of Mr. William MacLean, the secretary, St. Vincent-street,—Mr. John Baird, I.A., in the chair, the following gentlemen were admitted as members of the Institute, namely:—Messrs. Alex. Petrie, 141, West George-street; James A. Knox, 32, West George-street; D. M'Naughtan, 178, St. Vincent-street; J. S. Carmichael, 209, St. Vincent-street; J. L. Cowan, 103, West Regent-street; John L. Bruce, 103, West Regent-street; David Sturrock, 103, West Regent-street; and Andrew Myles, 99, Bath-street.

An interesting feature of the meeting was the distribution of the "Stevenson" prizes. These prizes, amounting to 22*l.* 10s., were offered by Mr. J. J. Stevenson, I.A., of London (late of Glasgow), a member of the Institute, for the first, second, and third best series of measured drawings and illustrative sketches from any secular or religious edifice in Scotland erected prior to the eighteenth century, being the original production of the competitor from measurements taken on the spot, assistants or pupils in the offices of members of the Institute being alone eligible to compete. Mr. Stevenson's object in offering these prizes has been to encourage and promote the study of old work, as the best possible means of acquiring the knowledge necessary to design good new work. Several very fine sets of drawings were submitted in response to the invitation, but the number of sets of drawings submitted was anything but creditable to the spirit and professional enthusiasm of those invited to compete, or encouraging to the gentleman who so liberally offered the prizes. Amongst other subjects illustrated are New Abbey, Kirkcudbrightshire; St. Magnus's Cathedral, Kirkwall; and Linlithgow Church The committee appointed by the council to award the prizes were the president (Mr. John Baird), Mr. John Burnet, and Mr. John Honeyman,—Mr. Burnet, convener. This committee reported that, after a very careful examination of the drawings the committee decided that the set of drawings of New Abbey, Kirkcudbrightshire, by Mr. G. W. Browne, was worthy of the first prize; that of the Linlithgow Church, by Mr. William Millar, of the second prize; that of St. Magnus's Cathedral, Kirkwall, by Mr. W. H. Ross, of the third prize; and that the next in merit was the set of drawings of St. Kentigern, at Lanark, by Mr. R. Browne. All were of a fair order, while the New Abbey set were of a very high order, evidencing a fine appreciation on the part of the artist of the beautiful subject he had taken in hand to illustrate. The committee also recommended that a set of drawings by Mr. William Ferguson, which, being insufficient in number, they had been obliged to throw out of the competition solely on the ground of his non-compliance with the stipulations, be awarded an extra prize of 5*l.*, as but for the non-compliance with stipulations, these drawings would be entitled to rank with the first-prize set. The President then handed the various prizes to the successful competitors, accompanying each presentation with a few well-chosen sentences. The prizes were awarded as follow:—1st prize, 10*l.*, Mr. G. W. Browne, in the office of Messrs. Campbell-Douglas & Sellars; 2nd prize, 7*l.* 10s., Mr. William Millar, in the office of Messrs. Campbell-Douglas & Sellars; 3rd prize, 5*l.*, Mr. Wm. Ross, in the office of Mr. William Leiper; and the extra prize of 5*l.* to Mr. William Ferguson, in the office of Messrs. Campbell-Douglas & Sellers. The President then intimated that the Institute had determined to offer a silver medal for competition annually, and hoped that the young men, for whose improvement and benefit the prize was offered, would see it to be for their advantage to take part in the competitions.

THE SANITARY CONDITION OF DUNDEE.

WHOLESALE MANURE MANUFACTURE.

SOME startling facts relating to the sanitary condition of Dundee have just been brought to light by the publication of a report by Mr. Brownlee, the recently-appointed convener, or chairman, of the Sanitary Committee of the Dundee Police Commission. After noticing at length the operations for the cleansing of the town, and describing the duties performed by the officers of public health, the report proceeds to deal with the actual state of matters. Mr. Brownlee has made a personal inspection over a considerable portion of the town, and his report is accompanied by suggestions for improvements by "a practical builder," who is master of all the details to which he refers. "I cannot help thinking," says Mr. Brownlee, "that of late years the sanitary committee has in a great measure lost sight of the primary object of its existence, viz., the cleanliness and health of the town, and that, instead, it has been too intent on the turning of the town into a vast manufactory for the production of manure, with a view to the raising of revenue. In hundreds of instances there are to be found large ashpits, with privies conjoined, within a few feet of dwelling-houses, where all the excrement of a score and upwards of families, and the refuse from their houses are deposited, and allowed to ferment for nearly a fortnight before being cleaned out, the only attention they receive in the interval being the laying down of a deposit of mill-dust for the purpose previously mentioned. As illustrating the gigantic extent to which this manure manufacture has been carried, I may mention that last year upwards of 3,000 tons of mill-dust, and about 1,000 tons of tan refuse were used for mixing, at a cost of 1,870*l.*, exclusive of labour and cartage connected therewith. I doubt, indeed, even the money profit of such an expenditure. It does appear to me that the impropriety, not to say the absurdity, of such a system, having cleanliness professedly for its object, requires only to be pointed out to be apparent to every one. No consideration that I can think of can justify to my mind its continuance."

Among others the following practical suggestions for improvement are made:—That ash-pits and privies of all kinds should be placed as far as possible from dwelling-houses, and that all

common privies should have a pan for each seat. That where there are not water-closets in each house the ash-pits and privies be cleaned out once in every two days. That such ash-pits should be constructed of flags or other imporous materials, perfectly smooth on all the exposed surfaces, the bottom to be at the level of the footpath adjoining; to have three sides say 18 in. high, the bottom to slope 3 in. from the open side; to have a grating inserted in the side at the lowest point through which the liquid may flow into a gully grating placed immediately outside; and to be of a size to hold not more than three days' refuse; the privy to be drained either into the ashpit, or direct into the gully grating. The whole to be screened off from the view of the windows by a wall or wooden fence. That a stand-pipe for a water-hose be placed in connexion with each such ash-pit for the purpose of washing away all impurities from the ash-pit and privy and their surroundings and accesses. That all closes, courts, and passages which are liable to get into a dirty state be laid with imporous pavement, keeping in view the free use of water for cleaning. That all soil-pipes and rain-water conductors in back courts be connected directly with the drains, and that each dwelling-house have a sink properly trapped and provided with water. That the soil-pipes of all sinks and water-closets be carried up to the eaves of the houses well away from windows, and left open at the top; where such soil-pipes are inside of the houses, to be carried through the roof, also well away from the windows. It is suggested also that in new buildings all water-closets used by more than one family have a window in the exterior wall; when used by only one family may be inside, but should have a ventilating shaft of not less than 2 ft., and open from bottom to top of building. All man-holes, it is recommended, should be perforated, and all gullies left untrapped for the free ventilation of the sewers, except in localities where any special smell exists. All house-drains should be formed of fire-clay pipes of not less than 6 in. in diameter, having a spigot and faucet joints, jointed with Portland cement and laid with a gradient of not less than 1 in. to 3 ft., all openings in confined places to be trapped. All single-roomed and the inferior class of two-roomed houses should be ventilated into the flue with a syphon ventilator; and all new tenements of dwelling-houses with a less space behind than 40 ft. should have water-closets. The report is receiving the attention of the Sanitary Committee and the Police Commission.

COST AND ACCOMMODATION OF LONDON SCHOOL-BOARD SCHOOLS.

THE Works Committee have lately laid before the Board the following table, which may be usefully recorded. The committee say in their report,—"It will be seen that in some cases the extras on the contract exceed the additional 10 per cent. of the contract amount authorised by the Board on the 6th of November, 1872. In many cases, however, it has been impossible to avoid this excess, which is owing to various causes. In some cases extra foundations have been rendered necessary by the nature of the soil; in other cases the Education Department or the district surveyor has required alterations to be made in the structure of the building; and it has sometimes been found advisable to carry out alterations or improvements to the school during the progress of the works, the cost of which could not be ascertained till the work was measured up and the builder's accounts closed." The following table shows in each case where the extras on the contract exceed the expenditure sanctioned by the Board:—

Accommodation	Name of School.	Expenditure authorised by Board.	Extras authorised by Committee.	Cost per Child.
		£. s. d.	£. s. d.	£. s. d.
	CHELSEA.			
767	Harwood-road, Fulham (Basil Champneys)	5,285 0 0	529 2 5	7 11 7
1116	Wornington-rd. North Kensington (Bd. Architect)	7,495 0 0	113 11 9*	6 16 4
	FINSBURY.			
1212	Winchester-street, Pentonville (Charles Barry)	9,328 0 0	984 8 8	8 10 2
811	Central-street, St. Luke's (Board Architect)	5,919 0 0	607 8 10	7 15 2
486	Hornsey-road (Board Architect)	2,419 0 0	109 8 7	5 5 3
	GREENWICH.			
775	Hughes's-fields, Deptford (Board Architect)	5,850 0 0	432 8 7	8 2 1
585	Grove-road, Forest-hill (H. Saxon Snell)	5,395 0 0	319 1 0	9 16 4
	HACKNEY.			
1122	London-fields, South Hackney (Board Architect)	7,172 0 0	315 18 1	6 13 5
1100	Olga-st., Bethnal-green (Hammack & Lambert)	6,828 0 0	1,895 17 2	7 18 7
1105	Globe-terrace, Bethnal-green (Board Architect)	7,178 0 0	694 3 10	7 2 5
1190	Maidstone-st., Haggerston (Mileham & Kennedy)	7,193 0 0	1,380 11 7½	7 4 1
587	Newcastle-st., Bethnal-green (Board Architect)	4,920 0 0	826 18 6	9 15 9
1139	Hammond-square, Hoxton (Board Architect)	6,144 0 0	23 3 11	5 8 3
	LAMBETH.			
794	Johanna-street, Lambeth (Board Architect)	6,740 0 0	1,235 7 7	10 0 10
1164	Harper-street, New Kent-road (R. W. Edis)	6,861 0 0	645 16 5	6 8 10
1086	Westmoreland-road, Walworth (Jarvis & Son)	8,740 10 0	666 3 0	8 13 2
590	James-street, Camberwell (Board Architect)	4,962 0 0	718 0 7	9 13 6
959	Canterbury-road, Camberwell (Board Architect)	7,622 0 0	459 13 3†	8 8 9
1055	Lower Wandsworth-road (Board Architect)	7,549 0 0	[392 6 7]	7 10 6
589	Bolingbroke-road, Battersea (J. W. Walton)	5,370 0 0	377 1 8	9 15 1
906	Battersea Park (W. G. Coldwells)	6,728 0 0	557 1 1	8 0 9
	MARYLEBONE.			
1129	Mansfield-place, Kentish-town (Board Architect)	9,556 0 0	431 9 11	8 16 11
758	Hawley-crescent (Board Architect)	7,180 0 0	718 12 0	10 8 4
531	George-street, Lisson-grove (Board Architect)	4,790 0 0	383 9 1	9 13 9
816	Bell-street, Edgware-road (Board Architect)	6,726 18 2	—	8 4 10
	SOUTHWARK.			
809	Orange-street, Borough (Board Architect)	5,814 9 1‡	457 16 1	7 15 0
769	Russell-street, Bermondsey (J. James)	5,280 0 0	908 13 9	8 0 11
1078	Jamaica-level (Board Architect)	7,297 0 0	592 4 11	7 6 4
	TOWER HAMLETS.			
1051	Gloucester-street, Stepney (Lee Bros. & Pain)	8,371 0 0	926 12 7	8 16 11
933	British-street, Millwall (R. Phené Spiers)	6,070 0 0	596 0 4	7 2 10
1145	Essex-street, Stepney (A. G. Hennell)	6,361 12 0	716 14 3	6 3 7
933	South-grove, Mile-end-road (Board Architect)	7,368 0 0	225 11 2	8 2 9
377	Northey-street Graded School (Board Architect)	3,210 0 0	337 6 8	9 8 2

* This amount does not include the cost of erecting teachers' rooms.
† This amount does not include the cost of the additions to the caretaker's apartments now being carried out.
‡ This amount includes 614l. 9s. 1d., sanctioned by the Board for extra foundations.

ROCK ASPHALTE AND CONCRETE IN THEIR APPLICATION TO ROAD-MAKING AND BUILDING.*

IN handing in the title of the subject, I fear hat for the moment I did not appreciate the full extent of the ground which such a title covers. To argue the theory and practice of working in cement in its various qualities and methods of manipulation, would be to enter upon a topic of almost undefined extent; so with your good leave I will refer to concrete only incidentally, and make the subject of this paper "Road-making," having special reference to rock asphalte as applicable thereto.

Asphalte, as commonly referred to, is generally understood to mean a rough mixture of broken brick, cinders, gravel or grit, with common tar or pitch. This composition has for many years past been frequently used in the construction of footwalks in quiet neighbourhoods, and even sometimes in roadways where the traffic has been very light. It has, however, never been anything like generally used; for although it presents a pleasing effect when first laid down,—especially when sprinkled with limestone chippings or other bright facing,—a very small amount of wear disturbs the surface and causes speedy failure.

I believe the cause of this early disintegration to lie in the natural principle, that no loose hard material may remain long distributed among any material of a softer nature. Every tread upon a paving of Common asphalte tends to force away the soft material from between the pieces of the hard material, and the effect of this is to leave the hard material less and less perfectly cemented. Moreover, the soft material is readily affected by the heat of the sun, and "comes" and "goes" with each variation of temperature, the effect of which is to reduce its adhesive qualities; for although the heat of the sun is sufficient to loosen, it is not sufficient to quicken and fuse the bituminous particles together again.

Again, not only sand and grit, but particles of common loam and earth, are by the effect of traffic thereupon gradually pressed and worn into the mass, which soon tells with adverse effect upon the quality of the paving. It is well known that the introduction of earthy particles are deleterious to, and detract from, the coherence of any cementing material. In the case of mortar and other quick-setting cements, of course no such adulteration can be effected after they are once hard; but in the case of a cementing substance which never properly hardens, and the very purpose of which is to be trodden upon, such adulteration is perpetual and inevitable, and equally inevitable is its rapid deterioration. In this way may be accounted for the disappointment so commonly experienced in a paving which at first appears so sound and beautiful, but which so soon becomes disintegrate and unsatisfactory. The quality of asphalte to which I make special reference, is that prepared for use by nature herself, which is quarried or got from the mine, and which is as superior to the common asphalte just referred to as a piece of fine marble is in grain to the grain of the coarsest piece of sandstone: it is called rock asphalte. This asphalte is a natural combination of limestone and bitumen. The saturation of the limestone is so perfect, that separation of the two materials cannot be effected, nor by any artificial means can so complete a combination be produced. The proportions of the materials are generally about 92 to 93 parts of lime to 7 to 8 parts of bitumen, with traces of silica or other calcareous substance.

Limestone being developed from deposits of organic matter which in ages past have accumulated in fissures and hollows in the surface of the earth, it is supposed that when such organic matter has become heated during a certain stage of the process of decay, and when it has remained for a lengthened period at a certain high degree of heat, a vapour has been generated which, when confined and unable to escape, has ultimately condensed as bitumen in the mass in which it originated. Considerable deposits of this material are known to exist in many parts of the world; but the mines from which supplies of the best material are obtained are the Limmer Mines near the city of Hanover, and the Virwohle Mines in the Duchy of Brunswick, Germany, and from the Val-de-Travers and Seyssel Mines in Switzerland. The material as got from the

* From a paper by Mr. Edward Guthrie, read before the members of the Liverpool Architectural Society.

mines is of a brownish black colour. Where the mines are worked in underground galleries, where the temperature is even—as is the case of the Challenge and Chavoroche Mines—the material is got regularly in a loose earthy condition; but when the mines are open and exposed to the influence of the sun the case is different. It can then be only worked in the cool of the morning and evening, when it is comparatively brittle, for under the heat of the sun the rock becomes so elastic as to be exceedingly difficult to separate.

The use of Rock Asphalte, according to antiquaries, appears to have been known to the ancients, for evidences of its having been used in building are said to exist among the great ruins of Egypt and Assyria, but in modern times it is only very recently that it has become at all generally known or largely applied. During the last century the material was to some extent introduced, but not until within the last thirty or forty years has any considerable use been made of it. In 1838 it was used for the first time in Paris, in the paving of a street. Since then it has been largely adopted for that purpose in many other large Continental towns, including Berlin, St. Petersburg, Moscow, Riga, and Copenhagen; and very lately, but not till very lately, it has been used in London and other large English towns as a paving. Besides for general paving purposes, it is a material capable of being used with great advantage either alone or in conjunction with cement concrete, in place of slates and lead in roofing, in the construction and lining of reservoirs, cisterns, damp courses, and in sanitary arrangements generally. And while thus (although only incidentally) referring to sanitary arrangements, I cannot let the occasion pass without earnestly urging the attention of this meeting to the facilities which rock asphalte affords for the cutting off of all direct communication between the islands of buildings and the drains. A more unsafe and insanitary arrangement than the introduction of drains to the insides of houses could not well be designed, and with architects rests the practical application of all reforms in this direction. Drains are pipes charged in a greater or less degree with poisonous vapours active for the spread of disease and death, and ever waiting to escape by the slightest imperfection therein, through the various traps laid either in the cellar floors or to the sinks and closets. By the present system of laying cellar floors with brick on edge, tiles, or inferior flagging, it is perhaps almost a necessity to introduce a drain to carry away the moisture which would otherwise accumulate in the lines of the floor, and there stagnate. By the proper application of asphalte all necessity for the introduction of the drains into the house may be removed.

In the building of a house, and after carrying the foundation up to the level of the cellar-floors, an inch or ¾-inch layer of rock asphalte should be spread over the whole surface, simultaneously forming the final flooring of the cellars and the damp coursing of the walls; and as the outside walls are carried up, the asphalte should be turned and carried up the outside of such walls to the level of the ground line, forming a perfectly waterproof skin to the whole basement. All washing and other waste water should be carried by a pipe into an outside area in the open air, and should enter the drain by a trap there, which should be as far away as possible from any opening into the house. I would not only suggest that this sanitary arrangement should be made compulsory in the matter of cellar drainage, but would also advise its compulsory application to all upstair sinks and closets, obliging all drainage matter from any source within the house to be conveyed into a trough in the open air before entering the drain, so that no direct communication between the insides of dwellings and the drains should exist.

Now, with respect to street paving: I will assume it to be admitted on all sides that for footwalks a half-inch or five-eighths layer of rock asphalte upon a 3-in. or 4-in. layer of Portland cement concrete is superior to flags, tiles, or any other quality of footwalk pavement; and now that the cost of asphalting and flagging are about equal, I believe that the general adoption of asphalting in place of flagging is but a matter of time and emergency. . . . . .

Wood stands next as a high-class paving. Only in one point,—that of foothold,—does it stand superior to asphalte; but on this account alone it threatens to compete very seriously with the otherwise infinitely better material. Observations have been made and records kept which prove that in all states of the weather other than greasy, the number of falls upon asphalted roads is fewer even than upon granite sets, and it is obvious that a fall upon a smooth asphalted road, when it does occur, must be less injurious to the horse than a fall upon a rough and stony one. The difficulty, however, of rising from the asphalte after a fall is very great. . . . I have from time to time given considerable thought to the end of attaining the desired object; and since I, a month ago, submitted the title of this paper, I have designed and registered a system of paving, a model of which is before you. I take short pieces of lathwood, which, having been first saturated in a preservative of liquor, I pass through a vessel containing rock or other asphalte in a molten and mastic state, and simply place such pieces of wood, with a small portion of the asphalte adhering to each piece, on their ends or edges upon the prepared surface of the ground to be covered, in such a position that they lean upon each other at any angle other than a right angle to the ground covered, and thus let them cool to a solid amalgamate mass, the ends or edges of the laths, closely packed with the hardened asphalte, forming the surface of the road. The road may be rolled, if desired, for fuller assurance of solidity, or for the purpose of giving a dressing to the surface; and I here call particular attention to one of the special features of its construction, that is, the angle at which the wood used lies. It is obvious that a paving so constructed, the more it is ran upon the heavier the weights which pass over it, the more and more consolidated it must become, and that a road so constructed must have great durability.

THE INSTITUTION OF CIVIL ENGINEERS

THE fifty-seventh annual meeting was held on the 22nd of December, Mr. Thos. E. Harrison, the president, in the chair.

The Report referred in the first instance to the numerous and increasing applications for admission, and to the desire of many candidates to be at once recommended for election as Members. On this point the opinion was expressed that any relaxation in the stringency of the bye-laws and regulations, which were quoted, would be inexpedient. When the rules were first framed, it was anticipated that Associates might, subsequently to their election, become qualified for Members, and provision was accordingly made for their transfer. During the past session the Council had had the pleasure to raise twenty-three Associates to the class of Members. Of the new candidates twenty-three were elected Members, while out of the 170 who were passed as Associates, five declined or failed to complete their elections. Some dissatisfaction had been expressed with the present definition of the class of Associates; and there was reason to believe that many young professional men, not yet fully qualified for the rank of Member, thought it a hardship that they should be called by a name which did not imply full fellowship, and should be classed with persons "not necessarily Engineers." It might, therefore, be open for consideration whether some modification could not be devised, which, while retaining an honourable distinction for the more experienced members, would yet afford a just recognition of the position of their younger brethren.

In the past twelve months there had been an effective addition of twenty-six Members and of 110 Associates, thirty-nine of the latter having previously been Students. The numbers of the three classes now composing the Corporation were fifteen Honorary Members, 792 Members, 1,323 Associates, together 2,130 of all grades, as against 1,994 at the same date last year. During the last five years the accessions had been 34 per cent. nearly; but in that period the Members had only increased 21 per cent., while the increase of Associates had been 44 per cent.

An analysis of the financial statement attached to the Report showed, that the subscriptions alone, with dividends on Institution investments, forming the income proper, amounted to 7,310*l.* 13s.; that the Telford, Manby, Miller, and Howard Trust Funds realised 447*l.* 17s. 5d.; and that the life compositions, the admission and building fund fees, and a further small sum from the residuary estate of Mr. Telford, all which were treated as capital, and invested accordingly,—produced 1,931*l.* 7s. 2d. Certain miscellaneous items, yielding together 301*l.* 17s. 11d., had not been included in the revenue named, as they were in the nature of set-offs to expenditure. After allowing for these, as well as for the outlay on account of premiums under trust, 240*l.* 9s. 8d., the net expenditure became 6,488*l.* 1s. 4d. A sum of 2,997*l.* 10s. 11d. had been invested, of which amount 191*l.* 12s. 9d. had been placed in Three per cent. Annuities, on account of the Telford and Miller Trust Funds, and 2,805*l.* 18s. 2d. in Four per cent. Debenture Stocks in several railway companies, on the general account. The Funds now belonging to, or under the charge of, the Corporation, amounted to 33,158*l.* 13s. 4d., as compared with 30,223*l.* 8s. 6d. at the date of the last report. Of these Funds a sum of 11,968*l.* 7s. 8d. was in Government Stocks, and 20,950*l.* stood in nearly equal proportions in guaranteed stocks of seven of the principal railway companies. The investments yielded an average rate of interest of 3⅞ per cent.

It was remarked that, to represent the ever-widening fields of industries now flourishing, many of them undreamt of in the days of our founders, various societies had from time to time been established for the study of special branches of engineering science and practice. The existence of these societies, each occupying different ground, furnished significant evidence of the growth of the profession. The Council had felt it a duty to aid them, by granting the use of the rooms for their meetings, and by any other friendly offices; but, at no very distant time, the question might arise, whether some plan could not be devised by which there should be a still closer tie between these societies and the oldest association connected with the profession,—the Institution of Civil Engineers.

The following gentlemen were elected to fill the several offices in the Council for the ensuing year:—Thomas Elliot Harrison, President; William Henry Barlow, John Frederic Bateman, George Willoughby Hemans, and George Robert Stephenson, Vice-Presidents; James Abernethy, Sir William George Armstrong, C.B., Sir Joseph William Bazalgette, C.B., George Berkley, Frederick Joseph Bramwell, George Barclay Bruce, James Brunlees, Sir John Coode, William Pole, C. William Siemens, Sir Joseph Whitworth, Bart., and Edward Woods, Members; and Major J. U. Bateman-Champain, R.E., John Head, and Colonel Charles Pasley, R.E., Associates.

CONCRETE BUILDING IN WATER.

IN the course of a paper read at a recent meeting of the Institution of Civil Engineers, on "The New South Breakwater at Aberdeen," by Mr. William Dyce Cay, C.E., the system of building with liquid concrete deposited *in situ* above low-water level was described. A framework of posts was erected round the space intended to be filled, excepting at the end of the completed work, which formed one side of the case. These posts had grooves in their sides, with sliding panels, extending from post to post. The bottom and sides of the case were lined with jute-bagging, and tie-rods, extending through the posts and from side to side, prevented the case from being burst open by the lateral pressure of the liquid concrete. In executing the concrete building *in situ* above low-water level, it was considered important to exclude the tide from the unset concrete. To effect this, the cases were arranged of such a size that, by commencing when the tide left the foundation of the piece, the concrete could be filled into the case faster than the tide rose, so that its surface was always above the level of the sea outside the case. To hasten the work, concrete blocks were sometimes incorporated with the liquid concrete. The contents of the cases in 1872 and in 1873 varied in weight from 335 tons to 1,300 tons. The proportions of the concrete found best for this work, keeping in view the risks from storms had been one of cement to three of sand and four of gravel. Bags of concrete, containing 100 tons each, were deposited in the apron after the other parts of the building had been erected, by fixing a large timber-box on brackets overhanging the site where the bag was to be discharged. The inside dimensions of the box were 32 ft. 1 in. by 8 ft. 1 in. by 6 ft. deep; and the 100-ton concrete-bag was filled in the same manner as the bags in the small skips. When full, the bottom of the box, which opened on hinges placed at one side, was let go by pulling two triggers which held up the other side of the bottom, and the bag of concrete was dropped into the site excavated for it, close to the toe of the foundations of the breakwater. The outer end of the breakwater had been secured against the sea by dovetailing the concrete blocks into one another, and by erecting a tower of concrete,

20 ft. high, on the end to add weight to it. The diving work had all been executed with the helmet apparatus; there were generally twelve divers under water at one time, and four shifts of diving work of four hours each were obtained per day in summer. A description was then given of the concrete blocks and the machinery for making them, with particulars as to the concrete mixing and the cement used. The proportions of the materials were one of cement to four of sand and five of gravel. With respect to progress and cost, it appeared that, from the time the machinery was fairly at work, about 300 lineal feet had been completed per annum, and that, taking into account the value of the plant now being used on another of the Aberdeen Harbour works, the cost had not exceeded the estimate. The total length of the breakwater was 1,050 ft., and on this 76,443*l.* had been expended. In conclusion, the opinion was expressed that concrete blocks of the ordinary size of from 10 tons to 20 tons each were not suitable for building a solid breakwater on sand or other soft material, and it was recommended that the parts of such a work below low water should be in blocks of from 100 tons to 200 tons weight each, and that some of these blocks might, with economy and advantage, be deposited in a liquid state in bags.

CONCRETE *v.* BRICKWORK.

THE following tenders have been received for stabling, &c., at Greenwich, for Messrs. J. Lovibond & Sons. Mr. J. Kiddle, Jun., architect. Quantities by Messrs. Batterbury & Huxley:—

	In Concrete.	In Brickwork.
Adey	£4,434 0 0	£4,807 0 0
Drake	3,448 0 0	3,818 0 0
Kirk & Co.	3,430 0 0	3,630 0 0
Manley & Rogers	—	3,180 0 0
Jerrard	3,326 0 0	3,349 0 0
Newman & Mann	3,496 0 0	3,220 0 0

This list is worth a little cogitation. It serves to show the difficulty with which an architect can pronounce as to the probable cost of a building, or by what sort of construction money may be saved. While one firm states that if concrete be used 470*l.* will be saved, another says it will cost 270*l.* more than brickwork, and, moreover, offers to build the house in the latter material for 220*l.* less than the firm who shows the saving produced by the use of concrete can execute it in concrete.

SANITARY CONDITION OF WARRINGTON.

IT is gratifying to find that Warrington continues free from serious epidemic disease, although it is so general all round. Not only has fever been very rife in places noted for neglect of sanitary arrangements, says our authority, the *Warrington Guardian*, but in some where natural position and sanitary care have, to a more than average degree, combined to promote good health, though doubtless with some real, though not overt neglect, as the connexion between epidemic disease and neglect in some form is now too well known for it to be supposed this curse could ever come causeless. It is remarkable that Warrington, in its lowest parts lying little above high-water mark, and on the banks of a very filthy river, has escaped the prevailing autumnal scourges.

It may be as well to note, however, that Warrington is not yet perfect in some of its arrangements for the health and comfort of its people. Unfortunately a good number of its houses are below the level of the highest tides in the river, and whenever high tides happen during a rainy period, and sometimes even when the fresh water is low, there is a back stream up the sewers, and these low-lying houses are flooded by sewer water. Whilst this wash of the tide up the sewer continues, the higher part of the town is really pouring its sewage into the cellars of the lowest houses, and a state of things is brought about that is highly dangerous. It is not difficult to realise both the nuisance and the danger when it is remembered that the receding flood leaves on the low kitchens and cellars of many houses a muddy deposit of the most unpleasant character. It is not the old and ill-planned houses alone that are subject to this dangerous periodic infliction, but also the new and more carefully-built houses.

Is this really unavoidable? The Borough Engineer would, if allowed, no doubt soon devise a remedy. And although it is hoped a scheme for the permanent diversion from the river and the utilisation of the town's sewage will not long be deferred, the low-lying parts of the town might be delivered from the danger at once.

SEWERAGE OF BUNTINGFORD, HERTS.

THE Buntingford sanitary authority, some time back, advertised for, and obtained from various engineers, competitive schemes for the sewerage of the town and disposal of the sewage, and, after the usual time spent in deliberation, decided upon one submitted by Messrs. Smith & Austin, sanitary engineers, of Hertford. Working drawings have since been prepared, and sanction was obtained from the Local Government Board for a loan of 1,600*l.*, the estimated cost of the works. Delay in the progress of the scheme has been occasioned by the difficulty experienced in obtaining the only piece of suitable land on which the sewage could be carried by gravitation, and the sanitary authority is now applying for a provisional order to take by compulsion six acres of land, the property of Sir Henry Lushington.

The town of Buntingford, being situated upon the river Rib, a tributary of the Lea, is compelled by a special Act to stop the flow of anything not being perfectly pure into the natural watercourses.

It is proposed to resewer the whole of the town with earthenware-pipe sewers, retaining the present sewers for the purpose of carrying away the surface and storm waters; to conduct the sewage by gravitation to land lying several feet above the line of saturation, and,—after passing the sewage through a simple filter and precipitating tank,—to utilise and purify it by surface and downward filtration. We understand the works are to be carried out during the coming spring.

PRIZE FOR ESSAY ON RURAL SANITARY SCIENCE.

A PRIZE of twenty-five guineas is offered by Dr. Lory Marsh, for open competition for the best essay on the following subject:—"The application of Sanitary Science to Rural Districts with a view to insure the highest Condition of Health, and the Prevention of Disease." Each essay to be limited to 25,000 words, and "to be forwarded not later than June 30th, 1875, to Dr. Marsh, 10, Adelphi-terrace, Strand, London, to whom the copyright of the successful essay shall belong." Several well-known men have consented to act as adjudicators.

Dr. Marsh asks us to make the offer known, and we willingly do so. At the same time, we must observe that twenty-five guineas can scarcely be regarded as "a prize" in such a competition, or be likely to induce the best men to compete. A competent writer would not have much difficulty, we should think, even in these days, in finding an "enterprising publisher" who would give him 26*l.* 5*s.* for a good essay on the subject named.

If the object be, as we suppose it is, not to make money, or to exercise unfledged essayists, but to obtain a thoroughly good and practically valuable essay, the premium should at least be doubled, or the author of the successful essay should retain the copyright.

THE PREVENTION OF CONTAGIOUS DISEASES.

MR. JOHN LIDDLE, of the Whitechapel District, never fails in his reports as medical officer of health to give information that applies widely. In his last, just published, he says, in speaking of the necessity of employing, to the best of our ability, such means as are known to us, whereby the spreading of contagious diseases will be prevented:—

"Notwithstanding that our knowledge is limited, as to the causes of epidemic diseases, and that we are unable to account for the rise, culmination, and decline of epidemic diseases, and cannot assert with confidence that any one particular agent will effectually destroy contagious matter, we may probably prevent the development of typhoid fever and other epidemic diseases, by the adoption of the following means:—

Firstly. By the practice of cleanliness in our houses and persons. Secondly. By efficient ventilation in our houses, and especially in our bedrooms. Thirdly. By complete drainage, whereby all refuse matter in a fluid state shall be immediately carried away from our habitations. The drains should be so constructed as to prevent the noxious gases which they contain from making their way into our houses. I may here observe that, unless the public sewers and house drains which communicate with them be properly constructed, they may be the means of diffusing the germs of disease, by allowing their contents to soak into the ground, and so contaminate the sources of the water supply; and they may also, through their imperfect construction, diffuse their poisonous emanations through the atmosphere, and thus spread disease among the people. Fourthly. By the local Boards causing *all* the streets to be cleansed daily. This should be done uniformly throughout the metropolis. Fifthly. By the prompt removal of all nuisances from the vicinity of dwelling-houses. Sixthly. By the use of pure drinking-water; and lastly, by so observing the laws of health, as regards the avoidance of overcrowding, by temperance, by proper food, by warm clothing, by exercise in the open air, &c., that the body may be preserved in health, and thereby enabling it to a great extent to resist disease. As the poor cannot, by means of their poverty, carry out in their persons all that is above stated as being necessary to be done to preserve the body in health, it may be expected that they will suffer more from the ravages of an epidemic disease than their richer brethren. I will conclude this part of the subject by reiterating the aphorism, that 'Prevention is better than care'; and that it will be found in every respect more conducive to the welfare of the people to oppose the attack of an epidemic disease by adopting such sanitary means as will prevent the contamination of the water supply, and the pollution of the air, and to preserve the soil in the vicinity of human dwellings from all refuse matter and filth. I say that it would be better to do these things, and not rely on the value of any disinfectant to stay the ravages of disease when it has obtained admission into the houses of the people."

PROPOSED NEW BUILDINGS IN MANCHESTER.

THE VICTORIA-STREET SITE.

THE value of the triangular plot of ground at the junction of Victoria-street and Deansgate, Manchester, was strikingly shown by the price paid to the Corporation by Mr. Andrew Hamilton and some other gentlemen a few weeks ago, the 5,160 square yards realising 288,960*l.*, which was at the rate of 56*l.* per square yard. The old buildings which stood upon it have for the most part been demolished, and a company is being formed to cover the plot with handsome shops and an hotel. The intention of the promoters of the company is to erect a five-storied stone building with double basement, with shops to front Victoria-street, St. Mary's-gate, and Deansgate. There will also be an hotel at the Victoria-street and Deansgate corner; and a large arcade in the centre of the plot consisting of shops. The plans have been prepared by Mr. William Dawes, architect.

The style of the building will be Victorian, with a Gothic treatment of detail adapted to suit modern requirements. The various frontages of the shops will be—to Victoria-street, 368 ft.; to Deansgate, 350 ft.; and to St. Mary's-gate, 220 ft. The hotel will occupy the angle at the corner of Victoria-street and Deansgate, and will form one of the most attractive features of the block. There will be twelve shops with a frontage to Victoria-street, and a similiar number to Deansgate, while the base of the triangle in St. Mary's-gate will be divided into eight. The main height of the building will be about 70 ft.

The space enclosed by the shops and offices will form the arcade, the widest portion of which will be about 70 ft. The height will be 60 ft., and the entire roof will consist of iron and glass. In the centre of the arcade will be a post-office and telegraph station. It is estimated that the cost of the building will be about 140,000*l.*

River Pollution.—It is notified in the *Gazette* that the Queen has appointed Sir John Hawkshaw, knt., one of the honorary councillors of the Institution of Civil Engineers, to be her Majesty's commissioner for the purpose of inquiring as to what towns and places contribute to the pollution of the river Clyde and its tributaries; and how and by what means the sewage of such towns and places, and the refuse arising from industrial processes and manufactures carried on within the same, can be utilised or got rid of, without risk to the public health or serious injury to such processes and manufactures otherwise than by discharge into the river Clyde and its tributaries.

ASSOCIATED CARPENTERS AND JOINERS OF SCOTLAND.

MR. WILLIAM PATERSON, the general secretary, has just issued his report for 1874. There had been an advance of 2s. per week in the wages of nearly all the members. The receipts for the year amount to 6,815*l.* 1s. 5½d., being 953*l.* 11s. increase when compared with last year. There is a balance placed to the credit of the Association of 1,411*l.* 5s. 3½d., which increases the funds in hand to 9,071*l.* 8s. 8½d. Of this sum, 7,554*l.* 5s. 6d. is the property of the trade section, and 1,517*l.* 3s. 2½d. is the property of the sick section. There is a balance added to the sick section of 651*l.* 6s. 7d. There are 774 more members in the Association than there were at this period last year. Appended to the report is a trade census, giving the number of journeymen and apprentices in different districts:—Aberdeen, 435 men, 99 apprentices; Alloa, 76, 24; Arbroath, 76, 21; Blairgowrie, 30, 15; Bridge of Allan and Dunblane, 33, 15; Broughty Ferry, 42, 14; Cupar, 14, 8; Dalkeith, 28, 10; Denny, 18, 12; Dundee, 508, 147; Dunfermline, 114, 52; Edinburgh, 1,444, 219; Elgin, 35, 13; Forfar, 60, 25; Forres, 15, 7; Glasgow, 2,785, 659; Govan, 582, 157; Greenock, 780, 310; Inverness, 90, 60; Kirkaldy, 120, 40; Kirriemuir, 18, 8; Leith, 174, 28; Nairn, 15, 13; Perth, 118, 36; Peterhead, 34, 15; Slamannan, 16, 8; Stirling, 61, 34; Tayport, 20, 9; Wick, 16, 14; Wishaw, 85, 32. The total number in the Association is 11,836 men, 3,310 apprentices.

SANITARY MATTERS.

Ilfracombe.—The increasing popularity of this favourite resort having caused it to outgrow its water supply, the Local Board have called in Mr. E. Appleton, of Torquay, to remodel and enlarge the works.

Newquay, Cornwall.—The Local Board have instructed Mr. E. Appleton to prepare a scheme of drainage, which it is proposed to carry out forthwith.

Shaldon.—The same gentleman has been instructed to report on the drainage of this place.

NEW PUBLIC HALL AT CARSHALTON.

CARSHALTON, though small in extent, has yet taken the initiative in the supply of a need long felt, by the erection of a substantial and commodious public hall, which was inaugurated on the 17th ult. The Carshalton Public Hall Company (Limited) was formed early in the present year, for the purpose of erecting a public hall suitable to the requirements of the neighbourhood. The share capital was 2,500*l.*, of 1*l.* each. Upwards of 1,660 were applied for previously to the company being formed. A suitable piece of land near the Fox and Hounds, in the main road leading from Croydon, Beddington, and Wallington to Carshalton, was secured as a site, plans and tenders obtained, and the work commenced with expedition. On the 17th of June last, the foundation-stone was laid by Sir Henry William Peek, bart., M.P., and the work has steadily gone on since then. The building, as now completed, is in the Gothic style, built with red bricks and stone dressings, and has a very pretty and charming appearance as seen from the road. The platform is 11 ft. by 39 ft., and over it is a handsome clock, presented by Sir H. W. Peek. The furniture of the hall and committee-rooms have been supplied by Messrs. Shoolbred & Co., of Tottenham-court-road. The architect was Mr. J. D. Hayton; the builder, Mr. Charles Coles, of Croydon.

METROPOLITAN TRAMWAY WAITING-ROOMS.

SIR,—It has at times been a matter of wonder and surprise to me, in passing through the London street thoroughfares, that so little comfort is provided for persons using the tramway cars in various districts, insomuch that it is only here and there that a room is to be found for them to remain in whilst waiting for the cars they may require. At this inclement season,—indeed at any time when the weather is unpropitious,—it is very unpleasant for passengers to have to wait standing in the open street, who may be travelling by the tramway lines, and be at the same time exposed to every kind of temperature. I write thus to express my own views on this point, and to suggest that tramway waiting-rooms be put up at the starting-points of the cars in and about London, where they do not exist at present, by their proprietors, and which, if done, would confer a considerable amount of comfort which now is denied to many.

A RESIDENT IN SOUTH LONDON.

THE CHIMES.

SIR,—The end of the year is approaching, let us take stock and review; with progressive utility we started, has our work been useful and true? Some failures we all must expect, all cannot do what they would: it's cheering for one to reflect at the year's parting, to say I have done what I could. We know what last year has brought us, we know not what the next one will bring; we repine not at parting, but smile when the merry bells ring, for they say—work on, sail on, onwards, work while you can, you all may not live while I reign—life is but a span. Strive to be good and useful, alleviate needless pain, if ye are missing at next ringing, the tune will be, he lived not in vain. *Builder* readers, hard-fisted pleaders, a goodly Christmas cheer; hand over hand, to avoid all shoals and sands in the forthcoming year; salutes and *salam*, Mr. Editor, I wish you a happy new year.—R. T.

NEW SHOREHAM CHURCH RESTORATION (?).

SIR,—With thanks for quoting my protest on this matter, and for your kind remarks and correction thereon, allow me to say that it was entirely because I knew that the Sussex Archæological Society was *non est inventus*, or in such a state of somnolence as to be dead to the heaviest prog in the side possible to give it, that I deemed it useless to point to them as the "real delinquent." For several years past their chief aim seemed to be in the background, while the picking out of some old mansion, and excursion thereto, for some one to read a paper full of *conjecture* only, and winding up with a good *luncheon*, always was to the fore. But as for being *guardians* over our ancient structures, such a notion exists only in imagination. Therefore I deemed it right to try and wake up the Institute of British Architects, who seemed to have done nothing worth notice for the benefit of architecture, ancient or modern, or for its professing body.

ARTHUR LOADER.

WHEEL-TIRES AND THE WEATHER.

SIR,—There appears to be no doubt that the late dreadful accident on the Great Western Railway was caused by the breaking of a wheel-tire of a carriage which had been added to the train at Oxford; where, it is stated, this carriage had been set aside to be repaired. If such was the case, it might be well to know whether the carriage had been fully exposed to the previous extreme cold, as from such an exposure, for many hours, wheel-tires must contract to the utmost degree, and thus, when in its most brittle state, oppose a more than usual resistance to the expansive effects of the heat generated by the friction of the wheel when in motion. A thorough investigation on this subject might give a fearful warning for the future, and show the propriety of railway carriages being protected from such exposure when not actually in use during such severe weather.

Experienced sportsmen keep their guns in moderately warm places, and when in the field, in severe frosty weather, protect the lock as far as possible from the cold, as at such times the hammer is apt to snap off when the gun is discharged.

G. A. ROWELL.

"GATE" AND "STREET."

SIR,—Several north-country towns afford a suggestion to our civic authorities for improvement in the nomenclature of some of our city thoroughfares. The old English "gate," signifying a "road" or "way," is retained in Bradford, as Westgate, Ivegate, Kirkgate; in Leeds, as Briggate, &c. If, in like manner, Aldersgate, Bishopsgate, Moorgate, and Newgate, were so called without the useless affix "street," it would be an extensive advantage without a corresponding loss.

Though, in London, the streets were so named because they led to the gates in the City wall, yet since neither the wall nor the gates exist, no ambiguity (except, perhaps, in "Newgate") could occur in adopting the old English meaning.

CARLO F. JOHNSON.

WHITEWASH AND BRICKWORK.

SIR,—Will any of your readers tell me of a quick process for getting whitewash off brick walls that has for several years been put on, without washing off, in the following manner:—A coat of limewhite and a coat of distemper on the top of it, the former, I suppose, being put on to bind the distemper down, instead of washing off properly. I have a large quantity to get off down to the brickwork, and think there may be some quicker way than chipping.

BUILDER.

Books Received.

Sketches and Studies, Descriptive and Historical. By R. J. KING, B.A. London: J. Murray.

MR. KING (who is the author of "Murray's Handbook to the Cathedrals of England and Wales") has in this volume collected (as it is now so much the fashion to do) essays written in various periodicals,—"Oxford Essays," the *Quarterly Review*, and *Fraser's Magazine*. Essays on such subjects as "Sacred Trees and Flowers," and "The Dogs of Folk-lore," are pretty sure to find interested readers at present, when there is such a run upon national legends and traditions. We should be rather glad to have done with the very expression "folk-lore" for the present: the way it has been worked in periodical literature lately is something alarming. Sacred trees and flowers, however, is a subject of much interest, from the beautiful and fanciful associations it brings us into connexion with. It is strange to see how largely the Mediæval Church linked the flowers of the field with the mysteries of religion; how "the wall-flower that 'scents the dewy air' about the ruined arches of its convent; the scarlet anemone, that flowers about Eastertide, and is called 'the blooddrops of Christ'; the blossoming almond-tree, one of the symbols of the Virgin; and the marygold, that received her name, are but a few of the old friends brought long ago from Syria by some pilgrim monk, and spread from his garden over the whole of Europe"; to think of the holy exultation over the discovery of the "Passion-flower" in the New World,—"the flower in which the Creator of the world had chosen to represent the principal emblems of His Son's Passion"; and so on. Truly men seem at all times to have seen in Nature whatever they looked for in it. "The Great Shrines of England" is a comparatively recent *Quarterly Review* article (1872), and gives a sketch of the great centres of devotion in England as they would have appeared in order and importance to the pious pilgrim of the days when these shrines were at the height of their renown. An interesting article on "Travelling in England" (*Quarterly*, 1864), commences by introducing us to the "very pleasant mode of travelling" in vogue with Sir Hildebrand Jacob (author, in the early part of last century, of some forgotten plays and poems), who, when the spring was somewhat advanced, and the roads became passable,—

"Set off with a portmanteau, attended by one servant, without knowing whither they were going. Towards evening, when they came to a village, they inquired if the great man loved books, and had a good library; and if the answer was in the affirmative, Sir Hildebrand sent his compliments, that he was come to see him; and there he used to stay till he was disposed to move further. In this manner he travelled through the greatest part of England, scarcely ever sleeping at an inn, unless when town or village did not afford one person civilised enough to be glad to see a gentleman and a scholar."

In these days, alas! we have fallen into very uncivilised ways. Have we any modern system of travelling so agreeable and comfortable as that of worthy Sir Hildebrand? And yet we know several "great men" of their town or village who would warmly welcome a gentleman and a scholar if they could be certain of catching him. Other portions of the essay touch in an entertaining manner, and a fairly picturesque style, upon some of the architectural monuments of England visited by the author; and a separate short essay is devoted to "St. David's." Among "sketches and studies from Belgium," will be found an interesting account of a visit to the châteaux of Rubens and Teniers, written in full sympathy with the genius of the artists whose former abodes thus become "shrines" for a modern pilgrim. The house once occupied by Teniers is at Dry-toren, near Steen, which is Rubens's "seat"; but the author observes that Teniers's name is unknown in his former neighbourhood,

though the fame of Rubens is still green at Steen. Of the "three towers" (Dry-toren) of Teniers, only one remains. "This is the gate-tower, of rough timber, high and square, with a broken-backed steep roof, and ornamented weather boards—a form constantly recurring in Teniers's pictures." The good farmer's wife to whom the place belonged was much astonished at the invasion of her pigeon-house (once the *atelier* of the artist); "but perhaps Mynheers were fond of pigeons, and had climbed up to see them. Not the pigeons? Ah, yes; she *had* heard that some one used formerly to paint in the tower. Was it either of the Mynheers themselves?" Such is the reputation of David Teniers at Dry-toren.

We can recommend Mr. King's essays, both for matter and style, to the "literary leisure" of our readers.

VARIORUM.

At this season of the year, when a large proportion of our London population are leaving Town on visits to pleasant country quarters, we would appeal, says the *Lancet*, to the railway companies, and request them to endeavour to make their stations somewhat less inclement, and free from draught. We recognise the difficulty of effecting this with respect to the outside approaches and the platforms; but surely something might be done to improve the condition of the interior. The booking-offices, for instance, are invariably placed directly in the current of a thorough draught, in which the unhappy traveller has to stand at the end of a long *queue* whilst the tickets are being doled out at the little pigeon-hole of a window. Again, the spacious waiting-rooms, except in the immediate neighbourhood of the fireplace, are deadly cold, and resemble some vast cave, in which the imprisoned winds are for ever contending. When the swing-door opens, *qua porta data ruunt*, fresh blasts enter and add to the general shiver. It would cost but little to equalise the temperature in these Æolian halls by introducing hot-water pipes, in addition to the existing fire; and if some kind of screen were placed round the booking-office, to shield us from the keen blast, whilst waiting our turn to receive tickets, we should be highly gratified. Many a severe cold has been contracted at the railway-station, and at this holiday-time it is particularly annoying to be laid up just when we wish to feel our best and brightest.——The *Pictorial World* says that actually "the only manufactory of wooden skewers in the world is supposed to exist at Toledo, Ohio, whence millions of them are shipped to England. They are made by machinery from hickory blocks; between 80,000 and 90,000 are turned out every day. ——The *Engineer* is speaking of the certain advantage that would be gained if the direct access of air from within a room to an open fire were prevented. "This might be effected by interposing a plate of talc,—easily removable, and large enough to cover the whole throat, grate, and ashpit,—between the stove and the room. The air for the supply of the fire would be drawn from outside. Ventilation would be effected by a valve near the ceiling in the chimney, nearly all the advantages of an open fire would be retained, the heat would radiate freely through the talc with little loss, while the flying of dust and smoky chimneys would no longer plague us. The whole device would be perfectly simple, the talc being set in a frame which could be removed in a moment when the fire needed more fuel. These talc plates have already been tried on a moderate scale, with excellent results, in some of our public buildings. It might be worth while to try them in our dwelling-houses. Difficulties may, however, stand in the way, which are worth notice, namely, the trouble of getting talc in sufficiently large plates, and its cost. By the rearrangement of our grates, then, and the provision of suitable reflecting surfaces, it appears to be possible, without very much complication or expense, considerably to improve the modern open fire, by utilising that portion of the heat which is radiant far more effectually than it is now utilised."——The *Leisure Hour* makes some pertinent remarks on Trade Packages:—"A vast amount of labour and skill is demanded and brought into action for the sole purpose of packing up goods. Here is the carpenter and joiner, the cabinet-maker, the gilder, the paper-maker, the paper-box maker, the printer, the chromotypist, the artist and designer, the glass-blower, the glazier, the potter, the worker in metals, the paper-bag maker (and many more industries might be mentioned), all employed regularly and constantly in the sole manufacture of trade envelopes of some kind or other, and affording employment to tens of thousands of hands in different parts of the kingdom. Then look at the fact that the entire production of this large army of workers is ultimately given away, so to speak, inasmuch as no charge is made for it to the individual consumer. We do not say that the whole of it is finally wasted, because many of the more artistic articles are carefully preserved, and being well worth preserving, often form the ornaments of our drawing-room tables. In a certain case in the Courts it was once argued that the defendant must be mad because he had thrown away his physic; the judge, who did not think much of physic, dissented, but agreed upon its being stated by counsel that the man had also thrown away the bottles and gallipots. Certainly none but a madman would throw away some of the exquisite productions in that department of industry of which we have been treating. The vastness of our internal commerce is a matter hardly conceivable by the mind, but some idea of it may be gathered from the extent of the manufacture of the mere vehicles and wrappers of retail goods."——"The City Diary," which is published at the office of the *City Press*, contains complete lists of the members of the Corporation and of its officials, with the names and addresses of the City clergy and ministers of various denominations, the ward clerks, tax-collectors, parish officers, ward clubs, and other City associations, with much information respecting the livery companies, the public business of the City, and other matters in which citizens generally are interested.

Miscellanea.

Value of the Grimsby Docks.—During the sitting of the Railway Commission upon the case of the Manchester, Sheffield, and Lincolnshire Railway *v.* The Caistor Union, in which the company are appealing against the high rating of their property, some interesting facts have been brought out in the evidence in reference to the Grimsby Docks. Mr. H. D. Martin, civil engineer, stated that he had had a great deal of experience in the construction of railways, and in making a calculation of the cost of maintaining the Manchester, Sheffield, and Lincolnshire Railway, found that 5·98d. was the cost per train per mile. This included the maintenance of stations and Grimsby Docks. In his opinion the structural value of the docks was 906,000*l.*, their rateable value 45,300*l.* He valued the Royal Dock at 500,000*l.* Mr. C. Lee, architect and surveyor of forty-five years' standing, considered the structural value of the docks to be 945,000*l.*, which he afterwards reduced to 890,000*l.* Sir E. Watkin, chairman of the Manchester, Sheffield, and Lincolnshire Railway, deposed that the expenditure on the docks had been 1,250,000*l.* The working expenses, he considered, swallowed up the whole of the returns. They were intending to spend 70,000*l.* more in connecting the Old Dock with the Victoria Dock, but did intend to enlarge them further.

The New Fever Hospital, Darlington.—The Mayor (Mr. H. F. Pease) formally opened this new hospital for infectious diseases on the 17th ult. The erection was begun two years ago by the Corporation of Darlington. The cost is about 9,225*l.*, of which amount 3,000*l.* have been raised by public subscription, while other 2,400*l.* have been realised from the sale of the old Darlington Union Workhouse, thus leaving a sum of nearly 4,000*l.* to be made up by the corporation. The hospital occupies a little over two acres of land, and consists of three chief wards, capable of accommodating 44 patients, and providing each with about 144 superficial feet of area, or 2,000 cubic feet of air. The number of wards can be doubled at any future time, and in the event of an epidemic breaking out, light and temporary wards could at once be constructed by the side of the present institution. There are four separate buildings, of two stories in height, connected by a spacious corridor. The hospital is built of brick, with stone facings. The architect was Mr. G. G. Hoskins, of Darlington. The contractors were:—For bricklaying and masons' work, Messrs. M. Watson & Son; for carpenter and joiner's work, Mr. Thos. Smith; for slaters' work, Messrs. J. Atkinson & Son; and for plumbers' work, &c., Messrs. Russell & Sons.

Refreshments at Sales.—In order to propitiate buyers, vendors occasionally provide a liberal supply of "refreshments." The refreshments not unfrequently consist of drink. It would seem from the evidence given at an inquest held at Blackpool on Saturday that it is advisable some restraint should be exercised on such occasions. A sale of property took place at Great Marton, and was attended, among others, by a farmer and a labourer named Sanderson and Cartmell. Before the sale commenced, bottles of gin, rum, whisky, port, and sherry were placed upon the table, and everybody had the privilege of helping himself as often as he chose. Sanderson and Cartmell drank themselves to death. The weather was cold, and the two foolish fellows probably fancied they were keeping up the natural heat by imbibing a mixture of spirits. Whatever their motive, however, they drank till they became unconscious, and while under the influence of the liquor they died. The jury returned a verdict "That the deceased died from congestion of the brain, produced by an excessive use of ardent spirits, aggravated by exposure to cold." They also added a rider, censuring the practice of supplying an unlimited quantity of intoxicating liquors at sales of property.

The General Union of Carpenters and Joiners.—The committee of the General Union of Carpenters and Joiners of Great Britain, Ireland, and the United States have presented the forty-seventh annual report to the members. The committee state that they have now the largest number of members and the greatest amount of accumulated funds that this society has ever possessed since its first establishment as a trade union in the year 1827. Notwithstanding that 689 members had been expelled from the union, it now numbers 141 lodges, representing in the aggregate 9,701 members, against last year's total strength of 140 lodges, representing 9,295 members. The entire expenditure from all sources reached the sum of 11,507*l.* 19s. 8½d., or rather less than 1*l.* 3s. 8¾d. a head when apportioned to each member; the largest amount of this outlay was entailed in the relief of members out of employment, sick and superannuation allowance, replacing lost tools, compensation for being disabled by accidents, strikes, the allowance granted for the interment of deceased members and members' wives, together with the outlay incurred to meet the general working expenses of the Executive Council and of the different lodges. The total amount expended in strikes has been 991*l.* 1s. 5½d.

Exhibition of Wedgwood Art Pottery in Birmingham.—A fine collection of Wedgwood art pottery is now on view at No. 6, Burlington-chambers, New-street. The name of Wedgwood, as is well known, has been connected with the art of pottery for more than a century, first at Burslem, and subsequently at Etruria. The manufactory at the latter place was opened in 1769, by Josiah Wedgwood, and the same family still carry on the works, under the title of Josiah Wedgwood & Sons. The present exhibition is a collection of the modern works of ornamental pottery produced by the firm at Etruria. Messrs. Wedgwood some time ago engaged the artist Lessore, who is known in connexion with the Imperial manufactory at Sèvres, and the result is seen in this exhibition in wall-plaques, circular, square, and oval, in plates for the cabinet, jardinières, dishes, tazzi, inkstands, and services for the table. The decorations are in each case original in character, and some of the plaques are in reality exceedingly fine pictures. In addition to Lessore's works, there are some painted by W. Crane, A. Bean, Miss Thompson, and Brownswood.

The New Public Hall, Stafford.—The Estate and Public Hall Committee's report, at the meeting of the Town Council on the 21st ult., showed that the tender of Messrs. Hayes, of Newnham and Birmingham, had been reduced to 7,150*l.*, and they now recommended the council to accept such tender. The highest tender was 12,000*l.* Mr. Cox entirely disagreed with the expenditure of this money in the erection of a hall on the site adopted. On such a site they could not erect a building in any way commensurate with the requirements of the town, and it would be a continual source of expense to the borough. There would be no suitable rooms for the offices of the council, or for any public body—nothing but a large hall, with a few ante-rooms and shops. After some discussion, fourteen voted for the adoption of the report and four against it.

Industrial Dwellings in Carlisle.—On Wednesday, the 23rd ult., a meeting was held in the Town-hall, Carlisle, "for the purpose of taking steps to secure proper house accommodation for the industrial classes in this city." The meeting had been convened by the mayor in accordance with a resolution of the Industrial Dwellings Committee of the Town Council, and the attendance of gentlemen who took part in the sanitary inspection had been invited. The mayor presided. After considerable discussion the Bishop of Carlisle moved the following resolution:—"That in consideration of the great powers bestowed upon the corporation by Parliament, and the present condition of many of the houses now inhabited by the poorer classes of the population of Carlisle, this meeting urgently appeals to the corporation to put their powers in force, both as regards the demolition of dwellings unfit for human habitation and as regards the erection of dwellings more suitable," which, with the addition of the words, "and the improvement of such as admit of improvement," was carried.

The New Reredos at Trinity Church, Margate.—On Tuesday, the 22nd ult., was unveiled the new reredos at Trinity Church. It extends the width of the large east window, there being space on each side, however, for the Commandments, which are being put up. The back of the reredos is of Caen stone, inlaid with coloured alabaster. In front are four shields containing emblems of the four evangelists, Matthew, Mark, Luke, and John. The centre shield has a background of green Irish marble, overlaid with a transparent alabaster Maltese cross, jewelled round with crimson alabaster bosses. The shield is illuminated. The pinnacles of the reredos are crocketed to match the architecture of the building, especially that portion in front of the organ-gallery, and finished with finials of the same character. The reredos alone, we hear, will cost between 300*l.* and 400*l.*, and is presented by a gentleman whose name is not to be disclosed. The architect of the work is Mr. Blackburn, of London; and the statuary, Mr. Forsyth.

Landlord and Tenant Law.—The lessee of a house in London had allowed her rent to fall into arrears, and the landlord, apparently finding nothing to distrain upon, was anxious to regain possession. Very commonly a clause is inserted in leases dispensing with what is called a formal demand of rent, but in this case the expediency of having such a proviso had been overlooked. Before, therefore, an action of ejectment could be entered it was necessary that the landlord should go through the rather intricate form against which he had neglected to protect himself. The exact sum, it appears, must be demanded on the premises at a convenient time *before sunset* on the last day on which it may be paid, and if it be not then paid the landlord may recover possession. This little-known requirement of the law was in this instance solemnly acted upon, and the landlord at once obtained a verdict. "We have now," said the judge (Mr. Justice Keating), "had an opportunity of seeing how a demand of rent at common law is made. This is the first time I have ever known it proved."

Water for London.—A special meeting of the proprietors of the Chelsea Company have passed resolutions to the following effect:—That the directors be authorised to take such steps as, in their judgment, may be necessary or expedient to obtain a fresh intake, with reservoirs and other works connected therewith, and lay the necessary main pipes from the site of such proposed intake to the works at Seething Wells, with the least possible delay. That the measures taken by the directors to secure the land necessary for the construction of impounding reservoirs be approved and adopted, and that they be empowered to appropriate temporarily such part of the company's "contingency fund" as may be necessary for the purpose of such land, until Parliamentary powers can be obtained for the proposed extensions. That the directors be authorised to apply to Parliament in the ensuing session for the necessary powers. The land, comprising an area of about thirty acres, necessary for the construction of the impounding reservoirs, has been obtained near Molesey.

Fees in Stamps.—The Lords Commissioners of her Majesty's Treasury have given notice that on and after January 1st, 1875, the fees payable in the police-courts of London, Chatham, and Sheerness, shall be collected by means of stamps.

Proposed West-End Theatre for Edinburgh.—The present edifice not being sufficient for the community as now existing, a number of gentlemen have combined to promote the erection of a West-End Theatre worthy of Edinburgh in respect of its appointments, and conveniently situated for the growing population of the western and southern districts. As a first step, the vacant stance in the centre of Castle-terrace has been fixed upon as the most eligible site. The ground in question measures 300 ft. in length by 150 ft. in width, and thus affords space for a theatre capable of accommodating 3,000 persons besides other public purposes. The site is accessible to the whole West End, and is in immediate communication with Princes-street and Lothian-road, and the main routes of traffic to all parts of the city and suburbs. It is proposed to erect in connexion with the new theatre a winter-garden, which might embrace an aquarium, and might be used for horticultural and other exhibitions, as also a music-hall, available for concerts or similar entertainments.

Ecclesiastical Buildings and Restorations.—It appears from information supplied to the Bishop by the Rural Deans of the diocese of Hereford, in compliance with the address presented to her Majesty by the House of Lords, dated the 22nd of June last, that there has been expended in the diocese of Hereford, in the building and restoration of churches (at a cost exceeding 500*l.*), since the year 1840, from funds derived from all sources (public and private), the sum of 437,338*l.*, viz., the cathedral, 48,591*l.*; Archdeaconry of Hereford, 208,378*l.*; Archdeaconry of Salop, 179,610*l.*, to which latter amount has to be added the church of Snead, 759*l.*, which has been accidentally omitted, making the total as above. The probability is said to be that, by the returns from the other dioceses, the grand total will be upwards of 30,000,000*l.* as the amount expended in church building and restoration, in thirty-three years, in England and Wales.

Reconstruction of the Liverpool Landing-stage.—The reconstruction of the Liverpool Landing-stage is likely to be delayed through a dispute having occurred between the riveters, platers, and others employed on the stage and the Messrs. Brassey & Co. The cause of the dispute is the amount of work that should be executed by the workmen. The employers insist upon as much work being performed in the short days of winter as they have had done in the long summer days. A week in summer means fifty-four hours, while a week in winter amounts to only forty-two hours and a half; therefore the men desire that the amount of work should be reduced in proportion to the hours. To this the employers object. Some of the men have left, and the struggle is likely to be a protracted one.

Works Prevented by the Metropolitan Board of Works.—The following applications were last week refused:—That of Messrs. Bateman & Corser, for the consent of the Board to the construction, &c., of a footbridge over the public thoroughfare known as Whetstone-park, Lincoln's-inn-fields, to connect the fifth or upper floor of the Inns of Court Hotel with a building opposite; that of Messrs. H. M. & W. Grellier, for approval by the Board of an advanced line of frontage for a warehouse to be erected at the corner of Harad's-place, Wellclose-square; and that of Mr. J. Wood, for the consent of the Board to the formation of a paved street, 20 ft. wide, to lead out of Back-lane, Brixton, and for the widening of that lane in connexion therewith.

Reorganisation of the India Museum and Library.—This is being vigorously proceeded with. The museum has hitherto occupied but a limited space in the India House. The valuable collections, so long hidden away in obscurity, are now being moved to the galleries at South Kensington. These galleries have been temporarily leased, in order that the curiosities may be brought into systematic arrangement before they are placed in the site selected for their reception in the new Museum and Institute in Charles-street, Whitehall. The new building will be in the shape of an irregular quadrangle, and will include a lecture-hall.

Old Masters at the Royal Academy.—The private view will take place on this, Saturday, and the Exhibition, which includes works of deceased British Artists, will be open to the public on Monday.

Election of Surveyor for Hythe.—Mr. Lancefield, assistant-surveyor under his brother, the town surveyor of Winchester, attended the sanitary authority, and answered questions put to him. Mr. Hogben, of Deal, also attended. After the two candidates had retired, the election of Mr. Lancefield was carried unanimously. He was then called in and informed of the fact. Mr. Hogben was also informed of the result, and the mayor highly complimented him on his testimonials, telling him the council thought very highly of his qualifications, and had they contemplated carrying out any large building work they would very probably have selected him in preference to Mr. Lancefield.

Patent Stone Working and Tunnelling Machinery Company.—We see by an announcement in our advertising columns that the works and business of this company are to be sold. We have ourselves inspected the patent machinery the company was originally formed to work and reported upon it, and the works at Nine Elms must be known to many of our readers. Owing to exceptional circumstances, which we are told can be satisfactorily explained, a liquidation has been found necessary; but we should be very sorry to see prematurely closed a concern like this, which seems to meet a want, and ought in the right hands to prove a success.

Working Men's College, Blackfriars-road.—The eighth year of the college begins on Monday, when all the classes and night schools will re-open. There are new classes in drawing, mathematics, history, English literature, and physical science. The night schools meet every Monday, Wednesday, and Friday; the drawing classes every Tuesday and Thursday under Mr. Miller; the French and German classes every Thursday under Mr. Oswald. A series of very elementary lessons in physical science will be given, with experimental illustrations, on Thursday evenings, by Mr. Rossiter, the secretary of the college, from whom any desired information can be had.

The Cupola of St. Peter's.—The *Diritto* says the Pope has taken up a project which he formed many years ago of placing twelve statues round the cupola of St. Peter's, in accordance with the idea of Michelangelo. Twelve sculptors are to be charged each with the execution of a statue, but they are not to be chosen by public competition; nor will any artist be eligible for the work who was not domiciled in Rome prior to 1870, or who has manifested any opposition to the cause of Holy Church.

Exhibition of Appliances for the Economy of Labour, 1875.—The Council of the Society for the Promotion of Scientific Industry, the head-quarters of which are at Manchester, has decided to give gold, silver, and bronze medals for excellence and novelty in the various classes of exhibits at the Exhibition of Implements, Machines, and Appliances for the Economising of Labour, which is to take place in Manchester in 1875. The arrangements for the Exhibition are progressing satisfactorily, and space has been secured by many high-class engineering and other firms.

Metropolitan Fire Prevention.—At the meeting of the Metropolitan Board of Works on the 23rd ult., in the course of a discussion upon the report of the Fire Brigade Committee, it was recommended that there should be a main water-pipe in every street, with high pressure, and that the firemen should have means of turning the water on independently of the officials of the water companies. A suggestion was also made that the fire-escapes should not be kept locked up during the day.

Not Too Soon.—The Society of Apothecaries contemplates the institution of an examination in the science of public health. Opportunity will thus be afforded to medical practitioners seeking local appointments as officers of health of producing to electing sanitary officers' authorities evidence more valid than that of so-called testimonials of their fitness to hold such offices. The society is to be praised for being the first of the medical corporations to move in this useful manner.

Narrow Escape of a Royal Villa.—The King of Italy's villa Malatesta, just outside the Porta Pia, Rome, was nearly being destroyed by fire a few days ago. A spark fell by some means unknown upon the carpet of an unoccupied room, and after smouldering, probably for a time, broke into a flame, and the furniture was soon attacked.

Fencing Stoke Newington Green. — A letter was read at the meeting of the Metropolitan Board of Works, last week, from the Islington vestry accepting the conditions on which the Board were prepared to contribute one-half of the purchase-money for the rights of the lord of the manor in Stoke Newington Green, and a cheque for the amount was ordered to be drawn, and the Parks and Open Spaces Committee instructed to commence the work of fencing.

Fall of a Roof at Sunderland.—On Tuesday, the 22nd ult., the roof of a house in Zion-street, Hendon, Sunderland, fell into the kitchen cutting off the escape of Mr. and Mrs. Dobson, the occupiers, who were in a bedroom that had been added to the main building. The upper portion of the house had been untenable for some time, through a defective roof. The unfortunate occupants were rescued from their uncomfortable position by their neighbours, who cleared the *débris* away.

New Club for Stockton.—Mr. T. Devereux, of Stockton, is building a club to cost 2,000*l*. Within the building, room will be provided for six billiard-tables, and there will be general club accommodation such as has been long required in Stockton. There will also be reading, dining, and retiring rooms. Messrs. Moses & Weatherill are the architects. The contract has been let to Mr. Smirke, of Norton, for 1,463*l*. The site of the building is in the yard of the White Hart Hotel.

Liverpool Water Supply.—Messrs. Hawksley and Bateman have reported on the proposed new water supply for Liverpool. Mr. Hawksley recommends the valley of the River Wyre, near Bleasdale, as the best source of supply; while Mr. Bateman advises the corporation to go to the Lake of Ulleswater and Haweswater, in which latter project he thinks that Liverpool and Manchester might combine for the procuring of a practically unlimited supply of good water for both towns.

School Competition, Wallingford. — Mr. S. R. Stevenson, of Nottingham, is the successful competitor for designs for the Grammar Schools at Wallingford, Berks. Three sets were selected by the governors of the school out of twenty-three which were sent in for competition, many of which were from London firms. The governors, however, decided to submit the choice to Mr. Hawkins, the consulting architect of the Education Department, who gave the award to Mr. Stevenson.

The Labour Laws.—The *Liverpool Albion*, in view of the approaching Trade-Union Congress, to be held in Liverpool, offers two prizes, one of 15*l*. and the other of 5*l*., for the two best essays on Trade-Unionism and the Labour Laws of this Country, including the Master and Servant Act, the Criminal Law Amendment (Violence, Threats, &c.) Act, the Friendly Societies Act, and other measures affecting the relations of employers and workmen.

Bridge Surveyor for the North Riding.—We understand that the candidates for this office were ninety in number. The committee appointed to examine the testimonials selected several of these to meet them a few days ago, and they recommend the following four gentlemen, from whom a selection shall be made by the Court of Quarter Sessions, viz., Mr. Walker Stead, Mr. John Blount, Mr. C. E. Dawson, and Mr. John Keith.

Fire at St. Stephen's Church, Hull.—Shortly after one o'clock on Monday, smoke was observed issuing from the tower of St. Stephen's Church. On the Rev. J. Deck going to the place he found that a chimney was on fire in the bell-chamber, where some workmen had been at work hanging the bells. With their assistance the fire was speedily extinguished, no material damage having been done.

Additional Prison Cells required for Birmingham.—At a meeting of the Birmingham town council, on the 22nd ult., on the recommendation of the Estates and Buildings Committee, it was resolved to enter into a contract with the county justices for the renting of twenty-five additional cells in the county gaol.

Improvements at St. Michael's Mount.—The improvements here are being carried out under the direction of Mr. Piers St. Aubyn, for Sir John St. Aubyn, M.P. These are now fully started, and the first section will be completed about the middle of 1876, at a cost of several thousand pounds.

A New Bridge over the River Hull.—A costly bridge, erected by the Hull Board of Health, and connecting the east and west parts of the town at a point considerably north of the present north and south bridges, is completed, and the mayor (Alderman Wells) will probably open it on Saturday, January 9th.

The Main Drainage of Dublin. — The Dublin corporation has resolved to ask the Government for a loan of half a million, to carry out main drainage works, the loan to be repaid out of the contributions by Government to local taxation.

Kelvin Grove Museum, Glasgow.—The foundation-stone of an important addition to this museum was laid on Saturday, the 19th ult., by Lord Provost Bain, in presence of the magistrates and council and a number of subscribers.

Destruction of a Church by Fire.—Bramham Church, near Leeds, has been partially destroyed by a fire, caused by the heating apparatus. The lower end was totally destroyed, and the bells fell during the conflagration.

The Mansion House. — The loggias and vestibule of the Mansion House have just been newly decorated by Messrs. Gillow & Co., under the direction of the City architect.

The Memorial Church, Cawnpore.—The windows of this church are now being made by Messrs. Cox & Sons, of Southampton-street, Strand.

TENDERS

For additional wing to Elm Lodge, Buckingham, Shoreham. Mr. Arthur Loader, architect:—

Berstow (accepted)	£326	0	0

For additions to the printing-offices *Brighton Daily News*, North-street, Brighton. Mr. Arthur Loader, architect:—

Parsons	£243	0	0
Newnham	237	0	0
Patching & Webber	223	0	0
Bruton	190	0	0

For further extension of Messrs. Spalding & Co.'s paper-mills, Farningham-road, Kent. Messrs. Spalding & Knight, architects:—

Downs & Co. (accepted).

For additional block of warehouses, Great Guildford-street, Southwark, for Mr. J. Kitchin. Mr. A. Fraser, architect:—

Downs & Co. (accepted).

For building tower to church at Farnham Royal, Bucks:—

Macey	£2,150	0	0
Bell & Son	2,030	0	0
Dove, Brothers	2,000	0	0
Sabey & Son	1,974	0	0
High	1,714	0	0

For party-wall to back premises, 66 and 67, Houndsditch. Mr. Wm. C. Banks, architect:—

Larke	£198	0	0
Merritt & Ashby	195	10	0
Staines & Son (accepted)	157	0	0

For the erection of a new building on the site of Nos. 91 and 92, Great Russell-street, and No. 1, Charlotte-street, Bloomsbury, for Mr. H. D. Clark. Mr. John Wimble, architect. Quantities supplied:—

				Additional Stairs and W.Cs.		
Browne & Robinson	£6,089	0	0	£170	0	0
Kilby	5,919	0	0	134	0	0
Brass	5,847	0	0	105	0	0
Newman & Mann	5,702	0	0	156	0	0
Falkner	5,612	0	0	125	0	0
Croaker	5,523	0	0	150	0	0
Scrivener & White	5,499	0	0	154	0	0
Lawrence	5,382	0	0	136	0	0

For five villas at Willesden:—

Vears & Co.	£4,090	0	0
Pink	3,575	0	0
Guest	3,805	0	0
Hook & Oldey	3,310	6	0

TO CORRESPONDENTS.

Contributions (unavoidably postponed):—Dr. L. M.—J. G. & Son.—C. S.—R. W.—Observer.—F. P.—J. M. G.—S. L.—R. P. S.—J. S.—Thomason College.—C. L. E.—S. & S.—W.—W. C. B.—Bronze (a plan should be obtained from a competent person at starting. Look through the book published by the Society for Improving the Condition of the Working Classes, Exeter Hall.—Inhabitant, &c. (*in type*). N. W. (*in type*).

We are compelled to decline printing cut books and giving address.

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Whitland Abbey Green Slates.—These Quarries are now fully opened out, and are producing Slates in all sizes, and in any quantity: sound, and of choice green tint.—For samples and further particulars, apply to the MANAGER, at the Quarries, Narberth-road, R.S.O. [ADVT.]

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VOL. XXXIII.—No. 1666.



The Flaxman Gallery in Gower Street.

IT is now a good while since a collection of models or casts of some of the finest works of John Flaxman, as well as a numerous array of pen and pencil sketches and miniature models, were presented by his adopted daughter, Miss Denman, to the trustees of University College, Gower-street, and provided with house-room in that cold, but nevertheless handsome edifice. The shrine of art thus created attracted a good many pilgrims at first, but has been deserted of late, and we have reason to think its existence is little known among the younger generation of enthusiasts. The collection has been commented on in these pages before now, but a few words by way of a "meditation" among these relics of a lofty mind may not be out of place, at a juncture when many are deploring the low state of the sculptor's art among us, and the unfortunately debased nature of public taste in regard thereto.

The larger casts of the collection are arranged in panels on four sides of the octagon-hall, forming the upper landing of the main staircase, and surmounted by the cupola, which forms the centre of the external design. Within this chamber may be studied and compared at leisure designs which, in their final form in marble, are only to be found in various somewhat out-of-the-way places, some of the best of them having been commissioned as family monuments for erection in places of worship:—Chichester Cathedral possesses two or three, and others are in parish churches and private collections. Conspicuous as the centre object is a full-size cast of the grand group of "Michael and Satan," executed for Lord Egremont. Few modern designs are better known than this; yet it is one which will always bear looking at once more, and which serves, moreover, to point a moral in regard to the class of subjects to be chosen for sculptural illustration. We hear much talk from popular critics about choosing subjects which appeal to the understanding and feelings of the people, and illustrate something with which the everyday mind is familiar. But, in spite of modern contempt for the allegorical, few persons would have the temerity to uphold that there could be any question as to the value and impressiveness of such a group as this over any number of "Reading Girls" or "Breton Peasants."

It is, however, rather to some of the bas-relief groups on the side-walls, less known or remembered at the present moment, that the notice of the appreciative visitor would be directed. A large proportion of these are, it may be observed, directly and pronouncedly Christian in subject and character, and in the purity and nobility of their artistic treatment serve to show how narrow and one-sided was the idea practically adopted by Gibson, that, because the Greeks were the great perfectors of sculpture, therefore none but Greek subjects could furnish adequate occasion for the highest expression of the art. In fact, Flaxman occupies, in regard to this question, a middle place between the classicists and the realists, but combining the best elements of both. He shows us how it is possible to retain the simplicity and grandeur of line of the Greeks, while adding to this æsthetic beauty the depth of sentiment and the attribute best expressed by the word "holiness," which is found only in Christian art; how it is possible again, to represent scenes of ordinary domestic joy or sorrow, without forgetting the dignity of sculpture, or thinking it necessary to cut brocades or chair-backs out of the marble. Among the designs which illustrate Flaxman's noble treatment of the loftiest and most intense moments of religious aspiration, are to be seen here some of the series of the "Lord's Prayer," which it is superfluous to mention to any of the minority to whom such works are an unforgotten treasure, but which, nevertheless, we know are passed over and unknown by many who ought to be acquainted with them. Among these are to be noted the powerfully-conceived group, illustrating the words "Deliver us from evil," with the central muscular figure in high relief, and in an agony of struggle against the lower influences, which would draw it down; and the simply composed subject, "Lead us not into temptation," in which the motive and feeling of the petition are so admirably typified in the combined movement of all the lines of the group from the tempter and towards the direction indicated by the pointing finger of the directing figure. This art of giving to a whole group a combined sway and impulse was peculiarly cultivated by Flaxman, and numerous examples of it are to be found among his illustrations to Homer and Dante. One of the finest among the "Lord's Prayer" designs is that in which a grand female figure in the midst of a group, in high relief, typifies the words, "Thy Kingdom come"; and it may be noted here how Flaxman could discard mere beauty and delicacy of line in the female figure, when he wished through it to express the higher attributes of power, hope, or energy. On the same wall is an example of Flaxman's power of simple pathos in the representation of the every-day sorrows of humanity, in the group of the dying mother, supported by her elder daughter from behind, while the younger kneels with one hand thrown over the recumbent figure, and the other shading her face: a beautiful combination of natural grace and pathos of expression.

The then new relations of England with India have their record in some of the most interesting of Flaxman's bas-reliefs. That of "Sir William Jones preparing his Digest of the Hindu and Mahomedan Legal Codes," prosaic as it may sound for an art-subject, became in the sculptor's hands a most effective group, owing to the contrast of national feeling and character exhibited in the handsome alert European countenance, and the dreamy thoughtful expression of the three Orientals opposite, who are assisting him in his task, and whose very attitudes are full of significance and character. But a still more striking work of this class is the group of two figures in relief called a "Hindu and a Mussulman contrasted," and which, in addition to its fine character of modelling, is interesting, as showing Flaxman's power of grasping and concentrating, in single figures, the typical characteristics arising from differences of race and of creed. Here the follower of Mahomet, full-robed, long-bearded, stands poring devoutly over the volume which contains the precepts of the founder of his religion; while the Hindu, a noble figure, naked to the waist, where his drapery is gathered and descends in bold folds to his feet, stands with head upraised and a bold speculative expression, with a half-glance of scorn at his devout neighbour's deference to precept and authority. This is a remarkable group, in view of the amount of thought and of human character (in the wider sense) concentrated in these two figures. Two compositions having more direct reference to real life are, that called "Maternal Affection,"—a very graceful group, in which the elder sister holds up the infant to the mother, who slightly stoops to kiss it,—and one under the title of "Clerical Instruction"; the last an unfortunate subject for the sculptor, in regard to costume. Yet he has made a very pleasing figure of the venerable clergyman in his robes,—a figure recalling a type of clerical character now all but extinct,—and has touched the group of children, in their quaint prim dresses, with that loving hand which he, in common with all artists of the highest type, always brought to the delineation of the innocence and *naïveté* of child-life. As a contrast to these lower flights of the artist may be noticed an exquisite design representing "the good received into everlasting bliss," a buoyant undulating figure, apparently just about to soar upward from the earth into a more congenial and celestial atmosphere, and in which the poetry of the art is carried to its highest point.

The sketches of Flaxman which were included in this bequest are arranged in a frame ingeniously contrived so as to present, by turning its various portions, the greatest amount of surface for affixing the drawings within a small compass. The different faces are distinguished by letters of the English and Greek alphabet, and the collection includes some careful studies for larger and well-known works, but is chiefly a collection of small and rather slight sketches of groups of figures in various actions and attitudes: nearly all interesting; some of them of great beauty. The artist's own portrait, as a boy, occupies appropriately the centre of the first screen. In the series of small figure-sketches on Screens C and D, we are irresistibly reminded of Blake, whose sketches in this form are often so grandly and poetically suggestive; more so, perhaps, than his finished figures, often marred as they were by carelessness in regard to correctness of detail. But in these smaller works the two artists often resemble each other exceedingly; and some key is thus furnished to the basis of the intimate and loving friendship between two men, who to outsiders would seem so utterly diverse, as the quiet, gentle, propriety-loving Flaxman, and the fiery eccentric author of the "Illustrations to the Book of Job," who was prepared to sweep away all the proprieties with a besom of destruction. On Screen E are some powerful sketches for illustrations to the Commandments, especially "Thou shalt not steal," and "Thou shalt do no murder," in each of which the motive is the same,—an attack by a powerful and muscular naked figure, who in turn is arrested by an angel, sword in hand. The centre of Screen L is occupied by a very pathetic group, in which a child is raised to kiss a dying person, who is supported in a sitting posture. The sketch on Screen Q, under the title, "Instruct the Ignorant" (a favourite subject with Flaxman), illustrates his exquisite feeling in delineating the nature of children: the little learner is shown with head nestled back against the shoulder of the teacher, in whose arms he is sitting, looking at the book held before him with a childish intensity and earnestness of attitude which is as true as it is difficult to realise in representation. Fine studies are to be found further on, for the series entitled "Acts of Mercy," and for illustrations to the second part of the "Pilgrim's Progress," among which Christian's "two ill-favoured ones" are depicted in a characteristic manner. In the centre of Screen X is a beautiful sketch of a nude female figure fronting the spectator, but with head averted, looking back,

and with a child clinging to one hand: slight as this is, nothing could be more perfect than the sway and balance of the figure, and the ease and grace of its action.

The staircase leading to the gallery exhibits subjects, mostly in low relief, in panels on the walls, some of them fine enough in form and feeling to make a reputation in themselves; notably a draped female figure to the right at the top of the first flight of stairs. These single figures, with no name or title attached to them, affect the mind like some beautiful fragment of poetry, suggesting ideas and fancies to which no more definite form can be given. Mulgrave Watson's statue of Flaxman, seated, which faces the top of the staircase, is in a bad light, and the shadows under the brows especially is exaggerated thereby; but as a specimen of a portrait statue this is no commonplace work. By selecting the sitting posture the artist has avoided the disadvantage of figure in his original, and by the disposition of the drapery, and emphasising the fine proportions and characteristic contour of the forehead, has brought the likeness of the great sculptor as nearly into keeping with the dignified and noble character of his surrounding productions as was possible. The contrast between the feeble and almost insignificant frame of the artist, and the character of the works which he produced, is remarkable even in an age when we have ceased to reverence outward physical development as in any way connected necessarily with mental grasp; and it is not surprising that the contrast should have so struck the nobleman for whom the great group of "Michael and Satan" was executed, as to lead him to record his feelings in the inscription placed on the pedestal, and which may not be sufficiently within the memory of all our readers to render its repetition here superfluous, highly honourable as it is both to its author and its subject:—

"This group was executed by John Flaxman, R.A.P.S., a man who presented the most striking example of the pre-eminence of the mental over the corporeal faculties of human nature, in the union of the most tender frame with the strongest energy of character, with the most exalted sentiments of honour, with a heart actuated by universal benevolence, and with a sublimity of genius of which this work remains a splendid monument, hardly surpassed by the most celebrated productions of ancient times, and certainly by none of his own."

What is known and recorded of the sculptor's character justifies such a eulogy as this; what he has left in evidence of his power as an artist is still more indubitable, though it is of that class of excellence which does not appeal to the popular mind, and which is too far above all "shibboleths" of art to obtain favour with some even of professed artists, in these days of cliques and affected preferences for some peculiar mannerism of feeling or of execution. And, therefore, it seemed not quite superfluous again to say a word, as a kind of reminder, in regard to a collection of his designs which has a little dropped out of recollection, and which is far beyond anything that is either done or thought of in sculpture at the present time. The collection is professedly only open to the public on Saturdays during the period of recess at the University, though we believe few at present are aware of, or avail themselves of this opportunity of visiting a collection far better worth attention than most contemporary exhibitions. We imagine there is, however, no difficulty in obtaining access to it at other convenient times, on proper application.

The College contains, as some of our readers may remember, another object of artistic interest in the *Marmor Homericum*, a fine specimen of decorative design in inlaid marble by the late Baron Triqueti, presented to the College by Mr. Grote, and representing a group of personages from Homer, with mythological heads in medallions, &c. This was intended as a specimen of an indestructible wall-decoration of the same nature as mosaic, but allowing of being seen nearer the eye, as the outlines are clean lines, and not formed of cubes as in mosaic work. We recall attention to it in order to suggest further consideration of its applicability in the decoration of important buildings, both externally and internally. The process does not give either the richness of surface texture or the gradation of colour attainable by the process of mosaic; it has more of the character of permanent fresco, in fact; but it is certainly worth consideration, especially as a means of decoration in buildings partaking of a Classic character, and where purity of line and delicacy of tint are desired in the decorations. The matter should hardly be allowed to drop without some decisive experiment.

GREAT GRIMSBY AND ITS SANITARY SHORTCOMINGS.

THIS ancient corporate and Parliamentary borough, situate on the Lincolnshire shore of the Humber, is fast developing into a town of some commercial importance. In the old days now long past, when our English history was but beginning, tradition gave it a name derived from one Gryme, a Danish pirate, who flourished in the seventh century, and made this his headquarters and rendezvous. The hero of Lucknow and Cawnpore is said to have descended from Havloc, a prince of Denmark, who was abducted from his home by the bold outlaw, and resided here. The name is found in various periods of successive reigns, and in the seventeenth century George Havelock was an opulent merchant and mayor of Grimsby. This was a seaport of note from the times probably of the Saxon heptarchy if not indeed anterior to it, as the seven tumuli in adjacent marshes testify. It was here that the Danes effected a landing on their first invasion of England. In the troublous reigns of Richard I. and King John it attracted legislative notice and a royal visit, and returned two members to the Parliament of 1283, by whom Grimsby as a thriving port was represented. In later times it was visited by royal families, notably by bluff Henry VIII. and his consort, Catherine Howard. The trading pursuits of the maritime inhabitants with the northern countries and neighbouring shores of the Netherlands seems to have been large during several centuries; whilst at the siege of Calais the port supplied Edward III. with eleven ships and 170 men. Grimsby in former periods possessed several religious houses and many monuments. The Black Canons had a monastery at Wellow, whose abbey had attained to wealth and interest, for, at the date of surrender to Henry VIII. by the abbot, Robert Whitgift, the revenues amounted to 152*l.* 7*s.* 4*d.*; when the lands passed from that anti-monastic monarch by grant to Sir Thomas Heneage, a progenitor of the present patron of St. James's, the parish church, and local landowner. Besides the abbey were two priories, a nunnery, a chantry, and a house for Hospitallers.

Some of the monumental remains are now in the church,—notably, an effigy of a knight in armour, recumbent,—Sir Thomas Haslerton. The date of the founding of St. James's Church is lost in the mists of antiquity, but is presumed to be earlier than Henry I.; it was formerly an Abbey Church.

It is an imposing structure, cruciform in plan. Over the transept rises a square massive tower, resting on four piers, 90 ft. high, and erected in 1365, according to an inscription in the chancel. In the neighbourhood are some Druidical remains and places of ancient defence.

From towards the close of the sixteenth century the port of Grimsby gradually dwindled in importance and prosperity, in consequence of the silting up of its haven, until nothing was left of the former greatness but relics. Indeed, according to that painstaking historian, Gervase Holles, the merchants and tradesmen, artizans and members of the Corporation abandoned the town, which became so depopulated that "one solitary coal-sloop was sufficient to supply the town," and he further proposed to "leave it venerable for antiquity, and write over the gate, *Fuit Ilium*." But not so, for after generations of dormancy, Grimsby has arisen, Phœnix-like, from its ruins, and may be yet greater than ever.

In common with a few other commercial towns, Grimsby has made great strides, attained rapid growth, and approximately doubled its population in the past decade. The era of prosperity, however, dates backward a few years from the time of improvement of the haven and the construction of docks, especially the magnificent new works designed by that eminent engineer the late James M. Rendel, and executed for the Manchester, Sheffield, and Lincolnshire Railway Company, to whom Grimsby as a seaport owes her modern importance. These works were almost entirely created upon ground reclaimed from the estuary of the Humber by means of a cofferdam and embankment a mile and a quarter long, enclosing 135 acres of land. The water area is large: the Royal Dock covers 25 acres; the tidal basin, 15 acres, with fishing and timber docks; besides the Old Dock, with which a gut is now being cut to connect them. Perhaps the most prominent features in this undertaking are the hydraulic tower, a structure 28 ft. square at the base and 300 ft. high, forming a beacon far out into the German Ocean, and from which splendid views of objects are obtained many miles distant. This furnishes the water-power to work the requisite machinery of the docks and wharfs at a pressure of 100 lb. per square inch. The next are the lock-gates: the flood-gates in the 70-ft. lock, made of oak chiefly from the Black Forest, in Germany, weigh 110 tons apiece, and are marvels of workmanship.

Some knowledge of the trade of the port may be gathered when it is understood that the value of exports alone is estimated at upwards of twenty millions sterling for the current year, the exports twenty years ago being a little over one million, and ten years since six millions sterling in value. Four hundred smacks for deep-sea fishing are owned by the townsmen, and worked by 3,000 men and boys; whilst many crews belonging to other towns discharge cargoes here. The value of fish landed may be taken at three quarters of a million sterling at least, and the weight at upwards of 40,000 tons.

Having—however slightly—touched upon the ancient and modern history of Grimsby, it is now our duty, not wholly a pleasant one, to refer to some investigations made on the spot with a view to determine whether the onward march of the town had kept pace with sanitary progress. Nevertheless, we take it that such impressions as it may be necessary to state will be accepted by those whom it may concern in the spirit they are given. Geologically it may be said that the town lies upon the chalk formation; the superimposed strata however consisting of esturian deposits of silt, gravel, clay, and sands with bands of turf or peaty matter. The locality is for the greater part flat; much of it lying originally below the level of high water. The streets are seemingly elevated very little above the sea line. Subsoil water—judging from some wells examined, and from other indications observed—is generally within a few feet of the ground surface. The town is drained by a series of sewers divided into five districts terminating in open watercourses flowing into the Humber; so that here as in too many towns the pernicious habit is followed of turning pure streams of fresh water into vile open sewers. The bulk of the sewage is intercepted by the Weelsby and Clee drain, an open course which skirts the south and east sides of the town, passing between streets of houses, and for a considerable distance often within a few yards of the buildings. The lower end of this drain or quasi-sewer is covered, and provided with a sluice so that the dammed up sewage may be let off into the tidal haven at stated times. The effect of the decomposing matter given off in the line of houses, and particularly at the outfall, where the fluid has to find its way for a third of a mile into the sea past shipyards, workshops, and other places of business,—and to the people resident on Lockhill, the lower end of Victoria-street, the Cleethorpes-road, with subsidiary streets,—must be most injurious to those who breathe it.

We found in many parts strong effluvia arising from this open ditch and the Haven, partly due to the stagnation of sewage, but mainly to the action of the sun and heat upon matter left adhering to the banks by fluctuations caused by the sluice and natural variation of rainfall. This is a serious thing, and should receive prompt remedy; for, as the town increases in size, so does the nuisance; whilst the engineering difficulties in the way of a proper system of drainage are not insuperable, and ought not to stand against public health and convenience. Again, the condition of many branch drains is not satisfactory,—indeed, less so, in newer parts of the town than in older. From the level character of the locality, not much fall can be obtained in the drainage scheme; hence graver necessity for impervious sewers and provision for flushing arrangements at their heads. Further, the state in which numerous box-closets and ashpits were found suggests more frequent visits from the scavenger and dust carts; for the accumulation of night-soil and garbage in the midst of a population, and the saturation of the subsoil of yards and outbuildings by percolations from them, are attended with well-known evils.

Grimsby is blessed with an abundant and pure supply of drinking-water, of which approximately one-half the inhabitants avail themselves. About a mile and a half to the south-west of the town, near to the village of Little Coates, are a number of springs of cool and pure water, of which there are many such in Lincolnshire, and called in the local vernacular "blow-wells." These are holes in the ground, of conical section, penetrating through the superstrata of clay into

the chalk beneath, from which the water is forced, bubbling up in constant streams of many thousand gallons per day. From the storage reservoirs the water is pumped by an engine of adequate power into the town, under the constant system, at a pressure of 25 lb. The other half of the townspeople derive the domestic water-supply from wells sunk in the yards and courts into the gravel or chalk, and in positions convenient for access from the dwellings. Unfortunately this facility of approach, in numerous instances, has placed the wells in juxta-position with the back drains, and, we fear, at times in actual communication with, by percolation and subsidence of, sewage. This was more especially found to be so in the modern town, on the east of the railway to the docks. Reference to notes of streets in these parts, made some time ago, reveals a truly deplorable state. In New Market-street we examined a row of ten houses, occupied by artizans and labouring and seafaring classes, all of which were furnished with water from a well in the rear, strongly contaminated with organic matter, and possessing a soapsuddy appearance, with the following result:—

1. Four cases of low fever.
2. Two cases of contagious disease.
3. Occasional diarrhœa amongst the children.
4. Tenants were absent.
5. Four inmates, three of whom were confined to the house with diarrhœa.
6. Two inmates, — complain of frequent diarrhœa.
7. Eight in family,—all of whom suffer from diarrhœa at times, some severely.
8. Seven occupants,—all have suffered from prevailing attack.
9. Six inhabitants,—one laid up with diarrhœa. The people here complain bitterly of the filthy water from the well.
10. Nine persons,—two suffering from infectious disease, and two laid up with diarrhœa.

In an adjoining row of ten houses, the people were actually suffering from disease in eight at the time of visiting, chiefly from diarrhœa. Inspections of dwellings in adjacent streets revealed, in house after house, a similar state of things,—disease the rule, and health the exception,—from bad water drunk, and foul emanations emitted from sewers breathed. Pumps were found giving out water contaminated with sewage, and containing living organisms, in courts of older districts of the town, such as King Edward-street and Burgess-street, with their offshoots; but not in such numbers as in other places, yet bad enough, in all conscience. It was pleasant to find in these back parts a few oases here and there where green plants grow, with good water supply, clean gutters and pavements, and free from disease.

The streets of a busy seaport, where the transactions consist largely in coal and fish, would not be expected to present a model appearance of cleanliness; yet there are grave reasons why the scavenging powers of the Local Board should be more stringently enforced. The bye streets and lanes, the waste grounds and building plots possess in many parts a combination of unsavoury odours. Moreover, a stale fish-like smell pervades the town; garbage and fish offal lie about in heaps; hollows are filled up with refuse from piggeries and general sweepings, in a short time to be built upon: particularly in the new portions of the borough and upon the Dock estate are these evils found. Notably, in a street (for which we could discover no name) on the east side of the new basin, and leading to the pontoon, garbage is redundant. At one end of this road is a sheet of water—a receptacle for fish offal and the drainings of necessaries and warehouses, all presenting a sad spectacle and unhappy contrast.

The town from its easy communication with the Continent, and the numbers of German and other emigrants passing through it, will always be subject to disease of epidemic kinds imported; whilst its unsanitary condition and consequent low tone of health of much of the population, make it a hot-bed for the propagation of zymotic complaints far and wide. Putting aside acts of humanity, and a first law of nature, that health is of primary consequence to man,—purely as a speculative concern, as an affair of financial policy, the inhabitants of Grimsby would be immensely gainers by a thorough sanitary reform, to be obtained at an expenditure of a few thousands; and a proper and judicious system of inspection, coupled with administration of sound bye-laws, by competent officers. Reference to the autumn returns of the Registrar shows that more than 50 per cent. of the deaths were preventible, and less than 4 per cent. were from decay of nature. For many years past, and without any signs of abatement, the town has suffered severely from recurrent attacks of diseases, which stout effort should be made to stamp out. Closely on the heels of cholera follow typhoid, smallpox, and scarlatina: each year brings forth its harvest of untimely deaths, whilst fever and diarrhœa are permanent. So let Grimsby awake! and tear away the scales from her vision, and with new broom sweep the cobwebs from her midst, where the germs of preventible diseases lurk, find nourishment, and grow.

THE ARCHITECTURAL PROFESSION.*

MR. FERGUSSON, in his able and interesting history of architecture, expresses the opinion that the system of architecture for the last three centuries has been false, and that the works produced have been mere copies and shams, void of interest, and valueless, as compared with the products of the true styles which, till the Reformation, had prevailed in every country. "The great change which was introduced at the Reformation," he says, "was this. A Technic art came to be cultivated on principles which belong only to one of the Phonetic class"; that is to say, architecture which is only the useful art of building elevated to a *fine* art, as "cooking may be refined into gastronomy and tailoring into an important art without a name," came to be treated as if it were like poetry, painting, or sculpture, one of the phonetic arts, "merely different modes in which men's thoughts can be communicated to other men, or perpetuated for the use of posterity." In the technic or useful arts, those, for instance, connected with food, clothing, or shelter, progress has been slow and gradual. Each worker is heir of an accumulated experience, and so any mechanic can now make a better steam-engine than Watt: "as in India, at this hour, local masons, who can neither read, write, nor draw, can design as beautiful buildings as ever graced that land." But in the phonetic arts,—poetry, painting, sculpture,—"the individual stamps the value." "We do not now find men writing better epics than Homer, or better dramas than Shakspeare. We do not see finer sculptures than those of Phidias, or more beautiful paintings than those of Raffaelle." "No one dreams," therefore, "of altering a poem or of improving a statue or picture, though they may be the production of inferior artists. But in the Middle Ages no one ever hesitated to rebuild the nave of a cathedral, or to add towers or chapels in the newest fashions to the oldest churches," just as "no Comptroller of the Navy ever hesitated to cut one of Sir W. Symonds's ships in two, if by lengthening her he could improve her qualities." "No one has cared to record the names of the designers of the Mediæval cathedrals; probably nobody knew who the architects were. The art was a true art; it was more difficult to do wrong then than to do right now. No genius, however great, could then enable an individual, to get much ahead of his compeers, while the most ordinary ability enabled any one to do as well as the rest." But "the individual is now everything in architectural art, while the age is of as little importance as in a poem or a picture." And so "it would be considered sacrilege to meddle with or attempt to improve St. Paul's Cathedral out of respect for Wren (I only wish it were so considered), and Blenheim must remain the most uncomfortable of palaces, because it was so left by Vanbrugh." "The new system subjects art to the caprices and vagaries of individuals." "What a man learns in his lifetime dies with him;" "his successor has to begin at the beginning;" "their careers probably cross each other." "An architect in practice can never afford many hours to the artistic elaboration of his design," and hence "the remarkably small amount of thought that a modern building ever displays. The evil has been aggravated in modern times by architecture being handed over too exclusively to professional men who live by it, and generally succeed more from their business-like habits than their artistic powers." In conclusion, Mr. Fergusson says that, "without a reorganisation of the whole system, we must be content to allow copying to the fullest extent, and must be satisfied with shams, either classical or mediæval, until at least the public are better instructed, and demand or initiate a recurrence to the principles that guided the architects of these ages when true and real buildings were produced.

I do not think it a straining of Mr. Fergusson's opinions to say that his view is that, under the present system in which architects direct the construction of buildings, by means of drawings, good architecture cannot be produced, and that we should return to the system of the "true styles" when there were no architects in the modern sense, but the employer communicated directly with the workman who executed the work; in other words, that architects should be dispensed with. The opinions of Mr. Fergusson have been restated in three articles in the *Quarterly Review*, entitled "The State of English Architecture" (April, 1872); "The Completion of St. Paul's" (December, 1872); and the "Hope of English Architecture" (December, 1874). In these articles in which the writer argues that in Greece, Rome, and Mediæval England (which last with more patriotism than accuracy, he says, was "for six centuries the finest scene of architectural display that the world ever saw"), as well as the Continent, architecture was produced, not by architects directing workmen by means of drawings, but by men who, while working with their own hands, had a charge of their fellows as foremen or master-workmen. He quotes numerous cases in proof of this from Mr. Street's book on Spanish Architecture, in a tone which seems to imply that he convicts Mr. Street of inconsistency in relating them and yet continuing to practise as an architect on the system now prevalent. His latest article concludes as follows:—"Such was the master workman of the past, whose free imaginative power has ever been the life of art; and in like manner the emancipated workman, gloriously 'impelled,' must always be, and is, the only real hope of English architecture." He expresses his hostility to architects unrestrainedly. "These eminent persons," he says, "have been the bane of art for the last 300 years." Again, he calls them, "A spurious, we had almost said a quack profession"; and again, he says, "There will then be no need of the 'profession,' and architects will subside into their proper places as bookmakers, artists, business men, students of symbolism and archæology, and, in fact, pupils and illustrators of those very workmen whom they now profess to direct and to control." The reiterated publication of such opinions on high authority is a challenge to architects to show reason for their existence, for Mr. Fergusson is without an equal, in his peculiar province, as a writer on the various architectural styles. If these opinions be well founded let us as architects, by all means, perform with what dignity remains to us, the happy despatch; and withdrawing from the practice of an art whose true progress we are arresting, give place to our worthier successors, the builder and the British workman. But before doing so, we may be permitted to examine the justice of our sentence.

The opinions above recited assert or imply not only that in the best times of the art architecture was produced without architects, but that this is the only right way of producing it. If they have any practical meaning, and are to influence the conduct of any one in the present day who is thinking of building, they amount to an advice to him not to go to an architect for his plans, but to work them out himself with some intelligent foreman or builder. That we as architects should oppose this new teaching is to be expected, and I think is right; but there is a risk that our opposition may not make so much impression as we could wish on the public, for they may think it the same in kind as that against Paul's preaching at Ephesus, which those who made silver shrines for the great goddess Diana united to stir up (though doubtless each had his grudge against another at losing jobs which the other had got) because their craft was in danger. I do not think there is much danger of the suppression of the architectural profession. It will, at least, die hard. The public certainly cannot do without us if they want something better in art and building arrangements than the builders unaided have been giving them in those miles of houses growing up like mushrooms in all our towns. We might admit as true all that Mr. Fergusson and the reviewer say as to the difference of the modes in which architectural works were produced in former times and now; we might admit the reality of Mr. Fergusson's distinction of architectural styles into false and true, though not, perhaps, approving of his nomenclature; we

* By Mr. John J. Stevenson. Read at the Institute of British Architects, January 4th, as elsewhere mentioned.

might even admit a just dissatisfaction on the part of the public with the results of our late efforts in architecture (and we were told on good authority at our last meeting, that the public are not satisfied with us); and yet be under no constraint to acquiesce in the conclusion that architects should be abolished, and that it is to the working men we should turn our eyes for light and guidance.

Mr. Fergusson's condemnation of us is that since the Reformation architecture has been conducted on a false method; that whereas it is a "technic" art, it has been treated as if it were a "phonetic" art, like sculpture or poetry; and that instead of developing by a natural process of evolution, it has been under the control of individuals. I do not think the terms "technic" and "phonetic" are happy. To say "*technic* art" seems tautological; "phonetic," implying sound or speech, does not properly describe painting or sculpture. This is, perhaps, of little importance, but the distinction itself has no existence in reality. The arts which Mr. Fergusson calls "phonetic" do not arise out of the gift of speech, as Mr. Fergusson asserts, but are rather substitutes for speech. He seems to have classified the arts as technic and phonetic, putting aside the familar distinction of the arts as useful and fine, in order to avoid classing architecture as a fine art with painting and poetry. But in truth the distinction among these arts does not lie in the subject matter of the art, but in the *manner* of treatment. Any useful art may become a fine art by having added to it the element of *fineness*—of beauty of colour or form, or of expression, that is, any element making it the vehicle of human feeling or emotion, such as tenderness, gladness, solemnity, or even, perhaps, mere refinement and perfection in work. "Every useful art," Mr. Fergusson says, "is capable of being refined into a *fine* art." Architecture is not only a fine art, but it is included in Mr. Fergusson's definition of the "phonetic" arts, being one of the noblest and most lasting modes by which men's thoughts can be communicated to other men, or perpetuated for the use of posterity.

Now, one of the results of an art developing into a fine art is, that the art expressing the personal emotions and feelings of the artist, we come to have an interest in his personality. We resent the alteration and interference of others, as destroying the value of the work,—the art becomes individual. This, at least, is the case in our present state of society and civilisation. But in certain states of society we find arts flourishing in what we may call a traditional manner. Their origin is lost in the past. They are handed down from father to son. They are understood by the whole community, and seem the expression of the national character. Their progress is slow and gradual, and we can measure it only by comparing the productions of the art at long intervals of time. This is what Mr. Fergusson means by a "true" style of architecture. But he is in error in saying that architecture in being so practised differs from poetry and other arts, for in these arts, in primitive states of society, we find the same state of things,—we cannot recognise the individual inventor in poetry and sculpture, any more than in architecture. They are lost in the community, or in a school of poets or sculptors handing down a tradition. In them, as in architecture, the age seems everything, the individual little or nothing. Mr. Fergusson ranks Homer with Shakspeare, as both equally historical personages. But few now hold that the poems of Homer are the work of any one man. They and other early Greek poems come to us as the collected traditions of the schools of professional singers and rhapsodists, who recited them at the public festivals. In the early history of every race literature and all the arts exhibit the same characteristic. The folk's lore and national tales, characteristic of the genius of each people, even when traceable to some far back source common to them with other races, the national proverbs are all authorised, so far as we know, and with as much truth as a style of architecture or ornament might be said to be the result of slow accretions of tradition. But no one would think of calling only such national poetry and literature true, and that by poets whose names we know false, or of lamenting that under our modern system literature had lost its ethnological value. All other arts were conducted on the same principles in these early stages of society.

The art of sculpture was practised in the same anonymous traditional manner; a useful art to begin with, to supply idols for worship, of the rudest and most practical kind, as we see from those lately found at Hissarlik (claimed as the site of Troy) the growing refinement of the Greek race, which tingled with art to the finger-tips, in time made these statues of the gods the highest expression of art which the world has seen. Early Greek coins show a slowly developing tradition. The later coins of Syracuse are signed by their sculptors. In the art of music it is the same; each nation has its national airs, breathing the spirit and sentiment of the race handed down by tradition, and doubtless changing and growing as each musician passed them on. But since the time of Palestrina, composers, like architects, have asserted their individuality, and the history of music, like that of architecture, as Mr. Fergusson complains, has become an account of the lives of inventors. And in other than the fine arts the same thing is seen. Any ship-carpenter used to be able to build a ship about as well as any other; but now we hear of individual inventors, and though this takes from us the safety of slow progress, and renders us liable to a fiasco like the *Great Eastern*, no one thinks of urging that the designing of ships should be relegated again to the hands of working carpenters. And in like manner the so-called phonetic art of painting has passed through a stage similar to that of the "true" styles of architecture—the state in which it was in Italy when Cimabue gave it life, in which it still exists, in the supply of pictures for Greek churches,—a fine art in a sense, not without a sort of beauty, under its conditions,—a tradition transmitted by common workmen, gradually advancing, or at least changing with the advancement or decline of the race.

Now let us consider the state of society in which the arts are traditional. It is a state of stagnation. There is a stock of ideas, very small, common to all the tribe; every man thinks exactly like his neighbour, and as his fathers did before him. All wisdom comes from their ancestors, and the old men, as nearest that source, are the sole repositories of truth. New ideas are regarded as blasphemy, and if they spring up are crushed out by the common sense of the people. The thoughts and ways of other nations are regarded with hatred as things the earth should be purged of; or, if with tolerance, as strange and inconceivable. The customs are often circumscribed in the narrowest districts: each village has its own peculiar dress, each district its own type of building.

The length of the period during which a nation may remain in such a state is absolutely indefinite. Many savage tribes appear never to have changed since the stone age. The East is still much as it was in the time of Moses, and from its daily life supplies illustrations of Biblical customs. The breaking up of such a state of things is always an epoch in a nation's history, and fills it with the gladness of new birth. The change may come to only one part of their life, or the whole social arrangements may be broken up. It came to the Florentines, in the art of painting, when Cimabue painted for the first time a Madonna with some touch of human feeling,—when he made the art phonetic, as Mr. Fergusson would say; and however feeble the flicker of life may seem in the picture, as it hangs gaunt on the wall in Santa Maria Novella, to us who know what the life grew to of which it was the germ, it filled the people with such joy that they carried it with shouting and triumph through the streets; and to this day the suburb through which it passed is called the Borgo Leto.

In our own day a new birth has come to the Japanese, affecting not their art only, but all their social state and customs. Their art, which to us was a new sensation, to them seems now crude and barbarous. They are delighted with the new idea of perspective and distance. They feel proud of marching in the ranks of European civilisation, and glory in black trousers and tail coats, as the outward and sensible sign of their new inward life. One who was present in Japan during the change told me that though the command of the Mikado, believed to be divine, was needed to start the nation on its new road, it would be powerless now to arrest it. The same sort of thing is happening everywhere. There will soon be no good to be got out of travel, for every place is getting like another. The beautiful national costumes af Norway are disappearing. In this country all these old ways are dying out. The Great Exhibition of 1851, as has been not untruly said, destroyed the last remnants of art in England. The old traditional arts are perishing everywhere. New Turkey carpets are harsh and bad in colour. We only know what the colour of them once was when we see an old one in some country-house where the furniture has been unchanged for a century. Every year, in India, carpets with the exquisite old colour have to be sought for farther up the country. I fear if Mr. Fergusson went back to India now, he might not find his village mason building the traditional tombs. In Persia the art has perished by the destruction of the old weavers in the famine, and the country has gone in for European ways. All over the East the art which has lived there since the days when the mother of Sisera looked for her son returning from battle with "a prey of divers colours of needlework," is perishing before our eyes. This age of steam and universal intercommunication is witnessing the destruction everywhere of arts which have their roots in the earliest traditions of the race. Their continued transmission depended on a stagnant social condition in the people, and when that is broken up they perish with it. It is sad, but it is inevitable; for the taste for individual freedom is like the tiger's taste for blood—once a man has known it, he can never again be a mere transmitter of tradition. And this is the age in which Mr. Fergusson tells us to return in architecture to those old ways which he says we gave up three centuries ago. He might as well tell the dead to rise. His book, "A History of Architecture of all Countries from the Earliest Times to the Present Day," is of itself proof that we have emerged from the state which conceives its traditional ways the only possible ones—that we can appreciate new and foreign ideas which, if they seem better to us, we are sure to follow under the guidance of their originators, and not of common workmen who do not understand them.

We see therefore that there is no ground, in fact, for Mr. Fergusson's division of arts into phonetic and technic, the first produced by individuals whose names we know; the latter anonymous, transmitted by tradition, and, therefore he thinks, advancing by the slow improvements of ordinary and unknown men; that, on the contrary, anonymity and transmission by tradition has been at certain times a condition of all other arts as well as of architecture.*

"THE HOPE OF ENGLISH ARCHITECTURE."

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary general meeting of the members was held last Monday evening, the 4th instant, under the presidency of Sir Gilbert Scott, R.A.

The secretary (Mr. Eastlake) announced with regret the death of Mr. Richard Bell, of Walbrook.

Mr. Haywood said that he was sorry to inform the meeting that he also had just heard of the decease of one of their oldest members; in point of fact, the father of the Institute of Architects,—Mr. William Kendall.

The ballot for Mr. John G. Hall, as associate, was postponed till the next meeting in consequence of some informality with regard to this gentleman's nomination.

The Secretary informed the members that Mr. John Gibson, vice-president, had presented to the Institute a pedestal for Sir Charles Barry's bust. (The pedestal is of handsome construction, and composed of red granite and marble).

Thanks to Mr. Gibson were given by acclamation.

Several gentlemen were then introduced to the President, amongst them being Mr. J. T. Wood, who is shortly to read a paper "On the Temple of Diana at Ephesus."

Mr. J. J. Stevenson then read a paper entitled "Master Workmen and Architects," part of which we print.

At the conclusion, the discussion of Mr. White's paper, which was adjourned from the last meeting, was resumed.

Mr. Haywood said that the title of the article Number 3, referred to in Mr. White's paper, was, he thought, a misnomer, the name having been given to it probably by an architect who had retired. First of all, the article began with amateurs in art and architecture generally, and described the chief evils which had occurred in the erection of buildings; and at the end it was equally strong, quoting from Göthe on the subject. In the middle it referred to the memory of Brunel,

* To be continued.

treating of the difficulty they had with the *Great Eastern* steamship, because some time elapsed before they got the noble vessel into the river. Then the article referred to Bond-street tradesmen carrying out their work. It referred, also, to modern education generally, and as to how the Universities were carried on, and how little satisfactory they had usually been; and, upon the whole, the article really took a general review of the present condition of the trades, and the ordinary system of working in society. There was no doubt but that the credit of the work that was done in the present day was given to parties who did not originally design the work; and a great deal of the profits of trade and business was obtained by the use of the brains of other people. Workmen in various stages, whose names did not occur, or did not appear, were subject to this; and more particularly was this the case in the trade of jewelry, or in designing in gold and silver work. Certainly in the Renaissance time the names of the jewellers were very well known, and they traded in their names; but in the present day this was not the case. When the reviewer came to speak of the condition of the working men of the present day, he did not state that they were in the condition assigned to them. The "Hope of English Architecture" was said to be in the working man; but there was no question how he must be improved. He must first of all be recognised; and the first thing proposed was to bring him out of his present position. He was now an "alien and an outcast" in "society," they were told; but what "society" would they like to put the working man in? When one came to read that statement, it did seem folly, mixed up with common sense. Mr. Haywood went on to say that he could not help thinking that the paragraph about that building—Portcullis Hall—must have been inserted in some odd way by a friend of the reviewer's. He thought that nothing was worse for the working men themselves, or any class of men, than to be petted and patted on the back as working men had been lately. From what he knew personally—and he appealed to Sir Gibert Scott, who had seen a great number of works executed of a high artistic character—he was sure that the ordinary general working man was always ready to learn and to study, and to see his faults whenever any one chose to point them out to him fairly. He thought, perhaps, that some gentlemen might question whether the museum at Tufton-street,—which he only wished was here at Conduit-street,—had produced any advantage or any good; and he should be glad of some practical statement to the effect whether or not the working man had taken advantage of it. With regard particularly to the view of English architecture they took professionally, it seemed to him that one of the greatest hopes of the profession was that of being thoroughly abused. The time was,—when the profession was hardly in existence, and there were few who took notice of them,—when they were supposed to be patronised; now, the architectural profession was established in every town of England, and whatever it did in the way of good, it did also a deal of bad, and on that account it received a great deal of abuse from parties of every class, and particularly from the largest and most important newspaper in the world, the *Times*. Only the other day, the *Times* took an extraordinary opportunity of abusing them with regard to industrial dwellings, that paper actually setting upon the architectural profession the burden of the fact, in so many words, that the population of London was not properly housed. If an important newspaper like that was supposed to speak the sentiments of the British public in issuing such a statement as that, surely it showed them that there was a great quantity of ignorance displayed as to their profession. What they wanted, and what was their hope, was, that one of these days such an amount of ignorance would be overcome, and that their employers, the public generally, would become more acquainted with architecture and its details than they were now. At the opening meeting of last session, 1873-74, they had a remarkable speech from the Marquis of Wesminster, who had stated that he believed that they wanted the study of architecture and art to form a part of the education in public schools, and generally amongst his (the Marquis's) class of society. In conclusion, Mr. Haywood said, that he felt very strongly that one of the greatest hopes of English architecture was, that the public would be better educated in the principles of architecture, and would be better able to appreciate their efforts.

Mr. Blashill referred to a copy of an inscription, which was exhibited on the walls, taken from a church in France, which stated that Guillaume le Telier, a master mason, was employed on the building for thirty years, and was referred to in French books as the architect of the church. He had been very much astonished when Mr. White, in the course of his paper, instanced a workman employed by Solomon in the building of the Temple as the architect of Solomon's Temple. Surely the reviewer never could have read the sacred writings properly, for there the statement is clear as anything could be, that Hiram was no more than a workman. King David not only left the money, but the drawings of the building, and Solomon only carried them out. It really was of importance that they should take some pains to know who were the designers of building, and who were the architects. It was only a few weeks since that a paper on Chaucer was written, in which Chaucer was set down as an honour to their profession; but there was no writing, to which they had access in which they found that Chaucer had anything to do with architecture. Some time in his life he was called "Clerk of the King's Works," but during the best years of his life he was employed as a receiver of taxes, and was compelled to be engaged in the duties of that office every day. Immediately he was employed as "Clerk of the Works" he appointed a deputy, and everything was done by that deputy, so that they could not infer from that that he had anything to do with architecture.

Mr. Aitchison thought that the articles in the *Quarterly* appeared to resemble what used to be called a simple converting of terms, as "Every goose was a bird," so the converse of the proposition was "Every bird was a goose." Because some architect was originally a workman, so every workman must be an architect. He was afraid that the reviewer, who really wished well to the profession, had, to use a common expression, "hit the wrong nail on the head." He had felt that there was something wrong about the profession, and he (the speaker) felt so too. They had heard a great deal said about the working man, and Mr. Aitchison had a great liking for working men, for they were the whole of mankind; but the working men, when they spoke of them generally, were those who did mechanical operations. The working man took a considerable interest in his work, he was fond of taking a holiday, and had an Englishman's liking for a good deal of beer; beyond that there was no difference between the working man and anybody else. As to their Trade Unions, they were almost the only things they could belong to; but architects belonged to a Trade Union themselves; and he had heard, too, that some architect of considerable eminence was absolutely "rattened" here. True it was that it was only cutting off a supply of bad coffee and worse talk. The architects of the present day were like a great French nobleman, who, it was stated, "died last night, and did not wish it to be known." They had a good deal of talent and energy amongst them, but it was turned in the wrong direction. They were a good deal like those people who supplied the costumes of old fancy balls in Wych-street, where they got everything, but no one seemed to think that it was necessary to get a man "dressed up" in his own time. There were distinguished architects among them, but they did not appear to get the very best or the largest number of intellects amongst them. In Mediæval times there arose a great demand for architects, and a man might build a cathedral without being thrown in a dungeon or burnt alive, so that they could not be surprised at so many people turning their attention in those days to architecture. The subject, however, he was asked to speak upon was the "Hope of English Architecture"; but he really hardly knew what to say upon it. He hoped there were new materials coming into use, and that as iron was a new material, they might get some of their younger friends to turn their attention to it; and if he might give them advice, he hoped what the poet had said would apply,—

"Like Robin Redbreasts, all their thoughts were fixed on a rail."

Mr. Woodthorpe confessed that he was not a great admirer of the working man, and his experience of him was very great in connexion with the Chartist movement. With regard to the articles in question, there was nothing to prove that the statements contained in them were true. He earnestly pleaded for a college or school of art, so that they might assume a position to the public, in order that they might not be condemned, as they were daily, at the present time.

Mr. White then gave, by the aid of the black board, an illustration of what he believed to have been the manner in which works were carried out in the Middle Ages, about the fifteenth century.

Sir Gilbert Scott said that he believed, as chairman, he ought to add something with regard to the subject, which was really extremely interesting and important, but so perplexing that he did not feel that he could give any opinion upon it. He confessed that he did not know what the hope of English architecture was. He was, perhaps, not a very proper person to speak on those papers, for, in the early ones, he was especially singled out for abuse. He had found out one thing that the reviewer did not like, but particularly hated, and that was the beautiful work that constituted the altar-screen in Westminster Abbey, because he thought that he (Sir Gilbert) designed it; but it happened to be designed in the time of Henry VI. He thought that there could be no doubt in any one's mind, when they looked back at the form of architecture which the whole world pronounced to be wonderful, by what manner of men this style was originated and carried into execution. The writer of these reviews had done something in directing their attention to the difference between those men and the architects of the present day. The president thought that he had exaggerated the difference greatly. The writer had referred to some points of difference which were genuine, and when they came to speak of the difference of the present day it was extremely important to them; and the writer had traced out the real truth and the points of difference. In his (Sir Gilbert's) first inaugural address, the year before last, he said the following, which he trusted the meeting would excuse him for quoting:—

"The first question which suggests itself is, *do all*,—does each in his chosen camp, and each according to his abilities and opportunities,—strive to the utmost to do his work *well*, and to fit himself for doing it in a manner characteristic of a period of earnest onward striving?

Now, one of the most marked characteristics of the productions of the great periods of architecture is this, that, though the works *of* any one of them differ in artistic merit,—some displaying the highest genius, others only comparatively unassuming correctness and propriety,—yet no *really bad* architecture is ever to be found among them. From the most majestic and glorious building downward, to the least pretending, the same matured knowledge, and the same careful, thoughtful working, are found ever to prevail. Who ever heard of a work of the Greeks at the great period of their art which they would presume to call *bad* architecture? Even in Byzantine art, though it laboured under great disadvantages, we have proofs in the ruined cities discovered in Syria, that these buildings of the more vernacular classes were as carefully studied as the mighty works by which their architecture is better known; while in works of the twelfth and thirteenth centuries in our own and neighbouring lands, as well as in Italy, the same masterly skill, and the same studious handling, are found in the simple village church as in the noblest cathedral,—nay, one is often disposed to uncover oneself in humbled reverence before the work of some unheard-of mason or carpenter in an obscure village, of which we had never before so much as heard the name; nor did these old workmen, so unambitious of fame,—ever produce work to the like of which the best or the most self-satisfied among ourselves need be ashamed to attach his name.

Now, is such the case among ourselves? It is worse than idle to attempt to blind our eyes by bland felicitations or to seek the bliss of a fool's Paradise;—let us rather look facts boldly in the face, and if they prove unpalatable, let us make it our business to correct them.

The true answer to the question is, that no contrast could be more marked than the difference in this respect, between the present state of things amongst ourselves, and that which prevailed at the great eras alluded to. Instead of all works (each in its own style) displaying the same instinctive sentiment, the same understanding of its style of art,—the same careful, wise, and thoughtful handling,—*the very reverse* of all this is actually the case. From each of our art-camps productions are put forth of the highest and of the most contemptible character, as well as of every intervening stage of merit and demerit. Our age and country will hand down some works of which no age or country need be ashamed, and others at which any age or country, however degraded its art, ought to blush: while I fear a large number of the buildings which will represent our period will be of that negative kind which, being neither hot nor cold, but only lukewarm, will not tend to excite any but a sickly emotion."

This, he believed, was a thoroughly true description of the architecture of the present day. There were some of the very best and some of the very worst that any age could produce. The points of difference which had been drawn by the reviewer proved very distinctly that there was no very great distinction between the architect and the workman in those days; they were all people who had a tendency to architecture. There was now an immense multitude who had no ability whatever. If, in former days, a man could do nothing but cut stones, he had to continue in that labour; but in these days he would turn architect. These were the men who brought disgrace upon the architecture of the present day;—they were the destroyers of architecture

and the disgrace of the age. He did not know how in the world this case was to be met; he had thought of it a great deal. They must band themselves together so that they would never receive a pupil unless he passed a qualified examination. As it was, five pupils sent to architects out of six were worth nothing in the world; and they stood as good a chance of getting on as anyone else, as Sir Edmund Beckett had told them. He thought, Sir Gilbert Scott went on to say, that the reviewer had exaggerated the difference of social station between the workman and the architect. The different classes of society were very much marked out, as in these days. There was this little difference between their sketching and that of the present day. In former days they sketched the same things as architects did now,—the very identical things,—so that now they were very old. This showed how infinitely they admired the very things that were admired now. With regard to the question of vernacular architecture, they should each do the best they could, according to the ability God had given them; and he would wish architects to improve as much as they could. The men who had zeal, energy, and ability were not apprenticed to masons, as in the olden time, but to architects. There were, however, exceptions among carvers, ornamental metal-workers, and decorators; and among these, as among architects, there were bad hands; but there were, however, thoroughly good artistic men in this class. These men they should encourage in their efforts; they had no pretension to make themselves architects, but to make themselves perfect in their profession, and it was the duty of the architect to assist them. He thought that they would make better architects, as well as better practical men, during the period of their architectural training, if they were to put their pupils among the works for a year or so.

Mr. White, in replying, said:—I attempted to refute the reviewer on historical grounds only, for it is generally admitted that in his "Hope of English Architecture" he is impracticable in theory, and theoretically wrong in the argument with which he supports it. Had he confined himself to the substance of his first article, called "The State of English Architecture," I should have hesitated to reply to his strictures. There must have been truth in that article, for in newspaper literature only the truth stings, and I am confirmed in this opinion by the knowledge that many architectural assistants,—associates of the Institute—who have done and are still doing good service to their masters, believe much of that article to be true. Now, I also have been an assistant, both in France and England, and lately in Calcutta, and I am convinced that, in many instances, the actual system of practice does not conduce to artistic excellence, nor is it fair to the junior and subordinate members of the profession. Though I believe that the hope of architecture depends more upon the public and upon amateurs than ourselves, still a great deal of good might be effected if, say forty members of the Institute, would zealously combine to introduce a practical reform. Suppose that ten of the younger Fellows—men like myself, for instance—and thirty of the elder Associates—men like Mr. Spiers, for instance—were to compose a Reform League, and that, having discussed the ways and means of action, we were to petition the president and council to appoint a Board of Examiners for the special purpose of examining us forty in the theory and practice of the building art? Such a Board might consist of the president, as chairman, and six of the English recipients of the Queen's medal, to be chosen by ballot of the Council. The names of the happy "forty," who I am confident would successfully undergo the ordeal, might be posted upon the walls of this room, and advertised for six days in six of the public journals. A certificate might be accorded to them; but no fresh letters or title would be necessary, because there would always be a sufficient tacit distinction between those who had submitted to an examination and those who had not; at the same time the elder Fellows might be declared exempt from the test. When the public came to understand this movement, and the rest of the profession to see the utility of it, it might be possible to compel future applicants for admission to our ranks to pass an examination, and then the present titles of Fellow and Associate would possess almost the force of a "degree." I hold in my hand a letter from Mr. Roger Smith, and he says:—"If you bring forward your proposal that a certain number of Fellows and Associates should ask the Council to examine them, you are quite at liberty to add that I am perfectly willing to join in making such an application, and to present myself to undergo any examination which it is fair to expect a man to pass who parted from his school-books twenty-five years ago, but who professes to be a competent architect." Let me add, that from this moment I am prepared to devote myself seriously to the task of organising the movement I propose; and that I will write a form of petition for the approval of members willing to assist me.

Mr. Stevenson thought that there would be a danger in making examinations a fixed rule. There was no doubt that where art was in a transitional state, where people were only doing what had been done before, and what had been approved by the verdict of many generations, there would appear difficulties. In music and other arts, bad works perished; but, unfortunately this was not the case in architecture.

Mr. Phené Spiers said that what Mr. White had proposed with regard to examinations was already in existence, and the best way would be, he thought, to endeavour to develop the old arrangement; for it had now been in working order for twelve years, and had done good work, and, if properly acted upon, would be one of the greatest benefits to the Institute.

THE IMPROVED INDUSTRIAL DWELLINGS COMPETITION.

THE names of the following competitors, in addition to those of the premiated designers already published, have been forwarded to us:—

1. "Fiat" (Mr. G. A. Lean, 21, Oxford-road, Ealing). Design provides 264 dwellings, and 15 shops, with 60 rooms attached, giving a total of 1,046 rooms.

3. Withdrawn from exhibition.

4. "Comfort" (Messrs. Drury & Mortimer, Palfrey Chambers, Lincoln). Design provides 189 dwellings, and 18 shops with 22 rooms and cellars, giving a total of 791 rooms.

5. "Work Hard for a Laudable Object" (Mr. Henry Ambrose, 4, Grove-place, Brompton). Design provides 126 dwellings, and 30 shops with 30 rooms and cellars, giving a total of 642 rooms.

6. "Domus Amica, Domus Optima" (Messrs. Lee Bros. & Pain, Whitehall-place). Design provides 233 dwellings, with 21 shops and 117 rooms attached, giving a total of 955 rooms.

7. "Hygiene"—commended by Referees (Mr. Henry D. Sheppard, 34, Tavistock-square). Design provides 160 dwellings and 8 shops, with 32 rooms attached, giving a total of 666 rooms.

8. "Aspiro" (Mr. George Ransome, 8, Queen's-square, Westminster). Design provides 184 dwellings, and 12 shops with 32 rooms attached, giving a total of 752 rooms.

9. "250"—commended by Directors (Mr. James T. Smith, 14, Christchurch Villas, Upper Tooting). Design provides 230 dwellings, or a total of 912 rooms. Also, 14 shops with rooms in basement.

10. "Omne Tulit qui miscuit utile dulce" (Messrs. Francis T. Dollman & William T. Allen, Adelphi Chambers, London). Design provides 170 dwellings, and 14 shops with 46 rooms attached, giving a total of 732 rooms.

11. "Palmam qui meruit ferat" (Mr. William Nicol, 148, Church-road, Islington). Design provides 281 dwellings, or 1,024 rooms. Also, 13 shops with rooms.

12. "Usui Civium"—commended by Referees (Messrs. R. J. Pope & Son, Guildhall Chambers, Bristol). Design provides 182 dwellings, and 14 shops with 50 rooms attached, giving a total of 807 rooms.

13. "Ex sorde dare munditiem" (Messrs. Hornblower & Son, Liverpool). Design provides 248 dwellings, and 16 shops with 48 rooms and cellars, giving a total of 1,097 rooms.

14. "Efficiency with Economy." Design provides for 236 dwellings, and 17 shops with 42 rooms attached, giving a total of 983 rooms.

15. "An Bon Droit" (Messrs. Habershon & Pite, 38, Bloomsbury-square, W.C.) Design provides 243 dwellings, with 18 shops, and 84 rooms attached, giving a total of 982 rooms.

16. "Deus Nobis" (Mr. Charles W. Harvey, Painsley House, Rusholme, Manchester). Design provides 198 dwellings, and 12 shops, with 60 rooms attached, giving a total of 864 rooms.

17. "Beta" (Mr. John Harris, 8, Gloucester-road, Camberwell). Design provides 157 dwellings, and 13 shops, with 32 rooms, giving a total of 661 rooms.

18. "Strive," commended by referees (Mr. Robert Walker, 10, King's Arms-yard, E.C.) Design provides 244 dwellings, and 24 shops, with 96 rooms attached, giving a total of 1,038 rooms.

20. "Vi et Virtute" (Mr. C. J. Wahab, 77, George-street, Edinburgh). This design not having been received in time was placed out of the competition.

SIR,—Referring to the notice you have given relative to the awards that have been made with respect to the designs sent in to the above company for competition, we think it right to inform you that the authorship of the one which has gained the second premium is claimed by our client Mr. Francis Butler.

We have written Mr. Bannister Fletcher, whose name appears as the author, to admit the claim of our client, and have given him until to-morrow (Tuesday) to do so, and, should he fail, a Bill in Chancery will at once be filed to restrain that gentleman from appropriating to his own use the work of a brother artist.

We are, Sir, &c.,
SINGLETON & TATTERSHALL.

9, *Great James-street, Jan. 4*, 1875.

THE NEW INFIRMARY AT LAMBETH.

THE erection of the new infirmary at Lambeth has formed the subject of discussion at a special meeting of the guardians, which has been held this week, in order that Mr. F. Fowler, the architect of the proposed building, might be present to explain the circumstances under which his estimate of the cost of the building was now 50,000*l.*, whereas the original estimate was only about 20,000*l.* The question was discussed at considerable length at the ordinary meeting of the guardians last week. Mr. Shaen strongly objected to the erection of such a large and expensive building, contending that infirmary buildings erected according to the plans originally submitted by Mr. Fowler would be sufficient for all the requirements of the parish. It was ultimately agreed to call a special meeting of the guardians for Monday last to confer with the architect. The meeting was held accordingly, and finally the guardians unanimously resolved to proceed with the erection of the new infirmary according to the plans and designs last submitted by the architect, at a cost of 50,000*l.*

THE FOOTPATHS IN THE STREETS OF LAMBETH.

IN consequence of a proposal having been made to introduce tar or asphalte paving for the footpaths in Lambeth instead of gravel, a return of the gravelled footpaths was recently moved for by a member of the Vestry. This return has just been furnished, from which it appears that the gravelled footpaths in the streets and roads in Lambeth, dedicated to the parish, contain an aggregate length of 40 miles, and that there are eighty-six streets and roads in which the footpaths are so gravelled. The streets and roads in question are chiefly situated in what are called the outer wards of the parish, viz., Norwood, Vauxhall, Stockwell, and Brixton, and the present rateable value of the property in such streets is 136,559*l.* It further appears, from the return, that to substitute tar-paving for gravel would cost the parish 34,000*l.*; and asphalte, 62,000*l.* and that to lay 2½ in. York flagging would involve an outlay of 100,000*l.* The question as to which of the above-named descriptions of paving is in future to be adopted as regards the footpaths in the parish, will shortly be considered by the vestry.

FIRES.

Destruction of Sawmills at Southampton.—Early on the 29th ult., a fire broke out in the sawmills of Messrs. Driver, Southampton, utterly destroying the works and ten houses in their vicinity.

A Manufactory at Manchester on Fire.—A fire occurred on the 29th ult., at the smallwar manufactory of Messrs. Wood & Westhead Manchester, a large part of which was destroyed On the arrival of the firemen, the western end of the building, a block twenty-five windows long and ten wide, was found to be in flames which became a wreck. A large stock was also consumed. The origin of the fire is unknown.

Bequests to the Royal Academy.—The death of Lady Chantrey, which took place on 3rd inst., in Brook-street, brings great gifts to the Royal Academy. Also, properly looked at great responsibilities.

WALWORTH COMMON SCHOOLS.

THESE schools, which were opened early in the spring, have been erected on a plot of ground that formed a portion of the Walworth-common Estate in Westmoreland-road, which runs into the Walworth-road near the spot where the old Camberwell turnpike gate formerly stood.

As the site is a large one it was determined to build the infants' school one story high, and thus keep it distinct from the rest of the building. This block is divided into two departments. Attached to each are a babies' room, a class-room for the elder infants, and a cloak-room and a lavatory. A large play-shed is common to both departments. The two general infants' schoolrooms are each 25 ft. wide, 41 ft. long, and 22 ft. high to the collar of the roof, where it is ceiled. Windows are placed on all sides, the larger ones divided by stone mullions are fitted with Burt & Pott's iron casements, the lower and upper portions being made to open; the other windows throughout the buildings have sashes double hung with transom-heads, above which are sashes hung on hinges at the lower edges to open as hoppers so as to ventilate the upper parts of the rooms.

Each room has a ventilating opening in the centre of the ceiling leading into the space between it and the slating. Communication is made with the outer air through openings in the gables, covered with perforated zinc. Captain Douglas Galton's stoves are used throughout; these admit warm fresh air at a level of about 7 ft. from the floor.

The boys' and girls' schools are two stories high. The boys' schoolroom is on the ground-floor; at either end are two double class-rooms, separated by sliding partitions, so that practically four class-rooms are available at one time. The girls' schoolroom on the first floor is similarly arranged.

The ground-floor rooms are paved with wooden block paving. The walls of all the rooms have Portland cement dados, finished with a moulded red-brick string-course, about 4 ft. from the floor.

Three rooms, for a care-taker, are situated on the third floor, over the girls' staircase and lavatory.

In the graded school-rooms the windows at the backs of the desks extend to within about 4 ft. 6 in. of the floor, and have a northern aspect. The windows facing the desks are higher up, leaving a large wall-surface below, for diagrams, &c. The upper panels of all the internal doors are glazed, so as to secure thorough supervision.

The seats, which, for the graded schools, are in pairs, are for 1,000 children, namely, 280 boys, 280 girls, and 440 infants; but, allowing 9 ft. superficial of floor-space for each boy and girl, and allowing 8 ft. superficial for each infant, there is sufficient area for accommodating 1,060 children.

The area of the site is about three-quarters of an acre. The buildings occupy about 1,100 yards, leaving about 2,700 yards for the play-grounds, which are covered with Wright's tar paving. As the buildings are only of one and two stories high, and are on the north side, the playgrounds are airy and sunny to an extent rarely practicable in London.

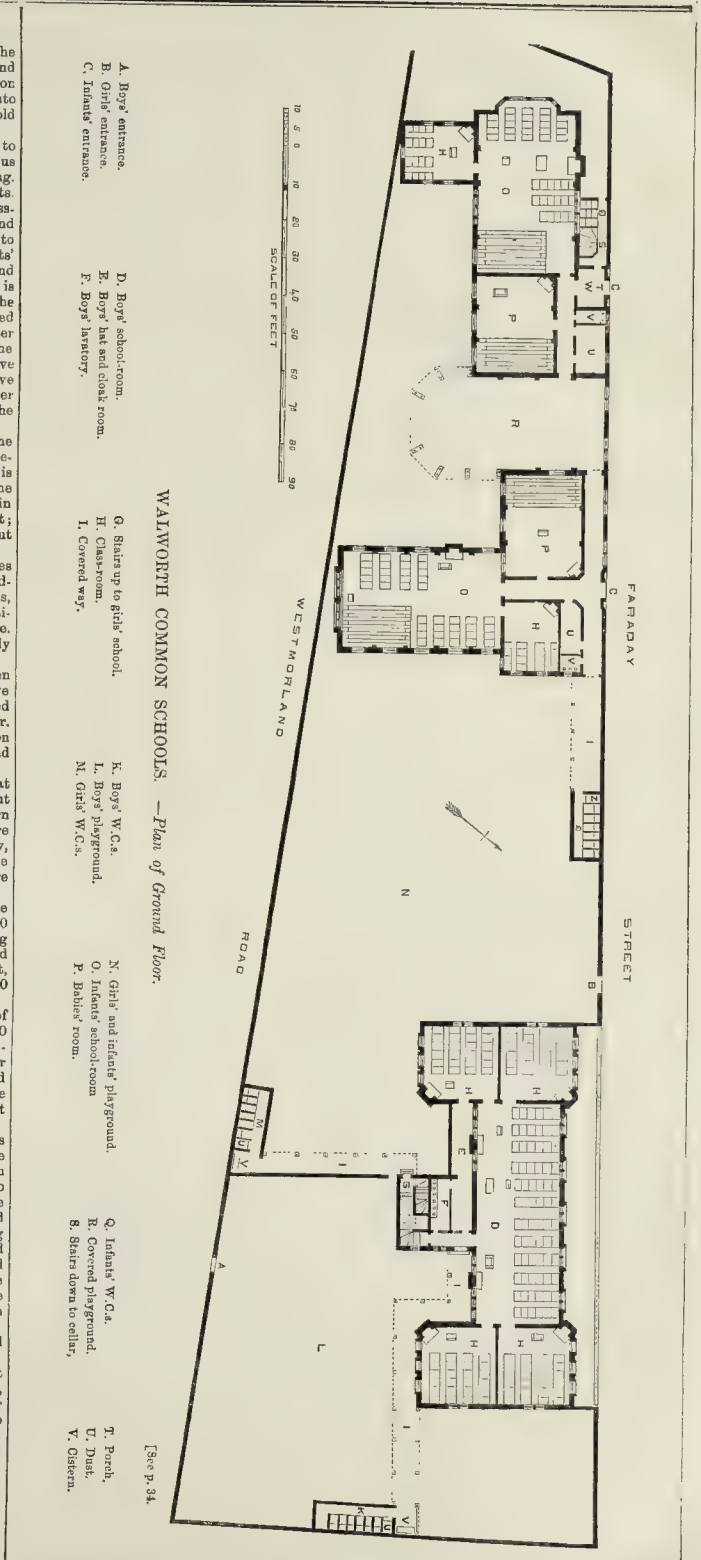
Owing to the ground on which the schools stand having frontages towards three wide roads, the surrounding houses having been very recently built, some consideration had to be paid to architectural effect. The walls are faced with yellow stock bricks; the lintels and window-cills are of Bath stone, with relieving arches of red brick. The windows of the ground floor of the graded blocks have margins of red bricks, and the patterns on the dormers of the first floor are formed with red bricks, which are also used in the cornice under the eaves, with red terra-cotta corbels.

The boundary walls are finished with moulded red bricks, made by Looker, of Kingston.

The large area of the site, and the great length of the boundary walls (about 800 ft.), together with the fact that the building is for the greater part only one story high, have slightly enhanced the cost, which has been about 9,300*l.* This amount included stoves and gasfittings.

Messrs. Henshaw & Co. were the builders; Messrs. Henry Jarvis & Son, the architects.

New Collieries.—Over fifty new collieries are being sunk in Glamorganshire, and in several instances nearly 100,000*l.* have been spent.



WALWORTH COMMON SCHOOLS.—*Plan of Ground Floor.* [See p. 34.

COUNTY COURT HOUSES AND COUNTY GAOLS IN IRELAND.*

IN designing the plan of a building suitable for the important public business transacted in county-court houses, an architect has to solve a complex problem, or rather a series of problems, in the solution of which a few slight defects or omissions will injure the character of his work in a degree altogether out of proportion to its general merits. A careful arrangement will appear absolutely necessary when one considers the number of interests and individuals to be accommodated, and that among the persons to be satisfied will be found many of the highest intelligence, versed in criticism, and sensitive about their rights. The following paper is intended to describe briefly the accommodation required in the court-houses of assize towns in Ireland. It is obligatory, under various statutes, to provide in court-houses assembly-rooms, courts, and offices for special purposes connected with the administration of justice, and with the fiscal government of counties. Other apartments and offices, though not in the same category, are provided because they proved necessary for public service. Courts of Assize, Quarter Sessions, and Petty Sessions are among the most important of one class of uses served by court-houses. Elections, meetings of grand jury, presentment sessions, &c., another class; and to a third class may be assigned the offices in which certain public officials are required to perform their duties, and in which public documents are prepared or lodged for safe keeping and reference. In serving these numerous and important uses, a court-house becomes frequented by and well known to the general public; so that its plan will be found to affect materially the despatch of public business, the comfort or convenience of many persons, and the credit of its architect. It is usual and, generally speaking, convenient to have two floors and a basement; to place housekeeper's apartments, store-rooms, and cells for prisoners in the basement; courts and offices connected with judicial business on the ground-floor; grand jury rooms and offices connected with fiscal business on first floor. This kind of arrangement or classification will be found expedient generally, but of course modifications may become advisable, according to circumstances: however, assuming that it can be adopted safely as a general rule, the accommodation required on each floor respectively will be as follows:—

Basement.—The court-keeper's dwelling may consist of living-room, kitchen, bed-room, pantry, scullery, lumber-room, coal-cellar, &c., and stairs to give access to the upper floors. Good light, ventilation, and sewerage are indispensable. In an area or yard a force-pump with supply-pipes to water-closets will be useful. In some counties it is customary for members of grand jury to dine or lunch daily in the court-house during their attendance; in such cases it is necessary to provide another kitchen, servants' room, pantry, plate-room, wine-cellar, &c., and to arrange a convenient service passage to the dining-room. However, the custom referred to is becoming disused generally, and will probably be altogether extinct in a few years. Under the crown court may be placed cells in which prisoners can be kept until wanted in the dock. A private passage from the gaol to these cells should be arranged wherever practicable, so as to avoid bringing prisoners through the streets. Separate cells are required for males and females, and waiting-rooms for warders, arranged so that the prisoners can be continually watched. Two water-closets should be provided, and stairs to the dock. All cells or waiting-rooms should be well lighted, ventilated, and warmed.

Ground Floor.—The first apartment to which attention is due is the great public entrance-hall, sometimes called the shire-hall. This is the main thoroughfare, waiting-place, and conversation-room for the public at assizes, sessions, general elections, and other gatherings. The hall is generally a noisy place at such times, owing to the din of talk, and bustle of people moving about, though there may be a lull occasionally when proclamation is made for witnesses or jurors to come and appear, or when a stern command for silence is heard. With reference to this noisiness, care must be taken to prevent it disturbing the courts. Anything tending to cause indistinct hearing while trials are going on would be wholly objectionable. The practice of making proclamation in the hall is not satisfactory, inasmuch as the persons called very often fail to understand, not merely from the absurd mistake which criers make in pronouncing names, but also from the sounds being rendered indistinct by reverberation, and by the hum of talk. As a partial remedy, it would be advisable to provide a waiting-room for witnesses and jurors, where they may be more distinctly called when wanted, and where they may have a more comfortable waiting-place than in the hall. A waiting-room, &c., for females should be arranged; and latrines for males should be provided outside the court-house. Most of the existing court-houses are defective with respect to such conveniences. It is desirable to give the hall considerable size and some stateliness; excessive size must be avoided, and for obtaining effect I would suggest good proportion rather than elaborate ornament. Floor space from 1,000 to 1,500 square feet will in general be found sufficient. The space for public use will be increased considerably by ante-rooms and minor thoroughfares. Adjacent to the hall, the Crown court, and the grand jury-room, are placed rooms for the crown solicitor, two *en suite* as offices for the solicitor and his clerk respectively, and a third as a waiting-room for crown witnesses. A convenient passage for getting these witnesses to the grand jury-room, and another to the Crown court should be arranged. Offices for the clerk of the Crown may be placed near the Crown solicitors; one large room, or two smaller, *en suite*, for the clerk and his deputy respectively, besides a fire-proof closet. The clerk of the peace's offices may be placed near the Record court; one large, or two smaller *en suite*, and a fireproof closet. Five other rooms, besides those already mentioned, may be placed on the ground floor near the hall; that is to say, one each for sheriff, magistrates' clerk, barristers' robing-room, attorneys, and for holding consultations; the last is seldom provided separately, one of the grand jury committee-rooms being used for consultations when required. None of the offices or apartments mentioned, except the hall, need be of large size; floor spaces from 300 to 400 square feet will, in most cases, be sufficient. All the rooms should be well proportioned, and well lighted, provided also with fireplaces and good ventilation. For assize business two courts are required; namely, the Crown court for criminal trials, and the Record court for civil cases; the former will be used for judicial business also at quarter sessions and petty sessions. Both courts may be alike in size, with floor-space from 1,350 to 1,500 square feet for each. Before considering how to plan them, it is advisable to settle whether the judges shall approach their chambers through the shire-hall or through a private entrance, inasmuch as it is expedient to make such arrangements as will enable those personages to pass into, or between, their chambers in private. I am of opinion that a separate and private entrance for the judges is advisable in general; but the same entrance may be used to give access to court-keeper's apartments, and to the grand-jury rooms and fiscal offices. A chamber, with an easy and private passage to the bench, must be provided for the judge of each court. Petty jury-rooms, accessible only from the jury-boxes, are required. It is advisable to provide two such rooms for each court; the average floor-space may be 200 to 250 square feet. Passages by which the public can enter each court from the shire-hall ought to be very easy and well marked, because any little intricacy of insufficiency will surely cause confusion and dissatisfaction. The various doors must be placed so as to enable jurors, witnesses, lawyers, and audience to reach easily, and without confusion, their proper places. Barristers are often called from one court to the other, so that an easy passage between, for their use, would be found advantageous. The plan of seats and compartments in the Crown court is a little complicated owing to their number, their arbitrary limits as to area and relative position, and to the thoroughfares. The bench may be considered as one of the principal compartments: it may be placed adjoining a side wall, with the witness seat at one hand, and the petty-jury box at the other, lawyers, prisoner, and audience in front. The position of the bench regulates that of the grand-jury box, as the judge has to see and address the grand jury. When the court is used at quarter sessions and petty sessions several magistrates sit together, so that the floor-space of the bench ought to be considerable, sufficient perhaps for ten or twelve magistrates. The clerk of the crown sits in front of the bench, facing the audience. His pen should be sufficiently near the petty jury and the witness to allow the clerk to perform conveniently his duty of administering oaths to jurymen and witnesses. The floor of this compartment should be about 2 ft. under that of the bench, so that its occupant, when standing up, can receive instructions from or confer with the judge. At quarter sessions the seat will be occupied by the clerk of the peace; at petty sessions, by the magistrates' clerk. The petty jury must be placed so as to hear and see distinctly witness under examination, prisoner, judge, and examining counsel. The jury-box must contain accommodation for twelve men sitting, besides space in which another twelve may stand, as it sometimes happens when one jury retires to consider its verdict another will be empanelled to try a new case. Therefore, when the old jury comes out again there should be space for it to stand without incommoding the new jury. The witness seat should face the jury with the judge at one hand and examining counsel at the other. It is important to place the witness so that his evidence and demeanour can be well observed, not only by judge and jury, but also by the prisoner. Several rows of seats for counsel and attorneys may be placed facing the judge; the first and second rows should be given respectively to the attorneys and council engaged in a case, within the space surrounded by attorney's seat, witness, clerk of crown, and the jury, there ought to be a table upon which models or other bulky articles may be displayed when required. A compartment for reporters is best placed between the witness seat and the bench, and partly facing counsel. It is usually most convenient to place the dock nearly central in the court, and to arrange it so that the prisoners shall have a full opportunity of seeing the witness, and of hearing everything said in evidence; too much stress cannot be laid on these points. Standing-room for ten or twelve men is required, besides seats for two gaolers. In front of the dock, but outside it, there should be a vacant space in which persons who have to appear in discharge of bails may stand. Seats for one or two policemen or bailiffs should be placed at each side of the dock, and there should be one for a judge's crier placed where he may have a good view of the court and of the jury particularly. The crier has generally to wait on the judge as a private servant or messenger, so that it will be useful to provide for him some ready way of approaching the bench. A box for the sheriff should be placed near the bench, perhaps behind the reporters, and in the same neighbourhood some seats for magistrates and county officers in attendance at assizes. Tiers of seats for the general public, and for jurors and witnesses who wish to wait in court, may be placed behind the dock, partly on ground-floor and partly on galleries, but it is advisable as a general rule to dispense with galleries for public use. A special compartment or gallery must be provided for the grand jury, to contain seats for twenty-three; it must be placed so that its occupants can be conveniently addressed by the judge. An isolated passage to the grand-jury room will be required. The arrangement of the record court need not differ materially from that required in the crown court, after omitting the grand-jury box and the dock. In this court the judge's registrar will occupy the space assigned in the other court to the clerk of the crown; and the space corresponding to the dock may here be given to seats for suitors waiting.

First Floor.—It is particularly necessary to give convenient access to the first floor. Broad and easy stairs for public use should lead directly from the shire hall to the grand jury room. Another less important, may lead from the private entrance and give access to the fiscal offices; and a third may lead from the crown witnesses' waiting-room. On the first floor it will generally be convenient to have the grand-jury room, in which public sessions of grand jury are held, committee-rooms, offices for county treasurer, grand-jury secretary, and county surveyor, a waiting-room, cloak-room, one or two lavatories, &c. In some counties, as before remarked, it is customary for the members of the grand jury to dine or lunch in the court-house; and where this happens a suitable dining-room, with accessories, must be provided. The grand-jury room is the most important apartment on the first floor, and of course it should be well proportioned, amply lighted and ventilated, and provided with sufficient fireplaces. The necessity for thorough ventilation will be understood when it is remembered that large crowds

* By Mr. John Brett, C.E., County Surveyor of Kildare, as elsewhere mentioned.

assemble and remain for hours in this room during public sittings; floor-space from 600 to 900 square feet is required. During the transaction of fiscal business, part of the room is reserved for the grand jury and county officers, but the other part is left open to the public. When the grand jury is engaged in finding bills of indictment none are admitted but the witnesses brought in to be examined on the bills. When in full session for fiscal business the grand jury consists of twenty-three members, one of whom presides as foreman; they sit round a table, hear reports or statements from officials or others authorised to address them, examine witnesses about fiscal matters, and finally they conduct, inquire into, and determine all the fiscal business within their jurisdiction in open court. I am of opinion that it is most convenient to place the grand jury round a table of horse-shoe shape; witnesses and others necessary to be heard, being brought to the open, can easily address the jury, and be seen by each member.

Outside the reserved space there should be seats for grand jurors waiting, or for gentlemen of distinction who desire to attend the proceedings; behind these, but enabled to see and hear everything, the general public may be placed. It will be necessary to provide at least two rooms for committees of grand jury; floor-spaces from 300 to 400 square feet will be sufficient. A small waiting or ante-room would be useful. Under a recent Act of Parliament the duties separately performed by the grand-jury secretary and the county treasurer are henceforth to be performed by the grand-jury secretary alone when the existing treasurers retire, and in some counties the change has already taken place. Under the new system the secretary's offices should consist of two rooms *en suite*, together with a good-sized fireproof closet for preserving papers in his charge. Where the old system prevails the treasurer requires one large room, or two smaller. The county surveyor may be provided with one large room, or two smaller *en suite*. In the outer offices on each floor a counter should be set up, leaving sufficient space at one side for persons calling on business, and at the other for clerks, desk, presses, &c. All committee-rooms, offices, waiting-rooms, fireproof closets, &c., must be provided with fireplaces, good light, and ample ventilation.

Before concluding this imperfect sketch, I wish to remark that it is very important to provide for amply ventilating and warming the courts; not merely by unobtrusive contrivances, but also in some degree by others of an obvious kind. The visible existence of a practical sash, a stove, or a good open grate will give satisfaction even though their practical utility be comparatively little. I am of opinion that a fresh-air chamber with an inlet for the outer air should be contrived under the floor, and that numerous small holes should be pierced through the floor into the air-chamber. I would allow the foul air to pass through the ceiling into a space above it having outlets in the roof; and I should like to have a flue enclosing a gas-jet or other contrivance to cause an upward current of foul air. By placing in the usual way hot-water or hypocaust pipes, in the lower air-chamber, the fresh air can be warmed before ascending through the floor.

SOMETHING ABOUT CHURCH BELL-HANGING, AND THE VIBRATION OF BELL-TOWERS.

I WISH to make a few remarks on the hanging of church bells, and the vibration of bell towers.

"Notwithstanding what has been urged by myself and others in other places, on the great danger of allowing the bell-frame or cage to touch the walls of the tower, I believe that the danger is overrated. But if there be any, it arises solely from *wedging* against the walls; and from the forcible and alternate hammerings of the frame if it gets unsteady; although, if the cage can be set *several inches* or feet away from the wall, whether it gets rickety or not, little damage can arise, though the ringers would have the harder work. But, if of necessity the cage is fixed within an inch or less of the walls, and it gets rickety and full of life during the ringing, battering away, first one side and then the other, the danger is most imminent; and if *wedges* are inserted by an unskilful workman, the evil is increased by the downward and expanding tendency of the wedge. In such a case, I am free to confess, that pieces of timber fixed to the cage and *butted square* and *hard* up against the walls, so that cage and bells may all oscillate together in one compact body (like as a person in a rolling boat would try to keep himself steady by taking tight hold of the sides) little or no danger will occur to the tower, provided the walls are of thick and substantial masonry; but if they are flimsily built, and the bells are hung high up, and in a high cage, the vibration of the tower would be so great that in some mysterious way the bell-cage gets so affected that it is found from experience a difficult thing to keep the bells up when ringing, to say nothing of the damage done to everything in connexion; therefore, in such a case, the cage must be kept clear of the side walls. After all, do what you will, it is perhaps impossible to prevent the vibration of a tower, unless it is constructed with deep-faced buttresses on all sides, and therefore great care should be taken that the vibrations be not checked; but that they oscillate steadily like a pendulum. Scientific men have not yet determined how much the vibrations are caused by the soniferous waves from the sound of the bells, as well as by their motion.

Bell-hangers may say, that if the bells are made to swing at right angles to each other, one will counteract the other, and the cage will be kept steady; but I am certain that is not the case. The cage may be a little stiffer from the cross-bracings which it involves; but it is contrary to all mechanical principles for two forces acting at right angles to neutralise each other at all. The only way for bells to swing and counteract each other is, by making them all swing in directions opposite to one another: that would be, all north and south, or all east and west, according as the tower may be buttressed, and then the bells would be pulled to follow each other *oppositely*; but this would only be in round-ringing; for when bells go off into *changes*, then it may be that all the bells, just for one blow, would swing the same way, though the direction of their motion would be changed by the very next pull. I have seen several old towers (Lymstone is one, and the bells badly hung) in which the timbers are so abutted without wedging, and no damage done, and the tower is not a low one. It is so at Bitton, my old parish; and in the tower of Clyst St. George all the original timbers were hard up against the walls; indeed, there was evidence, from the pinning, that the old cage was set up before the walls were raised, and that they were built close against it." *

P.S.—It is now more than twelve years since the above remarks were made, therefore my judgment ought to be more matured; be that as it may, during that time I have visited about 600 towers, in many of which I found the upper bell-timbers walled in, and wedges applied in many cases; but I have not found any instance of a tower being damaged thereby, provided the masonry was sound and substantial.

Very lately I was in the noble tower of l'Abbaye Auxhommes, at Caen, during the swinging (I cannot call it ringing—the bells being worked by the foot without wheel and rope) of two heavy bells for service, the cage of massive timbers was insulated, but the motion was so great as to produce the sensation of sea sickness to one of my companions, and the oscillation of the lofty tower with its glorious spire was greater than I ever before witnessed, but without any apparent damage.

Therefore, after mature consideration, I have come to this conclusion—that it is not at all unsafe or damaging to the tower—and better for the ringers that the cage should be butted hard and tight against the walls, and as the vibration or the rocking of the tower cannot be prevented—no harm whatever will arise from the same, provided there are no defects in the walls from old settlement or other cause, and that the whole building is of compact and solid masonry; the elasticity in such a building is so extraordinary, whether a tower, spire, or even a bridge,† that it is sufficient to counteract the disintegration of the materials of which it is composed. Substantially the same opinion is expressed in Sir E. Beckett's "Treatise on Clocks and Bells," p. 363, of 6th edition.

Well-constructed towers vibrate from the very basement. At Abingdon, Berks, there is a spur stone against the tower, and when the bells are ringing, boys amuse themselves by putting their knives between the stone and the tower, to be pinched as the vibrations go on.

I would here take occasion to say that in old cages it will be found that the timbers do not fit close down on the shoulders of the braces, owing to the shrinking; and arising from the mortises and tenons being pinned together. It is thought better not to pin any of the tenons, but to bolt the whole cage down to the beams below: in this way the bolts may be screwed tighter from time to time as the case may require: the bolts had better be put in bracingly, that is, not perpendicularly.

H. T. ELLACOMBE, M.A., Oxon, F.S.A.

* From a paper read before the Exeter Diocesan Architectural Society, September 22, 1862, by the Rev. H. T. Ellacombe, M.A., F.S.A., Rector.

† A new bridge at Langholm, N.B., was shaking owing to an unusually high flood. Telford, who lived near, was sent for—his reply to the builder's wife, who was alarmed for the consequences, was "Never you mind, Tibby—there's no fear o' the brig: I like it a' the better that it shakes—it proves its weel put thegither."—The bridge has stood the furious shakes of nearly a century unmjured. See Smiles's "Lives," vol. 2, p. 302, under *Telford*.

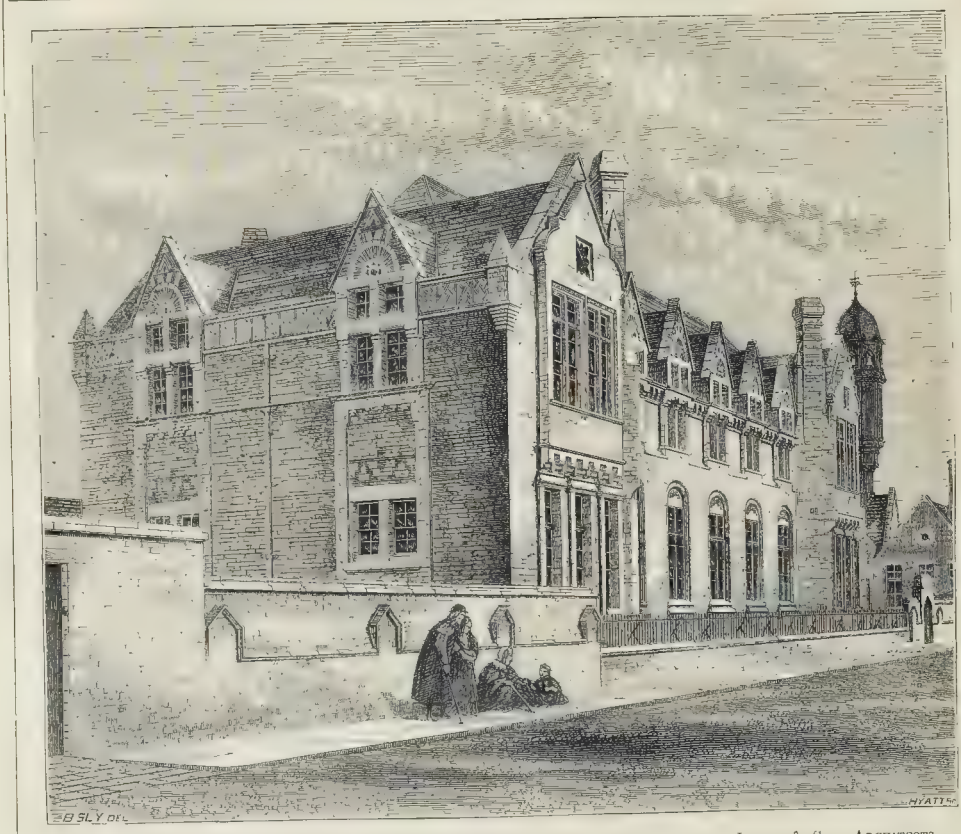
HENRY EDWARD KENDALL, ARCHITECT.

WE have again the sad duty to record the death of one of the oldest members of the profession, who may, in fact, be termed the Nestor of architects, Mr. Henry Edward Kendall, deceased the 4th day of January, 1875, in his ninety-ninth year! His father was a banker in York, where the subject of our notice was born on the 23rd day of March, 1776. He was pupil of Thomes Leverton, one of the surveyors of the Government Board of Works, and of the celebrated Mr. Nash. From the state of architecture in those schools at that time, the elements of taste obtainable were not of the highest order; but Mr. Kendall had considerable fancy and play of invention. From the offices of those architects he went into the Barrack Department of the War Office, which appointment he held for many years; until, in 1823, he left it to take the duties of surveyor to the district of St. Martin-in-the-Fields and St. Anne, Soho, and which he held for above half a century. He was one of the earliest promoters of the Royal Institute of British Architects, originally suggested by his son, and the early meetings of the committee were for a considerable period held in the rooms of the father. He practised largely as an architect, and entered frequently and successfully in competitions.

Among his works may be named:—Kemp Town, Brighton; Rosherville Town, Pier, and Gardens; mansions, wholly or in part, for the Earls of Bristol, Egremont, and Hardwicke, for the latter of whom he also built a fine conservatory at Wimpole. He erected the house of Mr. Kemp in Belgrave-square, and Chidingstone Castle for Mr. Streatfield; and a mansion for Sir Thos. Whichcote, bart. His also were the churches of St. George, Ramsgate; Trent, Middlesex; Bantry, Ireland; and Clagate, Surrey; besides several parsonages and schools. He was architect of the workhouse at Uckfield, Sussex; and of Melksham, Wilts. He obtained the first premium for a Gothic design for the chapel to the cemetery at Kensal-green, and the second premium for an Italian design; but he missed the building, as he with very proper spirit refused to carry out the design of Sir John D. Paul, the chairman of the company, who competed, and required his own design to be executed! He built the Sessions House and Gaol at Sleaford, of the former of which there is a fine view by the old Augustus Pugin, his friend. And he erected also the Sessions House and Prison at Spilsby, Lincolnshire, and the gaol at Spalding; he also made a design in the competition for the Houses of Parliament; and was a frequent exhibitor at the Royal Academy, many of the drawings being from the brilliant pencil of the elder Thomas Allom.

He was a man of refined, gentlemanly manners, noble and generous in disposition, tall and handsome in person, and had a winning address, which gained the esteem of all with whom he associated. He was a keen sportsman, and used in former times, each autumn, to take his gun and his dogs for a few weeks' sport. On one occasion his gun burst, so that his left hand was shattered, and he lost his thumb; but this did not cool his ardour for shooting.

He has left a widow; his son, of the same name, district surveyor for Hampstead; and two daughters, Mrs. Covey, the wife of Dr. Covey, and Mrs. Lewis Cubitt, all three the fruit of his first marriage. A daughter of Mrs. L. Cubitt is the wife of Mr. Edgar Bowring, late member for Exeter. Thirteen grandchildren and twelve great-grandchildren also survive him.—T. L. D.



WALWORTH COMMON SCHOOLS, WESTMORELAND ROAD.—MESSRS. HENRY JARVIS & SON, ARCHITECTS.

[See p. 31, *ante*.

THE ANCIENT TOWERS AND SPIRES OF GLOUCESTER.

GLOUCESTER is rich in ecclesiastical structures, and this is well shown by the drawing we have engraved (made by Mr. Frederick S. Waller, of Gloucester), which represents the cathedral, and the towers and spires of the other churches of the city, contrasted with each other. The buildings are drawn to the same scale, and as they are all taken on the same plane, and from actual admeasurements, as Mr. Waller tells us, the exact relative sizes and heights of each can be seen at a glance.

With the exception of the lower portion of the cathedral tower (not seen in the drawing), the oldest of these towers is that of the Church of St. Mary de Lode, the lower stage of which is fine Norman work. The upper stage has been much mutilated, and the parapet and pinnacles are modern, and very inferior.

The tower and spire of the Church of St. Nicholas incline very perceptibly towards the North, and about eighty years ago the top of the spire was removed, and the present small parapet and pinnacles were added. The angle pinnacles of the tower are gone. The effect of this tower and spire in its original condition must have been very fine.

The towers of the churches of St. Michael and St. Mary de Crypt, are of a design and character very similar to each other, especially in the details, leading one to the belief that they must have been designed by the same architect. The pinnacles of the former have been removed.

The tower and spire of the Church of St. John calls for no special remark, and of the other buildings which compose the lower part of the drawing, consisting of the deanery, the western gateway to the close, the chapter-room, the infirmary arches, the little cloisters, &c., little more need be said than to draw especial attention to the two first-named, the deanery, and the western gateway, as being peculiarly interesting specimens of Transition and Early English work, of which latter there are very few remains in the city of Gloucester.*

REFERENCES.

A. St. Nicholas Church.
B. St. Michael.
C. St. Mary-de-Crypt.
D. St. John.
E. St. Mary-de-Lode.
F. F. Deanery.
G. Chapter-house.
H. Chapter-house Library.
K. Gateway in St. Mary's-square.
L. Ruins of the Church of St. Catherine.
M. Remains of the Infirmary.

INHUMATION AND CREMATION.

THE following notes are intended as a short sequel to "Churchyards and Epitaphs" which appeared recently in the *Builder*. At the present time we know but little regarding the funeral customs of the early ages of the world. We may judge from the simplicity of manners and primitive habits of the people of the Patriarchal ages that burial somewhat similar to that practised in our own day would be adopted by them. When we come to the days of Abraham,—sepulchres and vaults, capable of containing whole tribes, were in ordinary use. It is stated in the book of Genesis:—"And Sarah died in the land of Canaan; and Abraham spake unto the sons of Heth, saying, I am a stranger and a sojourner with you: give me a possession of a burial-place that I may bury my dead out of my sight." "Out of my sight" would seem to be a superfluous expression, but it is not so; the Egyptians buried their dead, but not out of sight, as will be shown. The sons of Heth replied to Abraham, "In the choice of our sepulchres bury thy dead;" and Abraham answered, "If it be your mind that I should bury my dead out of my sight, hear me, and entreat for me to Ephron, the son of Zorah, for the cave of Macpelah." The bargain was closed with Ephron for four hundred shekels of silver. Abraham buried Sarah in the cave, in which, in due time, he was himself interred, and many of his descendants. In later ages the Jewish method of interment appears to have been to wrap up the spices with the clothes in which the body was enfolded. The larger the quantity of the spices employed the greater the honour was considered. The bodies were then deposited in natural or artificial caves, uncoffined, and the effluvium arising from advancing corruption was partially counteracted by the aromatics.

Crossing over into India we find that its inhabitants from the earliest age of history, consigned their dead to the funeral pile, which was erected in the neighbourhood of the town or village. The corpse being placed on the pile the officiating Brahmin offered up a prayer, the fire was kindled by the nearest relative of the deceased, and the ashes were deposited in urns or cast into the neighbouring stream or river. Turning to Egypt we find that the national belief in the immortality of the soul shaped out their method of disposing of the dead. They believed that when the body is dissolved, the soul enters into some other animal which is born at the same time, and after going the round of all the animals that inhabit the earth, it again,

* If Mr. Waller's example should lead some of our readers to make similar views of other of the public buildings in our ancient cities and towns, we shall be glad to hear of them.



THE ANCIENT TOWERS AND SPIRES OF GLOUCESTER.

after a circuit of 3,000 years, enters the body of a man who is then born. This belief in the transmigration of souls stimulated them to the most diligent inquiry as to the best manner of embalming, and extraordinary pains were taken to preserve the body from putrefaction, in the hope that the soul would one day be permitted to join the body it had previously quitted. The bodies were then conveyed to the sepulchres, where they were deposited—not *out of sight*, but in rows along the sides of the cave. The patriarch Jacob was buried after the Egyptian fashion, "and forty days were fulfilled for him, for so are fulfilled the days of those who are embalmed." Joseph was also embalmed and placed in a coffin, and his remains were afterwards deposited in the cave of Macpelah.

There is one marked instance of cremation in Jewish history. On the death of King Saul on the battle-field of "bloody Gilboa" the Philistines nailed his body in derision to the walls of Bethshan, "and when the inhabitants of Jabesh Gilead heard of what the Philistines had done to Saul, all the valiant men arose and went all night and took the body of Saul and the bodies of his sons from the walls of Bethshan, and came to Jabesh and burnt them there; and they took their bones and buried them under a tree at Jabesh." There are a few passages in the Old Testament that point obscurely to other cases of cremation. After Asa's death "they made a very great burning for him," and after the death of wicked Jehoram "his people made no burning for him like the burning of his fathers." These passages may probably find their proper explanation in the funeral custom of the Chinese, who after embalming their dead and depositing the body in a coffin, place it in a room decorated with white tapestry, where it remains for months, sometimes for years, during which burnings are made time after time of incense and aromatics in honour of the deceased. In the empire of Japan cremation is carried out in the most refined manner, the funeral pile is composed of sweet-scented wood; and incense is thrown into the flames to perfume the atmosphere. On the following day, the bones and ashes are collected into an urn, which is placed in the ancestral sepulchre.

The Romans in the disposal of their dead used both inhumation and cremation. Numa Pompilius, their second king, on his death-bed gave orders for his body to be buried in a stone coffin, "contrary to the custom of the time." The Romans, according to Cæsar, derived the custom of burning their dead from the Gauls. Under the Emperors the custom of cremation became almost universal among the Romans, but was afterwards gradually discontinued on the development of Christianity, and at last fell into disuse about the end of the fourth century.

Taking a rapid glance at other funeral ceremonies, we find that the Otaheitians lay their dead on a morai, a species of temporary shed, where the flesh is suffered to putrefy. The body, after remaining about five months, is taken down and the bones are then scraped, washed, and buried. The Parsees expose their dead to vultures and other birds of prey. The natives of Guiana bury their dead unshrouded, and after the flesh has decomposed, the bones are taken up and distributed among the nearest relatives. In the Canary Islands a species of mummy, called a guanche, is frequently met with; and at Teneriffe several specimens have been discovered, showing that a practice similar to that of Egyptian embalmment must at one period have been in use among them. In the uplands of Peru animal substances are dried up by mere exposure to the air, and human bodies are there found wrapped up in the skin of the vicuña. Many other peculiar funeral ceremonies might be referred to; but by adding the simple statement that in our country we have abundant evidence that cremation and inhumation have been in use from the earliest ages, sometimes contemporarily, enough has been said. And now for the moral of this Dryasdustic discourse. About forty years ago a writer in favour of extramural burial wrote "Why should we deposit the remains of our friends in loathsome vaults, beneath the gloomy cells and crypts of our churches, where the human foot is never heard save when the sickly taper lights some new guest to his appointed apartment? Why should we measure out a narrow portion of earth for our graveyards, in the midst of our cities, and heap the dead upon each other, with a cold, calculating parsimony disturbing their ashes and wounding the sensibilities of the living?" The wishes of the writer have been carried out. The churchyards of towns and cities have been closed, and cemeteries have taken their place; but these suburban burial-places have been gradually encroached upon, and in some instances surrounded, by human habitations, and have been so constructed that, like the churchyards, they have become nuisances, but on a greater scale, poisoning not only the air, but the water of their neighbourhood, and making themselves outposts for the dissemination of pestilence. Cremation is a moot question, but the time, if not already come, is coming shortly, when some means must be not only adopted, but enforced, for disposing of the dead which will neither injure the health nor wound the sensibilities of the living.

ARCHITECTURAL ASSOCIATION OF IRELAND.

AN ordinary general meeting of the Association was held last week, at 212, Great Brunswick-street, Dublin; the President, Mr. W. M. Mitchell, in the chair.

The following report on the sketches submitted by the members of the Class of Design was read:—

"Having carefully examined these designs, we have decided upon awarding the first place to Mr. Robert Browne, for the great number of his drawings, and for the thought and originality displayed in them. We award the second place to Mr. T. H. Longfield, principally on account of his beautiful design for a rose-window in the Italian Gothic style.

It affords us much pleasure to be enabled to bear testimony to the general excellence of the designs submitted. They afford very gratifying evidence of the talent and assiduity of the members of the class, and warrant us in anticipating a still further degree of excellence in the work of the present session."

The treasurer was authorised to pay Mr. Browne the sum of two guineas and a half as prize for his sketches.

A ballot then took place, when the following were elected members:—C. Morley-Bridgeford, jun., W. L. Falkner, Geo. W. Miller, Saml. Walsh. Messrs. Wilmot and Longfield were scrutineers.

Mr. J. H. Brett, C.E., then read a paper "On County Gaols and Court-houses," part of which we print.

Mr. Thomas Drew said that Mr. Brett in his paper had given a great deal of valuable information on a subject which did not occur every day in an architect's practice, and ventured to say that nine out of ten architects knew very little about the requirements of a court of justice. He thought that the courts of Ireland were invariably bad and complicated. The simpler the plan the better, as in the Manchester Assize Courts and new Courts of Justice. It occurred to him that the amphitheatre is the best form for a court, as it is the best way to group a number of people so that they can see and hear a central object, such as a criminal in a court of justice. The time that the Law Courts question was being discussed, the central hall excited a great deal of interest, and almost all agreed that it is essential to have such a hall for witnesses, suitors, and idlers. In the Dublin Four Courts, Gandon planned a fine central hall with the courts opening into it, so that the interior of all the courts were visible from the hall. This, as may be supposed, did not last long, and the open ends were built up. A private entrance for the judge is desirable, but when opening the assizes it is usual for him to enter by the principal door. Mr. Drew also agreed with Mr. Brett that the horse-shoe shape is the best for the grand jury-room.

Mr. T. H. Longfield said that cells without light are objectionable and reprehensible, and that they ought to be abolished; that man should not take from his fellow man, even though he be a criminal, the divine light of day.

Mr. C. J. Doran, in proposing a vote of thanks to Mr. Brett, thought that the semicircular plan recommended by Mr. Drew objectionable, as there is great difficulty in rendering such a room acoustically perfect. He was sorry that public buildings in Ireland are generally spoiled by the penury of those entrusted with their sanction, and that the architect is generally fettered with monetary considerations. Although the Manchester Assize Courts are considered excellent, yet they are open to improvement.

Mr. Drew, replying to Mr. Doran's observation said that in alluding to the semicircular plan, he meant more the arrangement of the seats than the plan of the rooms, which might be either a square or a parallelogram. He received the vote of thanks with great pleasure.

Mr. J. J. O'Callaghan agreed that the semicircular plan of seats was best, and was glad that the Courts of Justice would have a central hall.

The Chairman, in putting the vote of thanks, which was carried unanimously, said he was engaged in converting a prison in the South for the separate system, and that the railings round the galleries were made higher, to prevent the prisoners committing suicide.

A POLITICO-ECONOMICAL NIGHTMARE.

THIS was engendered not so much by sensual indulgence in mince-pies, as by Mr. Cole's letter (in *Builder*, No. 1660, p. 982), capped by the address of the president of the Institution of Surveyors (*Builder*, No. 1662, p. 1029).

Multiply London Bridge by to-morrow morning, square the product, deduct the "Thousand and One Arabian Nights," and dissolve the remainder in the spirit of one of Claude's landscapes: then tell me the result, if you can.

The president of the Institution of Surveyors acknowledges the existence of a sentiment,—while resisting it on economical grounds,—inimical to the spread of enclosures over open lands. Mr. Cole, also on economical grounds, recommends national investments in objects of fine art. Each teacher has scholars and adherents. But, if rightly analysed, will not the intensity of the sentiment with which either party esteems the teaching depend really on something much nearer home to the feelings than the figures which each teacher sets down on paper? He who admires pictures, applauds Mr. Cole. He whose private estate is aggrandised by an Enclosure Act, agrees with Mr. Huskinson. Each reads between the lines of the calculation; and if the whole Christmas pudding of ideas, wishes, and feelings were dissected, it might seem some such farrago as we placed next the heading of this letter.

Confessing to much more sympathy with Mr. Cole than with Mr. Huskinson, I am going to try my hand at a bit of political economy. I commence at an earlier point than does Mr. Cole,—the subject of the manufacture of paintings. I begin with the purchase of materials at the colour-shop. Suppose (a liberal supposition, perhaps) that a landscape by Turner consumed 5*l.* in materials; then by the admixture of, let us say, 195*l.* worth of Human Soul, the selling price of the compound becomes 200*l.*; after which, let Mr. Cole's further calculations of augmented value be brought to bear. Did high farming or turnip husbandry ever do more for augmenting value than this manure of human soul? Why, it is some 4,000 per cent.

And how is the 195*l.* worth of human soul ever to be reared to the perfection we have seen it to attain in past time, unless the painter's sketching-grounds are left intact; unless his freedom to wander at his own sweet will is secured to him; unless the road that he travels still continues to present the varied widths which used to diversify it, instead of being narrowed to the Act of Parliament 30 ft.?

We said 195*l.* worth of human soul. Whose soul? Not alone the painter's. The painter must have a purchaser. The purchaser must have a host of amateurs to sympathise with him and congratulate him on his acquisition. All these are sharers in the 195*l.* worth of human soul. All ought to have their roving grounds, as the painter must have his sketching-ground, with picturesque features left intact, to keep alive their enthusiasm.

Illogical as it may be, it would seem as if even in a case involving the grave precision of legal proceedings, it still seems quite natural to mix up incommensurable things like sentiment and value, present wants and antiquated sources of supply, London Bridge and the Arabian Nights. Witness that imbroglio in which the spirit of the age has involved Epping Forest. Æsthetic sentiment *plus* the City of London's money, multiplied into one of those old-world arrangements by which the peasant managed to subsist on the land of his birth before the parish allowance became a customary source of income to him, or the workhouse the recognised home of his old age; the mixture stirred up in the same cauldron, with enough hatred, malice, and uncharitableness to make it boil over.

> "Swelter'd venom, sleeping got,
> Boil thou first in the charmed pot,
> For a charm of powerful trouble,
> Like a hell-broth boil and bubble."

Pepper with legal acumen, salt with common sense, and, lo and behold, a grave legal decision within a court of equity, and a display of fireworks far off upon the scene of contention.—G. M.

BUILDING IN BIRMINGHAM.

CONSIDERABLE discussion has taken place in Birmingham with regard to new bye-laws proposed as to future building in the town. However great the desire to prevent over-crowding, and improve the sanitary conditions of the thickly-inhabited parts of Birmingham, there seems to have arisen a feeling that the proposal of the Town Council will tend to increase the rents of the dwellings of the working classes without decreasing the evils they have sought to prevent. Landowners, house-owners, architects, builders, and tenants, are equally opposed to the restrictions intended, so far as they relate to building operations. The Birmingham Architectural Society, on the 21st ult., passed a resolution,—

"That while approving of the object the Town Council have in view in framing the new bye-laws, it is the opinion of this society that if the laws are confirmed as at present proposed they will cause serious delay, expense, and inconvenience in the erection of new buildings, and also act prejudicially to the interests of architects and their clients, as well as those of land and property owners."

A letter was read from Mr. Arnold, solicitor for two of the largest local landowners, by the mayor, at a special meeting of the Town Council, expressing his apprehension that the street and building clauses would prove most ruinous to the town. Both architects and builders assert that the clauses as to separation of buildings, the dimensions of courtyards, as also the size of doors and windows, and similar regulations, would render it difficult for the working classes to live in the small houses, on account of the increase of rent they would entail, which, it is thought, would be nearly doubled: hence the inhabitants would be driven into apartments, and thereby increase the over-crowding of places requiring relief, some of the rooms that were inhabited, as Alderman Manton stated, not being fit for pigs. It is satisfactory to note, however, that the Town Council are only anxious for the well-being of the town, and its good sanitary and moral condition, and hence their proposal for its future regulation will not be adopted without full discussion.

YORK CITY AND COUNTY BANK.

THE new Bank Offices in Parliament-street, which have been in progress of erection during the last eighteen months, according to the local *Herald*, have been opened for business. The present Bank was erected in 1835, from the designs of Messrs. Robinson & Andrews, architects. Since that date the population of the city of York has very greatly increased, and the business of banking by joint-stock companies, which was then in its infancy, has succeeded beyond anticipations. The premises, which were thought spacious enough forty years ago, have long been too limited for the present requirements of the York City and County Banking Company. The directors, therefore, decided to enlarge their present building, and purchased premises in Market-street, adjoining their Parliament-street property. The plans were entrusted to Messrs. J. B. & W. Atkinson, of York, architects, and the works have been carried on without interfering with the progress of business in the existing bank offices, the new bank being situated immediately behind the present one.

Owing to the irregular shape of the site, and light being obtainable on one side only, the architects have had considerable difficulty in obtaining a well-lighted and symmetrical room; this, however, has been successfully accomplished. The new bank will be approached through the present entrance in Parliament-street, from which a vestibule, having glass doors, will lead into the bank, which consists of a rectangular-shaped room, 37 ft. by 18 ft. This contains the space for the public, and counter, the latter being 26 ft. long and 4 ft. wide. Behind the counter is the portion reserved for the clerks, averaging 24 ft. by 20 ft. The bank proper has a semi-circular ceiling, 28 ft. high from the floor; in the centre of this ceiling is a flat dome, 18 ft. in diameter; at the apex of the dome is a circular skylight, 9 ft. in diameter, and 35 ft. from floor to glass. The ceiling of this part is of plaster, panelled and moulded, all executed by Mr. Francis Rawling, of this city. The walls and columns are executed in Parian cement, and painted; wooden panels, painted in dark purple, are fixed all round the bank. The floor of the entrance vestibule and space for the public are laid with a new description of tile-paving, manufactured in Antwerp by Mr. Ludwig Oppenheimer, the surface of which is unglazed, and the objection of slipperiness thus obviated. The space for clerks is finished in a similar manner to the other part of the bank, having arched and panelled ceilings. The whole of the desks are mahogany, the workmanship of the counter being that of Mr. Rockledge, of Stonegate, and of the remainder of the cabinet and joiners' work and the desks that of Messrs. J. P. & W. Harrison, of York. Below, there is ample strong-room accommodation, which is connected with the bank by means of ingenious hydraulic-lifts, provided by Messrs. T. Cooke & Sons.

The bank is heated by air, which is conveyed direct from outside, and passed over a coil of hot-water pipes placed in the cellar, and is then transmitted into the bank through grates, which can be regulated at pleasure.

The various contractors, who have carried out the works in a very satisfactory manner, are:—Messrs. Weatherly & Rymer, brick and stone work; Messrs. J. P. & W. Harrison, carpenters and joiners' work and clerks' desks; Mr. Prudanes, plumbing; Mr. Rawling, plastering; Mr. Baynes, slating; Mr. Dodsworth, painting; the York Railway Plant Company, ironwork; Mr. Rockledge, counter; Messrs. Cooke & Sons, hydraulic lifts; Mr. Fryer, heating; Mr. Oppenheimer, Manchester, tile-floor.

It remains to be added that it is a source of much regret that Mr. J. B. Atkinson, the senior architect, and Mr. Peter Rymer, one of the contractors for the builder's work, were both removed by death during the progress of the work.

THE RIVERS POLLUTION COMMISSION.

THE fifth report of the commissioners appointed in 1868 to inquire into the best means of preventing the pollution of rivers is issued, and their conclusions are summed up as follows:—

We are of opinion that any law having for its object the prevention of river pollution should,—

1. Absolutely forbid under adequate penalties the casting of solid matters into the river channels;

2. Enact the foregoing standards of purity below which any liquid discharges into watercourses should, with the exceptions already mentioned, be forbidden;

3. Give power to all manufacturers in towns, except those of gas, paraffin oil, pyroligneous acid, animal charcoal, tin-plate and galvanised iron, to discharge their drainage waters into the town sewers under suitable regulations;

4. Confer additional powers on corporations, local boards, manufacturers, and mine-owners to take land compulsorily, under "provisional order," for the purpose of storing their waste refuse, or of cleansing sewage or other foul liquids, either by irrigation, filtration, or otherwise.

We are further of opinion that the equal and efficient administration throughout the country of any Act that may be passed for these purposes would be best secured by the appointment of inspectors, to whom should be committed the duty of detecting and proving offences against the law, and of procuring the conviction of offenders. We are, however, strongly of opinion that in order to secure the independence of these inspectors from local influence they should, like the inspectors under the Alkali Act, hold their appointments from your Majesty's Government.

On the formation of River Conservancy Boards with limited authority for local taxation, and power to authorise and direct expenditure for the purpose of river improvement,—as, for example, in the purchase and removal of weirs, the straightening and deepening of watercourses, and the formation of upland reservoirs,—we have already stated our opinion in our report (1870) on the Mersey and Ribble basins. There is undoubtedly a large field for useful work in every important river-basin both in England and Scotland for a Conservancy Board of this kind; and it is certain that whenever the necessity of the various river improvements which it would direct and superintend shall have become urgent, a representative body of this kind will be indispensable, having power, in connexion with the local and corporate authorities within the river basin, to levy rates for defraying the cost of whatever operations it may direct. But we are convinced that the thing of immediate and imperative importance in connexion with river improvement throughout the country is simply the prohibition, under adequate penalties, of the gross pollution which at present renders so much of the running water of this country useless to manufacturers, agriculturists, and the public generally.

The conclusions which we thus humbly submit to your Majesty have been arrived at after an inspection of nearly every town and district in Great Britain where any manufacturing or mining operations of importance are carried on. We have, moreover, personally examined, during the past five years, forty-nine woollen factories, fourteen works in which cotton is dyed, printed, or bleached; sixteen chemical and alkali works; ten linen, jute, and flax mills; five silk-mills and dye-works; nineteen paper-mills; four paraffine-oil works; four alcohol distilleries; four starch works; four tanneries; one sugar factory; two soap works; one salt works; five cutlery works; one nickel foundry; four silver, German silver, and electrotype works; five brass foundries; eight wire, tin-plate, and galvanising works; three iron works; sixty-nine mines; besides forty-three works for the purification of sewage, and the standards of purity below which we recommend that all liquid discharge into river-channels be forbidden, have been adopted after an investigation which has involved no fewer than 1,200 analyses of the various drainage waters which offend them, before and after the various modes of treatment which we have investigated, in addition to more than 2,000 samples of river and other waters before and after pollution.

SCHOOLS OF ART.

West London.—On the 22nd ult., the annual distribution of prizes to the students of the West London School of Art, Great Portland-street, took place. Mr. Forsyth, M.P., presided. By the report of the head master, Mr. George A. Stewart, it appeared that the number of students during the present year had been 590, being a decrease of fifty-seven on the number of the previous year. The two most successful competitors have gained valuable appointments through their talent,—Mr. Henry Noble, who takes the national bronze medal, as chief designer to a large Manchester firm; and Mr. Carl Jahn, as Master of the Mint at Helsingfors (Finland). Mr. Forsyth, in making the distribution, congratulated the students upon the nature of their occupation. They could not obtain excellence in art, and could not hope even to obtain mediocrity, unless they were determined to give to it unflinching and persevering attention. Another piece of advice was worthy of their notice, "Be modest,"—not in the ordinary sense of the term, but the modesty of being content to be pupils before they were critics. They would do well to avoid caprice or affectation. It was to schools of this kind that they looked for a better taste in the art studies of the metropolis, and for redressing such evils, even, as the disgraceful state in which the streets of London sometimes were.

Carlisle.—On Monday, the 21st ult., the annual exhibition of works executed by the pupils of the School of Art in this city was opened to the public, the works being displayed in the school-room. The generality of them, according to the *Carlisle Journal*, are of a more ambitious character than we have been accustomed to see there, though, at the same time, there appear to be fewer pictures done in oils. The advance steps consist in the increased number and better quality of the water-colours, and the more refined nature of the pencil-drawings from the antique. The water-colours are of very unequal merit; though many are of high quality, showing good draughtsmanship and purity of taste in colouring; others are inferior in drawing and crude in execution. The exhibition is superior to any previous one in the same school, and is of a more attractive character throughout, while the collection is supplemented by several superior engravings and water-colour studies from the South Kensington Museum.

Ryde, Isle of Wight.—An Art Loan Exhibition was opened in the Town-hall at Ryde, Isle of Wight, on the 22nd ult., in connexion with the School of Art of that town. The proceeds are to be devoted to the fund for the erection of the school, the foundation-stone of which was laid by the Princess Royal during the last season. The opening speech was delivered by Mr. Alexander Baillie Cochrane, the member for the Island. A large number of prizes were presented to the successful candidates.

Northampton Science Classes.—On the 18th ult., the prizes awarded by the Science and Art Department to the successful students of the Science Classes connected with the Northampton

Museum were distributed by the Mayor in Mr. Lees's school-room, Derngate, where the meetings of the classes are held. The Mayor, before proceeding with the distribution, said it gave him great pleasure to distribute those prizes, because they showed the amount of application and diligence students must have given to their studies in order to gain the prizes he saw before him. They were all fearfully and wonderfully made, and God, their maker, had placed them in a wonderful world, and it behoved them, not only to know themselves, but to know something of the elements by which they were surrounded. The instruction they were receiving at those classes was fitting them for honourable usefulness in the future. The first prize, a bronze medal, given by Mr. J. B. Hensman, five subjects, was won by Brian Norris; 2nd, 15*l.* scholarship, also by Brian Norris; and the 3rd, 15*l.* scholarship, by Frank Morris. In addition to numerous other prizes, thirty-seven first and sixty-eight second-class certificates were awarded. The Science and Art Department have also offered scholarships at the South Kensington School of Science to Mr. Law and Mr. B. Norris, and one of the late members of the classes has been appointed assistant at the same school.

THE AMATEUR.

THE amateur architectural critic has come in for some hard sayings recently; the last two or three weeks in particular. He has been called "hysterical," and other bad names, in assemblies of grave and reverend seniors of the profession, and wonder has been expressed that he should ever have been listened to at all. It was suggested that the architects generally had been guilty of a great want of foresight and care for their own interests, in ever encouraging the amateur as they had done in times past. They had done more than encourage him, indeed they had "bowed the knee to Baal"! invited him to come and rebuke them for their misdeeds, and humbled themselves before him. Under such treatment no one could wonder that the amateur critic "waxed fat and kicked," and had come to think himself a very privileged person, and to give himself airs; and now some of the architects say they have had enough of him.

This kind of re-action against the amateur is part of the searching of hearts which takes place whenever any adverse criticism, however unfair or overcharged, is directed against the profession by the public press. There is a cry raised that we are not sufficiently respected, and then comes the question, why not? And on this occasion the amateur is arraigned, and made the scapegoat, *pro tem.* He has behaved ungraciously and ungratefully. We have read his "hysterical" criticisms and praised them, even spoken of them with a sort of awe; we have invited him to our meetings, allowed him to reprove or even bully us *viva voce* and in print; and now he (the amateur, in the abstract) joins in a cry against us, if indeed he is not the main author of it; refuses our gold medals, and generally insinuates his opinion that we are worth nothing. And after this kind of behaviour, it is not very surprising that he should be told to mind his own business, and not interfere any more.

This seems to be the substance of a feeling which has lately received rather strong expression now and then, and was emphasised at a recent Institute discussion. And it must be admitted that the attitude assumed towards the architect by the representative of dilettantism on that occasion could hardly tend to modify the feeling. One is always glad, no doubt, to meet persons having extended interests and studies beyond the range of the profession; it is even very agreeable to be able to learn anything from them; but when an able lawyer recounts to a body of architects, with perfect *sang froid*, his method of adjusting a competition, the results of which had been unsatisfactory, by the simple formula,—"I will give you a plan, if you will make your architect adopt it,"—this seems to be clanking the chain a little too openly. One might, perhaps, tolerate being managed by amateurs, if they made themselves agreeable; but it is hardly in human nature to like being told that you are managed.

And it must be conceded that the charge against the amateur is not groundless. For some reason, architecture seems to be a matter peculiarly liable to be laid hold of and speculated upon, and even empirically practised by amateurs: a fact to be attributed partly to its less precise definition in comparison with other arts, but in great measure to the prevalence of mere restoration and reproduction of older style in modern practice. When the art is made to consist in the accurate imitation of any older style, rather than on the solution of modern problems in construction, a field is opened for the amateur, in which he can shine with little difficulty. He is not troubled with the petty details of actual practice; he is generally a man of some means and plenty of leisure; and it is no great undertaking for him to inspect old buildings, look up authorities, and make himself apparently perfect in whatever has been done, and then come down upon the unfortunate architect whom he chooses to accuse, in a "restoration," of want of attention to precedent, and whom he threatens with the thunders of some society ending in "ogical." We say the amateur is "apparently" well up in all these things, because, in fact, it is generally only the outside appearances which he has troubled himself with, and when it comes to a question of the bearing of construction upon the design, he is commonly nowhere. Nor does his knowledge of past precedent in any way enable him, as a rule, to make suggestions for the future guidance of the architect, except as to mere reproduction of ancient details. It is therefore in the sphere of restoration of old work that the amateur has generally been most demonstrative, and his view of his own position is pretty much that suggested by the "fine old English gentleman," who addressed the meeting on the occasion of Mr. Sharpe's recent lecture, and assured his audience that the preservation of ancient monuments, so far as it had been achieved, was mainly due to amateurs. We do not think this gentleman's position would stand the test of facts and figures, if the evidence on the point could be brought forward *in extenso*; and in cases where it would appear that the amateur had been the chief agent in the matter, it would probably be found that this was only because the said amateur, from some accident of social or political position, was enabled to bring influence to bear more directly on the public, and that the despised architect was in many such cases the *primum mobile*, after all.

Then, besides the social and archæological amateur, there is the literary amateur,—the person against whom, mainly, strong opinions have been expressed. The mischief of this class of amateur is that he indulges usually in a great deal of rhapsodical writing on the artistic side of architecture, without knowing anything of its practical and constructive problems. In this way he falls into many æsthetic pitfalls, and gives out, in beautiful and choice language, principles and theories which every practical architect, we might almost say every man of sound common sense and good education, knows to be mere talk and moonshine. The public, however, believe in his moonshine, partly because he not infrequently writes well; partly because he is one of themselves and makes no claim to professional exclusiveness; and partly because the architects, or certain of them, have weakly bowed down to him, and adopted his opinions and theories, chiefly (in general) as a weapon in combating those of another clique in their own profession. That is where much of the mischief originates. The profession are divided against themselves, and one party are only too ready to flatter and make common cause with a man who is good at his pen, and who will write against their professional or artistic opponents. We will not say the amateur has done no good. He has contrived probably to interest the general reading public in architecture more than they would otherwise have been interested. But he has done so in almost every instance (if not in every one) from a partial and one-sided point of view, and with a partial and imperfect knowledge of his subject. He would have been shown up for this at once, whether he were lay or clerical (the parsons are great hands at this sort of architectural romancing), if the profession had combined to keep him in check. But a clique of them have upheld and encouraged him, in order to use him for their own purposes, in recommending their own set of ideas to an easily deluded public. And now they begin to find that he is inclined to take the office of teacher upon himself, and to assume an air of authority, and lecture them from the position to which some of them have inconsiderately elevated him. The remedy is simple. Let the profession combine together and show the amateur to his proper place. He may be useful in collecting information, and in writing agreeable books which stimulate public interest in architecture. But he has no claim to dogmatise either to the architects themselves or to the public; and if he goes beyond his last he is sure to be discredited in the end. Architecture is the only liberal or artistic profession in which the amateur is allowed thus to parade himself as the instructor of the profession, not only with temporary impunity, but with applause and encouragement from certain sections of the architects. An amateur engineering or medical dogmatiser would soon be shut up. It rests with the architects themselves to bring these rather self-satisfied gentlemen to a sense of their real position.

REJECTION OF THE PUBLIC LIBRARIES ACT IN LAMBETH.

IF the decisions of the ratepayers of Islington, Bethnal-green,* and Lambeth are to be received as a test, there seems little hope at present of the artizan class in the metropolis having the privilege of availing themselves of those opportunities of intellectual improvement and scientific advancement which the establishment of public libraries affords, and which has already been so clearly manifested as regards several of the large towns in the provinces. Within the last four weeks Islington and Bethnal-green have refused to adopt the Act, and on Wednesday evening last week, at a meeting held at the Horns Tavern, in Kennington, the ratepayers of Lambeth adopted a similar course. According to the reported proceedings of the meeting in question, as well as from information which we have received from persons who were eye-witnesses, the conduct of the majority of those present afforded the most painfully conclusive evidence that the introduction of the Act was really required in the parish. Every person who attempted to speak in favour of the adoption of the Act appears to have been literally howled down. No statement whatever in support of the libraries being established was permitted, whilst, on the other hand, those who opposed the proposal, were compelled to admit that libraries were desirable, but that their establishment at the present time, involving the limited penny rate for their support, was inopportune. It was in vain that several gentlemen endeavoured to instance the case of Sueffield, and other towns, where the libraries are now in operation, with a rate of little more than a halfpenny in the pound. Mr. Applegarth, amongst others who claimed a fair hearing for the speakers on both sides of the question, was not allowed to say a word, and at length he retired, after stating very emphatically, "I enter my protest against the cowardly conduct pursued by a number of persons in this meeting, in deliberately howling down every man who has uttered or tried to say a word in favour of the adoption of these Acts."

It should be stated that at several preliminary meetings held in different parts of the parish, before the general ratepayers' meeting at the Horns, resolutions in favour of the adoption of the Acts were carried. The project was first originated by a number of gentlemen, whose object it is to associate the libraries with the museum in South London, which is now likely to be carried out, the excavations for the foundation of the intended building being at present in progress. They are desirous to have in Lambeth a free library, and a museum and art and science classes in connexion with it, in the spirit of the Public Libraries Acts, which were passed upon the understanding that such libraries, museums, and classes, were very desirable. At one of these meetings the Rev. Mr. Murphy observed that "if it was true that the workmen of the Continent had every facility given them to study special subjects, models of the antique, and beauty of form in the various galleries and museums free, it was time that something was done in the same direction in this country, or we should find our workmen left behind in excellence of workmanship. It was time that the rule of thumb should be a thing of the past, and that men engaged in work should endeavour to make the most useful things in the most beautiful forms." Mr. Percy Hart, another speaker at one of these meetings, said he hoped the Act would be adopted, and that the disgrace would no longer continue of the ratepayers in Lambeth not having a single building of such an

* It should be stated, with regard to Bethnal Green, that although the adoption of the Act was carried at the meeting of the ratepayers by a show of hands, the Vestry have since refused to act upon it, on the ground that the chairman of the ratepayers' meeting refused to grant a poll when demanded.

educational character which they could call their own. With reference to the first or central library proposed to be built, Mr. Symons stated that there was a piece of land at the junction of the Brixton-road and Camberwell New-road, which he had reason to know could be had from the Duchy of Cornwall as a site for the proposed new building. Mr. Storr also stated that the rateable value of Lambeth was close upon a million, and that a rate of 1d. in the pound would realise from 3,700*l.* to 4,000*l.*

DISSENSIONS IN EAST GRINSTEAD.

THE ceiling of East Grinstead church has been taken down, and the plaster has been removed from the walls, and a large number of the inhabitants are very cross about it. An indignation meeting was held last week, and it was resolved, —"That the vicar and churchwardens be called upon to restore and replace what has been pulled down and damaged, and in case they refuse that a suit be instituted to compel them to do so." What has been done may or may not be an improvement, we are not bound to say which; but surely the vicar would have shown himself wiser if he had first told the parishioners what he was about to do.

BUILDING ON THE DULWICH COLLEGE ESTATE.

THE trustees of the Dulwich College Estate have given notice, by direction of the Charity Commissioners, of their intention to grant building leases of certain portions of the property, for the term of 84 years, at annual ground-rents named, the lessees in each lease to expend not less than a stipulated sum in the erection of dwellings. In one case, the plots of land to be leased are situated in Half Moon-lane, Dulwich, having a frontage thereto of 25 ft. The annual ground-rent of these plots is 6*l.* 5s., and not less than 500*l.* are to be expended in buildings. Another plot to be let is also in Half Moon-lane, having a frontage of 110 ft., and a depth of 300 ft. In this case the annual ground-rent is 29*l.* 10s., and the minimum sum to be expended in building is 1,500*l.*

ST. MARY'S, BRINKLEY.

THE parish church of St. Mary, Brinkley, near Newmarket, was re-opened on Christmas day. The chancel has been partially rebuilt, and a vestry added; the chancel arch enlarged, and the chancel re-seated with open benches, in lieu of high pews. New open roofs of pitch pine, with curved ribs, have been put to the nave and aisles, and a new clearstory built. The windows throughout have been renewed in Box ground stone,—in place of the clunch, a soft local stone,—and are glazed with cathedral glass in lead lights. The walls internally have been replastered (a stoup, and a small piscina of some merit having been discovered bricked up), and have been refaced with flintwork externally. It is intended to rebuild the porch and reseat the nave as soon as funds will allow. The work has cost about 1,000*l.*, and has been executed by Messrs. Mason & Son, of Haverhill, under the superintendence of Mr. Frederick Thomson, architect, of Adelphi.

IMPERFECTIONS OF ROADS AND STREETS.

IN a paper on the imperfections of our roads and streets read at the meeting of the Society for Promoting Scientific Industry, Manchester, Mr. Evan Leigh, the lecturer, after admitting that Manchester had little cause for complaint with regard to the improvements which had of late been carried out in the paving of the streets, urged that notwithstanding this neither it nor any of our large towns were, in this respect, what they might be, at a much less expense withal, under a totally different system. The means which he proposed were novel, but quite practical. He discarded metal tramways altogether as unsuitable to the general public. He wished to see a road suitable for all vehicles, as smooth as a railway, and as durable; one that could be worked with perhaps a fourth of the present tractional power, and that would cost next to nothing for repairs, after the first expense in laying down. Instead of the pick and spade, which continued to be used in road-making, he proposed to introduce machinery and steam-power. For this purpose he would introduce the planing-machine, for which they were indebted to the genius of Roberts, late of Manchester, or Fox of Derby, and with this, if the road was macadamised, he would plane it level by steam-power. If operating upon a street the first thing would be to rake up the pavement to the breadth of a carriage-track, then to run the machine over it with the cutters set at a sufficient depth to get a hard and solid foundation. The machine would then be shifted to another part of the road, leaving behind it a road foundation, the solidity, uniformity, and general quality of which could never be produced by hand labour. Following the machine should be a number of labourers and paviors, laying down at a suitable distance apart blocks of artificial stone, with a facing of Portland cement, for the carriage-wheels to run upon.

EXPLOSIONS.

Fatal Explosion at Margate.—On the 23rd ult., an explosion took place at Mr. George D. Merten's concentrated worts factory, in Herbert-place, Margate. The brewery was in full work. The owner and other persons were on the premises at the time. The building and its contents, and a portion of the adjoining premises, were instantly a mass of ruins, and one boy named Gibbs (who was killed on the spot), and three or four of the men were buried under the *débris*. The men were speedily rescued, all being more or less injured. The machinery, packing cases, bricks, timber, &c., were scattered in all directions, a piece of iron weighing 64 lb. being thrown through the roof of a building 200 yards distant. The outside corrosion of one of the plates which was embedded in the brickwork was the cause of the accident.

Serious Gas Explosions at Sheffield. — A serious gas explosion has occurred at the works of Messrs. John Brown & Co., limited, at Sheffield. One of the gas mains running between the armour plating-mill and the press burst—probably in consequence of the frost—and large quantities of gas escaped through the crevices in the ground. At the time when this happened some men were conveying an armour plate, whilst in a welding heat, to the press opposite the mill. The gas ignited at the hot plate, and immediately exploded. The works were in darkness for six hours, owing to the stoppage of the gas supply. No one was much injured.—On the 31st ult. a house, situated in Rockingham-street, Sheffield, was almost demolished by an explosion of gas. The woman owning the house, it is said, was blown up a chimney, a girl who was upstairs was precipitated through the window into the street, and several others were hurt. The house is utterly wrecked.

Explosion at Maldon Union-house. — On the 21st ult., an explosion occurred in one of the out-buildings of the new workhouse at Maldon, used as the fever hospital,—a brick and slated single-floor building, divided into three departments, the middle of which contains a kitchen allotted to the nurse, about 10 ft. by 12 ft., and two wards, one on each side of the kitchen. The kitchen was fitted with a range of moderate dimensions against the wall of the room on the right, and water was supplied to it from the main through a tank divided into two departments, placed over the lobby between the ceiling and roof. Benham & Sons' patent circulating pipes were used, and on their system a pipe conveys the cold water from the tank down into the range boiler, and on becoming heated the water passes through another pipe up into the hot-water division of the tank. The kitchen had not been used for a considerable period, but as part of the Christmas dinner was to be cooked there, directions were given for a fire to be lighted. On Monday two female inmates set about lighting a fire, and did so with difficulty. Shortly afterwards a crash was heard. The two walls separating the kitchen from the two rooms were hurled into them. Half the chimney lay in the kitchen, the other half 6 ft. or 8 ft. into the room on the right. The kitchen ceiling had been torn down Two holes, one about 8 ft. square, were made by the chimney in its descent. The tank had left its position on the lobby, portions of the range were scattered here and there, but the main part was buried beneath the *débris*. Broken water and gas pipes, and windows, and heaps of rafters, &c., completed the scene of devastation.

Boiler Explosion at Chorley.—A terrible boiler explosion took place on December 27th, at a shop in Chorley, Lancashire. The house was just tenanted by a Scotch family named Waddell. They had been told not to light the kitchen fire, as the pipes from a boiler behind the grate to the bath-room were frozen; but the warning was disregarded, and while seven persons were sitting round the fire the boiler suddenly burst with a loud report. Six persons were seriously injured.

Explosion at Preston Workhouse.—On the 28th ult. a fatal accident occurred at the Preston Union Workhouse, Fulwood. The boys were entering the school, when the boiler connected with the heating apparatus suddenly exploded, scalding two children severely and killing another.

Croydon.—Last week a fatal accident occurred at the Croydon Town-hall. In the basement of the building was a boiler, in connexion with the heating apparatus employed for warming the various chambers, and, Saturday being the day on which the weekly Petty Sessions are held, it was the duty of a man named Cahill, the hall-keeper, to get the bench-room properly warmed beforehand for the occasion. It was believed that the pipes in connexion with the boiler were to some extent frozen, and in consequence the instructions were to light a very slow fire. The fire was lighted about one o'clock, and about twenty minutes past two Cahill proceeded downstairs to attend to the furnace, apparently intending to put on a little more fuel. About ten minutes afterwards Police-sergeant Flaxman, 32 W, while passing along Surrey-street, heard a loud report, and saw steam issuing from the lower windows in the rear of the town-hall. Suspecting that an explosion had occurred, he immediately ran round to the front entrance and proceeded to the basement. There he found the boiler had burst and been blown to pieces, scattering the brickwork in which it was set in all directions, and half-buried beneath the rubbish was Cahill, who still breathed, but was unable to speak.

Bradford. — A kitchen boiler, in the house of Mr. Ephraimson, New Ashfield, Bradford, exploded recently, forcing out all the windows on the ground-floor of the house, and bulging considerably the wall of the adjoining premises. A servant who was in the kitchen at the time narrowly escaped with her life, being blown out of the window, and falling a distance of 16 ft. on to the pavement.

MONUMENTAL.

Proposed Memorial of Bishop Sumner.—It is reported that the family of the late Bishop Sumner propose to erect in Winchester Cathedral a memorial of this distinguished prelate. The work will be intrusted to Mr. Weeks, the eminent sculptor, and the monument will be in the form of a recumbent figure of the late bishop, similar to the one in Canterbury Cathedral to the memory of Archbishop Sumner.

Monument to Captain Cook.—A communication from her Majesty's ship *Scout* states that a monument has been erected on one of the islands of the Pacific to the memory of Captain Cook, who was killed by the savages of Owhyhee, ninety-five years ago. The ceremony took place on the 14th of November, in the presence of Major Wodehouse, the English Commissioner, and the captain and officers of the *Scout*. The monument is an obelisk 25 ft. high, and mounted on a base 8 ft. square. It is of concrete, and bears the following inscription:—"In memory of the great circumnavigator, Captain James Cook, R.N., who discovered these islands on the 18th of January, A.D., 1778, and fell near this spot on the 14th of February, A.D., 1779. This monument was erected in November, A.D., 1874, by some of his fellow-countrymen." The architect was Mr. R. Lishman, of Honolulu (late of Northumberland, England). It is erected on a spot (which the *Scout's* company selected on their first visit in April, 1872), about 100 yards from the rock on which the captain fell. A monument, consisting of blocks of lava, was erected at the spot some years ago; but it had fallen down.

Statue to the Emperor Napoleon.—The Italian sculptor Gaetano Barzaghi is at present working upon an equestrian statue of Napoleon III. which is to be set up in Milan. It represents the late Emperor responding to the enthusiastic reception he met with on his entry into Milan, and is designed as a memorial tribute from that city. The statue is of life size, and will be cast

in bronze and placed upon a base of marble decorated with bas-reliefs.

Monument to Lessing.—A monument has been erected upon the tomb of Lessing, in the cemetery of Brunswick. It consists of a granite pyramid bearing on one side a profile portrait of Lessing in bronze.

Livingstone's Tomb.—A large black marble tombstone was laid over the grave of the late Dr. Livingstone in Westminster Abbey on the 23rd ult. The stone has a lengthy inscription, in gold letters.

Monument to French Troops.—Marshal M'Mahon has just given 2,000 kilogrammes of bronze taken from old guns to make an immediate cast of the colossal group which will be erected in the field of battle of Mars-la-Tour, to the memory of the soldiers killed in the days of Gravelotte, Saint Privat, Mars-la-Tour, and Sainte Marie-aux-Chênes, on the 16th and 18th August, 1870. The group will be inaugurated towards the 20th of February with great solemnity. The marshals and generals commanding *corps d'armée* will be present, and the Chief of the State, it is said, will preside.

GAS.

Stafford.—The Stafford Gas Company have given public notice that they have used all endeavours possible to keep up a proper supply of gas, but, in consequence of not being able to obtain coal from any source, they fear that the supply for public or private use for several days hence must be necessarily very limited. The scarcity of coal is attributed to the long holidays taken at this season by the colliers, and the consequently meagre "put out."

Fairford.—The Fairford Gas Company intend making a reduction in the price of their gas. It will be reduced from 8s. 4d. to 7s. 6d. per 1,000 ft., which is still rather a high price. [We should say it is, rather!]

THE ROYAL GOLD MEDAL OF THE R.I.B.A.

SIR,—The eyes of the profession are turned with considerable anxiety to the proceedings of the Council on this matter, for last year there was a complete *fiasco*. It is to be hoped that the like want of judgment and discretion will not be displayed on this occasion. It is feared, from certain rumours afloat, that the honour may not be conferred on one whose position or merits in the eyes of his brother architects will give weight to the decision. It must be remembered that the medal should not only confer honour on the recipient, but that he, to a degree, should be a credit to the honour. It must not be tarnished by the selection of a man of mere second-rate attainments or reputation, or of one whose fitness consists in a good appointment, or jovial sympathies. There cannot surely be wanting an architect of great abilities, or author of works either scientific, artistic, or literary, or whose eminent services rendered to the art and the profession, constitute a title. If the Council do not propose such a candidate, let them beware lest a spirit of indignant remonstrance be aroused, for some dozen Fellows will be surely found to vindicate what should be the judgment of the profession, and a rival name will be proposed (as on other previous occasions) to prevent the Royal Gold Medal being considered unworthy the ambition of the leading members; or perhaps steps may be taken to avoid such dilemmas in future, by requiring two names to be submitted for selection, and thus avoid the compulsory acceptance of the nominee of the Council. I send you my name. A WATCHER.

RATS AND SLAUGHTER-HOUSES.

SIR,—In your paper of the 26th ult. the increase of rats in the metropolis is reported. The reason is plain. Rats follow slaughter-houses, and will burrow through anything short of iron and stoneware pipes to get at blood and refuse. Plant a slaughter-house anywhere amongst brick drains and sewers, and in a short time every drain and sewer in the neighbourhood will be perforated; and not only will the rats be traversing and trying each weak point in our houses and house drains, but will be affording outlets to the sewage into the subsoil. Late inquiries have shown that there are from 1,600 to 1,700 private slaughter-houses in the metropolis, and that their number and business are increasing. What further reason can be wanted for the increase of rats also?

But it may be asked, why not pipe-drain your houses, and fit them with heavy sink-traps? This was done in a house I occupied in one of our squares; and the rats, baffled for a short time, soon worked their way back by burrowing from the outside cellars under the house foundation, and made their appearance again, like the clown in the pantomime, in the kitchen, pantry, and even drawing-room, much to the horror of kitchenmaid and housemaid. I could only get rid of the pest by changing my residence to another quarter. A LONDONER.

DESTRUCTIVE FIRES ON SEA AND LAND.

SIR,—The appalling loss of life of late on land and ocean is enough to startle nations from apathy. Many calamities are preventible, for example, in the case of the illfated *Cospatrick*, recently destroyed by fire, with the lamentable loss of some hundreds of lives.

I take a ship full of shavings, chips, anything inflammable. I ignite them. When flame mounts through the hatchway, I would clap the covers on, then pull a stout rod, which descends from the deck through an iron gas pipe to a large size fire-annihilator securely fixed in the bottom of the ship. Hauling at the rod-wire would unplug the can, and break a bottle of fluid fixed inside the can; the ingredients in the charged can would instantly emit the well-known fire-destroying vapour. Were the above adopted, it would save many a factory and mill, if the handle was only within reach of the night-constable. I present it in hope and confidence in its efficacy to prevent disasters on the main. Did my means permit me, I would gladly exemplify it.

Many useless beings are bedizened and subsidized, but a poor benefactor of mankind is throttled and robbed of 300*l.* if he ask for protection to being out something useful. Reverse this, ye powers that hold the scales! R. T.

A BALANCE REPUDIATED.

COOPER *v.* RADFORD.

At the County Court, Isle of Wight, a claim was made for 50*l.*, balance for work done. Plaintiff is a retired builder, of Sandown, and defendant is a clerk of works in the employ of the Government, but was formerly an apprentice to plaintiff. He had also been in the employ of Mr. Cooper, as a carpenter. Mr. Cooper built some houses for him for 450*l.*; 400*l.* were paid by defendant when they were finished, and 50*l.* were left as a debt, defendant agreeing to pay interest on the debt till paid off. Defendant left Mr. Cooper's employ, but afterwards returned to plaintiff's service, and after a time applied for an increase of wages. Plaintiff said he could not grant that, but would not charge him the interest on the 50*l.* as long as he remained in his service. In 1865 defendant went to London, and before going asked plaintiff to act as his agent. Plaintiff agreed to act as agent, and kept an account in a memorandum-book produced. Defendant came down to Sandown in 1867, when a balance was struck in the book. The matter went on till 1869, when plaintiff, hearing that defendant had sold his houses, called for his money, on which defendant repudiated the debt. Defendant said the bargain for building was originally 350*l.*, but it was increased to 400*l.*—never to 450*l.* Mr. Cooper said something about 50*l.* more which he ought to have, but no agreement was made for more than 400*l.* His Honour ruled that defendant having gone through the account in the memorandum-book, in which interest for 50*l.* was charged in 1867, when a balance was struck, this was a proof of the debt, and gave judgment for the full amount, to be paid in instalments of 2*l.* per month. A cheque for 35*l.* down was ultimately accepted.

BUILDING WITHOUT NOTICE.

At the Wandsworth Police-court, Mr. William Leach, a grocer, of High-street, Wandsworth, appeared to answer a summons at the instance of Mr. Hiscocks, district surveyor, for erecting a building without giving notice.

In the first instance a carpenter named Hatcher was summoned, but he stated that he was employed by Mr. Leach at so much per hour.

Mr. Hiscocks said he wished the magistrate to decide who was the builder. It was an important question, and though it was a penal section under which the defendant was summoned, he did not ask for a penalty.

Mr. Ingham said the Act meant a master builder, or other master employed to execute the work.

Mr. Leach, on being asked why he did not give notice, said Mr. Hiscocks had not required notice on six occasions out of seven. He always came into his counting-house, and received the fees.

Mr. Hiscocks said that statement was untrue, as he had always remonstrated with him.

Mr. Leach then produced a cheque, and said he had paid Mr. Hiscocks the fee for the building in question.

Mr. Hiscocks said the cheque was left at his office after the summons had been taken out. No account had been delivered, nor receipt given. In reply to the magistrate, Mr. Hiscocks admitted that his signature was on the cheque. He said he did not deny having the money.

Mr. Ingham said he (Mr. Hiscocks) had taken the fee without inspecting the building. Mr. Hiscocks said he had not taken the fee for the building. It was left at his office without his consent.

Mr. Ingham said he was not forced to take it up. He dismissed the summons against Hatcher, and ordered Mr. Hiscocks to pay him 5*s.* for his costs. He fined Mr. Leach 1*d.* and 2*s.* costs for not giving notice.

Mr. Hiscocks paid the 5*s.*, and said he should take proceedings against Mr. Leach.

CHANGE OF FIRM'S NAME.

SCOTT *v.* COLLINGRIDGE.

THIS was an action at the Lord Mayor's Court on the 29th ult. to recover 12*l.* 10*s.* the price of a safe which had been supplied to the defendant.

The plaintiff, Mr. Henry Scott, said that he and his partner carried on business at 120, Cannon-street, which were originally the premises of Mr. Samuel Chatwood, for whom they acted as agent. The defendant ordered a safe to be delivered to the offices of the *Pictorial World* in Fleet-street. Application had been made to the defendant for payment, but he had not yet settled the account.

Mr. Leonard Collingridge stated that he had inserted an advertisement in the "City of London Directory," referring to Mr. Samuel Chatwood's safes. With the view of obtaining a fireproof safe in exchange or as a settlement of the account, he called at 120, Cannon-street. On inquiring for Mr. Chatwood, he was told that he was at Manchester, and defendant saw Mr. Scott, from whom he ordered a safe, and gave instructions that it should be sent to the offices of the *Pictorial World*. The plaintiff did not say a word as to any change in the occupation of the premises.

The Counsel on behalf of the defendant urged that it was proved that the business of the plaintiff was the same as that originally carried on by Mr. Chatwood, and that, so far as the defendant at least was concerned, no notice whatever of the change had been given. The evidence went to show that the safe was purchased of Mr. Chatwood, and not of the plaintiff, for the circulars sent to the defendant had on them the name of Mr. Chatwood.

The Jury found for the defendant.

PUMP-WATER.—LOCAL BOARDS.

FOR some time past the western suburbs of London have been much disturbed by some useful sanitary proceedings, taken by the Acton Local Board of Health, before the stipendiaries at Hammersmith, in respect to pumps and their foul water. As usual, conflicting evidence was given on the question of the purity of water, and the Hammersmith magistrate, after hearing the evidence on the part of the Acton Local Board, as to the impurities of village pumps and wells that supplied the poor and middle classes for miles around the western suburbs, was so befogged that he appointed Dr. Voelcker to analyse samples of the water. The learned doctor could not determine as to some pumps, there being a difference of opinion.

Mr. Bridge, the magistrate, read a part of the report, that stated that the Brentford-lane pump was not contaminated with such an amount of drainage product as to render it unfit for drinking and for general domestic use.

The Rector of Acton championed the Thorney Conduit pump, whose antiquity could be traced 200 years, and he begged of the stipendiary, before he made an order, to consider earnestly what the consequences must be to a number of poor people who had used its water for years. Assuming the medico report to be correct, he submitted that it was the duty of the Local Government Board to remedy the evil, and if not, to place a drinking-fountain, or some other water supply, in place of the pump. As the Acton Local Board was custodian of the pump, it was cruel and unfair to order the only supply of water to be closed.

Mr. Hemsley, on the part of the Local Board, urged that the existence of wells and pumps was detrimental to the health, convenience, and comfort of the poor classes, as such led landlords not to put on a water-supply from other sources.

In giving judgment, Mr. Bridge said he had given the subject every latitude and consideration, as he considered it a very important inquiry. If well and pump water were pure and wholesome, it was better than water supplied from rivers and water companies. He should not order an old well to be closed unless it was shown that the water could not be made pure at a reasonable cost. He should, however, make an order for the worst pump to be closed for one month, and at the end of that time would require evidence that there were no means of purifying the water.

The Local Board here urged that it would be in the same position at the end of the month, and further expenses would be too heavy for them to undertake. The other summonses were withdrawn.

SMOKY CHIMNEYS.

SIR,—May I venture to ask if there is practically any real cure for that domestic delight,—a smoking chimney? Two of my chimneys have been tortured again and again, "tall-boy," zigzag pipe, cowl, "contracted throat," &c., all to no purpose, and the expense and disfigurement have been serious. I find any number of "patent" inventions, selection from which is no task; while to get a skilled opinion free from bias in favour of some particular "nostrum" is simply an impossibility. C. P.

*** Each case must be treated specially. The difficulty is to find the right man to do it.

The Love of the Picturesque.—Sir Thomas D. Acland, bart., M.P., was summoned before the magistrates at Exeter, January 1, for neglecting to have the hedges trimmed and trees lopped in various parts of his estate. In defence the hon. baronet said his father was fond of preserving the picturesque features of the Devonshire lanes, and out of respect to his memory the trees and brushwood had been left in their natural growth. An order was made by the magistrates for the removal of the cause of complaint.

Books Received.

Etchings on the Loire, and in the South of France. By ERNEST GEORGE, Architect. London: John Murray. 1875.

A VERY charming book. We had occasion not very long ago to speak with much praise of a similar volume by the same author, Mr. Ernest George, "Etchings on the Mosel." The present volume is not merely equal in merit to that, but in some respects surpasses it. Mr. George has obtained great mastery over the needle, and moreover chooses his subjects well. Letterpress accompanies each view, brief but to the purpose.

Homes, and How to Make Them. By E. C. GARDNER. Illustrated. London: Trübner & Co. 1874.

THIS little volume, published in Boston, consists of letters supposed to pass between an architect and his friends, and containing hints and suggestions relating to the building of houses and the creating of homes. A little family story runs through it, and one might think it a sort of reflex *longo intervallo*, of M. Viollet-le-Duc's pleasant volume lately reviewed in our pages. Mr. Gardner has made his book instructive as well as pleasant, and, though addressed more particularly to American readers, it may be usefully read by all on this side the big pond, who contemplate building themselves a house.

VARIORUM.

"THE History, Structure, &c., of the Sheep. By W. C. Spooner [(Lockwood & Co.)," is evidently accepted as a standard work on the subject of which it treats, for here we have a third edition, revised and enlarged. It contains full information on most points, but needs one more chapter which should treat of the buildings in which sheep can be properly kept.——The January No. of the *Victoria Magazine* includes a report of a paper by Miss Emily Faithfull, on "A Year's Experience in Emigration Work in connexion with New Zealand," read at the Victoria Discussion Society, and of the discussion which followed. This is more useful reading than some of the serial stories in the same number, which are poor things.

Miscellanea.

The Value of our Houses.—By means of the House-tax we get an annual account of the value of the inhabited houses in Great Britain worth 20*l.* a year or upwards. The *Times* says an official return has been issued for the financial year ending on the 5th of April, 1873; and it shows that in that year the duty, at 9d. in the pound, was charged on dwelling-houses of the annual value of 28,455,554*l.*; and, at 6d. in the pound, on shops and warehouses of the annual value of 9,232,546*l.*; on beershops, of the annual value of 3,575,560*l.*; and on farmhouses of the annual value of 759,767*l.* The total annual value, therefore, was 42,023,727*l.*, which is 606,749*l.* more than in the preceding year. The increase extended to every one of these four classes of houses, but is most marked in the first, namely, the ordinary dwelling-houses, in which it amounted to more than 500,000*l.* An increase in value is, of course, constantly going on. It is attributable partly to the advancing value of house property, but more to the increase in the number of taxable houses—that is, houses worth 20*l.* a year, or more. If we go back seven years, and compare the above return with that for the year ending the 5th of April, 1866, we find that at that time the values were very much less; the dwelling-houses taxed were assessed at the annual value of only 20,826,335*l.*; shops and warehouses, 7,505,169*l.*; beershops, 2,841,181*l.*; farmhouses, 606,766*l.*; making a total of 31,779,451*l.*, which in seven years rose to be 42 millions.

An Aquarium for Hastings.—The plans for an aquarium and public baths to be built on the beach, a little east of Hastings pier, have remained in abeyance since the premiums were awarded nearly a year ago. A company of local capitalists, including the partners in two local firms of architects, to whom premiums were awarded at the time, has just been started; and a meeting, called by the Mayor, has just been held, to promote the establishment of the company. Resolutions in favour of carrying out the scheme under limited liability were carried.

West Cheshire Hovels.—At the usual fortnightly meeting of the Nantwich Rural Sanitary authority, Mr. J. A. Davenport, the inspector, drew the attention of the Board to several cottages standing on Rees Heath, a short distance from Nantwich. He states:—"At one house the average height of the two bed-rooms is 3 ft. 6 in. each, and five occupants sleep in 1,100 cubic feet of air-space. At another house there are six occupants in one bed-room, containing 1,300 cubic feet. The roof is in bad repair, and the rain can find a ready access to the bed-room. But a third case is really serious. Here we have a one-bedroomed house, and in the roof of this one bed-room there are two large holes where the thatch has fallen in, and they have been temporarily stopped up by an old door, old slates and bags, and, and indeed, anything available. I do not hesitate to say that the room is not fit to live in. The window, too, is partly out and stopped up with paper. In the single room, containing 1,150 cubic feet, sleep eight persons—two men, two women, one girl thirteen years of age, another eight, and two small children. The room will only contain two beds. They are all of one family; and this number during Christmas will be increased to eleven by the addition of three adults."

The Phosphate Sewage Company and the Disposal of Sewage.—One ingenious gentleman—obviously a *shining* light—has, we believe, mooted a scheme for the conversion of sewage into *blacking*. The only really practicable use, however, to which sewage can be put, is to utilise it as manure,—which certainly seems its *natural* destination. The Phosphate Sewage Company having undertaken the disposal of the sewage of Hertford, Professor Tanner, the company's chemist, recently explained their process to visitors from various towns. About a million gallons of sewage have to be treated daily; and inasmuch as this includes also the surface-water of the area drained, the quantity sometimes rises, after heavy rainfall, to as much as two millions of gallons. The sewage is diverted from the main, by which it is conducted to the works, into a tank, and at the point of leaving the pipe it is subjected to the action of the "phosphate liquor," which is the chief agent in the process. After undergoing filtration, the effluent passes off into a back cutting, and by the manifold-ditch into the Lee. The solid portions of the sewage are lifted up by machinery and carried along troughs to a large tank east of the machinery shed, where it is spread out on the drying-beds, and becomes a manure.

Opening of Ripley Public Hall.—A new public hall and baths was opened on the 21st ult., in Ripley, by Sir Henry Wilmot, Bart, M.P. The only available room in the town in which a public meeting, lecture, or concert could be held was the National School-room, which was not sufficiently large to accommodate the number of persons who gathered together. It was therefore decided to start a company for the erection of a public hall. The shares were rapidly purchased, and the formal opening of the building has taken place. The structure is of brick, faced with stone, interspersed with lines of ornamental terra-cotta work, and provides a large public hall, a swimming-bath, a temperance hotel, a working-men's public-house, and lodge-rooms. The principal room is the public hall, which is reached by a flight of steps from the front of the building. The hall is 65 ft. long by 45 ft. wide, and has a gallery facing the platform. It is calculated to seat 800 persons. The architect is Mr. G. Eyre, of Codnor, near Derby; and the contractor is Mr. Fletcher, of Ripley. The total cost of the building is expected to be about 6,000*l.*

Suffocated by the Fumes of Charcoal.—The coroner for West Kent held an inquiry at Lewisham, on the 30th ult., touching the death of Alice Hanson, aged 26, a servant at No. 1, Rutland Park-villas, Perry-hill, who was found dead on the floor of her bedroom on the night of Boxing-day. One of the girls went out, and did not return until half-past seven o'clock on Saturday night, when, on knocking at the door, she failed to obtain an answer. Becoming alarmed, she procured assistance, and an entrance was effected through a top-room window, and deceased was discovered lying dead on the floor in her night-dress. A charcoal stove was in the room, and it is supposed that being cold on going to bed she took it up and lighted it, placing it inside the fender. Unfortunately the register plate in the chimney was down, causing the charcoal fumes to be diffused through the room.

The Roadways.—At the sitting of the Marylebone Vestry, on the 31st ult., —Admiral Oliver, R.N., churchwarden, presiding,—a letter, couched in strong language, was read from Mr. Leo Schuster, complaining of the "vile" parochial administration of the parish in respect of the slippery state of the roadway in Cavendish-square, and suggesting that the parish *employés* should be engaged in strewing dust and ashes, or gravel, about the roads. Mr. Hallam wished to know if it was legal for the Vestry to advise parishioners to throw dust and ashes about the roads. He had seen a notice issued by the police magistrate so advising people. Mr. Greenwell (Vestry clerk) said it would not be legal to so advise the ratepayers. The dust and ashes of the parishioners, according to the 137th section of "The Metropolis Local Management Act," were the property of the Vestry, who had full power to dispose of the same, and the person to whom they were sold had full power to take, carry away, and dispose of the same as he liked, for his own use.

The Purchase and Sale of Land.—On Friday (January 1st) an Act of Parliament began to take effect to amend the law relating to vendor and purchaser, and to simplify the title to land. This may be regarded as a commencement of Chancery reforms, and to simplify the sale of land. After the 31st December last, 40 years is to be substituted for 60 years as the root of title in the sale of land, and new rules are set forth as to the obligations of vendors and purchasers. The statute simplifies the conveyance of title of legal representatives by trustees and married women, and, after the commencement of the statute, there is to be no priority or protection, or of tacking allowed. Furthermore, vendors and purchasers may obtain a decision at chambers as to requisitions, objections, or compensations in estates. This will lead to other reforms, and simplify the sale of land.

Designs for the Plasterers' Company.—The *Labour News* reminds us that the Science and Art Department of the Committee of Council of Education, South Kensington, announce that the Plasterers' Company offer prizes to be competed for by students in metropolitan and provincial schools of art in connexion with the Department:—1. A model in plaster, for an ornamental bracket intended to support a bust or statuette,—for the best, 7*l.* 7*s.*; for the second-best, 4*l.* 2. A design in monochrome, capable of being executed in plaster, in low relief, for the ornamentation of a doorway of any of the principal rooms of a dwelling-house,—for the best, 8*l.* 8*s.*; for second-best, 5*l.* 5*s.* Designs in competition must be sent to the Science and Art Department, in April, 1875, with the works required by the regulations in the Art Directory. The designs will be judged by the Art Department.

The Anstice Memorial Institute and Workmen's Club, Madeley.—The restoration of this handsome structure, which was to a great extent destroyed by fire in March last, is now complete. The building was raised about five years ago in memory of Mr. John Anstice, whose many virtues and unwearied efforts to benefit his neighbours, particularly the poorer portions of them, endeared him to all who knew him, and it has now been restored at a cost of 1,800*l.* In addition to the large lecture-room, which is 75 ft. long by 40 ft. wide, a gallery, not previously completed, has been added; and improvements have been effected by means of steps from the body of the hall to the raised platform at the opposite end of the room, and by the addition of a handsome cornice, which adds to the appearance. The work has been carried out by the original architect, Mr. J. Johnson, of Moorgate-street, London; and Messrs. Nevitt, of Ironbridge, the builders.

Wells Polluted with Gas.—An unusual circumstance has occurred, in the pollution of some of the Galashiels wells by an impregnation with coal-gas, in the district embracing the head of High-street and foot of Island-street. The main-supply gas-pipe is about 20 yards from these wells, and it is supposed that a serious leakage exists somewhere. The whole soil is tainted with a strong smell of gas, and it is believed that it has even entered the Water Company's supply-pipes. Whether arising from this or from some other cause, typhoid fever of a somewhat malignant type has manifested itself in the district adjoining the polluted wells, and two cases have had a fatal issue.—*Scotsman.*

Sewage in the Regent's Canal.—At the Marylebone Vestry, on the 31st ult., in answer to Mr. Hallam, the chief surveyor (Mr. Tompkins) stated that, in accordance with the directions of the board, he had, with the assistance of the surveyor of the Regent's Canal Company, inspected the canal in the parish with a view to ascertain if there are any houses draining into it. The result was, that he found one house, situate in Grove-road, draining into the canal, the owner of which house had now been ordered by the Canal Company to connect his drain with the sewers. Mr. Hallam remarked, that eminent analysts had tested the water of the canal, and found it to be quite as bad as any sewer matter. He hoped the vestry would look into the question. The sewer committee are to investigate the matter.

Needham Market Brewery.—Messrs. G. A. Clowes & Co., maltsters and brewers, of Needham Market, have recently erected a new brewery near the railway station. The building was constructed from designs by Mr. Thomas Wilkins, architect, of London, late of Ipswich. The tower, or main part of the building, is about 70 ft. high, and on one side is the cooler-house, on the other the boiler-house. The whole is built of red bricks, with white finishings to the windows and quoins, and is of a substantial character. It is a five-quarter steam brewery, and contains a boiler of 10-horse power and engine of 4-horse. Messrs. G. & R. Scopes did the brick-work; Mr. Theobald the wood-work; and Mr. Cooper the plumbing and glazing, all being tradesmen in the town. The engineers were Messrs. Catchpool, Stannard, & Stanford, of Colchester, and the copper-smiths Messrs. Blundell & Co., of London.

The Water we Drink.—As the result of a chemical analysis of the waters furnished to the metropolis during December, Dr. Frankland reports that, in consequence of the Thames being in flood in the early part of the month, the companies drawing their storages from that river experienced the usual difficulties in supplying efficiently filtered water. In the water of the Grand Junction and Lambeth companies "living and moving organisms" were found. The Chelsea Company's water, however, besides "abundance of such organisms, contained fragments of woollen and cotton fabrics, clots of the mycelium of a fungus, and fibres of partially digested or decomposed flesh meat." Dr. Frankland further adds, "the water thus charged with fœcal and other refuse matters was unfit for dietetic purposes, and could not be so used without serious risk to health."

Which is the Smallest Church in England?—The discussion of this question has had an interest for correspondents of *Church Bells*, which may be shared by some of our readers. Several churches having been mentioned in previous numbers, the Rev. H. T. Ellacombe puts in his plea, thus:—Culbone Church, on the borders of Exmoor, near the shore of Porlock Bay, is a perfect little Norman building. The chancel is 10 ft. wide, by 11 ft. 3 in. long; the wall of the chancel arch is 2 ft. thick; the length of the nave is 21 ft. 6 in. in the clear; 12 ft. 3 in. wide. Total length, 34 ft. 9 in. A porch on the south side is 6 ft. by 4 ft. There is a western bell-turret, closed up, containing two unlettered bells. A notice of this secluded spot has recently appeared in a *Leisure Hour* article.

Sanitary Conference in Birmingham.—The Sanitary Conference is to be held in Birmingham on the 14th instant. The following is the programme:—Morning sitting, ten a.m. till one p.m.; opening statement by Alderman Joseph Chamberlain, the mayor of Birmingham. Papers "On the Sanitary Condition of Birmingham," by Mr. A. Hill, M.D.; Bristol, Mr. D. Davies, M.D.; Leeds, Mr. G. Goldie, M.D.; Liverpool, Mr. W. French, M.D.; "The Comparative Mortality of Large Towns," by Mr. B. Foster, M.D. Discussion. Afternoon sitting, three till five p.m.; papers "On Improved Dwellings for the Working Classes," by Sir Sydney Waterlow, bart., M.P.; Bailie Morrison; Mr. W. Swindlehurst. Discussion. "Hospitals for the Isolation and Treatment of Infectious Diseases," by Mr. J. B. Pritchett, M.D. Discussion.

Warwick.—It is proposed to construct a reservoir on each side of the roadway near Haseley Mill, the one on the left to be a settling reservoir, 10 ft. deep, to contain 2,116,000 gallons; and that on the right, a storage reservoir, of a depth of 16 ft., of the capacity of 19,519,487 gallons.

Proposed Conversion of a City Church.—A proposal has been set on foot, having the approval of the Bishop of London, and supported by the parish authorities and parishioners generally, to convert the ancient Church of St. Michael, Queenhithe, into a national school. The original edifice, which was built in 1181, was burned down in the Great Fire of 1666, and was rebuilt by Sir Christopher Wren. The archives of the parish (still preserved) date back to the time of Edward VI., amongst which is a churchwarden's book, curiously illuminated. There is also a marble font, dug out of the ruins of old Trinity Church, and an entrance-door surmounted with richly-carved fruit and flowers, by Grinling Gibbons. Should the change be carried out, these will be removed to St. James's, Garlickhithe.

More Money for the Hastings Town-hall.—Since the return of the plans for the proposed Town-hall and public offices, to the competitors, a general committee of the Hastings Council has been considering what to do. At the monthly meeting of the Corporation, on Friday, the 1st inst., the Committee reported in favour of rescinding the resolution to spend 10,000*l.* only on the building, and recommended that 20,000*l.* should be voted for the purpose. They also recommended that a new competition be opened, and that only those persons who had previously sent in designs should be permitted to join in the competition. All the recommendations were adopted, only one member speaking or voting against them.

Somerford Keynes Church.—There are no records which enable a correct opinion to be formed respecting the date of this church, which is dedicated to All Saints. The oldest register in the parish books is 1560, the third of Elizabeth. The church has two interesting features,—a semicircular arch on the north wall and a painting of St. Christopher on the same wall inside, much like the one in the church of St. John the Baptist, Cirencester. This is considerably defaced; but, if circumstances allow, it will be preserved. Messrs. Waller & Son, of Gloucester, having examined the fabric, report that a thorough and necessary repair, preserving the character in every possible form, will not be effected under 990*l.* The roofs of the whole building, without any exception, are bad.

The Factory Act passed last session came into operation on the 1st inst. It aims at improving the health of women, young persons, and children employed in manufactories, and the education of such children. The period of employment is to be from six to six or from seven to seven o'clock; the employment not to be continuously longer than four hours and a half without half an hour for a meal, except on Saturdays, when the employment is not to be beyond half-past one o'clock. Two hours each day, save on Saturday, to be allowed for meals, and one hour before three o'clock. There are provisions in the new Act as to education and school attendance. Employment during meal time is strictly prohibited.

Demolition of Mendelssohn's House.—The Mendelssohn house at Berlin, which has long enjoyed a world-wide renown from its association with departed genius, is about to be pulled down, and rebuilt in a form better adapted to secure a profitable rental for its proprietor. It was familiar to travellers as well as to native-born Berliners through the black marble tablet on the front which recorded in gold letters that within its walls "the immortal M. Mendelssohn had lived and laboured, who was born at Dessau in 1729, and died at Berlin in 1786." The house was subsequently occupied by Rammler, Mylius, Nicolai Lessing, and the younger Mendelssohn.

Fleet-street and the Embankment.—A meeting of the residents of Fleet-street and its immediate vicinity and Whitefriars-street was held last week at the Welsh Harp, Bouverie-street, "to consider the best means of obtaining an approach from Fleet-street to the Victoria Embankment," Mr. Johnson presiding. After some discussion it was decided that a memorial to the Metropolitan Board of Works and to the Commissioners of Works should be prepared for signature, pointing out the necessity for this approach to the Embankment.

Industrial Exhibition at Kettering.—Earl Spencer opened the Kettering Industrial Exhibition on the 29th ult. The Countess Spencer and Mr. S. Sackville, M.P., were among those present,

The Artizans' Institute, London.—At a New Year's *soirée*, held in this institute, Lord Lyttelton, who occupied the chair, said he knew of no institution of the kind which seemed to be doing so much good, especially by the lectures given there on history and political economy. He was also particularly glad to see the progress Mr. Solly was making towards realising his idea of getting practical workshop teaching combined with theoretical scientific instruction in courses of technical training. They had more than 200 members, and eight or nine classes in full swing.

Wages in Paris.—According to the *Moniteur*, the average wage of the men of all trades in France taken together is 2f. 90c., and that of the women is 1f. 29c. In Paris the wages exceed the above averages. The ornamental sculptor earns 7f.; the watchmaker, 5f.; the jeweller, 6f.; the metal-turner, 6f.; the stone-cutter, 6f.; and the ropemaker, 4f. The average wage of the Parisian workman is 4f. 99c., and that of the Parisian workwoman 2f. 78c.

Reredos, Fairford.—An addition has just been made to the interior of Fairford church, in the shape of a reredos, which has been presented by the vicar, the Rev. Lord Dynevor. The work, which is of Caen stone, carved and ornamented, and relieved by small marble columns, was designed by Mr. Maberley, of Gloucester, and has been executed by Mr. Humphries, of Cheltenham.

Market for Leeds.—The Leeds Town Council met on the 1st inst., under the presidency of the mayor (Ald. Marsden). A motion, brought forward by Ald. Addyman, in favour of extending the Kirkgate Market at an expense of 40,000*l.*, led to a long and interesting discussion. The Council adopted the plans drawn by the borough engineer, and recommended by the Markets Committee.

Removal of the Designs Office.—This office is to be removed from Whitehall to premises closely adjacent to those now occupied by the Patent Office. This change of locality is expected to be followed by important alterations in the administration of the department, as it will be transferred to the control of the Commissioners of Patents instead of remaining under the Board of Trade.

New Lying-in Wards for St. Pancras.—The St. Pancras Guardians have resolved to erect a block of buildings for lying-in and infants' wards, at the Workhouse, at a cost not exceeding the sum of 5,500*l.*, and at their meeting on Thursday they agreed to borrow the amount under the Union Loans Act, 1869, to be repaid by equal annual payments extending over thirty years.

Australian Wages.—The *Melbourne Argus*, giving an account recently of the wages paid in the colony of Victoria, mentions that plasterers, bricklayers, and carpenters get 10s. a day, the day's work being eight hours; labourers, 7s. The building trades are in full work. Cabinet-makers, from 4*l.* down to 2*l.* a week; less in the country. Navvies on the Government railways get 9d. per hour.

Institution of Surveyors.—At the meeting, on Monday evening last, a paper, "On the Landlord and Tenant Question," was read by Mr. J. E. Knollys, of Taunton. After a brief discussion on some incidental points raised by the paper, it was resolved to postpone the consideration of the general question until the meeting of January 18th.

Hall for Worcester Musical Festival.—The Earl of Dudley has written, proposing, as a solution of the question respecting the holding of the Worcester Musical Festival, that a temporary building should be erected for the next festival, and that in the following interval of three years before the ensuing festival, a music-hall might be built.

Licensed Victuallers' Asylum.—The annual ball, in aid of the funds of this asylum, is fixed to take place at St. James's Hall on Thursday, the 14th inst.; and, as the annual expense of this extensive institution exceeds 7,000*l.*, the Board look anxiously for a good attendance upon the occasion.

The Yorkshire Exhibition at Leeds.—The committee have accepted designs prepared by Mr. Bakewell, of Leeds, architect, for the covering in of the greater portion of the Coloured Cloth Hall yard.

Folkestone Harbour Improvements.—Extensive works are in preparation for improving the accommodation at the low-water pier, and a large staff of men will be employed for a considerable period. The old "Horn" is to be carried out so as to form a perfect barrier to the progress of the beach to the eastward. The Victoria Pier is also to be extended in a south-easterly direction for 100 yards, when a depth of water will be reached sufficient for the steam-boat traffic to be timed, irrespective of the state of the tide. The plans may now be seen at the Town-hall. They comprise the acquirement of a belt of land commencing at the Froghole steps and continuing along the coast-line to the Copt Point. This is the spot where, by a short tunnel, the tidal trains might be run alongside, if not on board, of the future boats for the improved Channel communication.

New Vicarage for St. George's Parish, Sheffield. — A vicarage is being erected in Chantrey-road, Sheffield, from the designs of Messrs. Flockton & Abbott. It is intended as the residence of the Rev. H. A. Favell, the incumbent of St. George's, and will cost 2,330*l.*, exclusive of the site.

The Safe Transport of Gunpowder and Petroleum.—No small matter this, and calling loudly for consideration. Mr. Jas. Ashley, C.E., has given the question much consideration, and has devised plans which are well spoken of by some who have looked into them. Persons interested should see to this.

Value of City Property.—Messrs. Hards, Vaughan, & Jenkinson have just sold by private contract the freehold of Nos. 4 and 4½, Lawrence-lane, Cheapside, occupying an area of 2,000 square feet, for the sum of 8,500*l.* The premises are let on lease for nine years, to run at 275*l.*

Design for a Pump.—Mr. William Henry Lockwood, architect, of John-street, Adelphi, has been awarded the premium of 5 gs. for the best design for a public pump and drinking fountain to be erected by the Seckford Charity Trustees at Woodbridge, Suffolk.

Gold Medals to Artists.—On the proposal of the Berlin Academy, the Emperor of Germany has conferred the great gold medal of art on the painters, F. Adam, Munich; Alma Tadema, London; and De Shampheleer, Brussels.

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We give with this Number, as a Supplement, an INDEX and Title-page to the Volume of last year. A COLOURED TITLE-PAGE can be had, Gratis, on personal application.

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CONTRACTS, *continued from page* ii.

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The Builder.

VOL. XXXIII.—No. 1667.

The Study of Italian Architecture.

NOT long since we gave the particulars of the bequest made by the late Sir William Tite to the Royal Institute of Architects, of a fund to be specially applied to encouraging and assisting the study of Italian architecture. To some of the most active members of the architectural profession, at present in the enjoyment of a brisk practice, in quite another field, such a bequest will very possibly have been regarded as a well-meant but futile attempt to revive an interest in a style which has passed out of favour. If it were so, there is, at all events, this admission to be made on the part of such unbelievers, that in leaving such a provision at the close of his life, for the continued study of the style which he adopted at the commencement of his career, the testator evinced that steadiness of purpose and consistent adherence to one style which are proclaimed by those of the "picturesque" school to be among the greatest of architectural virtues. And there is something commendable to the profession of architecture at large, as well as to the memory of an individual, in this instance of care for the posthumous study and improvement of a favoured phase of the art, when it could no longer be a matter of personal interest to him who made the provision in question. And we think even those whose tastes and convictions are in opposition to Classical architecture, should be willing to admit, on due consideration, that Sir William Tite did wisely in thus defining the employment of his bequest. Had the sum been left merely to encourage the study of architectural design in a general sense, its employment would have had a less distinctive result than it is likely to have under the conditions named, and it would only have gone to swell the facilities for the study of architecture in the phase most popular at the present.

Of course the uncompromising adherents to Gothic art will say that this is the greatest mischief that could be done; and that it is only offering a temptation to the younger students of architecture to divide their energies, instead of pursuing "the true style of architecture" with that unity of aim which would be most likely to lead to great results. They are welcome to their opinion; and if the encouragement of mere eclecticism were the necessary result, they might show some reason for it. The most reasonable view, however, of the source of power and originality in modern architectural design, is that which regards it as most likely to be evolved from the intelligent study of all pre-existing styles. And if this be the true view (and many of the opponents of Classicism have most strongly advanced it), then Sir William Tite's bequest comes at an opportune moment; in furnishing inducement for the further study of a style which has certainly been neglected far too much of late. Not that we do not see buildings still erected, not a few, which would be classed as "Italian" in style; but of anything reviving or recalling that peculiar combination of dignity with grace and elegance which belongs to the best specimens of Italian Renaissance architecture, how very little do we see! One of two opposite defects exists in most contemporary architecture professing the Italian model: on the one hand an utter flatness and coldness of character,* in buildings which merely reproduce certain stereotyped forms of ornament around windows and doors, which are supposed to constitute "Italian design"; or, on the other hand, an attempt to engraft mouldings and carved ornament of the bold character belonging to Gothic work, on a general design of Italian character; a process which only leads to an obliteration of that unity of type (difficult to define, but immediately felt by an educated eye) which constitutes what we distinguish by the word "style."

From either point of view, therefore, whether as a style good in itself, or as part of the basis of modern architectural education, — Italian architecture deserves more attention than it has lately received, from the younger section of the profession especially. In what precise manner the "encouragement" of this study, according to the terms of the bequest referred to, is to be practically entered upon, we have as yet no sign from the Institute; and it may be assumed that some tact and consideration will be required in so applying the fund in a manner at once advantageous and attractive to students: the latter being a point of importance in recommending a study still opposed to the prevailing taste of the day, though much less so than it was when Sir William died. But one object which may very well be aimed at is that of illustrating better and more fully many examples of the architecture of the Renaissance which have received very partial advantage in this way, and which are deserving of this attention, if only as a record of works which may eventually have to be removed or are decaying. The amount of labour and draughtsmanship expended of late on the illustration of Gothic buildings, by architects of this country especially, has been very great; Renaissance architecture has scarcely ever received the same extent and excellence of illustration. And it may be noted also that to the task of illustrating Gothic architecture has been brought a greater amount of artistic feeling and effect, in the manner of delineation, than has been the case in regard to Italian architecture. Much of the impression which a student would receive, on turning over the best available illustrations of Renaissance and Gothic buildings respectively, of the coldness and formality of the one type of architecture as compared with the other, might very reasonably be traced to the influence of the hard mechanical style in which the former have generally been delineated (a pure drawing-board and T-square style, in fact), compared with the advantages of the picturesque and artistic delineation, in etching and otherwise, which has been liberally bestowed on the illustration of Gothic buildings, and in which the actual light and shadow effect, and the texture and character of the masonry, &c., have been effectively rendered, while the Italian building has to be content with highly-finished (often) but conventional and ineffective geometrical drawing, showing the mere lines of the design in its first form on paper. Were there as many good illustrations of Italian buildings, in a picturesque manner and an effective medium, as there are of Gothic buildings, it might be more readily admitted that the contrast between the formality of the former, and the picturesque attractiveness and interest of the latter, exists rather in imagination and in the drawing than in fact. It is the custom to represent Gothic architecture with an appearance of antiquity and (as our Yankee visitors say) of "disrepair," which is most suggestive as a picture; and to represent Italian architecture as if it were always new and had none of the prestige of time and association in connexion with it. How little this is really the case all may gather from the beautiful and poetical part which Classic architecture plays in the works of some of the greatest landscape painters.

But the study of Italian architecture as a style for present practice, to what is that to lead? For it is evident that this has been the main object of Sir William Tite's bequest which we are speaking of. We have had a good deal of it already, and it has been voted unsatisfactory in its results by a considerable body of recent critics, professional and amateur. It is considered to have produced buildings not suited to English climate in general, or London smoke in particular, and which soon become black and weather-stained, and in that condition look unhappy. In other words, the style requires modifying to suit it to climates different from that in which it rose. There is no reason why it should not receive this modification. For let us consider for a moment what this which is called the "Italian style" really is. It is not more Italian in fact than some other manners of building: it is not the only style which is largely exemplified in Italy, nor is it by any means confined to that peninsula. The style is, in fact, the treatment of Classic detail, or detail founded on Classic forms, in a more or less Gothic manner. That is to say, its effect is produced not by a grand unity of scale and design, but by a multiplication and repetition of small parts. Putting aside construction, which is the basis of design, and looking only at the outer form assumed by the architecture, this is really a correct statement of the case. The radical difference between Italian and Gothic is that in the latter the external design is much more closely related to and influenced by the construction than in the former; and in so far it is a truer and more real style. But the Italian style, if not much related to the construction, is often closely enough related to the plan of the interior; and may be made much more so than it has been. And, in spite of the much less important part which construction plays in its formation, the architecture of the Italian Renaissance, in its best form, is really more nearly related to the spirit of Gothic architecture than it is to the Greek architecture from which (through the Roman) it was derived. It seeks effect in the same manner as far as the disposition of parts is concerned; in fenestration and the repetition of small parts, rather than in grandeur of scale. The difference between the Florentine palaces and the guildhalls of Ghent and Louvain is one of detail more than anything else. In each we see the same type; a class of building with long ranges of windows, treated differently on different stories, and gaining its effect by the multiplication and repetition of these parts. In modern thought and practice the styles have been put far asunder, because it has been assumed that Italian demands absolute symmetry, and that the true Gothic feeling is adverse to symmetry of design altogether, and is best exemplified in an artful and studied irregularity. Neither view is true. The Italian Renaissance is susceptible of great variety of treatment and departure from rule-and-line symmetry, without losing any of its best characteristics of refinement of detail and repose of effect; and the idea that Gothic is the style specially antagonistic to symmetry is a purely neo-Gothic superstition, not in the least borne out by the majority of the finest remains of the genuine article of the Middle Ages. In drawing attention to this degree of real resemblance and sympathy between Gothic and the style usually termed Italian, one is naturally led to the position from which the special study of Italian architecture, if it gains any new impetus from the

* "A building in the Italian style," we once heard it remarked, "generally means a building with all the life taken out of it." This was hardly fair; but one may regret that there are so many instances to justify such a criticism.

conditions of the Tite bequest should have its value as a lesson on modern design. We have had many buildings erected in a mere spirit of reproduction of the Italian Renaissance, which are neither original in themselves nor suited for effect in this climate, and which are viewed at present with indifference or regret in consequence. We have had much reproduction of Gothic, and some modern Gothic which is not reproduction, but deserves to be called in some points original; but its frequent defect is a want of refinement,—indeed, an absolute coarseness and clumsiness in detail. A more systematic attention to the forms into which architecture was thrown at the close of the Renaissance ought to do something to counteract this indifference to refinement of detail, and to counteract also the too prevalent taste for what is startling and odd, rather than for repose and consonance of effect. If any studies founded on Sir W. Tite's bequest are directed to these objects,—to an endeavour to originate such a treatment of design in the Italian character as [illegible] losing the refined and palatial character proper to the style and so far much more suited to the manners of the day than is the style of conventual Gothic), the students who are required at this way to give now attention to the style of the Renaissance may find that they are travelling less far from the feeling and influence of their at present Gothic than they may at first suppose; more especially if they make it part of their aim to connect the outer features more closely with the actual construction, which is the great desideratum in the Italian style and the need for which opens up suggestions for novelty of treatment, both constructionally and artistically.

The subject is one, too, which those who are about to build, not in towns, but in the open landscape of a country, may very well take into consideration. There seems to be no medium at present, in the types of country-house most favoured, between the average respectable cube of brick-wall and windows, utterly uninteresting and unsuggestive (save of long purses and county influence), and the most ultra-rusticity of effect which can be attained by irregular outlines, tiled roofs, and parti-tiled walls, tall chimney-stalks, and such other indications of a determination to be picturesque at all cost. We would rather see them than the "respectable cube" houses; they have at least a character of and interest of their own. But it is not a genuine one. There is no suitability in rendering the habitation of a wealthy and educated country gentleman like an overgrown cottage, or a group of cottages piled together. In realising an effect picturesque and yet refined and to a certain extent stately, more may be done with a style of design which would be no mere [illegible] of "Italian" [illegible] generally [illegible] a compilation [illegible] regard to the suitability of the building [illegible] its [illegible] site. The attempt to be too picturesque in building on a country site often defeats itself, and the architecture sinks its character and importance in the landscape altogether. But that air of grace and repose which belongs to a building in a not too formal version of the Italian style, can harmonise with nature without losing its predominance in the scene. Any who doubt this may go to the great landscape-painters of the Renaissance, and study their architecture and its combinations, as well as those of many modern artists. Only let the building have the same advantages, in richness of colour and texture of the building materials, which every modern Gothic architect professes to regard as so important in contributing to architectural effect in this climate, and the Italian need no longer be regarded as cold and repelling in aspect, or out of place under a northern sky.

These considerations indicate what we think should be the object to be kept in view in organising any renewed study of architecture in the Italian style, for which an endowment has thus been offered. And it is possible that the subject will be taken up with more interest than some may have expected. There have not been wanting symptoms of a turn of the tide lately in regard to architectural predilection in this country. We have heard of the very conservative-minded old gentleman, who, despising fashion in dress, kept resolutely to the same cut of coat he had worn in his youth, and was rewarded for his constancy by finding himself at last in the fashion again, when the whirligig came round, without having had the trouble of [illegible] through all the intermediate stages. It would be somewhat instructive if it were to turn out that the bequest of the late member for Bath, who began life as an "Italian" architect, and stuck to his colours throughout, has come just in time to meet the turn of the fashion again.

PICTURES IN BURLINGTON HOUSE.

ALTHOUGH the 269 pictures, which are now somewhat thinly spread over the walls of six of the rooms in Burlington House, form a collection numerically small, when compared with those which, on former occasions, we have been wont to see accumulated in this gallery, it must, we think, be admitted that the number is amply sufficient for the pleasure of the visitor. When we are asked to look at masses of paintings, from 500 to 800 or more in number, the strain on the eye becomes very painful. The only way to ease even a first glance at the mammoth collections to which we are accustomed, is to restrict the spectators to two or three rooms for a single visit. It is not every one who has either the time or the self-control requisite for this piece of wisdom; and thus it appears that visits to scenes of this nature are often attended by great weariness, however fully that weariness may be repaid by the wealth on which we gaze.

When we come down, however, to the modest number of about 250, the first task,—that of taking in the *coup d'œil*; the second, that of selecting the pictures to look at; and the third, that of fixing these gems of the collection on the memory,—are all wonderfully lightened. And we think that, in cases where a limit is perforce put upon the number, rather than upon the length, of visits, there is a very great advantage on the side of the smaller collections, both in point of pleasure and in point of instruction.

Thus much being said as to quantity, we are bound to admit a very favourable impression as regards the more important question of quality on the present occasion. We hope that those to whom we are indebted for a treat of a high order will not take offence at the term, a "scratch collection." Such it undoubtedly is; but yet in the fortuitous and capricious character of the objects thus brought together lies one main secret of its charm. We were disposed to grumble, on the first glance, at the flat room, at the apparent want of arrangement, styles, masters, dates, subjects,—no principle of selection or of juxtaposition could be detected, unless it were that of the size of the picture-frames. But after a time, and more especially on going further into the series of galleries, we began to question whether some subtle principle either of comparison or of contrast, had not guided the hanger. Lastly we came to the conclusion that such principle did prevail, and that its force was all the more resistless from the fact that its action was unsuspected by the official in question. That most delicate and subtle of all relations, the prompt perception of which is the essence of wit, in the purest sense of the word, and which may be considered to be the hidden and uncomprehended law of luck, as distinguished from the calculable law of chance,—that made of grouping together different things according to a relation which is true, but which is far from obvious,—that kind of arrangement is remarkably illustrated, in repeated instances, in the present collection.

Great names in art are represented on the walls, although, of course, not with equal felicity. Thus, the Raffaelle (178) requires a very vigorously attested pedigree to bear out its asserted relationship. The figure seems made of wood, and the small features, though resembling those which this great artist at first copied from the models of Perugino, before he painted the grander features of the Roman women, are not dressed in the usual magic of *Il Divino!* No less than seven pictures are ascribed to Titian. Some of them,—as is the case, alas! with but too many of the collection,—are among those which must once have been beautiful. The little Cupid trampling on a lion, called the "Triumph of Love" (120), is wonderful in its spirit and power, and has less retired beneath the dim glaze of antiquity than most of the other examples. The mouth of the lion must have been drawn from a stuffed, rather than from a live specimen, but the picture is one of which any gallery might be proud. The picture which struck us the most, regard being had to the good state, as well as to the original design and tone, of the picture, is the "Magdalene" (136). One of the contrasts,—we may almost call them the whimsical contrasts, that struck us the most in the whole collection, is that between the rich, imaginative, would-be-devotional picture, of a beautiful woman posture-making for the model of a great artist, and the bright, self-asserting, coquettish, but thoroughly genuine fun of Miss Fenton, afterwards Duchess of Bolton, as *Polly Peachum*, in the "Beggars' Opera," by Hogarth. Here are two pieces of acting,—melodrama and petite comedy, presented by two great masters, in such wise that we cease to compare the merits of the painters,—who altogether obliterate themselves behind their canvas. It is not Titian whom we find ourselves contrasting with Hogarth, but Italian catholic rapture, as presented at this hour (where there are any eyes of the proper fire to look at it), in many an Italian city dear to memory; and the clever woman of the English life of the time of Hogarth. Yet a little further to the right the eye glances on a third order of art,—that instructive object,—one of Sir Joshua's few failures. It is a Cupid and Psyche (140), in which not only has the fading of colour so common in the works of this great painter advanced to the utmost, but the result of this loss of tone has been to make the shadows altogether distressing, and thus to render doubtful even the drawing of the figures. Here, again, Sir Joshua was even wider removed from the life than is the Magdalene in her distance from the actress. No. 130, called a "Queen of Cyprus," a title which recalls the memory of the great picture exhibited at the French and Flemish Gallery, to which we recently called attention, is, at all events in its attributes, a Saint Catherine, although the disproportionately small chin, which detracts much from the regal grandeur of the face and figure, can only have arisen from a faithful portraiture of a beautiful, but not perfectly beautiful, woman.

We must not, it is true (remembering what we have said of the casual character of the collection) congratulate ourselves too highly upon the proud position which English painters sustain in it; even when their works are viewed alongside of those of such lights of art as Vandyck, Velasquez, Gerhard Dow, and, here represented with unusual felicity, Tintoretto. There is, perhaps, nothing on the walls quite equal to the head of the man in the portraits of the Doria Family (219), by Vandyck; a magic transcript of that mixture of power, subtlety, and vigour which formerly made that name so grand a word in Italy. But, considering the utter difference of climate, age, country, education, habits of life and thought, and strain of blood, that in either case go to make up the man, the portrait of Mr. Tickel (231), by Gainsborough, may perhaps be regarded as of not inferior merit to the Vandyck in question. If with these we compare the one example of Gerhard Dow, the "Portrait of a Man" (105), who bears a not very distant resemblance to his late Royal Highness Prince Leopoldo di Borbone, Comte of Syracuse, we shall have called attention to three as noble portraits as can be found in any collection with which we are acquainted.

By Sir Anthony Vandyck there are no fewer than fourteen portraits. By Gerhard Dow, as we have said, one; by Franz Halz, three; and three very fine ones, including his own portrait, with its screwed-up forehead, and keen eyes, that seem straining to look through the outer carcass, and to see the soul itself. By Tintoretto there are two magnificent portraits of Venetian senators, lent by the Earl of Yarborough, which show the excellence of this artist in portraiture to be but little below the very highest rank. The two figure-subjects by the same artist are of comparatively little mark. There are four pictures by Velasquez; and here, again, we see how far the art of the portrait-painter rises, in the case of so many artists, above their ideal-ising power. The "Virgin in Adoration" (198) sprawls in a very unadorable manner. The portrait of "Mariana, second wife of Philip IV. of Spain" (154), is one of those which does not carry its certificate on its face, although it is very possible that this is owing to the condition of the picture. Of what family the lady is a member there could not be a moment's doubt. We take one very great comfort from this most curious portrait. In Spain, in the time of the Fourth Philip, it was found possible to invent a mode of dressing the hair as absurd, outrageous and contrary to the simplest elements of feminine grace and of artistic beauty as that which, in some extravagant cases that may daily catch the eye, are held to be typical examples of the present fashion.

The portrait, lent by her Majesty, of Philip IV. when a boy, in rich armour and embroidered

baldrick, standing with a marshal's *bâton* in his little clenched fist, is an historical as well as a pictorial study. In every line of the little countenance, in the attitude of the little figure, in every fold and crumple of the dress, is to be traced the result of that education which told the child that he was little less than a god, and which only succeeded in making him a Grand Lama. Fuller of life, power, and promise, is the companion picture, "Portrait of the Infante Don Balthazar Carlos" (132). The little prince grasps his miniature weapon, and brings it down on the floor with an emphasis which tells, that he not only believed that the world lay at his feet, but, moreover, that it was his firm intention to trample pretty heavily upon it.

The writer of the catalogue might with propriety have called attention to the fact that the "James Stuart, Duke of Richmond and Lennox," who is represented (55), in the picture lent by the Earl of Denbigh, attended by the noble dog who saved his life by waking him when on the point of being murdered, is the same person as the one represented,—also by Vandyck, in No. 85,—under the title of "The Earl of Richmond;" and not only so, but painted so nearly at the same time must the two pictures have been, that though the somewhat feeble-looking noble had time to change his dress in the interval, he had not changed his wig, if such he wore, or his manner of brushing his hair, if natural. Arabella, Lady Wentworth, with all the simper, and little of the beauty, of some of Lely's fair sitters; Mary, Duchess of Hamilton (149), with a rare sense of the power of her charms weighing down her eyelids; and Mary, Duchess of Richmond (181), very like the work of Sir Peter Lely, are among the most successful portraits of this grand artist. In a more vigorous mood he has stamped on the canvas the lineaments of Edward Sutton, last Lord Dudley of that name (253), with a very unusual pose of the hand; Archbishop Laud (113), in the side-wise lift of whose eyebrows is to be detected a physiognomical sign of brutality of disposition; Thomas, Earl of Strafford, with the handwriting of evil fortune conspicuous on his very unusual, and somewhat sinister, features; and the Duchess of Savoy,—rather a girl who feels bound to behave like a great lady, than a great lady in early youth. This collection of Vandyck's possesses extreme interest; whether it was owing to a courtly modesty, or to the power to grasp masculine rather than feminine characteristics, or whether it was, as is more likely the case, that the men of his time were less artificial than the women, there can be no doubt that Sir Anthony's male portraits, as far as the present specimens go, are by far the finest. Even the Duchess of Savoy would veil her glance before the Doria.

Zurbaran is represented by an odious, unshaven, unwashed St. Benedict,—he should rather be called St. Maledict—(187), and by a fine St. Jerome, who, we learn from this portrait, was a cardinal of the Romish Church, a fact which proves the hitherto untold fact, that he must have been, in that case, also a prophet. The misdirected power of this painter is an instance of the direction in which that path which so many young, very young, men of the day are striving to pave inevitably leads.

Before Zurbaran, however, we should have mentioned the three examples of Rembrandt, Nos. 152, 153, and 137: the first, "The Adoration of the Magi," is the well-known painting, lent by her Majesty the Queen, in which all the pomp and splendour of the imaginative grouping of this great poet on canvas is fading in the mysterious gloom of his illumination. With this Flemish idea of the subject should be compared the wonderful poem, full of imaginative power, by Fra Filippo Lippi, "The Virgin and Child, with Angels" (185), in which hosts of the heavenly powers are trooping from the distance, which they fill. Naked boys seem to have escaped from purgatory, and birds of rare and rich plumage hover over the tender devotion of the mythical kings of the East.

We have mentioned the name of Hogarth. This truthful, though severe, satirist is unusually well represented in the present collection. There is the famous Gate of Calais (28), in a condition to delight the connoisseur. The "shrimp-girl" (31) is what is entitled "A Sketch from Nature." The examination of the recruits before Justice Shallow (37), is a less-known piece. The portrait of the murderess, Sarah Malcom (71), is a rare and instructive physiognomical study. There are seven Hogarths, and the most weird and ghostlike picture in the collection is one of them (35), a sketch of a country dame at the Wanstead Assembly, Essex. Whether it be owing to the haste of the original touches, or to the manner in which the picture has faded, or to any other cause, it may be difficult to say; but as you recall the number through the gallery, these quaint shadowy personages seem to be ever continuing a diabolical gambol, which is the very *diablerie* of the dame.

No less than ten Gainsboroughs adorn this collection. They may be instructively compared with the twenty-five pictures by Sir Joshua Reynolds, with the effect of noting how close at times is the affinity; how wide at other times is the divergence of these two noble English artists. A perfectly magical picture by Gainsborough is that of "The Two Sisters" (12), in which, while, as in most of the pictures here seen of this artist, the faded and unsatisfactory look of the background betrays the work of another brush, or at all events a far less masterly use of it than that which painted the face and hands; the eyes have the light of youth and beauty undimmed; the lips show rich carnations, scarcely faded by the lapse of a century and more. To the portrait of Charles Marsham, afterwards Earl of Romney (81) and his sisters, very similar remarks are applicable. A charming family portrait is the "Girl and Lamb" (151). The portrait of the hard-drawn and severe countenance of Mary, Duchess of Montagu, hangs close by that of an old lady by Rembrandt. We see with as much surprise and satisfaction that it is not catalogued as one of the numerous samples of Rembrandt's mother; and the contrast between the old age of the dignified English woman and that of the Dutch vrow, is a marvellous illustration of difference in habit and in breeding. To the wonderful portrait of Mr. Tickel we have already referred.

A well-known but never enough known pair of *capricci* by Sir Joshua (6 and 16) occur in the first room. The first is "Mercury," a roguish English boy of the type the President loved to paint, with the attributes of the Roman thief-god, translated into the vernacular. "Cupid" is treated in the same way—with bats' wings. The charm of these paintings, when fresh in their glorious colouring, must have been extreme. Lady Caroline Montague Scott (43) is badly faded, but deserves like praise. Sophia, Lady de Clifford, is twice painted by Sir Joshua, and it is most interesting to compare the two portraits, Nos. 3 and 61. The exquisite little figure here called "Nymph and Child" (63) is the charming "Titania and Puck" of Sir Joshua. Lady Gertrude Fitzpatrick deserves all the tender appellatives ending in een that sound so melodious in a gentle brogue. The portrait of Mrs. Morris, being one of the Musgroves of Eden Hall (83), is one of the most romantic and picturesque faces that it is possible to paint. If female beauty be a fairy gift, the "luck" of Eden Hall has brought it to this fine creation. No. 139 is one of the earliest, and No. 144 one of the latest, of the paintings by Reynolds. A much more masterly treatment of the brush, recalling some idea of the power of Titian himself, is to be observed in the later, as compared with the earlier, work. The later, also, has kept its colour better. The portrait of the artist himself (155) is not pleasing; it is a characteristic sketch, but not a picture. It recalls the likeness of Turner, by himself. In a different style, remarkable for calm breadth, is No. 160, portraits of two ladies of the ducal house of Montagu, one of whom is also represented in No. 186. Close by the group is the single picture by Sir Antonio More. It is that of the Earl of Essex, a speaking portrait, and an explanation of the vain character of that famous actor on a high stage that is worth a volume of moralities. The portrait of Sir Richard Worsley (218) is one of those in which the influence of the style of Gainsborough on that of the President is most apparent.

We have well nigh exhausted our space, and yet there is a goodly catalogue demanding, or at all events deserving, praise. It is difficult to select, where there is so much that is good. There are two Hobbemas (13 and 84), and at least one out of the seven examples of "Old Crome" may be placed at no very extraordinary distance from the work of the famous Fleming. Maclise is represented with extraordinary felicity, and although much of the want of judgment of this artist—so conspicuous in the crowding of his scenes—is to be lamented, there is ample proof of his great power of execution. In some the subject is too evidently taken from the theatre; in others the composition appears to have been built up, piece by piece,—with skill, indeed, but in a purely artificial manner. The ghost scene in Macbeth is an example of the first, the murder of Duncan one of the second degree. The beautiful "Eve of St. Agnes" is perhaps the most successful of the works of this great master. We have passed by three Rubenses—one the well-known "Conversion of St. Paul"—all a magnificent sprawl and scramble. Giovanni and Gentile Bellini are represented by two and by one picture; Paris Bordone by one, in which his usual model is more coarsely drawn than usual, in the attitude of "Titian's Daughter," and in the odious character of Judith.

Of Sir Augustus Callcott there are thirteen pictures; of Canaletto four, two very good; Annibale Caracci; Claude Lorraine; John Constable; Albert Cuyp; Greuze, with an almost modest female face; Guini; Mieris, in the well-known guitar-player; Romney, in seven pictures; Jacob Ruysdael, in five pictures; and Solomon Ruysdael, in two; Andrea del Sarto; Spagnoletto; Teniers; and Turner, are present. The allocation of these names is enough to show the ground of our past remarks as to the chance character, but also as to the extraordinary interest, of the collection.

We must not omit the most interesting baby portrait of King Edward VI. of England, by Hans Holbein, and the extraordinary, but very powerful, treatment of the subject of "William Tell," by the same master. The Duke of Monmouth, by Sir Peter Lely, is another historic picture of great interest. It might easily be mistaken for a portrait of the ill-fated Duke's Rogue Father. We conclude a review, inadequate from its enforced limit, with the expression of the opinion that the lovers of art will find it hard to tear themselves from a view of rooms in which, by rare good fortune, it was the luck of the writer to spend some little time entirely alone; a chance which gave an extraordinary idea of the pictorial wealth hanging on the walls, rather as if in a private dwelling-house than in a public gallery.

THE HOPE OF ENGLISH ARCHITECTURE.

I USED at one time to fancy that whether my views were assented to or not, I had at least the power of expressing them so that there should be no mistake about my meaning. I now, however, find from the now-too-famous articles in the *Quarterly*, and still more from the paper Mr. Stevenson read to the Institute of British Architects at their last meeting, and printed in your last issue, that I am mistaken in this respect, and that my meaning has not only been misapprehended, but I am represented as advocating views diametrically opposed to my most cherished convictions. I would like, therefore, to be allowed a brief space to express, at least, my dissent from the opinions erroneously attributed to me.

One of the points on which I have had most frequently occasion to insist is, that architecture has, in Europe since the Reformation, been practised on different principles from those which governed its use in this country before that time, and in all ancient and some modern countries till the present day. This is not a matter of opinion, but an historical fact, which appears to me so well established that I certainly am not going to argue it here. Assuming it, therefore, for the present, it is still quite open to any one to argue that we derive more pleasure from copying the Classic and Mediæval styles, and that we get more variety and more pleasing association out of them, than we could from the monotony of perfection that must result from the practice of one, though that one might be wholly suited to our wants and tastes. My convictions are so strongly in favour of the latter form that I do not care now to argue that point either. What I want to point out is, that since the Reformation the architect, as we now understand the term, has played a much more important part in the drama than he did before. So long indeed as we practise half a dozen styles, none of them exactly suited to our wants or tastes, the public cannot, or, at least, will not take the trouble to master all the archæological and antiquarian problems that are involved in the practice of the art. It is a mystery, as Lord Dundreary would say, "no fellow can understand." It must be in the hands of experts, and any public body or private individual who would attempt to carry out any important or ornamental building in the present day without the assistance of a professional

architect, would most probably have reason to repent his temerity.

The case was, I believe, different in the Middle Ages; then the bishop or noble, the clergy, and the gentry—every one who had occasion to build ornamentally—knew exactly what he wanted, and knew exactly what he could get for the money at his disposal. There was then only one style, and the limits of deviation were so narrow that, once any one had made up his mind as to what he wanted, he could easily find a builder or contractor to carry out his views, and could check and control him if he deviated from the straight path to the right or left. Every one—the patron, the builder, the art-workman, the workman, the labourer—then knew his place, and knew that he had not only to employ the most suitable materials in the best possible manner for the purposes in view, and to ornament what was most useful with as much appropriateness and elegance as he could devise. My belief is, that it was because the art being only one style, and being based on such simple common-sense principles that it could be understood by all, was one great cause of the perfection it attained; and, as a corollary of this, that being so simple and so perfect, its practice practically fell into the hands of the most refined and most intellectual of the upper classes.

If we could again revert to one style, and that style one suited to our wants, and up to the highest standard of our tastes, I feel convinced we could again enlist the sympathy and co-operation of the highest classes in the art; or, to put it the other way, if the most intellectual and most refined of the upper classes could be induced earnestly to interest themselves in the art, they would soon sweep away the trammels that now encumber its practice, and architecture would again become the master-art it always was when practised on true principles; but it is only by the best and most refined intellects that, in my opinion, the reform can be effected.

This being so, it is easy to see that my view of the "Hope of English Architecture" lies in a direction diametrically opposed to that in which the writer in the *Quarterly Review* looks for it. My view is, that any step towards employing any person of a lower educational or social status than the profession of architects as now constituted, would be a step in the wrong direction; and the idea of employing "workmen," in the sense in which that word is generally understood, and is used by the Reviewer, is so to degrade the art, by pandering to ignorance and vulgarity, as to destroy it at once and for ever, and to blot out its name from the list of the fine or refined arts of mankind.

In his paper above referred to, Mr. Stevenson entirely overlooked all I ever said with regard to the part I consider the upper and most intellectual classes played, and always must play, in the practice of any true style of architecture, and quoting, without any regard to the context, only what I said of the subsidiary accessories consequent on such a state of things, has managed to dress up a bogie, very amusing, probably very instructive, but which in no way represents me, or anything I ever advocated, but something totally foreign to my thoughts and feelings. I do not doubt that all this is done in perfect good faith, but if I know anything of my own views, I cannot in the least recognise them in his paper.

JAS. FERGUSSON.

THE CHANTREY LEGACY TO THE ROYAL ACADEMY.

THE munificent gift of about 3,000*l.* a year, which, by the death of Lady Chantrey, now falls to the Royal Academy, will have taken by surprise those of the public who were not aware of, or had forgotten, the provisions of the will of our most successful, though certainly not greatest, sculptor. It is no common occurrence for such a sum to be left purely for the encouragement of art, and still less common, unfortunately, for an artist to be in a position to leave it. One may be pardoned the reflection, that it is scarcely in the pursuit of the highest and most intellectual ends in art that the power to bequeath on this scale is attained, and that we, or the Royal Academy, owe it rather to the reputation of Sir Francis Chantrey in a popular and lucrative branch of his profession, than to any pre-eminent gift as an originator in art, that so solid a memorial of his success should be left. It may have been through circumstances as much fortuitous as natural that Chantrey was led to that [illegible] path in his practice which brought him such just fame; but the contrast between the material rewards which he reaped, and those which wait upon the more imaginative and ambitious sons of art, is too striking to be entirely forgotten.

If the sculptor possessed not the mind which would prefer future immortality to present success and riches, he at least has turned part of those riches to account in a manner which forbids any succeeding brother artists to be jealous of their accumulation. Visions of unlimited purchases for a gallery illustrating every phase of modern art rise before us in contemplating this annual sum to be set apart in perpetuity for such a purpose. Were the legatees left to their own judgment as to the manner of expending it, there might be no little doubt how to dispose of such an *embarras des richesses*, so as really to promote the ends of the highest art and artistic education in the most effective manner. It might perhaps be thought that this could hardly be better accomplished than by parcelling out the sum left to the Royal Academy into small annuities to a number of artists whose works line the walls of annual exhibitions, on the condition that they should cease painting. On reflection, however, it will be perceived that the sum to be disposed of is lamentably inadequate to carry out such a scheme with anything like completeness or impartiality, though it might be sufficient, perhaps, to buy off a certain number of painters, whose productions form so serious an item in the Academy Exhibitions. From any such bold stroke, however, the hands of the legatees are tied up, their instructions being to expend the fund in the purchase of works of the highest class in sculpture and painting, executed in Great Britain, but with no limitation as to the nationality of the artist. Perhaps the first result to be expected from this proviso as to locality will be an influx of needy foreign artists to our shores, desirous of their chance of a bite out of the cake. But a further condition imposed is a very important and a very sensible one, viz., that no orders or commissions are to be given beforehand. A work is to be purchased because it is recognised as worth purchase, not because it may be worth it when it is executed. It is probable that this prohibition will have a very important bearing on the results of the expenditure of the fund, as it will obviate any chance of the trustees being bound by an engagement to accept a work which might prove below the mark, and will certainly act as a much more powerful stimulus to artists to produce works which may be deemed worthy of purchase out of this fund. The bequest, however, although made nominally to the Royal Academy, is in reality in the nature of a public gift which they hold in trust; for it is stipulated that the works purchased are to be exhibited publicly, and to form a permanent national collection in illustration of art in Great Britain; and Sir Francis Chantrey expresses his confidence that the Government of the country will provide fit accommodation for this collection, the Academy being expressly forbidden to divert any of the funds towards building a gallery.

This last matter of the building will probably be met, in due time, without much difficulty; for if (or when) the National Gallery is rebuilt on the scale long talked of, the collection of pictures or other works of art thus formed would very naturally go to swell the ranks of the British school in such a gallery, where room could be provided for it in connexion with, though (if considered necessary) distinct from, the nucleus of a representative collection of British art already there. What is to be bought is a more serious question than where to put it when bought. Royal Academicians being but human, it is impossible to ignore the temptation thus thrown in the way of "the forty" to buy in works by members of their own body; and if these are the best, nothing could be said against it; if not, they will be likely to hear of it. In any case, the favouring of any special school or clique will be of all things to be deprecated. But there is the possibility of favouring one art, and that with reason and advantage. A disposition to expend a good proportion of the fund, for a time at least, on sculpture rather than on painting, might do a good deal to put new life into an art which is peculiarly ill-represented and ill-understood in England at present. We have few sculptors capable of producing great works, and they receive little encouragement to spend their genius on lofty subjects, and have to be content mostly with making the best of portrait statuary. The knowledge of a new possible market for works of the highest order in conception as well as execution ought certainly to have some influence on this great, but at present neglected and unpopular art.

The application of the Chantrey fund will be closely, not to say jealously, watched by all that portion of the educated public who have a serious interest in art, and wish to see the best things singled out and preserved for the study and delight of future generations.

A BRICK AND CONCRETE CHURCH.

ARCHITECTURAL ASSOCIATION.

AT an ordinary general meeting of the members, held on Friday, the 8th inst., under the presidency of Mr. Birch, the following gentlemen were elected members:—Messrs. Arthur G. Langdon, Benedict Riousset, J. A. Johnson, Arthur J. Gale, and Matthew H. Holding. It was announced that Mr. S. E. Barnes had given a donation of one guinea to the prize fund.

The President drew attention to a number of drawings exhibited on the walls, which were, he said, kindly lent to the Association by the Glasgow Institute. The drawings, Mr. Birch stated, showed most interesting work which was not very well known, among them being an illustration of the beautiful cathedral of St. Magnus, Kirkwall.

Mr. S. Flint Clarkson (secretary) said that the first Saturday afternoon visit of the session would shortly be held, and the place fixed upon would be duly advertised in the *Builder*.

Mr. Ridge urged upon those present the necessity and importance of joining the Artists' Corps of the Volunteers, stating that the architectural profession being of such a sedentary nature, it was highly important that the members should have the exercise which was attendant upon volunteering.

The President was glad to inform the meeting that another of their past presidents, Mr. Watson, had recently been appointed a district surveyor.

Mr. W. White, F.S.A., then read a paper, entitled "A Brick and Concrete Church, St. Mark's, Battersea-rise." He commenced by saying that the title of the paper, viz., "A Concrete Church," was not quite accurate, and might perhaps mislead. It would have been better to call it "A Church, in Concrete and Brick." A concrete building was a well-understood thing, and so was a brick building; but it was not so with the present building, as would be seen presently. The contract for the building was signed in the middle of August, 1873, and the church was consecrated on September 30th, 1874. There still remained to be finished the principal part of the carving, decoration of the walls, and stained-glass windows, with the exception of the three easternmost windows of the apse clearstory. The building was not for a district church, but for a chapel-of-ease to the old parish church of St. Mary, Battersea. The church consisted of a fair-sized chancel, with a polygonal apse, and an ambulatory, leading down by steps on either side to a crypt below; a large clearstoried nave, with north and south aisles; and a small bell-tower over the western bay of the south aisle, brought flush with the west wall of the nave. There were also north and south transepts to the western bay of the chancel. The north transept served at present as a chamber for the temporary organ. It had a small aisle on its western side, to give freedom of access to this part. At the north-east corner of this transept a small priests' vestry was screened off, which served for daily use. It was furnished with a locker and piscina. It had a separate window besides the large window, which properly belonged to the transept. The new organ, when finished, would be placed in the south transept. The entrances were seven in number. Besides the entrance immediately adjoining the vestry just named, there was one by the south transept into the ambulatory aisle. Then there was one on either side into the aisles of the nave, just to the west of the second pillar, and one at the west end of the nave; and there were two in the crypt, north and south. That on the south side came immediately beneath the south entrance to the ambulatory. There was an ordinary porch to the principal south entrance; but the west-end entrance had a vestibule, which served as a shelter in cases of funerals, and on other occasions. This was a lean-to building, 8 ft. 6 in. wide, with a canted projection, one side of which was made to form the external boundary of the ground, and the other was set

at an angle corresponding with it. This accounted for the peculiarity of its form. The ambulatory round the apse was lighted with lancet windows, graduated in height according to the rise of the ground, and of the steps from the crypt. It was covered with a lean-to roof, over which rose a clearstory of seven windows. The crypt itself formed good-sized rooms for classes, choir practices, and choir vestry. It was about 40 ft. by 35 ft. It had a ceiling vaulted in brick, on brick pillars with stone caps. This ceiling rose in height eastwards, following the rise of the steps of the chancel floor. It had, as named above, an external entrance on either side. The portion under the north transept was set apart for the warming apparatus. That portion under the south transept was partitioned off for a clergy vestry. The whole of its west wall, under the chancel arch, was lined with boarding, and fitted with pegs for surplices and hats. The crypt was floored with the usual description of wood-block paving. The steps, the treads of which were composed of slate nosings filled in with tile on brick risers, were a little winding to follow somewhat the bends of the apse. The principal dimensions were as follow:—Chancel, 14 ft. 6 in. by 18 ft. 9 in., with ambulatory 5 ft. wide; transepts about 16 ft. by 14 ft.; nave, 79 ft. by 24 ft., with aisles 8 ft. 6 in. in width; south porch 8 ft. 6 in. by 7 ft. 3 in. The chancel consisted of three parts, choir, middle space or cross passage, and sanctuary. The choir itself occupied the single bay, comprised by the large arch opposite the transept. The cross passage took the westernmost bay of the arcade of the smaller arches; and the sanctuary was bounded by the apse of seven arches of equal span. The sides of the first bay were but very slightly inclined from the side walls. The angles of the others were not quite equal. The roof was a kind of hammer-beam construction. The wall pieces were carried down on to carved stone corbels, which cut into the meeting of the splays of the windows. There was a low wooden chancel screen, without gates, formed by filling in the stall-ends with pierced panels. The choir was fitted with seven stalls and subsellæ for eleven bays on either side. The rise from the nave to the altar was by nine steps in all—two at the entrance of the chancel, two at east end of stalls, three at the altar-rails, and two from the foot-pace. In the tile paving were introduced seven subjects from the Old Testament, set in mosaic tesseræ and marble. Round the apse, between the pillars, ran a dwarf wall of brick and tile, with piercings. The altar was of oak, the table being supported on four octagonal pillars in front, with cusped braces, and close panelling recessed behind. The reredos also was in oak, panelled to receive decoration. The nave was divided from the aisles by an arcade of four broadish painted arches, with a smaller blank bay to the west. The blank bay on the south side carried the tower, which opened into the south aisle, with a double-ribbed soffit arch, corbelled out. In the clearstory and roof, however, the entire length was divided into four equal bays, without reference to the arches and pillars below. The aisles had lean-to roofs, which were divided into bays following the divisions not of the nave roof but of the arcade, so as to bring the wall-piece and collar-brace into the spandrel. The windows were triplets, under a containing arch,—the side-lights being cusped,—and were spaced in the centre of each bay. The north transept projected 7 ft. 6 in. beyond the aisle, and the south transept 3 ft. 6 in. only. The tower was small; it was only the width of the aisle, 8 ft. 6 in. square inside, and 15 ft. square outside. It was finished beneath the spire, with a brick corbel-table, 5 ft. high, added to the design subsequently to give greater height. The base of the spire was now only about 7 ft. higher than the ridge of the nave-roof. It was proposed only to have hemispherical bells. The wood spire was covered with oak shingle. The seats in the church were of the simplest open benches; they stood on a floor of wood block. The passages were laid with common red and black Leicestershire 6 in. tiles. The pulpit and lectern, having been gifts to the iron church, now removed, had been replaced in the new church. The warming was done by air, warmed in a chamber and circulated by means of an ascending and descending flue. The apparatus was a powerful cast-iron Gill stove so constructed as to burn from twelve to fifteen hours at a regular pace, without replenishing, so that by feeding night and morning it might be kept going continuously. It was fed from the crypt.

After this general description of the building, Mr. White proceeded to notice some criticisms which had been made as to the treatment of certain parts of the design. With regard to the details of the construction, Mr. White went on to say that the foundations were built upon a stiff clay, on the side of a hill, sloping to the east. The concrete for the foundations was specified as follows:—Concrete to be made carefully by measure of four parts strong coarse gravel or flint rubble,—one part small brick ballast, free from dust, one part clean and sharp sand, and one part ground stone lime. The whole to be carefully and thoroughly well mixed, and then wheeled hot into the trenches, and properly levelled. The width of the concrete foundation of the aisle walls was 5 ft., the width of the concrete being a matter of the first importance, the width indeed giving commonly greater security than depth. The walls were constructed of concrete, filled in to a casing inside and out of brick. The casing was of 4½ in., or half-brick work. It was bonded into the concrete every tenth course with a thorough course of bricks, and every intermediate fifth course with a course of headers projecting into the walls. Lias lime from near Rugby was used for the concrete of the foundation; but Portland cement was used for the filling of the walls in the proportion of six to one, which was the minimum of cement allowed by the Metropolitan Board of Works. The concrete was made well up to the mark, and, when an additional doorway was cut through for the north-east entrance to the crypt, it was with difficulty that the work was accomplished. It had been executed some three or four weeks. The walls were indeed all that could be desired, and there was no danger of the wet driving through them or into them. The description of work being new, a few difficulties necessarily presented themselves in the early part of its execution. One of the first questions which arose was as to the filling in of the concrete, in the absence of any frame, without disturbing the five courses in height of half-brick casing. It proved, however, to be only an imaginary difficulty, and gave no real trouble. But another difficulty did show itself. This was from the swelling of the concrete in setting, for being filled in to the height of the five courses from the bonding to the heading course, and again up to the bonding course, it was found at first that the cement expanded nearly 3-16ths of an inch on each side, pressing the casing out of the upright to this extent. It seemed to act more on the upper courses than on the lower, and it caused a spreading upwards, and not a mere horizontal displacing of the whole equally in a horizontal direction. In order, therefore, to obviate this, every space of 15 in. in height was built to batter that much inwards, and this was found to rectify itself in setting. But he then had the cement emptied out on to a floor, in a shed, and turned over several times in the course of two or three days before use. This set without perceptible expansion, so that no further difficulty arose on this score. The difficulties, however, commenced with the construction of these walls, proved to be less formidable than those connected with the permissions requisite for adopting it. It was a construction contemplated neither by the Church Building Societies nor yet by the Building Act and Metropolitan Board of Works. In the case of the former this mode of building stood in the way of grants towards the building, and in the case of the latter it stood in the way of buildings at all, without special permission first obtained. The Act of Parliament, in providing for cement walls, required that they should be of the same thickness as required for brickwork; and it required the due application of a mould or machine for giving cohesion to the work during its progress; but there was no provision for brick frames, nor for any such combination of concrete with brick. Moreover, it was supposed to be subject to several special dangers, as *e.g.*, from unequal expansion or shrinkage in the respective materials, or from unequal pressure, or from the possible separation of the brick from the concrete. It was thought, in setting, there might be too little consolidation in the brickwork by which an undue weight would be thrown on the casing, and cause it to buckle out from the concrete, or too much shrinkage, which would leave the casing suspended loose between the binding courses, so as to afford an insufficient support to the walls. And, again, the thickness of brickwork would perhaps leave a wall of concrete so far reduced in thickness as not to be sufficient to fulfil the provisions of the Act, which required that concrete should not be less than the usual thickness required for brickwork. He believed, however, that these walls were better than wholly concrete or wholly brick. The aisle and transept walls were 27 in. thick, or 1 in. more than required by the Act; but the arcade walls were 33 in. up to the spring, or 7 in. more than required; and the clearstory walls 28 in., or 2 in. more than required. After some negotiation, a sample of the work was prepared, submitted to the authorities, and approved. But when the licence came, it was accompanied by a stipulation that the brick casing should likewise be built in cement, instead of mortar; and the work then proceeded at an increased cost of 112*l.* The concrete being of cement, it was no doubt better that the casing should be built in cement also. He was sorry to say that the result of the experiment of brick and concrete, in respect of cost, was not satisfactory. A deduction was made from the estimate, in consideration of using concrete instead of brick for the filling of the walls, to the extent of 450*l.*, less 112*l.* for building the casing in cement, leaving a deduction still of 338*l.*; but it appeared that there ought to have been an addition instead of a reduction, to pay for the extra labour. The bricks used in the building were principally stocks from Teynham-by-Sittingbourne; the red bricks for buttresses, &c., were from Slough; and the moulded bricks from Locke & Sons, Aylesbury. The bricks at St. Mark's were of the thickness of a common brick. Pennant stone was introduced, after some delay, instead of bricks, for the pillars; the stone was in three courses, with a bed of 5 lb. or 6lb. lead between each. They were fitted with such accuracy that there was the greatest difficulty in getting in the last stone. The Coalville clay was capable of making very fine hard bricks, but the inequality of their resistance to pressure in bricks of the same section indicated imperfect preparation in making. Neither were they wholly free from fine fissures, caused by small pebbles; and, again, their beds were not as smooth and level as they might have been, had they been more carefully dried and rubbed before burning.

After giving the tabulated results of these experiments, the author proceeded to refer to the strength of pillars, the bricks of which, he said, were very hard, and they were soaked in water for twenty-four hours before use. The cement was gauged in the proportions of one part of cement to two parts of very fine but very sharp sand, carefully washed. The question as to the best proportion of sand to the cement was an important one. He knew it was held by some that, for such a purpose as this, neat cement was the strongest, on account of its more equal texture. He did not know what experiments had been made as to this; but he thought it was open to question whether it would not have borne a greater pressure with a larger proportion of sand. Some said that neat cement was strongest; but, so far as he could make out from the results of experiments, he should judge that from 3 to 3½ parts of sand would make the strongest work. The grain of sand was in itself harder than that of the cement, and the cement used ought to be enough only to fill up to and unite the particles of sand. But, on the other hand, it might be a doubtful benefit to have the cement much, if at all, harder than the brick which it was used to set. It ought rather, he should think, to be as nearly equal to the strength of the brick as it was possible to make it, so that the resistance might be equal throughout the mass, and the pressure equally distributed. Moreover, the adhesion of the cement to the brick was of far greater consequence than mere hardness, not only on account of equal pressure, but of binding the brickwork together laterally, and neat cement would not properly adhere at all. Moreover, with neat cement, or with too great a preponderance of cement, there was the greater chance of expansion in the setting; and it was evident that, supposing expansion to take place, when the pillars were heavily loaded, the expansion being vertical in the thickness of the joints, rather than horizontal, crushing must take place if the load cannot be actually lifted by it. It was of the greatest consequence that in such pillars the bricks should be all of similar kind and texture, of equal strength, and of perfectly level bed. This, in the case of very hard bricks, should be done by rubbing before burning. One must not estimate the strength of a pillar at more than that of the minimum resistance of its weakest part; for if one section failed, the whole would lose its proper bearing, and throw an undue strain upon the remainder,

thus reducing the sectional area in proportion to the weight to be carried. But the strength of the brick pillar, when built, was estimated by recognised authority at only one half of the material of which it is composed. Cement was reckoned to crush with forty tons per foot, and mortar with twenty tons. From the varying strength of the mortar or cement it was less easy to estimate the resistance relatively between built and unbuilt bricks. He estimated the load to be carried by each of the pillars, including allowance for pressure of a gale, at forty-eight tons upon an area of 2 ft. 3 in., or twenty-one tons per foot super., about twice the load to be put upon it. Now, according to prevailing ideas, a resistance of twenty-one tons per foot would be lamentably insufficient for safety. Instead of putting the safe load at one-tenth, it would be putting it at nearly one-half. The rule, however, of estimating the safe load at only a tenth of the first fracture strain erred so ridiculously on the side of excessive strength and waste of power, and was so wholly at variance with daily experience and observation, that it would be practically impossible to work by it; and thus, after all, one was thrown mainly on one's own judgment and common sense. But, in estimating their power of resistance, allowance must be made, as on the one hand, for the farther setting of the cement, so, on the other, for diminished strength by the height of the pillar, which in long columns was a material consideration. The height of a pillar, in proportion to its area, or diameter, must be taken into the account, and the ratio of diminished resistance by the extra height was considerable. No pillar or support of stone or brick should exceed in height twelve times its least thickness at its base; when more than this there was a considerable falling off in strength. He believed that it would be found that the reduction in strength diminished more or less rapidly, according to the strength and lateral cohesion of the material. In conclusion, Mr. White said that in the case of bricks thin ones would bear more weight than thick ones; but perhaps this might be accounted for by their more perfect drying and more thorough burning. He might add that the effects of the pressure upon the bricks could be seen by any one visiting Mr. Kirkaldy's machine and museum of experiments.

Mr. Quilter, in opening the discussion, thought that the concrete and brick walls had an advantage over ordinary brickwork. The appearance of the building, on the whole, he was of opinion, had done great credit to Mr. White's artistic ability. The church had been condemned by some of the residents of the neighbourhood; but Mr. Quilter was of opinion that it would, with the knowledge of the times, grow in favour with them.

Mr. J. Douglass Mathews considered that the chief interest attached to the building was truly the formation of the walls. With regard to concrete buildings, everything depended upon the foundations, which should be thoroughly good.

Mr. Payne was in hopes that Mr. White in his paper would have spoken more particularly with regard to the artistic treatment of concrete.

The Vicar of St. Mark's Church, who was present, in response to the call from the president, said that he could only speak of the usefulness of the building in a clerical point of view. The church was admirably arranged for sound, and the crypt was excellent for vestry purposes. He had been told that the effect of the choir ascending from the subterranean regions was of very great interest. They now enjoyed a church which was excellent in sound, which was extremely warm and comfortable, and had wonderful convenience of ingress and egress. As a practical working church, he could not have wished one better, and he was grateful to Mr. White for providing it for him.

Mr. Robertson was of opinion that the value of the paper was considerably enhanced by the fact that the building had not been one uninterrupted success. As to the load on the pillars,—21 tons per foot,—that he thought was a very excessive load to put on even ordinary brickwork. He confessed that he was very much struck with the spacing of the clearstory, which was, he considered, a most important feature.

Mr. Clarkson thought that the arrangements carried out in the building with regard to the site, which was situated on a slope, were admirable, and well worthy of their attention.

Mr. White, in reply, said that a concrete building, if properly constructed, would keep out the wet very much better than a brick building. With regard to a question which had been put to him, he would not advocate the bonding of a church with iron. Iron bedded in concrete was a difficult matter, and he did not like putting iron into any cement in any shape whatever; and in any case there would be an inducement to swell and burst the cement. As to the cost of concrete, the question was wholly a matter of locality.

SANITARY WORKS IN CAMBERWELL.

ACCORDING to a report which has just been issued by the vestry officials, it appears that the total length of new sewers constructed in the parish of Camberwell from 1856 to 1874 has been sixty miles, at a cost of 120,000*l.*, and other sanitary works have also been executed at a cost of 20,000*l.* During the same period, 118,497 square yards of paving were laid down, at a cost of 45,000*l.*; and general street improvements executed at a cost of 87,611*l.*; and 910 additional lamps were erected. It also appears from the same report that the present length of the streets and roadways under the jurisdiction of the vestry is fifty-two miles.

METROPOLITAN BOARD OF WORKS AND THE DISTRICT SURVEYORS.

AT last week's meeting, the Board proceeded to the election of a district surveyor for the district of the northern division of St. George, Hanover-square, which had become vacant by the decease of Mr. Bell.

There were twenty-seven candidates for the appointment; but, after several shows of hands had been taken, the choice fell upon Mr. T. H. Watson.

A letter was read from Mr. Hayward, district surveyor for the parish of St. Giles and St. George, Bloomsbury, stating that he had acted as deputy-surveyor for the late Mr. Kendall, in the district of St. Martin-in-the-Fields, and St. Anne, Soho, for the past three years, and asking the Board, as the latter district is vacant, to unite the same with his own. Mr. R. Kerr sent a letter making a similar request.

Mr. H. L. Taylor said he looked upon this matter as a question of great importance, and he hoped the Board would prevent any such application in future. He had before him a return for last year of the fees received by district surveyors, which afforded them an opportunity of ascertaining the amount which Mr. Hayward had received from what he had described as a very poor district. He found that in that year the amount which Mr. Hayward had received in fees was 439*l.* 8*s.* 3*d.*, and then there was to be added what he had for some years received as deputy district surveyor to Mr. Kendall. Now he (Mr. H. L. Taylor) contended that 400*l.* or 500*l.* a year was as much as any district surveyor ought to receive, and he ought not to receive more. If Mr. Kendall's district was to be added to Mr. Hayward's, that would make his income upwards of 900*l.* a year, to say nothing about a large amount of fees unpaid and were now due. So far from joining districts together he thought it was the duty of the Board, when large districts fell in, to so divide them that the income of the district surveyor should be about 400*l.* a year. It was a great privilege that district surveyors should be allowed to act as deputy to others, and which Mr. Hayward had done for years, and it was really monstrous that such gentlemen should seek to take other districts to themselves. He moved that Mr. Hayward's letter be laid on the table.

Mr. R. Taylor, in similar terms, seconded the motion.

The motion was then put and agreed to, and a similar course was followed with respect to the letter of Mr. Kerr.

A discussion followed as to whether the subject should be referred to the Building Act committee for consideration, and as to whether an amalgamation of the districts was desirable; but finally a motion made by Mr. Fowler that the election for the vacant district should be made on that day fortnight was put and agreed to by a large majority.

It may or may not be desirable to join the two districts, but any excuse for the rude sputterings with which Mr. Hayward's application was received, we find ourselves unable to discover. For three years this gentleman appears to have discharged the duties of the two districts (with reduced fees) by direction of the Board, and there could surely be no impropriety in his soliciting the Board to continue in a course initiated by themselves. The fact is, there are two or three members of the Board who can never see or hear the term district surveyor without going off into a sort of soda-and-acid fizzing, without the slightest consideration for either justice or decorum, and, we might almost add, with an apparent ignorance of what is looked for amongst gentlemen.

AUTHORSHIP OF DESIGNS.

BUTLER *v.* THE IMPROVED INDUSTRIAL DWELLINGS COMPANY AND BANISTER FLETCHER.

In this case a motion was made at the Vice-Chancellors' Courts, on the 11th inst., on behalf of Mr. Butler, architect, Bedford-row, for an interlocutory injunction to restrain the exhibition at the Mansion House or elsewhere of certain plans under the sole name of Mr. Banister Fletcher.

The plaintiff stated in the bill filed by him that the Company having in May, 1874, offered premiums of 250*l.* and 150*l.* for the two best plans for improved dwellings for the industrial classes, both he and Mr. Fletcher obtained printed copies of the instructions necessary to be observed in the competition; that soon afterwards Mr. Fletcher, who carried on the business of a surveyor at 32, Poultry, had an interview with the plaintiff, and explained that he was anxious to make his name known as an architect as well as a surveyor, and suggested that the plaintiff should prepare plans, elevations, sections, and estimates to be sent in to the Company as their joint production; that the suggestion was accepted, and that subsequently it was agreed that if the design was unsuccessful the cost of the preparation should be borne equally by the plaintiff and Mr. Fletcher, and that if successful they should share the premium between them; that when the plans were prepared Mr. Fletcher suggested alterations, but they were found to be impracticable, and that the design, drawings, and estimates as sent in emanated from the plaintiff alone; that the plaintiff, being young in the profession, was induced, through diffidence as to his own ability and the apprehension of losing business which Mr. Fletcher had promised, to allow the plans to be sent in with Mr. Fletcher's name alone upon them, but that he insisted that if anything more were heard of them his name should appear; that on the 23rd of December, the directors awarded the second prize to Mr. Fletcher; and that on the 26th the plaintiff asked that the joint names of himself and Mr. Fletcher should appear on the plans, which request was refused.

After the affidavit of the plaintiff had been read in support of the motion, the affidavit of Mr. Fletcher was read, in which he denied that he carried on the business merely of a surveyor; he was a member of the Institute of Architects, and had for many years carried on business as an architect and surveyor. He also denied that the plans were the production solely of the plaintiff.

Mr. Glasse, Q.C., and Mr. Ince appeared for the plaintiff.

Without calling on Mr. J. Napier Higgins, Q.C., and Mr. John Chester, who appeared for Mr. Fletcher,

The Vice-Chancellor (Sir R. Malins) said the case was too doubtful at the present stage to justify him in granting an injunction. He was of opinion that Mr. Fletcher was quite able as the plaintiff to prepare plans. Mr. Fletcher denied that the plaintiff was associated with him in the sending in of the plans, and upon further investigation it might turn out that Mr. Fletcher was justified in saying so. The motion was refused with costs.

Mr. J. Pearson, Q.C., and Mr. Millar appeared for the Company.

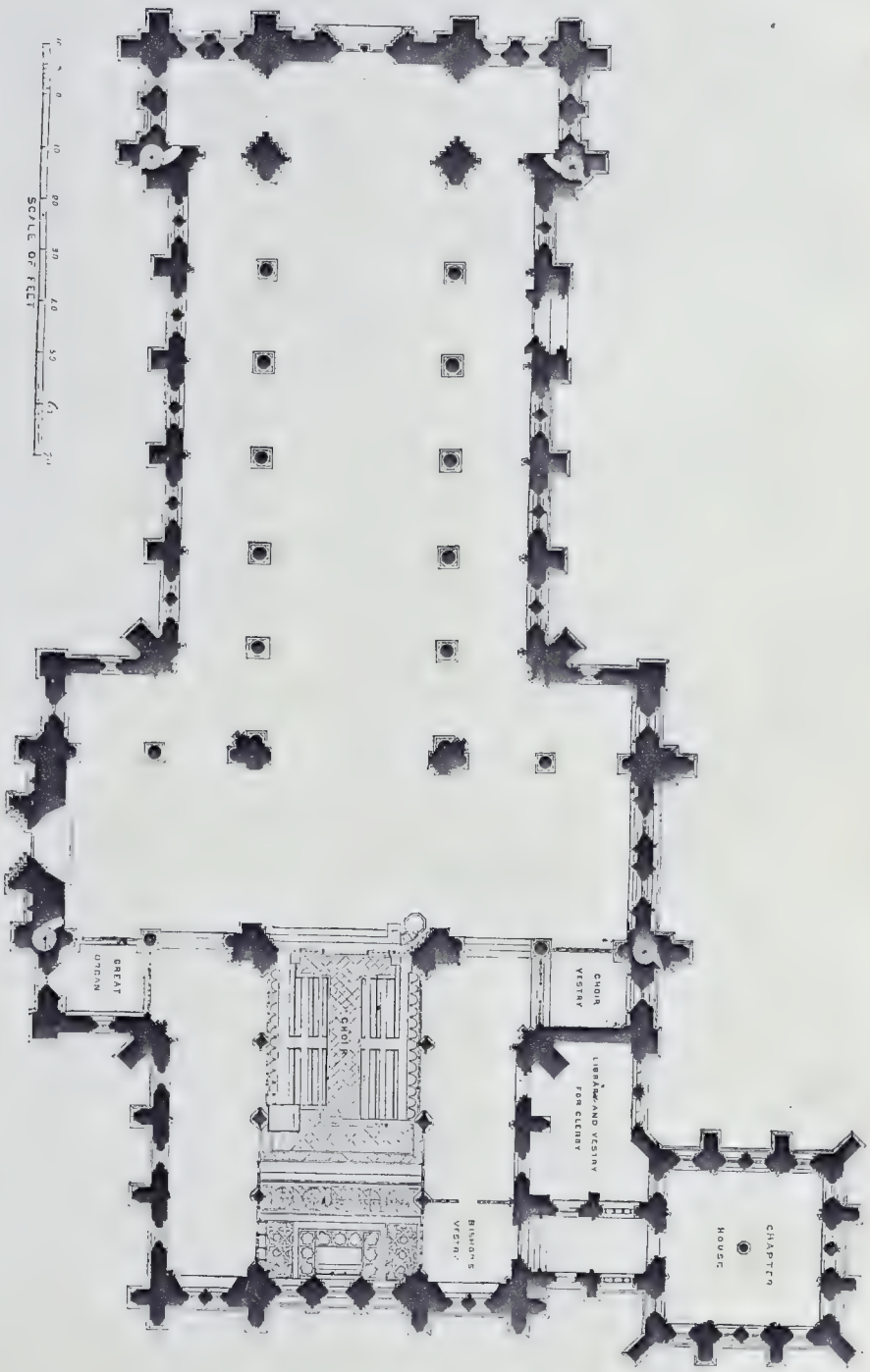
We have read carefully Mr. Butler's own Bill of Complaint, and are disposed to think he has been badly advised. We do not find any evidence of an agreement that the designs were to be sent in in the joint names of the plaintiff and the defendant, but the reverse. The only agreement quoted is the following, signed by the plaintiff:—"The terms of our arrangement as to the competition of the improved industrial dwellings are as follows:—I am to prepare all the drawings by myself, or with such assistance as may be necessary at 20*l.*, if unsuccessful; but should you obtain the first prize, 125*l.* is then to be paid to me, in lieu of the 20*l.* If you obtain the second prize, then 85*l.* is to be paid to me in full, for all my services and those I employ." It seems obvious that if the understanding had been that the designs were to go in with the joint names, the expression, twice used, "if you obtain the prize," would not have been employed; "if we obtain the prize," would have been the natural way of putting it.

We cannot avoid the expression of our further impression that, unless there is more to be said than has been said, Mr. Fletcher was badly advised also.

ST. MARY'S CATHEDRAL, EDINBURGH.

At the close of our last volume we gave a large perspective view of the Cathedral now in course of erection in Edinburgh, from the designs of Sir G. G. Scott, together with some descriptive particulars.* To these we now add, as then promised, a complete plan of the revised design.

* Vol. xxxii., pp. 1030, &c.



ST. MARY'S CATHEDRAL, EDINBURGH. *Plan.*

THE ARCHITECTURAL PROFESSION.*

QUITE erroneous is Mr. Fergusson's assertion, on which depends his division of the history of architecture into two markedly different periods, namely, that till the Reformation the so-called true system everywhere prevailed; and that since then, throughout Europe, the so-called false system has prevailed. It is no doubt true that most of the old styles of architecture, especially those which continue, as in India, to the present day, were practised during long periods as traditional styles by common workmen, and continued gradually progressing without any great originality, or such change as to be marked by the names of the architects. But I think it can be shown that this is not true as regards the rise of Gothic architecture. It arose in France in the building of the great cathedrals, in a period of remarkable social and mental activity; when the towns threw off the fetters of the feudal system, and gained their liberties and the right of having walls, an outcome of that Renaissance within the Middle Ages, which produced the free thought of Abelard, the love poetry of Provence, the new music of rhyme. The rise of the new architecture was rapid, the whole of the French cathedrals being built and left almost as we find them within a period of eighty years. It was not a slow improvement of traditional ideas by unknown workmen. On the contrary, we find in it one of Mr. Fergusson's characteristics of a "false" style; we know the names of the architects. These seem chiefly to have been laymen, judging from their names and the layman's dress in which some of them are represented on their tombs.

In the centre of a labyrinth marked in lines on the pavement of Amiens Cathedral were engraved the names of the "masters" who in succession in the beginning of the thirteenth century had directed the works—Robert de Luzarches, Thomas de Cormont, and his son Regnault. Peter of Montereau, in 1240, was commissioned by St. Louis to build the Sainte Chapelle at Paris. With his wife he was buried in the choir of the Lady Chapel of St. Germains des Près, now destroyed, which also he designed. Libergier was the designer of the very perfect Church of St. Nicaise, at Rheims, as his tombstone, removed on the destruction of the church to the cathedral, tells. Peter de Corbie built several churches in Picardy, and probably—Viollet-le-Duc thinks — the chapels of the apse of Rheims. John de Chelles constructed, in 1257, the gables of the transept, and the first chapels of the choir of the Cathedral of Paris. In 1277, Erwin of Steinbach commenced the great doorway of the Cathedral of Strasburg. The names of the masters who directed the work at Rheims, Noyon, Laon, and the façade of Paris, are lost; as, however much they might be honoured in their time, they well might be from the lapse of centuries and the destruction of records in France. But the instances given, collected by Viollet-le-Duc, show that Mr. Fergusson is in error in stating that no one seems to have cared to preserve the names of the designers of the Mediæval cathedrals. The preservation of Villars de Honnecourt's sketch-book shows that the small respect in which the Reviewer holds architects and their drawings was not the feeling of the thirteenth century. The Reviewer and Mr. Fergusson may, perhaps, answer that these men were not architects, but master-workmen. But while the sketch-book proves that Villars designed and directed work by means of drawings, there is nothing to show that he worked with his own hands at the buildings; while the plan which he gives us of a church, designed by himself and his friend, Peter de Corbie, seems as much individual work as any produced under the "false" system. These men, it is true, may have been engaged on only one cathedral at a time; but a cathedral, as then conceived, with its wealth of design, would furnish work for the lifetime of any man. It might, perhaps, be an improvement on our practice if we had a greater number of competent men among whom our great works might be distributed, so that to each the architect might give his whole time and thoughts. But this proves nothing against the existence of architects, or that they should be superseded by the workmen. It is rather the result of our system of building contracts which compels the planning of the building to its minutest details, usually in haste, before it is commenced, and makes after-revision and improvement difficult. And when we see the enormous number of buildings, sometimes designed by modern architects, —as, for example, the Brothers Adam,—in London, Dublin, Edinburgh, and all over the country, all full of invention, elegant, finished, and correct, according to their style, although we may dislike the style, we are bound to admit that the fact of an architect designing a great number of buildings does not prevent his doing good and original work full of variety. The instance of the Cathedral of Gerona, in Spain, where, in 1320, an agreement was made with a French architect, Jacques de Favariis, to superintend the works, and to visit them six times a year, seems very like our modern practice. And not only have we documentary evidence that the design of these buildings in each case was the production, or at least under the control, of an architect superintending every part of the work from the foundation to the furnishing, but the buildings themselves prove it in their structure, from their unity of design, and from the admirable adjustment of the various parts to one another,—a result which, in a new art rapidly developing, and before its principles were settled, could not have been attained by a mere understanding among hosts of workmen; though it might perhaps be possible, in a fully-developed art, with established principles and traditional modes of work; as, indeed, was the case later in Gothic art—the various trades, without an architect to direct them, working harmoniously enough together at a sort of buildings they were accustomed to, though this system might fail, as M. Viollet-le-Duc shows, in the restoration of Rheims Cathedral after the fire in the reign of Louis XI., when the building and its architecture were strange to them. I think, therefore, there is ground for believing, contrary to Mr. Fergusson's statement, that, at the rise of Gothic architecture, buildings were designed by architects having much the same functions as the architects of the present day. And more easily can it be shown that the second part of Mr. Fergusson's statement is erroneous, namely, that the so-called false system has prevailed throughout Europe since the Reformation to the present day; for the evidence of the contrary exists everywhere round us.

In the fifteenth century in Italy, in the sixteenth in England, architecture again took a new start. Gothic had solved its problems, had reached the limit of height in cathedrals, the limit of twisting stone in tracery windows, and of tracery decoration on the walls; while in England it had stiffened into Perpendicular, and, for reasons logically good, the pointed arch was gradually flattened till it became a straight lintel. The art could go no farther than it had gone. In a stagnant state of society it would have lingered on, degraded like modern Chinese pottery, but to the creative age of the Renaissance it had lost its interest, and was chucked away like a sucked orange.

It was impossible that an age which had found a new life in Classic literature and sculpture could avoid, in the then state of Gothic, adopting Classic architecture. But it was not mere copying, as Mr. Fergusson, by his nickname of "copying styles," seems to assert; the great palaces of Rome and Florence are original works, not copies of any old Roman remains. This age in France, Germany, and England was fortunate, not only in having great original architects, but in having the good sense to employ them, instead of mere copiers and bunglers. Thus the new style became established as the style of Europe, and of every country which adopted European civilisation. It soon came to be worked on the system of what Mr. Fergusson calls a true style, not by original architects, but by workmen following a tradition. It was mingled with such tradition of the old Gothic style as remained in each country, each of which produced its own type of the style characteristic of the genius or the people; and, notwithstanding the more common employment of architects during the last few years, it remains everywhere the traditional style to the present day. Every workman has been apprenticed to it and understands it; and in it builds, without drawings, according to Mr. Fergusson's "true system," those houses which the reviewer truly says Englishmen who must live in them justly abuse. The style has, to borrow a term applied in ecclesiastical controversy to a true church, a *note* of a "true style," it is practised by workmen like an instinct, and its production can be reasoned about with the same certainty as those of the instincts of the lower animals; and, like them, produces sometimes curious results by being followed out in unsuitable circumstances. I remember seeing once a row of houses in a street where the side wall of the last house overhung a wooded bank, and commanded an extensive view. *Reason* would have dictated to put the windows in this wall, but the builder's instinct prompted him to make this house exactly like the others, and to make this wall blank like the other party-walls with the chimney in it.

It would seem, then, from the history of the progress of the Gothic and Renaissance styles, that the law of progress in architecture is this: architects with the gift of originality, and whose names consequently have been remembered, design buildings different from those commonly built. The new fashion is imitated by the ordinary workman, and a traditional, or true style, if Mr. Fergusson prefers so to call it, is established, which continues developing by constant improvement, or at least changes, till a new "epoch-making" period of mental activity produces, or rather gives a chance, to original minds again to make a new start. The same thing happens in other arts. Our original painters now, as in old days, have each his school of followers. When railways were first started, original minds, like George Stephenson's, were needed to lay them out; now any contractor, or even, perhaps, as the Reviewer suggests, common workmen can make them. Any fool now can go to America, or make an egg stand on its end, though it needed a Columbus to do it for the first time. The late Gothic revival is an instance of the same thing. Pugin and others started it, and his works, though among the earliest, are still among the best, from possessing the originality of genius. The style has now become traditional, with established forms and modes of work, if not for houses, at least for churches, not with workmen who, still imbued with the ways of the degraded Classic tradition, though they make abortive attempts in it, have never understood it; yet with architects who, except when they unite with bad taste a belief that they are capable of originality, design fairly good Gothic churches. And the same is also true of the new fashion of so-called Queen Anne; although those whom accident may have caused to be accounted its leaders may not be those who first started it. The London builder is adopting its features, with more chance of success than in Gothic, since it is the natural outcome of London materials and modes of work; but it is to be feared that he, as well as the more ignorant architects, in attempting to get out of commonplace, will run into vulgarity, to avoid which, in this style, requires the constant restraint of good taste and refinement.

We see, then, that in architecture, as in other arts, in times of which we have any record, we can trace the rise of new inventions and know the names of their authors, while in times of which the records are lost, the names of the poets and sculptors have perished equally with those of the first inventors of new styles of architecture. The anonymity, therefore, of the "true" styles of architecture is an accident of our ignorance, and not inherent in the nature of the art, and forms no ground for distinction between it and other arts. Reasoning from what we know to have happened in times of which we have records, we may be certain that in times of which the records are lost, new improvements in architecture, great or small, were not made by common workmen or by the general sentiment of the community, but by individual inventors whom then, as now, the multitude copied and followed; and if these old works of art express the feelings and genius of the race, it is because the race had adopted them and taken them as the expression of their own thoughts. National poetry is the creation of individual poets, national music of individual composers, and national architecture of individual architects, and those patterns and colours which we admire in Eastern carpets, the invention of some long dead and forgotten designer, who have each in their own arts impressed their thoughts on the nation, so that they have become the expression of the national sentiment. Everywhere, and in all time, progress has been determined by the individual. Tennyson's soft music has infected all the youth of our age. Before him was Campbell, "blowing trumpets and beating drums." For a time all aspirants to poetry were Byronic. When we go far back in time, we must believe the same infection of personal influence and mood existed.

Now, as in all time, individuals are, in a sense, the products of their age and country, however remarkable they may be, but there is no reason

* By Mr. J. J. Stevenson. See p. 27, *ante*.

for thinking they were more so formerly than now. And architecture is necessarily now a product of its time, and influenced by national movements rather than by individuals, to a greater degree than an art, such as poetry, for several reasons. In the first place, it must, in domestic work, suit itself to our life and habits; and these do not readily change, even for the better, at the bidding of any single individual; while in its application to religious purposes it is dependent on the prevailing religious sentiment. Thus, we find that the romantic revival in architecture was a sequence of the romantic spirit in literature and religion, and will last as long as these.

In the second place, originality has not the same chance of showing itself as in poetry. A poet produces his work, notwithstanding that his audience is unfavourable, and if, as in the case of Wordsworth and Tennyson, it is received at first with opposition and ridicule, time, if the work is genuine, will give it currency and favour. But an architect's work must be approved before he is employed, and has an opportunity of exercising his gifts; and in his case, as in the poet's, new ideas, being strange, are received with opposition and dislike all the greater the better they are, and the higher above the heads of the people. It is sad to think of the chances of good buildings which have been lost to us from this cause. We wasted, for instance, our gift of Pugin. One sees in his little church at Ramsgate, where he had his own way, and which seems almost to contain in itself the whole Gothic revival, what a wealth of architectural design he could have given us if we had had eyes and hearts to receive it.

A third reason why architecture cannot to such an extent as poetry or literature be dependent on individual originality is, that a building cannot, like a poem, be the work of one man. No doubt, as all of us know, by full and careful drawings one man can direct a work down to its minutest details, and that, in the present state of workmen's training, this is the only way to get it right. But not the less is it true that in such a state of things the architecture of a country labours under enormous difficulties. The number of men who are capable of doing this when architecture has no settled rules, as at present, and when they have only their own innate taste and sense of right to guide them, is necessarily few, and as we see, they are the least likely to be employed. The public taste at present is ignorant and unformed, and especially is debased by a vulgar sensationalism to which the boasted freedom of Gothic has too readily lent itself. It is otherwise when the laws of art are settled, when they are universally diffused and learned as traditions of the trade by apprenticeship, and practised without difficulty by men who could never of themselves have invented them, when the work of architects, sculptors, carvers, painters, furnishers, fits together naturally without special effort. But if we ever again come to this, it will not be by the fortuitous groping of common workmen, but by men who can conceive, see clearly, and work out new order and beauty in the art. On our having men who can do this, and in our giving them the opportunity of doing it in actual work, depends the hope of our architecture. But as in Pugin's case, there is more chance of our having the men than of their being employed.

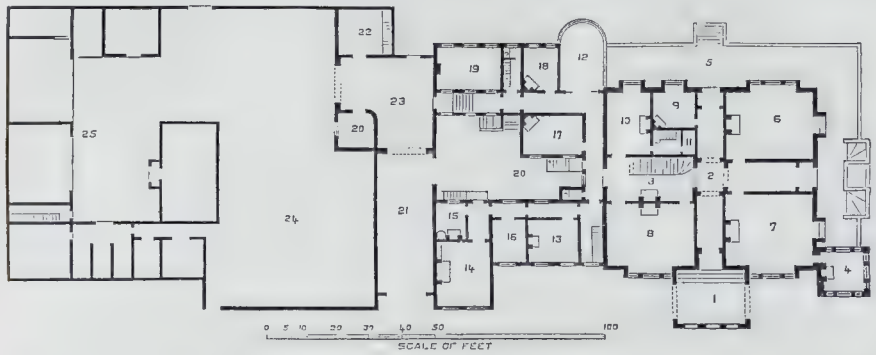
We agree with Mr. Fergusson and the reviewer that the present unsettled state of architecture is a misfortune to the art. But the causes of this are deeper than architects can control; they cannot change the spirit of an age; they are but straws in the tide of opinion which, in more important subjects than architecture, is now in a state of flux and movement. But all the more on this account does it seem to me our duty to preserve, instead of destroying, such building traditions as remain among workmen, to give new vigour and interest to a style still living, though common-place and degraded, and to give beauty and refinement to forms which left to uneducated builders for half a century had become vulgarised, while the talent and refinement of the country was following the new cry after Gothic. This consideration, though not the cause of the late reaction to free Classic architecture, which lies deeper, is, I think, a good justification for it. When, then, the Reviewer says that the hope of English architecture lies in the working man without the aid of architects working on the traditional system of the true styles, we answer, You have had that condition for fifty years, and the result is our dismal suburbs of London builders' houses. It was not so, we have seen, that architecture has progressed in the past, and, as Bishop Butler says, there is no reason to believe that it will be otherwise in the future.

There may be virtue in working with our hands. The digging and delving to which Mr. Ruskin has set Oxford students may be wholesome moral training. Mr. Gladstone may find benefit in felling trees. Monks, old and modern, have believed in the virtue of manual labour. It might be well for everybody if the old custom still prevailed of apprenticing every lad, however rich, to some hand-working trade. The discipline, however, has been recommended for its moral rather than intellectual benefits, and in architecture especially it is brains, not hands, that are wanted for designing it, and when that talent exists in a workman it is a waste of it to keep him to manual labour. That architects, as well as poets, should be born among them is to be expected, and the instances which Mr. Fergusson and the Reviewer give of common workmen designing great buildings in modern times are merely examples of this, not of a return to his "true" system of architecture. The church at Mousta was a break in the current building tradition of Malta, a bad copy of the Pantheon (including the two modern towers which spoil it), cleverly carried out. That its designer, Anthony Gatt, got only fifteenpence a day is an accident similar to Milton's getting only ten pounds for "Paradise Lost." Both ought to have got much more, but the true reward of both, as of every true artist, is his delight in doing the work. The Reviewer's instance of the Scott Monument, Edinburgh, designed by Kemp, originally a working carpenter, is still more unfortunate for his argument. Not without faults, for the worst of which, the spoiling of its line at the top by the introduction by the committee, after his death, of a projecting gallery, Kemp is not responsible, it is true work of genius, striking in design, and perfectly truthful in construction. But it is not a production of a true style, but something altogether new to Edinburgh; and neither is it an instance, as the Mousta Church may be, of the designer working at it with his own hands; for it is one of our few buildings which are wholly of mason work. Now Kemp, its architect, was by trade a carpenter, or wright, as he would call it, who probably never cut a stone in his life, but whose own trade gave him the practice of making working drawings. He was, in fact, one of the sketching architects whom the Reviewer condemns. One of his friends, beside whom I worked at the office at Edinburgh, where I was apprenticed, told me that Kemp used to disappear for long periods, during which he went abroad, and, working at his trade enough to support himself, employed himself in sketching the old buildings of Continental towns.

The talent for designing architecture, like that of making poetry, may be born in any rank. Bishops may have had it in olden time, and with the principles and practice of the art commonly understood (which, if we get our opinions settled, we may hope to have again) may have found no difficulty in carrying out their ideas, though in the instance the Reviewer quotes, where the church tower fell down from having a bad foundation, it might have been better for the bishop if he had had a competent architect to consult. I see no reason why women should not have it. I have known some ladies excellent planners. One of our best artists in furniture and decorations is a lady. Lord Burlington, doubtless, was an architect, though Colin Campbell, in his "Vitruvius Britannicus," inserts Burlington House as his own design. Builders may have it, and some large firms supply the want of it by keeping a young architect on the establishment, though their designs, even those of the best firms, often fail, not only through commonplaceness and poverty of invention, but in management of lighting and in planning. It is within my experience that a builder, asked to do some work requiring design, has come to an architect to advise him. I think he showed therein more wisdom than his employers, and that we should have better architecture if builders in their own work oftener did the same. To say that workmen only can produce good architecture, is absurd and contrary to fact, and I do not think they would thank us for pushing them into this position. I have had occasion to know something of them, and have found them mostly honest and sensible, with perhaps over-veneration for acquirements in others which they did not themselves possess, with interest and pride in their work, and in the design they were helping to carry out, and conscious that, to produce better art than they were used to, they must work under guidance. I have heard a different account of them,—that they take no interest in their work, that all they care for is to get as big a wage, and to do as little work as possible for it. Doubtless, this is partly true, and the workman's trade-union regulations seem framed to foster such feelings. But who first taught him to give as little and to get as much as he could; that his only value was his market value; that it was all a question of hard bargain, in which considerations of sentiment or honour were out of place? If in dealing with men political economy has dropped out humanity as a factor in the problem, it is not the teachers of its dreary gospel who should complain that the workmen have taken them at their word. Working-men would not appreciate being left to make designs themselves, or understand the veneration of the Reviewer for them. Hero worship has reason in it, but I can see none, nor would they, in the Reviewer's new religion of the worship of the working-man. We have no directions, either from Mr. Fergusson or the Reviewer, as to the practical steps which the public should take to introduce the "true" system of architecture. On one point I would desire information, namely, which of the numerous trades connected with house-building,—bricklayer, plasterer, carpenter, plumber, bell-hanger, decorator, &c.,—is to have the direction of the work. Old buildings had not this complication: the other trades were subordinate to the mason; but a mason now-a-days would find himself very helpless in adjusting the requirements of a modern house. Our London builders' houses, though each merely a repetition of what has been done a thousand times, do not show much hope for the system of leaving workmen to their own devices. It is, indeed, a curious theory that knowledge, education, and refinement should be hurtful to an art, to the proper practice of which, in the present day especially, they are essential. It seems to have arisen from the fallacy that because architecture, in a wholly different state of society from ours, and when good art was traditional, was practised successfully by men who could neither read nor write, the right way to advance it now is to leave it in the hands of ignorant men. The contrary is the truth; for if our architecture be in the deplorable state the Reviewer asserts, it needs to raise it, not ignorant men, but men who, to education, refinement, and special training for the work, unite the faculty of original design.

ROBERT HOOKE, ARCHITECT, AND ASKE'S ALMSHOUSES.

In respect to the original almshouse building designed by Robert Hooke, taken down early in the present century, to make room for the new building, now being replaced in consequence of the future ordering of the charity, we find the following description in "Walpole's British Traveller," a large-sized gazette, with plates, published in 1784:—"The house is a most noble edifice, built of brick and stone. In front there is a walk or ambulatory 340 ft. in length, under an elegant piazza supported by stone pillars of the Tuscan order. The chapel, which is in the middle of the building, is adorned with pillars of the Ionic order; and in the front is a statue of the founder. The principal entrance to the building is by a handsome pair of gates, directly opposite to the front of the chapel; there are also another pair of iron gates at the south end, supported by a pillar on each side, on the top of each of which is a statue at full length, representing the first two men that were admitted into the hospital" It further appears that it was erected to support twenty-four instead of twenty-two decayed members of the Haberdashers' Company, and that each had an apartment containing three rooms, and the master had "commodious apartments for his residence." The above additional particulars may afford some slight idea of the original buildings erected from the designs of Robert Hooke in 1692. The architectural features of the second building may be easily found in contemporary publications. It is sufficient to say that they were "Classical," strong, and substantial, and would have lasted for long years. The statue of Robert Aske, in front of the second building, was executed by Groggan, of Lambeth, but the statues on the pillars of the gates alluded to, we believe, have long disappeared from the outside.



1. Porch.
2. Hall.
3. Staircase.
4. Tower.
5. Terrace.
6. Drawing-room.
7. Library.
8. Dining-room.
9. Cloak-room.
10. Own room.
11. Safe.
12. Conservatory.
13. Housekeeper's room.
14. Kitchen.
15. Scullery.
16. Store.
17. Butler's pantry.
18. Gun-room.
19. Upper part of brewhouse.
20. Mangling-room.
21. Carriage-way to stables.
22. Potting-shed.
23. Yard.
24. Drying-ground.
25. Stable buildings.

HARBOURNE HOUSE, HIGH HALDEN.—*Ground Plan.*

HARBOURNE HOUSE, HIGH HALDEN, KENT.

THIS house, which has been some years in course of erection, is now nearly completed. It is beautifully situated, and the grounds, originally well wooded, were laid out twenty years previously with especial reference to the intended mansion, and with very considerable judgment by the proprietor, Mr. Henry Latter, who has also dictated the arrangement of the plan. On the ground-floor are the drawing and dining rooms, library, &c., arranged on either side of a hall shaped like a Greek cross, having entrances on three sides opening out on to salient external features, and a portion of the kitchen, offices, &c., the remainder of the latter, and the dairy being placed on a basement story in which there is also extensive cellarage. The upper floor contains a billiard-room, lady's boudoir, oratory, and numerous bed and dressing rooms, bath-room, and so on.

Stabling is attached to the house, and an extensive grange has been erected in a convenient locality. The works have been carried out by day-work; the bricks being made on the estate, and the oak, which is largely used, being also cut there. The new house is in the Italian style, with terraces and a tower at the angle, from which latter a view of the sea is obtained; and it has been designed and erected under the superintendence of Mr. C. G. Wray, of London; Mr. W. Jolliffe being the clerk of the works.

ST. PETER'S, ROME, AS AN ART-TEMPLE.

IT might prove a somewhat hard matter to determine which of the many great cities of the old time and of the antique world have most claim on our modern imaginative dreamings. They are right famous in history and in story, and are all full enough of poetic memories. The very names of them are suggestive of greatness and beauty of some kind or other, and the longer you dwell on them the more attractive they grow. Babylon, with its walls and hanging gardens, and tower; Thebes, with its temples and hundred gates; Nineveh, with Prophet Jonah to predict its fall; and a host of others, to say nothing of well-nigh fabulous Troy, Jerusalem, Athens, and Rome. Nearly all of what was once in them gone. The very *sites* of some are doubtful, and modern ingenuity has been, and is, taxed to find out *where* on the earth's surface precisely these famous haunts of men stood. Among this number there is at least one of them,—Rome,—which endures to the present hour, with a history which is most surely second to none! All the phases through which a city can pass, Rome has passed through. From the very earliest beginnings, all but mythical, to the city of the Republic; then to that of Imperial Rome, the mistress of the world, and from whose power and influence you could not possibly fly. Thence, again, through darkened times to that Papal Rome, not less famous and of wide-world influence, to the Rome of the present hour. This surely is representative of much, and the holder of many memories. A goodly volume might, and has been filled with it, and its many-coloured doings.

But it is not of the city itself that we now purpose to say a few words, but of one of the most famous of the structures in it, the great Church of St. Peter; in very many ways, one of the most remarkable buildings on the earth's surface; and most certainly, if the mere fact of the number of years which it took to build, and the number of men who thought out its various details be considered; the most remarkable of human constructions. Let us then say a few words about it, and revert in saying them, to a bygone memory or time. Saint Peter's stands, as all know, on the right bank of the Tiber, on one of the worst sites which could well have been selected for it, as some think; right down in a hollow, between the Janiculum and the Vatican; and is so hidden by *them*, that the church on three of its sides, up to the height of the nave of it, is totally concealed. It can indeed be hardly seen to advantage from any very commanding point of view at all. We need say here nothing of the Colonnade in the front of it, with its columns, and nearly 200 statues of saints; nor of the *exterior* of the church, though about this so much might be said that might perhaps be novel to some. We want to call attention to the *interior* of it, for it is in the inside of this great church that the charm and spell mainly rest. It is in the *plan* of the church, and in its great dome, as seen inside the building, the idea of it is found to be most striking. It is a little difficult to find a point to begin at, where there is so much.

But, first, it may interest some to consider for a moment of the difference between past modes of representing architecture on paper, and our present system of work. We have by us at this moment a rude engraving of the interior of St. Peter's, which, coarse and rough as it is, seems to carry you right into the place itself, all is so literally rendered. It is half-section, indeed, and the draughtsman appears to have wished to show as much of the building as by any possibility could be represented in so small a compass. The Royal Academy, it may be mentioned, has very many of those quaint prints of the olden architectures in its capital, though ill-arranged, collection. Our modern draughtsmen might learn not a little from this old plan of architectural representation. It may be useful to remind the reader that the full length of St. Peter's within the walls is 607 ft. from apse to entrance, and 445 ft. from the end wall of one transept to that of the other. The height from the pavement to the cross is 458 ft., so that our own St. Paul's might stand comfortably in the interior of St. Peter's. Shall we say a word on the relative cost of these two world-known structures? The total cost of St. Paul's did not reach a million sterling, including monuments, and paintings, and all; while the cost of St. Peter's has been estimated at from twelve to even sixteen millions! There may be some exaggeration in these immense money estimates of cost; but there can be no manner of doubt as to the vast sums spent on the fabric, and on the "adornments" of this greatest in dimensions of all churches. It is right curious to contrast the cost of the two buildings, and to note the sizes of the two cities of Rome and of London, their relative wealth, and the numbers of people living in each of them. We might here ask which of the two cities is most to be congratulated on its equally unique possession, counting the cost of each? The plan of St. Peter's, unlike that of St. Paul's, is a Greek cross, with aisles, and a multitude of chapels, but so arranged as not to destroy the simplicity of the main idea of the cross in plan.

These many altars and chapels so "utilise" the building that every part of this great church is devoted to some special purpose. In the centre of the church, and beneath the great dome, is the "Baldacchino," about which the world has heard so much, in so many ways. Under it is, of course, the high altar. It is of gilt bronze, of colossal proportions, and gives that special character to St. Peter's, which makes it what it is—standing as it does so conspicuously. It was erected under the Pontificate of Urban VIII. The Papal throne is to the eastward of this. It would take long to go through the mere list of the multitude of sacred and artistic objects which help to fill St. Peter's. There are the colossal figures of St. Helena, St. Teresa, St. Vincent de Paul, St. Philip Neri, and so many others. Of the multitude of altars to apostles, saints, and martyrs it would take long to tell; and a whole history might be made of the records of the successive Popes here commemorated. Around the dome, too, written on the frieze of the entablature, is the memorable inscription in giant letters, "Thou art Peter," &c. Indeed, it would be difficult to see what could well be added to St. Peter's. It would be impossible, without going into minute detail, to criticise much, but we may here fairly ask, as a curious architectural and "adornment" question, whether the inherent massiveness of the ponderous parts of this great building are not a good deal weakened by their very multitudinousness of detail? The breadth and simplicity of colossal proportions surely are well-nigh here lost. Examine carefully the piers of the nave arches, with their panels, bas-reliefs, and sup-



HARBOURNE HOUSE, HIGH HALDEN, KENT.—MR. C. G. WAY, ARCHITECT.

porting angels, and papal tiaras, leaves, and foliage, all coloured, too, and most surely a right useful lesson may be learned.

Nothing, it is certain, is more striking in St. Peter's than this universality of "adornment" in it. Every part and detail of wall surface that can well be "ornamented" is so. All over-done, as we take it, for though it be possible, as in St. Paul's, to have the flat walling thin and bare, still it is equally possible, as here, to have too much of decoration and of adornment; and so to leave the mind and eye no spot to rest on. In the more modern pictures of this great church, this is but partially visible and appreciable, but in the old prints we have referred to, it is manifest enough, as it is in the cathedral itself, where it is almost bewildering in amount. Pictures, statues, mosaics, carvings, and details without end, and everywhere! The special portion of St. Peter's, whereon the elaborate system of ornamentation tells best, is perhaps in the semicircular line of roof from one end of the building to the other. A wonderful piece of vaulting it is, simple in idea, and harmonising well with the great cornice on which it rests. The ornamental details here become small by dint of distance, and so blend together and produce an effect of quiet harmony and richness worthy of the place. There is in real fact as much to unlearn as to learn in St. Peter's, looked at as a work of art, or rather as a vast collection of works of art, — architectures, sculpture, paintings, mosaics, and the most costly of earth's materials. We can but generalise, and point but here and there to some one speciality. A volume would be needed to catalogue all that should be noted, with memoirs of each, and with a due estimate of its artistic value.

But the crowning glory of St. Peter's is, beyond doubt, the gigantic dome, the work of Michelangelo. Whether he has to the letter realised his proud boast, that he would suspend the antique Pantheon in the air, may perhaps be doubted. There is a wonderful neatness and architectural finish in the old Pantheon dome, which Michael, with all his powers has scarcely realised. Excepting the size of it, we think the disposition of the several main features of it are hardly equal to our own St. Paul's. The width of the tambour, or drum, of St. Paul's is a great gain, and its very bareness, where the clear stone shows itself, is perhaps a gain. Plain, unornamented spots and spaces here and there in a building are so many gains, affording background for the ornament. The ornament here is surely excessive. St. Peter's would gain, even in the dome, as much, we take it, by the absence of a portion of its excessive ornamentation and adornment, as our St. Paul's would gain by the addition, well-regulated and judicious, of a further quantity of it. No doubt there is a wonderful influence and power in mere *dimensions*, for the size of this immense concave almost compels forgetfulness of all imperfections of detail, at least for a time. But what a "thousand and one" pities it is that Michelangelo was not spared to *paint* this dome, as well as to build it, and that he had not designed it for that express purpose and intent. What have we not lost here? What has the world not lost, of all that is wonderful and sublime, and above the small things of this lower world? This idea, if once admitted, haunts the mind perpetually in this vast temple, and eventually, if the spectator will, fills the great hollow vault with the prophets and giants of the Sistine!

There are many lessons, we think, here in St. Peter's, at Rome, that may be well taken to heart by those who are interested in the well-being and preservation of our own cathedrals, by the careful study of this hugnest of Christian churches. Here are to be found marbles in plenty, and to spare, so that there is no lack of "precedent" for those to study who long to know what a profusion of marble looks like. It is a curious and difficult subject. Some of the art here is but poor in character, and it is possible that, had we just such another church as this in the midst of wealthy and dull-coloured London, not a few might turn from its magnificence of material and "adornment" to the baldness and coldness of our stone-lined St. Paul's, always supposing the *stone* to be everywhere visible. Statuary should adorn, not fill a building. The subject problem is now of infinite interest, from the rumoured intention of the venerable Pontiff who now fills the Papa chair, to carry out the idea of Michelangelo, and *add* twelve colossal statues to the dome of St. Peter's. It is to be hoped he will do this. It is a glorious opportunity, and would, if worthily done, perpetuate the memory, if nothing else does it, of his long and eventful reign. In an artistic sense, too, let us hope that these statues of the twelve Apostles will be by artist hands, as well as artist heads, not things of mere art manufacture, or commonplace reproductions. Let us hope for the best. It must be added, that some of the colossal figures now in St. Peter's are very fine, both in conception and execution. They are yet worth some analytical talking about, and a good and exhaustive catalogue of them, with the others of less merit, is still an art desideratum.

PROPOSED CATHEDRAL FOR LIVERPOOL.

At the last meeting of the Historic Society of Lancashire and Cheshire, a paper was read by Mr. Edward A. Heffer, of Liverpool, architect, entitled "A Design for the Proposed Cathedral of St. Peter, Liverpool." The paper was illustrated by designs exhibiting a stately edifice. Mr. Heffer remarked of the present parish church of St. Peter that it has very little, if any, merit to recommend it for consideration. It is neither ancient nor beautiful, and is out of character in its position. Mr. Heffer proceeded to describe the sort of building which he proposed to put in its place. He said in times of leisure he had prepared the drawings submitted. His leading idea is to erect a large church worthy of the increasing importance of the town, and suited to future requirements. He is of opinion that, although there may be some slight drawbacks to the site (that of the present church) for the new church, yet Church-street is the most eligible one that could be found. The Italian style of architecture, somewhat like that practised by Sir Christopher Wren, is proposed to be adopted. The general treatment is bold and broad, but the details would be of an ornate character. The Doric order is brought into requisition for the exterior, and, like Sir Christopher Wren's first design for St. Paul's, one order only is introduced. Above this order a range of statues, fifty-four in number, are carried round the edifice at one level. The clearstory forms a background, enabling the statues to be viewed with advantage, each statue to be of heroic size. The outline or plan of the church is that of a Greek cross, the nave and choir being somewhat longer than the transepts. The extreme length from east to west is 244 ft., and the width from north to south is 176 ft. At the intersection of the arms an octagonal space, 76 ft. in diameter, supports a dome, which rises to a height inside of 145 ft. from the floor, the whispering gallery being 71 ft. high. The dome, the principal feature of the building, is surmounted by a lantern of ornate character, and is crowned by a ball, 5 ft. in diameter, and a large cross. The total height from the street to the top of this cross is 221 ft. Portland stone is proposed to be used for the exterior. The columns supporting the vaulting inside, each 27 ft. high, and twenty-eight in number, would be of red marble. The pavement also to be of variegated marbles. The dome is lighted by sixteen windows, between coupled columns of marble. The treatment of this portion of the design on the exterior would be effective and uncommon, if not original. The total cost is put down at 117,000*l*.

The Rev. Canon Hume, expressing the thanks of the society to Mr. Heffer, remarked that it was a very peculiar circumstance that a meeting was to be held in the town-hall for the purpose of considering whether a portion of the diocese of Chester could not be taken away from that portion which lies in Cheshire, and added to the Isle of Man, forming a Bishoprio of Liverpool and Man. With regard to Mr. Heffer's design, he feared that the cost of it would be too great.

BAD AIR IN THE BRITISH MUSEUM.

SIR,—To judge fairly in the matter just now going the round of the papers, viz., the defective ventilation of the British Museum, one should know very precisely the exact amount of nicotine the plaintiffs may think it necessary to absorb in the course of the twenty-four hours, and also, the precise amount of alcohol in the form of beer or wine they may usually imbibe in the same period, particularly those who consider their health to have been seriously injured; otherwise one may be led to reproach, unjustly, the architect for neglecting to provide the proper means for the efficient ventilation of that magnificent structure.

B.

VOLUNTARY EXAMINATION AT THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

SIR,—The discussion upon two papers recently read to the members of the Institute seems to show that the profession, as it is represented at head-quarters, is even more satisfied with itself than the public appears to be dissatisfied with it. Few, if any, speakers ventured to hint that the ordinary architect of to-day required improvement; and one considered that any improvement must be preceded by an increase in the rate of professional remuneration. Previously to the meetings, I had fostered a weak idea that some of the leading Fellows would have suggested how the hope of English architecture lay partly in the better technical education of architects, and the means of obtaining one more easily than is possible to them at the present moment. The president did suggest that some of the influential practitioners should "band themselves together," to refuse all pupils who had not passed some preliminary test; but the many, who are ever ready to discover flaws in any proposal for reform, would immediately ask,—Where are those young men to study? and, again, having studied,—To what authority are they to submit themselves for examination? I should have answered the second question—To the examining authorities of the Institute, had I not seen the catalogue of "passed candidates" which concludes the list of members for 1874. Like actors at an ill-paying theatre, the students and passed candidates appear upon the same histrionic page in several characters. On the play-bill of last session, they number eighty-four names. But with a good glass, it is easy to see that the titled hero who appears in the second and third acts, plays the mysterious stranger in the first and fourth; and after a careful survey of the different tableaux, I find that instead of eighty-four there are only fifty-four gentlemen who from 1863 to 1875 have passed the voluntary examinations; while during that space of time her Majesty has conferred a gold medal upon twelve distinguished persons. In the year 1873, there were living eleven English recipients of the Queen's medal; while, in that same year, the "preliminary class" numbered twelve, and the "class of proficiency" three passed candidates. In addition to the fifty-four gentlemen above mentioned, the year 1870 witnessed the enrolment of one student; the year 1871 of another; the year 1872 of three more; but in the year 1873 no admission of fresh or unsophisticated youths appears to have taken place. In the session 1873-4, a student's prize in books was awarded; in the same session two medals were given away for two essays; the Institute silver medal, with five guineas, a medal of merit, and an honourable mention, were awarded for drawings; the Pugin Studentship competition was recompensed by a medal of merit and two certificates of honourable mention; but the Soane medallion, to which is attached the sum of 50*l*., was not given, for it had not been deemed by the young men worthy of emulation.

This is the state of things in which an institution formed for the purpose,—that is, if its charter be worth anything at all,—of advancing "civil architecture, and for promoting and facilitating the acquirement of the knowledge of the various arts and sciences connected therewith," is complacently sunk. A few members of the council deliberate over the affairs of the Institute *in esse*; a fragmentary committee discusses the affairs of the Institute *in posse*. The sympathies of men who have done good service both to the profession and the public who employs it, have been successively alienated by a light-hearted administration. Mr. Fergusson, Mr. George Godwin, and others of equal note in their own line, have long absented themselves from the general meetings, and it is no secret why they are absent. In spite of the slight spur given to the last two or three gatherings, due entirely to the exertions of Mr. Eastlake, the average attendance of Fellows at the meetings of this session cannot have exceeded a dozen; and from the speeches of some and the demeanour of others, an outsider might easily assume that the profession, having chanted a *Nunc dimittis*, could do nothing more than lay its laurelled brow upon the pillow of circumstances over which it has no control, and sleep the sleep of the just! Nevertheless, fresh Associates and Fellows are constantly being introduced by letter; and, except that they are personally known to three Fellows, those who are expected to vote for them cannot tell whether

these gentlemen are able to frame a door or a window-sash, or put together a stone portico upon paper. It is argued that all members subscribe to certain honourable obligations, which constitute a guarantee of their commercial morality; but this is pure sentimentality, for a man who would defraud his clients would also unblushingly sign the Institute declarations. It is possible, and this is an advantage, to evict a member who is proved to have misbehaved himself commercially; but the records of justice show that people of doubtful reputation may live threescore years and ten without any positive proof of ill-doing being brought against them. As far as I can see, the principal benefit of being either an Associate or a Fellow of the Institute in its present condition, lies in the pleasure of hearing an occasional lecture, and in the use of the library; but these can be enjoyed, and very properly too, without being a member. At every ballot at which I have assisted, a young man of amiable exterior has presented me with a certain number of "balls," according to the number of candidates, and I have always mechanically placed a "ball" in the affirmative half of the ballot-box, with the consolation of feeling that so many guineas are thus added to the income of the Institute, and the means of paying for creature comforts at the annual *conversazione* thereby increased. There is, however, a privilege attached to membership. It is that fifty years hence,—if foreigners are only as wise as Mr. Ruskin has lately shown himself,—men, like myself, who may live to be eighty-five or ninety years of age, will receive the Royal Gold Medal at the hands of their similarly bedecorated brethren.

It is thought by some that a voluntary examination of youths offers a partial remedy to this state of things, and perhaps twelve years are hardly long enough for the fair trial of that praiseworthy attempt at reform; yet it seemed to me, while attending Mr. Sharpe's lecture at Willis's Rooms, that there were a great many young men in London between the ages of eighteen and twenty-five who were studying architecture; I wondered, too, how each would obtain his first bit of building to do, because in this country the first client is usually obtained by a fluke. Before this voluntary examination was started, a young English architect was introduced to a rich lady, who desired to build a villa in a Continental capital, and he was asked,—"Have you ever built a house in Paris? If not, I cannot employ you." He replied,—"Madame, if every intending client makes a similar rule I shall never build one." The lady expressed astonishment that he could show no diploma,—nothing but formally polite letters of recommendation; and the chances of practical success being thus so egregiously speculative, she very wisely refused to join in the speculation. Herein lies the secret of the success of pluralists. People prefer to employ men of enormous practice, even though they know that such men farm a large number of assistants, and in many instances cannot do more for their clients than sign the plans and contractors' certificates. This is why, had the *Quarterly* Reviewer confined himself to the substance of his first article, called "The State of English Architecture," I would not have attempted to reply to him.

There is a remedy for this state of things, but it is an eminently Quixotic one. Like certain landowners in the Mofussil of India, the Institute council have planted the bamboo, and for twelve years have beaten the tum-tum on the dry bit of land they possess; but few wanderers have come to settle upon it. When Mahomet found the mountain did not respond to his call, he went himself to the mountain. Suppose the council follow his example,—suppose they settle upon the dry bit of land themselves, or at least encourage a certain number of men (not youths) to settle upon it,—to submit, in fact, to a practical examination. Those few who have already passed the classes of "distinction" and "proficiency," ought necessarily to receive the benefits of their industry and zeal; and, logically, they cannot oppose a project for the examination of certain brethren of superior age and position. The younger men would appreciate such a movement in more ways than one. But how to decide upon the nature of an examination, to make it broad enough to do justice to the attainments of numerous divisions of schools? Is it possible to examine a man upon the question of taste? No; but the plea of taste is the easy defence of the public, avowedly illiterate in art matters; the dogma of *De gustibus* has less aided genuine artists than it has successfully shielded professional quacks. Is it possible to examine a man upon the question of design? Most certainly; for, unless he knows how to combine the various building materials in a scientific manner, he cannot design: he must build his structure mentally upon the plan he draws. The real difficulty lies in getting even a few men, who are already Associates and Fellows by purchase, to submit to a practical examination, however general in its bearings. The classically-educated architect would not consent to be examined by Mr. Street; the Mediæval revivalist would, perhaps, be sent back by Professor Donaldson; the "Free Classic" and "Free Gothic" schools would probably refuse to sacrifice at any shrine of examiners except one which had a Swinburne at its ethereal head, and a Morris for its mundane secretary. Then adopt, I say, one of the few good things that latter-day Frenchmen have done; let those who are willing to combine for the purpose of submitting to a broad examination in the building art elect their own examiners by ballot. That no possible examination can ever test æsthetic gifts may very well be admitted; neither can the bravery of the future soldier be tested by his acquaintance with books. No doubt the army loses some "pluck" by compelling officers to pass an examination, and the profession would probably lose some "poetry" by rendering fashionable a similar test. But half a loaf is better than no bread. It would be fairer to sacrifice the chances of obtaining a few heaven-inspired architects than leave the rising mass of mediocrities like myself, and others of far higher attainments than I can claim, to all the known disastrous consequences resulting from the continued absence of any system of technical education.

WILLIAM H. WHITE,
Fellow, Royal Institute of British Architects.

COUNTY GAOLS.*

OWING to the adoption of a new system of prison discipline, it has become necessary to alter or rebuild our gaols to a great extent. Under the system which formerly prevailed, gaols were planned so as to allow a separation of classes of prisoners in groups of apartments or wards,—each class had its suite of sleeping-cells, day-room, work-shed, and exercise yard. But associating the prisoners in a day-room, at work, or at exercise, was found pernicious, partly in relation to evil effects on the prisoners themselves, and partly as to difficulty in maintaining efficient supervision. The main object of the new system is to separate the prisoners one from another as much as possible; in fact, to make each cell a complete prison within a prison.

In order to carry out the new discipline, the late General Jebb (then Colonel of the Royal Engineers) devised a plan of gaols which has since been generally followed as a model, with some variation of detail.† The principal characteristics of this model are:—1. A central hall, and radiating corridors open to the roof. 2. Several floors of cells opening off the corridors; the upper floors being reached by galleries. 3. Heating, ventilation, gas, and water-supply to each cell. 4. A special arrangement of pew partitions in the chapel, whereby prisoners are not allowed to see one another, though they may see the officiating clergyman. 5. Special forms of door and window-fittings and fastenings, alarums, cell furniture, &c.

The central hall and corridors give great airiness and promote free ventilation in the interior of the prison, and at the same time facilitate an efficient supervision. A single watchman can keep guard in the hall, so that no prisoner can move into the corridors without being seen, nor can the warders who have to attend on the prisoners neglect duty. If the occupant of any cell wants anything he may pull an alarum, which will disengage an indicator showing the number of his cell; the attending warder is then bound to ascertain what is wanted; the indicator will remain disengaged until he fastens it again. A warder may see into a cell without being seen by the prisoner, if he looks through a hole in the door, made for that purpose, one side of the hole being covered with wire gauze; or if he opens a small hatch in the door, the prisoner may see and speak to him. The prisoners have to clean up their cells, make beds, &c., and to work in the cells at oakum-picking, shoe-making, tailoring, mat-making, or other work practicable in such small spaces, but they are brought out daily to take exercise, and on appointed days to attend instruction or religious services in school or chapel. Some of the males are told off to do work outside the cells, such as preparing and cooking food, scrubbing, whitewashing, &c., while the females are required to do laundry work. The exercise-yards are generally circular inclosures, about 30 yards diameter, surrounded by a tall iron paling. In these the male prisoners are commonly put to the shot exercise; this is simply marching in a circle, and stopping at short intervals to lay on the ground and raise again a cast-iron ball: the frequent stooping and rising, coupled with rapid walking, is supposed to be good exercise for male prisoners, but free men would probably find it extremely disagreeable. Female prisoners merely walk round and round. The supervision of gaols is managed by intern and extern officers, appointed and controlled by a Board of superintendence, nominated in Ireland by the grand jury of each county, but subject to the supreme authority of the Lord-Lieutenant and Privy Council. There are rules to protect prisoners against unfair treatment by prison officials, and others to sanction summary punishment of prisoners for breaches of discipline. A modern gaol is generally divided into several blocks of buildings, some grouped together and others detached. They may be numbered as follows:—1. Administration. 2. Untried prisoners. 3. Convicted males. 4. Convicted females. 5. Infirmary. 6. Porter's lodge.

1. *Administration.*—In this block of buildings may be found board-room, clerk's office, and waiting-room for the board of superintendence, and for the officials, governor's house, and separate suites of rooms for matron and warders, male and female, a chapel and schoolrooms. It is found convenient to have the administration placed centrally, but with sufficient distinction and privacy between the dwellings provided for the several officers.

2. *Untried Prisoners.*—Prisoners of this class are not subject to such rigorous discipline as those of the convicted class, though their cells generally do not differ in character. Connected with this part of the prison it is usual to provide apartments called reception-rooms, into which incoming prisoners are brought at first, before they are taken to the cells. There is also a room in which visitors to the prisoners can see and converse with them.

The buildings of this block are sometimes extended so as to include quarters for the warders, and schoolrooms. A good arrangement would probably be found in placing the administration apartments and governor's house centrally, with wings at each hand for untried prisoners, and warders' quarters, respectively.

3, 4. *Convicted Prisoners.*—Separate blocks for males and females are provided radiating from a large central hall. The basements are utilised for kitchens, scullery, laundry, drying-closet, store-rooms for food, fuel, clothing, utensils, furniture, &c., workshops, heating apparatus, punishment cells, baths, &c. The planning of these apartments is dependent on that of the cells above, but it does not present any material difficulty. Taking the males' block—at one end may be found baths, punishment cells, &c.; at the other, kitchen, scullery, and heating apparatus; and in the middle, workshops and store-rooms. In the same way in the basement of the females' block may be found at one end, baths and punishment cells, at the other, laundry and drying-closet, and in the middle, clothing stores and workrooms. The fitting-up of baths, kitchen, drying-closet, &c., does not differ from ordinary types. The punishment-cells are for prisoners who commit offences while in gaol; they differ from ordinary cells in being completely dark, and in being provided with double doors and extra thick walls to exclude sounds. However, they must be thoroughly warmed and ventilated; the authorities enforce stringent attention to these points. The ground-floor plan simply consists of a large central hall to roof, and broad radiating corridors also open; the hall may be about 40 ft. diameter, and the corridors about 18 ft. wide. At each side of the corridors there are usually three tiers or floors of cells, one over the other; access to the upper floors is gained by stairs leading to narrow galleries which surround the corridors at each floor, but which do not obstruct the view from the central hall. The corridors are lighted by large windows at the end, and by skylights. The ranges of cells are alike on each floor, and in general all the cells are alike in size, shape, and general fitting-up.

* By Mr. John Brett. See p. 32, *ante*.

† Colonel Jebb's plan is well illustrated in one of the quarterly papers on subjects connected with the duties of Royal Engineers, published by Weale, London.

The minimum space allowable for any cell is 432 cubic feet, but usually more is given; in some good examples the dimensions are 11 ft. long, 7 ft. wide, and 9 ft. high, equivalent to 693 cubic feet. In construction it is usual to build outer walls of stone, with brick lining, and internal walls of brick only, the former from 2 ft. 3 in. thick, and the latter from 1 ft. 2 in. thick. Air-flues 9 in. diameter are sometimes placed in the walls which divide corridors from cells, and in such cases the walls are increased in thickness. It is not advisable to place flues in the walls separating cells, inasmuch as the effect would be to facilitate the transmission of sounds from one cell to another,—prisoners become extraordinarily expert in signalling through the walls. Cell floors are usually boarded, inasmuch as wooden flooring is considered better in a sanitary point of view than flagging or other flooring; internal wall surfaces are whitewashed, not plastered, and all cells are vaulted. Elaborate arrangements for warming and ventilating are usually provided, and generally designed to be partly under the prisoner's control. Fresh air is admitted through the cell window and an opening in the outer wall to any extent the prisoner prefers, but it is also admitted through flues in a way that he cannot control. Foul air is carried off in other flues to a great chimney over the central hall. An upward current is induced in the foul-air flues by heating the chimney, either by means of a furnace specially contrived for that purpose, or by means of waste heat from kitchen, laundry, or other fires. The cells are warmed by heating the ascending current in the fresh-air flues, or by means of hot-water pipes under the floors. It is usual to light the cells with gas, but it has been found dangerous to place the jets within the prisoner's reach. At present the most approved plan is to place the jet in or opposite an opening in the corridor wall, so that the gas may be lighted from the corridor, and so that the prisoner cannot reach it. Another point insisted on by the inspector-general of prisons relates to the apparatus by which prisoners sound an alarum to call up the warders. Hitherto a draw-handle like a common bell-pull has been used, but henceforth a button and spring must be provided: the reason is, simply, that the old projecting handle gave opportunity for attempted suicides. The other fittings and fastenings are well described in Colonel Jebb's book, and need not be referred to here, except that an additional bolt and lock is now sometimes provided for the cell-doors. This is in consequence of the remarkable escape of a political prisoner a few years ago; it is supposed that after being provided with a key and the hatch of his door being left open, he put his hand through it and easily opened the old form of lock.

5. *Infirmary.*—In this building it is usual to provide a surgery and various rooms for nurses, clothing, utensils, &c.; large day-rooms and yards for convalescents, and large, airy cells for the sick. The infirmary should be well detached from the other parts of the prison. Epidemics sometimes break out in gaols; so that it would be advisable to have a good deal of accommodation in the infirmary.

6. *Porter's Lodge.*—The porter's lodge consists generally of a living-room, a bedroom, and a waiting-room or office. The only entrance to the gaol is through double-gates at the porter's lodge. A visitor coming in will find the first gate shut behind him before the other is opened, and that the porter will keep a record of the visitor's name, business in the prison, and of the duration of his visit.

Formerly the gallows used to be conspicuous over the porter's lodge; but enlightened legislation in recent years has removed that ominous machine out of view, and happily it is now rarely used in Ireland.

LONDON SCHOOL BOARD SCHOOLS.

DURING the past fortnight the School Board for London has opened six new schools in different parts of the metropolis. The first situate at Cayley-street, Limehouse, accommodates 767 children at a cost including the purchase of site, of 10*l.* 10*s.* 10*d.* per head. It is a three-storied building, having the infants', girls', and boys', on the ground, first, and second floors respectively, with ample play-space and separate entrances. The contractors were Messrs. Kirk, of Woolwich, and the clerk of works was Mr. Davey. The second school is in Angler's-gardens, Islington, not far from the Angel. It has room for 1,090 children, and the cost per head, including site, &c., is 14*l.* 11*s.* 11*d.* It consists of two separate blocks, one of two stories devoted to infants, entered from Popham-road, and one of three stories for the boys and girls, the ground-floor of which forms a covered playground for all. The uncovered playgrounds are extremely airy, and the entrances are well arranged. Mr. High, of Lower Clapton, was the contractor, and Mr. Elson clerk of works. A third school was opened on Saturday in Bowling-green-lane, Clerkenwell, the accommodation here is 778, and the amount of the contract 6,261*l.* Like the others the infants are on the ground-floor, and the boys and girls divide the first-floor between them. There is ample play-space both open and covered, and the general arrangement is compact and very convenient. Mr. Prichard, of Paul-street, Finsbury, was the builder employed, and Mr. Chapman clerk of the works. Another large school was opened in Bethnel-green-road, situate between Turin-street and Hart's-lane. It occupies an area of some extent, and the elevation exhibits a considerable amount of Portland stone and terra cotta. The caretaker's house, with committee-rooms, &c., has a frontage to Bethnal-green-road, from which the boys enter by a covered way, while the school buildings, which consist of two separate blocks, are set some distance back. The infants' department has two stories, and the boys' and girls' three, the ground-floor of which is open to form a covered playground. Each division has two large school-rooms, and four class-rooms with cloak-room, &c., attached. The contract was 10,822*l.*, and the cost per head, including site, 10*l.* 3*s.* 5*d.*, the accommodation being for 1,631 children: the works were carried out by Mr. Brass, of Old-street, St. Luke's. The next is a smaller school for about 600 children, placed at the junction of Old and New Castle-streets, Shoreditch, and having by reason of the smallness of the site, the playground placed on the roof of the building, which is a flat, covered with Val de Travers asphalte, and surrounded by an iron railing, 7 ft. high. This, however, is but a temporary arrangement, a large quantity of the adjoining property being "scheduled," so that in a short time ample play-space will be provided on the ground-floor, as usual. The contractors were Messrs. Parsons, of Holloway, whose contract was 4,920*l.*, and Mr. Board was clerk of works for both this and Bethnal-green.

Lastly, a small school, for 235 boys only, was opened at Lewisham (provision being obtained for girls and infants in an adjoining building, lately belonging to the British Schools). The playgrounds are open, and the building neat and commodious, and well fitted for the purpose. The contractors were Messrs. Kirk, of Woolwich, and the clerk of works was Mr. Atkins. The amount of the contract was 1,703*l.*

The architects of the Bethnal-green schools were Messrs. Bodley & Garner. All the others were erected from the designs of the architect to the Board, Mr. E. R. Robson. In the latter schools, warming is effected with open stoves wherever practicable; and ventilation by means of opening the windows and casements, a simple apparatus being employed for this purpose, manufactured for the Board by Mr. Eisley, of Great Portland-street.

SCHOOL BOARDS.

Stourbridge.—At the last monthly meeting of this Board the chairman read the tenders that had been sent in for the new schools about to be erected by the Board. At the previous meeting of the Board it was decided that the original plans should be modified, and fresh tenders were invited. Messrs. C. A. Horton, Brierley-hill, tendered for 3,250*l.* for the schools, and 560*l.* for the master's residence; Messrs. Hilton & Co., Birmingham, 2,749*l.* 9*s.* and 642*l.* 11*s.* respectively; Mr. Arthur Scheasley, Leamington, 2,648*l.* and 610*l.*; Mr. Foster, Leamington, 2,163*l.* and 521*l.* Mr. Joseph Chapman and Mr. John Guest, two local builders, tendered for 2,348*l.* and 496*l.*, and 2,348*l.* 10*s.* and 502*l.* respectively; and, taking into consideration the lowness of the two tenders, it was the general opinion of the Board that the choice should be between these tenders. Mr. Foster, of Leamington, now appeared before the Board with regard to his tender for building the schools. Mr. Foster's tender was accepted at the last meeting, but he declined to find the sureties required. Mr. Foster now said that he declined to find sureties on principle, but if the Board held him responsible for the difference between his tender and the one that might be expected, he would do so. Mr. Foster then retired, and the Board proceeded to discuss the plans, and it was decided that Mr. Foster should be relieved from any liability, and his tender rejected. A short discussion took place as to the desirability of including the master's house in the school building. The chairman thought that as it had been decided at a larger meeting that residences should not be included in the clock-tower, as originally proposed, it would be better to follow their previous action, and only contract for the school building. It was thereupon decided to accept the tender of Mr. Chapman.

Nottingham.—A second school is about to be built by the School Board, at a cost of 10,000*l.*

Chester.—We understand that the contracts for enlarging the Victoria-road infant school have been entered into, and the work will be commenced as soon as the weather will permit; the plans prepared by Mr. Lockwood for the new infant school in Vicar's-lane have been adopted; and that the Commonhall-street building will be opened as an infant school on the first Monday in March, a teacher having been already appointed.

CABMEN'S RESTS.

Langham-place, Regent-street.—At the sitting of the Marylebone Vestry, on the 7th inst., Admiral Oliver in the chair, a report was presented to the Board from the Paving Committee relative to an application from Mr. Macnamara, Q.C., and Colonel Sir F. Fitz Wygram, for leave to place a cabmen's rest at the cab-stand in Langham-place, Regent-street. Mr. Edwards, on behalf of the committee, said they were prepared to recommend the granting of the request providing the rest did not prove inconvenient to the traffic. After some opposition, Sir F. Fitz Wygram said the rests would not be more than 13 ft. long by 6 ft. wide, which was about the size of a horse and cab. He considered London cabmen were the hardest treated men living. The proposed rest would protect them when waiting for hire, and, if adopted generally, would keep the men from the public-house. The motion was adopted by a large majority.

Westminster.—At an ordinary meeting of the Board of Works for the Westminster District, Mr. John Harris, the clerk, read a letter from Mr. Henry Macnamara, applying on behalf of the Committee of the Cabmen's Shelter Fund for permission to erect a shelter at the Knightsbridge Cab-stand, at the northern end of Sloane-street. Mr. Arntz, the surveyor, stated that he had seen the secretary, and had explained to him that the Board would be disposed to assist the committee in their endeavours, but they had no power to sanction such an erection as that proposed. The Board considered the movement as highly laudable, and one deserving encouragement and support; but, being advised that they had no legal power in the matter, they made no order upon the application; yet, at the same time, they would be glad to see a trial made of the shelter in their district, provided the parties placed it there on their own responsibility.

Another Cabmen's Rest at Bristol.—We hear that Mr. Charles Fisher intends to give a cabmen's rest, to be fixed on the cabstand in the Barton. The first rest, presented by Mr. Taylor, and now on the stand at the Drawbridge, is much appreciated by the men. Mr. Fisher has intrusted his order to Mr. Krauss, of Colston-street.

EXPLOSIONS.

Fatal Kitchen Boiler Explosion.—An inquest was held on the 6th inst., on the body of a domestic servant named Margaret Roberts, who was killed by the explosion of a kitchen boiler in the house of Mr. Barrett, New-road, Eccles, Manchester. A report was read from Mr. Lavington Fletcher, the chief engineer of the Steam Users' Association, who had been requested by the coroner to examine the remains of the boiler. He found that the boiler was of cast-iron, and measured 12½ in. in length by 10 in. in breadth, and 10½ in. in height. It had two pipes connecting it to an over-head cistern placed near the roof, one of these pipes being for the downward current of cold water, the other for the upward current of hot water. In each of these pipes there was a stop-tap. These pipes had no branches springing from them, the service-pipes for supplying the bath, the lavatory, and the scullery being drawn off direct from the hot

and cold water cisterns. The pipes, therefore, connecting the cistern with the boiler, which were the circulating pipes, were quite distinct from the service-pipes. One of the service-pipes burst during the recent frost, and when there was a slight thaw, began to leak. To disconnect this leaking service-pipe from the cistern, and thus stop the leakage, Mr. Barrett shut off the two stop-taps that were placed in the circulating pipes, but finding this of no avail opened the hot an cold water taps in the bath, and, blocking up the ball tap that regulated the supply, emptied the cistern. The next morning the plumber mended the leaking service-pipe, left the taps shut off, and said that the fire might be lighted, which was done; but, as the stop taps in the circulating pipes were shut off, there was no outlet for the pressure, and it consequently went on accumulating as the fire went on burning, and the strength of the boiler being overtasked, it was split in two by the expansion of the water. The cause of this explosion, therefore, was not the frost, but the lighting a fire with the stop-taps in the circulating pipes shut off. Such explosions might be prevented by fixing a small reliable safety-valve to the boiler, which would give relief if the pressure were unduly raised. The jury found a verdict of accidental death, coupled with a strong recommendation that no domestic boilers be allowed to work without a safety-valve or other equivalent means of relieving the pressure.

Serious Gas Explosion.—On the 7th inst. an explosion of gas occurred at the chemical works of Dr. Sadler, Middlesbrough. The time-office is a brick structure of one story high, and contains the gas-meter, which supplied a 2-in. pipe from the Corporation main. Whilst a man named John Neave was sitting before the fire smoking his pipe, three of the walls and the roof of the building were blown to pieces, and Neave was thrown some seven or eight yards among the ruins, being picked out much bruised, but with no bones broken. The explosion is supposed to have been caused by a leakage from the supply pipe, which led to an accumulation about the floor.

ST. PHILIP'S, CHEAM COMMON, SURREY.

THIS new church has just been opened, and is for the outlying parish of Cheam, near Worcester Park. The want of proper church accommodation in this neighbourhood is quite remarkable, the neighbouring parish of Cuddington, indeed, has had no church for three centuries! Possibly Henry VIII. pulled it down or incorporated it in Nonsuch House as its private chapel, if so it has disappeared with that famous palace. St. Philip's Church is built for 300 people, and consists in plan of chancel, nave and aisles, chancel aisle, and vestry. The nave is five bays in length, the aisles are of three bays only; there is therefore an arcade of three arches only on each side, with a low clearstory continued along over them and the two western bays.

The material with which the walls are faced inside and outside is Malden red brick, in which material are also the arches of the clearstory and aisle windows, the labels of the arcade, and some of the strings. The columns and arches, mullions and window heads are in Bath stone; the jambs of the windows, &c., are in rubbed brickwork. The roofs generally are covered with brown St. John's common tiles, but the aisle-roofs being of a flatter pitch are covered with green slates. The altar and pulpit of oak, enriched with carving and tracery, were executed by Mr. Forsyth. The builder was Mr. Shearburn, of Dorking. The clerk of works, Mr. Chapman, acting under the architect, Mr. R. Herbert Carpenter.

THE O'CONNELL MONUMENT.

A REPORT reaches us from both sides of the Channel that the O'Connell statue, for many years in the hands of the late Mr. Foley, the sculptor, is likely to be the subject of a lawsuit between the committee in Dublin and Mr. Foley's executors. Through the death of the artist, the completion of the statue has been retarded; and the committee some months ago entered into the proposal to celebrate the centenary of O'Connell next August, by the inauguration of the statue in Sackville-street. Much correspondence has passed between the committee and the representatives of Mr. Foley, and the committee, it appears, insist upon its completion, or to its being handed over to them, that it may be entrusted to other artists. It is, of course, very doubtful that the work will now be finished in time for the proposed centenary celebration, and if the event is commemorated, it must be by the substitution of a model. Several members of the Dublin Corporation are members of the O'Connell committee, and the town clerk is the hon. sec. Under the circumstances, not a few of the citizens of Dublin have given expression to their feelings, that it is no wonder the monument remains unfinished; for, had the committee acted with diligence or judicious prudence, the monument might have been finished long prior to Mr. Foley's death. It is to be hoped that the subscribers' money will not be wasted in any ill-advised lawsuit.

THE PROPOSED NEW INFIRMARY FOR THE HOLBORN UNION AND THE LOCAL GOVERNMENT BOARD.

THE Holborn Guardians and the Local Government Board are again at issue respecting the building of a new workhouse Infirmary, which it appears the Local Government Board have ordered the guardians to erect, but with which order the latter refuse to comply. At the meeting of the guardians last week, the question was asked if it was true that the Local Government Board had called on the guardians to build a new infirmary for the union, when Mr. Pedder replied that it was perfectly true that such a letter had been received, and that the Board was determined to resist this attempt to force the Union into more building schemes, and if they were defeated they would appeal to the ratepayers, and then to the Premier.

ARCHITECTS AND WORKMEN.

SIR,—Mr. Charles Foster Hayward, F.S.A., in his remarks at the Royal Institute last week, said, he thought "that nothing was worse for working men than to be petted and patted on the back as working men have been lately."

I would ask Mr. Hayward, with all due respect, whether it is not just possible to go to the other extreme, and, by treating mechanics as if they were dirt beneath one's feet, to destroy in the man all interest in the work in which he may be engaged. I have worked under most of the leading architects of the day, at one time or another (your honoured self included, Mr. Editor), and I know that whilst a Gilbert Scott incites research and a (late) William Slater, and a Benjamin Ferrey, win the energetic confidence (I might almost say affection) of all under them by their kindly forbearance and consideration for the workmen who carry on their works, there are others,—I do not mention names,—who, by their biting sarcasms and off-handed style of manner, take all the heart out of a man from the very commencement of a job.

There is but one Pope, and no one else claims to be infallible: hence it needs no apology from me when I say that the best architects make mistakes sometimes; even those with "F.S.A." after their name are not exempt from this; and hence there is the less reason for them to make a man feel so keenly that there is a great gulf betwixt ye and me, and to cause us to eat dirt whenever they give us advice, and thus entirely spoil the good they might otherwise do one. We do not want to be architects; we have enough to do to learn our respective trades thoroughly and well; and we do not want patting on the back. But neither do we want to be spoken to, when we ask a civil question, as if we were dogs. Such architects should remember "a man 's a man for a' that!"

A BRITISH WORKMAN.

CONCRETE PAVEMENT.

SIR,—As a regular reader of your widely circulated paper, I have noticed from time to time your remarks as to the advantages of Portland cement concrete in its various branches.

A couple of weeks ago you published a report of a paper read at a meeting in Liverpool on the subject of asphalte as used for road-making, and in this paper a footpath of asphalte on a bed of Portland cement concrete 4 in. thick is particularly recommended, but I, speaking from a practical knowledge of Portland cement concrete in all its branches, beg to suggest to your notice that a footpath laid with Portland cement concrete, composed of eight or nine parts of crushed bricks or stone, to one part of good Portland cement, on a foundation of broken stone or other hard material, forms as hard and as durable a path as can be made by any asphalte, and on account of its lighter colour, it has the advantage of having a much cleaner appearance than the dark brown colour of asphalte.

If the traffic is very great on any particular part, a top dressing (so to speak) of concrete made with granite chips, will, after a short space of time, resist any amount of wear and tear, and, indeed, increases in hardness as it grows older. Then the difference of cost is the chief thing to be considered, consistent, of course, with quality. The cost of laying asphalte is, I believe, when finished about 15s. per square yard, and to be compared with this is Portland cement concrete of the average thickness, at 3s. to 3s. 6d. per square yard, or say, including all preparatory work, and taking as an example a district where the carriage of material is an item, 4s. per square yard. This speaks for itself, and requires, I think, no comment.

This style of foot pavement for streets has been objected to by some on account of the difficulty of taking it up, and relaying it when necessary for the purpose of repairing the gas or water pipes, but this objection has been very simply and inexpensively overcome in this neighbourhood (Newcastle-on-Tyne), viz., by laying in, opposite each shop or house door, a couple of lengths of common earthenware pipe, through which the branch pipes from the mains are passed into the house, and thus, in case of any breakage or leakage, the pipe can be repaired without interfering with the concrete pavement. I have no doubt that this sort of pavement will shortly supersede Caithness or other flagging.

PORTLAND.

THE LATE MR. KENDALL.

SIR,—In your last issue, your correspondent in noticing the various works carried out by the late Mr. Kendall, has erred in stating that Mr. Kendall built "a fine conservatory at Wimpole." Mr. Kendall rebuilt the east wing of the mansion at Wimpole, in 1842. He built a new gatoway and park entrance in or about 1849; also new mansion stables in 1851, and the Queen's Lodge. The conservatory at Wimpole was not built by him.

G. E.

LINE OF FRONT, AND THE METROPOLIS LOCAL MANAGEMENT ACT.

AN important judgment was given on Friday, the 8th inst., by Mr. Ellison at the Lambeth Police-court.

Mr. Roycroft had been summoned by the Camberwell Vestry for an alleged infringement of the Metropolis Local Management Act, under the following circumstances. It appears that in the year 1869 Mr. Roycroft leased some property in High-street, Peckham, with a covenant to pull down the old building and erect a new one. He prepared his plans, and had a conference with the Vestry relative to the frontage line. The old building extended over what was supposed to be the frontage-line by 8 ft. 6 in., and in his plan for rebuilding, Mr. Roycroft offered to set back the new building 2 ft. 6 in. Subsequently, on a communication with the Vestry, that body stated that there was some intention of widening the street, in which case Mr. Roycroft would receive compensation under the 74th clause of the Act, but no proposal for compensation was ever offered to him, and last year he commenced to build under the terms of his lease, previously sending plans to the Metropolitan Board of Works. The Board refused to sanction the plans, but made no kind of proposal as to their being altered or amended, and Mr. Roycroft therefore went on with his buildings, setting back the main building 4 ft., and bringing only the shop portion in a line with the houses, and giving up 2 ft. 6 in. to the footpath, considering that under the 74th clause of the Act he was entitled to do so unless he received compensation for the land he gave up, which had never been offered. Mr. Vulliamy, the architect of the Board of Works, afterwards decided that under the 75th section of the Act the buildings projected 4 ft. beyond the building line, and the Vestry then summoned Mr. Roycroft to show cause why the buildings should not be demolished.

On the part of the Vestry it was contended that under the 75th clause Mr. Roycroft had infringed the Act, but Mr. Rowland, on behalf of Mr. Roycroft, urged that the 75th clause did not apply at all, but that the 74th clause, under which the defendant was entitled to compensation if he set back a new building within the line of the old one, was the only clause applicable, and that as the defendant had never been offered compensation, he could not be held liable.

Mr. Ellison, in giving his decision, said he was of opinion, and thoroughly convinced, that the 75th clause had nothing to do with it, but, on the contrary, the case came expressly under the 74th clause, wherein compensation was purposely provided for to meet similar cases. Under that clause the Metropolitan Board had power to require buildings to be set back to such a line and in such a manner for the improvement of any street as the Board should direct, "provided that the said Board shall make compensation to the owner of such building." Now this opportunity had not been embraced under the section as given by Parliament, and intended to be acted upon as fully as the 75th, which gave the power to Boards of demolition in the event of a man putting a building

where one was not raised before. But here the building (an old building falling into decay) did exist, and the owner was not about to alter a window or a door merely, but he really pulled it down. It was then that the Board should have stepped in, and offered reasonable compensation, and, as they had not done so, he must dismiss the summons.

A SMOKY CHIMNEY.

SIR,—In answer to your correspondent, "C. P.," asking if there is a cure for smoky chimneys, I believe from my experience of thirty years that there is, but I seldom operate from the top. The principal reason why chimneys smoke is that there is not sufficient atmospheric air in the room for consumption, and the result is, a downdraught. To cure this introduce or insert a pipe under the floor from the external air to the hearth in front of the stove, fit a bit-and-miss to regulate the draught, and in most cases it will be found effectual. H. R.

COMMENCING TO BUILD WITHOUT NOTICE.

ST. PANCRAS VESTRY *v.* WEST.

At the Marylebone Police-court, before Mr. Mansfield, Mr. Albert West, builder, of Powis-place, Haverstock-hill, was summoned at the instance of the St. Pancras Vestry for having unlawfully caused the foundation of a new house to be dug out without having given to the Vestry seven days' notice of his intention to build, contrary to the Acts 18 and 19 Vic., cap. 120, sec. 76, and 25 and 26 Vic., cap. 104, sec. 83.

Mr. Cooper, Solicitor to the Vestry, stated that this was another case of flagrant opposition to the law. The defendant had been frequently reminded of the necessity for furnishing a plan of the proposed drainage, and he had had experience in such matters, having been a builder of other houses in the same way, although a single summons had been taken but as a warning. In this case a substantial penalty was desirable, as slight penalties had not operated as sufficient warning to builders.

The facts were proved by evidence.

The defendant pleaded guilty. Fined 10*s.* and costs.

THE LAW OF MASTER AND SERVANT.

HARRIS *v.* HARRIS.

THIS was an action on the 8th inst., before Mr. Under-Sheriff Burchell and a jury, at the Middlesex Sheriffs' Court, to recover compensation for breach of contract. Judgment was allowed to go by default.

Mr. Josiah Harris, the plaintiff, a smelter and refiner in London and Swansea, made an agreement with the defendant, W. P. Harris, that he should enter the employ of Messrs. Harris, Callao, Peru, as engineer, for three years, at 300*l.* a year. Defendant went out at the expense of 117*l.* to the firm; and Mr. John Harris, the manager of the plaintiff's business in London, who was the only witness called, stated that as soon as the defendant arrived at Callao he absconded, and as no one could be found to take his place, the furnace which he was employed as their servant to superintend had to be blown up, and a loss of 1,0*9l.* was sustained, besides the 117*l.* incurred in sending him out to Peru.

Mr. Under-Sheriff Burchell remarked that the defendant did not appear, and although the loss was estimated at 1,000*l.*, the sum claimed was 500*l.*, and whatever they awarded they could not go beyond that amount.

The jury awarded the full amount—500*l.*

WHAT WILL BECOME OF THE SHOE-BLACK BRIGADE?

AT the last meeting of the committee of the Charity Organisation Society, Mr. Alsager H. Hill, brought under consideration a question of considerable importance.

Mr. Hill said, that a number of persons came before him who had no trade, and were not in any proper sense labourers. There was, at the same time, an almost unlimited demand for youthful labour, consequent, in part, on the operation of the Education and Factory Acts. He believed that ordinary employment was the best industrial education, and held that, under present circumstances, institutions for bringing children up under artificial conditions need not be multiplied. Boys earned so much in the shoeblack brigades, *that it spoilt them for industrial education.* No one would pay them as much while they were learning a trade. Boys from institutions were not well fitted for the labour market. He looked forward to the institutions becoming more and more mere places for orphan and homeless boys to live at whilst they went out to work. He moved—"That the present principle of educating lads in charitable institutions, apart from the immediate requirements of the labour markets, is inexpedient and conducive to pauperism."

Mr. Russell Barrington, a member of the committee of the East London Shoeblack Brigade, agreed with much that Mr. Hill had said. Circumstances had changed so much that it was high time that the institutions looked about them. His committee had come to the conclusion that the usual practice of dividing the shoeblack's earnings into three portions, one for the boy, one for his bank, and one for the brigade, was not a good one, as it put the boy under a great temptation to understate his earnings. They had decided to hire their stations out to the boys.

Some other speakers followed, and ultimately the motion was withdrawn. We trust, however, that the subject will not be lost sight of. Boys placed in the positions referred to become indisposed,—in fact, unfitted,—for any steady labour, and fall into vagrantish habits, which lead to evil.

CHURCH BUILDING NEWS.

Burgess Hill.—A north aisle is about to be added to the church of St. John the Evangelist, Burgess Hill, Sussex. Mr. Talbot Bury, F.S.A., from whose designs the church was built, is the architect.

Norwich.—The old parish church of St. Gregory, which has been closed for some time past for repairs and restoration, was re-opened on Thursday, the 10th inst. The ancient dilapidated and unsightly roof now assumes something like its original appearance; the panelling being well brought out, and the ancient bosses and carved figures which have for centuries been completely hidden and unnoticed, have been recoloured and regilded, and stand out in bold relief. The specimens of fan groining above the belfry, and the old bosses in the porches, have also undergone restoration.

Ludgershall.—The parish church of Ludgershall has been re-opened after partial restoration. The old square pews have been removed, and uniform sittings of stained deal are now open to rich and poor alike. An oak pulpit and lectern have been added. The works have been carried out by Mr. David Hunt, builder, of Ludgershall, under the direction of the architect, Mr. J. L. Pearson, of London. Last year the chancel was restored, and the choir and organ are now placed there.

Northwood.—Holy Trinity Church, Northwood, Hanley, has been re-opened after the erection of a spire, at the joint cost of Mr. C. J. Homer and Messrs. Meakin. The tower and spire are built of Brownedge stone. The tower is 15 ft. square, and is raised 13 ft. above the old work, the new part forming a bell-chamber. The spire is octagonal, and 50 ft. high above the tower. The height from the ground to the top of the vane is 100 ft. In addition to the work done to the spire, the vestry has been made 3 ft. longer, and ventilators have been fixed in the west and east gable ends of the nave. New seats have been fixed for the choir in the chancel, and the interior of the church has been cleaned, re-painted, and re-varnished. The cost of the spire and other work has been between 600*l.* and 700*l.* Mr. Baggeley, of Stoke, has been the contractor for the stonework; Mr. Matthews, of Hanley, for the choir seats; and Mr. Bickley, of Hanley, for the painting, &c. The whole has been carried out from the designs and under the superintendence of Mr. Ralph Dain, of Hanley and Burslem, architect.

Newmarket.—A public meeting has been held, the Bishop of Ely presiding, for the purpose of raising funds to erect a memorial church to the late Lord George Manners, in the parish of All Saints, Newmarket. The present church being inadequate, damp, and in bad repair, it is proposed to build a new church on the site. A committee was formed, and nearly 500*l.* at once subscribed.

Shrewsbury.—A new font, executed in Caen stone, by Mr. J. Maddox, of this town, has been placed in St. Michael's Church. The bowl is an irregular octagon, and on the smaller, or cardinal faces, are niches containing figures of the four Archangels. The larger faces are filled with panels, the subjects being the Baptism of our Lord, St. Catherine, borne by angels, angels as the guardians or protectors of children, and Christ blessing children, all carved in high relief. The architect is Mr. Haycock, and the sculptor Mr. R. L. Boulton of Cheltenham.

Farncombe.—The pretty church of St. John the Evangelist, in the Early English style, designed by Sir G. G. Scott, part of which was erected in 1847 on a site given by the late Mr. J. More-Molyneux, has now been completed by the addition of a chancel aisle and south aisle.

Matfield Green.—This picturesque hamlet, in the parish of Brenchley, has been the scene of an interesting ceremony, namely, the laying of the foundation-stone of a new church. The site, which is presented by Mr. Philip Roberts, is a little more than half a mile to the south-west of the green. It is on the summit of a hill close to the spot known as Cork's-pond, the actual site being on Kingstool farm, in the occupation of Mr. Thomas Ditton. The style of architecture of the new church is to be Gothic (fourteenth century), and the stone with which it is to be built is sandstone, from the estate of Major Lempriere, Stone Court, Pembury. The building is intended to accommodate between 200 and 300 persons. The front elevation will be facing Tunbridge Wells, where there will be three windows, a niche, and the porch-door. On the Lamberhurst-road side there will be four windows, and at the east and west ends of the building, there is also to be a window. A side entrance will likewise be supplied. The tower will be in accordance with the style of architecture adopted. Mr. Tyerman, of London, is the contractor, and Mr. Braid Campneys, the architect. The estimated cost of the structure is 1,700*l.*

VARIORUM.

SPEAKING of foreign competition, *Capital and Labour* says,—"We have been informed, on good authority, that an eminent firm in London, engaged in the manufacture of beautiful light wood upholstery, chiefly for bedroom suites, have been so hampered by the restrictive rules of the men in their employ, numbering about 300, as to find it impossible to carry on their operations at remunerative prices. They have therefore modified their plan of working, and for some time most of their goods have been made in Sweden, taken to pieces, packed, and sent to England, and then put together again. The consequence is, that this firm employs about forty men, instead of 300, in this country, and the work produced is far cheaper and better, and can be sold to the public at much lower prices." —— Old Bank notes! Hear what *Cassell's Family Magazine* tells about them:—"Bank of England notes are never re-issued, but when paid in for gold are at once cancelled. They are then preserved for seven years, so that inquiries relative to forgeries or frauds on which the notes may throw light may be answered. The stock of paid notes for seven years numbers 94,000,000, and fills 18,000 boxes, which if placed side by side would reach three miles. Pile the notes one on another, and the pile would be eight miles long. Join them end to end, and you will have a ribbon 15,000 miles long. Arrange them side by side, and you may more than cover Hyde Park with them. Finally, their original value was over 3,000,000,000*l.* sterling, and their weight more than 112 tons."——Housetop gardens are spoken of in the *Gardener's Magazine*:—"Housetop gardens have not attained to the importance predicated of them in the days when the lowering of the price of glass brought that useful article into demand for a thousand uses unthought of previously. But a sufficient number of examples are to be found, in London for example, to suggest that the covering of roofs with glass will in a few years become common. The photographers have given an impetus to the enterprise by showing how sunlight, previously wasted on unsympathetic tiles, could be utilised for the advantage of mankind. A housetop garden not only provides a source of pleasure, and it may be even of profit, in itself, but it adds materially to the comfort of a dwelling by equalising the temperature of the upper rooms. By screening the sunshine from the roof, the suffocating heat that often prevails in houses in the height of summer is abolished, and in the depth of winter the chambers nearest the roof are some degrees warmer than they would be were the roof exposed to the chilling influence of wind and frost and snow. A model-housetop garden is in process of construction, to 'crown the edifice' lately erected by Messrs. Barr & Sugden in King-street, Covent-garden, and as it is to be adapted on scientific principles to first-class plant-growing, it will, no doubt, give an impetus to this department of urban horticulture."——The *Practical Magazine* says,—"With regard to common modern cooking ranges there is one thing which always seems unaccountably neglected. The makers of kitcheners seem to hold many different opinions as to what are the requirements of ovens when adapted for any special purpose, and so they multiply them, and it is no rare circumstance to find even so many as five ovens connected with one fire. These ovens, or according to the use to which they are applied, closets, require different temperatures. Very few of the designers of kitcheners appear to know this. Names are given to the ovens,—such as 'Roaster,' 'Baker,' 'Plate-warmer,'—but no provision is even

made for the special regulation of suitable temperatures. Sometimes the oven that first receives the heat from the fire is named 'The Roaster'; then the second oven, or that which had only the heat which the first oven had not absorbed, was called 'The Baker.' As a matter of fact, an oven for baking bread should have a thermometric temperature varying from 350° to 450° F., whilst one for roasting meat is properly heated at a temperature between 180° and 200°. Again, the provision for ventilation in the latter should be ample. In the former,—or that for baking bread,—provision for ventilation is not required. If the 'roaster' is not well and sufficiently ventilated, meat is as it were parboiled in an atmosphere of vapour; if the 'baker' is ventilated, bread is dried, and the outside often becomes tough and hard."

Miscellanea.

The New Glenglassaugh Distillery.—The extensive erections necessary for the work of distilling at Glassaugh, parish of Fordyce, in the county of Banff, are now approaching completion, and operations will be commenced there early in the new year. The buildings are of a character which have attracted considerable attention, and possess specialities not common in similar establishments in the north. The distillery buildings are situated at the entrance to the ravine, about 200 yards below the turnpike-road; they cover a surface of about 400 ft. along the course of the stream, and from one end of the site to the other there is a fall of 40 ft. The promoters secured the co-operation of Mr. William Sellar, son of Mr. Sellar, Keith, who, both in this country and Australia, has had the practical management of similar works. Mr. Sellar, in conjunction with Mr. Wilson, coppersmith, Portsoy, made a general plan and disposition of the furnishings of the buildings; and Mr. Melvin, of Reid & Melvin, architects, Elgin, prepared the working plans, and had them carried out under his superintendence. Contracts were taken for the various departments of the work. The mason was Mr. Barclay Newmills, of Keith; the carpenter, Mr. Wm. Duffus, Cullen; the slater and plumber work was taken by Mr. George Macdonald, Portsoy; and the plasterers were Messrs. M'Iver & Younie, Cullen and Elgin. The cost of the houses and fittings is estimated at 10,000*l.*

Labour and Wages in Russia and Austria.—The *Eastern Budget's* correspondent at St. Petersburg, writing on the 20th inst., says:—"Shortly after the beginning of the new year a commission, under the presidency of M. Walnyeff, Minister of Domains, will consider the draft of a new law for regulating the wages of labourers and servants in Russia. The object of this measure is not, as in other European countries, to make concessions to working men as an important element of society which might become dangerous if it were discontented, for Russia has nothing to fear on this account, her abundant and undeveloped resources giving plenty of work for all who choose to ask for it. The necessity for regulating wages in Russia has rather arisen from the abolition of serfage, which would have produced a most disastrous effect on Russian industry if the Government had not at once recognised and grappled with the danger. The tendency of the regulations first issued on the subject was to protect the employer against the workmen, as the latter, being no longer forced to work, was unwilling to work even for money. These regulations were issued in 1861, and they were followed by others in a similar spirit in 1863, 1869, and 1870, when strikes were very prevalent. All the above regulations were brought together in a code in 1871, which is now to be transformed into a law by the commission under M. Walnyeff."

Street Names on Lamps.—The works committee of the Clerkenwell vestry, on the 7th inst., reported that the clerk had laid before them an alphabetical list of street names in each ward of the parish with the view to directions being given for the carrying out of this work with regard to the house numbers and indexes to be placed on each lamp, and other details, which subject had not been dealt with, owing to the unfavourable state of the weather. They recommended that such list be placed in the hands of the surveyor, with the view to the work being carried out as speedily as possible. The recommendation was unanimously agreed to.

The Anglo-French Submarine Communications.—The promoters of the Anglo-French Submarine Railway Company say they are organising the preliminaries, and have determined to commence at once the actual work of sinking and driving, leaving the expense of going to Parliament to a future date, when the driftways or headings are nearly complete. The first step would be the sinking of two shafts on each coast, and the driving thence, between shore and shore, two small parallel driftways or headings, with cross passages connecting the driftways at intervals, by which means the ventilation of the works during construction would be assured. It is for the execution of this work that the company called the Anglo-French Submarine Railway Company has been registered. The necessary land for preliminary works has been purchased and paid for (ten acres at the South Foreland), and at present there is no necessity therefore for this company to go to Parliament to purchase land on the English coast. Neither do they require any concession at present from the French Government, as the land for the preliminary works on the French coast has also been purchased and paid for.

Monument to the late Rev. Canon Savage. The monument to the late vicar of Nuneaton (the Rev. Canon Savage) has at length been placed in the chancel of the Nuneaton Parish Church. The monument, which is of white marble, polished, is placed upon the chancel-wall, immediately over the tomb to the memory of Sir Marmaduke Constable. Two corbels of white polished marble, fixed into the walls, the fronts richly carved, with ivy and convolvulus, form the support: upon these is a moulded plinth, with under-mould, enriched, of polished white. Upon the plinth are two pillars, of polished Lizard serpentine marble, with moulded bases of pure white, and capitals of alabaster, carved with the maple-leaf and passion-flower. The pillars support a moulded arch, with a moulded and carved capping at the top. The spandrels of the arch are delicately enriched with geranium and ivy. The background of the monument is of polished white marble, and forms a panel, upon which is neatly engraved, in black letters, the inscription. The work has been executed by Mr. Seager, monumental sculptor, of Coventry.

Alexandra Palace.—It is the intention of the directors of the Alexandra Palace Company to hold, in the course of the ensuing season, at the Alexandra Park, an exhibition of cab-horses and cabs, and to appropriate a sum of 200*l.* to be distributed in prizes for cabs in the best condition, and to drivers who have been longest in the employment of one master, and who have never been charged with cruelty to their horses, reckless driving, drunkenness, insolence, or other offences. The exhibition will be on an extensive and complete scale. It will be held at the close of the London season, when cab-drivers will be able to attend in large numbers. The stables at the Alexandra Park, which will afford accommodation for 400 horses, will give special facilities for the intended show. The condition and comfort of cabmen, and the desirability of providing them suitable shelter, is a subject which is now engrossing public attention, and this competition may assist to bring about results beneficial to the interest of the cab-driving community, and the public at large.

Fatal Accident to a Clergyman at Lincoln.—At four o'clock in the afternoon of the 6th inst., a shocking accident occurred to the Rev. J. S. Gibney, vicar of St. Michael-on-the-Mount, Lincoln, and a minor canon in the cathedral. The unfortunate gentleman visited the School of Art (of which he was secretary), which, owing to the late severe weather, was undergoing repair. He ascended the roof where the workmen were employed, and whilst inspecting the work done he stepped on a skylight, which gave way and carried him a distance of about 20 ft. into the room below. Assistance was immediately rendered, but life was found to be extinct, the deceased, who was about 50 years of age, having broken his neck by the fall.

The Extension of the Kirkgate Market, Leeds.—The Town Council having already granted 40,000*l.* for this improvement, the work is to be prosecuted vigorously, and Mr. Morant, the borough engineer, has already received instructions to prepare the detailed drawings of the fish-market.

The Hampstead Fever Hospital.—At the Metropolitan Asylums Board, on January 9, Mr. Galsworthy proposed the motion of which he had given notice, in reference to the Hampstead Hospital:—"That having regard to the letter of the Local Government Board, dated 18th of December, 1874, the Hampstead committee be, and are hereby, now requested to proceed under the reference to them of the 24th of October last, to obtain plans for the construction of the buildings at Hampstead." Mr. Galsworthy said, as to the question of damaging property, the large proportion of property by which the site was surrounded had been built since the buildings had been erected as a small-pox hospital, so that the property had come to the hospital instead of the hospital going to the property. He contended that the site was in every respect eligible for the purpose, and that a better one could not be obtained in the vicinity of the metropolis. Mr. Burt seconded the motion, which after discussion, was carried by a majority of twenty-eight to four.

Improvements at Guildhall. — The City Lands Committee of the Corporation of London, to whom the subject had been referred for consideration, have presented a report to the Court of Common Council, through their chairman, Mr. Edward Hart, submitting a model for the construction of a new Council chamber, at an estimated cost of about 50,000*l.*, exclusive of fittings; and also a plan for the re-arrangement and reconstruction of the committee-rooms and offices on the north side of Guildhall, at the further estimated cost of about 56,000*l.*, amounting together to 106,000*l.* The committee recommend that the proposed new Council chamber should be at once erected, agreeably to the model submitted to them, at the estimated cost of 50,000*l.*, exclusive of fittings, and that the reconstruction of the committee-rooms, courts, and offices be proceeded with after the new Council chamber shall have been completed. The area of the Council chamber within the screen would be about 2,100 square feet, compared with 1,645 square feet in the present apartment.

The Fitzwilliam Museum, Cambridge.—Important alterations and improvements, says the *Bedfordshire Times*, have lately been completed at the Fitzwilliam Museum. The staircase, which was complained of as cramped and ineffective, has been altogether remodelled and extended. This has been effected by a re-arrangement of the features of the plan, no external enlargement being possible. By lowering the floor of the entrance to the level of the upper landing of the portico, the architect, Mr. E. M. Barry, R.A., has dispensed with three steps at the principal doorway, and has made it possible to construct a handsome staircase with two ascending flights and two descending flights, leading to the picture and sculpture galleries respectively. Screens of coupled columns of Genoa green marble separate the flights of stairs, which are finished with massive balustrades of coloured marble. The principal entrance to the picture galleries is ornamented with two white marble figures about 8 ft. high, by Mr. Wyon, sculptor.

Maidstone Drainage.—A special meeting of the Maidstone Local Board of Health was held at the Town-hall, on the 6th inst., to consider the scheme of drainage submitted by Mr. Angell, in his report of the 15th December last. Mr. Lewis Angell having, in reply to various members of the board, given an explanation of his scheme, Alderman Ellis moved.—"That this board, having heard Mr. Angell's explanation of his scheme for the drainage of the borough, at an estimated cost of 30,000*l.*, it is resolved that the meeting approve of the same." With regard to the cost, he said, the estimate of Mr. Livingstone, a short time ago, for the completion of the sewage of the West Borough, King-street, and other places, together with the cost of 15,500*l.* for the outfall sewage, made a total of 28,052*l.*, so that those figures, as they did not include the outfall at Tovil, came substantially to the amount calculated by Mr. Angell. After some further discussion, the motion was carried *nem. con.*

Sharpness Docks.—Another leak has been discovered in the sill of the lock of the new docks at Sharpness. It is hoped that the damage may not prove to be of serious extent. Numbers of divers were employed last week with a view of repairing the mischief, which it is feared has arisen from a sufficient depth of concrete not having been laid.

The Archæological Museum at Lisbon.—Professor Sormenti writes:—"There is at Lisbon an archæological museum, in which fragments of all kinds are heaped together, but there is little that is valuable. Two stones have lately been exhibited there found in Algarve, and bearing an inscription in what were said to be unknown characters. The director consulted nobody in Lisbon, but sent a so-called fac-simile of the inscription to sundry archæologists in England, France, and Germany. The inscription was not decipherable from any one of the copies, but a fac-simile to which in no way reproduced the stone. Now if the inscription is perfectly readable, as the characters are Hebrew, as any one who looks at them will see at a glance. Only the Hebrew alphabet is not known to the managers of the museum, who are architects and archæologists. I mention this fact for the honour of the country."

The Noise of Towns.—It is probable that there is no form of mental suffering which meets with less sympathy or regard from those who do not suffer from it than the suffering caused by noise. The man of hard, healthy, well-strung nerves, can scarcely imagine the real distress which men of sensitive nerves endure from ill-regulated noise—how they literally quiver and shiver under it. Now, of course, the larger the town, the more varied and the more abundant is the noise in it. Even the domestic noises are dreadful to a man of acute nervous sensibility. In the City we have done much to remove this evil. The asphalte pavement has wrought wonders; the police have been also efficacious in putting a stop to some of our roughest and most discordant cries; and yet there is a volume of noise, ever rising up and filling the air, which must shorten many a life, and which must be a permanent source of misery.—*City Press.*

Accident in the City.—On the 6th inst. a shocking occurrence took place at a partially erected building in Jewin-crescent, City, which is being constructed by Messrs. Crabb & Co., builders, for Bride & Hoare, brace manufacturers. A number of men were employed here, and just before dinner a large girder was raised by means of a rope being ajusted round a stack of chimneys in connexion with Innes's Commercial hotel. The girder was left partially raised, and the men went to dinner—some eight or nine of them, however, remaining on the scaffold. Just previous to the men commencing work again, the stack of chimneys gave way, and falling with a frightful crash on to the scaffolding, broke some of the heavy beams and poles into splinters, carrying with them one of the unfortunate men

Accident in Bradford.—On the 6th inst., an accident of a serious character happened to a labourer named Silvester Dempsey, who was working on a building in Darley-street. Some dwelling-houses in that street, adjoining the shop of Messrs. Holmes, drapers, were being altered, and Dempsey was engaged in one of the cellars undermining an archway. While he was digging the archway gave way, and he was almost buried. When he was extricated, it was found that he was seriously injured. He was removed to the infirmary in a cart, and on being examined it was found that he suffered from a scalp wound, a fracture of the right arm, a compound fracture of the left knee-joint, and some injury to the back.

All Souls' College.—The work of the restoration of the chapel is being actively pushed on. The reredos has made considerable progress during the past year. The architecture is completed, about two-thirds of the sculpture is *in situ*, while all the statues, with the exception of the lower stage and some of the small statuettes, have been completed and placed on pedestals. The reredos will consist, when completed, of thirty-five statues and nearly one hundred statuettes, surrounding a sculpture of the Crucifixion, each of the statues standing in an elaborate canopied niche. The tympanum of the reredos contains a group representing the Judgment. The sculptor is Mr. E. E. Geflowski, of Camden-road, London; and Sir Gilbert Scott is the architect.

Engagement of the Manor House, Hughenden.—A rumour has reached the *Church Herald* from Buckinghamshire that the Prime Minister is likely to be married this spring to the widow of an English peer. In view of this coming event the Manor House, Hughenden, is about to be enlarged by the addition of a new wing from designs by Mr. Vernon, architect.

Mr. and Mrs. German Reed's Entertainment.—The entertainment provided by Mr. and Mrs. Reed is always so gay, so charming, and withal so entirely free from the least taint of immorality or vulgarity, that we are unaffectedly glad to hear that the programme provided by them since Christmas, at St. George's Hall, has proved very attractive, "The Three Tenants" and "Too Many by One" being received with very great applause. They intend to produce in a few days another new "First Part," from the pen of Mr. Gilbert A'Beckett, entitled "The Ancient Britons,"—an imaginative sketch of the state of Great Britain some three thousand years hence; and abounds, we hear, in humorous hits at modern manners and customs. Mr. German Reed composes the music, and Mr. O'Connor paints the scene of the ruins of Westminster. Mr. Corney Grain has made a great advance in his art, and stands now unrivalled in his special path. The entertainment altogether is delightful.

The Proposed Fine Art and Industrial Exhibition at York.—On the 8th inst. a meeting of the promoters of the contemplated Fine Art and Industrial Exhibition for this city, on a similar plan to the exhibition in 1866, which was so successful, took place in the Guildhall; Alderman Hargrove in the chair. The Lord Mayor was added as a member of the committee, and a brief report was read, showing that negotiations would take place between public bodies preparatory to obtaining a suitable site, which it was hoped would be Bearpark's Garden, adjoining the Yorkshire Museum and the Wilberforce School for the Blind.

Theatres on Fire.—A writer in the *Morning Post* says, at some theatres it is difficult between the acts to leave the stalls (especially for ladies) without going through a sort of hurdle-race, the practice of managers being to place chairs at the side-entrances of the stalls (not too wide as they are constructed), and so completely to block up the egress—a practice which must, on the alarm (false or true) of fire being raised, lead some day to a great disaster. Cannot the Lord Chamberlain, who has now (after six years' license of immoral dancing) taken care to preserve our minds from evil, do something to protect our bodies from destruction?

The new Town Hall at Bournemouth was formally opened on the 6th inst. by Sir George and Lady Gervis, and celebrated by a public luncheon. Among the speakers were Mr. R. Stephens, the Lord-Lieutenant of the county of Hants, Admiral Salivan, the Right Hon. W. Cowper-Temple, Sir Henry Drummond Wolff, M.P., and other gentlemen. Mr. Cowper-Temple spoke with pride of the position Bournemouth had recently attained, and referred to the fact that the Premier and other Cabinet Ministers had been benefited in health by visiting the town.

Wallingford Grammar School.—We are glad to learn, says the *Nottingham Daily Express*, that our townsman, Mr. Sidney R. Stevenson, architect, of Imperial building, has succeeded in competitive designs for the Grammar Schools at Wallingford, Berks. Three sets were selected by the governors of the school out of twenty-three which were sent in for competition, many of which were from London firms. The governors, however, decided to submit the choice to Mr. Hawkins, the consulting architect of the Education Department, who gave the award to Mr. Stevenson.

Tea Meeting and Ball of the Joiners at the Crewe Works.—The fourth annual tea-meeting and ball of the joiners employed at the Deviation Works, took place at the Mechanics' Institution on the 19th inst. There were two sittings, about 200 persons being at the first, and fifty at the second. After tea, Mr. Turner, who occupied the chair, said, whatever changes time might make in them, he hoped that, from year to year, they would meet in the old friendly spirit, make many friends, and be able to help a brother in distress. Dancing and songs were fully enjoyed.

Opening of a New Exchange at Hanley.—A new exchange was opened on the 6th inst., at Hanley by Lord Wrottesley, Lord-Lieutenant of Staffordshire. At the banquet which followed Sir C. B. Adderley complimented the county upon the Exchange, and he loooked forward to the institution being a means of promoting union among all classes by increasing an interest in their own affairs.

Bath Abbey Restoration.—The Bishop of Bath and Wells presided on the 6th inst. at the annual meeting of the subscribers to the Bath Abbey restoration, a work which was inaugurated ten years since by the late Rev. Prebendary Kemble, rector of the city. The work has cost upwards of 30,000*l.*, and is now drawing to a close. The work has included the grecning of the roof, the introduction of numerous stained glass windows, the removal of the tablets from the floor, and the placing them on the wall, the re-seating af the choir and nave, and the reparation of the walls and roof.

Clearing out of the Acropolis.—M. Burnouf, director of the French School of Athens, has just made an appeal to the friends of the fine arts. He calls for their co-operation to complete the clearing out of the Acropolis. There still remain, he says, 110,000 cubic yards of earth to be carried away, and with 150,000*f.* the work might be executed. This mount, a fortified enclosure, as all know, contains the Propylæa of Mnesicles, the Parthenon of Ictinus, and the temples of the Erectheum, Victory, and Minerva Poliades.

Salisbury Cathedral.—The restoration of the cathedral has proceeded but slowly during the past year, and much remains still to be done. The marble and stone work of the eastern transept and choir has been completed. A pavement of encaustic tiles and marble has been laid on the floor of the Lady Chapel, and the restoration of the thirteenth-century choir-stalls has been proceeded with. The two large tombs on the north and south sides of the choir, being those of Bishops Bingham and William of York, have also been restored.

A New Tower for St. Andrew's Church, Herts.—Five years ago, a new church was built for the parish of St. Andrew's, all but the tower. Earl Cowper, a few days since, wrote to the rector that he would build a new tower for the church, on which a debt of 500*l.* was remaining, part of 1,000*l.* borrowed of Mr. R. Smith. A meeting of the parishioners having been summoned, one of the churchwardens received a letter from Mr. Smith, stating that he had cancelled the debt for 500*l.* and returning the promissory note.

Hull Waterworks.—The Corporation of Hull have met to appoint a manager of their waterworks, in room of Mr. Dale. After considerable discussion, and after the voting had been taken, the scrutators informed the Council that Mr. David Maxwell, of Dundee, had received 38 votes; Mr. Alexander R. Binnie, 9; Mr. T. Milnes Favell, 3; Mr. George H. Stayton, 2; and Mr. G. H. Wood, 1. Mr. Maxwell was, therefore, declared duly elected.

The Railway from Moorgate-street to Liverpool-street.—Under the guidance of Mr. Myles Fenton, general manager of the Metropolitan Railway, and others, a party of gentlemen, on the 5th inst., inspected the new extension of that line from Moorgate-street station to Liverpool-street, which is subsequently to be continued to Bishopsgate-street. It is expected that the junction with the Great Eastern Railway will be effected in about a fortnight, and the connexion with Bishopsgate-street some months later.

A Noiseless Pavement for Oxford-street. On Saturday afternoon about 150 of the inhabitants of Oxford-street met in one of the large show-rooms of Messrs. Jackson & Graham for the purpose of conferring together as to the best means to be adopted with a view to induce the Marylebone Vestry to lay down a noiseless pavement along the entire length of Oxford-street. A deputation is to wait upon the vestry at its next meeting, and present a memorial praying for the laying down of a noiseless pavement.

Carpenters and Joiners' Wages.—At a meeting of carpenters and joiners held at Sheffield last week, it was finally decided to demand from their employers an advance of 2*s.* on their present rate of wages, and to press for a reduction in the number of working hours. At present they work fifty hours per week, but they expressed their intention of not working more than 49½ hours in future. Seven hundred men will be affected.

Gloucester Cathedral.—Workmen are now erecting scaffolding at the great window of the north transept of Gloucester Cathedral, prior to the placing therein of the memorial of Lady Caroline Susan Hicks-Beach. The present glass will not, however, be removed until the spring.

Sherfield.—The decoration of St. Leonard's Church was commenced four months since, and is now nearly completed, and sufficient has been done to enable the visitor to form an idea of what the effect of the whole will be. The style of decoration is that known as "Sgraffito." The inside walls, from which the old plaster has been taken off, are adorned with designs of various colours in the new plaster, with which some metal is compounded, rendering it hard and durable. The whole of the decorations are original. Mr. J. W. Hugall, of Oxford, is the architect; Messrs. Wheeler Brothers, of Reading, are the contractors, with Mr. Vickery as clerk of the works.

Masters and Workmen.—On the Tuesday following Christmas-day, Mr. Henry W. Timewell, builder, of Islington, entertained at his own house all his *employés*, and at the end of the dinner made a few fitting observations in welcoming his men to his own table. Mr. Brunning (clerk) returned thanks on behalf of those present, and alluded to the interest shown by Mr. Timewell in those about him.

A New Town Clock for Wellingborough.—The horticultural show of 1870 having produced a surplus of 180*l.*, a clock-tower was suggested to be built in the market-place. The cost, between 600*l.* and 700*l.*, being too much, it has now been decided to place a clock in the tower of the Exchange, the tender of Messrs. Gillit & Bland, of Croydon, for 130*l.*, being accepted.

Death of a Builder's Foreman.—An inquest was held on January 7th, at the house of Mr. C. Walker, in the Friars, Oxford, on the body of Thomas Maslen, who was some years ago foreman to Mr. Wyatt, builder, St. Giles's, and who was found dead in his bed the previous morning. After hearing the evidence, the jury returned a verdict of "Died by the visitation of God."

Carpenters' and Joiners' Ball.—On the 5th inst. the operative carpenters and joiners of Coventry gave a ball in St. Mary's Hall, on behalf of the funds of the Coventry and Warwickshire Hospital. There was a very fair attendance.

Fall of a Building in Limerick.—According to an Irish paper, the corn stores of Messrs. Barrington, in Limerick, have fallen to the ground. They were built only a few months ago at a cost of 30,000*l.*

The Congregational Memorial Hall.—The Congregational Memorial Hall in Farringdon-street will be opened on Tuesday, the 19th inst. The event will be celebrated by a dedicatory service, public meetings, and a conversazione.

Increase of a Surveyor's Salary.—The salary of the county surveyor of Wilts has been increased 40*l.* a year in consequence of additional duties thrown upon the county by the expiration of turnpike trusts.

Royal Architectural Museum. — The drawings and models for the prizes offered by the Goldsmiths' Company for designs for plate, are now being exhibited in the Museum.

TENDERS

For additions to schools at Haverstock-hill. Mr. Elijah Hoole, architect:—

Ball & Wicks	£347	0	0
Campion	315	0	0
Kitchener	265	0	0
Knight (accepted)	215	0	0

For villa at Eastbourne. Mr. R. K. Blessley, architect:—

Oxley	£2,580	0	0
Roberts & Co.	2,709	0	0
Bruton	2,750	0	0
Skinner	2,694	0	0
Hemming	2,632	0	0
Vidler	2,557	0	0
Steer	2,525	0	0
Perigoo	2,500	0	0
Longley	2,489	0	0
Peerless (accepted)	2,465	0	0

For Royal Aquarium, Winter and Summer Garden, and Concert-hall, Westminster. Mr. A. Bedborough, architect. Quantities by Messrs. R. L. Curtis & Son:—

Brown	£90,500	0	0
Waldram	88,715	0	0
Brass	83,273	0	0
Trollope & Sons	83,236	0	0
Perry & Co.	79,999	0	0

For alterations and additions to Mr. J. S. Stone's Agricultural Implement Warehouse, Newport, Monmouthshire. Contract No. 2. Mr. E. A. Lansdowne, architect. Quantities not supplied:

Williams	£714	0	0
Jones	677	0	0
Williams & Sons	673	0	0

For alterations and additions to the Rectory, Old-street, St. Luke's. Mr. Gordon M. Hills, architect. Quantities by Mr. W. Smith:—

James & Son	£2,554	0	0
Hill, Higgs, & Hill	2,380	0	0
Manley & Rogers	2,319	0	0
Newman & Mann	2,275	0	0
Morelend & Nixon	2,274	0	0
Dove Bros.	2,245	0	0
Seeley & Son	2,163	0	0
Bayes & Rammage	2,093	0	0
Grimwood & Sons	1,990	0	0
Cullum (accepted)	1,956	0	0

For alterations and repairs to 1, America-square, Minories. Mr. Lewis Solomon, architect:—

Mark	£880	0	0
Crabb	725	0	0
Cohen	700	0	0
Palmer	695	0	0
Sparks	681	0	0
Downs	675	0	0

For alterations and repairs, New Oxford-street. Mr. Lewis Solomon, architect:—

Richard	£217	0	0
Cohen	206	0	0
Woods	174	0	0

For building coach-house and stable, Rectory-place, Woolwich, for Mr. T. Lett. Messrs. Wm. Gosling & Son, architects. Quantities supplied:—

Harwood	£289	0	0
Vickery	255	0	0
Sonnex	252	10	0
Johnson	250	0	0
Cropper	247	7	0
Raby	247	0	0

For reinstating house and shop damaged by fire, Edenplace, Charlton, Kent, for Mr. Thomas Smith Cowell:—

Smith	£137	10	0

For alterations and additions to Tolsowa House, Dulwich, for Mr. H. Looking. Mr. E. A. Gruning, architect. Quantities supplied by Mr. Edward Bowen and Mr. Thomas Nixon:—

		Credit for old materials after pulling down.
Holland & Hannen	£5,850	£60
Colls & Sons	5,393	17
Brass	5,384	75
Jerrard	5,285	50
Lawrence	5,125	15
Kilby	5,110	100
Nixon & Son	5,047	50
Newman & Mann	4,966	—

For repairs and decorations at St. John's-hill House, Battersea Rise. Mr. E. C. Robins, architect. Quantities not supplied:—

Newman & Mann	£1,125	0	0
Gregory	1,057	0	0

For the erection of the first portion of Chancery-buildings, Chancery-lane. Mr. A. Bridgman and Messrs. Nelson & Harvey, architects. Quantities by Mr. J. Barrett.

Bracher & Son (accepted)	£3,990	0	0

For new coffee-room and dining-room, Bell Hotel, Bromley. Messrs. Waring & Nicholson, architects:—

Smith	£207	0	0
Arnaud	197	0	0
Payne & Balding	196	10	0

For new warehouse, Berwick-street, Oxford-street, for Messrs. Pickford & Co. Mr. Fred. Chancellor, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Brown	£6,147	0	0
Conder	6,022	0	0
Sharpington & Cole	5,915	0	0
Brass	5,895	0	0
Rider	5,803	0	0
Foster (accepted)	5,452	0	0

TO CORRESPONDENTS.

C. H. W.—O. S.—E. A. L.—R. A.—A. V.—H. O.—F. B.—R. P. S.—R. T. S.—J. H.—E. S.—C. P.—J. H. R.—R. S.—J. P.—G. R.—J. B.—B. & Son.—C. O. W.—W. H. P.—T. H. W.—G. & Son.—P. & B.—G. H. (Your good advice on the spot. One suggestion would be, admit fresh air from the outside in such a manner that it might be warmed by the steam-pipes as it entered).—W. C. (In type).—H. D. (we are not acquainted with any decision of Sir William Chambers).

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VOL. XXXIII.—No. 1668.

Echoes of the Birmingham Sanitary Conference.

MEETING to discuss general sanitary principles, and which may be termed successful so far as it went, has been held in Birmingham, where many of the large towns were represented by their mayors. The Mayor of Birmingham, in introducing the subject to the meeting, said he would venture to assert that if all the exceptional calamities which from time to time stir and excite the public mind were put together,—railway accidents, fires, explosions, and all the deaths from shipwrecks along our coasts,—they would not amount to one-tenth of the ghastly total number of persons annually done to death by our stupidity and negligence,—annually murdered by the neglect of proper sanitary regulations,—annually driven out of existence by the ignorance and apathy of the people. But even this is not all, for it has been calculated that for every person who dies six persons may be assumed to suffer from illness, and it has been calculated that the loss to the country is not less than 10*s.* per week for each of these sick persons; and the Mayor estimated the annual loss to Birmingham in this way at 54,000*l.*, and thought that if the people would make these calculations for themselves we should not have to complain of ill-judged parsimony which saves hundreds and thousands in order to lose tens of thousands. And local governing bodies, he said, have not merely to consider questions affecting the lives and the health of the people entrusted to their charge, but also their happiness, their morality, and the circumstances previously stated are the fruitful occasions of misery, pauperism, intemperance, and crime. All this disease and death was produced by filthy and uncomfortable homes; those homes, in their turn, drive the people to the public-houses and worse places. It is usual to say that these results are due to the ignorance of the people, but although that is true, it would be more truer to say that this ignorance in its turn is the result of the conditions amid which the people live. What folly to talk about the moral and intellectual elevation of the masses when the conditions are such as render such elevation impossible! What can the schoolmaster or the minister of religion do when the influences of home undo all he does. We find bad air, polluted water, crowded and filthy houses, and ill-ventilated courts everywhere prevailing in the midst of our boasted wealth, luxury, and civilisation. All reverence is blotted out from the minds of people subject to such conditions; as for common decency, it is an empty name: it is obliterated from the category of virtues; and then, when these people whom we have suffered to grow up like beasts, behave like brutes, we use the lash in order to repress the instincts which our neglect and indifference have allowed to develop.

[How many years have passed since we first said every word of this!]

Dr. Hill, the medical officer of health for Birmingham, stated that the deaths from zymotic diseases last year were 24 per cent. of the total number, while the town should be, from its natural situation, one of the most healthy in England; and so he thinks it would have been if those natural advantages had not been too much relied upon, and too much expected from them. Ignorance of the conditions of health, indifference, impatience of increased taxation, and false economy, had for years conspired to hinder and prevent those sanitary measures necessary for communities, and without which the most favourably-endowed spot on earth cannot fail to become filth-sodden and unhealthy. The question of back-to-back houses, which were very common in the town, was one of particular interest at the present time, and threatened to lead to a very dangerous and almost irremediable evil. The Town Council, in framing new bye-laws, desire to prohibit the erection of such houses, but they are met with great opposition.

Dr. Davies, medical officer of health for the city of Bristol, considered one of the first requisites for a large town to be sewers, out of which no liquid can escape, well flushed with water; and an ample supply of good water,—that was, water derived from a source inaccessible to human contamination. His own experience led him to believe that all water derived from wells situated in the midst of or near to human dwellings, sooner or later became contaminated with human sewage, and that water drawn from such a source was the most constant and the most dangerous means of diffusing the seeds of typhoid fever, which cannot always be detected by chemical analysis. Water might contain a considerable amount of organic matter, provided it be not that of human sewage, and a large proportion of inorganic salts, and yet be safe to drink. The sanitary authority of Bristol had recently shut up all the public wells but three belonging to them, owing to the water in them being found contaminated with sewage. The next most important requirement of a large town, he said, is hospital accommodation for the isolation of patients suffering from infectious diseases. At Bristol, for a population of nearly 200,000, they have two hospitals of twenty beds each, one for small-pox patients who are not paupers, and the other for fever cases of the same class, and these had been more than sufficient for the requirements, both hospitals being often empty for weeks and months. Paupers suffering from infectious diseases are removed by the Boards of Guardians before the disease is disseminated, and a minute and constant system of inspection and disinfection is carried on by the sanitary authority, the inspectors acting under the directions of the medical officer. Other means which are essential to the sanitary arrangements of large towns are an apparatus for disinfecting by heat; a supply of the best disinfectants gratuitously to workpeople, with instructions how to use them; an ambulance for the conveyance of persons suffering from infectious diseases, which should externally so resemble a private carriage as not to be distinguishable from one in the streets; and a closely-covered hand-cart for the conveyance of disinfected clothing should be kept with the disinfecting apparatus; and, finally, the most important sanitary requirement of a large town is sufficient and proper house accommodation for the working-classes. The removal of whole rows of cottages from near the places where people work, to make room for warehouses and railway extensions, has lessened house accommodation, and although there were many of them unfit for human habitation, no sufficient substitutes for them have been provided; and Dr. Davies thinks that it is only by supplying the masses of the people with well-ventilated and dry houses that that insidious destroyer of men and women in the prime of life—tubercle of the lungs—is to be prevented; but, above all, let the system of "flats," with common stairs, be avoided.

Dr. Goldie, of Leeds, stated that within the past few years 674 houses had been condemned as unfit for human habitation, and demolished; and that during the last twelve months the number of overcrowded houses was 401. [Here we seem to have cause and effect.] Dr. Goldie thinks the condition and situation of the slaughter-houses are contrary to public health and morality, being situated for the most part in the central and most crowded parts of the town, in an atmosphere charged with impurities; and he looks upon it as injurious to the morality of young persons, who, from the open and exposed situation of the slaughter-houses, are almost daily spectators of the most demoralising scenes, and auditors of the most debasing language.

In Liverpool, said Mr. Deacon, the borough engineer, the population between the years 1801 and 1871 had increased sixfold, or from 81,600 to 493,346; and that the housing of the workmen and labourer classes of this suddenly-increasing population was neither regulated by building laws nor cared for by municipal responsibility, but was left to the private and uncontrolled enterprise of small capitalists, influenced solely by personal considerations of gain, and without any care for the health of the people or the future welfare of the community; close, confined courts and cellar dwellings being the result. But in 1864 the Town Council obtained powers to improve the condition of these courts by means of a Grand Jury, who had required the demolition of 542 and the alteration of 115 houses, and the erection of trough water-closets, in lieu of privies, for the courts. This had been effected at a cost of 87,663*l.*

In Manchester, an examination of a large number of the drains and sewers, three years since, showed that they were nearly blocked up with a black and fetid composition of fine ashes, coal and cinders, and excreta. This was probably due to the practice which prevailed of laying drains from the middens, containing the house ashes and the excreta, to the sewers. Dr. Leigh, medical officer of health for Manchester (the author of the paper, which was read by Mr. Schofield), seemed to approve of the removal of excreta separately in tubs, after the Rochdale system. About 13,000 closets had been constructed on this system in Manchester. Most of the tubs were removed twice a week, and a few once a week. [We believe that any plan whatever is better than the midden system, with a drain communicating with the sewer, the midden being open to the rainfall.]

Dr. B. Foster, of Birmingham, compared the health-condition of Birmingham with that of other large towns, and found it, from all causes, to be in better condition than Liverpool, Manchester, Leeds, and Sheffield: while the death-rate exceeds that of the whole country by 4 per 1,000. Sheffield exceeds the whole country by 6·5 per 1,000; Leeds, 6·5; Manchester, nearly 10; and Liverpool, 17·7 per 1,000; and the reduction of this excess, he said, is the work before the sanitary authorities. The two great blots in the sanitary records of Birmingham are diarrhœa and diphtheria. The diarrhœa death-rate is twice as bad as the average of the whole country, and is only exceeded by the death-rates in Manchester and in Liverpool; but by making certain corrections, Manchester is eliminated and Birmingham stands next on the black list to Liverpool in this respect. As to diphtheria, Birmingham has been the worst great town in England during the last ten years; while both diseases are eminently preventible. Sewage-polluted earth, tainted air, and impure water are

the great factors of diarrhœal disease, he said, and that there is reason to believe that diphtheria depends on somewhat similar sanitary conditions.

The Mayor of Dudley said that he is about to propose in his own borough that the members of each ward shall take under their care the sanitary condition of that ward, and inspect it periodically, say once in every two months. [If members would but make a periodical inspection *thoroughly*, it would be a very good thing for everybody, but we may easily conceive how much harm it might do if not done thoroughly. In this case they would not see half—not a tenth part—of what they should see in order to be fully acquainted with the facts; while, although they might take some trouble to make a general inspection, for which only they would have time, there would be great danger that this might be supposed, both by themselves and the Board, to have been more thorough than it could have been, and so no proper remedies would come to be applied after all. A mere inspection is of very little use, even though everything be seen, unless the circumstances, the conditions, and the why and wherefore of each nuisance be studied on the spot. Merely to remove a thing which might recur as soon as one's back is turned is not to do much.]

The ventilation of sewers at Leeds has received a rough-and-ready treatment. Alderman Tatham described how they had knocked holes through all the dip-stones of the 'gully-traps in the streets, preferring to have the foul air escape there rather than in the houses; but they rely upon a plentiful supply of water to keep up a constant current of sewage, whereby the formation of gases is prevented to a great extent; and they think that if the sewage becomes in any part of the sewerage system so stagnant as to give off the gases, the sooner they escape into the streets the better, so that it may be known that they exist.

Mr. Challinor, of Leek, Staffordshire, explained that up to about the year 1860 that town had been one of the most unhealthy in England, the rate of its mortality being something like 30 in the 1,000, but by the construction of a good system of sewerage, thoroughly ventilated, and afterwards by bringing into the town a pure supply of water, not hard in character, they had, with proper attention to other sanitary conditions as well, been able to reduce the mortality, first to 24, and so on, until 1874 it has been under 16 per 1,000. They have at Leek a fever hospital for the isolation of infectious diseases. The Workshops and Factory Acts have been thoroughly carried out, and now they have a large number of children who go to school as half-timers. Property has been enhanced in value; many formerly only poor customers to tradesmen are becoming better ones, and although so many people do not now go to the doctor, those who do go can pay him.

ARCHITECT AND WORKMAN.

It has been a natural result of the recent talk that has been made about the status and duties of "the architect," that those of his subordinate, or antagonistic or rival, or superior (for in all these lights he has been regarded), "the workman," have been alluded to and canvassed. The manner in which the discussion on the modern architect was originated naturally led to the introduction of the workman, and the variety of feeling elicited in regard to him has been somewhat amusing. One speaker at an architects' meeting wished that a diagram of a now unfortunately celebrated workmen's club should be erased at once, lest it should cause offence to the sensitive minds of its owners and authors. Another thought it should be published, apparently as the readiest and most certain way of putting the workman in his proper place and showing him and his friends the imprudence of his going beyond his last. There seems to be very little display of moderate and judicious feeling on the subject, but rather a kind of oscillation between an ill-advised bepraising of the workman, putting him to the front as a kind of *deus ex machinâ*, and a dissatisfied objection to him as a personage who has been "patted on the back" and encouraged to step out of his proper sphere and make himself egotistical and impertinent. And now the workman claims to have his own word in the dispute; and in a letter printed in our last number, a "British Workman" (how far representing the spirit of his colleagues we do not undertake to say) insinuated that he had no wish to be patted on the back, but suggested that he would like to be spoken to civilly,—a wish which is not unreasonable.

When the discussion which is now running its course was commenced, we expressed a conviction that the better class of working men in the building trades had no particular ambition to be pushed forward in the way which has been suggested, and that their contempt for the architect was mostly a figment of a Reviewer's brain. Any "bad blood" which may exist between the profession and the craftsmen is mainly to be attributed, we believe, to the claims put forward for the latter by self-constituted patrons or champions; and the antagonistic remarks which these have excited at sundry meetings of architects lately may be worth the consideration of working men, as indicating where the advocacy of their indiscreet friends is likely to land them. If these indiscreet friends are constantly asserting in the most public and undisguised manner that the working man is master of the situation, and that it is his duty and privilege to assert himself as such, and to spurn the control of those who were hitherto regarded as his chiefs, it is only to be expected that these latter should be inclined to take high ground, and to express themselves strongly on the subject; and we must say distinctly that they in particular, and the better educated classes of society in general, have a right to speak strongly of the line taken by the amateur patrons of the working man. To judge by the talk of these gentlemen, it might be supposed that all the honour, chivalry, energy, and industry of the present day are concentrated in the representatives of the building crafts, and that all which we have been accustomed to believe about the superiority of mind to matter, and the necessity of a directing head as well as of operative hands, is so much antiquated moonshine. And if the working man finds these pretensions laughed at by those who can see his insufficiency for the place claimed for him, whom is he to thank for this? Certainly his indiscreet backers, who wish to force him into a position for which he is not fitted, and which we believe he really does not himself wish for. Let him repudiate their ill-advised patronage, and stand on his own merits, and he is far more likely to be respected and spoken kindly of than he will be in endeavouring to pose as the social and artistic hero of the hour.

We are not prepared to say, however, that the workman can find nothing which he has a right to wish altered, or to seek to alter, in regard to his relations with the architect. The letter above referred to indicates one source of dissatisfaction which, we are afraid, is more frequent than it should be,—the want of courtesy, the too great assumption of the *de haut en bas* style, on the part of the architect towards the workman. This, of course, is not a shortcoming peculiar to the architectural profession. In all professions and ranks the "churl in spirit," as Tennyson says, will be found; the man whose nature is selfish and inconsiderate of the feeling of others, and who is the more likely to show this unamiable quality in proportion as he finds himself invested with an authority which may seem to justify him in imposing his own will upon others, without being responsible to any one for the manner in which he does so. But some part of this roughness in the intercourse between architect and workman, so far as it exists, is probably due in part to a misunderstanding on both sides of what the one has a right to expect from the other. Any architect whose traditions are drawn from a period of some twenty or thirty years back, is, we suspect, liable to forget or ignore the social and educational changes which have taken place during that period. When his professional life began, it was a matter of course almost that the workman was possessed of little or no education, and was to be regarded as a being naturally belonging to, and born into, an inferior social grade, and as such the humble and unquestioning servant of those above him: not necessarily to be treated unkindly, but at any rate having no distinct or recognised right to call his soul his own. Under such a theory, a prominent and decided assertion of authority would be the natural result, and the manner of it would scarcely be likely to be called in question unless it took a very harsh and unjust form. Architects of that date would indeed pride themselves, as in instances we have heard of, on their powers in brow-beating not only the workman, but the contractor also, and would think with righteous satisfaction of their day's work when they had left the latter, as the phrase is, "shaking in his shoes." This was all accepted as quite natural in the good old days. But, not to speak of the contractor (with whom we are not just now concerned), the better class of workman at the present day, whether or not he has improved as a workman, is generally a better educated man than he was at the period we have been alluding to. He is often a thoughtful and observant, sometimes a well-read man, taking an enlightened interest in the political and social questions of the day, though too often with a very one-sided view of them; and if the architect forgets all this or ignores it, the workman is likely to remember it, and to resent a species of treatment, in regard to language and manner, which a generation ago he would have accepted as the natural course of things. We do not say that discourtesy and harshness was excusable even under a different state of things; but it is likely to be more keenly felt and more sharply resented under the present *régime*, and an architect who ignores this is either shortsighted or unjust. So much for the workman's side of the question. But the workman, on the other hand, very often errs egregiously in thinking (or at least acting as if he thought) that his better educational standing and his newborn political interests and ambition exonerated him from paying the ordinary tribute of formal respect which, even amongst those whom all social rules recognise as "equals," is due from employed to employer, or from those who are officially subordinates to their official head. That the architect is the official head of the body of workmen employed on his building, that they are there to obey and carry out his orders, we scarcely think it can be necessary seriously to urge, even to the most determined champion of the working man. And this being the case, an official respect is due to him, which it is asserted he does not receive sometimes from those from whom he has the most right to expect it; namely, the best educated and most enlightened of the workmen. Not infrequently the contrary is the case, and the man who thinks himself as well educated and as intelligent as the architect, indicates his sense of his worth not by an increased dignity and self-respect of demeanour, combined with a ready courtesy and attention, but contrariwise by an ostentatious stiff-neckedness and gruffness of behaviour—a kind of "I'm-as-good-as-you" manner—which, let us in all kindness assure our friends, is the farthest possible remove from the manner which alone can give a claim, with rich or poor, to

"The grand old name of 'gentleman.'"

And under such circumstances, it is not to be wondered at if the architects, even those who in a general way have sympathy with progress, think regretfully of the old type of workman, who had no politics and not much education, but who did his work honestly, was loyal to the interests of his employers, touched his hat when he spoke to you, and was invariably civil and respectful. Now, we do not care much about the hat-touching business, and only allude to it as the symbol of something really valuable which we fear has to a great extent disappeared along with it; that feeling of loyalty and respect to an official head which we are old-fashioned enough to regard as one of the best and healthiest of social feelings. It is entirely apart from any consideration as to the necessity or desirability of social gradations, or of the recognition of "upper" and "lower" classes, which we are not discussing at all: what we wish the educated workmen to see is, that a certain conventional respect is due, from subordinates in any work, to their chief, whether in the Government, the church, or a new building; and that the observance of such respect in outward demeanour, so far from being in any way [illegible] gatory to those who evince it, is i[illegible] the greatest bonds of social unity and good feeling, and one of the most important [illegible] of true courtesy.

It is hardly to be expected, however, that the architect can command this kind of respectful courtesy from the workman unless he is true to himself and to his own dignity and self-respect. It is not merely on grounds of ordinary kind feeling that he is bound to treat the workman with consideration and civility, but also in regard to what is due to his own position and authority, and to the best means of preserving this. Any attempt on his part to uphold a rule of terror, in these days, is pretty sure to defeat its own object, and to weaken his influence. The spectacle of an architect, who claims the position of an educated gentleman, engaged in a scolding-match with one of his workmen, and endeavour-

ing to overpower him in gesticulation and—well, strong language;—is not edifying, nor calculated to raise the profession in the estimation of the workman, or of any one else. Let the workman feel that the architect is above returning or resenting incivility in kind, and mere common sense will show him that he has nothing to gain by it, except to make himself disliked and despised.

The relation between architect and workman should also be influenced, rather more than it is sometimes, by the part which each plays in the work that is being carried on. The theory of the great French architect of the day, whose writings are exercising so wide an influence at present, is that the architect should know everything that all the workmen know, and something besides, and that he should be able to direct each of them, not only as to what he wishes done, but as to the best mechanical way of doing it: and it is said M. Viollet-le-Duc has himself come as near to this standard as possible. But however we may all concur in regarding this as the best ideal of the architect's position, it is obvious that but a very few men can be capable of filling such a *rôle*. As a general rule, the architect must be content to be less omniscient than this, and to be strong in a knowledge of principles rather than details of mechanical practice. This is no reason why he should be thought of with any less respect by the handlers of tools who carry out his wishes. It is the perception of the right principle on which to work that is often the most important agent in the economy of time and labour; and it is on this ground that the architect really can teach the workman valuable lessons, even in regard to work which he could not for a moment undertake to execute with his own hands. And we are inclined to think that the best class of workmen are quite able to see this, and willing to admit the truth of it. And it is right also that the workman should bear in mind the responsibility which falls upon the architect, and which, in fact, forms one of the most important advantages to be derived from the employment of such a recognised director of the work. A workman would often do some piece of work in an ineffective and inferior manner, which happens to come easier to him, were he not checked by the architect, upon whom the responsibility of it will rest, or by the clerk of works, who is the architect's representative in overseeing the work. And a consideration of this ought to induce every workman who has a right and honest feeling in the matter to be loyal to his architect in the execution of his task, and not be guilty of the meanness (for such it is) of surreptitiously scamping work, the discredit of which in most cases cannot be fixed on the man who is really guilty of it, but has to be borne by the architect who has depended upon strict obedience to his own orders being observed. On the other hand, the architect owes a great deal to good and clever workmen, and should be ready, and we know in many cases is ready, to acknowledge this, to give credit where credit is due, and to avail himself of the valuable assistance which he may often obtain from the suggestions of the workman. But if a man good at his own branch of handicraft makes a suggestion to the architect, and instead of being thanked for it, is snubbed or told to mind his own business, it is not in human nature not to resent this, and to feel the injustice and unkindness of it; and it is our duty to say that we fear this is not quite an uncommon case, and that often a workman is prevented from making useful suggestions from very distinct and unpleasant recollections of the manner in which they have been received on some previous occasion. It is with a very painful feeling that we have sometimes heard an intelligent workman timidly and in an apologetic manner offer an opinion on some practical point, and observed his relief of mind when he found he had given no offence, and his explanation that, "Some gentlemen, sir, take it as a liberty if we suggest anything." Such a workman is really one of the architect's best friends; and a word of thanks and acknowledgment in such a case will often go far to establish a pleasant relation between the architect and the whole staff of workmen, who will feel a pleasure in working for him and in doing their best, when they know that their good intentions will be recognised and done justice to.

Such is the feeling which ought to mark the relations of the architect and the workman, especially since the latter has, in many ways, advanced and improved in general educational standing, though not in all cases in his trade. The workman is entitled to courtesy and consideration from the architect, and to a recognition of the value of his own share in the work. But he is not, therefore, to think himself entitled to undervalue and hold cheap the educated architect, who does not work with his hands, but upon whom rests the contrivance of and the responsibility for the whole; nor will he be wise to listen to those rash friends who recommend him to claim a place for which he has not been fitted, and to endeavour to dispense with the head, and place the hands in its stead. Apropos of which, he may be reminded that the able writer on architecture, whose opinions have been assumed as the chief basis of recent attacks on the architect, has himself most distinctly repudiated any such construction of his language, and expressed himself as holding views directly opposed to those which have been recently put forth on this topic.* And the architect is entitled to expect from the workman that courtesy which is due from all men to their fellows, combined with the special deference which the head and director of any branch of labour ought to receive, and in every other case does receive, from his official subordinates—a deference which is entirely consistent with the highest self-respect, and which is best and most fully expressed by the good old word "loyalty."

SOCIETY OF PAINTERS IN WATER-COLOURS.

THE winter exhibition of this society keeps more literally to the limit implied by the words "sketches and studies," than is sometimes the case in collections so entitled. In such an exhibition we place most value on those works which fulfil most decisively the object of a study—that of bringing out strongly a peculiar phase of character, effect, or handling, in an original manner. There are more or less highly finished drawings here, which, however pleasing as pictures, are beside the object of the exhibition, and must give way in interest to those of broader, in many cases rougher, handling, in which a particular aim of the artist is specially illustrated. Among those which may be thus classed is conspicuous the fine work by Mr. Clarence Whaite, "Wheat Harvest in Cambria" (249), with its remarkable combination of warm foreground tints and cool tones in the mid-distant hills; a large and important study of much power. Mr. F. Powell's study of sea (99), showing pilot-boat "No. 135, G. K." just sliding down into the trough of the sea, before a fresh breeze, is equally fine in the swing of the water and the action of the craft; in regard to transparency and tone of the water, perhaps the smaller study on one of the screens (316) is even superior. "Loch Fyne Herring-boats,—Morning" (149), by the same artist, is open to question as to the treatment of the water, but is a remarkable study of misty morning effect. Among the class of works we are speaking of come, we think without exception, all the eight drawings by a new member, Miss Clara Montalba, and which show remarkable originality and force of effect without either exaggeration or mannerism. "A Rainy Day at Venice," with the white domes gleaming against a leaden sky, and the gondolas lying like black shadows on the water, is perhaps the finest; "Study of Birch Trees at Nääs," and "The Fish Market, Hastings" (96, 107), also deserve special mention, and "Limehouse Creek" (88), a drawing which would bear translating into etching very well. Among Mr. Albert Goodwin's numerous (mostly small) sketches are two of architectural interest,—"Market Place, Verona" (4) a slightly-coloured study for a work which has been exhibited, and "San Sanoni" (223). Ability, combined with a certain pretentiousness and conventionality, is evidenced in the contributions of Mr. J. J. Jenkins, of which "Bekes-bourne" and the "Bishop of Winchester's Memorial" are the best (51, 25); in "Going to the Ball" (7), the attempt to indicate the effect of light from the windows of the building is a failure, owing to want of depth and contrast in the darks. Most of the studies contributed by Mr. C. Davidson will repay examination; less individual in type than some others, they are marked by broad treatment and a fine feeling for colour; "Near Wray Common," "Redhill Common," and "Sand-bank, Redhill," are all admirable as faithful but not slavish transcripts of Nature.

The drawings of Mr. David Cox, jun., strike us as a little spotty in effect, though with an evident intention of following the footsteps of his father; there is a want of breadth and largeness of manner, however. Mr. Paul J. Naftel contributes largely and well; "Across the Moor to Coch-na-Oich" (89) is a really fine drawing rather than a sketch, and exhibits much care in defining the contours and folds of the distant hills. Mr. G. Dodgson shows fine colour in "Crawley Woods" (30), but the perspective of the river-banks is faulty; "Sandhills, Oxwich Bay" (155), is much superior in execution, though less interesting in subject. Some sketches by Mr. Ruskin naturally excite interest; one of the "Glacier des Bossons" defines what may be called the anatomy of a glacier admirably, on a small scale, and in a slight manner. It may be curious to compare this with the small "picture" (as distinguished from "study") of a glacier by Mr. Richardson (285), which deals chiefly with aërial effect,—a matter wherein Mr. Ruskin's sketch is absolutely deficient. Of the divers sketches by Mr. Richardson and Mr. Branwhite, it is but necessary to say that they display all their authors' usual and now well-known excellences. Several charming little works by Mr. W. M. Hale will not be passed over by the observant visitor; nor Mr. H. S. Marks's admirable little landscape studies on Screens 3 and 4. Mr. W. Collingwood contributes largely, in many cases well, chiefly in small studies of effect in the Alps.

Among figure-subjects are numerous works by Mr. J. D. Watson, nearly all of interest and excellence; the most important being "Homeward" (94); amongst the best and most original we note "A Welcome Visitor" (185), in which the action of the figure carrying the pails is admirable, and (on Screen 1) "The Lost Path" (300), an excellent bit of humour. Mr. Pinwell's two large and important drawings have all his best qualities, and show a greater breadth in composition and colour than is usual with him. Sir J. Gilbert's portrait of the "Notary Public," in Longfellow's poem, surrounded by his little friends, is as pleasing a work by the painter as we have seen. A clever study of the antique watchman, bidding you "Stand in the Prince's Name" (145) is sent by Mr. A. H. Marsh, who, we should have mentioned, contributes some very admirable landscape sketches in a rough manner, and with an effect bordering on monochrome, but showing much feeling and individuality. Among numerous figure studies by Mr. F. W. Topham, some of them rather weak, "A Venetian Water Carrier" (176) and "A Welsh Girl, — a sketch from nature" (195), please us most; these have marked character, in which some of the other studies are deficient. Mr. Boyd Houghton's legendary subjects from the "Arabian Nights" are certainly cleverly and carefully manipulated, but the colour is very heated and repelling, nor can we see any interest in the subjects, except for children. Among others which we can only just mention are a charming little drawing by Mr. F. Walker, an interior, with two girls looking out of the window at "The Rainbow" (326); Mr. Smallfield's head of "Sir Peter Teazle" (333), and "The Jacobite's Daughter" (76), a little work of genuine pathos; Mr. Bradley's drawing of the three young lions, well known in Regent's-park-gardens, excellent in drawing, but a little deficient in texture; sundry heads, by M. Carl Haag, of which "A Nubian Youngster" (222) is the best, the others being not a little mannered in style; Mr. H. P. Riviere's "Campanile of SS. Giovanni e Paolo," and "Arch of Titus" (241, 339); and others. The collection is a very good one, and presents much for enjoyment, and a good deal for study.

GEOFFREY CHAUCER.

BUILDERS' FOREMEN AND CLERKS OF WORKS PROVIDENT INSTITUTION.

THE lecture session for the present year commenced on Wednesday, January 13th, at the Institution, 9, Conduit-street, when Mr. Fredk. J. Furnivall, M.A., founder of the Chaucer Society, delivered the opening lecture, on "Geoffrey Chaucer, Poet, and Clerk of Works to King Richard II." The chair was occupied by Mr. White (Scrivener & White), who briefly introduced the lecturer. There was an excellent attendance, and after some preliminary remarks as to the desirability of Chaucer becoming more known and appreciated, Mr. Furnivall pro-

* See Mr. Fergusson's letter in the last number of the *Builder*, p. 47, *ante*.

ceeded to sketch the life of our great poet, who, he said, was born in London in the year 1328, at his father's house, which was situated where the Chatham and Dover Railway now cuts Thames-street. We have so recently given an account of Chaucer's life, that we must pass over it quickly. His father, although a vintner, appeared to have had some influence, which secured him the notice of noblemen's families, for in 1338 Chaucer became a young page in one of these, and undoubtedly this was very useful to the education of our poet, for a great source of education to boys at that time was the getting them into the families of noblemen and high-born personages, as pages, where they were taught certain accomplishments and rules of behaviour calculated to improve their naturally somewhat unpolished manners. Here Mr. Furnivall read a list of "rules for young pages" of those days, which proved highly amusing to a modern audience. In 1357, Chaucer entered into the service of a princess, and in 1359 he accompanied the army with which Edward III. invaded France, and was made prisoner at the siege of Retters. However, in 1360 money was paid by the king towards his ransom, and he returned to England, but precisely as in the case of Shakspeare, a long period of time elapsed before anything further was known about him; indeed, it was not until 1368 that he was heard of as then being in the service of Edward III. as valet. Then followed his promotion as an esquire, and his receipt from the Crown of a grant of twenty marks, equal to about 200*l.* of our present money. About this time he wrote his first poem, a "Complaint to Pity," which was occasioned by the cruelty and scorn of a lady with whom he fell in love. He also wrote about this time a beautiful poem on the Duchess of Lancaster, wife to John of Gaunt, whose patronage the poet had gained, and in 1372 he was so far advanced as to be sent in company with several noblemen on an embassy to the Duke of Genoa, and whilst in Italy in 1373 he probably met the great Italian poet, Petrarch. About this time he marries, and gets the lease of a house in Aldgate from the Corporation of London. There was he settled for the next dozen years as Controller of the Custom-house of wine and wool in the port of London. His duties in that capacity, as enumerated by the lecturer, were very numerous. But though so hard worked, Chaucer still cultivated his poetic tastes, and was distinguished by the same love of study. After working all day, he would go to his books and read during the long winter nights until his eyes were dazed; and though he got well scolded by his wife for his foolishness in poring so much over them, this did not act as a deterrent; and the only thing that could take him from them was the coming round of spring, for he was most passionately fond of nature, as his beautiful little poem on the Daisy shows. Therefore, it would be easy to conceive that Chaucer, who was of a most genial temperament, hailed with joy the return of the bright sunshiny days, after the long dreary winters,—a vivid picture of which Mr. Furnivall drew, showing the many hardships people had then to undergo, the inconvenient dwellings of the period, and the little provision of a recreatory kind there was for lightening the dulness of the season. He further said, we had reason to rejoice that our builders had considerably improved since those days, and that we had now greater facilities for indoor enjoyment, if even something had been lost of the intensity of pleasure which our ancestors took in the advent of the sweet spring time. In 1374-5 Chaucer wrote more poems, and went to Flanders, and in 1377 to Paris, and is also sent in 1378 on a second journey to Milan. In 1389 Chaucer was appointed clerk of the works to King Richard II., and the next year he was appointed to the same office at St. George's Chapel, Windsor, a position of great responsibility, as set forth in an account of what he had to perform, which Mr. Furnivall said would doubtless seem rather amusing to the clerks of works of to-day; but they had to remember that in those times kings even did not possess many of the advantages now enjoyed by working men. Mr. Furnivall added that Chaucer, as clerk of works, was an honour to his profession, and that all engaged in it might well be proud of having associated with them the name of so richly endowed a man; who was at once so great, yet so simple, and sunny-hearted. He was an extemely good linguist, and, somewhere about the year 1379, was a member of Parliament for Kent, and held the seat for about a month. The Canterbury Tales, the best and most durable monument of Chaucer's genius, which give such an excellent notion of English life in the fourteenth century were next written, and on October 25, 1400, our poet died, second great poet of England, fourth of the world. Mr. Furnivall finally spoke of the various beautiful characteristics of Chaucer, his delightful moods of cheerfulness, and his wonderful love and study of women. In everything he wrote about them there was always apparent the same tenderness and reverence for them which, later, was shown by Shakspeare in his female characters, though Shakspeare's ideals of women were higher than those of Chaucer. Chaucer was our first really musical poet; nobody but Shakspeare touched him in the beautiful melody of his verse. The lecturer hoped that Chaucer would yet become studied and valued as he deserved to be. With regard to the difficulties to be encountered in studying him, Mr. Furnivall thought that these would soon vanish upon application, and that great instruction and pleasure would well repay all who sought acquaintance with him.

The lecture was listened to throughout with the greatest attention, and Mr. Mark H. Judge, in proposing a vote of thanks to Mr. Furnivall for the very instructive and interesting lecture he had given them, remarked upon their indebtedness to him as Englishmen for endeavouring to spread the knowledge contained in the works of our great poets, and so worthily striving to raise the tastes of the people in the direction of aspirations for pure literature, especially at a time when so many worthless publications were in circulation.

The vote of thanks was seconded by Mr. J. W. H. Bedford, the secretary, and, after being unanimously accorded, was suitably acknowledged by Mr. Furnivall, when, with the usual vote of thanks to the chairman, the proceedings terminated.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AT an ordinary general meeting of the members, held last Monday evening, the 18th inst., under the presidency of Mr. Benjamin Ferrey, Mr. John G. Hall was duly elected Associate.

A doubt was thrown on the statement that Mr. Charles Questel, of Paris, had died, as had already been announced.

The secretary (Mr. Eastlake) said that at the last meeting, when the discussion took place on "The Hope of English Architecture," Sir Edmund Beckett, who was present, was asked to say a few words with regard to the matter, but at the time he did not respond to the invitation. Since then, however, he had written his views on the subject, which were embodied in a letter, and the question now was, whether the letter should be read before the meeting, or appear in the usual way in the "Transactions."

After some discussion, the letter was read.

The secretary then stated that amongst the books presented to the library recently, were some from Professor Lepsius, through Professor Donaldson, and it was a matter of great congratulation that the Institute were in possession of nearly all the works of this eminent architect. Attention was also drawn to the drawings made by Mr. R. C. Page during his tour as Pugin Student of 1874, which were exhibited.

Mr. C. Hadfield, jun., Fellow, then read a paper "On the Restoration of the Lodge at Sheffield Manor," of which we have given particulars on more than one occasion.*

In the discussion which followed, the chairman said that the building referred to was one of great historical interest, but into that question it would not be their province to enter; he would be glad to hear any remarks made concerning the work of restoration which was being carried out.

Mr. S. I. Tucker, "Rouge Croix" who accompanied the members of the British Archæological Association during August, 1873, said that he had carefully examined the arms upon a stucco cornice, and identified them unquestionably as the bearings of the sixth Earl of Shrewsbury, who was the custodian of Mary, Queen of Scots, he being the trusty counsellor and faithful servant of Elizabeth.

Mr. Morris confessed his surprise that the author of the paper called the work at Sheffield Manor, which had been restored, "a lodge." The proper name of it, he thought, must be a gate-house, for then it would come into analogy with such a building, as gate-houses were attached to all important mansions of that time; and he supposed it was an old Dutch fashion introduced by Henry VII. and his followers. They had examples of this at Lincoln's-inn, Lambeth Palace, and St. James's Palace, erected by Henry VIII. Therefore, there must have been some important officers who inhabited that part of Sheffield Manor, or else it was used for some special occasion they were not acquainted with.

The Chairman could not believe that this "lodge" was a gate-house in the ordinary sense of the word, but it might very probably have been the residence of some high officer in connexion with the castle.

Mr. Tucker said that there was a tradition that Queen Mary tried to escape from the castle, and the Earl of Shrewsbury, wishing to put her in better keeping, constructed this lodge. There was in the Heralds' College a letter in which the Earl stated his intention of sending to London for a plan of a lodge, which was no doubt built for the better security of the Earl's prisoner.

Mr. J. D. Leader, of the Sheffield Archæological Society, in response to the Chairman, said that supposing the lodge in question was built for the better security of the Queen of Scots, it was a curious fact that it was the only place which had not been destroyed, as was the case in all the other buildings where the unfortunate queen was detained. If it was true that this place of confinement was *bonâ fide*, much interest, he was of opinion, attached to the building. With regard to the long gallery of the building, it was unfortunately fast falling into decay, and it was hoped that it might be restored to a respectable appearance, especially as Cardinal Wolsey lodged here at the time of the mortal sickness which seized him, terminating his career four days afterwards at Leicester. Among some papers which Mr. Leader had examined at the British Museum, he had come across an account of the destruction of Sheffield Manor, in which it was mentioned that the long gallery was known as the Wolsey Gallery.

Mr. Hadfield, in answer to Mr. Morris, stated that Hunter, in his description of Sheffield Manor, spoke of the building in question as "a porter's lodge," and it was certainly a place which had been arranged, he considered, for some special purpose. At the time, the Earl of Shrewsbury told Lord Burleigh of the plan of the lodge which he was building at Sheffield Manor.

A vote of thanks to the reader of the paper, moved by Mr. J. T. Wood, and seconded by Mr. Brandon, was passed.

Before the meeting separated, a communication from Mr. Herbert Carpenter was read, with regard to the restoration of New Shoreham church, and which had been sent to the committee for the preservation of ancient monuments attached to the Institute.

It was also announced that the meeting for the purpose of awarding the Gold Medal would take place on the 15th of March, instead of the 1st of March, as previously arranged.

* A view of the building will be found in our volume for last year, p. 30.

THE ROYAL THAMES YACHT CLUB.

THIS club, of which his Royal Highness the Prince of Wales is president, having last year renewed the lease of their club-house in Albemarle-street, Piccadilly, have re-opened it for the use of the members, after the completion of considerable alterations and entire re-decoration. Amongst the former, a new billiard-room, new lavatories, and a new serving-room, have been added, and extensive changes and improvements have been effected in the office arrangements on the basement story. In addition to the usual club accommodation, a number of bedrooms have also been provided for the use of the members.

The general works and the decorations have been carried out by Messrs. Warne & Son, of Soho-square, under the direction of Mr. David Brandon; and the kitchen fittings by Messrs. Barron & Wilson, of Charing-cross. The club consists of over eight hundred members.

Reduction of Wages.—From 200 to 300 engineers and fitters have been paid off at the Barrow Steel and Ironworks in consequence of their refusing to accept a reduction of 4 per cent. in their earnings.

BUILDING MATERIALS, AS REPRESENTED AT VIENNA.

FEW things are likely to prove more instructive to the architect, or to the builder, than a comparative view of the character of building materials, as now employed, not only in this country, but on the Continent. For such a glance the reports and technical papers relating to the Vienna Exhibition furnish valuable information. The collections of building materials there exhibited were of sufficient importance to prove of great interest to the engineer, the architect, and the builder, although it was difficult to obtain a clear and satisfactory view of the whole of them; as they were divided into two groups, and scattered through the various galleries, the pavilions, and the grounds.

The United States sent specimens of a fine red sandstone, known as Connecticut freestone. This stone is much employed in New York; as its appearance is much in its favour, and it is easily worked. The price is about half that of granite. A yellow sandstone, easy to cut and to carve, was exhibited from Cleveland, Ohio; and specimens of granite from Vermont; and of red, white, black, and red-grained marble; completed the list of the American exhibits of this class.

From England, the specimens forwarded were principally those of artificial, rather than of natural, building materials. Of the latter, the samples of slate were most worthy of notice, and far excelled any from other countries. A slab from the Welsh Slate Company was 9 ft. 10 in. long, and 6 ft. 3 in. wide, weighing 32 cwt. At the other extremity of the scale of size, plates of only four hundredths of an inch in thickness, were also shown. Fine building materials, including sandstones, limestones, and clay, were contributed from Canterbury, in New Zealand; and Queensland sent specimens of marble and of clay.

Amongst artificial building materials, the first place seems to have been accorded to the Portland cement, which is manufactured on the banks of the Thames and of the Medway. The materials employed are chalk and clay, and the works are, for the most part, situated on the chalk, the clay being brought to the manufactory from a distance. In the cement works on the banks of the Thames, the white, or upper chalk, in a portion of which flint bands and nodules occur, is used. On the Medway, the gray, or lower chalk, in which much siliceous matter is distributed through the mass, so that it serves for a very fine material for interior work, is employed. The clay is the common dark blue clay, which is obtained in any requisite quantity along the shores of the confluent rivers. It consists of 68 per cent. of silica, 12 per cent. of alumina, 15 per cent. oxide of iron, with a small quantity of alkaline matter, and a trace of lime.

Cement is manufactured either by a wet or a dry process. In the former, some four parts of gray chalk, or three of white, mixed with one of clay, are ground with water in a mill, until they attain the consistency of cream. This is allowed to flow from the mill into settling-tanks; whence it is removed, when dry, to hot plates. It is then burnt in a kiln, and finally reduced to powder in a grinding-mill.

The dry process is much used on the Continent. The chalk and clay are first dried, then broken up, and then ground between vertical stones. The powder is placed in a pug-mill, and mixed with water containing freshly-burned chalk, with the addition of a little calcined soda, in the proportion of three measures of powder to one of water. The semi-fluid thus produced is cut into bricks as it issues from the pug-mill, in a continuous stream 10 in. wide and 5 in. deep. These blocks are removed on boards, dried, baked in a kiln, and finally ground to powder. It will be seen that although the latter is called a dry, and the former a wet, process, the chief difference lies in the amount of water which, in one or the other series of operations, is first mixed with calcareous, argillaceous, and siliceous matter, and afterwards driven off by heat.

The selenitic mortar invented by Lieutenant-General Scott, R.E., is another artificial building material, described in the same reports. The process of production consists in mixing, with the water used in the preparation of the mortar, a small quantity of sulphate of lime, in the form of either plaster of Paris, gypsum, or green vitriol. The water and sulphate are first mixed in a pan, the lime is then added, and the mixture is worked into a creamy paste. After grinding for three or four minutes, the sand, burnt clay, or other ingredient used in the composition is added, and the whole is ground for ten minutes more. It is claimed that by this invention ordinary lime can be at once converted into an excellent cement-like mortar, which sets rapidly and well, and can be used for masonry, concrete, or plasterers' work.

General Scott applies a modification of the same process to the manufacture of bricks. He mixes one part with lime, eight or ten parts sand or burnt clay, and produces bricks which are said to be ready for use in about ten days after pressing, without being burned. The addition of sulphur to the lime used is also said to have the effect of preventing the swelling of the brick, from the water absorbed by the lime in process of stacking.

An invention of posterior date to that of the selenitic mortar, is General Scott's sewage cement. The principle of this manufacture is the precipitation of the solid ingredients of sewage, and the removal of their organic constituents by burning. In the mineral deposit which is left, substances are present which are analogous to the components of the limestones that are used in the manufacture of hydraulic cement. The residue after calcination bears the nearest affinity to Portland cement, which is produced by calcining three parts of chalk with one of clay. But the state of comminution in which the material existed in the sewage is such as to make the mixture more homogeneous than in the case of the Portland process. It should be remarked that the calcined residuum is said to be valuable as manure, not only from the lime which it contains, which would be of service on arenaceous or argillaceous soils, but also from the presence of from 1 to 2 per cent. of phosphoric acid. It is on this element that the utility of sewage as manure principally depends. The organic matter contained in sewage is not a material which the roots of plants can assimilate. It is the chief source of danger in case of neglect.

In pottery, the exhibits do not appear to have come up to the number or quality of those which we have hitherto described as displayed at South Kensington. The encaustic tiles of Messrs. Minton, made from Kaolin and various coloured clays, dried, and pressed, the glaze being obtained from felspar, are well known. Mr. Robert Minton Taylor exhibited a novelty, under the name of mosaic tiles. They consist of small cubes of about ½ in. on the side, closely compressed in a powerful press, and afterwards burnt. A third speciality consisted in the majolica tiles, made of white clay, with drawings either painted or printed, partly under and partly on the glazing. While small in number, these exhibits were exquisite in quality.

The natural building materials supplied from France contained a large collection of slates from the Ardennes. Roofing slates, in thickness of from ⅛ in. to $\frac{3}{16}$ in., ranged in colour from a pale red to a clear pale blue. Other specimens exhibited enamelled paintings on a highly polished dark ground, of the natural colour. A beautiful fine-grained white sandstone is supplied from the Drôn. French marbles are numerous and excellent. The fine Griotte d' Italie and Griotte Compan marbles are dark red, with spots of a darker colour, and white veins. They come from the quarries of Félines-Hautpoul (Hérault). The Languedoc is another marble from the same quarries, with white spots, and dark in veins. A light red marble, with spots of a darker red, comes from the Hautes Pyrénées. The Brèche Impériale is a light-coloured marble, clouded with red and grey, spotted with red and yellow, and darkly veined. It is quarried near the mouth of the Rhone. The Grande Antique, from La Rochelle, has an almost uniform red hue. A dark green marble, veined here and there by both lighter and darker streaks, which takes a beautiful polish, comes from the Basses Alpes. A fine white statuary marble, not unfit to compete with those of Italy, is quarried in the Haute-Garonne, and known as the Blanc de Béat. The transparent onyx marbles, with which we have had the opportunity of making ourselves acquainted at South Kensington, are not found in France, but are imported from Mexico. A similar, but somewhat inferior quality, is found in Algiers.

The art tiles manufactured by M. Deck, and those of M. Collinet, both of Paris, are excellent in design and in execution, although their price is too high to allow of a very general introduction of this decorative material. The bright colours employed by M. Deck are heightened by a peculiar glaze; most of the designs are Persian. M. Collinet has succeeded in the production of large tiles—some as much as a mètre square. A special process, called *émail-cloisonné*, is applied to these large *panneaux*. A white glaze is first placed on the tile. On this the design is painted in black. During burning, the enamel contracts, which gives a relief to the drawing, the colours of which are heightened. A panel of 3 ft. 3 in. square, thus finished, costs from 14*l.* to 18*l.*

In coarser pottery, and the manufacture of bricks, France was not a formidable competitor with ourselves. Some curved, wedge-shaped, and dove-tailed bricks, constructed for different special purposes, were sent from Mézières.

The Boulogne cement is a remarkable manufacture, well known in France. Its ordinary colour is yellow, but it is made into blocks of a pale blue tint. Plates of two mètres long by one wide, and not more than ¼ in. in thickness, were exhibited with perfect surfaces. Thirty bricks, placed one on another in a pile, united by this cement, were suspended from a beam. The hydraulic lime of Lapage-du-Thiel is produced in large quantities in the Ardèches. As much as 18,000 cubic feet per diem is turned out from thirty-four furnaces, which use from 80 to 100 tons of coal. The slacking of the burnt limestone, which is carried on in sheds, is aided by jets of steam. Ten days are required to pulverise the mass, which is then passed through bolting-machines. The residuum is ground and made into cement. This lime is used, to a large extent, for harbour work, in the form of *béton*, or concrete; blocks of which were exhibited that had been under water for twenty-five years, without showing any signs of change. The cement made from the refuse of the bolting-machines, mixed in equal proportions with sand, make good water-pipes, with smooth and even surfaces. A proportion of three-parts sharp new sand to one of the cement makes a serviceable brick. Coloured tiles of various hues, paving, pedestals, and other architectural requisites, are made from the same material.

The "carton pierre" of MM. Hardouin and Lefevre, of Paris, is largely employed for architectural decoration in that city. Its superiority to plaster is so great that it would be interesting to know why the attempt made, some time since, to introduce this material into London has not been attended by more signal success.

The native marbles of Belgium may compete with those of France. Some very beautiful kinds are found in the province of Namur. The *Grive Gérard* is of a light grey colour, with small black spots distributed regularly over the whole surface. The *Lilas* is of a brighter grey, with white and also very dark spots. The *Florence* is of a reddish grey colour, with brown spots; the *Coquille* is bluish black, with light spots, in the form of mussel-shells; the *Marbre Bois* shows a fibrous pattern on a black ground. A pure black marble, from Mazy-Galzines, is remarkable for the facility with which it can be worked, a quality very rare in black marbles. It is worth as much as 15s. per cubic foot. Inferior marble suitable for pavements, can be obtained for a part of this price.

Roofing slates from Luxembourg are divided into fifteen different classes, varying in thickness, as in the case of the French slates, from ⅛ in. to $\frac{5}{16}$ in.

Fire-clays are wrought in the province of Namur, varying in colour, from an almost perfect white, to dark bluish grey, and reddish brown. Fire-proof bricks, of a superior quality, are priced at from 32s. to 40s. per ton. Hearth blocks for welding furnaces fetch as much as 64s. per ton. Fire-bricks, from the province of Liege, are compressed by hydraulic pressure, and afford a dense, compact material at a reasonable price.

The bricks of Holland are described as sound and durable, though not, as a rule, well finished. The corners are rounded, and the surfaces coated with sand. They appear to be well burnt through, without vitrification on the outside, and are dense and very hard. The largest size is 8⅛ in. by 4¼ in. by 2 in.; and the price varies from 20s. to 40s. per 1,000. The second size is 6¼ in. by 6⅛ in., by $1\frac{2}{16}$ in.; for which the price is from 8s. to 10s. per mille. Clinker bricks are supplied for paving. It is worthy of remark that the prices of machine-made bricks are 2 or 3 per cent. higher than of those which are made by hand.

Wall-tiles of white, pale blue, and lavender, of the well-known old Dutch patterns, vary in price between 60s. and 80s. per thousand. The usual size is 9 in. by 6 in. Millions of these tiles are made annually at Utrecht, a little under 5 in. square, and costing from 8 to 10 centimes

each, or about 64s. per thousand. They are also produced in finer qualities, at prices from 60s. to 68s. per thousand.

Denmark has shown but little of its building products, Messrs. Erichsen's roofing tiles being almost the sole exhibit. These are solid, flexible, and perfectly adapted to the requirements of the builder. Sweden only exhibited small specimens of her rich and varied stores of building-stones, granite, porphyry, marbles, and limestones.

The varied and inexhaustible wealth of the Italian peninsula, in all that forms the material of the builder, the sculptor, and the decorator, was well and completely represented at Vienna. The Italian Ministry of Agriculture, Industry, and Trade exhibited a fine collection of stones for building, quarried and worked in Italy.

The physical conformation of the Spanish peninsula is such as to leave little room to doubt that the mineral products of that country are in no way inferior to those of Italy. Indeed, in the neighbourhood of Logrono, there is said to occur excellent coal, while bituminous shale is the only combustible mineral with which we are acquainted as native in Italy. Many specimens of building-stone were sent from Spain, chief among which may be noted magnificent specimens of pure alabaster from Guadalajaro. Fine dark-coloured slate is found in the same province. Marbles of various kinds are quarried in the Balearic Islands; and hydraulic limes and cements are also produced in Spain. Encaustic tiles, manufactured by Signor Nolla, of Valencia, are exported in large numbers to Italy and to South America. Messrs. Soto y Tello, of Seville, manufacture tiles coloured with white, green, blue, and black, made after designs taken from the works of the Alhambra, in the repairs of which building they are employed. Nothing, however, of merit approaching that of the famous Buen Retiro *faïence* was forthcoming from Spain in 1873. In Portugal, mining industry has of late taken a fresh start, under the impulse given by a modification of the laws regulating mines and quarries. Marbles were exhibited from Estremas, and very fine dark slates, some of which were almost black, are found in the district of Oporto.

The most numerous and most complete series of exhibits of building materials to be seen at Vienna came, as was naturally to be expected, either from the dominions of the Austrian Emperor, or from those of his German brothers. Under the latter head, the Mining Commission of Alsace and Lorraine contributed a fine collection of some 180 specimens from the quarries of these provinces. These comprehend granite, gneiss, porphyry, various sandstones, limestones, and marble. The dark yellow sandstone found in the vicinity of Halle was represented by a large lion, sculptured from the material. A grey sandstone from the same exhibitors was formed into a pedestal supporting a bust of the Crown Prince.

The granite from Silesia is remarkable for its excellence. A carefully-wrought slab, 16 ft. long, 12 ft. 4 in. wide, and 7 in. thick, was sent from Saarau, in this district. The slate quarries of Lebesten have been carried on since the tenth century. The colour of the slate is dark blue, and its imperishable character is explained by the chemical analysis, which shows 64 per cent. of silicic acid, 17 per cent. of alumina, and 13 per cent. of various oxides, combined with 4 per cent. of water, and but little more than 1 per cent. of carbon and carbonate of lime; the slate is fine in grain and regular in cleavage, producing plates as thin as ·04 inch. The price also is low, and the consumption very large.

The Saxon serpentine, from the stoneworks of Zoblitz, appears to be free from the usual defect of this very beautiful material; a defect to which the serpentine of our own south-western district is liable, namely, the numerous cracks that divide the mass, rendering it impossible for the quarrymen to extract large and sound blocks. In the Norman, and also in the Florentine work, in which this material is used, the pieces are very small. The Zoblitz Company, however, produce not only large blocks, but veneers for covering surfaces of stone, and their work has attained a high degree of excellence. The usual colour of this serpentine is a dark green; but black, red, and yellow varieties also occur, and are used with good effect in mosaic.

The "cajalith" of M. Schmidt, of Dresden, is a beautiful artificial building material, the composition of which is kept secret by the inventor. It is nearly white, fine in grain, and closely resembles marble in appearance. When first made it is plastic, and may be moulded into any required form. It subsequently sets, and becomes extremely hard. It can also be made of any desired colour, but the specimens of mosaic formed from cajalith, made in imitation of various natural stones, had suffered from exposure to the weather. As much as 50 tons of this material is now produced per month.

A tufa, found in the vicinity of the Laacher Sea, near Andernach, is interesting as showing the appearance, in this region, of this light, durable, volcanic material, which cuts with almost the facility of chalk; and to the abundance of which, in Italy, the introduction of the vault, as an architectural feature, may with great justice be attributed. The Andernach tufa, however, is blue; that of the south of Italy is of a pale yellowish brown. The analysis of the former shows it to contain 52 per cent. of silicic acid, 15 per cent. of alumina, and 11 per cent. of sesquioxide of iron. It has been used since the time of the Normans, for the manufacture of hydraulic cement. As many as twenty-five cement-makers competed at Vienna from Germany. The tertiary clay, and the chalk, of Rügen and Stettin, and the deposits near the mouth of the larger rivers, as for instance near Emden, which are analogous to those of the Medway, are used for this manufacture. Light yellow bricks, inlaid tiles, glazed decorative plates, terra-cotta columns and capitals, a terra-cotta statue of Germania, mosaic tiles for pavements, fire-bricks and blocks for blast-furnaces, large clay retorts, up to the weight of 1½ ton, glazed tiles, and white Dutch tiles, gilded and brightly enamelled, are exhibits which say much for the industry of the clay-workers of Germany.

Artificial-roofing materials are also much in use in Austria. There were twenty-three exhibitors of felt, paper, wood, and various cements, for this purpose. Herr Irmes, of Berlin, works up 1,500 tons of raw material into roofing material per annum. Zinc plates, coloured red, black, and white, in imitation of tiles, were taken from a roof in Munich, where in twenty-seven years they had suffered but little loss of weight. Considering, however, the conducting power of metal, the instances can be but few in which a wise architect would substitute a thin zinc plate for a sound and impervious tile.

The building-stones of Austria are numerous and excellent. White, light grey, blue, and yellow varieties of limestone are quarried in the Vienna basin. The Wöllersdorf stone is distinguished for great hardness and purity of colour. The Mühlendorf limestone is of a similar quality, although in places it contains crystals of dolomite. A blue and yellow stone, from Sommerein, extremely hard in its lower bed, is known as Imperial stone. A fine white statuary limestone is found in the neighbourhood of Neusiedeler. A fine sandstone, which has been used in the restoration of the Cathedral of St. Stephen, at Vienna, is from St. Margarethen. A fine red sandstone, variable as to quality, is quarried at Brun am Steinfeldt, and also at Baden. The Vienna or Karpathen sandstone is of a bluish-grey colour, with a fine quartz base, cemented by lime and clay. It disintegrates by exposure to the atmosphere.

Marbles are found in Carinthia. Quarries of a dark red marble have recently been opened at Arnoldstein. A light-blue marble-like stone, with dark veins, which takes a high polish, and a fine-grained white and reddish limestone, with green veins, are largely used. Tufaceous limestone is also frequent in Carinthia. It is light, and easily quarried. Most of the slate used in Austria comes from the Silesian and Moravian provinces, which possess good qualities of green and of dark blue slates.

In the Lengau valley about 30,000 tons of materials are annually worked up into hydraulic lime and cement. In Vienna, 50,000 tons of cement and hydraulic lime, and 12,500 tons of gypsum, are annually made and sold. Near Steinbrück, in Styria, an argillaceous marl slate and a dark blue limestone have been quarried for the same purpose for fourteen years. Building blocks, composed of broken stone and cement, are manufactured at Vienna.

The brick industry of Austria is also very active, a thousand million of bricks having been turned out from the various factories in 1870. The Wienenberger bricks, from their acknowledged excellence, are chiefly used for public buildings. The Wienenberger Company produce also tiles and objects in terra-cotta, and it is said to be owing to the magnitude of these works that the building for the Exhibition of 1873 was completed in time.

SCOTTISH COLLEGES.

A SUM of money approaching nearly to one third of a million pounds, is about to be disbursed in the extension of one college in Scotland and the foundation of another. The one college that has existed for centuries is to be enlarged to meet the demands of intellectual advancement, and the other college has to begin its life and make its history, which, considering the commercial growth of the town is certain to be a flourishing one. Edinburgh is to extend its university; Dundee is to found its college. A short story of the educational advancement of these towns may prove interesting and useful.

Previously to the Reformation Edinburgh possessed no university; the convent of the Grey-friars was endowed by James I. (of Scotland), and several learned men were brought from the Continent with the view of establishing an educational seminary in the city. Soon after the Reformation the magistrates of the city and the Protestant clergy formed the design of a college for the education of youth; but it was not till years after that they were enable to carry their designs into execution. The germ of the idea of erecting a university in Edinburgh is to be found in the will of Robert Reid, Bishop of Orkney, who dying in the year 1558 bequeathed the sum of 8,000 marks Scottish money towards founding a college in Edinburgh for the education of young men. The legacy of the good Bishop of Orkney was not received by the citizens of Edinburgh till 1582; but in the meantime they had purchased of the last provost of the collegiate church of the Kirk of Field the precinct of the church for the site of their intended college, but it was not till the year 1581, when the Scottish hierarchy had lost its power, that a grant was passed for erecting the designed college in the buildings occupied by the collegiate church of St. Mary-in-the-Fields, and in 1583 its first professor was appointed. Maitland tells us that "where the principal of the college's house is situated stood that of the Provost of the Kirk of Field, which was blown up by gunpowder in the year 1567 to screen the murder of that unhappy prince, Henry, husband of Queen Mary of Scotland," and he also informs us that at this time, "the provostry of the Kirk of Field, together with the Monasteries of the Black and Grey Friars, standing without the wall of Edinburgh, were greatly exposed to the depredations of enemies; wherefore it was judged necessary to extend the town wall round the same for their better security." James, like his immediate descendant, Charles I., was a warm friend of learning, so far as university education was concerned, and took considerable pains to nourish this infant institution. He watched over it with a paternal care. In 1617, when the teachers in the University were at least six, James VI., who then visited his native kingdom, condescended to become, as it were, its godfather, desiring it thenceforward to be designated "The College of King James," and in addition to this kindness gave it what he called "a royal god-bairn gift" in the shape of certain lands and tithes in the counties of Lothian and Fife. After this it received various lesser benefactions. Cromwell bestowed on it an annuity of 200*l.*, and his example was followed by William III., who endowed it with 300*l.* yearly.

The design of the University at first received considerable encouragement from the foundation of a library, which had been bequeathed in 1580 by Clement Little, advocate, for the use of the citizens of Edinburgh, and which the magistrates immediately appropriated to the service of their infant seminary. This collection of books was more numerous than valuable; but it afterwards received some important accessions. The poet Drummond, of Hawthornden, enriched its shelves with many useful works, among which were a few of the early editions of Shakspeare's separate plays. In those early days the College was accessible to the citizens of Edinburgh by a narrow lane, then known as the Wynd of the Blessed Virgin Mary in the Field, now as College Wynd. Facing down this humble lane was the gateway of the College, displaying a richly ornamented architrave. The wynd itself, strange as the averment may now appear, was the abode of many of the professors. The illustrious Joseph Black lived at one time in a house adjacent to the College gate. In an adjoining house Sir Walter Scott was born, August 15, 1771. Robert Chambers writes, among his reminiscences:—

"In the course of a walk through this

part of the town in 1825, Sir Walter did me the honour to point out the site of the house in which he had been born. On his mentioning that his father had got a good price for his share of it, in order that it might be taken down for the public convenience, I took the liberty of jocularly expressing my belief that more money might have been made of it, and the public certainly much more gratified, if it had remained to be shown as the birthplace of a man who had written so many popular books. 'Ay, ay,' said Sir Walter, 'that is all very well, but I am afraid I should have required to be dead first, and that would not have been so comfortable, you know.'"

In 1768 a proposal was made public for rebuilding the college after a regular plan, but the American war prevented the immediate execution of the design. In 1785 the magistrates set on foot a subscription for erecting a new structure, according to a design which had been prepared by Robert Adam. But this plan, after it had been partially carried out, was altered and modified, and the building was finished in conformity with a design furnished by the late W. H. Playfair, in the form of a parallelogram.

Adjoining the college, and forming part of it, is the Museum of Science and Art, which was designed by the late Captain Fowke, and is constructed of the same stone as the original university,—that of Craigleith,—which may be termed the Portland stone of Scotland. It was founded in 1861 by his Royal Highness the Prince Consort, and inaugurated by his son the Duke of Edinburgh.

Of Dundee there is little to be said. About 200 years ago Dundee had its one church (the most magnificent remnant of ecclesiastical antiquity in Scotland), its one tavern, and its guard-house. Ships came to its harbour and only asked for stout lads and men to man them; but in 1616 Mr. James Glegg left his chair, as professor, in St. Salvator's College, St. Andrews, to be chosen rector of the Dundee Grammar Schools, with a salary of 16*l.* 13*s.* 4*d.* yearly, the quarterly fees of the scholars being 6 pennies. In 1822 there flourished a teacher of mathematics, by name John Davidson, whose death for many years was greatly deplored by those who wished to become students of navigation. In 1785-86 an academy was opened, which expired in 1792, but which was revivified by a grant of 6,000*l.* from the legacy of the Messrs. Webster, merchants in London, and natives of Dundee. The latest contribution of Dundee to the interests of intellectual enlightenment is the Albert Institution, which was erected under the superintendence of Sir Gilbert Scott, at a cost of 20,000*l.*, and opened in 1869. Dundee compared with Edinburgh is but a town of yesterday, but it is most creditable to the former to see that though the proclivities of the inhabitants are for "the sea, the open sea," they are determined to provide an education at home, which will keep up and ennoble still further the race of men who have by their industry and intelligence brought into notice the town of "Bonny Dundee."

DESIGNS FOR THE GOLDSMITHS' COMPANY.

IN reply to the liberal advertisement of the Goldsmiths' Company, there were twenty competitors for the premiums offered for the best designs for articles above 30 oz. in weight, twelve for articles under 30 oz. in weight, six for those offered for models, three for articles in silver, and two for chasing or *repoussé* work. Under the first heading a prize of 50*l.* is awarded to W. Clausen, for a clever work; and 25*l.* each to R. Lunn, and W. F. Randall (a design for tea service with some meritorious points). Under the second head (articles less than 30 oz. in weight), a prize of 25*l.* is awarded respectively to F. W. Sharp (design for a cup, with groups of figures on it), and to J. J. Shaw. Owen Gibbons gets 25*l.* for a model of a work over 30 oz. in weight; and Thos. A. Crichton and E. H. Stockwell 25*l.* each for articles in silver. The model of a plate, with figures in low relief, by George Morgan, deserves recognition. The defect observable in most of the designs, as well those that are rewarded as those that are not, is want of simplicity. They are for the most part greatly overdone.

The designs may be seen, without payment, at the Royal Architectural Museum in Tufton-street, Westminster.

THE PRODUCTION OF COAL.

THE official Exhibition Report on the production of coal, published by J. Pechar, of Teplitz, and Dr. A. Peez, of Vienna, contains some interesting information on that head. According to these statistics, England's production of that valuable commodity in 1866 was greater than that of all the other coal-producing countries of which statistics are published taken together. In that year the total amount of coal raised was 184,693,742 tons, to which England contributed as much as 103,069,804 tons,—a surprising increase since 1839, when the production from English coal-mines was only 31,502,193 tons. Although between the years 1866 and 1872 the English production had considerably augmented, other countries had gone ahead at a still more rapid rate, so that in the latter year England may be considered beaten; for in that year the total production amounted to 256,275,824 tons, of which England contributed only 125,473,273 tons.

A comparison of the total coal production of the globe in 1866 with that of 1872 is afforded by the following table:—

Countries.	Production in 1866. Tons.	Production in 1872. Tons.	Rate of Increase per cent.
England	103,069,804	125,473,273	21·73
Germany	28,162,805	42,324,469	50·27
United States	21,856,000	41,491,135	89·83
France	12,260,085	15,900,000	29·68
Belgium	12,774,662	15,658,948	22·57
Austro-Hungary	4,893,931	10,443,998	113·41
Russia	264,455	1,097,832	315·13
Australia	774,000	942,510	21·77
Other Countries	638,000	2,943,659	361·38
Total	184,693,742	256,275,824	38·75

It will be seen from this table that, as regards the rate of increase, England, with the exception of Australia, takes last place in the list of coal-producing countries, but that, as to production *de facto*, she is still considerably ahead of all competitors. Another interesting compilation contained in the Vienna Report is the following table, which supplies information as to the amount to which the different countries contributed in the total production of coal in 1872:—

Countries.	Production in 1872. Tons.	Per cent. of Total Production.	Population.	Production of coal per head in lb.
England	125,473,273	48·96	31,817,108	7887·15
Germany	42,324,469	16·52	41,058,139	2061·68
United States	41,491,135	16·19	38,650,000	2147·02
France	15,900,000	6 20	36,469,875	871·95
Belgium	15,658,948	6·11	5,081,260	6156·33
Austro-Hungary	10,443,998	4·07	35,904,435	581·76
Russia	1,097,832	0·43	82,172,022	26·72
Australia	942,510	0·37	1,958,650	962·40
Other countries	2,943,659	1·15	260,810,980	22·57

One of the most instructive parts of the Vienna Report is that treating of the production of coal in Austro-Hungary, where lately brown coal has begun to be used to a large extent. The great demand for fuel for railways, steamers, and steam-engines of all descriptions, as well as furnaces, has compelled the Austrians to utilise their precious treasuries of coal to a degree somewhat in accordance with the plentiful supply stored below. What vast strides Austria has made in this respect, the following figures will show:—From 1848 to 1871, the mileage of her railways increased 886·5 per cent., the raising of coal, keeping pace with the railways, by 970·18 per cent., and the production of pig-iron 123·4 per cent. The number of workmen employed in Austrian coal-mines was, in 1871, 67,664, against 59,517 in 1870, and 53,994 in 1869.—*Zeitung des Vereins deutscher Eisenbahn-Verwaltungen.*

THE CONSTRUCTION OF GAS WORKS.

THE INSTITUTION OF CIVIL ENGINEERS.

AT the seventh ordinary meeting of the session on the 12th of January, the paper read was on "The Construction of Gasworks," by Mr. Harry E. Jones, C.E.

The subject of the paper was the consideration of what types of gas-making appliances were cheapest in construction as well as most efficient in action. The site should be selected chiefly for facilities in receiving and delivering material by road and water. Every section, of which the most important was the retort-house with its contents, should be so constructed as to admit of extension without involving destruction. Opinions were divided, whether the house was best with the retorts upon the ground level, or on a "stage." The author had come to the conclusion, that when there was a ready sale for coke from the ground-floor of the stage-houses as fast as it was made, a saving of labour, as compared with the ground-floor house was effected; but not when the coke had to be stacked outside the house. A comparison of the manufacturing wages for the year 1873 of those metropolitan gas companies employing stage retort-houses and others using ground-floor houses, showed a saving by the former of ·48*d.* per 1,000 cubic feet of gas sold. On the other hand, the cost of a stage retort-house, complete with retorts and fittings, and having suitable coal stores, ranged from double to three times that of the simpler form of house for the same capability of production. The cost of the stage house was not less than from 16,000*l.* to 18,000*l.* per 1,000,000 cubic feet of gas produced per diem, or 8,000*l.* more than the ground-floor house. This would require, at the usual rate of interest, 800*l.* per year, to which much be added the wear and tear at 2*l.* per cent. = 160*l.*, making an annual extra charge upon working of 960*l.* Allowing a deduction for extra labour on coke, the net saving was probably about ¼*d.* per 1,000 cubic feet of gas. Supposing the maximum annual make to be 203,670,000 cubic feet, the saving on this quantity would amount to 282*l.*, which fell short of the extra annual charge by 678*l.* Of the various retorts, the round form was undoubtedly the strongest and most enduring, and the oval the weakest; but the latter and the D-shape were capable of working heavier proportional charges. The greater the number of retorts within one oven, and worked by one furnace, the greater the economy in fuel; as the surface of the enclosing walls, and *pro tanto* the loss of heat by radiation, were thereby reduced in proportion to the capacity for carbonisation.

The effect of the high temperature at which coal was best carbonised was that, through the dip pipes, the liquid contents of the hydraulic main were subjected to a continuous blast of gas from the white-hot sides of the retort. The stagnant tar, therefore, was boiled until its fluidity was gone. This produced pressure on the retort, causing loss through its pores, active deposition of carbon on its sides, and a constant choking of the ascension pipe, near the mouthpiece especially, but more or less throughout its length, occasionally even implicating the H-pipe. There were many propositions to remedy these stoppages, and to do away with the hydraulic seal altogether. Of these, none would bear comparison for safety and effectiveness with the contrivance they aimed at displacing. The fault lay not in the hydraulic seal, but in the condition of its contents. The problem to be solved was how to keep the tar in the hydraulic main sufficiently fluid. The author found that an extra length of 8 ft. of ascension

and dip pipe, interposed between the retort and the hydraulic main, reduced the average temperature within the latter 36°. The deposit of pitch then ceased, and no further stoppages were experienced. There was little prospect of the intermittent process of carbonising by manual labour being superseded by a continuous system actuated by steam power. None of the suggestions with this aim had justified their adoption on a working scale. Even the modified advantage of substituting steam power for manual labour seemed difficult of realisation. Of this last, a thorough trial at Beckton had ended in its being for the present abandoned. The form of the condenser was immaterial so long as it was extensive enough, and did not separate the tar and liquor until the desired minimum temperature was reached. This should be near that of the atmosphere, even in the depth of winter, to avoid condensation of naphthaline and loss of illuminating power in distribution. Of exhausters, the best, known as "Beale's," had a rotary action. The washer and scrubber were next considered.

The purifiers should be capable of holding such a bulk of material that its interstices might contain a considerable volume of gas, and reduce the velocity with which the latter were passed in contact with it. The capacity should vary with the density of the purifying material.

Gasholders, with their tanks, were a portion of the plant which, next to retort-houses, figured most prominently in a company's capital account, and therefore afforded the engineer scope for the exercise of economy in construction. The holders should be telescopic, developing a double storage capacity for the single expense in tank. The proportion of the height of the holder to its diameter should be regulated by the maximum amount of pressure required, subject to the value of the ground occupied. At the same time a height in each lift of less than one-fifth of the diameter was undesirable. Gasholders might be light in weight without sacrifice to their efficiency. The iron sheeting need not be thicker than No. 12 Birmingham wire gauge, weighing 4·38 lb. per square foot. The pressure of the gas within assisted in maintaining their shape; and the sides needed little framing beyond good top and bottom rings, where the guide-rollers were attached, and a sufficient number of uprights to sustain the weight of the top sheets. No truss framing was required, as the sheeting might rest on a cheap scaffolding of wood when the holder was landed, and would be sufficiently sustained by the gas within when afloat. The author had frequently been inside gasholders inflated with air, and had noticed the trussing hanging from the distended sheeting of the top, being practically a burden instead of a support. However perfectly a roof-framing might be adjusted, when the holder was lifted by internal pressure, its members remained rigid while the sheeting stretched, and never again fitted the framing. At ordinary rates of iron, gasholders of the kind described could be constructed, for sizes below a capacity of 300,000 cubic feet, at about 13*l.* per 1,000 cubic feet; above that size the cost diminished with the increase of capacity, until at 2,000,000 cubic feet 8*l.* to 10*l.* per 1,000 cubic feet represented the cost. A holder for 2,350,000 cubic feet, which had a slight truss in the top, had been executed in 1866 for the Commercial Gas Company at so low a rate as 5*l.* 13*s.* per 1,000 cubic feet. The external guide-framing should be strong enough to sustain the inflated holder, even under the influence of a hurricane. At the same time, the constituent metal could be disposed in forms developing, far more than was commonly seen, the strength due to the weight of iron composing its members. The author had been impressed by the elegance and general fitness of the form to the purpose, exhibited by the guide-framings of the original gasholders, at the Bow-common station of the Chartered Gas Company, designed by Mr. Croll, C.E. Gasholder tanks had usually, where soil permitted, been built of either brickwork or masonry, well puddled round the walls and over the bottom. Portland-cement concrete, in some cases without puddle, had been adopted lately, notably by Mr. Livesey, C.E. Brick tanks, puddled, ordinarily cost 6*l.* 10*s.* per 1,000 cubic feet of capacity of the telescoped holder fitted in them, though the cost of the tank for the Commercial Company's holder was as low as 5*l.* 5*s.* per 1,000 cubic feet. A concrete tank constructed by Mr. Livesey had been completed at a saving of 2*l.* 11*s.* per 1,000 cubic feet, as compared with a brick tank of the same capacity.

As an argument for the importance of cheap construction, it was pointed out, that the maximum demand for gas extended only for about three weeks in the year, falling at midsummer by as much as two-thirds. The anomalous and varying rates at which gas was sold, not only throughout the country, but even within the limits of London, was explained by the varying proportions between the quantity of gas manufactured in each case and the amount of capital employed. The difference in the charge to the consumer was absorbed in meeting the higher charge for dividend which the company with the larger proportion of capital required. This difference no concentration or amalgamation could overcome; and the lesson taught to the engineer should be the importance of endeavouring, as far as in him lay, to develop the highest efficiency from the works with the lowest expenditure of capital.

OF WATER-PIPES BURSTING WITH FROST.

IT invariably happens at this season of the year that we are inundated with complaints from correspondents of all ranks and classes about the damage done to property by water-pipes bursting, and boilers exploding, in consequence of the severe frost. We have frequently explained the phenomena and their surrounding circumstances; and have also repeatedly pointed out the proper remedies; but the subject seems to be one of those which needs perpetual repetition—like the warnings we are constantly uttering with respect to gas explosions, or death down an old well.

Although the frosty weather has disappeared for the present under the influence of the gulf stream, yet we are not absolutely certain that this high temperature will continue; and, at all events, the lesson we have to teach is worth remembering even although another year should pass by before it can receive a practical application. At all events, a good story of this kind is none the worse for being twice told.

The physical cause of a water-pipe bursting during frost is, or at least ought to be, well known, for it is simple enough. Water which turns into ice, or freezes at the temperature of 32° Fahrenheit, expands about one-fifth part of its volume. Freezing is, in point of fact, just a process of crystallisation—a process which the sugar-refiners of these latter days well understand to their profit. Expansion immediately bursts the water-pipe, and it is of no consequence whatever of what the material may be composed. Lead, tin, copper, iron, steel, even an Armstrong gun (properly plugged) must yield to this irresistible force, which is destined by nature, as all geologists know, to remove mountains; and, as all builders know, to destroy work.

Keeping these principles in view the question arises how are we to prevent this action of frost on this specific point? Stronger pipes are out of the question, for it is impossible to resist the pressure directly. Can we not, then, by some method evade it or diminish it indirectly? The answer is, to some extent, we can. In the first place, we can diminish the heat-conducting power of the metal tube by encasing it with cloth, rope-yarn, sawdust, charcoal, or any similar non-conducting material, which acts on the principle of delaying for a time the action of the low temperature on the water-pipe. In the second place, we can insert in exposed situations in the lead or iron pipe, an interior tube of vulcanised india-rubber, which is still elastic, or in this case resilient at a much lower temperature even than zero, and which yields accordingly to the process of expansion. We believe that both of these methods have been tried with success in various parts of this country; but, we must add, with partial success only; and they have been found totally ineffective in climates like Upper Canada and the Northern States, where (as the late Professor Agassiz once jocularly remarked) the temperature is low enough to freeze hydrogen. The truth is, that no process of confining water under such condition as a severe frost will prevent its destructive power, under almost any circumstances.

The best and surest method, therefore,—the only ultimate and effectual method,—of preventing water-pipes from bursting with the action of frost, is to keep them empty during its continuance. It is no disgrace to retreat before a superior force, either in the arts of construction or in the art of war! And the simplest method of effecting this is to provide an ordinary stop-cock at the basement floor, with a small tap immediately above it—the former to shut off the water, the latter to empty the pipes. Several ingenious inventions of a self-acting nature have been made to this purpose, although we do not remember any of them to have been brought into practical use. But the real fact of the matter is that a good architect should not permit the possibility of his water-pipes bursting. There are parts of the wall in every house which never by any possibility can sink to the temperature of 32°—close to a hot-air flue, for example, or to the kitchen chimney; and that is the proper quarter to carry up the supply-pipe of the cistern. A special provision may be made sometimes in the shape of a well, running from basement-floor to attics, in which the whole water-pipes, waste-pipes, and soil-pipes are fixed, easily accessible, and so protected from the external air and the action of frost.

This should especially be the case where hot water-pipes are concerned, which are connected with our modern kitchen ranges, and from which so many (sometimes fatal) accidents constantly arise.

WALLASEY SOCIAL CLUB AND CONCERT HALL.

THIS new club and concert hall erected in Manor-road, Liscard, has been opened by Mrs. James Harrison, wife of the chairman of the company by which it has been erected.

The building is situated in a central position in the parish, a few hundred yards from the village of Liscard, in the direction of the river. The principal entrance is from Manor-road, opening into a large recessed porch, on either side of which are the entrances to the billiard-rooms. These rooms have four tables (two in each) and benches on raised platforms around, with windows on two sides; and, being warmed by hot water, well ventilated, and fitted up with every regard to comfort and completeness, they will no doubt prove an attractive feature in the club scheme. At the back of these rooms are on one side of the central corridor the chess-room and the refreshment-bar, and the other the library, each 32 ft. by 15 ft., the bar being fitted up with the usual appliances, including a double lift from the kitchen below. The central corridor is 10 ft. wide and 40 ft. long, and leads to the staircase-hall, which is 16 ft. 6 in. wide, on either side of which are the committee-rooms, each 27 ft. 6 in. by 15 ft. The staircase consists of three easy flights up to a broad landing, in the centre of which is the principal entrance to the concert-hall. There are also two ante-rooms from this landing, with folding-doors, and larger folding-doors opening direct into the hall. The hall is 75 ft. by 45 ft., with the addition of an apsidal recess 18 ft. wide at the east end for the orchestra. The height in the centre is 36 ft. The roof is of open pitch-pine timbers, stained and varnished. The room is lighted by six corona gaseliers, warmed by hot water, and ventilated into two large extraction-flues at the back. The exterior, built entirely of the grey bricks made on the ground, and relieved by red pressed moulded bricks and stone. The style adopted is free Italian, the treatment being bold. The architect is Mr. G. E. Grayson, of Liverpool, the work being carried out by Mr. James Ridehalgh, of Liscard, who commenced operations only ten months since. The cost of the building, we believe, has been about 4,000*l.*, exclusive of the land. At the rear there is a piece of land, enclosed, which will be laid out for bowling, croquet, quoiting, and other out-door recreations.

Fire in Eynsham Parish Church.—Much alarm was caused here on Sunday last, about three o'clock, just as the congregation were assembling for Divine worship, by the discovery that the east end of the roof of the south aisle of the church was on fire. Fortunately the service was in the afternoon; had it been, as usual, in the evening, the fire would, in all probability, have remained undiscovered until it had made serious ravages, the roofs of the south aisle and nave being new and constructed of deal, covered with tar-felt. On examination it was found that the purlin was burnt through, and that the fire had extended for some distance under the slates. There being plenty of assistance at hand, all further danger was soon arrested, and the damage done is happily not great. The fire originated at the top of a chimney in the east wall of the aisle, connected with the stove.

DWELLINGS OF WORKPEOPLE IN SWEDEN.

THE manufacturing and artizan classes are estimated at about three per cent. of the entire population of Sweden. Much difference prevails with regard to their dwellings and mode of living. In the north, where timber abounds, the agricultural farmer who has settled in a district, and who owns part of the adjoining forest, will cut down whatever wood he requires for his houses, of which he often has several, and for his barns and cattle-sheds. These are then strongly run up by himself, or by hired carpenters, and while the dwelling-houses are inhabited during the summer months by himself and his family, it is not unusual for them to be closed during the long winter, and for him to betake himself to the cattle-sheds, where the necessity of keeping up fires to cook food for the cattle induces the peasant to partition off a dwelling-place. The barns and sheds being substantially built, such an arrangement is productive of a great saving of fuel, and, during deep snow and bad weather, of some other advantages. How it affects health we do not hear.

Here is the institution of the "Torpare," one which is peculiar to Sweden, and may be considered as the pioneer of cultivation in a country where a great portion of the soil is still in its primeval condition. In order that large proprietors may be able to count upon a certain number of workmen every year sufficient to till their ground, they make use of a portion of their land hitherto uncultivated whereupon to establish small farms, called "torp." A "torp" consists of a space of ground more or less extensive, upon which the proprietor has raised the necessary buildings, and which, under certain conditions, is allotted for the use of a workman "torpare," who, in consideration of this, and without further wages, is bound to work for a certain number of days per week on the property of the master, in proportion to the greater or less value of his "torp,"—most frequently one to three days per week. Besides this, he is often bound to execute other service, such as manufacturing carts, spinning a certain quantity of flax, clearing wood, and other duties depending upon the district and its customs. The proprietor, on his side, is bound to keep the "torp" in good repair, furnish the occupier with fuel, and pasturage for cattle, and allow him the use of his beasts of draught, in case he possesses none of his own.

In the southern districts, where wood is comparatively scarce, as in Skania, the peasant was, until lately, compelled to build his house of a framework of timber, and to fill this in with clay,—a labour in which he was assisted by his friends and neighbours, who were called together for the purpose, he, of course, rendering the same service to them when required. Of late years, however, bricks have been introduced in many places, and are now used instead of clay.

Almost every mine smelting-house or factory of any size has houses specially built as dwellings for the workmen. These are usually the property of the heads of the establishment, and are distinguished for their neatness, and the care with which each little piece of garden-ground is cultivated. These cottages are built of wood, and generally lodge one or two families. Such an arrangement has been thought preferable to having large barrack-like houses accommodating many persons in a small space, both on moral and sanitary grounds.

At Nankoping, one of the largest manufacturing towns in Sweden, detached cottages being too expensive to build, the workmen are lodged in the barrack style. The house consists of a basement and first floor, besides an attic. It contains twenty-four lodgings for married workmen. Each of these comprises one fair-sized room and a still larger kitchen, besides a spare room, while spacious cellars serve to keep fuel and provisions. The twenty-four lodgings are separated in such a manner that only two persons use the same entrance-door, one being on the ground-floor and the other on that above. The attics contain four large rooms for unmarried workmen, and a reading-room and anterooms. The court in front of the house is divided into allotments for the cultivation of flowers. Two adjoining houses are set apart for the bakery and other offices. The library, or reading-room, contains many sources of information; instructive books, newspapers, and geographical maps. A great inducement to a workman to practise thriftiness is the hope of one day becoming the actual possessor of the house in which he lives, as well as the plot of ground attached to it, which he may leave to his children at his death. Part of the labourers' homes built by the Fahleur Company are let at a cheap rate to their workmen, while the rest are the *bonâ fide* property of their occupiers, who have purchased them by easy instalments allowed them by the company. Those at Gefle, which possess in addition a piece of land, are sold to the workmen at cost price, varying from 110*l.* to 170*l.* apiece. A part of the price is paid at certain periods, so fixed as to be as accommodating as possible to the purchaser, while the remainder is mortgaged on the property sold.

Gothenburg is, however, the town in Sweden where most pains have been taken, and most capital expended, in providing comfortable lodgings for the working classes. The Commune of the town has subscribed capital and given land for the purpose, and one of the results is a block of ten wooden houses, constructed of one story only, costing nearly 3,000*l.*, and containing seven sets of lodgings of two rooms and a kitchen, 26 of one room and kitchen, and 14 of single rooms furnished with an economical stove. The rents of these lodgings vary from 5s. to 12s. 7d. per month, according to accommodation. The revenue of the whole reaches about 230*l.* per annum. They are inhabited by 118 persons, besides 38 children under 12, whose condition may be understood from the fact of their paying insurance upon 1,561*l.* worth of movable property in their rooms. Such, then, are the dwellings of skilled workmen in Gothenburg, and in other towns where the lodging-house system exists.

In Stockholm the poorer classes of workmen often sleep several in one room, but this chiefly applies to day labourers and those who cannot depend upon a weekly salary. The artizans when unmarried occupy one room apiece, for which some pay as little as four rix-dollars (4s. 6d.) per month; but in this case the landlord or letter of the room sleeps in a small closet of it during the night and makes use of his lodger's room while he is absent during the day. The generality of the rooms are low, and not very well ventilated, especially in winter, when, owing to the cold, double windows are used, the inner ones being pasted up so as to exclude all the air. One pane is often made to open, but this is frequently not the case, and all ventilation will then depend upon the slight draught between the door and stove. The average dimensions of the rooms in the model lodgings are 16 ft. by 18 ft., and 11 ft. high.

The house-rent paid in Stockholm by artizans and workpeople averages from 6*l.* to 14*l.* per annum, according to their means and the requirements of their families. The higher sums are paid for two or more rooms and a kitchen, generally occupied by skilled workmen, who can earn 90*l.* to 100*l.* a year. The ordinary class of men, generally single, whose earnings do not surpass 50*l.* to 60*l.*, content themselves with one room and a kitchen, or even with one room alone. The cost of their food, clothing, and other necessaries may, perhaps, be double that of lodgings, so that an industrious and careful man may always save one-third of his year's wages. In a country lying between such widely separated parallels of latitude as Sweden, the mode of living of the industrial population must of necessity differ greatly in the southern provinces from that which prevails in the far north, articles of food and consumption changing their character, according to the requirements of the climate and the productive power of the soil. Thus, in Skania and the districts of Culmar and Gothenburg, the agricultural population subsist chiefly on potatoes, rye, oats, and barley, beans and peas being cultivated on the north sea-board. Salt herrings are much used, but meat is seldom seen, and then consists of smoked pork, as the farmers generally are breeders of pigs. Oatmeal cakes are baked, and the other food being wrapped up in them the whole forms a tolerably palatable meal. In the far north, however, this is modified. For there barley is the only cereal available, everything else having to be transported thither. Potatoes are grown, and salt fish is stored up for winter consumption, and milk is to be found everywhere, and in many districts in great abundance.

These remarks apply equally to the mining population, who, with the smelters of ore, are generally lodged by their employers, and receive a large proportion of their wages in the shape of the necessaries of life. These are supplied to them at prices which have been previously agreed upon, and any considerable fluctuations in their market value are equalised by a relative increase or diminution of wages paid to the men.

The day's work is considered to cover thirteen hours, from six a.m. to eight a.m., or from five a.m. to seven p.m.; the latter in the case of smiths and rough workers in metal, one hour being allowed in the middle of the day for dinner.

In towns, meat, vegetables, and bread are to be had at a tolerably cheap rate, and, taken altogether, the artizan may be said to live very comfortably.

THE USE AND ABUSE OF TOOLS.

AN OVERLOOKED CHAPTER.

THE remarks that follow are applicable to the execution of workmanship in all branches of handicraft; but considering the medium through which they appear they are more particularly confined to building operations. There is an old saying still current among workmen,—"A good tool is half the work." Without accepting it in its literal sense, it must be acknowledged at the same time that good tools, presupposing good workmen handle them, considerably expedite the execution of work, as well as add to its more clean and artistic finish. Numerous volumes have been published within this last century and a half on constructive carpentry, joinery, and masonry, but in one and all there is an almost complete absence of advice as regards tools. Within these last few years some very good volumes have been issued affording sound scientific and practical instruction in the application of geometry to the development of forms and surfaces in building construction, affording the intelligent mechanic a more clear insight to the nature of his work, and opening readier methods to its execution. We may instance the works of one or two authors which have been noticed in these pages. Mr. E. Wyndham Tarn's "Practical Geometry for the Architect, Engineer, Surveyor, and Mechanic"; and his lately published work on "Carpentry and Joinery," are both excellent volumes,—the latter containing an account of various operations of the joiners, with an explanation of several technical terms used in the preparation of work. Volumes of a different nature, and most commendable of their kind, are those of Mr. Robert Riddell on "Carpentry, Joinery, and Stair-building." Neither of these authors has devoted a chapter to tools, though a large amount of information might be conveyed in connexion. In some books and so-called manuals prepared for publishers by men unconnected with any branch of the architectural or building profession, there have been engravings given of workmen's tools, and the operations performed have been attempted to be described; but of practical information regarding the handling, the adjustment, or keeping in order of tools, or the duty of workmen or masters in relation, there has not been a word. Every one who learns a branch of trade is supposed to know how to use the tools or instruments appertaining. In a builder's, cabinetmaker's, or coachmaker's workshop one of the first things the boy apprentice is put to do is perhaps to boil the glue, or turn the grinding-stone. The latter operation is at present performed in many shops by steam where there are wood-working machines, but in the majority of builders' yards in town or country the younger apprentice has the monopoly of the grinding-stone. This is ironically called "doing the circular work" by the older hands, and it is a species of labour not at all relished by the raw recruit. It may be laid down as a maxim that good workmanship cannot be executed with bad tools, no matter how skilful the workman may be. The experienced eye will discover the defect, and if it can be hidden from observation it will be only when much time and labour are sacrificed that might have been saved had the workman's tools been in proper order. Of course, if the workman is an inferior hand, or what is commonly known as a "botch," the best manufactured plane or other instrument, or the most finely-tempered or keen steel, will avail him not. There is an art or a taste essential in keeping the instruments of one's craft in working order, and the young workman that is careless of the condition of his tools can have no love for his work, and it may be asserted it will do him no credit. If a joiner or cabinet-

maker requires to make a glue-joint the plane known as the "jointer" is the proper tool to use, though the trying-plane may be pressed into service where the joints intended are short. Indeed, in many builders' workshops the trying-plane is utilised more often than the jointer. Although good joints may be and are made by good workmen by the ordinary trying plane, it needs that the mouth of the plane should be close and the plane-irons well ground and set. A trying-plane being nearly in as constant use as a jack-plane, cannot maintain for any considerable time on account of its wear and tear, the degree of excellence necessary for jointing purposes. A jointer or jointers should, therefore, be provided, and their use insisted upon in all requisite work. It was formerly customary, and is still customary in many builders' and cabinet-makers' workshops, that the masters should provide the jointers, as they provided the moulding-planes and sash-planes and other tools not generally known as bench tools, or carried in the journeyman's basket. The introduction of wood-working machinery in large building yards in cities and towns renders the purchase of moulding-planes, mortise-chisels, sash-planes, and a few other hand tools, less necessary than formerly on the part of workmen or masters. There are hundreds of workmen in town and country at the present time who do not know how to grind their plane-irons, chisels, or gouges, or properly sharpen their hand-saw or tenon-saws. The saw-sharpener has become a separate branch, and workmen have long been in the habit of leaving or sending their tools to the tool-makers, or rather tool-sellers, to have them set and sharpened, or hammered when they are "buckled" by bad usage, or from other causes. A good grinding-stone is an absolute necessity in a builder's yard, and it is the duty of builders to provide it, as it saves time and facilitates the execution of work.

Plane-irons, chisels, and gouges for joinery work need a good bevel, long and flat, and not round or carved in the centre. If they become much round in the length of their bevel, they cease to cut or work with ease. Careless or lazy workmen will often continue to use the whet or oil-stone for days after the grinding-stone has become absolutely necessary. The usual result of such negligence is that the tools used take longer to do the work required, and do it badly, or, translated in other words, the workman murders time, and often murders the employer's stuff or materials into the bargain. This is bad enough, without taking into account the workman's own bad temper, engendered as the consequences of his folly, which no amount of cursing his tools will rectify. With tools neatly kept in order, a skilled workman will always perform good work. The roughest tool in the workshop, if kept to its allotted work, and kept in order, will facilitate the operations of other tools that follow in its wake. The jack-plane is the greatest slave of the joiner's bench, yet it needs to be a competent tool for its work, and not, as too often, treated as if it were essentially a hack. It should have the same care bestowed on its keep as the more ambitious trying-plane, that traverses its work. If the jack is in bad condition, the more trying will be the labour of the other, and the labour of the workman to boot. Planes used in the working of soft woods, such as pine and deal, are not exactly fitted for hard woods. The cutting-iron ought to be more upright in planes used on hard woods, such as mahogany and oak. Cabinet-makers know this, so their plane-irons are placed on a less rake than in carpenters' and joiners' planes. When joiners work on oak or hard woods, it becomes necessary for them to adjust the cap-iron on the cutting-tool closer to the sharpened edge. In the finishing of very feathery hard vein wood, the position of the plane-irons may be advantageously reversed. Much might be written on the choice of workmen's tools, the proper make of tools, the materials of tools, and the artistic and workmanlike manner of handling or using tools. It is not our intention at present to enter into details on these points. Our object was to direct attention to a want, and give a few illustrations of the use and abuse of workmen's tools by workmen themselves. We quoted one adage at the commencement of our remarks; we will end with the application of another. "Show me your companions, and I will tell you what you are." The relevancy of the saying to our subject is unquestionable. Show us a workman's tools, and we will read you his character, and the style of his workmanship.

HOLLAR, THE ENGRAVER, IN SAVILE-ROW.

THE Burlington Fine Art Club, in pursuance of a capital system adopted by them, have brought together in their rooms, with the aid of Messrs. S. Addington, F. Seymour Haden, the Rev. James J. Heywood, A. Morrison, and R. P. Roupell, Q.C., 136 plates, topographical, architectural, portraits, and illustrations of natural history, by Wenceslaus Hollar, which will enable those who have not before studied his productions, to see what a remarkable artist he was. A catalogue of the selection is published with a sketch of his life prefixed. It was not a successful life, in the ordinary acceptation of the word. Born at Prague, in 1607, he studied for the law until the troubles that came upon Bohemia drove him from it, and allowed him to take up art as a profession, which was more to his mind. We find him successively at Frankfort, Strasburg, Cologne, and then at Lintz with Thomas Earl of Arundel, who brought him to London, where he became known at Court, and taught drawing to the prince who became King Charles II. He afterwards married, and then came the civil war, which forced him to Basing-house, during the siege of which he was taken prisoner. Obtaining release by some means, he passed over to Antwerp, and again joined Lord Arundel, who, however, soon after died, and Hollar worked for the Antwerp publishers, with small money result to himself. Soon we hear of him in London again, where the English publishers, according to all accounts, treated him even worse than those of Antwerp. The Restoration did little for him; the Great Plague of 1665 carried off his son and stopped the sale of his works, and, his first wife being dead, he must needs marry again, in the midst of his distress, one who had apparently no money to help him out of it. He went to Tangier for the king to make drafts of the town, and, on his voyage home, narrowly escaped capture by Algerine men-of-war. We may not further particularise, though the story draws us on. He again got to work for the booksellers, died in Gardiner-street, Westminster, and in the parish register of St. Margaret's will be found this entry, "Wenceslaus Hollar, buried 28 March, 1677." He executed in all, for the pleasure and information of the world, 2,740 plates, and in his last illness he implored the bailiffs, who were then in the house, not to take away the bed on which he lay until after his death. We agree with the writer of the memoir prefixed to the catalogue that there would be something affecting in the contemplation of a life thus passed in unremunerative labour, if the very fact of its being unremunerative did not suggest that with Hollar the incentive to exertion was not so much gain as the love of his art—if we might not with good reason hope that he found his reward and forgot his troubles in the pleasure arising from the constant exercise of his art. "If we consider the difficulties under which, from first to last, his work was carried on, the vicissitudes and hardships that everywhere attended him, we may well wonder at and respect the spirit and mental elasticity which sustained him throughout, and animated him in his range of subjects, and the freshness of his treatment of those subjects."

NEW PUBLIC BUILDINGS AT HARROW, AND HARROW SCHOOL.

WE had occasion not long ago to refer to the activity which is evident at Harrow, and to speak of the commencement and completion of various new buildings. Two of these we illustrate in our present issue.

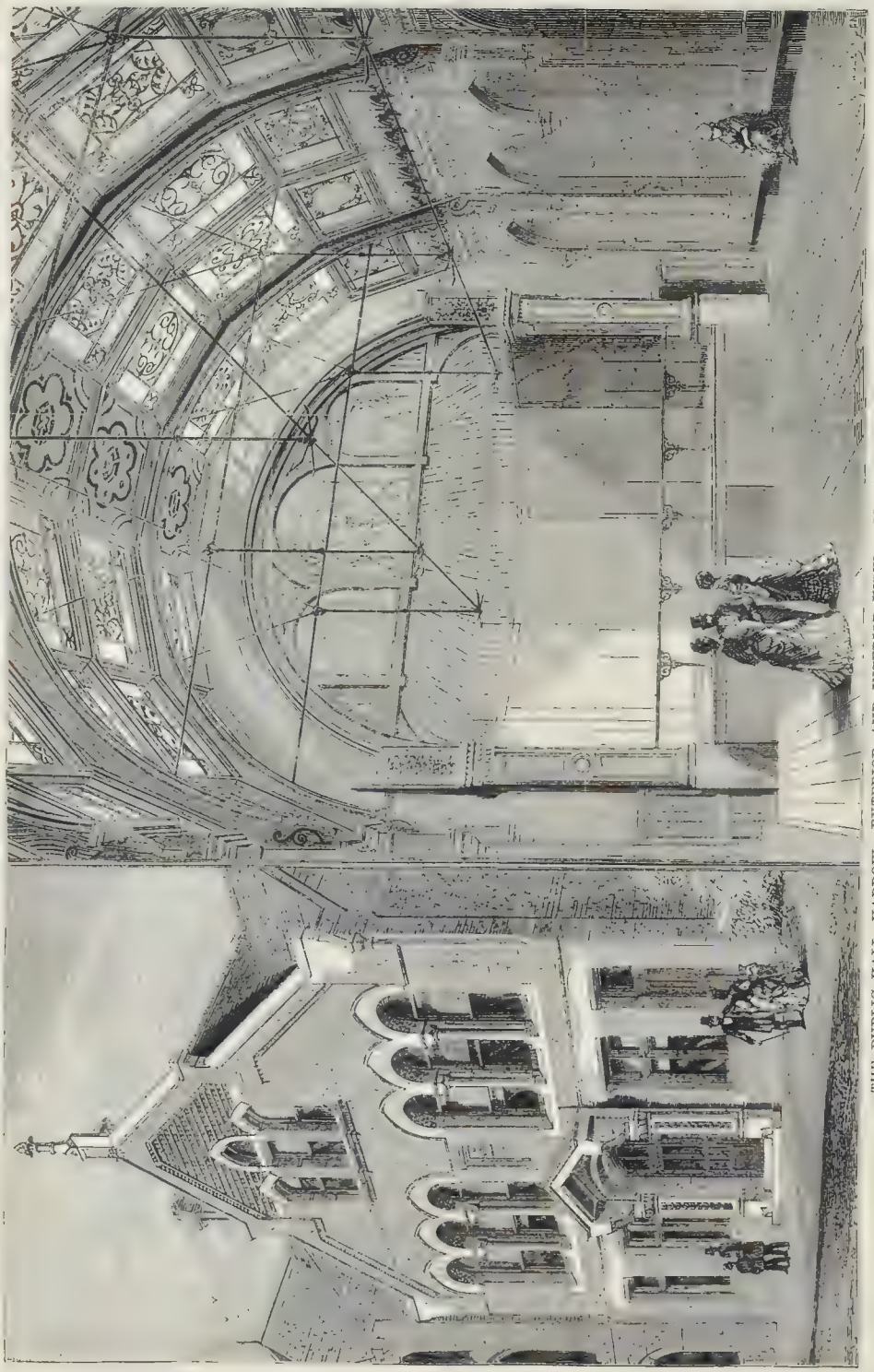
Gymnasium and Workshops, Harrow School.—The Harrow School Tercentenary Fund was raised in 1872, to commemorate the foundation of the school by John Lyon, and one of the immediate results has been the erection of a gymnasium, by Mr. C. F. Hayward, F.S.A., architect, who is also engaged in the building,—now near completion,—of the Natural Science Schools and Laboratories, another of the fruits of this fund. The Gymnasium, which was opened last summer, has also a large series of workshops on the floor beneath, intended for the recreation of the boys, and for their study in practical mechanics, though not yet in actual use. Our view shows the interior of the gymnasium, looking towards the gallery, which is available for fencing and other classes, and not only for spectators.

There was a goodly gathering the other day, and a most creditable display of skill for the first six months' use and instruction, under Captain Risk, the instructor, and we congratulate Dr. Butler, the energetic head-master of Harrow, on this addition to the school. Albeit, we consider the new Scientific Buildings not the less needed.

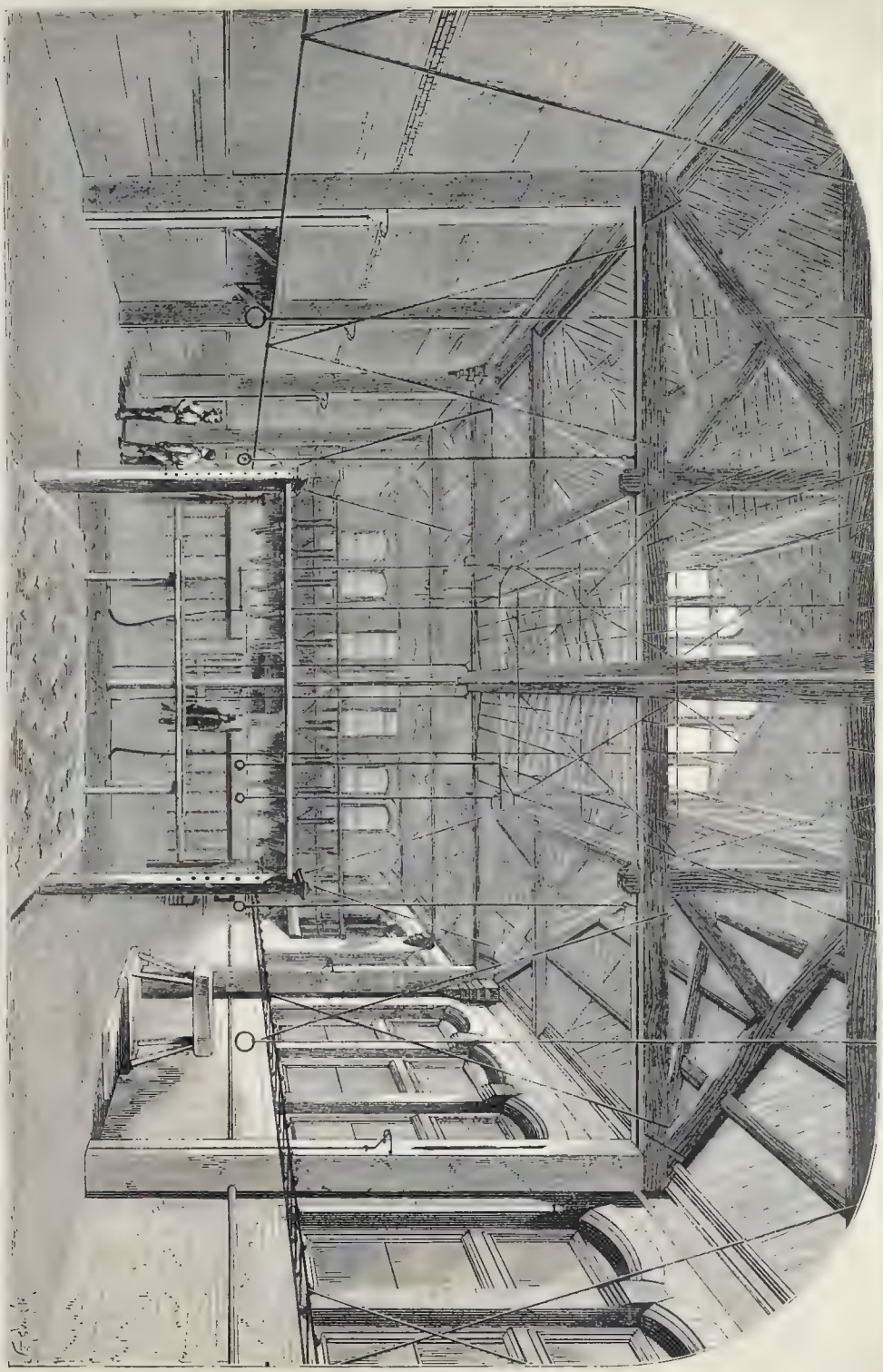
The exterior dimensions of the Gymnasium, (which adjoins the raquet-courts), are 78 ft. long and 44 ft. wide, giving an interior main floor of 63 ft. 8 in. by 42 ft., with a height of 23 ft. up to the eaves, and about 40 ft. to the lantern top, which is kept somewhat lower than originally intended, to avoid interfering with the famous view from the school-yard at the top of the hill. There are masters' rooms and dressing-rooms, and other conveniences right and left of the entrance, and below. The timbers and woodwork throughout are made specially strong, and the flooring is 2 in. thick, to allow of the great strain and wear and tear likely to come upon it. The contract price, without fittings, was about 2,550*l.* The building is well lighted by windows from one side, at each end, and from the lantern at top; also by gas on each pier. It is warmed by Bacon & Co.'s hot-water apparatus, and by open fires. There are several lengths of hose attached to the cistern for use in case of fire, though the supply of water, we fear, is more likely to be wanting than to be abundant when wanted. The contractors were Messrs. Lander (mason) and Kindell (carpenter), of Harrow. The walls generally are of stock bricks, with some red and yellow courses. Ventilation is secured by a series of openings beneath each window-sill, closed by a flap and handle, and the windows are all made to open easily by long iron lever handles.

The site was given by the governors of the school, but being on a steep slope, and on stiff clay, great care was necessary in putting in the foundations, especially as a series of buildings stood on the slope of the hill immediately above. All this, however, has now happily been accomplished without accident.

The Public Hall in Harrow.—This structure, of which we give illustrations, has been built by a local limited company. For many years something of the sort has been required; more than one attempt has been made to erect a building, and the present is but a modification of what was at first intended. It has, however, so far proved a success. Opening in April with overflowing rooms, and a series of specially good amateur theatrical performances, the accommodation, which was half expected to be too great, has proved rather the reverse. Owing to the impossibility of getting side-windows, the roof had to be designed for glazing, and the inner ceiling of glass is made sufficiently ornamental to be in itself a decoration by day, and when lighted up at night. The front towards the street contains a cloak-room on one side, and a staircase going out of a central lobby on the other. Over this, on the first floor, is a room 25 ft. 5 in. by 17 ft. 6 in., with a balcony opening into the hall, or closed from it by a sliding partition. This room is available for vestry, local board, and other meetings of the kind. On the floor above are caretaker's rooms, &c. The hall itself is 56 ft. by 37 ft., and 24 ft. to cornice, with a total height to top of glass ceiling of 36½ ft. The orchestra or stage is 16 ft. deep by 26 ft. wide. It is inclosed by sloping sides, and roof of wood, all in separate pieces hinged, or hung in such a way as to be easily shifted to give more clear space. The effect of this is to make the building equally successful acoustically for a single speaker, and for a chorus, for a solo, as for a body of instrumental music. And this notwithstanding the large quantity of glass in the ceiling, and the thick external glazing of the roof. The space between these two glazed surfaces is available for ventilation; and excesses of temperature are prevented by one of Howorth's screw ventilators on the ridge. Connected with the orchestra are several small retiring-rooms, and space is left for the erection of a "green-room" at the back when circumstances warrant the expenditure. The gas-lighting is by two rows of single jets longitudinally, with star lights at intervals, which can be used together or separately, and of course footlights, when required, for the stage. The gasfittings were executed by Mr. Chapman, of Harrow; and the works generally were carried out by Mr. Lander, mason, and Mr. Kindell, carpenter, of Harrow. Mr. C. F. Hayward was the architect here also, and the total cost was just above 3,000*l.*



THE PUBLIC HALL, HARROW: EXTERIOR AND INTERIOR VIEW.—Mr. C. F. Hayward, Architect.



GYMNASIUM AND WORKSHOPS, HARROW SCHOOL.—MR. C. F. HAYWARD, F.S.A., ARCHITECT.

THE NEW GARDENS ON THE THAMES EMBANKMENT.

THE conversion of the land in front of the Thames Embankment, running parallel with the embankment between Whitehall-place and Whitehall-gardens, into an ornamental garden, similar to that between Hangerford and Waterloo, is now in active progress, and it is fully expected that the work will be completed and the gardens opened to the public not later than the beginning of May next. That portion of the land on the west side, in the direction of Whitehall, which the Crown reserved when the final arrangement was made with the Metropolitan Board of Works, has been partitioned off, and the area immediately in front, consisting of a little more than three acres, and now under the control of the Metropolitan Board, is undergoing the necessary garden transformation. In order effectually to carry out the conversion, and render the space suitable for ornamental garden purposes, it was found necessary to bring upon the land a large quantity of maiden soil and manure, and no less than 4,000 cubic yards of these materials have been carted from the neighbourhood of Haverstock-hill, and laid upon the land in the process of levelling. In carrying out the works the small plot of land at the north end, surrounding the statue of Sir James Outram, and which had already been laid out, has been broken up, in order to admit of the entire area being uniformly laid out and arranged. The several walks and footpaths have already been formed, with the exception of the gravelled and asphalte surface, and the drainage is now in progress. A walk 16 ft. in width is carried the entire length of the ground, both on east and west sides, and from these several other walks are carried across the area at right angles, whilst others are circular in form. There are three circular mounds, and two of oblong form, portions of which will be planted with flowers and shrubs, and the remaining parts will be turfed over. There will be four entrances to the gardens, three being on the embankment, and the fourth at the north-west angle in Whitehall-place.

The contractor for the laying out of the grounds is Mr. Weston, the ornamental railings inclosing them are by Messrs. Cottam & Co., of the Oxford-street Ironworks, and the whole is being carried out under the superintendence of Mr. Valliamy, architect to the Metropolitan Board of Works.

We understand that the Crown has undertaken to erect an ornamental wall at the western boundary of the gardens.

THE NEW CAPITOL AT HARTFORD, CONNECTICUT, UNITED STATES.

THE style of architecture adopted for this building is secular Gothic, with a dome on a lofty drum, or tower, which is the commanding feature of the building. The height of the drum, or tower, from the top of the roof to the spring of the dome, is 75 ft. The dome itself is 32 ft. high, the lantern, above, 55 ft., which, added to the 18 ft. for the roof, gives the height above the front wall of 180 ft. The length of the building is 300 ft., and the width 200 ft., while the dome is 53 ft. in diameter at the base, and richly adorned with arcades, columns, galleries, &c., and will be built of white marble, of which the greater part of the building is to be constructed, while grey and red granite will be used for columns. The dome is twelve-sided, having at each terminal a figure carrying the arms of one of the original thirteen States, while the figure for Connecticut surmounts the cupola and holds the original charter of the State. The representatives' hall, which is the central building of the south front, is lighted on three sides, and is supported on an arcade of polished granite columns with carved granite caps. The tympani of the arches are to be filled with sculpture illustrative of the history of Connecticut. There will also be subjects to show the founding of the colonies, and their struggles and success in achieving their independence. The extreme height of the building, including the dome, is 250 ft.

At first the Legislature appropriated half a million of dollars for the building, provided the city of Hartford would give an equal sum and furnish the site. Hartford accepted the proposition. A commission of able and respected citizens was appointed to construct the building. Feeling that they were restricted to a million of dollars, the commissioners contracted for a building on Mr. Upjohn's plan, for $875,000, reserving the sum of $125,000 for architects' fees, superintendence, and contingencies. But this money was quite inadequate in the construction of such a building as the State really wanted. The investigation of a capable committee, during the last session, and the debates in the general Assembly, showed that the representatives of the people desired certain changes, and the sum of $1,500,000 is now appropriated to it. The American *Manufacturer and Builder* gives a view of the building.

AS TO LIGHTNING CONDUCTORS.

A PAPER by M. Melsens, member of the Belgian Academy, translation of which is given in the Society of Arts Journal, is worth the consideration of those interested in the subject. The writer says, the Halles Centrales, Brussels, consist of two large naves, 160 mètres (525 ft.) long, supported by sixty cast-iron columns, on which rest the main girders. The wings are united to these interior columns by wrought-iron arches, with 116 columns, the spaces being filled in with masonry, thus forming the outer walls. All the columns reach down into the basement, which consists of two vaults, communicating one with another, and provided with gratings over the whole surface. Each column carries the iron joists which sustain the arched masonry of the ground-floor. There is, therefore, quite a network of joists and girders connected, metal to metal, with the rest of the iron-work of the building, and with the gratings above mentioned. Each of the columns rests on a strong limestone flag, bedded on a square masonry foundation, which in turn rests on a layer of concrete laid on the natural surface of the soil, the space between the concrete and the brick floor of the basement being filled in with earth. On the ground-floor, as well as on the basement, a large number of cast-iron waste-water, gas, and water pipes complete this extensive metallic network. The whole quantity of wrought and cast iron is about 2,460 tons in weight, all the different portions being connected by more than 100,000 bolts and nuts; there are probably, therefore, as many points of contact. It must be admitted that an edifice would be protected from lightning if the iron of the ridge were continued without break to the earth. If, then, in the case of the Halles Centrales the whole is in perfect metallic contact, and if, besides, the soil on which it rests is sufficiently damp to act as a good conductor of electricity, it may be said that the building constitutes a protecting conductor in the highest degree, and that a flash of lightning which might strike that conductor of unusual section would be dispersed by the numberless channels, or would traverse the whole network with the greatest facility. This fact was proved by (1) voltaic electricity from a battery, and (2) by magnetic electricity from electrical machines and a Rhumkoff's coil.

The author, with MM. Gibbs and Banneux, telegraphic engineers, conducted some experiments with a small Daniel battery of three cells, one pole of which they connected by a copper-wire rope of three strands to the iron ridge of the building, which pointed S.; the electric current then passed freely into a Siemens' rheostat and a galvanometer, or differential rheometer, such as is employed in connexion with telegraphs. The second wire rope, sufficiently long to reach the last column and the ridge on the opposite side, was connected with the other pole, and allowed the circuit to be made at will by touching any of the parts of the building. In the first place, the circuit was completed by placing the wire rope on the layer of asphalte on the market-floor, where there was no deflection: whence it follows that, to the buyers and sellers in the market, the floor is a complete insulator. On taking up some of the asphalte and making contact with the concrete of the vaults, the deflection rose to between 84° and 85°. In the vaults are several cast-iron frames, some provided with a grating, and others with a plate of rough glass. On placing the wire in contact with the iron frame, which is connected to the concrete and the back of the vault by a large surface, the deflection rose to 88°. The electric current can, therefore, pass almost freely in the girders, the columns, and the mortar of the vaults. If the circuit was completed by placing the second wire in contact with the columns of the nave, the outer columns, the gas-pipes, the wrought-iron in the galleries, the cast-iron waste-water spouts, or the columns which separate the two wings, or touching, without in any way changing the former arrangements, the same parts in the second gallery, columns, spouts, gallery, girders, &c., there was no alteration in the deflection of the galvanometer; this showed that there was no sensible resistance, for the instrument always stood at 90°, that is, with the needle at right angles to the current. These experiments were repeated in the vaults, and the deflection was always the same, viz., 90°; the case was also the same when contact was made in the street beyond the footway, in the mud near the manholes of the sewers.

The Halles Centrales are thus proved to constitute an excellent protecting conductor; but the question is, whether it is prudent to be content with this. The author is of opinion that it is not, and advises that the network conductor be completed near the soil, and that the ridge be supplied with a row of copper points, so as to transform the building into a lightning conductor both protecting and preventing. In order to make the communication with the soil thoroughly perfect, two wells of circular section should be dug, one in the middle of each of the wings. The sides should consist of a long column of cast iron, filled, if necessary, with sea sand rendered alkaline by weak lime-wash. The capital of this column should be in perfect contact, metal to metal, with the cast and wrought iron of the edifice, and with the water and gas pipes beyond the meters, which often contain lead pipes offering sufficient resistance to become melted in the case of strong discharges of electricity.

THE LATCHMERE ALLOTMENTS AT BATTERSEA AND THE METROPOLITAN BOARD'S GAS BILLS.

A PORTION of one of the Gas Bills promoted by the Metropolitan Board of Works is to be opposed by the local authorities and other inhabitants of Battersea. It appears that for several years past a large space of ground in Battersea has been vested in the hands of the churchwardens and overseers, and let as what have been known as the Latchmere Allotments, to the labourers and artizans of the neighbourhood, who have cultivated the same, the vegetable produce generally sufficing to last them during the winter. The Metropolitan Board of Works have introduced a clause into one of the Gas Bills which they are promoting in Parliament, giving them powers compulsorily to acquire this land for the purpose of erecting gasometers and other buildings upon it for the storage of gas. This has caused much dissatisfaction amongst the inhabitants, who consider that the site has been improperly selected, and that the absorption of the land for the erection of the proposed buildings would be a great hardship to the labourers and artizans who have occupied it for so many years.

The Battersea Vestry, amongst others, are taking steps to oppose this part of the Bill, and at a meeting of that body, held recently, a resolution was passed to the effect that the Metropolitan Board be asked to reconsider their decision, and to amend their Bill, that the privileges which the labourers had for so many years enjoyed might be preserved to them. It was also decided to bring the matter under the notice of the members for that division of the county, —the Attorney-General and Sir Henry Peek,— with the view of securing their support in opposition to the project.

The Metropolitan Board of Works propose to give a lump sum of 50*l.* to the tenants of the allotments, but this is deemed unsatisfactory.

THE EXPLOSION OF HOUSEHOLD BOILERS.

MR. LAVINGTON E. FLETCHER, chief engineer to the Manchester Steam Users' Association, writes as follows, on the subject of household boiler explosions:—

Few winters, if at all frosty, come round without bringing with them several of these explosions, which too frequently are attended with serious consequences. The cause of household boiler explosions is simple, and their prevention easy. They are not due to the thaw, but to the frost. They do not arise from a sudden generation of steam through the boiler being boiled dry during the frost, and then, when overheated, being subjected to the introduction of cold water on the occurrence of the thaw. To throw light

upon this subject, the Manchester Steam Users' Association instituted some experiments in the year 1867, making some household boilers red hot, and then injecting cold water, when no explosion resulted, though the experiment was repeated again and again. Household boilers on the circulating principle have, as a rule, two pipes connecting them to an overhead cistern. Through one of these pipes there is a down-current, and through the other an up-current. As long as these pipes are free they form two natural safety-valves, and no accumulation of pressure can occur. When, however, the thoroughfare through the pipes is choked, the conditions are altogether altered. Sometimes stop-taps are placed in the circulating-pipes, and these may be inadvertently closed. Under these circumstances, there being no outlet, the pressure within the boiler accumulates, and in a short time, with a brisk fire, generates an explosion. Such explosions may occur at any time of the year, whether winter or summer, and several have come under my notice. In frosty weather the circulating-pipes are apt to become choked with ice, which bottles up the pressure within the boiler just as securely as if the thoroughfare were cut off by means of stop-taps, when, as just stated, the pressure having no outlet, goes on accumulating till it bursts the boiler and leads to an explosion. The simple cause of household boiler explosions, therefore, is a gradual accumulation of pressure through stoppage of the outlets. To prevent this accumulation of pressure, all that is required is to fix a small reliable safety-valve to the boiler. Pending the fixing of a reliable safety-valve, it is desirable to open the hot and cold water taps in the circulating-pipes to see if the water runs freely. If it does not do so, the fire should not be lighted. The precaution of opening the taps is more especially necessary on re-lighting a fire after the boiler has been standing idle for a day or so. This suggestion, however, is not intended as a substitute for a safety-valve, but simply as an intermediate precaution. Where there are no taps for testing the freedom of the circulation, no fire can be lighted under a circulating boiler in frosty weather without great danger. In many cases the stoppage for a single night is sufficient to choke the outlets with ice.

THE MIDLAND COUNTIES IDIOT ASYLUM.

THE NEW BUILDING AT KNOWLE.

IN 1868 a committee resolved on the erection of an asylum at Knowle where imbeciles of the middle and upper class in life might be trained and educated. As a matter of consequence, they had to appeal strongly for public support. The promoters received an early offer of 1,000*l.* from an "Anonymous Friend." This offer was made on condition that 5,000*l.* were raised to complete the first wing of the building. At the commencement of 1872 arrangements were made for erecting a portion of the new Asylum at an estimated cost of between 4,000*l.* and 5,0 0*l.* The design of Messrs. Mathews & Quilter, of London, was accepted, and to that firm was awarded a premium of 100*l.*, offered for the best design by Mr. G. F. Muntz, of Umberslade. On the 2nd of May, 1872, the foundation-stone was laid by Lord Leigh.

The contract for the building was entrusted to Messrs. Clark & Smallwood, of Henley-in-Arden, and a short time since it was so far completed that the patients were removed there from Dorridge-grove. The contract price for the building of this,—which will only be a wing of the entire asylum when erected,—was 4,444*l.*, but with extras and other miscellaneous necessaries upwards of 6,000*l.* have been expended. The institution is situated about half a mile from Knowle Station, on the Rotten-row-road. It is a red brick building, having a frontage of over 220 ft., and in order to avoid the danger of the patients falling downstairs it is but two stories high. The rooms are all large, well ventilated, and heated with hot-water pipes. On the ground-floor there is a spacious and lofty dining-room, 18 ft. wide by 26 ft. long, the viands being passed through a sort of window from the adjacent kitchen. There are two large day-rooms, 37 ft. 6 in. by 19 ft. 9 in., in which there is ample room for the patients to recreate themselves. Besides kitchens, sculleries, &c., there are several private sitting-rooms, 12 ft. by 13 ft. At the extremity of the building, with every regard as to isolation, is the infirmary. This compartment is fitted with appliances in the shape of earth-closets, bath-rooms, &c. On the first-floor the rooms correspond with those on the ground-floor, but dormitories take the place of day-rooms, and instead of sitting-rooms day-rooms are substituted.

ENLARGEMENT OF THE FORESTERS' HALL.

THE new Foresters' Hall, in Wilderness-row, Clerkenwell, which has been built and opened within the last two years, has already been found not large enough for the purposes of the Order, and a new "grand hall" of large dimensions, together with lodge-rooms, and other apartments, are about to be added to the present building. In order to carry out this object a large plot of land, adjoining the existing structure, and the grounds of the Charterhouse, was recently purchased for the sum of 5,500*l.* The intention is to provide a hall to be used not only for the meetings of the Foresters themselves, but also for meetings, lectures, concerts, and other entertainments for the public generally. In carrying out the intended works the interior of the present building will be to a great extent reconstructed. The new hall will be of large dimensions, being 101 ft. in length, 62 ft. in width, and 50 ft. in height, and in addition to the body, will contain a lower and also an upper gallery, the area of the hall containing seating accommodation for an audience of 1,110, whilst the two galleries will hold 452 and 440 respectively, or a total of upwards of 2,000 persons. The body of the new hall will be approached from the level of the gallery of the existing hall, off the present octagon staircase, and also from a new entrance-hall on the ground-floor, by two staircases which land in the centre of each side of the body of the hall immediately under the galleries. The upper part of the present hall is to be taken down, and the space utilised for part of the new grand hall. The floor is to be removed, and the present basement or lower hall, and the lower part of the upper hall, will form what is called a minor hall of the same dimensions as the present hall.

On the ground-floor, on the left hand side of the new entrance-hall, there are two spacious lodge-rooms, each 31 ft. by 17 ft., together with two similar rooms in the basement, and attached to these several lodge-rooms are commodious waiting-rooms. At the further end of the new range of buildings it is intended to erect a large warehouse, which it is calculated will realise a rental of about 200*l.* per annum. The external features of the new structure will harmonise architecturally with the present building, and the extreme height, from the floor to the ridge of the roof, will be 76 feet.

The designs for the new building have been furnished by Mr. Frank Thicke, architect, and the estimated cost of the structure (exclusive of the land) is 11,200*l.*

STREET PAVEMENT.

SIR,—If modern civilisation owes Queen Semiramis little, it yet can scarcely escape the acknowledgment of a debt of gratitude to the great Babylonian empress for being the first to teach the nations how to make roads passable, and render communication easy. Since her time, and during the thirty-eight centuries and a half which have elapsed, the same important question has puzzled the municipal mind periodically in every country in Europe. It is true that there have been vast improvements in road-making in our own days, and railways, together with tramways, have contributed in no ordinary degree to the comfort and speed of travelling; nevertheless, the actual paving of many of our streets, over which the "million-footed pilgrims tread," is painfully imperfect, and reflects little credit on those to whom the duty has been from time to time entrusted, and who have had the example and success of the Assyrian monarch before their eyes. At the same time we must not forget that the Municipality of Babylon in the year 1965 before Christ, was in all probability saved the continual worry incidental to the laying and repairing of gas and water pipes and sewers; that, with the exception, perhaps, of an occasional ponderous obelisk dragged slowly from the Armenian mountains for the decoration of the city, there could have been comparatively little heavy or constant traffic to damage the streets; and that the injury occasioned by the little which existed must have been easy of repair, on account of the vast stores of bitumen ready at hand, with which, indeed, the great walls were cemented.

Although Cordova, in Spain, was paved after a fashion about the year 850; London at the end of the eleventh century; and Paris sometime during the thirteenth, with the exception of the last named, the result has been most unsatisfactory; and why? Simply because every known paving material has been extensively employed except the proper one, and because thrifty but obtuse vestrymen and others have failed to see that, subways or tunnels, containing the necessary drains and pipes easily accessible without a perpetual spasmodic disembowelling of the streets whenever repairs were required, would, in the end, prove the only true economy. In fact, it may be said that, so long as the primitive, mistaken, and absurd system prevails, even the best known style of surface paving must necessarily be pursued at a disadvantage.

But supposing that all our chief streets had already been tunnelled, after the fashion adopted under some of the principal thoroughfares in Paris, and that no further disturbance of the roadways need be apprehended, the paving substance itself would remain to be settled, with a view to economy, durability, noiselessness, safety for horses, cleanliness, and salubrity. Now, where is this *multum in parvo* to be found? Whin, granite, iron, macadam, and concrete have all had their day, and been by common consent denounced or abandoned in some of our large cities where the traffic is considerable. We are thus reduced to the enforced necessity of choosing between lava, timber, and bitumen.

Lava pavement appears to have been considered the correct thing in Herculaneum and Pompeii; but the deep ruts made in it by the carriage-wheels of the period, visible at the present day, would seem to indicate a liability to wear away under vehicular friction, which would scarcely recommend this as an enduring paving material to any modern municipality. Besides, the absence of a convenient volcano in this country, for the cheap supply of the best lava, would alone prove an insuperable barrier to its economical employment.

It is probably to be regretted that in Great Britain we are not familiar with the appearance and peculiarities of the "Corduroy" roads of North America, consisting of rough logs planted side by side across the track. Had we been, the likelihood is that our authorities would have hesitated ere making even temporary trials of wooden pavement. This material was suggested for the London streets by a Mr. Finlayson as far back as the year 1825; wooden pavement was afterwards laid down in Oxford-street, with,—according to an enthusiastic writer of the time,—"great promise of success." It was employed in one of the principal streets of Glasgow; 391,688 yards of it are at the present moment a source of continual grief and expense on the streets of New York; but in every instance, sooner or later, the utter inefficiency of wood to endure the strain of continuous heavy traffic, and the offensive and dangerous effluvia emitted after a time from its filth-saturated pores, and arising from its premature decay, have ultimately procured its condemnation and removal.

Whether some of us approve of it or not, we are thus driven to the recognition of asphalte paving,—a system which possesses, besides substantial merits entirely its own, the united advantages of all the others, with none of their defects. In short, there is every reason to believe that when the improved horse-shoe, specially adapted for travelling over smooth surfaces, and the steel stud recently recommended for the toe and heel of draught animals by a veterinary surgeon in the Land Transport Corps, and adopted by some of the officers in that Department, have come into general use; when perfect cleanliness has been secured in the streets by a copious supply of water and the final abandonment of all mud-producing pavement; and the present wooden experiments evince symptoms of decrepitude and corruption, even the enemies of asphalte will be constrained to acknowledge their error and its superiority. WILLIAM COCHRAN.

Fire on Board Ship.—The Council of the Society of Arts have decided to offer the Society's Fothergill Gold Medal for an effective means of extinguishing fire on board ship, and they have directed the secretary to enter into communication with leading ship-owners, with the view of enlisting their aid in this important matter.

MR. FERGUSSON AND HIS ILLOGICAL FRIENDS AND FOES.

THOUGH present at Mr. Stevenson's late lecture at the Institute, I did not catch the opening sentences, owing to the low pitch of his voice. If I had done so, I should have risen to combat the following statement:—"I do not think that it is a straining of Mr. Fergusson's opinions to say that his view is, that under the present system, in which architects direct the construction of buildings by means of drawings, good architecture cannot be produced, and that we should return to the system of the 'true styles' when there were no architects in the modern sense, but the employer communicated directly with the workman who executed the work; in other words, that architects should be dispensed with."

Ever since the publication in 1849 of Mr. Fergusson's original work, entitled "The True Principles of Beauty in Art," the professional world have had in their keeping the flattest denial of the opinions above attributed to him.

The vigour of his onslaught against the current art weaknesses of that day (now a quarter of a century ago) has done not a little to raise the status of the architectural profession, and the independent character of English architecture. And there are few works on art that I have read and re-read with greater relish than the remarkable 'introduction' which has been partially incorporated with the "History of Architecture."

Until Mr. Fergusson's disclaimer appeared, it was as great a puzzle to me how he could tacitly father all that the friendly *Quarterly* Reviewer intended to say in his praise, as that he could be entirely silent when such a statement of his opinions as that quoted above was put forth by an opponent.

Surely, Mr. Stevenson and the Reviewer cannot have read in the introductory portion of the "True Principles," at p. 155, the following clauses under the head of "Prospects of Art":—

"How are our arts to be improved and rescued from their present degraded state? The following work is little more than an attempt to answer this great question, and until I have gone through the whole argument, it will not be easy to understand the solution I propose; but it may assist in understanding it, if I shall briefly show what appears to me the principal points towards which attention must be directed.

The first is to restore to art its progressive vitality, or, in other words, to give up all imitation of past styles, and to start at once with the determination to surpass all that has hitherto been done, and to progress towards a degree of perfection that has not hitherto been reached.

The second is to enlist a higher order of minds in their practice, or at least a higher class in society than has hitherto condescended to interfere with them.

The third is to fit them with some higher aim than merely to please the *dilettante* or the connoisseur, for they must teach and elevate or themselves suffer degradation."

Or the following, at p. 173:—"Earnest search after the beautiful by men of a high class of intellect could not long exist without discovery being made of the direction in which it is to be sought after, and where it certainly will be found by those who seek it in sincerity and truth; but it certainly will not be where it has been found and worked before, but in some new and loftier sphere, where the virgin ore is concealed still in its original matrix."

And again at page 149:—

"It is not the *form* of a work of art that gives it value, but the *thought* that is bestowed upon it; and I believe it may be safely asserted that a work of art is valuable in the direct ratio of the quantity and quality of the thought that it contains."

But if the foregoing extracts are too abstract for Mr. Fergusson's critics' apprehension, can there be any misunderstanding of the meaning of the following passage, under the head of "Education," at page 9 of the same "Introduction," showing that it is both to the democracy and to the aristocracy of the country, but specially the aristocracy, to which Mr. Fergusson looks with hope for the future:—

"There is on all hands a strong desire to see the lower classes better educated, whatever difference of opinion may exist as to the mode in which this should be effected; and schools of design, and galleries of art, are being everywhere established, to enable artizans to understand and practice a higher style of art than has hitherto been within their reach. All this is right, and indeed essential; but it is not all, nor indeed the most essential thing: what is most wanted is a better style of education for the upper classes; it is in them that the great danger to society exists, and from them that the example must come that will elevate the tone of society. It is in vain to hope that a poor man, who has his daily bread to earn by the sweat of his brow, can have either the leisure or the opportunity to improve the arts of his country. Long thought and elegant refinement are essential for the improvement of a fine art, and these can exist only among the upper classes: long, patient, steady, and expensive research can alone advance science; and these, too, are incompatible with the condition of the lower orders. But when the upper classes are so refined as to make art a necessity to them, have their taste so cultivated as to be able to appreciate what is right and what is wrong, and knowledge sufficient to direct and command, then will art advance; and they will soon find ten thousand hands ready and able to execute what they must conceive, but what the labourer now neither can nor dare attempt. At present we have not an upper class capable of conceiving or creating, and consequently no lower class trained merely to execute; but art rests half-way on a class combining both attributes, and who practise it only for its money value as a trade, thinking and executing themselves."

Is there any resemblance between these nobly-spoken opinions and the premises of the question put before the Institute by Mr. Stevenson the other night? In so far as he has removed the ground of debate from the reviewer to the reviewed, Mr. Stevenson has not strengthened the case of his predecessor, Mr. White, but his strong common sense comes out in a telling manner at the close of the paper.

Mr. Fergusson has elsewhere shown to whom the Middle Ages owed their wonderful monuments, viz., to the education and refinement of those ecclesiastics who absorbed the learning of those days, but whose elegant designs were so well executed by their comparatively uneducated but zealous hand-craftsmen whom they inspired and directed.

Those were times when the employer was his own architect in a sense in which the exigencies of the generally well-educated society of to-day forbids the recurrence.

With the rise of the middle classes have come many mediators between the employer and the employed, and notably the professional men who belong to neither of the three professions, among whom is the architect, the engineer, and the like.

So far from mechanics and artizans being the "Hope of English Architecture," Mr. Fergusson would seem rather to have had in his eye the nobility and church dignitaries, or, at the least, those upper middle-classes from whence our peerage is being more and more recruited, and wherein may be found those highest intellects who at the present moment fill the highest places in Church and State. EDWARD C. ROBINS.

"ASHES TO ASHES."

SIR,—As you liberally open the columns of the *Builder* for the discussion of all questions affecting the sanitary well-being of the public, I venture to forward to you those views which have converted me to the belief that cremation is, for the common weal of nature, the best means of resolving human remains. And I hope to prove, not only that cremation is by far the best means of getting rid of the dead and corruptible body, but that it is the means by which Nature herself gets rid of the effete, lifeless matter of organised beings.

In treating of this question of cremation, it has never, that I am aware, been considered that life is carried on by a slow process of combustion, that we are, in fact, being cremated from the cradle to the grave. Our entire bodies, it has been estimated, are consumed and renewed every seven years. So that a man who attains the age of seventy has been cremated ten times by this process of chemical combustion going on within him. When, therefore, the fire which carries on this process is extinguished, we should get rid of the body by Nature's process, and burn it. Cremation is Nature's favourite means of getting rid of fermenting, corrupting matter. To piles of such materials she not unfrequently holds the torch herself, and we have spontaneous combustion.

Not only are we continually being cremated, but we cremate annually in our digestive furnaces whole hecatombs of sheep, oxen, &c., which have themselves cremated in a similar manner grass and grain of untold amount. The farmers, too, taking up Nature's process, cremate dead materials to fertilise the land. Even the sun itself, the physicists tell us, is being cremated for the common weal of the system. It is the fount and source of cremation throughout the planetary system. The earth, too, hoards its internal fires, which occasionally threaten with thundering utterances and forked tongues a general conflagration from the mouths of Etna and Vesuvius.

If burial had been Nature's best process of getting rid of dead animal or vegetable matter, the beasts would have instinctively buried their dead, as some of them do their excreta. But not only has she not done this, but she has created fierce beasts and birds to prey upon and consume, cremate, the timid kind, and has even produced certain creatures with a taste for offal and garbage, to cremate, by the process of digestion, the remains of animals which die, and which would otherwise become noxious, if not pestilential.

Fire has always been regarded as something sacred. It was never allowed to expire in the ancient temples, and it still burns as an emblem of purity before the altar. Cremation was esteemed the acceptable mode of making an offering. "I will purge with fire," "I will not suffer my Holy One to see corruption," are familiar texts. Which, then, is the greater desecration of human remains, to burn with fire, or to give them over to the earth and to a long period of putrefaction, too horrible to be thought of, and in which even then certain forms of life are evolved to consume, to cremate death?

It has been objected to cremation that, after all, it leaves a residuum of ashes on the hands of the world, which, in course of time, would accumulate to such an extent that it would be difficult to deal with it. With a perfect process, we believe, this residuum would, in each individual instance, be next to infinitesimal. But suppose that in each case a few ounces of ashes remained, these could be cast adrift when all interest in them had passed: there is no desecration in the act. Nature endeavours to do that, and we impiously restrain; but she must be victor, and ultimately, without respect to pyramids, tombs, or graveyards, cast adrift the ashes of the entire human race.

But there is another point of view, sir, from which the treatment of the dead has not been considered, viz., that as the human body contains those elements which are essential to the building up of the physical humanity, the withholding of these for a long period from circulation by entombment may be a possible cause of human degeneration and disease. If this be a reasonable conjecture, cremation is of all methods by far the most expeditious for disseminating those elements in order that they may be re-appropriated and re-assimilated by the living. Before this all minor considerations pale. Besides, cremation insures the purity of atmosphere and springs, both of which are contaminated to an incalculable extent by our present system of burying the dead. W. C. T.

BUILDING LAND, DULWICH COLLEGE ESTATE.

SIR,—In your impression of the *Builder* of January 9th, there is a notice of some building land on the Dulwich College Estate, situate in Half Moon-lane, of which the trustees of Dulwich College Estate are said to have given notice of their intention to grant building leases. I am at a loss to understand this notice, as all the land on the Dulwich Estate is let through me as surveyor to the Governors, and never by public advertisement. I imagine, therefore, that the plots of land in question may be on the north side of Half Moon-lane, whereas the Dulwich Estate is on the south side.

CHARLES BARRY.

*** The advertisement to which we referred is from the Trustees of "Alleyne's College of God's Gift," and the land is distinctly described as being on the *south* side of Half Moon-lane.

The Statue of Grattan, which is to be erected in College-green, Dublin, has arrived. The figure, executed by the late Mr. Foley, is 9 ft. high.

OUR THEATRES.

IT cannot be said that quantity is wanting when referring to the subject of London theatres, although we can affirm, without fear of contradiction, that quality in the majority of instances is conspicuous by its absence.

Within the last few years a number of insignificant theatres have jumped into existence in the metropolis, which, to say the least of it, are of a very humble order. With the exception of our Opera-houses we have scarcely a single theatre that merits attention in an architectural point of view. In one case, that of Her Majesty's Theatre, we have a handsome building, the interior of which is allowed to absolutely rot away, without having once been opened since its completion. The theatre is in every respect a building that we cannot afford to lose entirely; and yet there are grave doubts if it will ever be opened for theatrical representation. Surely this is a disgrace to London, that after spending a very large sum in erecting a building, pushing on the works to the very utmost extent, so as to lose no time in the completion of the contract, and after a lapse of some years its doors are still closed to the public. This is carrying private warfare to too great an extent, for we presume the non-opening is due to managerial squabbles.

Among the small fry there is scarcely one theatre that can be called really comfortable in London. Of course the very old ones such as the Strand, Prince of Wales, &c., are simply execrable in their planning. But it seems absurd in the extreme that the many new theatres in the metropolis contain many of the old faults in their arrangements. Many of them have been planned as if their designers' object was to prevent the audience from obtaining a good view of the stage, whereas the main object in planning a theatre should be obviously to obtain a good view of the stage from any part of the house. Even the gallery, a very humble seat, should not be forgotten; in fact, the pit and gallery are without doubt the money-making portions of the house, and, therefore, should receive the very careful attention of the architect. Perhaps, in this respect, the best theatre in London is the Haymarket: the pit is not buried underneath the dress-circle which is too commonly the case, and the gallery is so admirably arranged, that even in the back seats a tolerably good view of the stage is obtained. Although no advocates for lavish expenditure of money such as has been laid out on the new Paris Opera House, we should like to see a little more care exercised in the production of houses for the drama. A theatre should receive as much attention in detail as a church, and not be run up something in the style of modern houses, in about a week, dubbed a theatre, and opened much to the surprise of the public, who had scarcely an idea that a building of the kind was even contemplated.

As to external design, the least said the better. About the only theatre with an imposing elevation is Covent-garden, and even there we only have a front elevation; the remainder being the usual bare wall so familiar to the eye.

It is possible that before long, other theatres will be opened in the metropolis; for the theatre-building fever seems scarcely to have subsided, and let us hope that in the next theatre London is treated with, the architect will have a chance of displaying some external designing which shall make his work stand alone in the metropolis as the only London theatre that does not remind one of a barn in its external appearance.

CHAS. FREDK. FULLER.

CORROSION OF PIPES BY SEWER GAS.

AT the meeting of the Society of Medical Officers of Health in London last Saturday evening Dr. Andrew Fergus, president of the Faculty of Physicians and Surgeons of Glasgow, repeated some statements he had made at the Glasgow Congress. Starting from the basis that typhoid fever was induced either by drinking polluted water or by inhaling polluted air, Dr. Fergus showed that in Glasgow, where the entire water-supply is derived from Loch Katrine, and conveyed through pipes in such a way as to preclude the possibility of excremental pollution, typhoid fever had gone on increasing in a most surprising manner. Reciting many remarkable facts in connexion with cases of typhoid and diphtheria that had come under his notice, he exhibited several pieces of 4-in. leaden pipe curiously perforated upon their upper segments by corrosion commencing from within, and which could only have been caused by the action of sewer gases. These perforations had admitted sewer gas into the houses in which mysterious cases had occurred; but, as corrosion did not take place in such parts of the pipe as were charged with liquid, the perforations never betrayed themselves by ordinary leakage. Dr. Fergus said that he had found that such pipes as were freely open to the sky by an upcast shaft remained sound nearly twice as long as those in which there was no effective ventilation; but he gave it as his opinion that leaden soil-pipes exposed to the action of sewer gas were not to be depended upon as sound after they had been up ten or twelve years. He demonstrated that the present method of sealing sewer-pipes with water allowed sewer gas to diffuse itself into the house by a process of soakage, and that within a period of from half an hour to two hours the various sewer gases would saturate the water by which the trap was supposed to be sealed, and would thenceforth be freely emitted into the house.

Dr. Tidy, while fully admitting the great importance of the subject raised by Dr. Fergus, argued that the corrosions must be peculiar to Glasgow, and due probably to the water of Loch Katrine, or other local cause. Dr. Edmunds, on the other hand, stated that he had several times seen exactly similar corrosions in London, occurring generally in the upper parts of the D trap, and he thought that Dr. Fergus had explained the real source of many mysterious cases of typhoid and diphtheria which had occurred in high-class houses, where no sort of leakage or apparent unsoundness of the soil-pipes had been discovered.

THE PLANS FOR THE EDINBURGH UNIVERSITY EXTENSION.

THE subscriptions for the extension of the Edinburgh University buildings, already alluded to, now amount to 73,000*l*. The committee addressed a circular to certain Edinburgh architects, requesting them to state whether they were willing to send in competitive designs. Mr. David Bryce declined; but Messrs. Peddie & Kinnear, Messrs. Wardrop & Reid, Mr. Robert Anderson, Mr. David Cousin, and Mr. John Lessels, intimated that they were prepared to do so,—the two last-mentioned gentlemen, who had been asked to compete separately, indicating that they should prefer to send in a joint design. Printed instructions were sent to each competitor. The area to be dealt with was explained to be that occupied by the houses of Teviot-row and Park-place, together with the whole of the ground lying between those streets and George-square-lane on the one hand, and the Central Meadow Walk on the other. The buildings to be erected were to comprise all necessary accommodation for a fully-equipped medical school, the number of students to be provided for in the various departments being as follows:—Anatomy, 400; Chemistry, 400; Physiology, 250; Pathology, 200; Materia Medica, 250; Surgery, 250; Practice of Physic, 250; Midwifery, 200; Medical Jurisprudence, 200. There was to be an Anatomical Museum, having a length of 112 ft., a breadth of 40 ft., and a height of 42 ft. In the Anatomy department a lecture theatre was required, which might take the octagonal form of the present room; and the dissecting-room was to be at least 100 ft. long, 40 ft. wide, and 30 ft. high. A general preference was expressed for roof lights in the class-rooms, as well as in some of the working apartments, while for some special purposes side lights were required, and in connexion with several departments, cellarage and courtyard accommodation was stated to be indispensable. Besides providing for the Medical Faculty, the architects were requested to include in their plans a design for a College Hall suitable for important academical gatherings. The committee, while desirous of securing due attention to style, discouraged elaborate ornamentation; and in regard to cost, they indicated that a limit of 70,000*l*., exclusive of fittings, should be kept in view.

The four competing designs were deposited on the 1st inst. Messrs. Peddie & Kinnear's ground-plan shows a central court, round which the various departments of the Medical Faculty are ranged. The College Hall is placed on the line of Teviot-row, where it forms a feature in the frontage. With one ground-plan these architects have submitted alternative elevations, one set being in the Gothic and the other in the Classical or Italian style. Messrs. Cousin and Lessels have adopted the Italian style in its Venetian type, and a prominent feature in their design is a large dome surmounting the College Hall, which is brought forward to Teviot-row. They place their quadrangle on the east side of the ground, and group their buildings mainly to the north and west of it; and, besides the ground-plan adjusted to the area as proposed, they submit an alternative design for extending the buildings over the solum of Park-place, in the event of that being acquired by the University. Mr. Anderson has arranged his buildings round a court-yard, with the College Hall at the north-east corner. The style of architecture is Early Italian, and a lofty campanile forms a conspicuous feature in the external aspect of the design. Messrs. Wardrop & Reid have, we understand, adopted the Gothic style for their elevations.

The plans have now been examined by the members of the acting committee, and sub-committees have been appointed to go carefully into the details of each design, and report in writing thereon before the final decision is made.

THE INTENDED GOVERNMENT BILL ON DWELLINGS FOR THE WORKING CLASSES.

IN the course of a speech at Maidstone last week, returning thanks for his health having been proposed as one of the members for the borough, Sir Sidney Waterlow adverted to the Bill relating to the erection of dwellings for the working classes, which it is now generally understood will be introduced by Government during the approaching session of Parliament. He remarked that the Bill to provide for the erection of better dwellings for the working classes which would in all probability be brought in by the Government, was one in which he himself took a great personal interest. The measure would certainly not be treated as a party question, and a well-digested scheme would be sure to receive support. At present little could be done to destroy dwellings unfit for human habitation without compulsory powers, as there was usually such a variety of interests in this kind of property. It was therefore to be hoped that Mr. Cross would recommend Parliament to grant either special powers to the local authorities or to special commissioners appointed for the purpose. But little burden would be thrown on any municipality by the adoption of such a course, while the expenditure would soon be compensated by a decrease in pauperism and crime. Large sums were constantly being subscribed for churches, chapels, and schools, but these efforts would never produce a lasting beneficial effect while masses of the people were compelled to crowd together in dwellings quite unfit for habitation.

ARCHITECTS COMPETING IN PRICE.

AT the ordinary meeting of the Sheffield Board of Guardians, last week, the tenders received from various local architects for the drawing of plans, &c., and for superintending the erection of the proposed new workhouse, were opened and read by the clerk. According to the local *Independent*, Messrs. Wilson & Master, Bank-street, offered to undertake the plans and specification, and superintend the work for 2½ per cent. commission, and if quantities were supplied they would require an additional 1½ per cent. Mr. Edward Wright offered to act as the architect, and for the whole of his services, with the plans and superintendence, asked 1½ per cent. on the total outlay. Messrs. D. Kershaw & Son, No. 6, Alliance-chambers, George-street, offered to do ordinary architect's work for a commission of 2½ per cent., and the additional superintendence generally done by clerk of works, 2½ per cent. The South Yorkshire Asylum, Wadsley Park, had been erected entirely under the superintendence of their senior partner. Messrs. Flockton & Abbott, 7, St. James's-street, would prepare plans, specifications, &c., and superintend the whole work, at 2½ per cent. commission on the cost of the works. Mr. E. J. Fay, 16, Montgomery-terrace, would undertake the whole of the work appertaining to an architect at the rate of 1½ per cent. commission. Messrs. M. E. Hadfield & Son offered to do the work at 3 per cent. on the outlay. They had had thirty-five years' experience

in various parts of the country. Mr. J. D. Webster asked to enter upon the work at the fixed sum of 500*l.* Messrs. Scargill & Clark applied for it at 3½ per cent. on the expenditure. Messrs. Innocent & Brown tendered for the various departments of architect's work, including all attendances upon the guardians and Poor-law officers here and in London (including expenses), at 5 per cent. upon the outlay. They mentioned certain specifications, &c., for School Board school accommodation, which they estimated to cost 72,413*l.*, but when completely finished the work entailed an outlay of 72,208*l.*, They had also prepared plans for fifteen school buildings, and of these not one had to be altered in any respect to meet the requirements of the Education Department. Mr. G. W. Wilson, North George-street, tendered for 4½ per cent. commission upon the entire work. Mr. James Hall tendered for 2 per cent., which would not include taking of levels, &c. Mr. E. M. Gibbs offered to prepare plans and specifications and superintend the work at 2 per cent., and would not undertake further work for twelve or eighteen months. Messrs. Hill & Swann asked 2 per cent. for plans and specifications and superintendence. They had erected two workhouses, and received several prizes in open competition for others. Mr. W. F. Hempsall asked 3 per cent. commission. It was agreed to proceed with the choice of architects by marking the list till three or four remained. These were to be requested to attend the next meeting of the Board. The final result of the voting was as follows:—Messrs. Hill & Swann, 8; Mr. Hall, 6; Messrs. Flockton & Abbott, 5; Mr. Gibbs, 3. The final decision of the Board will be arrived at when they meet next week.

ORNAMENTAL MEMBERS ON PUBLIC BOARDS.

IT has been the custom for many years to elect peers, members of Parliament, public men, and landowners as members on public Boards, and it very seldom occurs that such personages take the slightest interest or trouble in attending to their duties, except upon an election for some good appointment to the Board, when they are "whipped up" to vote for their friends.

These "ornamental members," as they are termed, are, for the future, it appears, expected to take their share of committee-work, which falls very heavily upon those members who do their duty, or they will be called upon to make way for men willing to sacrifice their time for the public good.

The clerical magistrates, guardians, and members of sanitary and local Boards, in the North, are the reformers this time, and they have, in no measured language, assailed marquises and lords for their neglect of duty.

THE SECRET OF THE OVER DARWEN EPIDEMIC.

THE secret of the outbreak has been worked out by Dr. Steven, whom Mr. Simon despatched on behalf of the Local Government Board. The origin of the outbreak was strikingly simple, says the *Sanitary Record*. Typhoid fever is a "filth fever," and the specific poison is commonly conveyed by the excremental pollution of drinking-water, or of any other potable fluid. The first case of typhoid imported into Over Darwen occurred in a house at a considerable distance from the town. The sufferer contracted the disease, came home, and died with it. The distance of this house from the town, and the circumstance that the sanitary arrangements of the house were held to be good, and that there was no apparent communication from this house with the water drunk by the sufferers in the fierce epidemic, diverted attention from this important case, which, nevertheless, proves to be the *vera causa*. On first inquiry it was stated that the town derived its water-supply from a distant and unpolluted source, and that the water was brought by covered channels into the town, and could by no possibility be polluted by the excreta from this first case. A more minute investigation revealed a startling contradiction of it. The drain of this closet into which the excreta of the first typhoid patient were passed emptied itself into a neighbouring field, for agricultural purposes. Through this field passed also the water-main, conveying the water-supply of the bulk of the inhabitants of Over Darwen. At the point of supposed contact of the pipe with the drains special precautions had been taken to prevent any infiltration of sewage into the water, but when the earth was dug up to ascertain how far these precautions were efficient, it was found that just above the spot where the cement and other segregating materials had been placed there was a leak, which allowed the contents of the drain to be sucked freely into the water-pipe, and thus, as the very typhoid poison itself was regularly thrown down the drain, it passed as regularly into the water main, and was continuously mixed with the drinking-water of the people of Over Darwen. This water was mixed with a poison which is one of the most deadly that can be found in nature, or devised by art. All over the country similar experiments are being tried, sometimes by placing the water-cistern of the house over the closet, and letting the overflow-pipe pass into the soil-pipe; sometimes by allowing untrapped sewer-pipes to open into dwelling-houses through closets or fixed water-basins; sometimes by drinking polluted well-water; and at others by drawing a supply for whole communities from brooks and rivers liable to sewage pollution. The epidemic of Over Darwen arrested national attention, for 2,035 people were attacked within a very short period, and 104 deaths occurred. If an inquest were held on every case of death from typhoid fever, a similar relation of fatal effect to preventible cause could nearly always be traced, yet of these deaths there are 20,000 annually in this country.

CASES UNDER BUILDING ACT.

GREENHOUSES.

AT the Wandsworth Police-court, Mr. William John Lobjoit, a nurseryman of Wandsworth, was summoned under the Building Act for not giving notice.

Mr. A. J. Hiscocks, district surveyor of Wandsworth, said on the 7th instant he discovered a greenhouse erected in the grounds belonging to the defendant in the road leading to Putney. The defendant said his answer was that it was never intended for nurserymen's greenhouses to be brought under the Act.

Mr. Ingram referred to the Act and found that greenhouses, so far as regards the necessary woodwork of the sashes, doors, and frames, were exempted.

The defendant said it was all wood and frame placed on brickwork, which he could remove at pleasure.

Mr. Hiscocks replied it was a regular building, and he asked what the effect would be if greenhouses were allowed to be built in the metropolis and not subject to the Act. He pointed out another part of the exemption clause, requiring buildings to be at least 60 ft. from the nearest building. He said the greenhouse was only 4 ft. distant from another building.

The defendant said the Nurserymen's Association had the opinion of counsel with regard to the assessment of greenhouses, and it was to the effect that a greenhouse was not a building. If he were to erect a pigstye, or even a dog-kennel, on his ground, he would be prohibited, according to Mr. Hiscock's reading of the law, from erecting another building within 60 ft. of it.

Mr. Ingham asked the defendant if he would like to take a case for the opinion of a superior court.

The defendant said it was an important question, and he should like to have an opportunity of consulting the Association.

Mr. Ingram adjourned the summons until the 13th of March.

It is strange, after so many decisions on the subject, that this question should be opened. The Act provides that, so far as respects the necessary woodwork of sashes and frames, greenhouses are exempt. It is obvious, therefore, that in all other respects they are not exempt.

GAS EXPLOSIONS.

THESE explosions continue in spite of all advice as to precautions necessary when in search of gas escape. Scarcely one of the recent explosions has arisen from any other cause than that of the so-often forbidden lighted candle. If the accumulated gas were first permitted to escape, and the gas temporarily shut off at the main, the flaw in the pipe or the defective gaselier might soon be discovered, and danger would be avoided. It is not merely with ignorant or careless servants, but with masters and mistresses, that this "want of thought" is so frequently demonstrated. The gas-men themselves are equally blameable. They no sooner make their entry on the scene, than a match is lighted, without the slightest thought as to the quantity of gas in the room, and, of course, an explosion is the result. This was the case at the hotel at Ashbourn. Chandeliers are a frequent source of danger; these should be examined at stated times, just as chimneys are swept to prevent fire.

Antwerp Waterworks.—An English firm has undertaken to construct the waterworks of Antwerp, and has lodged the required caution-money, 10,000*l.*

THE BUILDING OF KNUTSFORD COLLEGE PREVENTED.

IN the Court of Chancery, on the 11th inst., the case of Legh *v.* Hatch was a suit to restrain the building of Knutsford College. The plaintiff, Mr. John Pennington Legh, was, prior to 1876, owner of a parcel of land in Nether Knutsford, containing about 102 acres. In 1870 plaintiff sold this to Mr. James Carlton for 22,400*l.*, subject to certain covenants, one of which was that all buildings were to be private dwelling-houses, except any used as churches, according to the rites of the Church of England. Mr. Carlton sold forty-three acres of the land to the defendant, who commenced to build a Middle-class College, and on the 24th of September, 1873, the Bishop of Chester laid the foundation stone thereof. The plaintiff sought a declaration that the commencement of the college was in contravention of the covenants under which he sold the estate, and for an injunction restraining the defendant from proceeding with the building of the college, or from allowing it to continue thereon.

The Master of the Rolls was of opinion that the plaintiff was entitled only to an injunction restraining the defendant from using any building on the land, except for a private dwelling-house or church, and made a decree accordingly.

THE JUDGE, AND HOUSE AGENTS' CHARGES.

FINLAYSON *v.* BRICKWOOD.

THIS action, at the Clerkenwell County Court, before Mr. G. Whitbread, was brought to recover 17*l.* 10*s.*, being 5 per cent. commission for the purchase of some leasehold property.

The plaintiff, who is described in the plaint note as an architect, surveyor, and auctioneer, of 61, Euston-road, said the defendant, who was a publican of the White Hart, Euston-road, employed him to purchase the leasehold house, 2, Tonbridge-street, Euston-road, from a gentleman named Placquet, and he bought it at the price of 450*l.*; the defendant agreed to give him 5 per cent. commission on the purchase-money. He had received from Mr. Placquet, the seller of the house, 14*l.* 14*s.*, and that was a customary practice.

The Judge.—Do you mean to say it is customary for an auctioneer to receive a commission from a party for whom he purchases a house, and for whom it is his duty to purchase it as cheaply as possible, and at the same time to receive money from the other party for selling the house, and for whom it that case it would be his duty to obtain as high a price as possible?

The Plaintiff.—Oh, yes, certainly.

The Judge.—Well, I have never heard of it before, and if any auctioneers act in so base a manner, they deserve to be struck off the lists.

Mr. Popham, for the defendant, urged that no agreement was ever entered into, and that the plaintiff was indebted 5*l.* to his client.

The Judge gave judgment for the defendant, and ordered the plaintiff to pay all costs.

SELLING THE BATHS.

THE Lords of her Majesty's Treasury have before them a singular application from the not over-clean city of Durham. Some twenty years since, the Corporation of the city of Durham, after much pressure, built baths and wash-houses, and which have cost the ratepayers the sum of 25,503*l.*, and the receipts only amounted to 4,149*l.*, and last year the loss on the establishment amounted to 560*l.*; the inhabitants paying a rate of 3d. per pound.

The Corporation admit that a great number of males and females have been taught to swim, but urge that the washing department is more patronised by the rich than the poor, the former sending women to do the laundry work, so that little is done at rich people's houses.

The Mayor and Common Council have passed the following resolution, and it remains to be seen what the Government will do with it:—

"Having taken into consideration the question of the desirability of disposing of the baths and wash-houses, erected by the council of this city, under the provisions of the Baths and Wash-houses Acts,—9 and 10 Vict., c. 74; 10 and 11 Vict., c. 61,—and transferred to your Board by the Public Health Act, 1872, section 7,—beg to report that they have examined the receipts, accounts, and expenditure of the baths and wash-houses from their first institution to the present time, and find they cannot be maintained without causing a serious yearly loss.

And that an application be made to the Lords of Her Majesty's Treasury for leave under section 32 of the 9th and 10th Vic., c. 74, to sell such baths and wash-houses, on the ground that they are "too expensive to be kept up."

The Corporation of the City of Durham may, next year, ask the Lords of the Treasury for leave to sell their poor, on the ground that they are "too expensive to be kept up."

FILTERS AND THE PREVENTION OF "FUR" IN KITCHEN BOILERS.

IS water holding "fur" in solution injurious to health? Do the Silicate Carbon Company's filters prevent "fur"? They are fixed, I think, outside the cistern, the water entering at the bottom and flowing out at the top? It was, I think, in the Vienna Exhibition that an invention for preventing "fur" was exhibited. Can any of your readers tell me anything more about it? A. C.

Romsey Abbey Church.—The new stained window in the north nave-aisle, which has been recently placed there by Mr. Henry Tylee, is the work of Mr. Alexander Gibbs. There are two medallions in this window, which is a family memorial, one representing "Christ Blessing little Children," the other, "The Good Shepherd." The stonework surrounding this window was executed by Mr. Ellery.

WARMING CHURCHES.

SIR,—Some years ago I wrote to ask your opinion of a plan of warming a church which is in use in a large edifice under my ward. Half a dozen oblong pits some 12 ft. by 2 ft. contain the furnaces and iron flues. Cold air is admitted from the outside so as to impinge on the side of the furnace, and the theory is that this warmed air gradually ascends, making way for quiet streams of colder air that may be floating about in the edifice. The six furnaces centred in a common shaft which had no damper, and the effect was that when a fire was well lighted it got the mastery, roared and rioted along the flues, turning them red hot, and soon putting an end to itself. All the time a great rush of cold air was drawn through the open sittings near the pits' mouth, and when there was no longer any fire in the furnaces the legs of the unhappy congregation were benumbed, and serious colds were traceable to the warming (!) undergone in church. When the shaft was throttled and the pace of the fire regulated by a damper, the more serious of the ill effects were not experienced, but the system never worked perfectly with us. Whether it was through imperfect lighting, or want of stoking, or wrong regulation of the damper we have usually run a course of difficulties between no heat all through the service, or too much at the beginning and too little at the end. By way of radical cure, the man who manages the furnace has lately got up a roaring fire, and made the plates red hot for a couple of yards before the congregation arrives. It is in vain for me to endeavour to explain that he is first producing carbonic oxide, and poisoning the people, and next producing that rapid draught which Dr. Thompson tells us is so fatal. "There is the fire; you can see it; and, of course, you must be warmed. Don't it stand to reason?" I should scarcely appeal to you, sir, against my subordinate, but unfortunately my vicar sides with him, and nothing less than a scientific opinion from an authority like yourself is likely to be satisfactory. Will you kindly tell us how we ought to warm our church? A CHURCHWARDEN.

*** Our correspondent asks too much. Advice should be taken of a proper person on the spot. We will go so far as to say that nothing can be worse than red-hot plates burning up the vital principle of the air.

ON THE OMISSION OF A PROPER LINING OF ROOMS.

SIR,—Many months since I apprised an honourable member that maladies from which the public are suffering, arise particularly from the omission of battenings, lathing, plaster, and wainscots, up to the top of the backs of our chairs in England; an island surrounded by the sea, whose atmosphere is humid, and that humidity not free from saline particles, which sink into the porous brick, and when confined render it damp.

The rain falls upon our houses, and the sun drives it in, which we may see when, after the wainscot, at the period of twenty-five years, is removed, its inside is found to be rotten from the saline deposit in the brick there, but which the oil in the paint and varnish outside had, all that time, shielded the inmates from, rendering the room not only warm, but dry.

This practice, which our forefathers had discovered, led them to the necessity of adopting the battenings, &c., which, either from imitating the fashion or practice by the Parisians, compared with us, economy of space or timber have by the builders been discontinued, and entailed upon the inhabitants of houses in England complaints seldom heard of before.

ROBT. J. STOTHARD.

THE READY RAFT.

SIR,—The simple fact that only half can be saved from sinking and burning in troop and emigrant ships is dreadful. This conviction should give force to an *all*-saving device being adopted.

I beg to refer to my "Ready Raft," published in the *Builder*, January 23rd, 1869. By unbolting a portion of the deck (quarter, poop, or main), with bulwarks, and lashed casks of provisions, and water, the raft is ready. The crew should be exercised at hitcher drill to slide it, &c. Men in despair see stout timbers everywhere, but so contrived as to burn or sink. R. T.

"ARCHITECTS AND WORKMEN."

SIR,—Only a few words to say (lest I should be somehow thought to dissent) that I agree with the tenor of your correspondent's remarks, though not with the tone he adopts. There is no occasion, because the "working man" is not to be petted or patted on the back, that he should be "treated like a dog" (the "petting and patting," indeed, is more like the system of treating the canine race), and how any one could think such an idea could arise out of the remarks of any one joining in the discussion at the Institute, I cannot imagine. We all claim to be working men,—hard-working, too,—and get often pretty hardly used, but, I am persuaded, the worst treatment would be to be petted, and have our faults and failings slurred over lest we should be offended. As working men we are above all that, and, taking pride in our work, should endeavour to *deserve*, if we cannot *command*, appreciation or success. C. F. HAYWARD.

FROM AUSTRALIA.

Melbourne.—The new Custom-house, which it is proposed to erect at Williamstown, will be built on the site of land, a portion of which is at present occupied by the old morgue. The main building, which will consist of two stories, will be in the Italian style of architecture, and, when completed, it will assimilate with the Mint in outward appearance. The materials to be used are brick and cement. The foundations will be formed of bluestone and concrete, surmounted by a bluestone plinth, from which the principal structure will be carried up. On the ground floor will be the long room, at the junction of the front road and the thoroughfare leading to the steamboat pier, and will be 24 ft. 6 in. long, 16 ft. 6 in. wide, and 16 ft. high, with a portico to give entrance to it. The long room will communicate with the office of the tide inspector, an apartment 17 ft. 9 in. long by 16 ft. 6 in. wide, and also 16 ft. high; and an entrance from the ong room will lead into the stairs, hall, and, back pa-sage, conducting to the storeroom, which is to be 16 ft. 6 in. wide by 17 ft. 9 in long. From the public entrance communication will be obtained with the tide-surveyor's office, which will be 18 ft. 6 in. long by 13 ft. At the rear of this is to be the guard-room, 21 ft. 9 in. by 13 ft. 6 in. This room will be a single-story building, 13 ft. high. Next to the tide inspector's office will be the business-room, 16 ft. 6 in. by 14 ft. This room will be entered by a portico. A verandah is to extend round the back of the building from the guard-room to the out-offices. On the side fronting the pier road the site is to be enclosed with a corrugated iron fence, supplied with large folding-gates, and also with wicket-gates, and on the opposite side the yard will be enclosed with a paling-fence. The total length of the frontage of the main structure will be 72 ft., the width 66 ft., and the altitude, from ground line to top cornice, 36 ft. Between the two front porticos there will be a cast-iron balustrade, and two stone pillars carrying ornamental gas-lamps.

Brisbane, Queensland.—Monday, 15th of June, was a great day in Queensland annals, the new bridge across the Brisbane having been officially opened by his Excellency the Governor, with great ceremony, in the presence of some 8,000 or 9,000 persons. The procession and formal opening were followed by a banquet at the Town-hall. The bridge was christened by his Excellency as "The Victoria." It is 1,013 ft. in length from one abutment to the other, with a central roadway of 30 ft. width clear, and on each side of this is a footway 6 ft. wide, supported upon cantilevers—the whole construction being on the lattice-girder principle, supported on cylinders. There are ten spans altogether, two of 52 ft., and the rest 82 ft., the difference being caused by an alteration insisted on by the Government in the length of the swing after the plans had been prepared, and the work commenced. The swing, which is on the south side, is 172 ft. in length, rests upon a cluster of five cylinders, and weighs 305 tons. It is easily opened and closed in ten minutes by hand-labour, by a contrivance designed by Mr. Jones, the engineer, when it was determined not to use the hydraulic apparatus originally intended; and when opened, affords a passage on each side 51 ft. in the clear. Some idea of the length of the cylinders may be formed from the fact that one of them had to be sunk 33 ft. in the bed of the river, down to the solid, and that it is 45 ft. in height from the bed to the pier-cap. The height of the bridge-level, above high-water mark, is sufficient for all ordinary traffic, so that the swing will not require to be often used. The conformation of the river-banks rendered a slight incline necessary, but it is not more than 1 in 90. The roadway is planked, the lower tier being 9-in. by 5-in. hard wood, and the transverse, or upper tier of 6-in. by 2½-in. stuff of the same material. The designs for the bridge emanated from Messrs. Robinson & l'Anson, of Darlington, England; the ironwork, from the works of the late Mr. Thomas Brassey; and the construction has been entrusted to Mr. J. R. Jones, who has supervised some of the most important works executed by the firm of Peto, Brassey, & Co. in various parts of the world; amongst others, the celebrated railway-bridge across the St. Lawrence, at Montreal, in Canada.

SCHOOL-BOARD SCHOOLS.

West Wycombe.—The new Board schools at West Wycombe which have been in course of erection for some time past, were opened to the children of the parish on the 4th inst. Several members of the School Board were present. The schools will accommodate 200 children, and comprise a schoolroom, 46 ft. by 18 ft.; an infants' schoolroom, 30 ft. by 18 ft.; and two classrooms, 16 ft. by 15 ft. The cost of the ground was 117*l.*, and of the building 1,675*l.* The contractors were Messrs. Smith & Fletcher, of Lane End, and the architect Mr. Frederick William Barnham, of Wycombe.

Ramsbury.—The new Board schools for this parish were opened at Ramsbury, by the Rev. H. Harrison. They are situated in a plot of land, about two acres in extent, which will form an extensive playground. The architect was Mr. Samuel Overton, of Marlborough, and the builder Mr. Dyer, of Ramsbury. The edifice is constructed to accommodate 130 boys in one school, and 100 infants in another; and also contains suitable class-rooms and lavatories, and is well supplied with maps and other necessary school materials.

Rowley Regis.—At the ordinary monthly meeting, on the 11th inst., the Board proceeded to select plans for the erection of schools at Old Hill, Cradley Heath, and Knowle, and to take such further action as might be deemed necessary with respect to the sites. Several plans were put in by Mr. Holmes, of Birmingham, and Mr. Meredith, of Kidderminster, and the estimated cost of building the schools was as follows:—

For Cradley Heath:—			
Holmes	£3,826	0	0
Meredith	3,245	0	0
For Old Hill:—			
Holmes	£3,818	0	0
Meredith	3,245	0	0
For Knowle:—			
Holmes	£2,601	0	0
Meredith	2,242	0	0

The plans of Mr. Meredith for Cradley Heath and Knowle, and that of Mr. Holmes for Old Hill, were accepted.

SCHOOL BUILDING NEWS.

Moughtrey.—The new district schools here have been opened. Some time ago the Education Department issued an order uniting the parishes of Moughtrey and Penstrowed into one school district, and requiring accommodation for about 140 children. This the Church party undertook to provide. The school has been erected from a plan prepared by Mr. Sturkey, of Newtown; the contractor being Mr. Stephens, of the Bog, Penstrowed. The amount of the contract (exclusive of bricks, which were otherwise provided) was 197*l.* 15*s.*, a few extras making the amount somewhat over 200*l.*

Lickey End (Bromsgrove).—The plans of the new schools at Lickey End, by Mr. Cotton, architect, Birmingham, have been approved by the committee, and the contract for the erection of the building has been given to Messrs. Brazier & Weaver, Bromsgrove. The site, given by Mr. Dixon, is about half an acre in extent, on the Birmingham-road, near the old toll-house. The school will provide accommodation for upwards of 200 children, and will consist of infants' room, 42 ft. by 20 ft.; girls' room, 51 ft. 3 in. by 17 ft. 3 in., class-room, and porch, with out-buildings and playground. The building will be of red brick, with slated roof, and the price named in the contract is 600*l.*, being less than 3*l.* per head for the children accommodated, while statistics show that the cost of schools erected by School Boards has ranged from 6*l.* to 10*l.* or 12*l.* per child.

Lutterworth.—At a meeting of the School Governors of the Lutterworth Education Trust recently, to receive tenders for the new buildings

for the elementary schools, tenders were presented from four builders. Messrs. Law's estimate for building new boys' school and master's house, girls' and infants' schools, and outbuildings, was 2,956*l.* 10s., which, being the lowest, was accepted, subject to any alterations, omissions, or additions in the plans or specifications, which may be required by the endowed schools or Charity Commissioners.

Dunston.—A new school at Dunston, connected with the Whickham School Board, has been opened by Mr. R. Carr-Ellison. The cost of the school alone at Dunston was 2,148*l.*, and for the master's house, 445*l.*; the boundary walls around the school cost about 400*l.*; the levelling of the playground was about 112*l.*; the cost of the site, 300*l.*; the total cost being 3,414*l.*

Thornton-le-Dale (*Yorkshire*).—A new school is approaching completion in this village. It has been erected at the cost of Mr. J. R. Hill, and consists of schoolroom 70 ft. by 20 ft., classroom 24 ft. by 16 ft., with separate entrances, yards, and out-offices. The rooms are open to the ridge, all the framed principals being dressed and stained. The plans were prepared by Messrs. John Gibson & Son, architects, Malton, under whose superintendence it has been erected by local workmen.

Highurst Wood (*Buxted*). — The want of a school so long felt in this part of the parish has been at length supplied, owing in a great measure to the energy and tact of Colonel Harcourt, of Buxted Park. The necessary funds were obtained from the proceeds of Saunders's Charity, supplemented by donations. From the exterior the premises present a very pleasing appearance. They include the schoolroom and class-room, to which is attached a commodious residence for the teacher. In front of this is a kitchen garden for the teacher's use, and in the rear separate playgrounds for boys and girls, in which there is a giant's stride for the former, and a capital swing for the latter. An inspection of the interior of the building cannot fail to give pleasure, and one is struck with the exceeding cheerfulness of the rooms, notably of the principal room, which will accommodate 100 children. The formal opening of the school took place last Tuesday. The school was built by Mr. Lulham, builder, Uckfield, upon the plans of Mr. E. Christian, architect.

NEW BUILDINGS ON THE THAMES EMBANKMENT.

THE GRAND JUNCTION CANAL COMPANY'S OFFICES.

THE architectural character of the Thames Embankment is gradually being fixed for good or bad. Two lofty and prominent blocks of buildings are now in course of erection at the bottom of Surrey-street, having their main frontages to the Embankment. One of these, at the west angle, consists of new office buildings for the Grand Junction Canal Company. The Embankment frontage of this structure is 60 ft. in height to the cornice, above which, at the angle of Strand-lane, immediately adjoining the new buildings which have just been added to King's College, there is a gable carried to a height of 18 ft., the extreme height of the building from the pavement line being thus 78 ft. The width of the elevation is 52 ft., and it contains five stories, in addition to the basement and ground-floor. The materials used are red Suffolk brick, with Box ground stone dressings. The ground floor and the first story project 10 ft., in the direction of the Embankment, beyond the upper part of the building, the last-named portion being carried up on iron girders, resting on brick piers. The windows are all square in form, in two and three divisions, with stone mullions and transoms, and the entire range of the windows in the second story has ornamental tracery headings. The Surrey-street frontage, which is uniform in its general design with that facing the Embankment, is set back from the general street-line to the extent of 8 ft., the area thus formed in front of the building being inclosed by an ornamental iron railing. The main entrance to the building is on the right-hand side of the Surrey-street frontage, and it projects from the face of the elevation to the street-line. This elevation is also surmounted by a gable uniform with the Embankment frontage, and all the chimney-shafts, which are ornamental, are lofty. The roof is covered in with red tiles. The whole of the interior will be occupied by the company's Board-room, committee-rooms, and offices. Mr. D. Cubitt Nicholls is the architect, and Mr. J. M. Macey the contractor.

On the opposite side of Surrey-street, with its principal frontage also next the embankment, another new building, closely resembling the one just described, is also in course of erection. This building, which has likewise been designed by Mr. Nicholls, has a frontage to the embankment 36 ft. in width, and another to Surrey-street 79 ft. wide, several old houses having been taken down to make way for the new structure. The embankment frontage is surmounted by two lofty gables, and the ground and first floor each contain two large bay windows, the central portion of each window being in three divisions, with carved and moulded mullions and transoms. All the windows have tracery headings, and the first-floor windows are surmounted by perforated panels. The Surrey-street elevation has a range of five windows, in three divisions each, to each story, and the north angle is surmounted by a lofty gable, and the rest of the elevation by dormers. The building is being erected for Messrs. Few & Co. Messrs. Trollope are the contractors, and Mr. J. Wills is the clerk of works for both structures.

ARCHITECT TO THE LIVERPOOL SCHOOL BOARD.

THE Sites and Building Committee of the Liverpool School Board have recommended:—That an architect to the Board be appointed to perform the following duties: (*a*) To give to managers of Board Schools estimates of the cost of any additions to, alterations in, or repairs of the fabrics or fittings of their respective schools, which they may consider desirable; (*b*) to prepare plans and specifications and superintend the execution of any work of the kind above described which the Board may have sanctioned; the remuneration of such architect to be confined to 5 per cent. on the cost of all the work executed, and the appointment not to give him any claim to be employed in the planning and execution of new schools, for which latter work the committee recommend the Board to reserve its freedom to employ any one whom it may select; and that no recommendation of new work be for the future made to the Board by school managers which is unaccompanied by the estimate of the Board's architect. The recommendation was agreed to, and it was left to the committee to name a gentleman for the office.

THE INSTITUTION OF CIVIL ENGINEERS.

WE are asked to state that supplemental meetings, for the reading and discussion of papers by students of the Institution have been appointed for the following Friday evenings:—January 22nd and 29th; February 5th, 12th, 19th, and 26th. The papers to be read on these evenings are respectively,—"On the Manufacture of Illuminating Gas from Coal," by Mr. J. Tysoe; "Experiments on Current Meters and their bearing on the Hydraulics of Rivers," by Mr. J. C. Inglis; "The modern Methods of Constructing the Foundations of Bridges," by Mr. R. P. T. Logan; "The Isle of Man Narrow-gauge Railways," by Mr. T. O'Hagan; "The River Humber," by Mr. A. S. Moss; and "On the Design and Construction of Lock-gates," by Mr. A. E. Baldwin. The chair will be taken on each evening at seven o'clock, and successively by Mr. Bramwell, F.R.S., Dr. Pole, F.R.S., Mr. Woods, Mr. Bruce, Sir John Coode, and Mr. Abernethy.

THE RATING OF THE CHELTENHAM WATERWORKS.

AT the Court of Quarter Sessions at Gloucester, last week, the Cheltenham Waterworks Company appealed against their assessment to the poor. The rating of the company's works and property in these parishes had not been altered for several years, although the income and profits of the company had largely and regularly increased, and the net rateable value in the several parishes had stood as follows:—

Cheltenham	£1,833
Charlton Kings	1,221
Leckhampton	110
Prestbury	21
Total	£3,182

The overseers having, however, been instructed and authorised to obtain a fresh assessment, engaged Mr. Humphris, the borough surveyor, and Mr. Paul, to make a re-valuation of the property, and they made the following net assessment:—

Cheltenham	£2,887
Charlton Kings	1,630
Leckhampton	338
Prestbury	55
Total	£4,710

This showed an increase of 1,528*l.*, and the Water Company appealed against the increase.

On the first day of the hearing Mr. Hawksley, the consulting engineer of the company, and Mr. McLandsborough, the resident engineer and manager, were examined and cross-examined at great length upon matters of detail. The income was admitted to be 10,530*l.*, but from this some rather remarkable deductions were claimed as necessary to arrive at the net rateable value of the property. The account thus presented may be summarised as follows:—

Gross income for 1873		£10,530
Expenses of management, repairs, and other outgoings	£2,632	
Tenants' remuneration, risks and casualties, interest on tenants' capital, &c.	2,459	
Set aside for renewals	848	
Rates and taxes	804	6,743
Net estimated annual value		£3,787
Deduct Offices rated at		58
		£3,729

The capital of the company was stated by the appellants to be 118,000*l.*, of which sum it was said 84,504*l.* had been expended in works of a constructive kind, in mains, &c., and the remainder in land, works, costs, and other expenses, legal and engineering. Counsel for the respondents argued that the deductions claimed by the company, especially under the head of tenants' remuneration, were greatly exaggerated. The result was, that the appeal of the company was dismissed, and the rates confirmed in the several parishes, the appellants to pay the costs of the appeal.

THE CHATHAM AND DOVER RAILWAY COMPANY AND THEIR ENGINEERS AT THE BATTERSEA WORKS.

DURING the last fortnight a dispute has been going forward between the London, Chatham, and Dover Railway Company and the men employed in the engineering works at Battersea, arising, it is stated, out of the proposal of the locomotive superintendent of the company to introduce the piecework system into the works. It also appears that the men put forward (erroneously) as a grievance a clause in the regulations for employment which provides for an inquiry into a workman's character for a period of ten years before he can be accepted as a servant of the company. The men further complained of the conduct of Mr. Evans, one of the foremen of the company. As regards piecework, notwithstanding that it seems it has for many years been in operation at the workshops at Derby and other places, the men at the Chatham and Dover Company's Works at Battersea condemn it, alleging that it leads to bad quality of work and "scamping." A general turn out took place on Saturday week, which, however, it is said, was precipitated by two men, who had openly expressed their determination not to work, being discharged. The company have succeeded in obtaining other hands to replace those on strike; and the result has proved most disastrous to the men.

WIER'S PATENT REVOLUTION INDICATOR.

A SIMPLE machine which should show the speed at which machinery is going at any moment has been a *desideratum*: the wonder is it should so long have remained so. However, it is now supplied by Wier's patent Indicator, which seems to us admirably adapted for the purpose, and very likely to be universally adopted. As respects steam ships, the engineer in the engine-room, as well as the officer on deck, can, by simple inspection, ascertain at all times, by night or day, the number of revolutions being actually made either ahead or astern. One dial-face shows by a pointer the precise number of revolutions per minute; while another dial-face records the number of revolutions made during each hour, day, week, month, or longer period.

For locomotives it would be invaluable.

Want of punctuality is admitted to be a frequent cause of railway accidents. Engineers as a rule are in the habit of noting certain objects along the line by which they regulate the speed, but in a fog this is impossible, and at night it is most difficult; the consequence is that the driver is afraid of over-running or being behind his time. By means of the Revolution Indicator the engine-driver can always regulate the speed of an engine to the precise rate required, and consequently keep exact time.

Equality of speed is most essential in machinery attached to mills and factories, more especially those used for spinning yarns or cotton. At present, strange to say, the speed of engines is ascertained by counting, and this information can only be obtained at intervals, and with a degree of uncertainty; but by the aid of this indicator the slightest variation is detected instantly, and can be seen at all times while the machinery is in motion.

We have no hesitation in strongly urging such of our readers as have to do with machinery to examine for themselves the principle and working of this new Hydro-Gyrometer, or Revolution Indicator.

CONCRETE PAVEMENT AND ASPHALTE.

SIR,—Your correspondent "Portland" may mislead your readers as to the relative cost of Portland cement paving and asphalte for footways by quoting 3s. 6d. for cement against 15s. for asphalte per superficial yard. I have had large quantities of Val-de-Travers asphalte laid in London at 4s. 3d. and 4s. 6d. per yard, including the removal of earth and laying Portland cement concrete foundation for the same.

ARCHITECT.

AN ILLEGAL AND DANGEROUS HOARD

AT the Bow-street Police-court, before Mr. Flowers, John Brindle, builder, of Doris-street West, Lambeth, was summoned, at the instance of the St. Pancras Vestry, for having continued a hoarding at and in front of No. 185, Tottenham-court-road beyond the time stated in the licence for such hoard. It appeared that the licence was granted in the first instance for twenty-eight days, for pulling down the house, and the hoard was kept up to an objectionable height pending the consideration of an application to the Metropolitan Board of Works for leave to build the house to an advanced line of frontage, and was let as an advertising station. The proceedings were taken because the defendant had kept up the hoard for nearly a month, in the interval of the two licences, and that to a dangerous height, notwithstanding his promises to the chief surveyor and the works committee of view to alter or remove it; and as the defendant had reaped considerable profit by the use of the hoard, a substantial penalty was asked for on the part of the Vestry.

The evidence of Mr. W. B. Scott, chief surveyor, Mr. John Ware, assistant surveyor, and Mr. C. Worrell, chief clerk of Works Department, showed that the hoard had been kept up for a month longer than the licence allowed, and that it was of a most objectionable character, being described, when the committee viewed it, of 50 ft. in height, with planks nailed to the tops of scaffold-poles, like the sails of a ship, and swaying to and fro with a very light wind.

Fined 5*l.* and a continuing fine of 2s. 6d. a day for fifteen days, making together 6*l.* 17s. 6d., with costs.

SCHOOLS OF ART.

Ely Etheldreda.—The distribution of prizes in connexion with this institution took place at the Reading-room, Ely, on the 18th ult. The Dean, who presided, called upon Canon Selwyn, the parent of the society, to address the meeting. Canon Selwyn drew attention to Mr. Toombs's drawings of the west front of the cathedral, in the twelfth, fifteenth, and seventeenth centuries, and expressed a hope that it would be restored in the present century. He also pointed to the painting of the interior of the cathedral on the occasion of the Etheldreda Festival, by the same artist. The subjects for the next exhibition were: "A Flower" (any sort, pencil, oil, or water colours taken from nature, the prize given by Mr. Marshall), and the other prize would be for the best design for a new public assembly-room for Ely. The first prize was awarded to Harriet McDougal (wife of Bishop McDougal), and the second to Mary Sophia Merivale (daughter of the Dean of Ely), similar prizes being given to Lucy Tuck and John Titterton, the three being considered equal. By request of the chairman, Mr. Gambier Parry, the artist engaged in the decorative work at the cathedral, addressed the meeting at great length, and was unsparing in his criticisms upon the pictures before him. His condemnation may be summed up in these brief words which he used, "All is wrong from beginning to end." In the course of his address he also said that "it was not necessary for art to imitate nature." Speaking of photography, he retailed this pun, which he pronounced one of the best he ever heard. One person said to another, what is photography? The reply was, "The foe to graphic art." Mr. Marshall took exception to several ideas propounded by Mr. Parry, especially with reference to the notion that art should not imitate nature. He gave a prize for a floral subject, and he expected that the artists who might think it worth their while to compete would imitate nature to the letter.

Lincoln.—The annual distribution of prizes to the students of the Lincoln School of Art took place at the Schoolroom, Silver-street, on Tuesday, the 15th ult. The Mayor (Mr. W. B. Maltby) presided. The head-master (Mr. Taylor) read his report, from which it appeared that,—the total number of individual students is 249—morning class, 41; afternoon, 24; evening, 179; Saturday afternoon, 60. The evening classes have been full all the year, and many applicants could not be received. Out of the thousands of works sent up to South Kensington from all the art schools, only fifteen were hung in the national competition exhibition. Of these, nine were from the various London schools, one from Manchester, one from Bristol, and four from Lincoln. Of the four awards made to these works, one National Queen's Prize was gained by Lincoln. They also obtained one of the two highest awards given in machine drawing, viz., the National Bronze Medal. The Government awards for the present and for last year are as follows:—National competition, 1873, 3 Queen's prizes; 1874, 1 bronze medal, 2 Queen's prizes. Third grade prizes for highly meritorious work, 1873, 19 awards to 18 students; 1874, 27 awards to 16 students. Advanced work selected by the examiners for the National competition, 1873, 20; 1874, 29. Free studentships, 1873, 4; 1874, 5. Second grade prizes for freehand model drawing, geometry, and perspective, 1873, 15; 1874, 19. Certificates for ditto, 1873, 61; 1874, 67. The Chancellor (Dr. Benson), who presented the prizes, in the course of his address, said,—"Artists had risen from almost every class in society, and the workmen class seemed to be breaking up with the richest possible promise. In a great place like Lincoln a skilled artizan required to be a very skilled artizan indeed, and he urged working men to take every advantage of the opportunities which the School of Art afforded them."

CHURCH BUILDING NEWS.

Leicester.—A meeting of the parishioners has been held to take steps to promote the rebuilding of St. Leonard's Church. The Rev. S. Trench occupied the chair. Mr. Alfred Ellis, one of the secretaries of the Church Extension Society, stated that the special fund for rebuilding the church amounted to 1,800*l.*, and urged the importance of raising funds in the locality.

Manningham.—A new church, in the Gothic style, is being erected in Grosvenor-road, Manningham, from the designs of Messrs. Walford & Pollard, architects, Bradford. The church is of large proportions, and consists of nave, side-aisles, chancel, baptistery, and narthex, with inside wallstones for the exterior of the building. The church is expected to be ready for opening early in the new year.

Stirston.—The restoration of this ancient edifice is now nearing completion. The whole of the chancel, and the greater part of the nave walls have been re-built. For the dressings, both internally and externally, Ketton and Harlestone stone has been used; the interior walls have not been plastered, the stones being dressed and pointed. The roofs of nave and chancel are of high pitch, of oak, and are covered with Newcastle black-roofing tiles. The interior woodwork of the chancel-roof is formed into panels with oak mouldings. The interior of the roof of the nave has oak rafters and oak moulded-ribbed king-posts, plastering being used between the rafters. The old screen has been repaired and refixed. The floor within the altar-rails has been inlaid with encaustic tiles, the steps to the same having been executed in white Mansfield stone. The nave floor is laid with Ketton stone. The seats are of oak. The windows are glazed cathedral-glass. The pulpit has been refixed on a stone base, with steps of similar material, and the font has also been refixed. The restoration has been effected from the designs of Mr. R. H. Carpenter and the late Mr. William Slater, of London. Mr. J. Allen, of Irthlingborough, was the builder. The plumbing and glazing were executed by Mr. Langton, of Wollaston; Mr. Lucas being the clerk of the works.

Aberdeen.—The Aberdeen Town Council have approved of plans for the restoration of the East Parish Church, at a cost of 6,000*l.*, prepared by the city architect.

Mitford.—The parish church of Mitford, Northumberland, is undergoing renovation and extension. The edifice is very ancient, having apparently been built in the Early English and Norman styles. An entire pulling down and rebuilding of the church is considered necessary; while it will be extended by the reopening of a long-closed aisle on the south side, and a lengthening of the nave by the erection of a tower and spire, 130 ft. in height, at a cost of 5,000*l.* at least. Mr. Johnson, of Newcastle, is the architect; and the stone-work is being executed by Messrs. Waterson, Brothers, of Morpeth.

Books Received.

The Encyclopædia of Costume; or, a Dictionary of Dress. With numerous illustrations. By Mr. J. R. PLANCHÉ, Somerset Herald. Part I. London: Chatto & Windus.

MR. PLANCHÉ'S little "History of British Costume" is well known, and has been of good service; but forty years have passed since it was published; much light has been thrown upon the subject since then by the efforts of antiquarian societies, and it is quite time therefore that a work such as that of which the first part is now before us should be issued. The new book is of quarto size, and will treat of dress, regal, ecclesiastical, civil, and military, from the earliest period in England to the reign of George III., including notices of contemporaneous fashions on the Continent, and a general history of the costumes of the principal countries of Europe. Mr. Planché is the greatest living authority on the subject, and we have nothing to fear as to the excellence and completeness of his part of the work. But as regards the illustrations we are tempted to urge upon the publishers the desirability of a little extra care and attention. The engravings in No. 1, including a coloured plate from the picture of Richard II. in the Jerusalem Chamber, Westminster, are fairly good and sufficient for the purpose, but they cannot be compared with the illustrations of recent French works on similar subjects,—works by M. Paul Lacroix, for example,—and as this Cyclopædia of Costume is destined, we anticipate, to be the standard English work on dress, no pains should be spared to render it perfect in every respect. We cordially recommend the work.

VARIORUM.

WE are glad to find the condition of miners' dwellings, to which we long ago drew attention, is now being taken up in various quarters, as we recently mentioned. The *Engineer* says:—"The only question of importance connected with the Scottish miners engaging attention just now has reference to the sanitary condition of the men's dwellings, which in many cases is described as very deplorable. Mr. Macdonald, M.P., has taken up the matter with great vigour and determination, and has declared that if an improvement is not speedily effected, he will combine with others in bringing the subject before Parliament in the ensuing session. Many of the houses are altogether unfit for human habitation. In not a few cases, large rents are paid, and in many instances the houses are greatly overcrowded. Scarcely anything like comfort is to be had in any of them. With stone, and quite as often mud, floors, they are in a deplorable state in fine weather, and their sanitary features outside are of the worst possible kind. All kinds of refuse are thrown into uncovered ashpits outside the houses, and there are often large open drains, in which the sewage of the villages stagnates, and emits effluvia that must be prejudicial to health. In any general scheme for the improvement of miners' dwellings the question of their tenure is almost certain to arise, and it will be a very difficult one to settle."

——A romance might be written in which the recital of the trouble and expense incurred in obtaining furniture woods, from the different parts of the globe, would form the most interesting portion of the writer's labours. "Hair-breadth escapes by flood and field," says the *Furniture Gazette*, "encountered by the hardy carriers of wood, would excite youthful as well as older imaginations to appreciate the obstacles surmounted. The so-called French walnut burls

of which our finest furniture is now made, never grow in France, and indeed there are none at this day to be found in all Europe, as search has been made for them in every corner of the forests and the last one brought to market. They are now obtained from Asia, beyond the Black and Caspian seas, where they are hunted for in all directions by the agents of Western houses, who go out with gangs of nomads, well armed, and often carrying their lives in their hands. The burls are dragged through the uninhabited forests, and over the mountains, or in rough wagons drawn by bulls, shipped and re-shipped until they reach Constantinople, whence they are sent to the different manufacturing centres."——It is pleasant to be able to record such an incident as the following, which shows an appreciation of educational advantages worthy of being extensively imitated. We get it from *Capital and Labour*:—"The quarrymen of the Dinorwic and Deiniolen district, following the example of their brethren in Festiniog, have just forwarded to the secretary of the University College of Wales, Mr. Hugh Owen, the sum of 25*l.* as a scholarship to be given annually to the best candidate from that district. Self-help is a noble virtue; and it is to be hoped that the example thus set will be widely copied."

Miscellanea.

Important to Mechanics.—At the Sheriff Small-Debt Court, Edinburgh, on the 13th inst., Alexander Carmichael, joiner, sued Mr. Thomas Crow, builder, for 2s. 7½d., as balance of wages. It was stated in the summons that the defender had agreed to pay his outdoor workmen, of whom pursuer was one, at the same rate as the indoor workmen—viz., 5s. 7½d. a day, whether they worked the same number of hours or not, and the pursuer grounded his claim upon that and the rules of the Joiners' Association, which set forth that outdoor workmen should be paid at the same rate as those employed within doors, provided they reserved only one half-hour daily for meals. The alleged agreement was denied, and evidence was led to show that the pursuer had taken two half-hours daily for meals. The defender's agent urged that the men had themselves broken their rules by taking an hour per day for meals, in which case the master was quite entitled to deduct the value of the additional half-hours from their wages. The Sheriff said the rate at which the men were paid was really 7½d. per hour, and not so much per day. He thought it was a question whether or not the outdoor men were entitled to take an hour daily for their meals as they had done, and yet be paid in full for nine hours. They could not reasonably claim that, and gave decree for defender without expenses.

Fires in London.—Captain Shaw, chief officer of the Metropolitan Fire Brigade, has forwarded his annual report to the Metropolitan Board of Works. It states that the number of calls for fires or supposed fires received during the year has been 1,750. Of these 89 were false alarms, 88 proved to be only chimney alarms, and 1,573 were calls for fires, of which 154 resulted in serious damage, and 1,419 in slight damage. These figures refer only to the regular calls for fires or supposed fires, involving the turning out of firemen, fire-engines, horses, and coachmen; they do not include trifling damages by fires, which were not sufficiently important to require the attendance of firemen; neither do they include the ordinary calls for chimneys on fire. The fires of 1874, compared with those of 1873, show an increase of 25; but compared with the average of the last ten years, there is a decrease of 6. The proportion of serious to slight losses in 1874,—154 to 1,419,—is about as favourable as we have hitherto succeeded in making it.

Covent-garden Pantomime.—Mr. Rice has produced a pantomime at Covent Garden, "Babes in the Wood and the Big Bed of Ware," which is an excellent specimen of its class, including some most admirable scenery, glittering and effective pageant, and very good burlesque acting. The kitchen-scene, with its fun of the old-fashioned kind, and the Christmas revels in the ancient Banqueting Hall are excellent of their sort, and the transformation scene surpasses that of all competitors this season, whether as regards ingenuity of design, harmony of colour, or beauty of forms. It is a charming production, and does great credit to the artist, Mr. Julian Hicks.

Dwellings of the Poor in Large Towns. Sir James W. Hogg, chairman of the Metropolitan Board of Works, and M.P. for Truro, addressing his constituents, said the question of the dwellings of the poor was a most important one, and he was glad to be able to say that it was the intention of the Government in the coming session to bring in a Bill which would deal with the provision of dwellings for the poor in large towns. He had had something to do with the clearing away of large numbers of poor dwellings in London for the purpose of improvement, which spared neither the habitation of the humble nor the mansion of the duke. He knew, therefore, the need that existed when these changes took place for the provision of adequate dwellings in substitution. The Government fully recognised this necessity, and he had reason to know that if an Act were not passed to meet this public want, it would not be the fault of her Majesty's ministers.

The Water Supply of Newcastle.—At the meeting of the Newcastle Town Council on Wednesday, a report of the Sanitary Committee on the subject of the water supply was read. Mr. Hamond among others opposed the proposition on the ground that the works were totally inadequate to supply the town with water. They would have to pay at least 700,000*l.* for the works and then another 500,000*l.* to supply the town with water, and he contended that a full and adequate supply of water could be brought from Ullswater at less than one million of money, including a reservoir to hold constantly 500,000,000 gallons of filtered and purified water, and the laying of pipes in Newcastle and Gateshead. The consideration of the subject was adjourned for a month.

The New Locks at Saltersford.—The foundation-stone of the New Locks at Saltersford, on the river Weaver, has been laid by Mr. Andrew D. Cairns, the resident engineer. On the occasion Mr. Thompson, foreman, presented him with a handsome silver trowel, supplied by Mr. West, of Northwich, bearing the following inscription:—"Presented to Andrew D. Cairns, the Resident Engineer of the New Locks at Saltersford, on the river Weaver, by the *employés*, as a token of their esteem for him, on the occasion of his laying the first stone." Over 100 of the workmen sat down to an excellent supper, prepared by Mr. Godier, at the Bridge Inn, Barnton.

The Agitation in the Sheffield Building Trades.—The operative carpenters and joiners engaged in the building trades at Sheffield have forwarded a circular to their employers, asking for an advance of ½d. per hour on their present wages, and a reduction in their working-hours to 49½ hours per week. The operatives also ask for a code of rules, so that there shall be uniformity of working, which the men state "will be a benefit both to the employer and employed." A deputation from the men will probably meet a deputation from the employers in a few days, when it is believed an amicable arrangement will be made. If the demands are conceded, the alterations will come into force on the 3rd of May.

State of Eaton Bray Church.—Part of the stonework of the tower has fallen. This church, which has long been in a critical condition, has suffered very much from the late severe frost, and it is feared that if something be not at once done, one of the finest thirteenth-century churches in the county will soon be amongst the things of the past. The whole north side of the church is in quite as bad a state as the tower, and the vicar has been obliged, very reluctantly, to give notice that he does not feel justified in any longer risking the lives of the congregation. A sketch of the church by Mr. W. G. Smith, now before us, shows the upper part of the tower bandaged with iron ties, and the north aisle shored up with timber.

The Mortuary Chapel at the Asylum, Charminster.—On 12th inst., the bishop of the diocese consecrated the new mortuary chapel and cemetery connected with the asylum at Charminster. The chapel is a Gothic building, with bell-turret. It is built of Broadmayne brick, with Bath stone dressings, intermixed with flint panelling. It is 30 ft. by 16 ft., with an open roof about 26 ft. in height and with Gothic ribbed arches. The whole extent of the floor is laid with encaustic tiles. The building was designed by Mr. Fletcher, the county surveyor; the builder being Mr. E. Miles, of Charminster; and was erected at a cost of about 500*l.*

Yardley Drainage, Birmingham.—On account of threatened Chancery proceedings by the Warwick and Birmingham Canal Company, for polluting the feeders of their canal by allowing the sewage of the parish of Yardley to flow into them, the Solihull Urban Sanitary Authority called in Mr. E. Pritchard, C.E., who has prepared plans for draining the whole district. The scheme will require about fourteen miles of sewers and disposes of the sewage by gravitation on a farm near Stitchford. At their last meeting the Board approved the scheme, and decided to apply to the Local Government Board for the requisite powers to proceed.

The Annual Trades Union Congress was opened at Liverpool on the 18th inst., Mr. A. W. Bailey presiding. Mr. Macdonald, M.P., Mr. Burt, M.P., and Mr. George Odger were present. Eighty-three societies were represented, including the National Union of Working Women. After the appointment of the officers, the report of the Parliamentary Committee was read. The committee believed the absence of strikes among the better-paid mechanics was due to their strong and healthy organisations, and proved that trade associations did not conduce to strikes.

Queen's College, London.—Mr. J. Callow has been elected to the chair of Landscape Art here, in the place of Mr. Henry Warren, retired after very long service. Mr. Albert Henry Warren, who has efficiently discharged the duties of the office for his father for some years past, presented such a remarkable set of testimonials from men of the greatest eminence as artists, that the result seems to show little less than ingratitude on the part of the committee. "Service is no inheritance," we too well know.

Tooting Graveney Common.—A letter was read at the Metropolitan Board of Works on the 15th inst. from the Wandsworth District Board, requesting, in the event of Tooting Graveney-common being vested in this Board, that it should be kept in its present rural state, and that pedestrians should have free access to all parts thereof, and that the District Board should have the use of certain convenient and unobjectionable parts of it as depôts for road materials. Mr. Runtz said it was intended to have a stone-yard on the spot, and he moved that the request contained in the latter part of the letter be refused, which was agreed to.

The Baths and Washhouses, Alnwick, recently erected and furnished at the sole expense of his Grace the Duke of Northumberland, were opened to the public last week free of charge. Upwards of 300 persons availed themselves of the tepid plunge-bath, nearly 200 more made use of the warm baths, and the washhouses were attended by over 100 women, some of whom held their stalls for three days. The soup-kitchen was also fairly tested, and about 600 pints of soup supplied daily to deserving recipients.

Brighton.—The result of a Local Government inquiry, held by Mr. Arnold Taylor, at the Town-hall, on Friday, was that the inspector decided to report in favour of an application made by the town council for permission to borrow 10,000*l.*, for the extension of main drainage. A committee has reported in favour of building the new school of art in the Grand Parade, at the cost of a little over 5,000*l.*

Sales of Land.—Mr. E. J. Wilson, the secretary of the Estate Exchange, Tokenhouse-yard, has published the following return of land and other property registered as sold by public auction and by private contract from the 1st of January to the 31st of December, 1874, as compared with the preceding years, 1872 and 1873:—1872, 9,901,220*l.*; 1873, 8,948,362*l.* 1874, 11,160,324*l.*

Another Blow at the Nine Hours System.—The Newcastle Chemical Works Company, who employ between two and three thousand men, have issued a reduced scale of prices, and a proposal to return to the working hours of from six in the morning to six in the evening. Should these terms not be accepted, the works will be closed on the 27th. This is another blow at the nine-hours system in the North.

Designs for the Crook Co-operative Stores.—Out of nine sets of plans the premium of 20*l.* has been awarded to those of Mr. Neil Macara, architect, High-row, Darlington (formerly pupil with Messrs. Ross & Lamb), and that gentleman has been instructed to carry out the work.

St. Mary's Church, Bryanston-square.—This church having been closed for some time for reseating and decorating, was reopened by Dean Stanley on Sunday last. The whole of the ceiling and walls have been decorated, and a large new east window inserted, introducing the subject of the Transfiguration. Messrs. Dove, Brothers, executed the woodwork, and Messrs. Heaton, Butler, & Bayne the decorations and stained glass, under the supervision of the architect, Mr. A. W. Blomfield.

Bricklayers' Wages.—The Secretary of the Master Builders' Association informs us that the operative bricklayers of Coventry have given three months' notice to expire on the 31st day of March next, for an advance upon their present rate of wages from 6½d. per hour to 7d. per hour, which will amount to about 3s. per week.—*Coventry Herald.*

Destruction of the Wesleyan Chapel at Antley.—On the 17th inst., the Wesleyan Chapel at Antley, near Accrington, was destroyed by fire. It was built about six years ago, and the damage is estimated at 2,000*l.*, partially covered by insurance. An entertainment had been held in the chapel on the previous night.

The Sumner Memorial.—The memorial to the late Bishop Sumner, presented by the grandchildren of the above prelate, was placed in St. Andrew's Church, Farnham, on the 13th inst. The memorial consists of a polished brass eagle lantern, which bears an inscription. The total height of the eagle is 6 ft. 6 in., and the width across the wings 2 ft. 2 in.

The Constantinople Underground Railway was opened on Sunday, the 17th inst. The line runs from Galata to Pera, a distance of 672 yards, rising with an average gradient of one in ten, from the level of the Bosphorus, to the extreme height of Pera, an elevation of 200 ft.

Suffocation Prevented.—At a meeting of the Society of Arts, on the 19th inst., a paper was read by Captain Shaw, on "Appliances for enabling persons to breathe in dense smoke or poisonous vapours." The chair was taken by Professor Tyndall.

South Brent.—At the last meeting of the School Board of this parish, Mr. James Hine, of Plymouth, one of the architects of the Plymouth Guildhall, was chosen architect for the Board Schools about to be erected here.

Fall of Portions of the Ruins of All Saints Church, Pontefract.—On the 10th inst. the only remaining arch of one of the bays of the old south chapel and the old chancel of the above-named once stately and majestic church fell with a tremendous crash, and destroyed several monuments.

Great Fire in Glasgow.—The greatest fire in Glasgow for some time occurred on Saturday, the 16th inst., the well-known biscuit factory of Gray & Dunn, Kinning Park, being totally consumed. The damage is estimated at 50,000*l.*, and is covered by insurance in ten offices.

New Town-hall for Annan.—At a meeting of the Annan Town Council held last week, it was unanimously resolved to appropriate 500*l.* of the common stock for the next five years, to aid in building a new Town-hall for the burgh.

A Town without Water.—Owing to the bursting of a main, the Staffordshire potteries and district, with 150,000 inhabitants, are destitute of water, and will probably be so for several days.

British Archæological Association.—On Wednesday, 27th inst., papers "On Estrighoel and Tintern in the Thirteenth Century," by Mr. Thomas Morgan, and "On Funeral Garlands," by Mr. H. Syer Cuming, will be read.

TENDERS

For alterations and additions to warehouse, Lambeth-hill, Queen Victoria-street, London, for Mr. T. S. Hahn. Quantities supplied. Mr. John M. K. Hahn, architect:—

Little	£2,316	0	0
Grover	2,218	0	0
Jackson & Shaw	2,198	0	0
Elkington	2,139	0	0
Scrivener & White	2,093	0	0
Woodward (accepted)	2,060	0	0

For building stables and alterations at the Castle Tavern, Notting-hill, for Mr. Johnson. Mr. W. E. Williams architect:—

Cowland	£637	0	0
Colley	611	0	0
Anley	545	0	0

For a warehouse, now being erected in Aldersgate-street, for Messrs. Thompson & Vine. Messrs. Lander & Bedells, architects:—

Colls & Son	£3,756	0	0
Dove, Brothers	3,555	0	0
Rose	3,500	0	0
Grover	3,463	0	0
Ebbage	3,398	0	0
Roberts	3,389	0	0
Kelly, Brothers	3,282	0	0
Sewell & Co.	3,285	0	0
Kinnor	3,263	0	0
Moreland & Co.	3,100	0	0
Williams & Son	3,078	0	0

For roadmaking and drainage works for the British Land Company (Limited), on their Bromley, Kent, No. 5 Estate:—

Bloomfield	£1,700	0	0
Lansbury	1,550	6	0
Harris	1,540	0	0
Pizzey	1,459	0	0
Richardson	1,356	0	0
Johnson	1,330	0	0
Peill (accepted)	1,169	13	0

For repairs at Nos. 352, 374, and 376, City-road. Mr C. G. Wray, architect.—

Bangs	£526	0	0
Bayes & Ramage	510	0	0
Anley	396	0	0

For alterations and new front, &c., at Nos. 30 and 31, Great Queen-street, for Messrs. Corben & Sons. Mr. W. S. Treherne, architect:—

Anley	£694	0	0

For alterations to 126, London-wall. Mr. Herbert Ford, architect.

Crabb (accepted)	£11,000	0	0

For proposed new warehouse at Hamsell street, City, for Messrs. Glover & Barnes. Mr. B. Tubberer, architect:—

Dye	£3,650	0	0
Crabb	3,594	0	0
Brass	3,486	0	0
Larke	3,294	0	0
Merritt & Ashby	3,293	0	0
Jarrett	3,278	0	0
Cohen	3,200	0	0
Staines	3,194	0	0
Mark	3,035	0	0
Robinson	2,882	0	0
Palmer	2,848	0	0

For buildings and ironwork for the Bristol Industrial Dwellings Company, Limited. Mr. Elijah Hoole, architect.

Buildings.

Davey	£11,890	0	0
Brock & Bruce	11,772	0	0
Baker	11,257	0	0
Boon	10,508	0	0
Wilkins	10,485	0	0
Howell	9,250	0	0
Humphreys	9,070	0	0
Krauss	8,880	0	0
Stephens & Bastow	8,760	0	0

Ironwork.

Edbrooke	£1,210	0	0
Harris	895	0	0
Smith & Adams	839	0	0
Stephens & Bastow	790	0	0

TO CORRESPONDENTS.

C. J. (next week).—A. Y. (list of tenders has been cancelled).—W. G.—W. J.—A. & C. H.—E. P.—W. H. T.—W. B.—J. W.—H. S.—J. F.—R. W.—L. H. R.—J. B.—Dr. S.—M. H. J.—T. E.—E. C. R.—J. H. B.—J. P.—C. S.—H. J. J.—W. R.—S. W.—W. P. R.—D. B.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c must be accompanied by the name and address of the sender, not necessarily for publication.

N.B.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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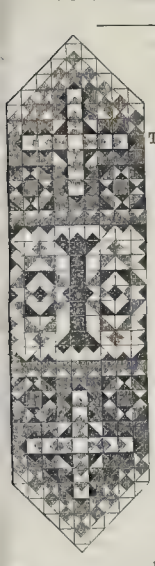
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The Builder.

VOL. XXXIII.—No. 1669.



The Frozen Thames.

IT is a question for meteorologists to consider whether the seasons of long-continued frosts will come again, and whether with the greater protection to the stream from increased building in London, it will be possible for the whole surface of the Thames above bridge to take a solid form as it did in 1814. The coldest winters of late years have done little more than stop the navigation of the river, and the present generation of Londoners has only seen at sundry times great masses of ice, floating on the tide and giving our river a very Arctic appearance.

History has left us particulars of many cold winters in which the river was frozen over, but those in which it was firm enough to support large numbers of persons occurred in the years 1564-5, 1607-8, 1683-4, 1715-16, 1739-40, 1788-89, and 1814. It is also recorded that the Thames was frozen for nine weeks in the year 250, for six weeks in 695, for thirteen weeks in 923, for five weeks in 998, and for fourteen weeks in 1063. In 1281 there was a severe frost and snow "such as no man living could remember the like," when five arches of London Bridge were "borne downe and carried away with the streame." The river was frozen as far as Gravesend from November to February, 1433-4, and in 1506 and 1515 the ice was said to be strong enough to bear carriages and cattle, but we have no authentic details of any of these frosts.

As we have access to a very complete collection of views and documents relating to Frost Fairs, we will take the opportunity of giving a short notice of the most interesting of these. In 1564, a very severe frost set in on the 21st of December, and on New Year's Eve people walked on the ice from London Bridge to Westminster. Some played at football, and others shot at marks. The courtiers from the palace at Westminster mixed with the citizens, and tradition reports that Queen Elizabeth herself walked upon the ice. This frost was of short duration, for on the 3rd of January the thaw had commenced, and on the 5th there was no ice to be seen between London Bridge and Lambeth. The next frost of note commenced on the 8th of December, 1607, and continued until the 15th. A thaw ensued until the 22nd, when it began "againe to freeze violently, so as divers persons went halfe way over the Thames upon the ice; and the 30th, at every ebbe, many people went quite over in divers places, and so continued until the 3rd of January." There were bowlings and dancings on the ice, and numerous other pastimes. A great concourse of men, women, and children, gathered round the booths of the fruit-sellers, beer and wine sellers, shoemakers, and barbers, and in all these tents there were fires. The ice lasted till the afternoon of the 2nd of February, when "it was quite dissolved and clean gone." In the winter of 1676-7, booths and provision-tents were erected on the Thames, but a narrow channel, over which people passed on planks, always remained unfrozen. The greatest of the frost fairs was the one that took place in the winter of 1683-4. The frost began about seven weeks before Christmas, and continued for six weeks after:—

> "Behold the liquid Thames now frozen o'er,
> That lately ships of mighty burthen bore.
> The watermen, for want of rowing-boats,
> Make use of booths, and get their pence and groats.
> Here you may see beef roasted on the spit,
> And for your money you may taste a bit.
> There you may print your name, tho' cannot write,
> 'Cause num'd with cold; 'tis done with great delight,
> And lay it by that ages yet to come
> May see what things upon the ice were done."

These verses give a catalogue of the amusements of the fair, but we have also two contemporary views, which aid us materially in picturing what the place was like. In the distance is London Bridge, with the old houses still standing upon it, and in the foreground are the Temple Stairs. Right across the river, extending from the latter place, was a double line of tents, called Temple-street, or Blanket Fair (from the blankets with which they were made).

> "Like Babel, this fair's not built with brick or stone,
> Though here, I believe, is a great confusion;
> Now blankets are forced a double duty to pay,
> As beds all the night, and for houses all day."

Here were the Duke of York's Coffee-house, the song booth, the booth with a phœnix on it, the roast-beef booth, the half-way house, the bear-garden booth, the music booth, the printing booth, the lottery booth, and the Horn-tavern booth. Between the bridge and Temple-street were two large rings of spectators, in one of which a bull was baited, and in the other was the sliding-chair which was drawn by a long rope fastened to a stake fixed in the ice. Large boats capable of containing a number of passengers, and decorated with flags and streamers, are represented as being used for sledges, some of them being drawn by horses, and others by watermen in want of their usual employment. Another sort of boat was mounted on wheels, and one vessel called 'the *Drum-boat*' was distinguished by a drummer placed at the prow. The games of throwing at a cock, football, skittles, &c., are represented as being played in various parts of the river. Boys are seen sliding, and men "sliding upon skates," and coaches filled with visitors moving in all directions. The Temple Gardens are represented as crowded with people looking over the walls, and in the trees are boys looking on at the bull-baiting. There is a whole literature of ballads printed and sold upon the ice, such as "Great Britain's Wonder," "A Winter Wonder," "Freezland Fair; or, the Icy Bear Garden," &c. In "Blanket Fair, or History of Temple-street, being a relation of the merry Pranks plaid on the River Thames during the great Frost," we read:—

> "I'll tell you a story as true as 'tis rare,
> Of a river turn'd into a Bartholmew Fair.
> Since old Christmas last,
> There has bin such a frost,
> That the Thames has by half the whole nation bin crost.
> O scullers! I pity your fate of extreame,
> Each landman is now become free of the Thames."

In "Thamasis's Advice to a Painter," a full description is given of the wonders of the fair:—

> "Then draw me Temple-Blanket-street, where all
> The watermen do loudly cry and bawl,
> Louder than lawyers in western hall:
> Instead of standing at the stairs to ply,
> They say, What is't you lack, what is't you buy?"

Evelyn relates in his "Diary" what he saw upon the ice. He tells us that coaches plied from Westminster to the Temple, and to and from the various stairs as in the streets; that sledges flew about the place; that there were horse and coach races; and that, on account of the puppet plays and interludes, the tippling and other lewd places, the whole "seemed to be a bacchanalian triumph, or carnival on the water." Charles II. was very partial to frost fair. Once he hunted a fox here, and a French traveller present in London at the time states in a small volume printed at Paris that the king passed a whole night upon the ice. On one occasion he went with his queen, the Duke of York and his wife, the Princess Anne and her husband, and Prince George of Denmark, who had their names printed by G. Croom on one card. Some of the meat of the roasted ox is said to have been presented to the king and queen and the rest of the nobility. Evelyn refers to the humour that took the people to have their names printed on the ice, with the day and year set down; and, he adds, that it was estimated that the printer gained five pounds a day for printing a line only at sixpence a name. Numerous instances of this fashion have come down to us; for instance, Henry Justel, the newly-appointed Keeper of the King's Library at St. James's, went with his wife to the printing-booth, and their card is still in existence.

On the 5th of February the thaw commenced, but it took some little time to melt the 11-inch-thick ice. The watermen celebrated their return to their proper occupation in a spirited song, called "The Thames Uncased," which commences as follows:—

> "Come, ye merry men all,
> Of Watermen's Hall,
> Let's hoist out our boats and careen;
> The Thames it does melt,
> And the cold is scarce felt,
> Not an icicle's now to be seen.
> Let's pull down each scull,
> That hung up in the hall,
> Like weapon so rusty, and row;
> Let's cheerly fall to't,
> If we've not forgot,
> For the frost is over now."

In 1709 the Thames was again frozen over, and several persons crossed the ice, but the frost was not sufficiently permanent to allow of another frost fair. This winter of 1708-9 was exceedingly severe over the greater part of Europe, and obtained the distinctive title of the cold winter. Men and animals perished by thousands and immense quantities of vegetables were entirely destroyed. Olive plantations were destroyed in the south of France, and in England wheat rose in price from 2*l.* to 4*l.* per quarter.

In 1715-16 the river was frozen from the 24th of November to the 9th of February, and all the fun of the 1684 fair was revived. An unusually high spring-tide, which overflowed the cellars on the border of the river, and raised the ice 14 in., occurred without interrupting the people in their diversions. Coaches, wagons, and carts passed and repassed, an enthusiastic Methodist preached to a motley congregation, and over against St. Paul's Wharf an ox was roasted on the ice. The Prince of Wales and many of the nobility were attracted to the fair, and a newspaper of the period intimates that the theatres were almost deserted. A large cook's shop was erected, and gentlemen went as frequently to dine there as at any ordinary. Printing-presses were set up near Westminster, Whitehall, and Whitefriars, and the following is a copy of the handbill of one of these:—"This is to give notice to gentlemen and others that pass upon the Thames during this frost, that over against Whitehall-stairs they may have their names printed, fit to paste in any book, to hand down the memory to posterity,—

> "You that walk there and do design to tell
> Your children's children what this year befel,
> Go print your names, and take a dram within,
> For such a year as this has seldom been."

The nation seems still to have been sorrowing for the death of good Queen Anne, although she had been dead for a year and a half, for the

favourite broadsides that were printed and sold on the ice were verses in commendation of her virtues.

The next frost-fair was kept in the winter of 1739-40, which was so intensely cold that many persons who had lived in Hudson's Bay declared that they had never known it colder there. The frost commenced on Christmas-day, and the Thames was soon covered with floating rocks and shoals of ice. When these were fixed, the river represented a snowy field rising in many places in hillocks and huge rocks of ice and snow, and many artists seized the opportunity of making sketches of it. The streets were so clogged with snow and ice that hackney-coaches went with three or four horses, and Fleet-street was so long neglected that, at last, scores of men had to be employed to clear the way. The houses on London Bridge received considerable damage from the numerous vessels that broke from their moorings, and lay beating against them. Little or no novelty appears to have been introduced into the amusements of the fair, and the same things were done as on the former occasions. Some vintners in the Strand bought an ox in Smithfield to be roasted whole on the ice, and Mr. Hodgeson, a butcher of St. James's-market, claimed the privilege of knocking down the beast as a right inherent in his family, his father having knocked down the ox roasted on the river in 1684, as he himself did that roasted in 1715 near Hungerford stairs. The beast was fixed to a stake in the open market, and Mr. Hodgeson came dressed in a rich laced cambric apron, a silver steel, and a hat and feathers, to perform the office. At the Golden King's Head Printing-booth was sold "An Account of all the principal Frosts for above a Hundred Years past," with a frontispiece of London Bridge at the time of the frost, which purported to have been printed on the ice. Another popular publication was, "The humble Petition of the River Thames to the venerable Sages of Westminster Hall," in which we read that "ministers of punishment have treated him with the utmost contempt and insolence, have even made a publick shew of him, have call'd in heaps of ragamuffins to trample upon him, and, what is worst of all, have forced a numerous family, which he used to provide for, to beg in the streets." The thaw came on very rapidly, so that the most valuable effects were moved with difficulty out of the different booths. The ebbing tide on the 21st of January carried with it a sort of island of ice, which was interrupted in its passage by London Bridge, as if it had come to anchor, and the inhabitants of the western side of the bridge found on opening their windows in the morning, the remains of booths, shops, huts, &c., huddled up in the greatest confusion beneath them.

The next severe winter of note was that which occurred in 1788-89, when there was the greatest distress among the poor. The different parishes opened public subscriptions for the assistance of the distressed, and the Watermen and Lightermen's Company requested subscriptions in aid of their poor members, who, by reason of the freezing of the Thames, were deprived of their means of earning a living. At the foot of the advertisement we are informed "that upon every exigency of the State, the Company have raised out of their body of people three thousand men, or more, fit for his Majesty's service, most of them having been at sea." The frost was so intense that the Thames was frozen below bridge, and a young bear was hunted on the ice near Rotherhithe. The shipping at Deptford, Greenwich, and Blackwall was almost as completely shut in with ice as that in the pool. Every morning large quantities of boiling water were poured on the water-works at London Bridge before the wheels could be set in motion, and twenty-five horses were daily employed in removing the ice which surrounded them. Firemen patrolled the streets and delivered the following handbill to the inhabitants:—"The directors of the different fire-offices, taking into consideration the dreadful consequences that may arise should a fire happen in the present inclement season, have thought it expedient to direct that a proper number of their respective engineers and firemen shall patrole, in divisions, the different parts of the town, which the constables and watchmen are desired to take notice, that the earliest information may be given to said firemen when a fire happens." The fair extended from Shadwell to Putney Bridge, which was a considerably larger surface than had been occupied at any other time. Booths, turnabouts, and puppet-shows were everywhere to be seen, and travelling menageries moved from place to place. The watermen, in order to put a little money into their pockets, broke the ice close to the shore, and placed bridges across, with toll-bars, so that every person had to pay one halfpenny for liberty to pass on to the ice. The thaw came on very suddenly, and the fair was broken up in confusion on the night of January 13th. The cracking of some ice at eight o'clock caused considerable consternation and an instant rush to the shore on each side of the river. The confluence here was so sudden and impetuous that the watermen who had formed the toll-bars, not being able to maintain their standing, pulled up the boards, by which a number of persons who could not leap, or were borne down by the press, were soused up to the middle. The loss of hats, handkerchiefs, and other property was great on this occasion. About two o'clock, as some people were drinking in a tent on the ice, a little below London Bridge, that part of the ice upon which the tent was broke away from the main body, and floated with the tide almost to the bridge, where the now sobered bacchanals were taken into a boat.

We now come to the last of the frost-fairs, which took place in the year 1814, within the memory of some still living, notably of George Cruikshank, who has given us a vivid representation of the humours of the fair. The frost commenced on the evening of December 27th, 1813, with a thick fog, which lasted for several days, and was succeeded by a very heavy fall of snow. After the frost had lasted for a month, a thaw of four days, from the 26th to the 29th of January, took place; but this thaw was succeeded by a renewal of the frost, so severe that the Thames soon became one immoveable sheet of ice. On Tuesday, February 1st, the unemployed watermen set up their little bridges from the edge of the river to the firm ice, and some of them are said to have received as much as 6*l.* in the day from tolls, so great were the numbers that thronged to the fair. There was a street of tents called the City-road, in which gay flags, inviting signs, music, and dancing attracted the visitors' attention. Here respectable tradesmen attended with their wares, selling books, toys, and trinkets of every description. Those who made purchases were presented with a label, setting forth that the article was bought on the frozen Thames. The printers, as usual, brought their presses, and sold large numbers of their handbills. One of these contains the following notice:—"Whereas, you, J. Frost, have by force and violence taken possession of the river Thames, I hereby give you warning to quit immediately.—A. THAW." On another are these lines:—

> "Amidst the arts which on the Thames appear
> To tell the wonders of this icy year,
> Printing claims prior place, which at one view
> Erects a monument of that and you."

A small sheep was roasted over a charcoal fire placed in a large iron pan, and sixpence was charged for the privilege of seeing this. The meat itself was sold under the name of "Lapland mutton" for one shilling a slice. On the evening of the 5th of February a thaw set in with heavy rain, and at two o'clock the tide, which during the whole frost had not risen above half its usual height, rose rapidly and burst the ice. The greater number of the people were warned in time and got off without difficulty, but a drunken party who were carousing in a tent at two o'clock in the morning narrowly escaped drowning: they were dashed from iceberg to iceberg till they settled against one of the piers of Blackfriars Bridge. In their terror they added to the danger of their situation by setting fire to the tent. A few days after the breaking up of the frost a "comic pantomime" was brought out at the Olympic Theatre, called "Frost Fair; or, Harlequin frae the North." "Among other scenery was displayed Queenhithe and the Fair on the Thames."

We have had severe and long-continued frosts since 1814, as in the winters of 1855 and 1860-61, but in no year has the Thames been completely frozen over, and we hope that 1814 will long deserve and retain the distinction of having produced the last frost fair, for the distress and stagnation of all business which the cold causes very far outweigh any amount of amusement that may be got out of the anomaly of walking on solid water. "'Tis sixty years since!" and London has greatly advanced in every respect during the period, so that a severe snowstorm does not now find us *quite* so unprepared as it did our forefathers in 1814, although it still leaves our streets in great disorder.

ON RETICENCE IN DESIGN.

IN the course of a concise but original and sensible paper read at the last meeting of the Architectural Association, on the Influence of Tradition in Goldsmiths' Work (noticed in another column), reference was made to the superior artistic excellence of Greek goldsmiths' work, combined, as it is, with a great simplicity of design and workmanship—marked by what the lecturer on the occasion rather happily termed the "reticent power" of Greek design. It is this quality which more, perhaps, than any other, distinguishes antique from most modern art. The modern designer is desirous of showing all he can do in a given space; like Launcelot, he would "spend all the wealth of his wit in an instant." The antique artist, the Greek especially, was desirous to show how perfectly and effectively he could do just what was required, or what the object demanded and allowed scope for, and no more. It is this "no more" which we have very much lost sight of, and seem in danger of altogether losing in modern art.

This is particularly the case in regard to the class of art-work in reference to which the remark was made. Where gold and silver are used as the medium for ornamental design, the chief desire seems to be to produce what is supposed to be as rich an effect as possible, by a superabundance of work on every part, without consideration either of the suitability of the details themselves, or of their real effect on the total result. If we notice the majority of the articles set forth in the windows of our leading jewellers and silversmiths, we see a great deal of beautiful and elaborate workmanship, but a great lack of attention to beauty and fitness of form, amounting often to absolute want of perception of this, to all appearance; and this defect is atoned for by a profusion of ornament which serves to weaken and obscure the main lines of the design, even where these are better than usual. In a brief note last week on the drawings for the goldsmiths' prize designs now exhibited in the Architectural Museum, we had occasion to notice this utter absence of reticence in design, which is displayed in these drawings in a most marked and unfortunate manner. In designs for tea and coffee services, spouts and handles are encrusted with ornament just in the same way as the body of the vessel, with no attempt to emphasise the longitudinal lines in these situations where a broad surface treatment is impossible; the feet and stands of the articles are ornamented as profusely as the rest, and in several cases in a manner which takes from them all appearance of strength and stability, and makes them seem quite unfit to support the weight placed on them. Yet these designs, which are shown, some of them, in very elaborate and well-executed drawings, are put forth as the best art-workman's design in response to handsome premiums offered by the trade Guild engaged in producing such articles. We may take these therefore as fair specimens of what the working gold and silver smith, left to himself, has to offer us; and certainly they are not encouraging, when we consider the amount of lecturing and museum-opening for the art-workman which has gone on of late years. There seems to be no perception that the thought and consideration evinced in the design, and its fitness for the shape and the material in which it is executed, are what go to form its chief value. The object is to beat up the metal into an elaborate pattern ("design" it often can hardly be called), leaving not an inch of untouched surface to give relief; and then the article is at once reckoned as one of the handsomest which the firm, whatever it be, has turned out, and is priced, and generally paid for, accordingly: for the wealthy purchaser in England will believe whatever he is told, and is ready to buy whatever he thinks will make the most show. To a considerable extent, no doubt, the customer is in fault as much as the artificer, as he demands these things to please his inconsiderate taste for show and glitter rather than real beauty; but it would be, at all events, more satisfactory if there were more chance and temptation for purchasers to blunder into good taste, even by accident, instead of being offered only a choice of gaudy and pretentious articles. If the Goldsmiths' Company, who offered the prizes here alluded to, are possessed with a real desire to improve their art in the truest sense, they would have done better to have withheld the premiums, and sent them back to the designers to remodel their designs, and reduce them to simpler and better considered forms. But it is to be

feared that what really was required was the style of design that would be most marketable; and in that view of the matter the premiums have possibly been only too well bestowed.

It is in some of the smaller productions of the ornamental arts that the common and vulgar character of modern art, or want of art, is as much felt as in anything. A Greek finger-ring, or ear-pendant, though it may be very simple and unpretending in comparison with some modern productions of the same kind, has a defined and delicately-finished form which has evidently been carefully considered, and which is elegant in itself, even when unaccompanied by any suggestive device; and if it have such a device, it is one showing fancy and invention, not a mere aimless repetition of some common-place object. There is nothing more indicative of the real vulgarity of taste of the present day in such matters, than the kind of articles which are produced for inspection, as fashionable, in the way of personal ornaments. Every one who has ever wanted a scarf-pin or ring knows that he will be offered either a buckle or a horseshoe in gold. There is no pretence that such objects are very interesting or suitable in themselves,—but they are executed in gold, and that is enough to give them value; and the more massive the better, as representing greater expense. And in this quality of massiveness there is a very singular contrast between ancient and modern goldsmiths' work, which has not been so much noted by critics. In antique classic ornament it was recognised that gold being a material of great value, the most was to be made of it, and the greatest amount of artistic effect was to be got out of the smallest amount of metal. So antique gold ornaments, Greek and Etruscan at least, are much thinner and slighter than most modern gold work; the metal is a precious metal to be used economically, and it is twisted into cunning designs in line, or beaten and engraved in thin plates. But now, although gold is not yet a drug in the market, the object in ornamental work seems to be exactly the reverse of that of the antique workman; the evident aim being to use as much of the metal with as little trouble in designing as possible. This is a characteristic of some semi-barbarous nations, among whom massive bracelets and anklets of gold are counted as desirable ornaments, and evidently valued and respected for their massiveness in metal. So that now we, the children of modern civilisation, have come very much back to barbarism in these matters, and desire show and ostentation of valuable material, in regard to quantity rather than quality, and with no wish for anything better from it than an evidence of so much expenditure.

This quality of reticence is characteristic of antique art in other things, of course, besides articles made of the precious metals, and the want of it in the present day is equally to be noticed in various branches of art design. Take examples of Greek ornamental vases, for instance, and observe how simple and concise, if we may so speak, is the decoration, and how the figures, where introduced, seem to give the abstract essentials of expression and action, rather than realistic representations of detail. At present, in regard to objects of this kind, we have turned our attention to models of the opposite extreme of excessive elaboration of minute detail, regardless of general design or effect; and the vases of Japan are our models in place of those of Greece. These have much richness and beauty, especially of workmanship; but it is workmanship bestowed for its own sake only, without thought, and producing its effects of colour by a happy instinct. The want of reticence in these productions is characteristic of the East, which we habitually speak of as "lavish" and "gorgeous" in the use of ornament, and there is a great charm about this profuseness of display in its way; but it is a charm not of the highest order, and partaking of the spirit of barbarism,—of a childish delight in display for its own sake, very different from, very inferior to, that reasoning intellectual spirit in design which led the Greek artist to give just what was necessary to produce the highest and best result, without weakening the effect by unnecessary elaboration.

What applies to ornamental work on a small scale in this respect applies also to architectural design at large. The want of reticence in modern architecture is fostered by the competition system, which leads to the very contrary result, the object of each competitor being to surpass and extinguish the rest by the profuseness of decoration to be supplied for a given sum. We seldom see a building (of any pretension) in execution, and still less often in drawing, in which there is not a good deal of ornamental work which seems to have no object or meaning, and not to help the design in the least. It would hardly be a bad thing for modern architecture if a tax were levied on ornamental carved work; there would then be a probability of architects and their clients (who are not without their influence in these matters) taking care that what ornament was introduced had some definite value and meaning to show for the expenditure upon it.

It is possible, as we see in Oriental work, to have a good deal of "power," though not of the highest kind, without "reticence"; it is also possible to have reticence without power or originality. This may seem at first to imply mere nothingness; but it is a virtue, though a negative one, and is infinitely to be preferred to profuseness under the same conditions. If a man has nothing to say, whether in oratory or in art, his wisest course is to say nothing. Profuse decoration without ideas is the very essence of what is called "vulgarity." Much better to let it alone altogether, and be content with the plain merit of good workmanship and construction, which is at least respectable, and of which there is not any superabundance in the world at present.

COMPLETION AND OPENING OF THE METROPOLITAN EXTENSION RAILWAY FROM MOORGATE STREET TO LIVERPOOL STREET.

THE extension of the metropolitan underground line from Moorgate-street to the Liverpool-street station of the Great Eastern Railway, which has been in progress during the last two years, will be opened for traffic on Monday next. Although the line is only a little more than half a mile in length, the engineering and other works in connexion with its construction have been of a formidable character, and the cost, including the purchase of property, and the replacing of buildings which the company have been under the necessity of removing, is unusually heavy. Commencing at the Moorgate-street station the course of the line directly intersects what was formerly the refreshment rooms, and in their place entirely new refreshment rooms have been erected on piles, and are thus now on a level with Moorgate-street. The line is then carried under and across Little Moorgate-street, and the space between that street and Finsbury-pavement, by side walls supporting iron girders, the walls and girders in the space between Little Moorgate-street and Finsbury-pavement being of unusual thickness, inasmuch as they are intended to form the superstructure of a large railway hotel which the company, in conjunction with an hotel company, specially formed for the purpose, intend to erect upon the site. This hotel will have four frontages, the principal elevation having its frontage to Finsbury-pavement. From Finsbury-pavement the line is continued immediately under the centre of the enclosed gardens in Finsbury-circus, and on to Blomfield-street to its junction with the lower end of Liverpool-street, by a tunnel 420 ft. in length. The walls of this tunnel are constructed of brick, with concrete inverts. In intersecting Blomfield-street the line takes in several blocks of property which the company have had to purchase and remove. Amongst these is the Provident Savings Bank Institution, with respect to which the company have undertaken to erect a new building in lieu of that which has been destroyed. The plans for this new building have been furnished by Mr. Sydney Rogers, architect, and the structure is about to be erected by Messrs. Newman & Mann, the amount of the contract being 4,540*l*. There has also been some heavy work as respects other property at this point, considerable difficulties having been met with in securing the safety of St. Mary's Roman Catholic Church and the Finsbury Congregational Chapel. It was found necessary to underpin both these buildings, whilst as regards the former, it was deemed advisable to close it during the progress of the works, and the company had to incur the expense of erecting a temporary church close to the Moorfields station. From Blomfield-street the line passes under Liverpool-street by a curve, in a north-easterly direction, forming a junction with the Great Eastern line, which describes the portion to be opened on Monday next. The main line, however, continues in a south-easterly direction under Broad-street, which is carried over it by side-walls and cast-iron pillars, supporting wrought-iron girders; towards Bishopsgate and the intended final terminus at High-street, Aldgate, being carried under and across Devonshire-square, and running parallel with Houndsditch, on its north-eastern side. From Broad-street to the termination of the present works, in the direction of Bishopsgate-street, a large and valuable amount of property has been demolished to make room for the company's intended Liverpool-street station on the south-east side of that street. There will be entrances to this station both from Liverpool-street and Broad-street, and the station-area will have retaining walls at each side, with strong pillars and girders supporting a glass roof. There are sideways between the Great Eastern and Metropolitan stations, so that passengers can pass from the platforms of the one company's lines to those belonging to the other.

The works for the continuation of the line from Liverpool-street and Bishopsgate to the Aldgate terminus have not yet been commenced; but it is fully expected that they will almost immediately be proceeded with, as the report of the directors,—in anticipation of the approaching half-yearly meeting,—which has just been issued, states that the completion and opening of the line to Liverpool-street renders it opportune to consider whether the line to Aldgate should not be carried out. It adds that the shareholders have already paid 152,281*l*. for property and compensations on this section, and as all the notices were served before the Board took office, it would be economical to acquire the remainder of the land and buildings. It may be further stated that, last week, Mr. Mills, M.P., obtained upwards of 10,000*l*. as compensation for property in Devonshire-square which the company require for this portion of the line.

Mr. E. Wilson, the company's engineer, has designed the whole of the works above described, and the contractors are Messrs. Kelk & Lucas.

BATH ABBEY CHURCH.

WE mentioned in an incidental paragraph, the other day, the last annual meeting of the subscribers to the restoration of this church, which was held on the 6th ult.., at which it was stated that upwards of 30,000*l*. had been spent up to the present time. The actual architectural restoration, so far, we believe, has cost somewhat less than this, and the sum named probably included some contingent expenditure.

The most important part of the work consisted in carrying out the groined roof of the nave, in continuance of the design of the chancel and transept roofs, and completing the large clearstory windows. Previously to the restoration the nave was covered in by a timber roof, resting on the walls at about the height of the present transomes of the clearstory windows, which were thus cut square off at the top by the eaves of the roof. Practical considerations alone must have led to reconstruction of some kind here, as this roof was much dilapidated, and even unsafe. To have simply replaced this by a new roof of the same description would have been a most unsatisfactory expenditure of money in renewing and perpetuating an incomplete form of the building, and it is to the credit of the late rector, the Rev. Charles Kemble, that he inaugurated, and by his energy and liberality did much to forward, the complete carrying out of the design of the church. This is an instance of church restoration in regard to which there can be no two opinions, as there is here no reconstruction of features the interest of which was purely archæological, but the carrying out of an architectural design which was in an incomplete state; and Bath can now boast of a specimen of a complete "Late Perpendicular" interior, with nave, transepts, and chancel, with fan-vaulting of fine design and execution carried throughout, as complete in its way as St. Mary Redcliff at Bristol; and, though not possessing the scale and grandeur of that remarkable church, nor showing such interesting specialities of design and effect, yet worthy of comparison with in regard to completeness and symmetry of internal architectural design. The old vaults, and the piers also in places, have had to be cut and filled in where the stone had decayed; but considering the usual impression as to the durability of the Bath stone at present so largely employed, and the manner in which we have seen angles and arrises de-

cayed and broken off in comparatively new churches, the state of preservation of the old vaults here has been far more complete than might have been expected, and leads to the supposition that the best beds of this popular building-stone had been chosen before it came so largely into use by modern builders. A complete cleaning of the surface has brought out the almost white lustre of the stone throughout the interior, which gives great effect to the stained glass with which the whole of the aisle windows, as well as the large windows of the chancel and transepts, are now filled. A large proportion of these windows, given mostly by individual donors, were the work of Messrs. Clayton & Bell, one or two being by Messrs. Hardman, and two by Messrs. O'Connor. Without directly making invidious comparisons as to merit, it is impossible to avoid the consideration, in looking at this large collection of stained glass, how desirable it would be in all such cases to bring the stained-glass design under some general control in regard to style and scale of colouring. In combination with the delicate tints of the Bath stone, the low key now almost always adopted in the windows of the first-mentioned firm is by far the best for the architectural effect; it harmonises best with the general tone of the masonry, and (which is a still more important point) extends the aërial perspective, and thereby gives scale to the building. This is particularly observable in regard to the large and many-lighted window which fills up the whole end of the south transept; and visitors who admire the effect of the view across the transept would be surprised to find how much of this is owing to the scale of colour in the window, and how the architectural effect would be reduced and narrowed by the substitution of the stronger and more vivid colours often so inconsiderately admired. Of course, this is more particularly the case in a building where the stone employed is of so light a tint. Nor do we say that we should always be satisfied to see stained glass employed with such an almost entire ignoring of primary colour as is shown in these windows. But at least the whole should be in the same key; and in Bath church the three or four windows in which stronger and more vivid colours are used stand out as quite at variance with the general scheme, and as if loudly challenging attention. The necessity for some systematic relation between the colour scale and design of all the stained glass, in a large interior, has been often insisted on in our columns, and will be until it is better attended to. Windows cannot be regarded as pictures in a gallery, each independent of the others; they are too intimately connected with the architectural design, and the effect of the transmitted light is too vivid, for that; and it is unfortunate that, in the present case, an opportunity of presenting a homogeneous effect of stained glass throughout the building has been come so near to without being fully realised.

The church contains sundry remnants of old stained glass which have been carefully preserved, partly in the centre of some of the clear-story windows, and the rest in a vertical band in the centre lights of the west window, the rest of which is at present all clear glass, except in the heads of the upper lights. When this is filled in, as it is expected to be before long, we hope that, whatever artist is employed, the same delicate and subdued effect which has been happily realised in two at least of the other large windows will be aimed at.

The old colouring of the horizontal spandrels of the fan-vaulting has been restored, and repeated in the nave vault; blue and gold predominate in this, which is a trifle too strong at present, but will soon tone down more than sufficiently.

The work of restoration has included also the reseating of the church with open seats with carved ends, of solid construction and good execution, and the removal of the numerous monumental tablets which formerly hung in "admired disorder" on the piers (a system of decoration which it has been gravely proposed to apply to St. Paul's Cathedral), and which are now arranged, with more regard to order and less detriment to architectural effect, on the wall. Here may be seen the tablet, decorated with a simple marble inlay, to the happy memory of Beau Nash, once King of Fashion in the adjoining "Pump-room"; and the jovial head of Quin, of theatrical and epicurean fame, forms the headpiece to another inscribed record. The church contains two or three monumental sculptures by Chantrey, one by Bacon, one by Nollekens (if we mistake not), and one by Flaxman, in which the sculptor's art is expended on two angels, in somewhat stiff, perhaps intentionally conventional attitudes, flanking the inscription stone; it is hardly an interesting specimen of the great artist whose name is cut on it. The Jacobean west door, decorated with heavy carved scrolls and "knops," is worthy of notice, in respect of its massive and solid construction and bold execution.

The restorations have been under the direction of Sir Gilbert Scott. As the work is spoken of as nearly completed, we presume absolute "restoration" of the exterior is not at present contemplated, nor is it at all necessary. Some cutting-out and filling-in of decayed stone would be of service here and there, and if done soon and with judgment, would preclude the necessity for any more extensive refacing, and perhaps remove the temptation to indulge in operations which have been so fatal to the effect and the archæological interest of some old buildings in this country.

DISCOVERY IN PALESTINE.

THE quarterly statement of the Palestine Exploration Fund, for January, 1875, contains matter of unusual interest. As much as seven years ago* we took occasion to point out what appeared to us to be the reason that the results of the exploration of Jerusalem, up to that time, had been so unsatisfactory; and to indicate the spots where, in our view, systematic research could not fail to obtain certain fruits. Whether owing to our suggestion or to his own good sense, Mr. Henry Maudslay,—a name well known in the engineering world,—has now been engaged for some time in excavation, at his own cost, at one of the points indicated; and the result of his labours, as reported in detail by Lieutenant Conder, R.E., is the full determination of the south-west angle of the most ancient of the walls of Jerusalem. A solid tower of native rock, about 25 ft. square, has been scarped or hewn out, to a height of 20 ft., above a rock platform; from which a second sheer descent of 25 ft. and upwards formed the outer line of the city wall. The direction of this scarp, as continued to the north and to the east of the tower, shows that the latter occupied the south-west angle of the wall. A large rock-hewn cistern, behind the tower, opens on the level of the rock platform; and exactly corresponds to the description given by Josephus. The scarp facing the south rises from a second rock platform, of width hitherto undetermined, to a height of 30 ft. The solid basis of a second tower, also accompanied by a cistern, and with a height of 30 ft., has been also discovered at the corner of the cemetery. The work of the scarp Lieutenant Conder describes as magnificent. A counter-scarp, forming a ditch of about 20 ft. wide, has been exposed in one point; but it is not yet made clear how far this ditch was cut. The reference made to the crossing a ditch, or "gutter," in the storm of Jerusalem by Joab, is illustrated by this brilliant discovery. That the work of the Jebusite kings is here laid bare, however it may have been strengthened by later masters of Jerusalem, there seems but little room to doubt.

The progress of the Ordnance survey continues to be rapid and exhaustive. Not only has Lieutenant Conder added a number of important identifications, including that of the Royal and Levitical city of Debir, to our previous knowledge of Palestine; but he has discovered the key to the whole of the topographical arrangement of the Book of Joshua. Thus, within the same year, the first incontestable definition of the most ancient line of the wall of Jerusalem has been attained; and the position that the Book of Joshua is unquestionably a contemporary Domesday-book of the conquest and settlement of Palestine, has received an unexpected and valuable confirmation. We prefer referring our readers to the report, to making any attempt to condense what is there presented in a very distinct form.

We take the opportunity of remarking that, in the discussion which has lately arisen as to the supposed discovery of an inscription marking the limits of Gezer, and the deductions proposed as to the determination of the Hebrew cubit,—which is already accurately determined to be 48 barley-corns, or 16 English inches, in length,—certain main elements of the question have been left out of sight. The letters of the inscription, which have been engraved from a photograph, are not, as has been stated, of the square Hebrew type, nor do they at all nearly approach it. One of them closely resembles a character inscribed on one of the foundation courses of the fortress wall of the Temple, figured in the "Recovery of Jerusalem." This is, of course, in favour of the antiquity of the inscription. On the other hand, it is not possible to read the word TECHOOM in the inscription, except by the aid of a strong resolution to do so. There is nothing in any way resembling either a final M in Hebrew, or a Phœnician, or old Hebrew M. The mark which has been taken for the first letter of the word Gezer is not a G, either of the Hebrew or of the Phœnician alphabet. And the idea that a line of inscription begins at the right hand in Hebrew letters, and at the left hand in Greek letters, meeting about half way, appears to us to be unworthy of serious comment. Assuming that the boundaries of the Hebrew cities were visibly marked (which there is authority in the Talmud for doing), two points have to be borne in mind. First, the marks were on hills, or visible points; as doubt is expressed as to the distance from the city wall passed over by a traveller in a valley. Secondly, the outer boundary could not have been an exact square, even in the very unlikely case of the city itself being square. This is proved by the precise directions that are given in the oral law for not passing the *Techoom*, or Sabbath limit, of 2,000 cubits from a city wall in any direction. In the case of a square circumscribing a square, the angles of the outer square must have been more than 2,000 cubits from any part of the inner wall. This part of the outer boundary, therefore, if traced on the ground, must have been rounded off. If it were not traced, its position was defined by the fact that the Jew was forbidden to walk more than 2,000 ordinary steps in any direction beyond the city verge on the Sabbath. This limit of the *Techoom*, or Sabbath restriction, is the only one to which any reference is made in the Talmud. Maimonides, in his treatise on the Sabbath; Elias, in his Tisbi; Rabbi David and Rabbi Solomon, in their Commentaries, are all full, clear, and accordant on this subject. The laws regarding it are founded on the expressions in the Bible; and it is thus as certain as anything of the kind can be, that no boundary stones, erected under the Jewish law, can mark the Sabbatical suburbs of any city by being erected at four angles.

* See *Builder* for 7th December, 1867; 4th January, 1868; 20th June, 1868.

THE MARYLEBONE NEW POLICE COURT BUILDINGS.

IN consequence of the old police-court in High-street, Marylebone, having for some time past been found unsuitable for its purpose, new police-court buildings have just been erected in Seymour-place, Marylebone-road, and are now ready for occupation. We understand that the magistrates will remove from the High-street court, and take their seats in the new court, in the course of about a month.

The new building, which is situated on the west side of Seymour-place, and almost immediately adjoining the county court and the public baths, has a frontage to Seymour-place of about 70 ft. in length, and is a little more than 30 ft. in height. In addition to a basement it consists of a ground floor and story above. The ground floor portion of the elevation, up to the first floor windows, is in rusticated Portland stone, the upper part being in white Suffolk brick, with Portland stone dressings. There are two entrances, one at the north and the other at the south end of the elevation, 6 ft. in width, ornamental piers and carved and moulded trusses supporting a projecting head. The central portion of the elevation projects about 2 ft. beyond the north and south sides of the frontage, and is surmounted by a pediment rising several feet above the main cornice, the pediment enclosing a sculptured representation of the royal arms. In addition to three-light windows in the central portion of the elevation there is a range of six windows in the ground floor and upper story, those on each side of the latter having ornamental pediment heads, whilst the central three-light window is arched. The entrance at the south end is exclusively for the magistrates and professional men, whilst that at the north is for the general public.

The last-named entrance leads into a spacious hall, or general waiting-room, the walls of which, to a height of 7 ft., are faced with red glazed

brick. The court-room, which is in the centre of the building, is approached from the entrance-hall. It is a large and commodious apartment, 24 ft. in width by about 40 ft. in length. The lower portions of the walls, to the height of 7 ft., are faced with ornamental glazed brick, in red, blue, and stone colour, whilst the upper portions are in panels, divided by moulded pilasters with capitals. The ceiling is also in panels, and is surrounded by a moulded cornice. The court is amply lighted by a lantern light in the centre of the ceiling, and also by windows on the south and west sides. The bench for the magistrates is raised about 2 ft. above the general floor-level, and there is every requisite accommodation for the officers of the court, professional gentlemen, and witnesses, together with a spacious area for the general public. A corridor, running the entire length of the ground-floor on the east side of the court, leads into the several offices for the magistrates, clerks, and other officials, these offices being in the front of the building, and overlooking Seymour-place. There is also a similar corridor on the west side, leading to witnesses' and prisoners' waiting-rooms and other offices, and also to prisoners' cells, of which there are six in number, as well as three in the basement, making nine in all, which are heated with hot-water pipes, and secured by perforated iron doors. Magistrates' private rooms are at the south end of the first-floor, and the keeper's apartments at the north end. We have omitted to state that at the extreme south end of the building there is a carriage entrance for the arrival and departure of the prison vans, by which prisoners will be conveyed to and from the court in entire privacy.

The building has been erected by the Commissioners of Works, under the superintendence of Mr. Pullman, Messrs. Jackson & Shaw being the contractors.

VALUE OF LAND FOR BUILDING PURPOSES IN THE NORTH OF ENGLAND.

A MONTH since a piece of land measuring five acres and a half, running from Yarm-lane to Mill-lane, Stockton, was advertised for sale by auction, but was bought by private contract for 8,500*l.*, and it was considered that the purchasers had paid rather a high figure for their venture. The same site has, however, again been sold to Messrs. Craig, Henderson, & Stainsby, of Middlesbrough, who have given 13,000*l.* for their bargain, the first purchaser having cleared 4,500*l.*, after holding the land for about fourteen days.

DEMOLITION OF WHITECHAPEL PARISH CHURCH.

SALE OF THE BUILDING MATERIALS.

THE old parish church in High-street, Whitechapel, as we have previously mentioned, is about to be taken down, and a new one erected on the site, and on Wednesday last the materials of the old structure were sold on the spot by Messrs. Moore, when the interior of the church, in which the sale took place, was crowded with persons connected with the building trade. The materials were divided into seventy lots, and included, according to the catalogue, about 300,000 bricks, 100,000 plain tiles, 50 tons of lead, 1,500 square feet of flooring, together with the interior fittings; comprising, amongst other articles, 104 pews, the oak inclosure case of the organ, the carved oak pulpit on fluted columns, and a handsome stained and illuminated window over the chancel, at the east end of the church. With the exception of the lead, for which there was an active competition, the several lots realised little more than nominal prices. The moulded and panelled front enclosures of the galleries, with fluted oak columns and capitals, were sold for 18*l.* 10*s.* Two carved oak and gilt figures, "trumpeters," on oak pedestals, fetched 24*l.*; the organ-case, described as "carved and gilt, with carved oak trusses and gilt cherubim, surmounted by four richly-carved and gilt figures," realised 63*l.*; the carved and gilt oak reredos fetched 6*l.* 10*s.*; the pulpit, 12*l.* 10*s.*; and the 104 pews, which were divided into nine lots, realised an aggregate sum of 27*l.*; the whole of the timber and stone in the belfry and cupola, including the inner staircase, were sold in three lots, for 8*l.* 5*s.* Four massive Portland stone circular columns, with carved Corinthian capitals, about 2 ft. in diameter, and 28 ft. in height, were knocked down for 18*s.* each. The stained glass window over the chancel, the subject of the central illuminated panel being "The Adoration of the Shepherds," with the inscription "Unto us a child is born, unto us a son is given," was put up at 15*l.*, and ultimately sold for 17*l.* 10*s.* It was stated in the room that the cost of this window, which is 14 ft. in width, and 18 ft. in height to the crown of its circular arch, was between 500*l.* and 600*l.*, and that should the purchaser be able to remove and replace it elsewhere, without material breakage or damage, he will in all probability realise a substantial profit. As we have already stated, the lead formed the chief attraction to purchasers. It was divided into three lots. That on the east of the roof realised 140*l.*; and that on the west 154*l.*; the lead covering of the belfry and cupola fetching 190*l.* For the last-named lot there was an unusually animated competition. The biddings having rapidly risen to 120*l.*, one competitor, more spirited than the rest, offered 190*l.*, at which sum it was knocked down to him. The aggregate proceeds of the sale amounted to 926*l.*

REVIEW OF SANITARY SCIENCE IN NOTTINGHAM.

UNDER this title a paper was read by Mr. William Richards, Chief Sanitary Inspector of Nottingham, in the literary section of the Nottingham and County Liberal Club, on the 12th inst.; Mr. Councillor W. Ford in the chair. At the close Mr. Richards said, although great progress has been made in sanitary science during the last twenty-five years, there is still a large field open for further advancement. The continued high rate of infant mortality is a subject which demands serious consideration; the better education of the people in the laws of health, and last, but not least, better houses for working men, which will greatly tend towards the furtherance of the social and moral elevation of the community generally. The results of these improvements, as far as affecting vital statistics, are most encouraging. The mortality for the four years from 1842 to 1847 was 35 per 1,000; for the five years from 1848 to 1853, 29 per 1,000; and for the five years from 1868 to 1874, 24 per 1,000. This would represent a saving of 2,000 lives in the five years ending 1873, as compared with the five years ending 1853, and although these various improvements have cost a large amount of public money, it will be generally admitted that increased health, comfort and social progress have been the result, and that the sanitary rate is less expensive and more satisfactory than the fever rate.

ELECTION OF DISTRICT SURVEYOR OF ST. MARTIN'S-IN-THE-FIELDS.

AT the meeting of the Metropolitan Board of Works, on the 22nd inst., applications from twenty-seven candidates for the appointment of district surveyor for the district of St. Martin-in-the-Fields and St. Anne, Soho, were received. Mr. Roche moved that it be a condition that the district surveyor should keep open his office during the business hours of the day, say from ten to four. The district surveyor of Paddington had opened a little office, and put up a small board, stating that the office "hours" were from eleven to twelve. He had occasion to call there on the 21st inst. at a quarter-past twelve, and could not see the surveyor. For a large parish like Paddington this was a great inconvenience. Mr. Freeman said surely that was only a temporary arrangement [or there is some misconception]. A show of hands was then taken, and the number of candidates reduced to six, and the election ultimately resulted in the appointment of Mr. Robert Walker, of 10*a*, King's Arms-yard, Moorgate-street.

Brampton New Workhouse Contracts.—The Guardians of the Brampton Union, on the 20th inst., let the building of the new workhouse for 10,528*l.* 6*s.* 3*d.*, in the following contracts:—Sproat, Talkin, Brampton, mason's work, 6,570*l.* 15*s.* 8*d.*; Winthrop, Brampton, joiner's work, 2,197*l.* 8*s.* 3*d.*; Gibson, Leeds, plumbing, glazing, &c., 600*l.*; Nanson, Carlisle, slating, 749*l.*; Canning, Carlisle, painting, 95*l.*; Ormerod, Carlisle, plastering, 316*l.* 2*s.* 4*d.*

WASHED AWAY IN A SEWER.

MR. LOVEGROVE, surveyor to the Hackney Board of Works, has reported a terrible accident that occurred to two men, named Heale and Webster, whilst at work in the high-level sewer, in the Manor-road, Stoke Newington-road, on Friday last. They had fixed a 9-in. drain-pipe in the sewer, and were returning along the sewer, when suddenly a rush of water came upon them. The force of the stream threw them down. Webster managed to get to the side entrance, clung to the side, and thus escaped destruction. Heale, however, was carried away. The body has not been found, and as there was nothing to intercept the flow between Stoke Nowington and Barking, it is probable that the body may be washed ultimately into the Thames. Query, Would not a running-rope, to pass through rings fixed to the side of the sewer a little above the ordinary water level, or a small permanent chain attached in the same manner between each manhole, afford a means of escape to workmen who are obliged often to pass through the rushing waters of our main and outfall sewers?

THE STORM IN THE NORTH.

Carlisle. — Last week a gale swept over Carlisle and the district which has not been equalled in severity since the storm of January, 1839, involving a great destruction of property. On Tuesday night and Wednesday morning the tempest raged with fearful force. The strength of the wind was something extraordinary in these latitudes, and the amount of damage done to property in this city was exceptionally large. Shutters were blown off shop-windows in the streets, chimney-pots came rattling down with alarming frequency, and in many places not only were the chimney-stacks stripped of their tops, but the chimneys themselves were blown down, smashing in roofs and doing other damage. Numerous other towns in the district were equally damaged.

Sunderland.—A terrible gale blew here early on Wednesday morning, doing considerable damage, especially at Monkwearmouth. The new Free Methodist Chapel, in Roker-avenue, which was to have been opened that day, has had part of its front blown away. At St. George's-terrace, Roker, an unoccupied house had its roof taken off. A portion of the wreck was carried a distance of thirty yards, and some of it was driven against the back windows of the adjoining house.

Glasgow.—An accident of a somewhat serious character is reported from the neighbourhood of Glasgow, as having resulted from the gale of Tuesday. The west gable of a Roman Catholic chapel in course of erection at Cardowan, near Stepps Station, was blown down. The masonwork of the building had been almost completed, but a number of workmen were still engaged at the place. Four men were on a scaffold raising a prop against the gable-wall, when a fierce gust of wind drove the mass of masonry in upon them. The whole were buried amidst the ruins except one, Naismith, who, as the wall descended, threw himself through the gable window, escaping almost unhurt. After several minutes' labour on the part of the other workmen, who were attracted to the spot by the cries of alarm, Downie was released, but he was so severely injured—both his legs being broken—that he died in less than an hour. The next man released was Gunn, who was conveyed to the Glasgow Infirmary, where it was found that one of his legs had been broken, and he was otherwise severely injured. The other man, Lorney, was extricated shortly after, but the injuries he had sustained were not of a dangerous nature.

Belfast.—This neighbourhood was, on Wednesday, visited with a storm of unusual violence, causing a great damage. There was a perfect hurricane, sweeping chimney-pots and slates off the roofs, and carrying them about in all directions, while in many streets signboards and projecting lamps were blown away. A portion of a house at Sydenham was blown down, and the inmates had a narrow escape; and the side-wall of a church at the Knock was so much bent that it will have to be taken down. A portion of the Orange Hall at Holywood was also blown down. The new Methodist church, which is in course of erection at Carlisle-circus, was considerably injured, a large portion of the masonry having been blown off the top of the building. One of the lighthouses in Belfast Lough was also blown down.

THEATRE ROYAL, WORCESTER.

A commodious new theatre has been erected in Worcester from the designs of Mr. C. J. Phipps, architect. The pit holds about 600 and the gallery 700 persons, while the balcony-stalls seat 106, and the upper circle behind the balcony 100. Including the eight private boxes, accommodation will, therefore, be afforded to more than 1,500 persons. The decorations have been executed by Mr. Edward Bell, London. Over the stage is emblazoned the Worcester coat of arms, with the motto, "*Semper fidelis*," while above the stage boxes are two figures painted by Mr. Alfred Thompson, representing Comedy and Tragedy. The theatre is arranged on the plan of the Gaiety Theatre, London. It is lighted, not by a centre chandelier depending from the roof, or by gases round the front of the galleries; but by a constellation of seven gas-stars fixed in the concave centre of the ceiling. The theatre has been promptly built by Mr. Dixon, contractor, Worcester; the sunlight has been erected by Messrs. Strode, London; the upholstery work has been executed by Mr. Williams, Worcester; and the chairs have been manufactured by the Messrs. Wadman, Bath.

SCHOOL-BOARD SCHOOLS.

Brecon.—A new school, at the corner of St. David's-street and Orchard-street, has been erected by the School Board for the united school district, and was opened on the 18th inst. The site of the building is 960 square yards in extent, and the cost of purchase was nearly 300*l.* The building is detached from other buildings, being bounded on two sides by gardens. The contract price was 1,280*l.*, and the extras do not exceed 10*l.* The school, which has been erected by Messrs. Williams & Sons, of Brecon, from the design of Mr. William Williams, the county surveyor, is in the Gothic style, the exterior being of local stone, with Bridgend dressings in the front and local stone dressings in the back. There is a projecting bellcote at one end. The building consists of one schoolroom for boys and girls, 48 ft. by 20 ft.; a class-room, 18 ft. by 15 ft.; and two porches, 16 ft. by 5 ft. Accommodation is provided for 150 children. The roof is open timbered, of pitch pine, wrought and finished, and the furniture is of pitch pine. The rooms are lighted by windows in sashes and frames, and gas has been laid into the building. There are two open fireplaces, and ventilation through the outer walls is secured by openings just below the wall fret. The building is covered with Bangor and Carnarvon slates laid in alternate courses. The chimney-stack is ornamented with dressings of local stones. The playground, which is enclosed in walls with four pillars, is 70 ft. by 80 ft. in extent. On the south side of the building is a stone coping and iron rails, and there are two entrance-pillars on that side and two on the east side. The east and west sides of the site are bounded by walls with stone copings.

SCHOOLS OF ART.

Manchester.—The annual meeting and prize distribution of the Manchester School of Art was held in the Lecture Theatre of the Manchester Royal Institution, the Mayor (Mr. Alderman King), presiding. Mr. E. W. Marshall (the hon. secretary) read the treasurer's balance-sheet, which showed an income of 1,652*l.*, against an expenditure of 1,406*l.* He also read the committee's report, which stated that prizes exceeding the average number have been awarded to the pupils by the Science and Art Department, and they recorded their gratification that the Princess of Wales Scholarships of 25*l.* and 11*l.* respectively, had again been gained by students of this school. Mr. Birley, M.P., who delivered the prizes, impressed upon the students that art cultivation and all that it led to was not to be considered the inheritance and the exclusive possession of the wealthy, but that it ought to be the heritage of the many. It had been often urged that the people of this country had no natural aptitude for what was called art; but he believed there was good authority for maintaining that there was no reason why, with proper appliances, proper exertions, and proper uses of those talents with which Providence might have gifted our art students, we in this country should not attain very fair rank among the nations as regarded the practice and appreciation of art.

Taunton.—A public meeting was held, at the School of Art, Bath-place, on Wednesday, 13th, when the prizes awarded by the Government Department of Science and Art were distributed to the successful candidates; Mr. Arthur Malet, president of the school, taking the chair. In opening the proceedings, the Chairman said that the school was progressing very fairly and very well. Everybody knew the necessity at the present day for pressing forward, and that art learning was no small part of the education now required. Art and science were needed by all who had to make their way in the world, and without these those who worked with either hand or brain would find themselves in the background. Continental nations were pressing forward in the line of science and art, and unless we did the same for our sons and daughters we should find ourselves left behind not long hence.

Cork.—The annual public meeting for the distribution of prizes of the Cork School of Design has been held in the Theatre of the Institution. The Mayor occupied the chair. Mr. James Brennan, head master, read the annual report, which stated that the number of pupils who passed through the school during the year ending June 30th, was 188, and there were at present attending classes 159. In the subjects of practical plane and solid geometry, and machine drawing, all those who presented themselves for examination were successful, and six Queen's prizes were obtained. The report renewed the complaint of the unsuitability of the premises for a School of Art, badly lighted, draughty, with a leaky roof, and rotten floors. The Mayor having distributed the prizes, said he had great pleasure in seeing the school so flourishing. He, however, fully participated in the opinion expressed by Mr. Brennan as to the disreputable condition of the building in which the school was located; it was unworthy of a great city. He had seen ruins in many countries—had seen many in Rome, in Pompeii, and elsewhere, and he should say he had seen ruins that were in a far better state of preservation than the ruin in which they were assembled. It had been one of the dreams of his life to see a free library in Cork, with a museum and a school of art altogether, which would be one of the best civilisers they could introduce into their midst.

COMPENSATION CASE.

On the 19th inst., Mr. Under-Sheriff Burchell and a special jury attended at the Christ Church School-room, Ealing, to try the case between the executors of the late Lady Delipierre and the Ealing Local Board, the former being the owner of the land near Perrivale Church, required by the local Board for sewage and irrigation purposes, in connexion with the new northern district lately included within the boundary of the Ealing district.

The jury assembled at ten o'clock, and after the court had been formally opened, they were conveyed to Perrivale to view the land. On the re-assembling of the jury, Mr. Hawkins, Q.C., and Mr. Armstrong (who appeared for the local Board), and Sir Henry James, Q.C., and Mr. J. O. Griffith (who represented the executors), held a private consultation, the result being that after a short deliberation the jury awarded the executors, by consent, a sum of 4,100*l.*, for the land owned by them, all interest in the same to be given up. The land in question is about 22½ acres.

A large number of witnesses were engaged on either side, including Messrs. Driver, Clark, Ryde, Oakley, Prickett, H. Jones, and others.

Mr. Charles Jones, the engineer to the Board, has designed a scheme of drainage and irrigation (with previous deodorisation and classification), similar to the works lately completed by him at Tonbridge, Kent. The plans have received the consent of the Local Government Board, and will shortly be ready for tender.

Church Restoration.—The church of Langton Matravers is to be rebuilt at a cost of 3,500*l.*, the present accommodation being inadequate for the parishioners, who are chiefly labourers and quarrymen.——Bere Regis Church, Dorset, is in the hands of the restorer, the plans having been prepared by Mr. Street, of London. The cost will be nearly 5,000*l.*——The parish church of Folke, in Dorset,—a peculiar example of a post-Reformation edifice,—is to be reseated and restored at a cost of 1,075*l.*

ST. BARTHOLOMEW'S, BRIGHTON.

In our volume for last year (xxxii., p. 909), will be found a view of the exterior of this church, built for the Rev. Arthur Wagner, under the direction of Mr. Edmund E. Scott, architect, together with some descriptive particulars. To these illustrations we now add the ground plan, and a view of the interior of the church looking towards the chancel, which in this case does not mean towards the east, but the north.* The total length of the church inside is 170 ft., and the height to the ridge is 135 ft.

There is a choir organ by Holditch: the gallery for the grand organ is not yet constructed, but the foundations are prepared. The porch is not yet built. The reredos is formed with crimson velvet hangings; the table is of oak, with painted figures on a gold ground in the panels. At night the church is lighted by circles suspended from the triforium on brackets, all gilt. The total cost of this large fabric, including porch and vestry, will be about 16,000*l.*

INFLUENCE OF TRADITION IN THE TREATMENT OF GOLD AND SILVER SMITHS' WORK.

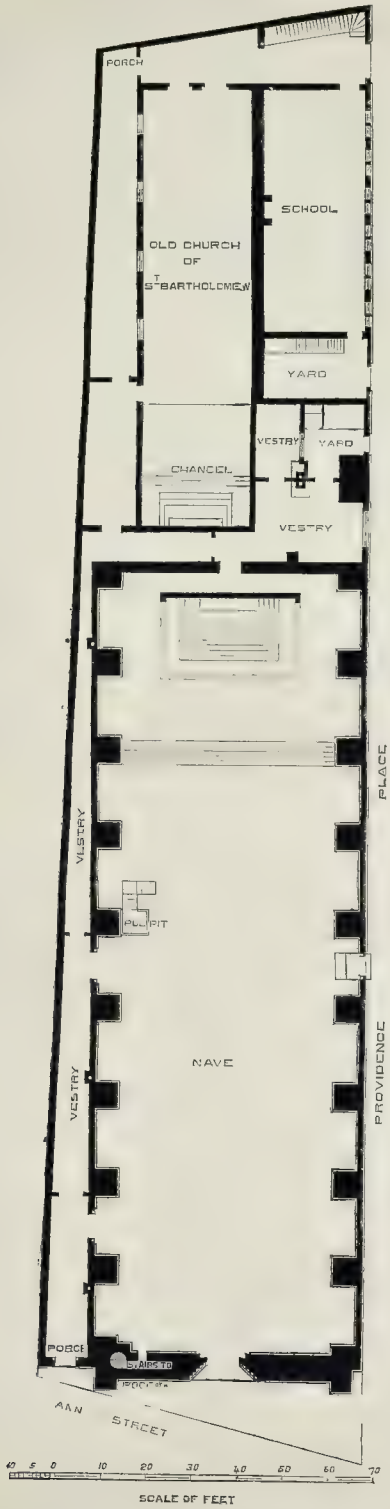
ARCHITECTURAL ASSOCIATION.

At an ordinary general meeting of the members held last Friday evening, the 22nd inst., under the presidency of Mr. George H. Birch, the following gentlemen were elected members:—Messrs. A. Ardron, J. Gibson, jun., T. E. Collcutt, A. W. Cross, W. Renwood, W. E. Brown, S. C. O. Pinchin, and R. M. Driver.

The secretary (Mr. S. Flint Clarkson) said that the first visit of the Association was paid on Saturday afternoon last to the new buildings of the National Gallery, and he had much pleasure in proposing a vote of thanks to the architect, Mr. E. M. Barry, for the facilities he offered for their visit. The vote having been carried,

Mr. R. H. Soden Smith, M.A., then read a paper "On the Influence of Tradition in the Development of Gold and Silver Smiths' Work." He commenced by saying that the subject was one which, as it dealt with a class of productions not always included within the province of fine art, he should not perhaps have selected it for the consideration of the Association had he not been assured that the study of the lesser arts was not deemed outside their province, although they, as an Architectural Association, were united for the promotion and practice of the chief and greatest of the Fine Arts. He proposed to consider briefly some of the developments of the goldsmith's art in ancient and mediæval times; to show the durability of the traditions which influenced it; and to point out that these traditions became in some instances the inheritance of races who had triumphed over those from whom the knowledge was originally derived. Goldsmiths' art cannot at present be said to have a history: other arts were more fortunate. There was a bulky and important work known as the "History of Art by its Monuments"; but in the case of that with which they had to do, its monuments, minute, rare, and precious, were themselves its history, and it was only after close personal study of these often exquisite works that one could arrive at satisfactory knowledge of the processes and development of the art. The earliest goldsmith's work to which they could assign a pretty accurate date was that of the Egyptians, and no other was more strongly and peculiarly characterised. In no other was the influence of early tradition more apparent or more durable. Like all the art of those wonderful people, their goldsmiths' work was conceived in a spirit that made it unlike any other in the world; its conception was also carried out with a skill, power, and completeness which had never been surpassed, proving that the Egyptian workers in precious metals were not less masters of their tools than their fellow artists who wrought in the hardest basalt, and the most stubborn varieties of porphyry. The antecedents of their art they were ignorant of. When it was first become acquainted with,—and some specimens extant were in all probability more than 3,600 years old,—its character was fixed, and its processes almost perfect. Already tradition had asserted its authority; conceptions possibly derived from distant and diverse nations had been assimilated, modified, and finally fettered in Egyptian fetters; the real work was

* See p. 99.



ST. BARTHOLOMEW'S CHURCH, BRIGHTON.——*Plan.*

already done, the track cleared, the bounds set up and fixed to prevent any straying away of too exuberant fancy, and most wonderful was the mastery of the technical processes which was attained; and this, 1,800 years before the Christian era. They would give much to know what preceded the fixed tradition and consummate skill. When they looked closely into the matter a few considerations occurred. In Egyptian jewelry, including the most ancient, an effect of decoration, evidently much relied upon for producing the gorgeous hues which they loved, was given by a tesselation or inlay of brilliantly-coloured stones, jaspers, agates, lapis-lazuli, or by glass pastes to imitate still brighter colours. These were harmonised with judgment, and the pieces fitted with excellent skill into partitions or cloisons of gold, each portion often shaped as best suited the requirements of the design. Such were some of the jewels which came to light when amongst the tombs of Thebes the rich coffin of an ancient Egyptian queen was fortunately discovered. This was in 1859, and the gorgeously decorated case was found to contain the mummy of the Queen, Aah Hotep, wife of the monarch Rames, and that the date was at least 1800 B.C. The jewels deposited in the mummy-case were most splendid, and were royal insignia, probably buried with the queen's body, by order of her son, as his name, Aahmes, occurred on some of them. They included a diadem of gold, a pectoral plate, bracelets, chains, poniards, and other gorgeous objects, and the workmanship upon them was of the most complete and admirable character. He specially mentioned them because they offered remarkable examples of the rich inlay work in stones and coloured pastes to which he had just alluded. In fact, the finest of these jewels depended for their splendour of effect chiefly on this ingenious and richly-coloured ornament. The pectoral plate, and some of the bracelets, were almost entirely composed of it, and on one of the latter was a representation of a vulture, formed of a *cloisonné* mosaic of lapis-lazuli, carnelian, and coloured glass pastes. Besides these examples there was in the Louvre a fine specimen of similar work, and in the British Museum were several jewels showing the rise of the same process. Now it appeared to him that such a method of decoration as this was likely to have had its origin in a land where precious stones abounded, and that a love of gorgeous colour found its expression in their use, such a tradition being carried to a country where the most splendid gems did not exist, as was the case with Egypt, the artists who received it setting themselves to produce similar effects by the use of imitative glass pastes of the richest hues they could obtain. If this be so, it would be to the East, probably to India, that they would turn for the origin of such a tradition. However the fact might be, and from whatever source Egypt might have obtained her goldsmiths' processes, it was undoubted and most remarkable that at the remote period to which these works belonged an excellence was already arrived at which in some respects had never been surpassed in any age or in any country. This praise of their work was justified, to take one example, by the treatment of a pendant in form of a scarabæus, which was attached to an exquisitely-wrought chain among the jewels of this ancient queen. Nothing could exceed the skill of the workmanship of this remarkable object, not even the Greeks, of whom he had shortly to speak, could go beyond the perfection with which this design was carried out. Assyrian goldsmiths might well come next after Egyptian under his consideration, but that the means of knowledge at their command were not sufficient for his present purpose. That they worked largely in the precious metals was known, lavishly indeed, and on a magnificent scale; but their gorgeous works had perished, and not enough remained to enable them to trace the history and development of their labour in gold, as they could that of their sculpture and various kindred arts. The tradition of their splendour had an Oriental stateliness about it that kindled the imagination; the couches, and tables, and thrones of gold, the statues and palaces overlaid with gold, all the pomp of personal adornment of jewels, and collars, and crowns of precious metals; but they turned away from these things, which were now little more than a vision, to delve their antiquarian way through piles of ruins and vast mounds of almost undistinguishable desolation. Passing, then, from these ancient nations, they came to the seafaring race, who had possessed themselves of the carrying trade of

the ancient world,—he meant the Phœnicians, as they were, if not the originators, at least the disseminators, of much knowledge of metal-working processes. Their own art, as far as they knew it, showed little that was original, but was influenced in the first degree by traditions of Egyptian work, and also in a less measure by Assyrian, Etruscan, and Persian motives, and, later in their history, by Greek. As the Phœnicians made their influence felt along the shores of the Mediterranean, and beyond it, so they carried to their scattered settlements or trading places the traditions of nations of an organisation different from, and more artistic than, their own; they themselves seemed to have possessed no strong art individuality, but rather to have reflected what they received from others. Thus objects of their workmanship often presented a perplexing problem to the student, and cannot at times be identified with certainty as of truly Phœnician production, except with the external aid derivable from the circumstances and conditions of their discovery. Amongst the nations that profited by Egyptian traditions, prominent above all were the Greeks. The tradition was filtered, doubtless, by Phœnician intervention, and by Asiatic influences; nevertheless, it had in it the seed of vitality which characterised all true art. Their soldering, or some analogous process the methods of which might possibly have reached them from India, was brought to extraordinary perfection. The ease and certainty they seemed to have arrived at in some of its most difficult applications gave a special character of delicacy and refinement to the details of their work. By a manipulative skill, which had never been surpassed, they succeeded in clothing surfaces with a dust of golden granules too minute to be discriminated by ordinary sight, which produced a sense of richness, a warmth of colour,—if he might be allowed the expression,—unattainable by any other method. To one uneducated in the study of those processes, it might appear that an equal effect could be obtained by casting or chasing at a much less expenditure of time and labour. But it was not so. Casting, however dexterous, was clumsy in comparison, and the result was wanting in the clearness, the light and shade of the original method; chasing produced an effect, but of a different nature. The Greeks, in elaborating and perfecting their difficult process, were not merely exhibiting a *tour de force* of manipulative dexterity; but were aiming at a result to which their true artistic sense directed them. They owed it to the well-instructed skill of a modern artist in gold that within the last few years this most delicate process of decorating surfaces with granules of gold had been re-discovered, and was now practised with admirable success. The beaten up, or *repoussé*, work of the Greeks, also exhibited the utmost excellence, showing at times so entire a mastery of the process that no perception of its difficulties remained to distract attention from the result. The examination of any considerable collection of Greek work would justify this praise, for the productions of the finest period were rare; and, moreover, they could not suppose that the very best had come down to them. Yet enough remained in such collections as those of the British Museum, the South Kensington Museum, and the Louvre to amply repay the most careful study, and to convince the student how difficult it was to rival their skill. In surface-chasing, also, the Greeks greatly excelled; and the results of this process, as but little technical knowledge was required to appreciate them, impressed the casual observer more than those attained by the difficult soldering and beaten work of which he had spoken. Their chasing was, indeed, admirable. It exhibited the freedom and mastery which proved that all technical difficulties had been overcome, together with the delicacy and control which belonged to work which was felt, and not merely *executed*. It was when studying these seemingly minute points, and appreciating their results, that one felt the almost immeasurable distance between the ancient Greek artist in gold, and too many of our countrymen, working in the precious metals, who supplied the modern market with its popular wares. Indications there were, happily, of a better taste; and he rejoiced to know of some who had taken a long stride beyond the senseless rubbish of golden padlocks, horse-hoofs, and fetters, valued by their weight in metal, and hung in garish profusion on the costume of some who might be leaders of taste, if not of fashion. But beyond even this excellent skill in surface-chasing was the work of those incomparable artists in intaglio-cutting in gold. Many, no doubt, of these intaglios—he alluded chiefly to those occurring on finger-rings formed wholly of gold—were rather sketches than elaborately-finished works, and in the mortuary rings the indications of figures were often slight and rude. But, occasionally, intaglios in gold occurred of extraordinary excellence worthy of the artists who produced in the harder metal of their coin-dies the finest work of its special kind that the world had ever seen. A Greek intaglio was, indeed, a wonderful production; and while they noted with astonishment the mastery they possessed over the stubborn materials, even of sapphire, they felt how completely the comparatively soft gold must have been under their control. Moreover, the gold they employed, when obtained from Transylvania, no alloy being added, was wholly pure, the gold having the least portion of natural alloy of any that was known. Lastly, he might mention their skill in the production of woven wire-work, and the refinement and delicacy with which they employed it, so as to take full advantage of its surface, penetrated by light in its minute interstices, and the undefinable grace which it added to designs that might otherwise have wanted somewhat of the peculiar justness of proportion and freedom at which they aimed. The origin of Etruscan art in general was a question so difficult, that no satisfactory solution of it had yet been offered, and in the special branch of it with which he had at present to do, their skill was such that the inquiry respecting the sources of their knowledge became peculiarly interesting. Their singular skill as goldsmiths had long been acknowledged by those who had paid close attention to these inquiries, and owing to the fact that their sepulchres were respected, perhaps sometimes not discovered, by their Roman conquerors, and that in these sepulchres were often deposited treasures of the jeweller's art, they had the means of becoming more familiar with their goldsmith's work than with that of any other nation of antiquity. They were masters of the various processes of casting, beating up or *repoussé*, soldering, wire-drawing, and plaiting. Especially they availed themselves with skilful judgment of the ductility of the metal; their twisted wire-work, used as an enrichment of surfaces, was delicate and elegant; while their fine wire chains were admirably woven. They also possessed the art of clothing surfaces of the metal with a gold dust of the most minute granules, and in the practice of this difficult work they were scarcely inferior to the Greeks. It was probable that the same tradition taught this peculiar process to both nations, but they had at present no certainty, though they might form some conjecture as to whence it was derived. At all events, in the hands of these ancient artists it was brought to perfection; rounded and otherwise varied surfaces were covered, and various designs of ornament successfully indicated. As an illustration of the permanence of the tradition of goldsmiths' work, it seemed never to have been wholly lost, for, in the less frequented parts of Central Italy, workmen were found, possibly of the race of ancient Etruscans, who still wrought in the precious metals, using some such method as that described, and retaining such manipulative skill that their aid was of value in the revival of the antique forms of jewelry. This fact also illustrated the truth, too often neglected or overlooked, that skill which required peculiar powers of sight and touch had a tendency to become hereditary. The beaten work of the Etruscans was often very remarkable, and as their gold was usually employed thin they had much recourse to this very effective method of giving richness, variety, and play of light to its surface. Many of the earrings were exquisite specimens of this kind of work, combined with the corded and beaded decoration which they also used with excellent judgment and effect. On the whole, ingenuity and elaboration of design, great richness of general effect, together with minuteness and dexterity of manipulation, characterised their goldsmith's work. The influence of very ancient tradition, external to them as a Tuscan people, was apparent, and, as at all periods their art seemed to have been receptive rather than inventive, the effect of Greek intercourse became ultimately more or less obvious. It seemed beyond doubt that early Egyptian traditions gave a character to their art, the points of resemblance being in certain directions frequent and striking. Another influence was traceable, which seemed derived from Asia, pervading not alone the minute objects under their consideration, but their whole art sufficiently to have induced some inquirers to refer to eastern lands the origin of the nation itself. Next to the Etruscans it would seem most natural to consider the development of the goldsmith's art among the Romans, but this great conquering nation cannot be truly said to have had any art of their own; they emerged from the barbarism of their origin by the aid of the Latins and Etruscans, whom they subdued. The African luxury of Carthage next told upon them, and, finally, the arts of conquered Greece subdued them; but in all this there was nothing that aided their present inquiry. Whenever good artistic work was shown to have emanated from ancient Rome they called it Greco-Roman, recognising in it the hand of the subtle and adaptable Greek, who found it suited well with the fallen fortunes of his race and nation to make his home in the Imperial City, and to trade upon his art instincts, which, even among the vulgar Trimalchios of the day, it had become the fashion to patronise. Byzantine goldsmith's art would seem at present another example of the predominance of foreign influence, but it essentially differed from Roman in that the traditions might be said to have taken root, coalesced, and produced a sufficiently marked and individualised result. The chief interest of Byzantine art was that through it one element of Oriental tradition chiefly made its made into Western Europe. No doubt the Gothic nations spreading to Spain in one direction, to Scandinavia in the other, carried with them the strong Orientalism of their semi-barbaric art; but this was different in motive and character from that of Byzantium, and, moreover, for a time it yielded to the influence of the latter. Nothing could so aptly illustrate perhaps the combination of the two than reference to the astonishing mass of golden spoil discovered in Roumania in 1837, and called the Treasure of Petrossa; one golden salver found being alone worth, in weight of metal, nearly 1,000*l.*; but their archæological importance was still greater. They included Byzantine work, in which the tradition of classic art remained, overlaid with Oriental influence; and there were exhibited gorgeous but barbaric specimens of the jewelry of the Gothic tribes that overran ancient Dacia. These latter objects were characterised by an enrichment of inlay-work, composed of slices of garnets and various coloured glass pastes. In referring to the durable nature of traditional processes in goldsmiths' work, and the contingent influences exerted on the quality and fashion of work during many generations, the author went on to ask,—Did the Phœnicians possess themselves of the process, and carry it to those who were described as the barbarians beside the ocean? For, in addition to the knowledge of enamel which these rude people possessed, they found objects dating from the Celtic period enriched with a sort of tesselation of minute portions of glass pastes. Again, in the mixed mass of treasure, Byzantine and Gothic, which he had mentioned as found at Petrossa, the same well-characterised and peculiar style of ornament reappeared, portions of garnet as well as vitreous paste being used to fill the minute golden partitions. Another link in the chain, and that a most important one, was furnished by the objects of extraordinary interest and importance which were found in the grave of Childeric I., second king of the Merovingian dynasty, who died in 481, and was buried at Tournay; and among the personal ornaments were several enriched with the exact kind of work they were considering; the golden bees, which were supposed to have adorned his royal mantle, were inlaid with portions of garnet or glass paste. From this time forward the links in the chain were sufficiently continuous to show that the tradition of the process was never lost. It was not difficult to cite examples, such as the objects found in 1842 in Champagne, and now preserved in the Museum at Troyes, among them being sword and dagger hilts richly decorated with the same inlaid work. When they came to the Anglo-Saxon period, they found this inlay a favourite ornament for their gorgeous brooches, &c., and in the Faucett collection, at Liverpool, were some splendid examples of brooches, found as they chiefly had been at Kent. Passing from the Saxon period, they found the tradition of this ornament lingering among the Scandinavian goldsmiths; they also found that it had never been wholly lost in Spain, and that to a very late period it was practised in the Tyrol, in Hungary, and in Albania, and, in a modified form, had scarcely yet died out. In conclusion, he said

that the effect of traditions on goldsmiths' work was, first, to perfect processes as long as the real life of a nation endured; afterwards, to induce imitations of the more difficult processes intended to save labour and satisfy or deceive the superficial eye; and, lastly, to check invention.

The President said that it was impossible to overrate the importance of studying goldsmiths' work, which was of great interest to them as architects, for they might sometimes have occasion to be employed in the kind of work to which the lecturer had referred. With reference to the collection in the British Museum, alluded to by Mr. Smith in his paper, Mr. Birch thought that it was classified in an extraordinary manner, and he trusted that before long it would be so placed that they could go from class to class, and study all the branches of this goldsmiths' work. Alluding to the law of "treasure trove," the President trusted that it would be placed on a better foundation.

Mr. Hugh H. Stannus said that they ought to thank Mr. Smith for introducing the subject of goldsmiths' work in so clear a manner as he had done. One of the reasons why the trade of the goldsmith was kept so secret, he thought, was that the work was such that it could be executed privately, and taken home to the workmen's houses. The first man, he was of opinion, who discovered that he could unite two pieces of metal together made goldsmiths' work practical.

Before the meeting separated,

Mr. Hayes called attention to an interesting sketch, made by Mr. Statham, giving a fine view of St. Paul's Cathedral from the Blackfriars Station of the Metropolitan District Railway, and which showed the building of Sir Christopher Wren's to great advantage.

STREET PAVING ARTISTICALLY GLANCED AT.

A GOOD deal of talk there has been lately about the paving of the streets, and not, it is certain, without cause; and the wonder is that so important a subject has not long before this excited more attention. It would be hard indeed to find a subject more universally interesting and useful than that of the character and condition of the very roadway on which everybody, be he who he may, must needs travel; and not only travel and move about on, but must also perpetually *look* at,—a subject of twofold interest both useful and artistic. Nay, more than this; for these words hardly express what "Pavement" may be made to imply. In the old-world ways, and in poetic imagery, what is there not to be found of all that is imaginative in the antique pavements and floors? Golden pavements, floors of jasper, green emerald, for the footsteps have been pictured in the minds of poets all the world over, from east to west. We are contented to dream of what we cannot, or are unwilling to, realise; and the streets of the very largest and very wealthiest city of the world exhibit no sign of even jasper or marble in their pavements. Nothing but quite ordinary "Yorkshire" in all and any sizes, as most conveniently quarried and moved about. We are a plain and practical people, it is certain, and do not do much in the way of putting before the public and general eye, — which a great people ought always to do,—the precious things of art and of nature. Still a little might be done, even here; and we venture, therefore, to say a few words about it, and to point to a fact or two.

If the problem be a puzzling one as to which of great London streets be the most attractive generally,—and it certainly would tax the keenest of us to say which is so, taking, of course, the best of them,—it would be yet a greater puzzle to say what it could be in such street that could be pointed out which specially characterises it as artistic, or even picturesque, or "architecturesque." Which is, may we ask the curious in passing, the most picturesque of London streets? Which the most otherwise attractive? Which the most architecturesque?—to adopt that not a little expressive, and really convenient word. But leaving these hard-to-be-answered problems; what is there, say, in Regent-street, that can possibly fix the eye and attention of the artist; barring the open and ever bright shop-windows, and their fresh and attractive contents? It certainly is not the house-architecture line, for that is sufficiently poor, not to say mean, as well may be. It is not of imposing size. It is not extreme width, or, what is more, extreme narrowness of street-way. And most certainly it is not the street pavement that can attract the special notice of the passers by. Here and there it may be that some little attempt has been made to ornament the footway by the addition in a doorway of a thin strip of encaustic tile work; but this is mere accident, and does not help the general poverty of the ground which must be passed over. But first to a quite plain and practical matter, though still in the end an artistic one; for plain, and simple, and even poverty-struck, though the common pavement of the streets of great towns may be, still do such street roadways come into the picture of the streets, and cannot be otherwise than noted in such picture; and we are looking at it artistically.

The common street-paving no doubt does, and must to most people, perhaps even to most professionals, seem a matter of mere necessary utility, more or less well and satisfactorily executed, in more or less good and sound materials, and as having nothing whatever in it having to do with art. At first sight this does seem so, but in reality it is far different even as things are. No one can look down the length of a street, however indifferent, or however imposing, without at the same time that he sees the buildings right and left, taking in as well the eye impression of the street, or road, and foot-paving, whatever that, as a whole, may be, and whatever may be the colour of it. He sees the ground on which the buildings stand, and this ground is in reality fully as important in the eye picture, as the very sky itself, which forms the roof of the picture, and which no one certainly can, or possibly do otherwise, than notice and even dwell upon. We cannot help looking at the street pavement, even if we would, and with not a few people given to brown study, it is not unfrequently the only object they *do* look at. A history of street-paving among different nations, and at different times, would be a not-a-little useful addition to our architectural and artistic records. We do not mean a history of mere road-making, but of road-making "artistic" as well, and the time has been when this was an item in the architectural "specification" of works to be done.

We do not here speak of country roads, however formed, but of town street-ways and foot-pavements. No one can go down some out-of-the-way by-street of the old-fashioned type in London, without, may be, at least a passing notice of the roadway of it. It is composed of good-sized granite blocks, round and smooth on the surface, almost polished indeed, and irregularly set in the ground. It makes, in very quiet, narrow streets, almost an artistic appearance, both in form and colour, and is always noticeable in the old prints of London, as it was before the days of MacAdam. Of course, this is a noisy enough pavement, but it is a solid-looking and artistic one. It might as we think, be yet improved upon, and made here and there to do good service. It is this solid paving which is now gradually and surely making way for asphalte or wood. Huge heaps of it may be seen, looking like old-world walling, on the Thames Embankment, close to Blackfriars, and the heaps are daily accumulating, for its day is over.

The next step in road-making was, as all must know, the cutting up of these boulders into smaller irregular fragments, and the scattering these broadcast over the earthen road itself, after the plan of MacAdam. This in a few days got trodden into the earth, so as not to be distinguishable from it, or from an ordinary high road of earth and pebbles. This hardly comes within our present looking at the matter. There is certainly nothing of art in it. Next comes the asphalte and the wood paving of different kinds, and, artistically looked at, they may be classed together, for the object aimed at in both of them is simply smoothness and an even level of roadway. The dull colour of them must tell in the street picture. At night, as it is in the narrow, high-housed, City streets, in wet weather, nothing can be more dreary or much colder than an asphalte-covered roadway,—as like to rotten, dirty ice as is possible.

It is, nevertheless, street-paving of asphalte or wood that will in all probability supersede all others, for the street *noise* then is at a minimum. It is curious to note the difference between the *tread* on such pavement and the tread on the ordinary stone paving, and the *ease* with which way is made on the yielding wood paving. It would be curious to experiment on the additional distance which a vigorous traveller could pass over on good wooden paving as compared with the distance—to say nothing of fatigue—on the ordinary stone paving. But this by the way. It is the *foot* paving here that we more especially refer to as capable of artistic improvement, or rather of artistic treatment. As things are, nothing can be rougher, or less adapted to attract the eye, than the pavement the Londoner passes over so often. The irregularity in size of the slabs composing it, and the inartistic way in which the work is put together, make the sight endurable only from the fact of every one being used to it, and knowing of nothing else. The simple regularity of forms in the separate slabs, and a little ingenuity in the putting of them together, and in their arrangement, would of itself, little as it may seem, do a great deal. It needs only to be noted, this constant attractiveness, as in the flooring of St. Paul's, where the slabs of marble are regular in form and arrangement, to feel sure of this. Nay, how very little is required to interest the mind even here; for the mere passing over a pavement roughened by the feet of a past generation works an almost magic charm as soon as we are conscious of it. It may be said that the very echoes of past footsteps are to be *heard*, if but attentively listened for. We are not all gifted with so acute an ear, but all can see, and some at least of us may hear a distant echo.

We may well, and perhaps usefully, note here a very small remnant of the past, which until very lately existed. It was, we believe, the only instance in London of artistic or architectural paving in a public way. We allude to a few square feet of fragments of stone and marble pavement in Covent Garden, in Inigo Jones's piazza, on the east side of it, and opposite to the hotel there. It was not much perhaps in itself, but a good deal where there is nothing. It was a clever thought this Covent Garden-square, with its covered walk all round it, and its church and gateways. Sometimes we are inclined to think it unique. It was never completed by its illustrious architect, and has been in very many ways sadly marred and put out out of joint. The proportions of it, and its details, though few, are admirable, and there is a quaintness about the little there is of it left which makes one regret most sincerely that it was never completed. Its noble owner and great landlord, his Grace of Bedford, might well for London's sake complete this square, after the plans of its architect, and when doing so *restore* the pavement. Fashions change, and Fashion has run away from Covent Garden-square as a place to abide in, that is certain; but yet not altogether run away, for the great theatre near holds its own, and all that is noble and wealthy and fashionable go to it; and through this very square, for three months in the year, nay, in this very covered way, Fashion itself, in satin slippers, in plenty, have we seen pass over this very bit of quaint and old marble paving,—the only pavement of marble in mighty, all-wealthy London! Did any of those who so trod it notice it, on their way to their easy carriages?

Looking thus generally at the common pavement of the streets, it is certain that nowadays cheapness rules well-nigh absolutely in it; all sizes of stone slabs are used, and those of the very thinnest possible. It is a little lamentable to think of, for things might be otherwise. Understand, says a great modern teacher, that no good man did, or ever should, encourage "cheapness" at the ruinous expense of unfitness, or, we might surely add, positive ugliness. It is a pity indeed that such opportunity for good work, good in all senses, for fitness and beauty, and even as a vehicle for instruction to those who read as well as run, should be neglected. But so it is. We can but imagine a better condition of things. A quaint street pavement. How little would do it, and what an immense field for it there is. How very far towards delighting the eye would a little bit of clear and bright coloured marble go, here and there, after the example as above of Inigo Jones. Nay, the very granite discarded from the roadways and cut into squares, and polished, might be made to do good service, and help the eye to a cure of its dull vacancy! We might go into detail, and hint at more than one thing here, but will leave it to the thoughtful consideration of those who may perchance take to it. If it be true, as the leading journal has it, that one of the great problems of the future must needs be the "rebuilding of our hideous Metropolis," then most certainly its repaving in some way or other different from the present must be included in it, and that, whether artistic or not. As it is, might not a good beginning be made by the "artistic paving" of some leading and fashionable London street?

OLD WESTMINSTER.



TOTHILL FIELDS, CIRCA 1745.

OLD WESTMINSTER.

II.—TOTHILL FIELDS.

IN an old map of Westminster, bearing date 1776, the town of Westminster seems limited within its south-western boundary to that ancient causeway, the Horseferry-road. Beyond this, toward Pimlico and Chelsea, spread the open fields, with but here and there scattered buildings. Ponds and marshy ground appear at the western end of Rochester-row, and patches of garden-ground distinguish the cultivated from the generally waste character of the soil. On the site of the present gas-works was Eldrick's Nursery, which supplied the district with fruit and flowering shrubs, as the Abbey Vineyard had supplied the monks in the olden time with many a vintage, and the site of which may be traced in the present Vine-street.

The open Tothill Fields, as they were called, existed in this state till 1810, with a group of lonely cottages standing in their midst, when the note of preparation for an altered site might be heard in the construction of the iron bridge at Vauxhall. Doctor Vincent had already inclosed a portion of the fields for the square which bears his name, and the Westminster Gas and Coke Company removed their offices, and commenced their new buildings in the Horseferry-road, on the site of the before-mentioned nursery. So partially disturbed, however, was the locality generally that the tower of St. Luke's Church, Chelsea (1820), was clearly distinguishable whilst building from the back windows of the houses in Marsham-street.

In 1830 the Vauxhall-road was not entirely built upon, and bits of the hedgerow were still to be seen. Patches of greensward might as yet be observed beneath the litter of old iron, which Andrew Mann so liberally spread over any plot of waste ground; whilst the site of the present South Belgravia remained open market-garden ground, intersected by bridle-paths, for some ten years subsequently. The present Warwick-street, uniting Westminster with Chelsea, occupies the precise site of the "Willow Walk."

In 1832, the Seven Houses, or Five Chimneys, as they were called, retained much of their primitive appearance. With the moss and lichens growing on the roofs and walls, and their generally old-fashioned quaintness, a very small



Site of Battery in 1643.

stretch of the imagination removed the buildings which had surrounded them even then, and brought them once more into the open ground. They marked the site of a battery and breastwork when the fortifications round the cities of London and Westminster were hurriedly thrown up in 1642. This battery is marked as about midway between the Chelsea-road, and the bank of the river opposite Vauxhall. In 1665, these houses, as being somewhat removed from the town, were used as a sort of hospital or lazaretto for the plague-stricken patients in that eventful year, and they are shown as such in a slight etching of them by Hollar. Many a torch, or lanthorn-lighted group of mysterious-looking figures have borne the litter of the stricken to this then solitary spot, not so much with hope of recovery, as from fear of spreading the dire infection by retaining them within the frighted and unhealthy town. In connexion with the fields surrounding them, there are many incidents recorded illustrative of the days of old. Prior to the Statutes of Restraint, they were considered to be within the limits of the sanctuary of the Abbey. Also, on account of the general dryness of the soil, and the size of the fields, wagers of battle were often decided here. It is related that in 1441 such a one occurred in a combat between "two Theves." The "pælour" (appellant) is described to have "hadde the felde and victory within three strokes." In the reign of Henry III., St. Edward's Fair, originally held in St. Margaret's Churchyard, was removed here, and in 1302, the Abbot of Westminster was allowed to levy tolls upon all traders who sold their wares at the time, even within the precincts of the Palace. In 1628 were preserved in the muniment-room of St. Margaret's King Henry III.'s Patent to the Abbot of Westminster, giving him leave to keep a market in Tothill every Monday, and a fair every year for three days. This fair was held in Rochester-row, in the space between the Almshouses of Emery-hill and where the Church of St. Stephen the Martyr now stands. The fair was in existence in 1819, but died away gradually previously to the general suppression of fairs in 1840. The fields were resorted to by the King's scholars and neighbours generally for sport and recreation, and in 1672 the parish made a new maze here. William Wells had a bear-garden here on the site of the present Vincent-square in the time of Queen Anne.

In 1651, upon Cromwell's return to London after the Battle of Worcester, 4,000 of the Scots prisoners were driven like a herd of swine through Westminster to Tothill-fields, and sold to several



ST. BARTHOLOMEW'S CHURCH, BRIGHTON: INTERIOR VIEW LOOKING TOWARDS CHANCEL.

MR. EDMUND E. SCOTT, ARCHITECT.

[See pp. 94, 95, *ante*.

merchants, and sent to Barbadoes. As an old writer observes, "a sadder spectacle was never seen except the miserable place of their defeat." A fatal duel was fought here in 1711, between Sir Cholmeley Dering and Mr. Richard Thornhill, in which the former was killed.

The solitary character of this tract of land, spreading out to the Chelsea-road, beyond which lay the "Five Fields" extending to Knightsbridge, is illustrated by an incident not uncommon to the neighbourhood at a period when the highwayman would lie in ambush for the belated pedestrian, or for the chaise, which in this instance is conveying not the most loyal subjects of George II. from one of those political meetings when the mug-house riots were at their height.

Such was the disturbed condition of society at this period, that two witnesses were sufficient for the immediate arrest of any party suspected of harbouring either Romish priest, or other of proven Jacobite politics, and great abuses were consequent upon this hasty legislation. The panic created by the rumoured march of the Highlanders, with the numerous party of the disaffected in London, kept the alarmed citizens wakeful in their beds; for the Highlanders were feared as a terrible race, and possibly no anticipated result had been surrounded with greater doubt and uncertainty, but that the energy of the king, backed as it was by the commercial interests of the Londoners, threw the balance in favour of the new dynasty. In the summer of 1745, two adherents of the House of Stuart,—one a young officer in the Pretender's army,—had hired a chaise to convey them from Westminster to the then remote village of Chelsea. To avoid the rioting in the town, they had taken a route across the less disturbed fields. They had not proceeded very far, however, before two well-mounted men made their appearance, and so suddenly that had they risen out of the earth it could not have surprised them more. Both men wore masks, and whilst one of them stopped the postboy, the other rode up to the window of the chaise, and scrutinised the occupants within. The postboy spoke in too low a tone to be heard by the travellers, but whatever might have been the nature of the conversation it was sufficiently talismanic to relieve the party of their apprehensions. Making a sign to his companion, both men turned their horses' heads in the direction of the town, and the postboy proceeded on his journey. Upon reaching their destination they asked the "boy" who his rather suspicious-looking friends were, to which he returned no answer, but upon being pressed again on the subject said, "It's not much matter who they are, but they belong to those who don't care to meddle with Prince Charley's boys"! The mystery seemed now greater than before, and further inquiry might only have involved further difficulty. It was evident the postboy knew too much, but in what manner he had become acquainted with their political bias it was impossible for them to conceive. Treating the matter, however, as a joke, and paying the boy handsomely, the matter ended, but their anxiety only terminated by their quitting London for the North. The widow of one of these gentlemen died in 1824, at the advanced age of ninety-five years. After the amnesty, her husband, who fought at the Battle of Culloden, had, in common with others, some curious restraint laid upon him, one of which was that he could not ride a horse of a higher value than 10*l.*, without forfeiture of it to any one who chose to avail himself of the prohibition.

Down to as recent a period as 1819-1820 that most barbarous sport of bull-baiting occasionally took place here; and the three days' fair (St. Edward's) was not finally discontinued till some time afterwards. In 1832 these houses (the Five Chimneys) yet excited some curiosity, and a measured drawing was made of them at that time.

Passing up the narrow court, the primitive little group warranted, perhaps, the idea of a still earlier date for their building. The reddish grey tone of the old brickwork where the lime-whiting had disappeared, and the mosses on the roofs, seemed quite out of character with the growing neighbourhood surrounding them. The old palings here and there yet indicated where the pigs and the chickens had been kept, and had not long left their habitation. Over one of the doors was nailed the horse-shoe so salutary a preventive against the entrance of the witch, and even a belief in its efficacy was at the time elicited from the old woman with whom the young measurer of the buildings had his early morning conversation.

AN INSTITUTE OF ARCHITECTS IN UTOPIA.

THE capital of Utopia is peculiarly happy in its guild of architects, and the guild is equally happy in its admirable constitution. Although the members of the profession are divided into an infinity of schools and even cliques, the central power is so organised as to embrace all of them under the folds of a banner upon which is inscribed the universally acknowledged trinity of beauty, utility, and common sense. The canons of art which were originally called either Gothic or Classic have now no other designation than that of Catholic, because they have been proved as infallibly true as the problems of geometry; and since the word "taste" has been banished from the artistic vocabulary, the study of architecture has been recognised as of importance almost equal to that of the evolution of species and language. So invincible was the ignorance, so profound were the errors concerning the building art in which the Utopian public were sunk, that learned editors found it profitable to insert in publications of high reputation ridiculous comments upon the state and hope of architecture; and the leading journal of the time flattered the ignoramus, eager to condemn yet powerless to point out the abuses of artistic practice, with well-turned periods about the pure and simple working man. It used to be argued that the *lucus a non lucendo* principle, which it was thought absurd to apply to other trades or professions, was really suitable to the building art, and that the best architecture was that in which no architect was permitted to meddle.

Although the Institute has had barely fifty years of existence, it numbers nearly 2,000 souls, yet in the Utopian year of 1842, there were only 98 Fellows and 78 Associates, while thirty-two years afterwards there were only 295 Fellows, and 281 Associates. Its earlier annals were not, however, less eventful than those of a few years ago, when its reform was triumphantly effected; nor were the first score of sessions more clouded with internal dissensions than they are at the present hour, when president, council, and secretaries work together for the general good, regardless of "camp" or shade of opinion; and mindful only of the duty they owe themselves and the whole body of members, by a portion of whom they are elected. In those days, as in the present ones, literature was worthily represented, and men who devoted themselves to the criticism of art were welcomed in the councils of the Institute, doing good service there with their erudition, experience, and advice. But in that evil hour, when the public journals were forbidden to publish the papers read to scanty meetings, it was decided that the Transactions of the Guild should only be printed three weeks after they had occurred, in order to render them exclusively beneficial to the members; and so perfect was the result that, with the obvious exception of the few who had heard it read, any ultimate acquaintance with a paper was confined to its author and the secretary who corrected the proofs. At the same time the majority of the public, not having any means of knowing that the Institute published its Transactions, and the minority believing very naturally that it ought to be able to buy for pence what the Institute did not sell for shillings, a large amount of waste paper remained on shelves which are now profitably filled with books and illustrations. In those days, as in the present ones, foreign correspondence and other cosmopolitan business were zealously conducted; but as clique succeeded in ousting clique, a good and laborious servant who had helped to found the Institute was replaced by another whose labours in the post hardly deserved the name. Since then, however, a great many things have happened; nor was reform effected without a little general injustice and much individual sacrifice. That it was effected has been the best and only unanswerable answer to the complaints of those critics who periodically wrote against architects and wrote down themselves.

It is perhaps not well known that in the original formation of the Institute right royal pens had declared its purpose to be for "the general advancement of civil architecture, and for promoting and facilitating the acquirement of the various arts and sciences connected therewith;" but it is certainly well known that from the day of its foundation until the Utopian year 1875 it had only fulfilled the first half of its contract. It had also been decreed that no resolution should on any pretence whatsoever "be made by the said body politic and corporate in opposition to the general scope, true intent, and meaning" of the Charter accorded to it,—which, it is also well known, was treated with polite indifference by a long succession of councillors, with whom the art of framing excuses was cultivated with such assiduity as to lead to the belief that had other and different arts been equally well studied by them, a great benefit would have accrued to the whole community. The stumbling-block to progress—for reform was never thought requisite by those in authority—was the existence of a body of men, about 600 in number, who had formed themselves into a co-operative association for the laudable purpose of mutual instruction. They had been driven to do this from the egotism of their masters; and so great was their success in the path they chose that one of the greatest living exponents of architecture, a Frenchman, had approved their action in his admirable lectures. The best papers upon the building art were deservedly delivered to them, for the only serious attempts at the technical education of professional juniors were made within their ranks. If a little vanity was mixed up in their proceedings, it was only natural among a society whose chiefs were very young men—especially as those chiefs were enabled to style themselves presidents and past-presidents of an Association, when, as members of the Institute, they could not have obtained a higher rank than that of Associate. Nevertheless, there was really good sense amongst the general body, for when an enthusiastic parson once addressed them as "learned men," many of them laughed heartily, and upon their uplifted faces rose some honourable blushes. The original fault of the Institute had consisted in treating these men as rivals and opponents, or in patronising them; in fact, the grave fault which it had always evinced towards the world generally, was its suicidal attempt to be exclusive and aristocratic. It possessed as fine a technical library as any in Utopia; but the books were not read except by a dozen of the members, and no inducement to amateurs and non-members was offered to visit it. The lecture or meeting room used to be laid up in "lavender" 365 days and 350 nights in the course of a year. The first step in reform was made when those in authority found out that the members did not pay their two or four guineas per annum for the use of the library, and to hear the lectures; and when this discovery was made, they threw open the library to every member of every architectural society in the whole realm of Utopia, without inquiring whether the visitor was a member of the Royal Guild or not. They also handed over their lecture-room to the junior association of the capital for use every Friday evening. The president of that society for the time being was invited to sit in the council of the Institute, together with the presidents of three provincial societies selected by ballot of the council. The president of the junior association was made an Associate of the Institute without ballot, entrance-fee, or annual subscription; and it was only when he should apply to be admitted as a Fellow that the usual subscription was to be required of him. Any member of the Association was admitted an Associate of the Institute by ballot, and on signing the usual declaration, without an entrance-fee; and the members of any provincial architectural society were accorded a similar favour. The burdens of all Associates were lightened without increasing those of the Fellows; and an intimate connexion gradually sprang up between the country architects and their metropolitan brethren. The impetus thus given to co-operative action alarmed the Foreign Secretary, who would have resigned, as he said, to give place to a better man; but he did better by rising to a sense of his manifold duties, and exerting himself, as his predecessor had done. Another honorary secretaryship was founded, and it was filled by a man of middle-age, of polished address and varied attainments, whom a private income permitted to disregard the allurements of large professional practice. The paid secretary remained to transact general business, and edit the Minutes and Transactions; but the life of the Institute, as a body corporate, depended upon the Home Secretary, whose task was no light one during the first two years of his work; and happily he was equal to the labour involved in the acceptance of his onerous post. The leading principle which guided him from the very com-

mencement of office was an absolute conviction that in the Royal Guild only lay the germs of general professional reform; and that, properly encouraged, the affiliation of provincial societies was not only feasible, but it was really desired by the majority of those bodies. Animated with this notion he visited the leading provincial architects; and, having learnt their views upon the subject, drew up a careful report of them, and added to it many excellent suggestions of his own. He found it generally acknowledged that the chief complaints against the Institute were based, not upon errors of commission, but omission; he found that the majority of conscientious practitioners throughout the kingdom approved of, and even demanded, the establishment of some central examining power to which they could submit themselves for the purpose of testing their qualifications to practise the trade, business, or profession of an architect. One of the real obstacles to reform consisted in the ignorance of each other's wishes which characterised the leading societies of the kingdom. The biennial conferences which had been held had not led to any practical results, because men cannot talk or act in a body, and no officer had been appointed to carry out their wishes or to represent them. Indeed, it seems to have been expected that, when the architects in general committee assembled had once or twice declared how certain reforms were necessary, the public would immediately step forward and carry them out. Instead of which the public began to look about for the means of dispensing with architects altogether; and in this mood it was naturally attracted to the engineers, whose pursuits reflected the utilitarian spirit of the time.

The new Home Secretary found out also that the provincial architects desired some more friendly recognition of their visit to the capital than it had been the custom to afford them. When a man had come two or three hundred miles to be present at a discussion, or make one in a vote of thanks to a lecturer, he expected something more than the traditional cup of tea or coffee in return for his trouble. He had then no means of conversing with his metropolitan colleagues except by button-holing a stranger; and he usually left the town with an impression that the Institute was of little use to him,—always barring the fact that membership implied the acceptance of certain obligations, which, however, honest men who were not members always fulfilled. And this defect was acknowledged by many town as well as country architects. It was felt that half an hour or longer might be agreeably spent at the close of a day in consultation with professional brethren, and that the five o'clock tea of the fair sex might be made a profitable institution in the Conduit-street of the Utopian capital. There professors might meet with old pupils; fellow-students established in practice at opposite corners of the kingdom might be brought together again; and especially in those days of overwriting, the acrimony of many a paper war would be there dissipated by a few words of ordinary conversation. At the same time the daily and weekly papers, the last new books upon art subjects, and the art serials of the Continent, would there form a centre of discussion; and the library might be made to unfold its hitherto unappreciated treasures. Nor did the Home Secretary leave unargued the vexed question of the admission of building-surveyors and master-builders. It was felt that a society which was instituted for architects alone could not admit other than *bonâ-fide* practitioners to its highest grade of Fellow; but the leading builders and art-tradesmen were invited to join as Members,—subject, of course, to election by ballot. The absurd title of "Contributing Visitor" was abolished; and the class of Members, which now numbers more than 500, has enriched the Institute "Transactions" with valuable information of a practical character, and of which too many professional men had remained too long ignorant. It was suggested that the eldest sons—not architects themselves, and not carrying on any trade connected with building—of deceased Fellows who had distinguished themselves in the profession should be made honorary Fellows. How these reforms were accomplished is inscribed in the records of the Institute; and none—except those who had profitably imposed upon the public claims to practise an art the very rudiments of which they ignored—have regretted that that central authority which was once a power in the republic of Art was successfully asserted in modern Utopia by the chartered guild established in the capital.

MUSEUM OF SCIENCE AND ART, EDINBURGH.

THE important addition recently completed, and forming the second instalment of building operations in connexion with the Edinburgh Museum of Science and Art, was, on the 14th inst., formally opened to the public.

The museum was commenced in 1861, after a design by the late Captain Fowke. The east wing and a small portion of the central hall were finished and opened to the public in 1866; the work was then suspended till 1871, when the section now inaugurated was taken in hand. There now remains only the construction of a west wing, similar to that at the east end, to complete the building as originally projected. Estimates for the work have been obtained, the ground is nearly cleared, and building operations will be commenced in the ensuing season.

The section of the Museum in which we are now interested carries the façade westward to the point at which the new wing will come in. It embraces the main entrance, which takes the form of three round-headed doorways, approached by two flights of broad steps. Passing within, the visitor finds himself in a hall, measuring 270 ft. in length by 70 ft. in width, and 72 ft. in height to the ridge of the roof, with two galleries carried round the sides on ranges of light columns. This hall is lighted chiefly from the roof, and painted in light green and French grey, picked out with red. On the south side, communicating with it through wide openings, are two smaller halls, also lighted from the roof, and round which both galleries are continued. The space between the smaller halls is appropriated, on the ground-floor, as a refreshment-room, with kitchen underneath, and in the upper stories as apartments to be used at present for administrative purposes, but eventually to be allocated to special departments of the Museum. On the basement level, again, there is a range of workshops for the skilled craftsmen employed in connexion with the establishment, while a vast extent of stone-vaulted cellars affords accommodation for heating apparatus, storage, and other purposes.

FROM MANCHESTER.

WHEN I have visited Manchester I have always found things to admire: I now add,—mired I have oftener been than I could wish. A more deplorably dirty state of the streets of a noble city cannot be conceived. Slush in a main road ankle-deep, as a rule, this weather; pavements black, greasy, and slippery, and heaps or pools to drown the unwary; and, to make all these more certain destruction, fogs to which those of London in density and taste could not hold a candle. London fogs as a rule are good, honest vapour, with a clever admixture of smoke and soot. Here we have those skilfully compounded with everything bad, supposed to issue from the furnaces of the infernal regions. When there is light enough to see the buildings by, coupled with the advantage of clean streets and pavements, which may sometimes happen after a deluge, sharp and powerful enough to act as a scavenger, Manchester awakens much enthusiasm; things have been done with a will—no flinching; a giant seems to have been moving about and impressing his seal upon everything. The styles are diverse enough, but, as a rule, one thing has ever been kept in view—*light*, and no wonder.

In 'buses, everybody knows, Manchester excels London,—that is, as to size: one drawback, or fall-forward, there is,—you must mount and alight whilst the 'bus is in full motion. This is to save the horses and time—very much the time, I think, for the way three horses are made to do the work of six is surprising. Well, to return to the mounting: having plunged through a river of black mud—in Longsight-road say,—dodged the deepest part, and caught your 'bus, you seize the steps, give a lurch forward, knock your shins against the step, and with wet feet and muddy trowsers you mount to the top; and here you are repaid for everything, for, instead of the soddened straw-stuffed *cushions!* of the London 'bus, you have a clean wire seat, free from wet, although a shower descended but a minute before. But the *descension* (?) takes the comfort even of the thought of a dry seat away; if you do not drop off the step boldly, you cling like grim death to the step-ladder and are dragged for fifty yards through everything, and perhaps crack your shins this time. If you drop off boldly you are as likely to find yourself on your back as on your stomach: one or other you must do the first go off, if you happen to be of mature age and good condition. As one 'bus follows another in rapid succession, it does not do to lie too long, however much amusement you may afford to the practised and skilful. And all this you can have for twopence outside and threepence in. Then you can get into a Hansom cab here without the chance of being decapitated during the journey, as is usual in London. The fourwheelers, too, are as a club to a gin-shop in comparison; they are well lined, commodious, run easily, and have drivers who will take half-a-crown for ninepence without a thankee; but human nature is human nature here as in London. My landlady, too, reminds me that my scribbling will not pay her gas-bill, so for my description of Manchester I must await the sun. U.

A NATIONAL HISTORY GALLERY.

MURAL decoration has, for a century and a half, received little or no encouragement in England. Bare walls are the rule in our churches and great public buildings. The object now is to find opportunities fit for the development and display of historical painting on a large scale; for this is precisely the class of painting which, more than any other, requires encouragement beyond the means of private patronage. The want of such encouragement has long been regretted, not by professors only, but by all who have turned their attention to the state of painting in England,—a proof that the promotion of historic art is an object of interest, with a considerable portion of the public.

Mural painting being employed to decorate large and solid surfaces, the artist is no longer intent upon the reproduction, however ingenious, of reality in its most limited sense. A dignified subject is essential, and to this genius is required to add ideality, or elevation of treatment. Lastly, *simplicity*, the *indispensable* characteristic of great works, must be apparent in the composition and in the execution. Hence arises the especial condition of excluding from mural painting all that may interfere with grandeur of effect, all that aims at literal imitation and illusion. It follows, therefore, that the treatment of subjects fitted for large dimensions must tend to ennoble the style and taste of the artist of the National School of Painting, and even to influence and to improve the fine-art manufactures.

Therefore, in default of our churches and public buildings being fields for the exercise of the arts of painting and sculpture, I beg to propose that a National History Gallery shall be erected by means of a Government grant, public subscription, or private enterprise, whose walls shall afford ample space for the display of historical painting. In this building I would have a succession of galleries, each of which should be devoted to a particular period of British history. The ante-chambers to each gallery might contain a collection of the antiquities of this period. Between the paintings there should be statues of the remarkable men of the time. The whole should be linked together with architectural skill. Great splendour in the exterior of the building would not be required, the decoration of the interior is the matter of first consideration and importance. The paintings and sculptures in these galleries would form a series of illustrations of English history. Such a gallery would be a great national monument, wherein the public could lounge, be instructed, and, perchance, inspired.

I would not insist upon any particular method of painting being adopted, the choice of this or that process might be left to the artist. But this and many other minor points may well be left for future consideration.

W. CAVE THOMAS,
Hon. Life Governor, University College.

The New Mechanics' Institute, Whitby. The directors, after more than a year's investigation, have chosen the Albert-chambers, with a frontage to Baxter-gate and another to the railway station, as the site of the new Institute, subject to the plans being approved by Mr. Palmer, M.P., who started the movement by a subscription of 500*l.* The building, it is expected, will be converted into an Institute, comprising library, reading, class, and recreation rooms, with a large lecture-hall above, at a cost of between 3,000*l.* and 4,000*l.*

THE DUKE OF EDINBURGH'S STABLES.

THE Duke of Edinburgh has just had a commodious stable-yard and carriage-houses erected in Belgravia, nearly opposite the Grosvenor Hotel. The coach-houses will accommodate about thirty carriages, and there are stalls and boxes for above that number of horses. These stables have all been fitted by Musgrave & Company (Limited), of Belfast, with their patent fittings similar to those supplied by the same firm for the stables of the Prince of Wales at Sandringham, and for those of Sir Richard Wallace just completed, and to which we shall refer on another occasion. The stables are erected round a covered courtyard, nearly two sides of which are occupied by the coach-houses, while the stables are to the right and left of the gateway. Over both stables and coach-houses are lofts and rooms to serve for fodder, &c., harness-rooms, and apartments for those employed in attending to the horses, &c. The divisions between the stalls are of wood, finished at the top with wrought-iron vertical rails surmounted with a neat, but strong, iron ramp. This ramp and the lower part of the frame carrying the rails are supported by a strong cast-iron pillar. The upper end of the stalls is lined with blue tiles. The light is admitted from behind. Ventilation is secured by a patent valvular window over the head of each horse. The rack is of iron. The manger is of iron, and enamelled, so that it is easily kept clean, while a couple of rollers stretched across permit the horse easily to eat his feed, but hinder his knocking it about.

ROCHESTER CASTLE GARDENS.

THE Corporation of the City of Rochester have awarded the first premium to Mr. E. Evans Cronk, London; the second premium to Mr. John Young, of London; and the third premium to Mr. Friend, of Maidstone, for laying out the Castle Gardens Estate at Rochester. Eighteen sets of drawings were sent in for competition.

RENDLE'S SYSTEM OF GLAZING.

RENDLE'S patent system of glazing has been used for some time past in horticultural works with complete success. We are disposed to think its use may be, and will be, much extended. In this system the glass is placed in horizontal metal grooves, and fixed on wooden rafters without putty. The woodwork is completely covered by the metal and the glass, so that it is not exposed to the action of the atmosphere. The glass moves freely in the metal grooves, and can be easily removed, so that if a pane of glass is broken it can easily be replaced without the aid of the glazier. Moreover, the system is said to be very economical. The winter garden and aquarium about to be formed in Westminster are to be covered in this way; and so will be many other buildings before long.

COST OF ROAD REPAIRS.

St. George's, Hanover-square.—The report of the surveyor, at the vestry meeting on the 21st instant, recommended that Eccleston-street, Ebury-street, Elizabeth-street, part of Grosvenor-road, and Chesham-street, the east and west ends of Eaton-square, and Chapel-street, should be coated with granite. It stated that the steam roller had been for over four years in almost constant work on the roads of the parish with much satisfaction to the vestry and advantage to the public. Details were given of the various items of estimated expenditure, the totals being 39,319*l.* 16s. 6d., divided into the following heads:—Maintenance of roads, 11,350*l.*; maintenance of footways and carriageways, 3,553*l.* 1s.; casual repairs, 2,250*l.* 0s. 8d.; lighting, 9,637*l.* 18s. 6d.; watering, 3,994*l.* 16s. 4d.; cleansing, 8,534*l.* In addition to this, the sewers were estimated to need an expenditure of 2,577*l.* 10s. for the year. The report was adopted.

St. Pancras.—At a meeting of the committee of the St. Pancras Highways, Sewers, and Works Committee, recently, Mr. W. B. Scott, chief surveyor, reported as to the cost of paving the roadway of Charles-street and Phœnix-street, extending from Seymour-street to Brill-row, Somers-town. The total area is about 4,200 yards; the cost of keeping the macadam in repair, and that never good, is about 400*l.* per annum. The cost of paving with granite cubes would be 3,465*l.*; less credit for old stone, 465*l.*, making the net cost 3,000*l.* If this amount be borrowed at 4 per cent., to be paid off in twenty years, the average annual instalments of principal and interest would be 228*l.* per annum. The chairman remarked that it was sound economy to have such streets paved. The report was agreed to.

SUBWAYS.

SIR,—Allow me to point out to your readers, and your hypercritical correspondent, "William Cochrane," in particular, that the unpopularity of subways is not fairly attributable to the alleged thriftiness of "obtuse vestrymen," inasmuch as the Legislature has not vested in the representatives of the ratepayers the power of compelling public companies to use subways when constructed. Commercial interests are all-potent in Parliament, and I need only quote Sir George Grey's speech, made on the 26th of February, 1866, in reply to an attack on Local Government to prove the soundness of my argument: he said, "Whatever the local authority may be, if Parliament give power to a company to break up pavements and lay pipes, whatever the local authority is, it must submit to the exercise of powers granted by Parliament."

A PAROCHIAL OFFICER.

WORKMEN AND THEIR TOOLS.

SIR,—Your chapter upon "The Use and Abuse of Tools" is one so much "overlooked," and, moreover, so important, that I am constrained to trouble you with another word coming out of the same subject. After many years' experience, not only have I learned to conclude the general character of the workman by a peep at his "kit," but have learned also to take far higher ground in relation to the same. It is quite possible for a bad workman to have about him what is known as a "swell" lot of tools; but it will be found, upon examination, that the *condition* of those tools will, in most cases, reveal the "tradesman," or otherwise; for it often turns out that their "swell" condition is in externals only, and not in their careful keeping, as fitting them for skilful use.

Far more important, however, is the revelation of hidden character as seen in the *product of the workman* itself, for if out of square and devoid of "truth" in its manipulation, it shall be found to be a reflex more or less of its producer. So much has habit led me to adopt this observation as the index of "the man," that I have rarely found it uncertain.

R. H. TAYLOR.

GAS EXPLOSIONS.

SIR,—I am truly grieved to continually read of accidents caused by taking a naked light into a room full of gas. Do the gas-men really ignore the miners' lamps intentionally? They can be bought cheaply, and are easily applied.

W. N.

PAINTED INSCRIPTIONS.

SIR,—Can any of your correspondents tell me what paint will stand on the carved letters of tombstones? I have one stone which was painted in London, which is quite unaffected by weather. Two others painted in the country have lost all trace of paint.

INQUIRER.

"FUR" FROM WATER.

SIR,—Will you permit us to reply to your correspondent "A. C.," and to inform him that "fur" is injurious to health, being formed by the lime present in water, or sulphates, or carbonates, and that the silicated carbon filters have the power of removing lime to the greatest extent possible by filtration. They are constructed as "A. C." states, and were in use during the Vienna Exhibition in the iron houses inhabited by the party of British workmen.

THE MANAGER.

ARCHITECTS' CHARGES.

AT the Durham County Court, before Mr. E. J. Meynell, judge, Mr. Robert Rule, of Bishop Auckland, architect, sued a miner named Bell, who had amassed some money, which he proposed to invest in building, for 3*l.* 3s., for professional services.

Mr. Rule stated that he met the defendant at the Boyne Hotel, Langley Moss, who asked witness for plans for a house and shop he intended to build, and he went with the defendant to inspect the site of the property. Upon that occasion the defendant gave instructions as to what kind of building he wished to have erected, and it being a slight job, witness agreed to prepare the necessary plans and specifications for 4*l.* 4s. He took measurements of the site and proposed building in his pocket-book. At that time it was also agreed that witness should draw a pencil-sketch of the plans and submit it for the approval of Mr. John Bell, the defendant, who appointed a meeting for the purpose at the Feathers Hotel, Durham, on the next Saturday. Witness made a sketch of the plan and went to Durham; but the defendant failed to keep his appointment. He had not gone to the trouble of making a specification, and he now claimed 3*l.* 3s. for the trouble he had taken in the measurement, and making the pencil sketch.

Mr. W. Fox, of Durham, architect, gave it as his opinion that three guineas was a very low charge indeed for the services rendered.

The defendant said he thought it a very high charge, and pretty quickly earned for a pencil sketch. Besides, he never gave any instructions to prepare any plans, as they could not agree about the price of the plan, and he told the architect he thought 4*l.* too much for a plan.

The Judge.—What do you say about the arrangement to meet this gentleman at Durham?

Defendant.—He was to meet me in Durham and sketch a plan, but that was his own wish.

The Judge.—What about the pencil sketch he was to make?

Defendant.—I said I would see it if I was in Durham.

The Judge.—Did you expect an architect was to travel from Bishop Auckland to Durham on the chance of meeting a client for a pencil sketch? I do not. I shall give judgment for two guineas, and allow the plaintiff full costs.

JAMES BUTTERWORTH *v.* JAMES READ WEST.

THIS was an action in the Ipswich County Court, January 20, to recover 2*l.* for preparing plans and specification of a villa residence on the Willoughby-road, and superintending its erection. Plaintiff gave credit for 3*l.* 12s. 8d. for gasfittings, &c., supplied to him by defendant. Defendant pleaded a set-off of 7*l.* 2s. 8d.

Mr. Pollard appeared for the plaintiff, and Mr. Hill for the defendant.

The plaintiff said four houses were erected in Willoughby-road about the same time, of which plaintiff prepared the plans, &c., and superintended the erection by Mr. Trew, the contractor. Of these houses one was for the plaintiff himself, and the adjoining house (the houses being in pairs) was for the defendant, the contract price of each house was 408*l.*, and plaintiff's commission on the defendant's was 20*l.* (five per cent.). Plaintiff, at defendant's request, gave a statement in writing that his charge would be 20*l.* When the house was nearly finished there were one or two little things which Mr. Trew had not done, and consequently plaintiff would not certify, but ultimately defendant told plaintiff he had seen Mr. Trew and was satisfied. In cross-examination Mr. Butterworth said the same plans used for the defendant's house were used for four houses built for Lord Gwydyr on Willoughby-road, and Lord Gwydyr had paid him 80*l.* As to defendant's set-off, he disputed certain gasfittings which defendant put up in his (plaintiff's) house without an order, and which were taken down and put into defendant's house.

For the defence Mr. Hill contended that the plaintiff should not be paid for preparing the plans, as they served for Lord Gwydyr's houses, and had been paid for by him. He called Mr. Trew, who proved that there were certain deviations from the plans and specifications. It appeared that Mr. Trew lost by his contract.

The Judge said it was proved that there was an agreement that defendant should pay 20*l.* Although there might have been some departure from the plans, Mr. Butterworth's statement that Mr. West said he was satisfied was uncontradicted; and he should allow Mr. Butterworth 20*l.* He deducted the items of the set-off which were admitted, and gave judgment for plaintiff for 14*l.* 5s. 4d.

RECOVERY OF CHARGE BY A BUILDER FOR PLANS.

CHARLES U. BARRATT *v.* GEORGE TURNER.

AT the County Court, Stone, Staffordshire, on the 18th inst., before Mr. W. Spooner, judge, the plaintiff, a builder at Eccleshall (for whom Mr. Smith, barrister, appeared), sued the defendant, a baker, of the same place, to recover 3*l.* 17s. for work done in the capacity of architect.

Mr. Smith said, that at the request of the defendant the plaintiff drew plans for a new shop-front and bay-window to his premises at Eccleshall, and also made a specification and estimate, putting the cost of the proposed work at 180*l.* The defendant thought that too much, and Mr. Barratt prepared a fresh plan and estimate, in accordance with which the cost would have been 144*l.* The defendant, however, entered into a private arrangement with the plaintiff's foreman, a person named Houghton, who submitted an estimate on his own account amounting to 135*l.*, and carried out the work from Mr. Barratt's plans, with very slight modification. As soon as the plaintiff ascertained what was going on between his foreman and the defendant, he discharged the former from his service. When a builder acted as architect, and was not allowed to carry out the work, it was customary for him to be paid for his plans and estimates. In this case the charge made was after the rate of 2½ per cent.

The plaintiff having been examined, Mr. Smith called Mr. Robert Hamilton, managing clerk to Mr. Griffiths, architect, of Stafford, who stated that when a person was employed to draw out a plan and an estimate—such as had been provided in this case—he would be entitled to charge five per cent. upon them jointly, in addition to, say a guinea, for sketching the plan in the first instance.

The Judge said that as the plaintiff was only a builder, the defendant should not be charged at the rate usual where the superior skill of a professional architect was engaged.

Mr. Smith.—He has only charged half of that.

The defendant said that when he first spoke to the plaintiff about the probable cost of refronting his house, Mr. Barratt said that he was a "very bad one to guess at a thing," but would draw out a plan. He (defendant) did not order the plan, but one was made and brought to him, without specification or estimate, with a statement that the cost would be 178*l.* odd. He demurred to that amount. The matter stood over for some time, and Barratt's foreman told him the work could be done for less, and afterwards prepared a plan, with an estimate for the amount already stated.

Mr. Houghton was called to confirm this statement. He said he took the dimensions for the plan himself, and that the plan of the elevation as carried out differed materially from the one prepared by the plaintiff.

The Judge having examined the plans produced, said he was of opinion that Mr. Barratt's plan had been substantially adopted and carried out. There must be a verdict for the plaintiff for 3*l.* 17s., to be paid forthwith. Costs were also allowed.

CLAIM FOR DILAPIDATIONS.

NEAVE *v.* CLEMMANS.

THIS was an action, in the Court of Exchequer, on the 20th inst., to recover about 90*l.*, the amount of certain repairs effected in respect to four houses in Homerton. The question involved was one of some importance as regards liability to repair on the determination of a lease.

The plaintiff was a pawnbroker, the ground-landlord of the house in question, receiving 24*l.* a year. He had advanced on mortgage 1,000*l.* on the property, at a stipulated interest of 7 per cent. The defendant was a house and estate agent, and had taken the houses in question on lease in 1870, paying for the same at the time 200*l.* One of the covenants in his lease required him to paint the wood and iron work outside of the premises every four years, and the inside every seven years. It appeared that the defendant had done the latter last year, being only the third year of his possession. The plaintiff, however, brought an action of ejectment against him for breach of covenant in not keeping the houses in repair. The defendant did not defend this action, and the plaintiff became proprietor of the entire rents, amounting to 150*l.* a year for the remainder of the lease, upwards of eighty years. The plaintiff, in addition, claimed the amount he had expended in repairs, for the recovery of which he brought the present action.

The judge (Baron Bramwell), in summing up, told the jury that the only question they had to consider was the amount of damages the plaintiff was entitled to according to the covenant for repairs at the time he brought the action of ejectment, such repairs to be only those which the defendant was by his lease required to execute. They must, however, bear in mind that the defendant was not bound to make the premises better than he found them, nor to pay for any improvement or addition which did not exist when he entered into possession of the property. He was not, for example, bound to substitute an oak beam for a deal one. The plaintiff would have acted more regularly if, before he had entered into those repairs, he had furnished the defendant with a schedule of those which he demanded. It was quite certain that the defendant was amenable to the putting up of stack-piping, varnishing of doors, &c., which formed items of his claim.

The jury found a verdict for the plaintiff,—damages, 40*l.*

CHURCH BUILDING NEWS.

Horsham St. Faith.—This parish church has recently been restored. The total cost (exclusive of the chancel repairs), has been 3,180*l.* 10s. 3d., of which the sum of 2,798*l.* 5s. 3d. has been raised, leaving a deficiency of 382*l.* 5s., towards which subscriptions are being collected.

Ingham (Norfolk). — Holy Trinity Church is about to be restored, at an estimated cost of 2,500*l.* Subscriptions have been promised to the amount of 800*l.* The Ecclesiastical Commissioners will repair the chancel at a cost of about 800*l.*

Newton-le-Willows.—The alterations in conformity with the late faculty have been commenced in St. Peter's Church. The architect is Mr. H. B. Bare, of Rock Ferry, and the contractors Messrs. Holme & Nicholls, of Liverpool. The new organ, presented by Colonel McCorquodale, has been built under the directions of Mr. T. W. Best, by Messrs. Brindley & Foster, of Sheffield.

Cheltenham.—It has been determined to proceed at once with the restoration of the parish church in accordance with the plans of Mr. Christian. The work will be carried out piecemeal, the commencement being made with the northern aisle, which will be boarded off from the body of the church until its restoration is complete, when the southern aisle will be undertaken. With reference to the erection of the new church, Mr. Agg-Gardner having renewed his offer of the Dorset Mews property as a site for the proposed new building, the committee decided to accept it. The site, which adjoins St. Mary's churchyard on its western side, and lies between it and the houses fronting St. George's-place, has been considered by Mr. Christian and Mr. Middleton as admirably suited for the purpose.

Brockhall.—The parish church of Brockhall, near Weedon, has been restored by the liberality of the Rev. T. C. Thornton, the patron of the living and lord of the manor. Though possessing few features of architectural value, the little church is not without interest, since vestiges of the ancient structure still remain. The edifice, dedicated to SS. Peter and Paul, consists of a nave, south aisle and porch, chancel, and an embattled tower containing three bells. The most ancient of its architectural characteristics are Norman. The arcade, which divides the nave from the only aisle, contains the remnant of the primitive Norman structure. The two easternmost arches are semicircular and spring from the outer edges of the square shallow capitals of the two supporting pillars, which are low and circular, with circular bases. The third arch is pointed, resting at the west extremity on a demi-octangular column inserted in the wall. The inner door of the south porch has a plain Norman arch without columns. Two of the windows give indications of Early English building in the church. The north side, or nave, is assigned to the fourteenth century by Baker, though the late Rev. Henry Rose in his architectural notice of the Church, expressed the opinion that it had been rebuilt about the middle of the fifteenth century. Mr. Rose attributed the south porch and the upper story of the belfry to the same date. The chancel is separated from the nave by a lofty pointed arch; and the tower arch is similar in character. Near the east end of the south aisle is a monumental arch with crockets and finials, and ball flowers are thickly set in the hollow mouldings. The arch is rudely executed, and encloses an inner trefoil arch of Decorated character. On a slab beneath it was a brass—a floriated cross—and inscription commemorative of Peter de Thurleston, rector of the parish in 1281. The whole of the stonework of the southern arcade has been cleaned of the whitewash and paint, and restored to its original character; and the internal stone-work and arches round the windows have undergone similar treatment. A new oak screen has been placed in the archway of the mortuary chapel. This part of the building was restored some years ago by Mr. E. F. Law. The old roof had been plastered and whitewashed between the tie-beams; and when this work was being cleaned it was discovered that the whole of the roofs were in a dilapidated condition. The architects then received instructions to put on new roofs. These roofs have been executed in the best pitch pine, and after the model of the original, and covered with lead as before. Not the least of the improvements effected is that of the opening of the tower arch. The arch was closed up by massive oak panelling of a modern character. The removal of this obstruction lays open the tower chamber, and displays a small lancet window. The total cost has been something like 1,100*l.* The restoration, carried out from the designs and under the superintendence of Messrs. E. F. Law & Sons, has been executed by Mr. Beardsmore, builder, of Northampton.

St. Lawrence (Thanet). — A new church is about to be erected at St. Lawrence, Thanet. The plans have been prepared by Mr. W. E. Smith, of Upper Bedford-place, London, and the building will be erected by Messrs. Smith & Sons, of Ramsgate.

Southampton.—The new place of worship just erected for the use of St. John's Free Church, in Clifford-street, has been opened for divine worship. The edifice is constructed principally of iron, and is 82 ft. long, by 36 ft. wide, inside measurement. It is built to accommodate some 500 persons. Wood, varnished and stained, is freely used in the interior. There are two windows on each side, and one at the east and another at the west of the church, making six in all; and the building is lighted artificially by five sunlights. In the chancel is accommodation for the choir, and in the nave is placed the organ, —the one used in the services at the Philharmonic Hall. There are two entrances to the building, one to the vestry, and an ordinary one at the side, and in the roof are six ventilators. The exterior of the church is of corrugated iron, having a foundation of brick; and there is a steeple and bell. The whole is surrounded by a brick boundary-wall, with iron palings.

Worlingham. — The church of All Saints, Worlingham, a village to the east of Beccles, has been re-opened for divine service after having been partially closed for eighteen months, during which time it has been thoroughly restored, entirely at the expense of the Rev. Sir Charles Clarke, bart., at a cost of about 1,600*l.* The nave of the church has been re-seated with oak benches, the windows restored to their original patterns and filled with green glass with amber border, and the old roof removed and an open one of pitch pine substituted. At the entrance to the chancel a new arch has been made. The chancel has been raised one step, re-seated with oak benches for the choir and clergy, and paved with ornamental tiles. The floor has been raised two steps within the altar-rails, and also paved with ornamental tiles. A reredos has been erected over the altar-table, formed of encaustic tiles and mosaic. The chancel aisle has been re-seated and paved. It contains the new organ built by Messrs. Walker, of London, at a cost of about 600*l.* Mr. A. Blomfield was the architect, and Mr. J. Botwright, of Bungay, the builder.

Manningtree. — The church of St. Michael, Manningtree, better known as Manningtree Church, has been re-opened, after restoration and repair. The original edifice was erected in 1616, and has been twice enlarged. The present restoration has comprised the removal of the wooden windows in the north wall, and the substitution of stone ones; the rebuilding of the south wall; the high pews have been reconstructed, the pulpit and reading-desk remodelled, and the church has been painted, grained, and cleaned. Mr. William Rivett was the architect. Tenders were asked for from tradesmen of the town; but their estimates so far exceeded the expectations of the committee that it was decided to put each department of the work into the hands of separate tradesmen. Accordingly, the masonry was given to Mr. James Frewer, Ipswich; the joinery to Mr. G. T. Clover, Manningtree; and the painting, graining, and glazing to Mr. S. S. Parsons. In the north wall is a monument, erected in 1748, to the memory of Thomas Osmond, who suffered martyrdom in 1555, for adhesion to the Christian faith.

Great Hallingbury.—This church has been restored, almost rebuilt, and enlarged, at an expense exceeding 6,000*l.*, defrayed by Mr. John Archer Houblon, with the exception of a sum of about 600*l.* devoted to the rebuilding of the chancel. The church consisted of a nave (45 ft. by 25 ft.), chancel, western tower, and south porch. During the alterations some early work was brought to view, which is described by Mr. G. E. Pritchett, the architect, in a paper in the transactions of the Essex Archæological Society. A new north aisle has been added to the nave and continued along the chancel, the entire length being 73 ft. by 19 ft. wide. The architecture of the latter portion of the thirteenth century has been followed in the construction of this aisle. The worst portions of the walls have been rebuilt with the old materials, and great care has been taken to reproduce, where practicable, the old stone windows and doorways both in the church and tower. The stone used has been Ancaster stone from the best quarries, and also the pink stone from the same quarries. The roofs are of oak, boarded with the same material, and felted, battened and tiled with old tiles. The seating and stall work and other fittings in the chancel, and the chancel and tower screens are all of oak. The pulpit and font are of the finest grained Ancaster stone. The reredos is of English alabaster. The paving in the chancel is of encaustic tiles, with a marble border to the altar-piece; the other portions of the church are paved with hard Newcastle tiles. The glazing throughout is of cathedral glass in diamond quarries. The spire is covered with oak shingles, characteristic of the churches of Essex. Provision is made for heating the building with warm water. The builders are Messrs. Rattee & Kett, of Cambridge, and Mr. O. Polley is clerk of the works.

Alton.—The new district church of All Saints, Alton, the foundation stone of which was laid by the then Lord Chancellor, Lord Selborne, on the 18th of June, 1873, was consecrated by the bishop of the diocese on the 23rd ult. The church stands in a meadow at the south-western end of the town, adjoining the Chawton-road, near the district of Newtown. It is in the Early English style, and consists of a nave, transepts, and apsidal chancel, with sedilia, and the design includes also a tower and spire, which at present have not been undertaken for want of funds. The outer walls are of Selborne stone, flints being worked in and around the base, and the windows, &c., are faced with Bath stone dressings. The seats inside are of open deal work, stained; all are free, and will accommodate 400 persons. The roof is open-timbered, covered in in the nave with V-jointed diagonal boarding, the covering in the chancel being longitudinal, with moulded ribs and carved bosses. The organ-chamber is on the north side of the chancel. The chancel is lighted by four coloured glass windows, by Messrs. Hardman & Co., of London. The area of the church is floored with encaustic tiles, and a hot-water apparatus is provided for heating. The estimated cost of the erection, exclusive of the tower, is over 3,000*l.* The architect was Mr. F. C. Dyer, of London; and the builders, Messrs. J. H. & E. Dyer, of Alton.

Exeter.—On removing the pews and flooring of the church of St. Olave, it was found that all the area was occupied with walled graves (each covered with its grave-stone), recording the names of ancient inhabitants of note. The lofty tower arch, hitherto concealed, has been

laid open, and within it, on the eastern wall of the tower, is exposed a piece of relievo sculpture, set in a sunk panel, representing the scourging of Our Lord, who appears seated on a bench with his hands tied, while being scourged by two soldiers; on another bench is a figure seated, probably an officer, watching the flagellation. The figures are much mutilated. Adjoining the statuary is a bagioscope, an aperture in the wall of the tower, arranged so as to command a sight of the high altar, in order that a worshipper should be able to see the elevation of the host. One or two steps only now remain of a flight of stairs, under an arched headway, leading from this spot, over the entrance-door of the church to a chamber or chambers, in the situation occupied by the western gallery. The seating removed was erected in 1815; the pulpit and sounding-board are adorned with marquetry work, and against the east wall is a painting of the Royal Arms (1693), surmounted with the See of Exeter impaled with Trelawny. The church of St. Olave is mentioned in the Exchequer Doomsday as dependent on Bath Abbey, in Sussex, hence its Norman antiquity,—if not earlier,—as its dedication to St. Olave, a northern saint, may imply.

Kingston.—The Duchess of Teck laid the corner-stone of the north aisle and organ-chamber of St. John's Church, Kingston-vale, on the 28th ult. The addition is intended to complete the building as originally designed by Mr. Ewan Christian, architect, London.

DISSENTING CHURCH-BUILDING NEWS.

Long Eaton.—A new chapel has been opened in the district of Long Eaton. The memorial stone of Zion Chapel was laid at the end of April last, and the building, which is in the centre of the town, is intended for the better accommodation of the members of the Methodist New Connexion. The cost of the ground and building was originally estimated at 1,500*l.*, but as alterations have been deemed advisable, the total cost will not be less than 2,000*l.* At the present time the funds obtained amount to something like 900*l.* The architect is Mr. J. Collyer, of Nottingham; the builder and contractor is Mr. Youngman, of Long Eaton; Mr. Taylor, of Long Eaton, being entrusted with the joiners' work. The building is in the modern Italian style of architecture. The dimensions are 57 ft. by 35 ft., and provision is made for extension in case of necessity. The fittings are of red deal, stained and varnished; and the heating apparatus is on Haydon's hot-air principle.

Devonport.—The congregation of the Wesleyan Chapel at Stoke, Devonport, have made arrangements with the lord of the manor for a piece of ground near the residence of Dr. Rolston, for the erection of a new chapel. The plans are prepared, and it is expected that the work will commence in a short time. The outlay will amount to about 2,000*l.*

Lancaster.—Nicholas-street Chapel, one of the oldest Dissenting places of worship in the town, and which has been closed since the end of January, has been reopened, after extensive alterations and additions from designs by Messrs. Paley & Austin, the architects. It has been found necessary to take out the whole of the interior of the primitive chapel, which has been entirely renewed and re-constructed; the roof has been retimbered and slated, and the old windows replaced with new ones. Additional space has been gained by building a new chancel of a semicircular shape, at the west end of the old building, and a rearrangement of the interior, so that the restored building may be said to consist of a nave and chancel, the original structure constituting the nave. The floor of the nave has been seated with open benches of pitch-pine varnished, with panelled ends. The total cost of the alterations was originally estimated at about 1,000*l.*, but this has been exceeded by nearly 500*l.*, which has been occasioned by various additions which were not foreseen when the alterations were originally planned. Mr. James Heap was clerk of the works, and the following were the contractors:—Mason work, Messrs. Lancaster & Trafford; joinery, Mr. Roger S. Wright; tablets and chancel-windows, Messrs. Shrigley & Hunt; painting, Mr. Standen; plumbing and glazing, Mr. W. Abbott; slating and plastering, Mr. Hartley; and heating apparatus, Mr. Greenall, all of Lancaster.

Birmingham. — Bethany Chapel, Anderton-street, which has just been completed, has been opened for religious service. The chapel will accommodate about 200 persons, at a cost of about 600*l.* The architect was Mr. G. Ingall, and the builder Mr. Sapcote.

Handsworth (Sheffield).—The foundation-stone of a Wesleyan chapel has been laid here. The chapel will seat 350 people, including 120 in the gallery, under which are two vestries. Under the chapel is a school-room for 200 children. The walls are built and faced with local stone, in uneven courses. The style of the building is Romanesque; the interior work is pitch-pine; the roof is open-timbered. As the site is very narrow, light cannot be introduced from the sides of the building. The cost will be about 1,500*l.* The builder is Mr. Joseph Buxton, of Handsworth; and Mr. J. King James, of Hull, is the architect.

Oxford.—The foundation-stone of a new Primitive Methodist chapel and school, in Pembroke-street, St. Clement's, has been laid by Mr. C. Early, of Witney.

Wellingborough. — The new mission-hall in St. John-street, of which the corner-stone was laid in September, has been opened for divine worship. The building cost a little over 600*l.*, of which about 250*l.* had been raised. The edifice is a commodious one, of brick, with stone dressings, 52 ft. by 30 ft., and is built to hold 400 people. The tender for the building was 473*l.* 3s. 3d., exclusive of costs of foundation, diversion of road, and fittings. The ground was given by Mr. R. and Mrs. Sears. The corner-stone of the building bears the inscription, "Him that cometh unto me I will in no wise cast out."

Wolverhampton.—In 1865 a wooden chapel was erected by the Wesleyans of this town, which having become insufficient for the accommodation required, a new chapel and schools have been built from the plans of Messrs. Loxton Bros., Wednesbury, the work of erecting being intrusted to Mr. David Evans, of Wolverhampton. The foundation-stone was laid on the 8th of November, 1873, by Mr. Isaac Jenks, and the edifice was opened for public worship on Wednesday morning, 23rd ult. The total cost has been about 6,000*l.* The building is in the form of a parallelogram, 53 ft. wide by 100 ft. long. The exterior is of a plain design. The lighting of the building has been arranged by Mr. Heaton, of this town.

York.—At the quarterly meeting of the New-street Circuit, on the 29th ult., the erection of a new Wesleyan chapel in the neighbourhood of Cemetery-road, at a cost of about 5,000*l.*, was agreed to. The building will adjoin the present Wesleyan chapel in that thoroughfare, but will front Melbourne-terrace, the existing chapel, with an additional wing, being continued for Sunday-school purposes.

SCHOOL BUILDING NEWS.

Amwell.—In February, 1874, the small old school at Amwell was burnt, and, as matters have turned out, it was a fortunate accident, for the vicar, the Rev. R. Parrott, set to work energetically, and soon raised a goodly sum, so that by the following July the builder, Mr. Hampton, of Hoddesdon, had begun the new school, and early in that month the foundation-stone was laid. The new school, a lofty large room with class-room, lobbies, &c., is of red brick, and close to it is the master's cottage, of similar material. Mr. T. T. Smith, of London, was the architect. The work has recently been completed, and the school opened.

Birmingham.—In their report on the 15th inst., the Sites and Buildings Committee recommended the acceptance of the tender by Messrs. Barnsley & Sons for the erection of a room for teaching cookery at Farm-street School for the sum of 595*l.*; also the tender by Messrs J. Hardwick & Son for the erection of schools in Norton-street, All Saints', for the sum of 9,430*l.* They advised the payment of the sum of 1,156*l.* 19s. for the purchase of the leasehold interest in the Rea-street property, of 1,554*l.* in payment of the purchase money of the site in Dartmouth-street, and also 252*l.* 11s. 10d. for the purchase of additional land at Bloomsbury. The report and the recommendations contained in it were adopted without discussion.

Leiston.—The old school, which was only capable of accommodating from 100 to 150, and was totally unprovided with class-rooms, or a separate room for infants, has been restored and connected with the new buildings, which have just been completed. They consist of the schoolmaster's house at one end, and the infant schoolmistress's at the other, one large double T-shaped room, the largest compartment of which measures 62 ft. by 19 ft., and the smaller 52 ft. by 18 ft.; two class-rooms, one opening into the large room and one into the smaller, and the infant school-room. It is estimated that the double room will contain nearly 250 children. This is intended for the mixed school, or the elder boys and girls. The infant school-room, previously the old school, is capable of seating 150, thus it will be seen that there is now accommodation for nearly 400 scholars. The architect is Mr. F. Peek, of London. Mr. J. W. Lacey, of Norwich, was the builder, whose contract for the work amounted to 1,649*l.* 11s.

Hastings.—The new schoolhouse for the Holy Trinity parish has been formally opened. The new school building is on the north side of the railway, somewhat in a hollow, midway between the station and the Bohemia tunnel. The site is part of the Cornwallis Estate. The schools are of a Gothic character. Messrs. Jeffery & Skiller were the architects. Besides the two schoolrooms, both of which are lofty and light, there are class-rooms, lobbies, sanitary, and other conveniences. Separate entrances are provided for two schools. Amongst the internal fittings are convenient galleries for the infants, and the seats are so arranged as to form backs to rest against when not in use as writing-desks. Good yards for play-grounds are connected with each school. The external walls are of sandstone and moulded bricks, the internal lining being of pale yellow brick with stone dressings. Residences for the teachers are at the east end of the schools. The builders were Messrs. Hughes. The cost has been about 1,900*l.*

Crowthorne, near Wokingham.—On Monday, the 18th inst., the new parochial schools, recently erected in Crowthorne, were opened by Mr. John Walter, M.P., to whose enlightened liberality their existence is due. The school is substantially built. The work was executed by Mr. Walter's own men, under the superintendence of Mr. Deacon. Adjoining the school is the master's house, which, however, is not yet finished.

Nottingham.—The new Roman Catholic schools, London-road, connected with St. Patrick's Mission, Leen-side, were opened on the 18th inst. The schools are situated in the densely-populated district of Narrow Marsh and neighbourhood. They consist mainly of three large rooms, one over another. The bottom room, which is intended as the infants' school, is 56 ft. by 22 ft.; and the boys' school, situated on the top floor, is 60 ft. long by 22 ft. wide. The rooms are tolerably lofty, but not too much so. The schools are built on the 10-ft. system, and arrangements have been made for ventilation.

STAINED GLASS.

Islington.—The east window of St. John's Church has been filled with stained glass by Messrs. Gibbs & Moore. It is a three-light window, with tracery; in the centre light is the Crucifixion, and on either side St. John and the Virgin Mary.

Walworth.—A new series of memorial windows, four in number, have lately been presented to St. John's Church by different donors. The four Evangelists are represented nearly life-size, and the figure of St. Paul is represented in another window. These have been designed and executed by Messrs. Gibbs & Moore.

Wimborne.—A stained-glass window has been placed in the minster to the memory of the late Lieut. Clogstoun, by the officers of the 9th Regiment, to which he belonged. The designers and painters were Messrs. Bailey & Co., of London. In the two centre panels are figures of David and Jonathan, and underneath each is placed a wreath of laurels, with a ribbon twined around, on which are written the names of the battles in which the regiment had been engaged. In the trefoil above are placed a sitting figure of Britannia, and the arms of the regiment. A brass plate is placed below the window with the following inscription: — "Thornton Warner Clogstoun, Lieut. 9th Regt., obt. May 15th, 1874. æt. 31. Erected in affectionate remembrance by his brother officers, A.D. 1874."

Ipswich.—A window has recently been inserted in the north aisle of St. Margaret's Church by Mrs. England, relict of Dr. England. The window is at the west end of the aisle, and is of three lights, with tracery in the Decorated style of

architecture. The three lights are divided into upper and lower compartments for the purposes of the artistic treatment of the subject, which is a representation of the Six Acts of Mercy. In the tracery above are representations of angelic figures. Beneath the window is a brass plate, with the following inscription:—"To the Glory of God and in loving remembrance of William England, M.D., who lived in this parish nearly 15 years, and died on the 1st June, 1871, aged 72 years, this window is erected by his Widow. October, 1874." The window is by Messrs. Ward & Hughes, of London; and the stone and other work was executed by Mr. Ireland and Mr. Grayson respectively.

Cowden (Kent).—A new window has been placed in the large east window of Cowden Church: the subject is the Raising of Lazarus—our Saviour, in the centre compartment, and the other figures are of large dimensions. The window is inserted to the memory of his father, by Mr. Gainsford, of the firm of "Goode & Gainsford." The Gainsford family of old possessed Crowhurst Place; another of them possessed the Moat, in Cowden. The late Mr. Gainsford, to whose memory this window is placed, filled all parish offices, and possessed a large farm contiguous to the Moat and the greater part of the houses in the village. He and his brother George gave large charities yearly to the "deserving poor." There are five painted windows in the chancel of this church.

Bibury.—The large west window of Bibury parish church has been filled with stained glass to the memory of the late vicar,—the Rev. H. Snow. The window has been erected by Messrs. Wailes, of Newcastle-on-Tyne.

Brigg.—A two-light window has been erected in the north side of the church, near the organ. The subject is the Apostle John taking the mother of our Lord to his own home, and the same Apostle in the Isle of Patmos. The window bears the inscription:—"To the glory of God, and in memory of Robert Haldane Paterson, and Susanna his wife. This window is erected by their seven children."

Great Thurlow.—A new three-light window has just been placed in the chancel end of the Suffolk church. It is filled with stained glass, the principal subjects being full-length figures representing "Faith," "Hope," and "Charity." It has been executed by Mr. Constable, of Cambridge, at the expense of the nephews and nieces of a lately deceased sister of the vicar, the Rev. William Wayman.

Darlington.—Two stained-glass windows have been erected in Coniscliffe Church, Darlington—one given by Mr. W. W. Benson, containing the subject of "The Good Samaritan"; the other, presented by Mr. W. H. Watson, and contains the subject of "Our Lord raising Jairus's Daughter." The windows are of the best description of glass painting. There are now eleven windows in this church, all of which have been designed and executed by Mr. Baguley, of Pilgrim-street, Newcastle.

New Wandsworth.—St. Paul's Church has received a three-light subject window. The centre light is occupied with a representation of the sudden conversion of Saul when on his warlike mission to Damascus. The two contiguous lights containing the arrested warrior's followers filled with awe and amazement. It is the work of Messrs. Cox & Sons.

Abingdon (Berks).—A new stained-glass window has been put in Tubney Church by Messrs. Gibbs & Moore. It consists of two lights, and tracery. The subjects illustrated are, St. Lawrence distributing alms to the poor: and, in the other light, St. Lawrence before the Roman Prefect.

Hawkhurst.—The district church of All Saints, which was erected and endowed some fourteen years ago by the munificence of the Rev. Canon Geffreys (then and now incumbent of Hawkhurst), and his sister, Miss Geffreys, has very recently had four new stained glass windows at the east end put in the place of the four original plain ones, in memory of the above lady, who died in 1873. The principal window is in three lights, the centre one of which contains the figure of Our Saviour rising from the tomb, with the historical surroundings, prominence being given to the females. All the subjects represented are illustrative of points of interest in the life of Our Lord, in which women were concerned, such as Mary Magdalen washing His feet, His blessing little children, &c. The above comprise all the windows in the chancel. The work was executed by Messrs. Clayton & Bell.

Louth.—The east window of St. Michael's Church has lately been filled in with stained glass, by public subscription, to the memory of the late vicar. The window consists of three lancet lights, and prominence is given to angels, on account of the church being dedicated to St. Michael and All Angels. The centre light is taken up with the subject of the Crucifixion, on the north side of which we have two events prior, and on the south side two events subsequent, to our Lord's life,—the Angels appearing to the Shepherds, the Annunciation of the Virgin, the Angel at the empty Tomb, and the Angels appearing at the time of the Ascension. In the upper part of the window nine angels are depicted, corresponding with the mystical "nine orders." The window is elaborately finished, and the tone of the colouring somewhat light in effect. The architect was Mr. James Fowler, of Louth; and the artists were Messrs. Ward & Hughes, of London.

Gressenhall.—A stained glass window has lately been put in at the west end of the parish church, in memory of the late Rev. Dennis Hill, for sixty-six years rector of the parish. The window, the subject of which is the Crucifixion of our Lord, is by Messrs. Ward & Hughes, and is a copy of the east window in Brisley Church.

Binfield.—Three windows, painted by Messrs. Lavers, Barraud, & Westlake, of Endell-street, Bloomsbury, have recently been placed in the North Transept of St. Mark's Church, Binfield.

Books Received.

Studies in Design for House Decorators, Designers, and Manufacturers. By CHRISTOPHER DRESSER, Ph. D. Nos. 1 and 2. London: Cassell, Petter, & Galpin.

THIS work, which is in demy folio size and is to be completed in twenty monthly parts, consists of designs by Dr. Dresser, produced in combined colours and in gold and colours. Each part contains three plates and a certain amount of letterpress. Dr. Dresser's skill in harmonising colours is well known, and the plates already published give further evidence of it. His chief danger is, lest in striving for novelty, he should become *bizarre*. He says in his introductory chapter,—"As newness of idea must be sought after as well as refinement of expression, I have to beg the indulgent criticism of those who seek fresh ideas in this work; for the efforts at realising what is new must ever be attended with the danger of being extravagant, and the risk of being eccentric. I have striven to attain newness, and my sketches go forth to the world. I beg lenient consideration."

It is safer to set forth the good than to strive for the new. We cordially wish our author success in his endeavours both ways.

VARIORUM.

THE *Printing Times and Lithographer* has entered a fresh phase, and No. 1 of the new series includes two papers of special interest, each of which is to be continued, viz.:—"Orthographical Difficulties Elucidated," evidently the work of a competent writer; and the commencement of a much-needed "Grammar of Lithography."——The *Engineer* says as to glass:—"Two circumstances are worth noticing with respect to it. Within the last ten years the home manufacture has been quadrupled, while during the same period the cost of production has diminished fully one half. It is but lately that English manufacturers carried out a series of experiments, with a view to improve the manufacture of glass and cheapen its price. The experiments were completely successful, and we can now produce glass at home equal to the best imported. Glass would perhaps be more used in actual construction, if any pains were taken to improve its qualities, other than those which affect merely its transparency and ornamental properties. It is not generally known that good glass will stand a compressive strain, but little inferior to that proper to ordinary wrought iron, the proportion being as seven to eight. Experiments have been tried on glass bars and rods in a similar manner as with iron, with the above result. Unfortunately, the tensile strength of glass as estimated at present is very small, not exceeding in the best examples more than a ton and a half per inch of sectional area. It is not impossible that the strength of this material both as regards its compression and tension might be increased by a better annealing process and by other means, if there were once created a demand for glass possessing these properties to a greater extent. Its advantages are that it can be readily both cast and rolled into any form; the ingredients of its manufacture are cheap and abundant; it is completely unaffected by acids with the exception of one, with which it can scarcely accidentally come into contact, and is not attacked by the weather and the thousand and one causes of deterioration which are so fatal to iron. In addition, it is about one-third of the weight of the latter material. We think that glass would play a more important part as a constructive material if attention were drawn to the qualities it possesses—qualities no doubt capable of considerable improvement."

Miscellanea.

The Working Men of Crewe.—The Bishop of Manchester, at the Liverpool Council of Education on the 16th inst., said,—"I see among the working classes generous and noble aspirations and desires to do their duty to themselves, their wives, and children; and this is, I think, deserving of all possible admiration and encouragement. I do not know when I spent a more pleasant two hours than I did last night in distributing, at Crewe, the prizes at the Mechanics' Institute, a great institution having a thousand members, the *élite*, as it were, of the working men who are employed in the great works of the London and North-Western Railway Company. This morning I had the pleasure of going with the superintendent (Mr. Webb) through the gigantic and magnificent shops of the works, and I must say that whether I saw the men in their working clothes and their begrimed hands and smutty faces, or whether I saw them last night dressed in good broadcloth, and looking—I was going to say every inch as gentlemen, but something better than the mere conventional gentleman—as independent men who do their duty, I confess I thought to myself that there is no country in the world where there is so noble a class of working men if they have a fair chance offered them. When I said so to Mr. Webb, he replied, 'You must recollect that we have a sort of *corps d'élite* here. We have in our works 6,000 men, who are the pick of the working men of the world.' I thought to myself what the class is capable of producing, under favourable circumstances, it is capable of producing elsewhere if only we could remove the fets and hindrances."

Ancient Measure at Norwich.—Mr. J. D. Smith, at a meeting of the Norwich Town Council last week, stated that among lumber stored in a chamber at the top of the Guildhall, the City Committee had discovered an ancient bushel measure formerly used by the corporation. This was a valuable specimen, and would, if the corporation desired to sell it, fetch a sum of money. He, however, moved that the measure be lent to the trustees of the Norwich Museum, so that visitors to that place could see it. [The measure, which was brought into the Council-chamber, is of bell metal, very heavy, and in shape not unlike a cauldron, except that its sides are upright and not curved. Round the outside of the measure is this inscription, in raised characters, in French:—"Henry VII., by the Grace of God King of England and France."] Mr. Hill seconded the motion, which was agreed to; Mr. Stanley remarking that it would be placed with other measures formerly belonging to the city, and would complete the set. The City Surveyor said he had measured the capacity of the vessel, and found it almost exactly the same as that of an imperial bushel of the present day. In reply to the sheriff, Mr. Smith stated that several other things, amongst them some valuable books, had also been discovered, concerning which a report would be made.

Sea Wall and Esplanade, Sandgate.—The Local Board of Health having made application to the Local Government Board for permission to borrow 1,500*l.* to pay for the sea-wall and esplanade, which have been carried 900 yards further to the westward this autumn; and also for making a new sewage-chamber at the outfall and a new subsidiary main-drain; a public inquiry was held on Thursday, 21st inst., in the Assembly Room, respecting the above loan, by Major Hector Tulloch, the inspector appointed by the Local Government Board for the purpose. The inspector having taken all the information necessary, visited the works, and stated that he should report to the Local Government Board on their efficiency.

New Bonded Warehouses, Kendal.—These warehouses, which are being erected by the Kendal Bonded Warehouses Company (Limited), are situated on the east bank of the river Kent, a short distance above Stranongsgate Bridge. The site, which is freehold, was purchased by the Kendal [Chamber of Commerce, who afterwards handed it over to the Warehouse Company, for the purpose of erecting buildings for the storing of bonded goods. The new warehouses will include a free as well as a bonded department. Mr. Stephen Shaw is the architect. The building is 200 ft. long, 108 ft. in width, and two stories in height. The lower story, which is composed of vaults or cellars, is fireproof throughout, and the upper story is partially so. The lower story is arched over with brickwork, and carried upon cast-iron pillars and girders. The windows throughout are of iron, and are also protected by strong stanchions. The building contains sixteen commodious warerooms, four of the largest being each 100 ft. in length by 33 ft. in width. The warehouses will be connected with the London and North-Western Railway by means of a siding.

New Artesian Well at Leamington.—The contract for the artesian well, near to the Campion Hills, is rapidly approaching completion; and was on Saturday formally inspected by Mr. Dale, C.E., of Hull, the consulting engineer of the Leamington Local Board for the work. The shaft has been sunk to a depth of 50 ft., and at the bottom of this well a bore has been carried down for another 200 ft., part of the way 18 in., and the remainder of the way 12 in. in diameter. The shaft and bore, except a few feet at the surface, have passed through sandstone. On Saturday steps were taken to ascertain the probable yield of water from the well. The shaft was first pumped dry, and then the bore, which had been closed up, was opened, and the water allowed to flow into the well. The yield was so abundant that the water in the capacious shaft rose 18 in. in a minute, and though the "head" gradually diminished as the water rose in the well, it flowed in until it stood at a total depth of 30 ft. The computation made on the spot was, that as the water rose 18 in. in the first minute, and a foot of the well represented 320 gallons, the yield in 1,440 minutes—or twenty-four hours—would be 697,200 gallons.

Stealing Timber. — At the Birmingham Police Court John James (32), foreman, Buckingham-street, and Henry Newton (59), carpenter, Newton-row, were charged with stealing a quantity of timber, value 25s., the property of Anthony Cassera, manufacturer, Carr's-lane. The prosecutor, who had a timber yard in Snow-hill, has missed at various times timber, and a few days ago communicated with the police. On the 20th inst. Detective-sergeant Cooper watched the premises, and about six o'clock he saw the prisoners with another man go on to the wharf with a handcart. Shortly after they left with some timber upon the cart. Later on in the day the officer arrested the prisoners, and on being charged James admitted his guilt, but the other man denied the accusation. The third man was afterwards seen by Cooper, and acknowledged that he had the timber, but had bought it, and did not know that it was stolen. The prisoner James was in prosecutor's employ. Both the prisoners were sentenced to three months' imprisonment.

University Education in Sheffield.—The movement which has been set on foot in Sheffield for affording University education was inaugurated on Monday, by a meeting in the Cutlers' Hall. The Mayor (Mr. Mark Firth) presided. He was supported by Mr. Mundella, M.P., Mr. S. Roberts, the Rev. Dr. Stacey, Mr. H. Clifton Sorby, the Rev. S. Earnshaw, the Rev. W. Moore Ede, M.A. (who represented Cambridge University), and Mr. S. Cole. After a lengthy address, Mr. Mundella moved the following resolution:—"That this meeting, having heard Mr. Ede's system of education for large towns proposed by the University of Cambridge, highly approves of it, as being eminently suitable for this town, and believes it confers educational advantages which will be found highly beneficial by all classes." Mr. Wrigley, a delegate from the Sheffield Trades Council, seconded the resolution, which was passed.

Gymnasium at Harrow.—We are asked to add to our notice of this building, illustrated in our last issue, that the fittings were erected by Messrs. Sparrow & Charles Spencer.

Drainage of Sheerness-upon-Sea. — At a meeting of the Local Board of Health on the 20th inst., Mr. Prosser read the report of the committee appointed at the last meeting to consider the improvement about to be made in the drainage system of this town. The report showed that the committee had been to a considerable amount of trouble in the matter. It was a very lengthy one, and the surveyor estimated that the carrying out of the plan proposed by the committee would involve an expenditure of 2,500*l*. Mr. Gordon moved, and the chairman seconded, that the report be received and adopted, and that the surveyor be instructed to prepare a plan and estimate previously to the Board's applying for permission to borrow the money to carry out the work. The resolution was carried.

The Restoration of Margate Parish Church.—Since this church was closed all the pews have disappeared, with the exception of those in the chancel. The committee appointed by the vestry chose Messrs. R. Paramor & Son for their work; but the chancel being in the hands of the Ecclesiastical Commissioners, and Messrs. Adcock having offered a somewhat lower tender for it, the Commissioners seemed disposed to give them the chancel restoration, though the vicar was anxious that all the work should be done by one firm. Messrs. Paramor & Son have since been accepted by the Ecclesiastical Commissioners as contractors for the chancel, as well as the nave of the church. The restoration of the chancel, therefore, is now in full progress.

Dangerous Structures. — The case of Cheetham *v.* The Corporation of Manchester was heard on the 18th inst. in the Court of Common Pleas. The plaintiff was the owner of three houses in Market-street, and one in Palace-street, Manchester; and the question was whether he could recover from the defendants for certain damage which he had sustained in consequence of their having taken proceedings in reference to the houses as dangerous structures. Lord Coleridge, after going through the provisions of the Manchester Police Act, and comparing those provisions with the facts of the case, held that the proceedings had been quite regular, and therefore that the plaintiff was not entitled to recover. Judgment for the defendants.

The New County Asylum, Banstead.—At a meeting of magistrates, at the Sessions House, Clerkenwell, on the 21st inst., a report was received from the committee appointed to erect a third county lunatic asylum at Banstead, Surrey, which stated that they were actively pushing on the works to completion. The supply of water in the dry season had been tested, and it was found to yield 168,000 gallons every twenty-four hours. The committee were also making great progress in the examination of the plans and estimates for the completion of the building for the reception and occupation of patients. The report was adopted.

A National Sanitary Association.—The interest excited by the conference on sanitary reform held in Birmingham suggested the establishment of a National Sanitary Association for the promotion of sanitary science. It is proposed that the first annual meeting shall be held in Birmingham in the autumn of the present year, and that other large towns shall be visited in annual succession if the proposal meets with sufficient support. A local committee will be first formed, and then a meeting of members having been called, an executive, representing all important districts, will be elected to consider the future business of the association.

Building at Allerton.—The continued prosperity of this thriving manufacturing and agricultural village is indicated by the pressing demand for cottage dwellings, notwithstanding that within the past few months several blocks of houses have been built. To meet the demand Messrs. Robertshaw & Sons are about to erect thirty dwellings forthwith, to be succeeded by others, in the upper portion of the village, and the Allerton Co-operative Society intend also to build twenty-four in that pleasant part of the village known as the Grange.

The Wakefield Borough Surveyorship.—Mr. John Pagan, assistant borough surveyor of Sheffield, will, it is confidently expected, be appointed borough surveyor of Wakefield. There are about sixty applicants for the post, and the General Works Committee have resolved to recommend Mr. Pagan for the appointment.

Withdrawal of the Bill for Freeing Metropolitan Bridges. — At the meeting of the Metropolitan Board of Works on the 22nd inst., a letter was read from the Chancellor of the Exchequer, stating that the Government could not consent to the extension of the coal and wine dues as an equivalent for freeing the metropolitan bridges from tolls; and a motion by Mr. Runtz to proceed with the Bill for freeing the bridges, so far as regards Waterloo Bridge after discussion, was withdrawn. The Bill will therefore be abandoned.

Eythorne.—The re-opening of the village church after restoration has taken place. The Rev. G. W. Seppings, shortly after his appointment to the rectory, undertook the work of renovation, which has been carried out at a cost exceeding 2,000*l*. It was found necessary entirely to renew the roofs, and to rebuild the whole of the interior, whilst several of the windows have been completely renewed. The walls have been repaired in flint work, and stone copings and crosses added externally.

The Drainage of Deal.—At a meeting of the Council recently, the Drainage Committee, having considered the subject of extending the drainage to the remainder of the town, expressed the opinion that it would be desirable that the same should at once be fully carried out and completed. At the ensuing meeting, Councillor Sutton proposed that the Town Clerk should apply for power to borrow 3,500*l*. for drainage purposes, which was seconded by Alderman Ralph, and carried unanimously.

The Borough Surveyor, Bradford.—The sub-committee of the Finance and General Purposes Committee of the Corporation have resolved to recommend that the two offices of engineer and borough surveyor may be separated, and that Mr. Allinson be appointed as borough surveyor, and that a waterworks manager be appointed at a salary of 400*l*. a year. Mr. Allinson has for the past twelve months discharged the duties of borough surveyor.

Sinking of the Hythe Railway Station.—Notwithstanding that this station has been underpinned with masses of concrete and stone walling to the depth of 20 ft., and in some spots 40 ft., and although there are piles 53 ft. long driven under it, it still continues to sink. The treacherous wealden clay of the locality seems to be of little more consistency than "butter," and wherever a weight is placed upon it, it "spews" out.

Proposed Extension of Margate Jetty.—The desire to effect this has not been abandoned by the directors of the Pier and Harbour Company. At the meeting held last week the question was again under consideration, and the engineer (Mr. G. G. Page) was present. Two or three tenders for the execution of the work were opened, and we hear that there was but little difference between the estimates.

Councils of Arbitration.—The Trades Congress again met at Liverpool, on Saturday, when the subject of arbitration and conciliation in cases of dispute between employer and employed was considered, and a resolution was proposed to the effect that local Boards or councils of arbitration should be established in the chief industrial centres of the United Kingdom for the furtherance of friendly settlements of disputes. This was unanimously adopted.

The Society of Engineers.—The first ordinary meeting of the society for the year 1875 will be held on Monday, the 1st of February next, in the Society's hall. The president for 1874, Mr. William Macgeorge, will present the premiums awarded for papers read during the year; and the president for 1875, Mr. John Henry Adams, will deliver his inaugural address.

Wood Paving for Piccadilly.—The Vestry of St. George, Hanover-square, have accepted the offer of Mr. J. G. Leigh, of No. 138, Piccadilly, to pay the cost of laying wood paving in Piccadilly, between Park-lane and Hamilton-place. The work is to be commenced at once, and the surveyor has been directed to proceed with the work as speedily as possible. The amount is estimated at 812*l*.

Institution of Surveyors.—At the ordinary general meeting, January 18th, the adjourned discussion on the paper by Mr. J. E. Knollys, entitled "The Landlord and Tenant Question," was resumed, and, after a long debate, again adjourned until next meeting.

Shirley Church, Southampton.—A gift has been made by Mr. William Haigh and Mrs. W. Haigh for the warming of this church; this will be effected by hot water, and the work has been entrusted to Mr. Milsom and Mr. Richards. The cost will be about 170*l.*, the whole of which will be defrayed by the donors.

Royal Society of Artists, Birmingham. The annual exhibition has closed after a very successful season. The sales during the season were as follows:—General sales, 4,327*l.* 14*s.*; Art Union sales, 783*l.* 4*s.*; total, 5,110*l.* 18*s.* 224 pictures were thus disposed of. No less than 37,260 persons visited the rooms during the past few months.

Sale of Margaret Chapel, Bath.—This building, for a long series of years used for Divine worship in connexion with the Church of England, was sold by Messrs. Knight & Son, at their rooms in Milsom-street, on the 19th inst., to Mr. William Duck, of this city, for 1,950*l.* The building is likely to be converted into a skating rink.

National Association of Carpenters and Joiners.—The establishment of a National Association of Carpenters and Joiners was celebrated by a dinner held at the Woolpeck Hotel, Birmingham, on Saturday afternoon. The Mayor presided, and there were also present Alderman Hawkes, Dr. Burdett, and Mr. Rupert Kettle.

Proposed Docks for Wisbeach.—A large meeting of ratepayers was held at Wisbeach last week, to consider the expediency of proposing a Bill in Parliament applying for powers to construct docks at Wisbeach. The Bill is proposed by the Wisbeach Docks Company. A resolution in favour of the Bill was adopted.

University Education for Working Men. A gentleman, whose name is unknown, has made a gift of 10,000*l.* for the promotion of university education among the working classes of Nottingham.

Masonic Temple in Rome.—It is said that a Masonic temple is to be solemnly inaugurated in Rome next month. It is understood the occasion will be one of very great pomp.

Swindon.—It is proposed to erect a church and schools at Gorsehill, Swindon, a new village recently sprung up, for the accommodation of railway *employés*.

TENDERS

For building three warehouses, Bevis Marks, St. Mary Axe, exclusive of cranes, lifts, fittings, &c. Mr. H. H. Collins, architect:—

Honeywell	£19,919 0 0
Scrivener & White	19,518 0 0
Moreland & Nixon	17,998 0 0
Kelly Bros.	17,850 0 0
Thorne & Co.	17,600 0 0
Mortar	17,330 0 0
Brass	16,925 0 0
Newman & Mann	16,859 0 0
Bayes & Ramage	16,700 0 0
Manley & Rogers	16,645 0 0
Merritt & Ashby	16,150 0 0
Kirk & Co.	14,940 0 0
Oliver (accepted)	14,575 0 0

For constructing and making roads and sewers, Thornton Heath, for Mr. J. Sharp. Messrs. Toy & Franks, surveyors —

Moore & Co.	£685 0 0
Dover, Sons, & Co.	366 3 1
Barns	325 0 0
Lake	300 0 0
Goodair	295 0 0
Craker	271 0 0
Porter (accepted)	227 10 0

For stable at Hainault House, Chigwell, Essex, for Mr. T. Blundell. Messrs. A. & C. Harston, architects:—

Palmer (accepted)	£281 0 0

For general repairs to the London Orphan Asylum, Lower Clapton, for the Metropolitan Asylums Board. Messrs. A. & C. Harston, architects:—

Denbeigh	£1,279 0 0
Dixon	1,185 0 0
Derby	1,049 0 0
Waldram	969 0 0
Barber, Son, & Lulwyche	955 0 0
Wadsworth (accepted)	938 0 0

Engineering Work and Laundry and Kitchen Fittings.

Fraser, Bros. (accepted)	£853 0 0

For alterations to No. 64, King William street, City, for the Scottish Equitable Assurance Society, exclusive of gasfittings. Mr. C. J. Phipps, architect:—

Lugg (accepted)	£1,368 0 0

For additions and alterations to the Home in the East Reformatory School, Old Ford, Middlesex. Messrs. A. & C Harston, architects:—

Johnson	£989 0 0
Hearle & Son	985 0 0
Harris & Wardrop	931 0 0

For alterations and repairs at Nos. 19 and 20, Bishopsgate-street, for Messrs. McIntyre & Co. Mr. T. C. Clark, architect:—

	Internal.	External.
Clarke & Brassey	£633 0 0	£203 0 0
Kiddle & Son	525 0 0	209 0 0
Heeps	517 0 0	198 0 0
Greenwood & Son*	495 0 0	165 0 0

* Accepted.

For alterations to premises, No. 6, Lowndes-terrace. Mr. F. Dovey, architect:—

Thompson & Smith	£763 0 0
Turrell	655 0 0
Langmead & Way	650 0 0
Salter	625 0 0
Taylor	619 0 0
Wagner	597 0 0

For works at Hythe Church. Mr. Street, R.A., architect:—

Shearburn	£6,648 0 0
Gaskin & Godden	6,159 6 0
Adcock	5,991 18 0
Wilson	4,325 0 0

For new monastery at Highgate. Mr. F. W. Taske, architect.—

Grimwood & Son (accepted).

For warehouses, London-wall:—

Carle	£7,570 0 0
Rivett	7,272 0 0
Crossley	6,968 0 0
Crabb	6,850 0 0
Foster	6,934 0 0
Newman & Mann	6,900 0 0
Sharpington & Cole	6,889 0 0
Brown	6,840 0 0
Scrivener & White	6,788 0 0
Grimwood & Sons	6,712 0 0
Cook & Green	6,666 0 0

For foundations of the new parish church of St. Mary, Whitechapel. Mr. E. C. Lee, architect. Quantities supplied by Mr. L. C. Riddett:—

Macey	£4,198 0 0
Ashby & Horner	4,144 0 0
Conder	3,996 0 0
Lucas, Bros.	3,985 0 0
Enor	3,925 0 0
Holland & Hannen	3,613 0 0
Jacobs	3,600 0 0
Gammon & Sons	3,544 0 0
Chappell (accepted)	3,492 0 0

For the erection of a block of buildings, for lying-in and infants' wards, inclusive of credit for materials on the site, for the Guardians of the Parish of St. Pancras. Mr. H. H. Bridgman, architect. Quantities by Messrs. W. Barnett & F. Thomson:—

Stamp & Bowtle	£6,839 0 0
Moreland & Nixon	6,747 0 0
McLachlan & Son	6,545 0 0
Nightingale	6,363 0 0
Boden	6,300 0 0
Tarrant	6,227 0 0
Timewell	6,220 0 0
Crockett	6,187 0 0
Merritt & Ashby	6,161 0 0
Hunt	6,060 0 0
Willson, Bros.	6,059 0 0
Niblett & Sons	5,995 0 0
Ward	5,992 0 0
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TO CORRESPONDENTS.

Stones, Bars, Sway Poles, &c.—We depart from our usual custom to say, in reply to more than one inquirer, that things of this sort are made by Messrs. Geo. Spencer & Co. late Saoxell & Spencer, Howard's-buildings, St. Luke's, E.C.; also by Messrs. Sparrow & Spencer, Piccadilly.

M. J. C.—C. G.—S.—W. T.—J. G. & Son.—H. S.—S. J. L.—Mr. T.—Dr. G.—G & Co.—A. F.—W. T. & F. W. H. O.—U.—G. P.—E. H.—J. A. K.—M. U.—F. £. T.—F. R.—T. N.—J. C.—J. M.—S. & S.—H. H. B.—A. G. M. L.—C. C. (we have already protested against the threatened destruction of the old Toll-house in Yarmouth).—F. G. (the law on the subject is still doubtful. The question is discussed at some length in a previous volume of the *Builder*).—W. A. (premium offered by Sir Joseph Whitworth has been awarded).—M. (ditto).—G. M. (we could not advocate the plan).—R. L. (next week).

Enlargement of Forester Hall.—In reply to W. L. G. and Messrs. L. & F. we are informed that the particulars given in our last number are perfectly correct. The design mentioned has been unanimously recommended by the committee for adoption.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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The Builder.

VOL. XXXIII.—No. 1670.

Something about Maidstone.

THE crisp snow crackles beneath the feet as we speed away through the keen wintry blast along the Rochester-road, past such scenes of rare beauty as Charles Dickens loved to depict. Far away from the hill tops, stretching to the right and to the left as fair a scene as any in England; woods of hazel and hop plantations, fruit orchards and smooth meadows, with the dark Medway winding through the garden of Kent, now all wrapped in a mantle of purest snow. In the distance rolls the smoke from some busy factory far to the right. Up the slopes of the rising ground the sombre cedars and yews wave their plumes of snow; whilst the rich and brilliant sunset from the west tints the whole face of nature with a rosy hue. As the grey mists rise up from the low lands enveloping the quaint old streets in a haze, we enter our "Inn of ye Faire Maide," and over a cosy fire and cheerful cup talk with "mine host" of the old-fashioned winter returned again.

Maidstone, the chief town of West Kent, is plausibly presumed to be the *Vagniacæ* of the Roman period, and from very early times, from its position between London and the Continent, must have enjoyed long epochs of prosperity, and a history far beyond any written records now extant. As there are "sermons in stones," so the Romano-British remains—the cemeteries of past æons—and Druidical cromlechs scattered round about the locality, speak of Medwegston, as it was called by the Saxons as a district of remote antiquity, and the scenes of busy haunts of our ancestors the aborigines. Maidstone, whose population is stated at 27,000 souls, lies on the right bank of the Medway on hilly ground, and is intersected by four main thoroughfares. A modern suburb, Westborough, is pleasantly situated on the left side of the stream, and approached by a substantial old bridge of five arches over the river, an ecclesiastical gift.

There are few towns that can vie with Maidstone in picturesque beauty, with its quaint lanes and streets, gabled and decorated buildings of centuries ago that may have been silent witnesses of the rising of Wyatt's standard of rebellion against Queen Mary, and the executions that followed in the market-place, and of the sharp encounter that Fairfax experienced when he stormed the town in 1648. Indeed, some of the buildings date back many centuries beyond these times, and are still objects not only of interesting antiquity but likewise of present usefulness. A noble structure—one of the finest and largest parish churches in the realm—is All Saints' Church; rebuilt in the fourteenth century by Archbishop Courtenay, who it is thought lies buried here. Many interesting remains are found within the building, consisting of monuments, brasses, figures, and paintings—some in excellent preservation,—and especially a number of oak-carved stalls with hinged seats formerly used by the college monks, now black with age. One of the wall paintings over a tomb near the vestry entrance to the church is curiously dentated and disfigured as if hacked with swords. The Archbishops of Canterbury from very early times had a residence here, and within a few yards of the church stands the Archiepiscopal Palace in a state of good preservation, and now used as private residences. Archbishop Ufford began to rebuild the palace in the fourteenth century, and subsequent Primates added to it from time to time. Besides the hospital or college of the thirteenth century attached to the church are several buildings of interest adjoining, which may have been occupied in connexion with the palace or college, but of which little now is known. They are worthy of inspection, and are in fair condition without.

A pleasing view is obtained of the river and adjacent grounds, from the churchyard. A remnant of a still earlier building,—the Hospital for Pilgrims,—is incorporated with the modern St. Peter's Church.

One of the chief of the numerous objects of interest to the student or tourist the town possesses is the ancient structure, Chillington Manor-house, in St. Faith's, devoted to a worthy purpose, a museum and free library, containing 3,500 volumes, many of them rare works, besides choice antiquarian, geological, and other collections, the whole forming one of the most valuable county museums.

The old-fashioned inns, of which several remain, with their long histories far back beyond the old coaching-days, are models of comfort; at one of these that inveterate gossiper, Pepys, once stayed, and gives some account of it in his diary.

That times are prosperous with the Maidstonians, the handsome, commodious, well-filled business houses would show; many of them in their appointments and capaciousness vie with metropolitan establishments. Of the town-hall, and its artistically decorated council-chamber; of their breweries and their wholesome ales, with the full flavour of the Kentish hops; of the paper-mills; of the county gaol, barracks, schools, charities, associations, hospitals, and modern churches, we have no space to treat of; nor of the numbers of local newspapers, the many houses of entertainment and refreshment for man and beast, and the long string of country carriers who patronise them, finding occupation, notwithstanding the rivalry of two lines of railway, and a seaboard and inland river.

Maidstone has clean streets and well-kept pavements, and outwardly all the appearances of a neat model town. Let us penetrate beneath this thin surface crust, and see what it covers. In other words, let us ascertain if the homes of the people are clean and healthy, and the sanitary provisions, whether public or private, are in accordance with the dictates of the day.

Many of the streets in the newer parts on both sides of the river, owing to the undulating contour of the ground, present an effective appearance, which is heightened by the absence of sameness of design characteristic of modern street architecture. The West Borough is a fine open healthy suburb, lying on high ground. Bower-place, West-place, and Prospect-cottages seem well-favoured spots, where the sick and mortality rates ought to be low, and no doubt are, if the pristine custom here in vogue of sinking wells and privy cesspits convenient to each other and the back-doors of the houses, is not more powerful for evil than the effort of kind nature and the ozone-charged air are for good.

The streets are for the most part well sewered, but the mode of disposing of the sewage by direct discharge into the river, or into the streams contributing to it, is an evil one. The plan of dealing with fœcal matter is in a great measure the cesspit or privy system, and there are possibly few water-closets in the town; yet we know from experience that the constituents of sewage, and the amount of stercoraceous matter it contains, vary very little from the sewage of the water-closet towns. Hence to turn this filth into the Medway and the Len,—streams noted in old times for their purity,—wholly in an untreated manner, is simply to convert them into foul carriers. Although not much smell was emitted from the water on the day of inspection, owing to the intense frost prevailing, there was yet sufficient to show that in summer the foul vapours arising must be well nigh unbearable,—indeed, some of those living on the spot said it often is so. The unpleasantness and evil tendency of the Len loaded with impurity flowing slowly through a thickly-populated part of the town, must be sore to those who have to endure it. The huge discharge from paper-mills, breweries, and other manufactories into these streams is a crying shame and disgrace to our sanitary legislature, being thick with putrescible matter. We viewed one stream in particular, poured from a paper-mill, of thick, brown-coloured fluid, containing much more solid ingredients than average sewage, all conveyed direct into the canalised river without filtration or attempt at purifying. A glance at the position occupied by Maidstone would show that all the sewage and foul waters from manufacturing trades now passing in open streams could be collected into one intercepting sewer, built parallel with the river, and conveyed away from it to a convenient distance below the town, and there, treated by land irrigation, downward filtration, or chemical process, and again diverted into the stream, cleansed of its foulness, and utilised.

From the very slight declivity of the Medway towards the sea, pumping operations would be necessary to raise the sewage to be treated to the requisite level; nevertheless, by a judicious planning of the intercepting sewer some of it might be carried to the place of treatment by gravitation, and so lessen the working costs of application. Indeed, it would appear that the Local Board have now and then turned their attention to seeking remedial measures, but matters remain *in statu quo* so far as their appliance goes. It would appear further that an old and long-ago condemned plan of treatment,—that of Wicksteed's lime process,—is talked about by the authorities as the now proposed method of dealing with the local sewage. If this is so,—which, by the way, we should prefer to doubt,—the improvement intended to be effected is likely to be delusive, and the existing nuisance merely transported from one part of the river to another; for of all the schemes introduced for the amelioration of the sewage difficulty, we do not remember one which has so signally failed in the object sought, in its attempt to produce a pure effluent water, as that by the use of lime *per se*.* Many wells exist in the town, and from some the water is made use of for culinary purposes. The water they hold may be good in a few, but the conditions by which too many of them are surrounded render it difficult for the waters to maintain their purity at all times and seasons. The teachings of many years, and the watchings in many places, show that, however clear and sparkling to the eye, well waters surrounded by surface dirt, in proximity to cesspools, and within a few yards of overflowing privies and foul gutters, cannot be wholesome to imbibe. The inevitable day of dirt-disease and sudden deaths may be delayed months or even years, but it surely comes. As this is the condition of wells we are personally witness of, it behoves those who are responsible to take heed in time. The town is further furnished with water by a public company under the constant system, with

* See *ante*, vol. xxix., p. 779.

some exceptions, and at high pressure, of which part of the townspeople avail themselves. Mutterings were audible in various quarters touching the quality of this supply, and as it is a question that ought to be above suspicion, the responsible officers would do well to finally set the matter at rest. For our own part, we negatively saw nothing against the character of the water.

Inspection of the dwellings and surroundings of many houses of the labouring and artizan people reveals that Maidstone,—which, in some aspects, like Eastern towns, looks better from a distance than when viewed close at hand,—is deficient in administering the laws of health, and by dissection much of its beauty vanishes into thin air, leaving a bleared image mistily impressed on the vision of mind.

Ascending the hill from Bovil, are a number of small rows and courts of cottages on the left, the homes of workpeople in the locality. In one row, Rayfields, the necessaries and merely superficial cesspools belonging to them lie back a few yards from the doors of the dwellings in the little plots of gardens on high ground; these were in a shocking condition, and overflowing with abominations towards the cottages to a gutter and dilapidated pavement running about a yard from the doors. At one end of the gutter and yard, is a well of water, which presented all the appearance of impurity and contamination, probably from the privies referred to. In an adjoining yard the conditions for health are even worse, for besides the garbage kicked about the yard, the pump is by the side of a cesspit, if not, indeed, right over it. In the Close, Upper Stone-street, are vile abominations, and all attempts at decency are cast aside by the inhabitants. The privies are tumble-down shants, and overflowing to a lower level, where is Langley-row, claimed by the Cottage Improvement Society. This Association is evidently doing much good, to which we attest witness, and has the power, properly directed, of doing considerably more. In place of the old dirty evil-smelling privies, here are erected neat new brick closets, connected with the town sewer, not too near the inhabited parts, and yet convenient. The Society will, no doubt, in good time, provide these closets with water, and instead of sealing up the sewer with the closet syphons, may see the wisdom—apparently not attempted by the Local Board—of commencing a system of sewer ventilation from the bends of soil-pipes up through the roof, and so turn the sewer-gases into the outer air in place of the interior of the houses by the sink-pipe, as we discovered was the case in nine-tenths of the houses visited. Of course a society established for the purpose of improving the homes of the people, will not permit the town sewers to long continue to ventilate themselves into the interior of their houses, and will effectually prevent a recurrence by some such device, avoiding aërial connexion between the drains and house, as terminating the slop-pipe on the *outside* over a trapped grating, or into an open channel. Moreover, the Association will no doubt further provide some more convenient receptacle for the house refuse of ashes and garbage, and other sundry accumulations in quantity, than by heaping it against the house side at the back door, as is now the unfortunate practice, and for frequent removals. Referring to the town sewers again, it is evident that the want of a system of ventilation is incurring great risk, and should be forthwith attended to. The house sinks are provided with the common loose bell-traps, which the folks here are just as ready to avail themselves of to put out of place, forgetting to put them in again, as are the people of other towns where the system remains, for convenience of scouring down, or disposing of scraps so much easier to wash down the drain than to pick up from the sink. This suggests the thought whether it might not be as much the duty of the State to place sewer air and other mischievous matters as much beyond the reach, for evil, of careless housewives or maids, and of wiser people, too, for that matter, as is enacted in the somewhat analogous case of poisons and noxious drugs, and only cometable under equally stringent restrictions? No one could possibly imagine that Maidstone has the benefit of the Public Health Acts, or that a Local Board is established with duly appointed officers, or that a Medical Officer of Health is responsibly in charge of the town, if judged from the disgraceful state of the back parts of such places as Bristowe's-yard and Thorner's-yard. Nothing can be viler than the yards in those spots strewed with filth and dirt, and the privies smeared with ordure, setting at defiance all attempts at decency or morality. In the midst of one of these yards is a pump, from which the domestic water is provided; the appearance of this beverage is not especially inviting, and its quality cannot be improved by percolations from the ubiquitous privy receptacles adjoining.

Considerable improvements on the foregoing are Kingsman's-yard, and a row of houses opposite, which are altogether of a cleaner description, but not quite free from such sanitary defects as conveniences overflowing with putrid soil, and untrapped sink-pipes inside the buildings. Many good houses are found in Kingsley-road, Melville-road, and other streets,—clean, nice-looking dwellings, with pleasant fronts, trim gardens, and well-swept yards. Nevertheless, here and there foul smeared privies point to the personal habits of some of the people as debasing. Whilst in many of the houses the mingling of sewer air with the atmosphere of the rooms,—plainly perceptible by day when doors are often open and more vigorous currents prevail, it may be neutralising danger,—must at night, when bolts and snaps are drawn close, when fires burn out and ventilation is minimised, when the master of the house confidently secures his family against intrusion,—then steadily creeps forth from the unguarded sink-stone the lurking thief,—worst of all burglars,—who robs the household of the greatest of all blessings, health and sound constitutions.

The Superintendent of Police on whom devolves the duty of inspecting common lodging houses would do well to give heed to their sanitary and social requirements. Several houses of this kind were visited, of which the following is an average specimen:—At the low and easy rate of threepence, the tramp, the costermonger, the door-to-door hawker, or any of the fraternity patronising such establishments, enjoy the privilege of half a bed, and for a trifle more a whole one if so disposed and numbers admit of it, and 180 to 200 cubic feet of air space. Two rooms are set apart on each flat for accommodation of single lodgers—one for male and one for female, in chambers averaging 6 ft. to 7 ft. high, and 1,000 ft. to 1,500 ft. capacity. Others again are used by married couples, and upon the whole of the doors of the sleeping apartments, whether male or female, single or married, not a hasp, bolt, lock, or fastening of any kind whatever is to be seen. These are simply boxes holding six or eight persons, without a fireplace or provision for ventilation of the rudest description—stuffy, stifling places, filled with a loathsome atmosphere, which many hours after the sleepers had arose and departed was enough to induce nausea and headache! What must be the permanent effect upon the health of those who are compelled to pass whole nights in such dens, let us ask of those in authority, should they awake from the lethe of apathy, and who alone are morally if not legally responsible to the country, and far more so than the mere tenant, who from crass ignorance may know no better than to crowd his victims into rooms to which God's pure air cannot enter to carry off the effete matter oozed from doubtless unclean bodies?

As we have said, Maidstone is one of the pleasantest and prettiest of our English country towns, surrounded by a rich and luxuriant vale,—a veritable garden of Eden,—with a glorious past, a prosperous present, and, as well-wishers, we hope a future more transcendent still; but as we have shown, faithfully we believe, with blemishes serious and deep-rooted, which the inhabitants would do well to dig out and eradicate at any cost. When we look around throughout the length and breadth of the land each day's experience teaches us that a town ignoring the fair warnings of the sanitary reformer incurs a risk from which there will be a sudden and rude awaking. Let Maidstone hence take heed and give ear, whilst trusting to invigorating breezes from sunny downs, and fail not to drive deep and quickly the lance into festering sores ere the disease of dirt be upon her with all its fell results!

Manslaughter against a Manufacturer.—An inquiry into the cause of the boiler explosion which occurred at the works of Mr. George Hides's cutlery manufactory, Sheffield, on the 22nd ult., was concluded last week. The cause of the explosion was a corrosion of one of the plates induced by a leakage. A verdict of manslaughter was returned against Mr. Hides, the jury believing that he had not had the boiler attended to as he ought to have done.

SPECIMENS OF MODERN FRENCH DECORATION.

We have on a previous occasion noticed the work in which, under the title of "Architecture privée au XIXme Siècle," that indefatigable labourer, M. Cæsar Daly, has undertaken to illustrate completely the characteristics of French domestic architecture of the present day. The first two volumes, dealing respectively with planning and ensemble of design, and with technical and artistic detail, have been some little time before the public, and in the third and concluding volume, a considerable portion of which* is now published, we have chromo-lithographed illustrations of internal coloured decoration, taken from work executed mostly by Paris decorative painters under the direction of Paris architects. The plates are executed with a carefulness of delineation and a brilliancy of colour which renders it possible to judge of the merit of the work represented almost as well as by actual inspection of it.

The illustrations, as far as at present published (four parts, out of the ten which are to complete the series) include decorations of walls and ceilings for rooms of different descriptions; dining-room, study, boudoir, and bath-room are all represented; the designs so far being almost entirely by two artists, M. Dennelle and M. Fréchou, under various architects, whose names are more or less well known to our readers. It is not surprising, therefore, if a certain degree of sameness pervades the majority of the designs; but as these specimens are selected on such good authority, as showing the best examples of what is now practised in the internal decoration of domestic buildings in France, we may accept the drawings as representative as far as they go.

The style of design, and the nature of the combinations of colour shown in many of these illustrations, are not such as would be admired by the majority of architects and decorative artists in England at present. We find here none of those rich and somewhat subtle combinations of secondary tints which are so much exemplified among the types of decorative treatment produced by the best firms in England which give their special attention to high class decoration, and most favoured by English architects and "men of taste" at present. The French decorator appears to waver between an absolute ignoring of colour, except in the form of dull tertiary and neutral tints, and an employment of primary colours in considerable quantities, and in no very delicate or harmonious combination: at least, we find among the designs selected for illustration in M. Daly's book, a considerable number which present us with an expanse of browns and greys, which can only in a qualified sense be called "colour" at all, and in others a mass of strong colours used with very little evidence either of refinement of taste or of any feeling for the more delicate and richer effects of colour harmony. Nor is there much attempt at massing and contrasting decorated surfaces. As a rule, the same design pervades a whole wall, with similar tone and details carried throughout, except in one or two simple schemes of ordinary dado (wainscot) and wall-paper type. Whether or no this is a defect, may be open to question. It may be said that the walls of a room should have a homogeneous treatment pervading the whole surface; but we recall the effect, for instance, in Pompeian decorations, of the marked contrast, either vertically or horizontally, between different portions of the surface to be decorated; and the same source of effect in much of the decoration in which the Japanese so much excel; and we come back to these French designs with a sense of monotony, of a want of point and picturesque effect, which is due in great measure to this somewhat mechanical system of carrying some one "notion" over the whole expanse of wall, with little or nothing to fix the eye as a central point, or to discriminate between the most and the least emphatic part of the design.

In regard to the employment of colour in the decoration of rooms, again, there are two main principles or objects that may be kept in view: either the production of a rich and full effect of colour, or the use of varieties of one or two tones, nearly related to one another, to produce a special scale of colour suitable to the situation. We may decorate a dining-room or a library, for instance, on a scale from which the brighter

* Décorations intérieures peintes: Salons, Salles-à-manger, Chambres-à-coucher, Salles de Billard, Boudoirs, &c. Par M. Cæsar Daly. Paris: Ducher & Cie.

tints are excluded, and which has only a limited range among the deeper tones (from reddish brown, perhaps, to a dark green, or in the other direction of the scale, to a low orange); or we may decorate a boudoir with a combination in which blue, grey, and white predominate, in search of a cool and delicate effect, or a bedroom in a combination of tints of which green is the key. In each case the object is to realise a feeling in the colouring specially suitable to the nature of the apartment and the use to which it is to be put. But apart from such special objects, and when a rich effect of colouring is required, all the experience and authority of the best designers in colour are in favour of a style of arrangement in which the primary colours are used in small quantities but in bright tones, and in equal proportions in regard to their respective power; so as to produce a generally balanced effect, not obtrusive and yet not dull. The primary colours and the brighter secondaries also may be used with great effect in very small quantities, as high lights in a system of generally subdued tones. This latter arrangement the French decorators, as represented in M. Daly's collection, do not altogether ignore, though they make but sparing use of it. But of the combination of colour so as to produce a glowing and yet homogeneous and unobtrusive effect, they seem to have little sense. Where bright colour is used, it is mostly either straggling about in filigree patterns on a dull ground (on the panels or stiles of a wainscot, for instance), or it is put in more or less raw masses with anything but a happy effect. Take as an instance the decoration for an antechamber, 131, Rue Faubourg St. Honoré, by M. Denuelle (MM. Croiseau and Latrosne, architects). Here, over a low wainscot, is a wall of "high" * crimson, and a ceiling which is all but yellow, very slightly subdued, with a border round it of white filigree on a strong blue ground. The colours are not absolutely inharmonious in themselves, as a bright and bold combination, if they were more intimately combined; but it is the way in which they are used, as unconnected masses, that gives such a crude and ophthalmic effect to the whole. This tendency to yellow in the ceilings seems a part of the creed of the French colourist; and a still worse form, also apparently a favourite, is that in which the yellow expanse is made to assume the aspect of a canopy stretched over the room, and attached at various points of its margin to the outer member of the cornice, leaving a series of loop-holes round the edge, through which a strong blue is seen, relieved upon which in white are the tag ends of the conventional strings with which the conventional canopy is supposed to be tied up. This is seen in two examples in this book, both by M. Denuelle, and the force of bad taste could hardly go farther.

On the whole, however, the ceiling decorations include some of the best bits of decoration in the book; and one may regard with satisfaction the aim of the French decorator to make the ceiling, as a matter of course, a part of his scheme of colour, instead of regarding it as a sacred surface not to be touched but in the most timid and hesitating manner. A good specimen of refined combination of tertiary tints is shown in the ceiling of an antechamber, No. 32, Rue de Lisbonne, by M. Fréchon (pl. 24). Here we start from the lower members of the angle cornice, which are lined in deep reddish and greenish brown tones, employ lighter and yellower shades in the soffits which divide the ceiling into panels, lighter still in the interior mouldings, and the centre of the panels is occupied by a blue-grey ground, with arabesques in a lighter shade of the same, the whole relieved with white. Some spandrels adjoining the large centre panel are filled with a diaper in little squares of a very subdued red and orange, or rather citrine; and this is important as a harmonising element for the whole, and as emphasising the grey and white tones of the centre panels. This is a heavy combination for a ceiling, and there is scarcely a particle of real colour in it; but it is a good instance of the effect produced by a thoughtful and systematised arrangement, and is, at all events, completely refined and free from vulgarity in regard to colour at least; much cannot be said for the forms. The dining-room ceiling from the same "Hôtel," and by the same designer, is rich and powerful in effect, divided out into deep panels in which the octagon form prevails, and in the centres of which strong blues are used as a ground, with a predominance of reddish brown in the mouldings, heightened to a decided crimson in portions of the centre of the whole design. This is very bold, and looks well on paper, but it would make a dark room by daylight, and certainly would not light up effectively. The soffits between the panels are a subdued green. It is, however, in the combinations of dulled tints that the decorators illustrated in this book seem most successful. There is (to finish with ceilings) a rather pleasing light ceiling for a *petit salon*, by M. Denuelle (pl. 14), from a villa at Croissy, in which, on a warm buff ground, a kind of trellis of narrow red diagonal lines, emphasised at the crossing points, is intermingled with tangent circles of broader blue lines, with a small centre ornament in each space. The general effect is pretty and delicate, and the transition from this central design to the low tones of the cornice, by a strong gilt line, and then a space of ornament in two tones of grey, is well managed. But in general, when the French decorator of the day gets to his bright colours, he is a very "fearful wildfowl," and not to be approached without caution. He seems to have "a great dispositions" towards those lighter tones of red violet which popularly go by the name of "pink," and which are the most pleasing of all to children, and the most difficult to use with any good effect in artistic decoration. In small quantities and in delicate tones pink can be used with effect on a quiet grey ground (as it is in some of Mr. Morris's wall-paper designs), or with a very subdued buff. But the French decorator uses it lavishly, with the certain result of a heated and at the same time weak and tame effect; and in one ceiling here, by M. Denuelle, there are little pink buttons dotted over a ceiling of nearly yellow ground; a combination which it sets one's teeth on edge to look at. If we come from the ceilings to the walls, we have to complain that in all the designs which aim at being decidedly rich and sumptuous in decoration, everything seems to run into thin, meagre "sprigginess," if one may coin the word. Here is a design for the decoration of a *grand salon*, by M. Denuelle (pl. 5), consisting of light green "stiles," and panels of a nearly white ground, with pink sprigs flourishing over them; the same pattern everywhere, from floor to ceiling. Nothing could well be weaker and more unmeaning. M. Ouri, in his design for another "Grand Salon," shows a little more effect, but in a very vulgar style. We find effect too in M. Denuelle's "Billiard-room" (pl. 16), but this again is that thin scattered effect, produced here by ornament of thin white lines on a dull ground, in the ends and at the centres of panels; it is pretty, but very gew-gaw-looking. The ceiling of this room is treated in a broader and richer manner, and is the best part, but it must completely kill the wall-decoration; and if there is any disproportion in intensity between wall and ceiling, it ought certainly to be the other way. But what strikes us perhaps above all in this collection of decorations, is their utterly meaningless and uninteresting character. We do not find any attempt at special suggestiveness in the decoration, unless in M. Denuelle's "Smoking-room" in the Château des Crêtes (Switzerland), where there is an evident intention to convey a generally Turkish effect (Turkey being considered, we suppose, as the head-quarters of smoke), combined with floral ornaments suggestive of the composing weed itself; and this is certainly the best and most effective piece of work of an elaborate kind that is illustrated here. In the majority of instances we seem to meet with the same unmeaning little details, the same sprigs and scrolls, and turns, over and over again. Ornament with less thought in it one could hardly find; and there seems to be so little feeling for breadth and effect in the manner of defining the designs; thin lines are placed dead on the background, with a bare open-work effect, instead of that breadth and reinforcement of the design by outlining and repeating the lines in deeper tones, which is so necessary to produce a full and rich effect. Among the schemes less ambitious of being handsome, there are one or two in which a richer effect has been produced by mere massing of the colour. To a certain extent this is the case in the design of M. Parent (architect) for his own "Cabinet de travail" (pl. 6), where the rich brown tones of the wainscot and door go well with the dark green arabesqued wall. The best piece of effect in the work, so far as it has gone, is certainly the dining-room decoration at 32, Rue de Lisbonne, by M. Fréchon (pl. 3). Here there is very little "ornament," in the common sense of the word; but the deep red of the walls, and deeper maroon of the door-stiles, with the lighter brown tones of architrave and mouldings, and the rich deep bluish-green of the panels (it is scarcely apparent whether these are painted or an inlay of another material), combine to form a really rich though sombre effect of colour, with which the marble mantel-piece, with its coloured panels, also harmonises in style. The cornice decorations are a little too pronounced, but otherwise the whole thing is in perfect taste and keeping, and is most admirably shown in the drawing.

As a specimen of illustration, in fact, this book is, like other French architectural works of which we have had occasion to speak, got up with a perfection and finish to which the designs owe much, and which some of them at least are not worthy of. There is on pl. 11 a representation of decoration of a "bath-room," consisting of marble inlay on the walls, and a bath of red veined marble, of very solid appearance (or is the whole only enamelled slate after all?). This bears the name of an architect, and nothing could be more beautifully shown than the different marbles, with their veining and reflections; but what is there in it? Panels of white marble, and an edging of black, and division-bands of yellow, with a little bit of red inlay of the commonest design in the upper panels. The genius of any marble-mason might have been equal to the design; and here it is set forth as a specimen of French decoration of the nineteenth century.

On the whole, we fear these specimens must be taken as indicating that the French decorative art of the day is too often somewhat vulgar in taste, and flimsy in design and effect; that its authors have little feeling for harmony of combination; and that when they do achieve this, it is in a manner which indicates a perception of what may be called the logic rather than the poetry of colour. As to the manner in which the illustrations are produced, it is more than creditable to all concerned; and M. Daly's record of the domestic architecture of his own time and country would not have been complete without this supplement to it.

* As the hunting Quaker defined his red coat,—"Friend, 'tis but a *high drab*."

THE METROPOLITAN BOARD OF WORKS AND THE DISTRICT SURVEYORS.

Case of Mr. J. H. Good.—On the 10th of November last, two houses in the course of building in Addington-road, Bow, fell to the ground, and the accident was reported to the Board of Works by the district surveyor, Mr. Good. The facts as explained by him to the Building Act Committee of the Board are these:—On the 25th of September, 1874, the district surveyor received the builder's notice to erect two houses; a day or two afterwards he visited the site pointed out, but found nothing had been done. He repeated his visits once or twice, and still the works had not been commenced. On going again about the 10th or 12th of October, he found the foundations put in and the walls carried up to a height of about 2 ft. or more, when he complained of the work and requested it might be amended. He afterwards made further complaints, and on the 24th served the builder with a formal notice that the walls were of insufficient thickness. In the builder's notice the height given for the walls of the intended house was 25 ft. But from his own observation and experience the district surveyor felt certain that the notice in this respect was deceitful, and that the buildings must, when carried up to their full height, exceed those figures. In order to confirm his opinion he asked permission to enter the old house adjoining, that he might measure the exact height (the new buildings being intended to correspond in height and appearance with the old block adjoining), when his expectations were realised.

Having thus satisfied himself that the walls, when built up to their full height, would be illegal, he determined as soon as possible to take out a summons to enforce the provisions of the Act, and after waiting a few days he went again to visit the buildings with the intention of afterwards proceeding to the Police-court to apply for the summons, when to his surprise he found the buildings had fallen in. Mr. Good correctly explained that if he had taken out the summons in the first instance when he made complaint, and the case had been heard, the builder would no doubt have told the magistrate he only intended to carry the walls to the height of 25 ft., and the summons would have been dismissed with costs for the district surveyor to pay. As long

as 9-in. walls, divided into stories, are not carried up above 25 ft. in height the Act is complied with: as soon as they exceed that height they become illegal.

Up to this time the district surveyor, as it seems to us, had done his duty, and more than his duty. The Building Act Committee, however, thought otherwise, and Mr. Good was informed that they intended to report that he had neglected his duty by not taking the proper measures under the Act of Parliament, in regard to buildings of which the walls were of an insufficient thickness, and would recommend that a communication expressive of such opinion on the part of the Board be forwarded to him. Upon this and previously to the meeting of the Board, the District Surveyor addressed a letter to the Committee recapitulating the whole of the facts, and thus proceeding:—

"I maintain I had no power to stop the work under the Act, as you suppose; I could only caution the builder, and serve the notice in anticipation of what I knew perfectly well would be the consequence if the walls exceeded the limited height, and this I did to the very letter of the law. I have no complaint to make against you, gentlemen, collectively, for the opinion you formed of my conduct, for it is utterly impossible that you could have been so well acquainted with the *practical* working of the Act as I am, an architect, a Fellow of the Institute of British Architects, and a District Surveyor of *thirty-five years'* standing. I might, however, have fairly expected that your chairman, as a professional Architect, would have guided you by enlightened and skilled opinion, and exonerated me from the blame it is sought to cast upon me. Surely, if he be an architect, and holding the important post of chairman of your Committee, he ought not to have led you astray by his opinion of my conduct, inducing you to follow your leader in the same strain.

I confidently leave myself in the hands of the whole Board, firmly believing that they will not allow one of their faithful servants, after he has borne the burden and heat of the day for upwards of thirty-five years, to be unjustly accused, notwithstanding the threatened report, under the advice of your chairman, that I have neglected my duty.

In justice to the officers belonging to the Board with whom I am sometimes obliged to put myself in communication, I am bound to say from your talented Superintending Architect and his chief clerk, from your solicitor and his manager, and the gentleman in the dangerous structure department, Mr. White, and all others with whom I have come in contact, I have invariably received every kindness, attention, and information I have required.

I can assure the Board generally that I have endeavoured faithfully and honestly, without favour or affection, prejudice or malice, to discharge the duties of my responsible office with credit to myself, credit to you, my masters, and with satisfaction to the public, and I very sincerely hope I may not have failed in this endeavour.

Trusting the explanation I have given may be satisfactory to the full Board.—I remain, &c. J. H. Good."

At the meeting of the Board, the Committee nevertheless reported as promised, and the chairman, Mr. F. Fowler, moved the adoption of the report. Immediately after the meeting, Mr. Good addressed the following note to the Clerk of the Board:—

"In the letter I addressed to the chairman and members of the Building Act Committee on Friday last, which I enclosed with another addressed to you, requesting it might be read before the general meeting to be held that day, I may have expressed myself in too strong terms with regard to the opinion of their chairman, Mr. Fowler. Should I have made use of any expressions unbecoming my position or that of a gentleman, I freely withdraw them, and trust the Committee and Board generally will make allowances for the excitement of my feelings under a charge of having neglected my duty, when I conscientiously felt and believed I had done all in my power to avert the catastrophe which has occurred."

At the following meeting of the Board (the 22nd of January), Mr. Richardson again referred to the facts of this case, and added that when the matter came before the Board at their previous meeting, a letter was read from Mr. Good, which the Board thought desirable should be referred to the Works Committee. The Committee had had that letter under their consideration, and it was found to contain most serious reflections, not only on the conduct of the Building Act Committee as a committee, but especially on the conduct of the chairman of that committee. Such conduct, the Committee thought should not be allowed to pass by unnoticed, and they therefore recommended that Mr. Good should be called before the Board and reprimanded.

And this proposition, in the face of some protests, was carried.

At the meeting on the 29th ult., the matter was again adjourned to, this, Friday, the 5th inst., to give Mr. Good the opportunity to withdraw more unconditionally the observations objected to. This he will probably do, though some of our readers will probably think it was not very extraordinary that he made them, and there we may suppose that part of the matter will end. Mr. Good, however, will owe it to himself to invite the Board to withdraw their assertion that he did not do his duty in the case in question, and in this he may very properly look for the support not merely of his brother district surveyors, but of the public at large.

The constitution of the Building Act committee would seem to require looking into, and we are called on from more than one quarter to attempt it.

District of St. Mary, Newington.—A report was brought up from the Works and General Purposes Committee, reporting, with regard to the reference by the Board as to the course taken by Mr. C. A. Long, district surveyor of the district of St. Mary, Newington, and part of Lambeth, with respect to the proposed erection, by Mr. Cutler, of three one-story shops at No. 5, Clapham-road, and recommending that the reference to the committee be enlarged, so as to extend to the general conduct of Mr. Long in the performance of his duties as district surveyor, and that in the meantime Mr. Long be suspended from the discharge of such duties.

Mr. Richardson said the matter was referred to the committee on the 15th inst. by the Board, with instructions to inquire into the conduct of Mr. Long with reference to certain buildings about to be erected in the district. The complaint was in respect of this gentleman having received fees before any works had been commenced in connexion with the said buildings. The committee had seen Mr. Long, and also the principal parties interested in the subject, but they were not yet in a position to report fully on the case. He might say, however, that other matters had been brought before the committee which seriously affected the conduct of Mr. Long as a district surveyor. They had, therefore, felt it their duty to recommend the suspension of Mr. Long, and that the reference to the committee should be enlarged so that they might consider his general conduct as a district surveyor. He moved the adoption of the report.

The motion was carried.

Sir,—Referring to a report in your last number of a statement made at the Board of Works, I beg to say that my appointment has made no change in the district office hours. I have not, as stated, "*stuck up a small board*," nor have I made any announcement of my "*office hour*" or "*hours*."

No complaint has been addressed to me, nor was I present at the meeting where this statement is said to have been made. As reported by you it is a mischievous misrepresentation of an obviously temporary arrangement for the convenience of all parties, pending the completion of the necessary preparations for the transaction of the business of the district.

Horace Gundry,
District Surveyor for Paddington.

METROPOLITAN BOARD OF WORKS.

Sir,—It has gone forth, by means of the public press, that Mr. Good, a professional gentleman and meritorious public officer, appointed by the magistrates of the county of Middlesex, who for thirty-five years has performed his duty faithfully and efficiently, has been brought before the Metropolitan Board of Works, — a public court,—and there tried, — without having had the opportunity of obtaining a proper hearing,— and condemned to be publicly censured. The matter out of which this trial has originated had reference, I understand, to the mode of carrying out the very complicated Metropolitan Building Acts, — a matter upon which Mr. Good, after thirty-five years' experience, might, I presume, have been reasonably expected to be quite as well acquainted as the members of the recently-created Metropolitan Board of Works, and upon his having remonstrated against the conduct and treatment of the Board, which he considered to be unjustifiable, he is again requested to appear before this open court to be there publicly reprimanded.

Now, Sir, bearing in mind how this Board,— this Court,—is constituted, I should wish to ask under what authority its members have deemed it to be their duty, or felt themselves at liberty to adopt the course which, according to their published proceedings, they have taken on this occasion? I confidently assert that Mr. Good is not an officer of the Metropolitan Board of Works, but an officer of the public, and that he takes his instructions from Parliament, and not from them; and that it could not have been intended by the Legislature that the Metropolitan Board of Works, however well suited for the main purposes of the Acts, should be entrusted with powers to deal judiciously with a case of this kind. It appears that the letter of remonstrance addressed to the Board has been withdrawn, under the assurance that it contained expressions hurtful to the feelings of certain of the members, and the subject is again postponed for further consideration. It is to be hoped, therefore, that, before the members of the Board meet again, they will have investigated their powers, and reflected upon the manner in which they have been exercised in this particular instance, and that they will have ascertained whether they can properly assume the functions of judge and jury in such a case, and proceed, in a most unusual manner, publicly to pass a *condemnatory sentence*, which, if legal, or carrying any weight whatever, would, to say the least, be humiliating to social position, and highly detrimental to professional character. Lex.

SIR RICHARD WALLACE'S COUNTRY STABLES.

There has recently been completed at Sir Richard Wallace's country-seat, Sudbourne Hall, Suffolk, an extensive range of stabling, which, whether considered in detail or as a whole, may be regarded as a good example of the superiority of modern stables over those erected by our forefathers.

There are in all seven stables, and these, with the coach-houses, harness-rooms, cleaning-room, grooming-room, &c., form an extensive quadrangle, entered through a central archway. The whole of the fitting up of these buildings has been executed by the St. Pancras Iron-Work Company, of St. Pancras-road, London, and the accommodation provided consists of twenty-two stalls and four loose boxes. The stalls are separated from each other by specially constructed divisions, consisting of massive iron posts, and high ventilating ramps with stout solid wrought-iron plates at wall ends to prevent the horses from seeing each other while feeding, and wrought-iron bottom cills with improved arrangements for facilitating the easy removal of the broken boards. The woodwork between the ramps and cills is in narrow widths (to facilitate removal), and is fitted with stout wrought-iron tongues, thereby greatly adding to the strength, stability, and resisting power of the division. The manger-fittings consist of enamelled manger-pans, and water-troughs fitted to a strong top plate with large barrel front, so formed as to prevent the possibility of the horse getting his teeth locked in it. The hay-rack is placed on the top plate, and the horse feeds through the front bars, the hay being sent to the front by a sloping grid. This arrangement prevents the waste which sometimes occurs in the use of the underhead racks, and it has none of the objectionable features of the old pattern overhead rack. Below the manger-fitting and along its centre length is placed woodwork about 18 in. deep.

Above the manger-fittings are glazed tiles hexagonal in form and of an olive green tint, the effect of this is pleasing and restful to the eye, a great consideration in the stables where all glaring effects should be studiously avoided. In the centre of the tiles is inserted a brass ring for racking the horse to, and their upper edge is finished by a moulded iron capping corresponding to the top rail of the stall divisions.

The four loose boxes are grouped together in one stable, and are so formed that while the whole interior of each is clearly visible from the outside the horses occupying the boxes cannot see each other. This end is attained by the use of solid divisions of wood fitted into wrought iron cill and capping, and strengthened by wrought-iron tongues, ties, &c. The front of the boxes is formed by ventilating grating corresponding in pattern and strength to the ventilating ramps of the stall divisions.

The doors of the boxes are worthy of notice, the frames being formed entirely of wrought iron, strongly forged, and fitted with deep ventilating grating to facilitate the ready inspection of the box from the outside. These doors are hung on the principle introduced by the St. Pancras Ironwork Company many years since, and which in practical working has been found superior to the use of hinges and similar devices. The fastenings of the doors are exceedingly ingenious, and are an enlargement and adaptation of the Company's Patent Catch. They require but one movement of the hand to release or secure them, have no spring to get out of order, and cannot be moved by any action of the most ingenious horse.

The manger-fittings used in the loose boxes are similar in general construction to those already described for the stalls, but are fitted for and fixed in the angles or corners of the boxes, thus occupying less space than if carried across the whole width of the box.

The stables have been designed and constructed under the immediate supervision of Sir Richard Wallace, and his architect, Mr. Ambler.

THE VASE OF BEZETHA.

THE subscribers to the Palestine Exploration Fund can not be called unreasonable for inquiring whether the "Vase of Bezetha," which was described in the Quarterly Statement of October, 1874, as a discovery of great value, is to be seen at 9, Pall Mall East; or where else it may be inspected. The notes to the last statement announce the landing of M. Ganneau at Marseilles with this vase, and other information, early in December; and the subscribers have a clear right to the objects in question. After opening a special subscription-list for the purpose of M. Ganneau's expedition, the committee of the fund have incurred the responsibility of a large outlay for that object from the general funds. The only points of importance that have been credited to the *per contra* side are:—the denunciation of the collection of M. Shapira; the proposed identification of Gezer; and the discovery of the Bezetha Vase.

With regard to the first of these, the assertion that all the objects are made "of badly-baked earth," and of clay "absolutely identical with that now used by the Jerusalem potters," as well as that of the superficial quality of the saltpetre deposits, is contradicted by a writer in the *Athenæum*, who describes the different kinds of clay employed, and gives instances of the special action of the saltpetre. The assertion that the letters are only casually marked on the pottery, is disproved by the comparison, given by the same writer, of the partially corresponding inscriptions on two different urns. It would have been more advantageous to the interests of the fund to give the subscribers some means of forming an independent opinion on this curious question, than simply to denounce the objects as forged, and that on grounds which have not been substantiated. Thus, when the note to the January Statement says that newly-displayed specimens in Jerusalem are "precisely similar to all the rest," it would be more useful to mention whether they are made of the hard red clay, the grey and crumbling clay, the outwardly red, but inwardly black and porous clay, or the clay that is black throughout. Again, as of more than 1,300 objects no two are exactly alike, it would be interesting to know whether the open urns, the long-necked vases, the ram's-horned goddesses, the cow's-horned goddesses, the lunate goddesses, the goddesses with Egyptian head-gear, those with cats' heads, the votive objects, the *Fypi Pehoris*, or emblems of Baal Peor, the faces with round open mouths, with square open mouths, or with ordinary lips, or the curious one-horned god who is said, in the inscription which was formed on it before the clay was fired, to preside over the water-cisterns, are intended. Again, whether the variety of type referred to is that of written or unwritten pottery, and, in the former case, whether the letters are raised or depressed; single, or ligatured; taken from the alphabet of sixteen letters, from that of seventeen, or from that of twenty-two; as all these varieties exist, and have been mentioned in the columns of our contemporary. It would be interesting to hear a little more about them, whether forged or otherwise. Nor is the statement "There are no new facts connected with the Shapira collection" accurate. The discovery, in Moab, of an inscribed vase by an American traveller, without any communication with M. Shapira or his agents, is a fact of remarkable significance, which ought not, in candour, to have been concealed under such a phrase as we have quoted.

With regard to Gezer, the discovery of an Arabic name, now in use, nearly corresponding to a Hebrew Biblical name, may be the first step to an important identification; but is not, in itself, an identification. The accuracy of the theory as to Gezer must depend for confirmation on the survey. As far as the best extant maps go, they are against the proposed adoption of the site of Abu Shusheb, for this reason. The Canaanite city of Gezer was within the limits of the tribe of Ephraim, the southern frontier of which territory, according to all the positions identified on Smith's map, is either three or eight miles to the north of Abu Shusheb, according to the adoption of the northern or the southern of two natural lines of boundary. Abu Shusheb lies on the parallel of Ekron,—a city within the limits of Philistia. Moreover, the language of the Hebrew Book of Joshua indicates that Gezer was on the sea-coast, with which position the etymology of the word, according to Gesenius, coincides. Whatever may be the ultimate outcome of the Ordnance Survey, it is thus evident that at present the weight of argument is against, rather than in favour of, the proposed identification.

These two points being still so much in the air, there is the more reason to make sure of the vase of Bezetha, as the most tangible result of a considerable expenditure of public funds.

ON PUBLIC ABATTOIRS,

WITH SPECIAL REFERENCE TO ONE RECENTLY ERECTED AT MANCHESTER.*

SOME few years ago, the corporation of Manchester turned its attention to the disreputable state of many slaughter-houses in the city, which, from their filthy condition, were an intolerable nuisance; and owing to many of them occupying sites in the very heart of the town, and in densely-populated neighbourhoods, a demoralising influence was brought to bear, especially on the rising generation; in some localities it became almost a pastime for young children of both sexes to frequent slaughter-houses, and witness the death-struggles of the butchers' victims. This familiarity with scenes of blood and slaughter was justly considered as having an immoral influence, and afforded ample justification for a comprehensive measure of reform. It was also considered that the drainage of the city was vitiated by the existing system of slaughtering, and that, therefore, from a sanitary point of view, it was absolutely necessary some action should be taken to provide a remedy for the existing state of things.

In dealing with a measure of reform, the Markets Committee of the Corporation found it necessary to proceed with extreme caution. The "Fleshers" of Manchester were, and are, a strong and numerous body of tradesmen, cemented together, so to speak, by an "Association," through which they were naturally prepared to combat, and possibly defeat, any effort which they might consider an infringement of independent rights. After careful consideration, the committee (very wisely, as the result has proved) discarded the idea of seeking compulsory powers from Parliament to enable them to carry out their object; whilst many slaughtering establishments were highly objectionable from a sanitary and moral point of view, there also existed many which were a credit to their owners, and against which no reasonable objection could be raised. The committee therefore resolved to take the butchers into their confidence, and to enlist assistance from the trade in the great work to be undertaken at the expense of the Corporation; for, whilst the Council already possessed powers through its Nuisance and Health Committees to compel the closing of objectionable slaughter-houses, it was logically argued that if a public abattoir could be satisfactorily established, replete with every convenience, the butchers themselves would see the desirability of migrating thereto, and so avoid the trouble, expense, and sometimes litigation, which the compulsory closing of slaughter-houses frequently entailed.

For my own part, I have every reason to be thankful that the course I have mentioned was adopted by the committee in charge of this work, inasmuch as I have been enabled to place myself in direct communication with the men for whom we had to cater; and in the place of antagonism and resistance, I have experienced courtesy, and received valuable advice and assistance, the absence of which would have rendered my share of the work extremely troublesome, and created a task of almost insurmountable difficulty. I regret to learn that in the town of Liverpool the compulsory course has been adopted and defeated at considerable expense and loss.

When the Markets Committee of the Manchester Corporation first entered upon the consideration of the practical working out of a public abattoir, it appeared desirable that the Old Meat Market, or "Shambles," being inadequate to the wants of the wholesale meat trade, should be dispensed with, and incorporated with the abattoir, and so secure the slaughtering and sale of meat in one establishment; and also that the wholesale meat or carcass market should be attached to, and work in immediate connexion with, the slaughter-houses to be occupied by the wholesale butchers. This idea being definitely fixed upon, the problem for solution became possessed of some interest and originality to the architect; for whilst the abattoir question had occupied the attention of municipal authorities in some parts of the country, attention had been directed to slaughtering accommodation only, and not to the sale of meat in connexion therewith. On first turning my attention to the solution of this question, I visited the abattoir in Edinburgh, erected under the care of Mr. David Cousins, the city architect. My attention was directed to this establishment as probably the best of its kind then existing in this country, and through the kindness and courtesy of its architect I was enabled to obtain many useful hints and suggestions as to the arrangement of the slaughter-houses and lairs for cattle, but could obtain no help from it as to the working out of the important problem under consideration for the Manchester abattoir, namely, the association of a carcass-market with slaughter-houses.

From what I observed at Glasgow, Edinburgh, and Bradford, and also in the latter town from a careful perusal of Mr. Manson's sketch-book, containing the results of his investigation into several Continental abattoirs (kindly placed at my disposal), I concluded that the best and most efficient plan for a slaughter-house was that which placed the slaughter-house and lair for cattle under one roof, one in front of the other, with a communication between the two, the lair being entered by the cattle intended for slaughter at the back, and the meat, when dressed and ready for human food, passing out at the front for the purposes of commerce, either wholesale or retail. It then occurred to me, that any number of these slaughter-houses and lairs might be associated in parallel blocks, the lairs facing each other, with a roadway between, and the slaughter-houses also face to face, divided by a cartway. The peculiar shape of the site, resembling the letter L in form, enabled me to carry out this parallel block system, and to place the Carcass Market the whole length of the longer arm, with the wholesale slaughter-houses of the carcass butchers immediately behind, with a roadway between.

The site occupied by the Manchester abattoir is situated some little distance from the centre of the city, separated from the borough of Salford by the river Irwell; it contains 12,840 square yards, and is bounded on its north-easterly side by the river Medlock, and on the north-westerly side by Water-street. The frontage to Water-street is 533 ft.; along this frontage is placed the Carcass Market, extending to a length of 418 ft., the remainder being occupied by the Entrance Gateway and Lodges. Behind the wholesale slaughter-houses in rear of the market, are placed those occupied by the retail butchers; behind these, again, are the blocks of buildings devoted to the pig-slaughtering, blood-store, and condemned meat, dead and alive. The rest of the site is occupied with a large general lair for cattle, manure-pit, and a common room for drovers' and butchers' *employés*.

The Carcass Market, as before remarked, occupies the frontage to Water-street, and is 417 ft. 11 in. in length, by 55 ft. 6 in. wide, is spanned by an iron trussed roof, having sheet-iron courses the entire length of the building. The market is lighted exclusively from the roof. As part of my scheme was to facilitate the operation of the carcass butchers as much as possible, and to reduce the labour of moving carcasses to a minimum, four gateways are provided in the street front, communicating with a cartway in the centre of the building; by this arrangement the purchaser of carcasses can drive his cart to the particular bay or stall in the market occupied by the carcass-butcher from whom he buys, and by mechanical arrangement, which I shall hereafter describe, the carcasses can be placed in the cart without any lifting or carrying into the street, which was a necessity in the old markets. This roadway is wide enough for two carts to pass, and a very large trade is conducted without any confusion or trouble. In towns where a large export trade is carried on, this roadway might be occupied by a line of railway-metals communicating with the main line, provided the site of the market was convenient; by this means the carcasses, after being packed in the usual way, might be deposited in trucks, and with very little trouble despatched direct from the scene of slaughter to their destination. The back wall of the market is pierced with large doorways, directly opposite to the doorways in the wholesale slaughter-houses, — a necessity of the mechanical arrangement carried out; and the accommodation provided for a carcass-butcher consists of a lair, slaughter-

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* By Mr. A. Darbyshire, Fellow. Read at the Institute of Architects, as elsewhere mentioned.

house, and a bay in the market equal in width to his slaughter-house.

The wholesale slaughter-houses are twenty-one in number, and are 24 ft. by 17 ft. 6 in. inside measure, the lairs attached being 22 ft. by 17 ft. 6 in. These houses and lairs are open to the roofs, which are simple in construction. The slaughter-houses are well lighted from the roofs, top-lights being superior to side-lights for purposes of slaughtering; the lighting of slaughter-houses requires careful attention, as the operations of killing, skinning, and dressing must be performed by a steady hand; the portions of the animal not used for human food, such as the hide and guts, might easily be spoiled by an operator not having a good light upon his work, and the commercial value of these interesting fragments of the beast would be affected thereby.

The retail slaughter-houses are nineteen in number, and similar to the others, with the exception of the doorways, which are much wider in their openings, to enable the butcher's cart to be backed partially into the slaughter-house, so as to facilitate the removal of the meat to the private sale-room or shop, where it is cut up and distributed to customers.

The condemned meat department consists of a lair, slaughter-house, meat-store, and boiling-house. All animals pronounced unsound, diseased, or unfit for human food, by the Corporation inspector, are removed to this establishment, slaughtered, and the meat boiled down to a consistency of fat or grease, which is applied to various useful purposes. Any meat also which should happen to pass through the usual operations of dressing and afterwards be condemned, shares the same fate.

The blood department is an interesting section of this abattoir, and consists of a storing-room, drawing-off room, and drying-room.

The pig-slaughtering department is adjacent to the above, and contains a large pig slaughter-house, open yard, and piggeries.

The entrance lodges contain residences for the porter and Corporation inspector, and also rooms for the convenience of the Markets Committee. These lodges are arranged on either side of the entrance-gates, through which all cattle enter the establishment.

In addition to the above accommodation, the site contains a large General Lair for Cattle, manure-pit for the temporary storage of the manure from the live animals, and a common room for drovers and others having business in the establishment; on several points of the site are provided suitable conveniences, and also stable and gig-house for the inspector.

Having now given an idea of the general character of the various buildings forming this abattoir, I shall endeavour to explain in detail the uses to which they are applied in respect to the slaughtering of cattle, and the dressing and sale of meat. I shall do so as clearly and in as concise a manner as possible. I shall commence with the poor beast at the entrance gateway, and follow it to its death, then accompany its carcass through the various processes, until its final removal from the establishment in the shape of human food.

When the cattle enter the grounds they are driven into the streets or roadways between the lairs before alluded to; the bullocks, or "beasts," as they are technically termed, are secured to strong wrought-iron rings built into the walls of the lairs at right angles therewith, and the sheep are allowed to remain loose, or, if the butcher desires it, he may provide his own sheep-pens. The door of communication between the lair and the slaughter-house is placed near to one of the side walls, so as to secure the largest amount of wall-space. In the latter place, in the floor, and almost close to the wall dividing the lair and slaughter-house, is fixed the *killing-ring*. When the animal enters the house from the lair, it simply turns the corner of the doorway, and is instantly at the scene of slaughter. At this point we must pause to note the killing-ring. On turning my attention to this matter of killing, I became naturally anxious to facilitate and quicken the operation. I had occasionally noted that the death-struggles of the animal had been prolonged, sometimes by an unsteady or unskilful slaughterer, and in some instances owing to the clumsy method of tying-up preparatory to the death-blow. I concluded, after careful investigation, that the frontal bone, or forehead of the beast, should be secured at right angles to the striker, and also at a certain elevation from the ground, to suit the peculiar character of the pole-axe, or instrument of death. After submitting my views on this matter to those practically interested, it was determined to adopt a killing-ring. This is a round iron bar bent to the form, with a circular ring forged to the underside of the horizontal portion; the rope or chain round the animal is then passed through the ring, and secured to an upright iron hook in the floor, which brings the head down tight to the horizontal bar: thus the skull is presented to the full force of the pole-axe. The animal having fallen on its side, the knife is inserted at a certain point, and the blood carefully drained off into a vessel, and taken away to the blood-storehouse, where, for the present, we leave it. Without taking up time with more unpleasant details connected with slaughtering, I proceed to the dressing of the carcass, and the mechanical appliances associated with this part of my subject. Next in importance to the general arrangement of an abattoir comes the question of the scientific application of mechanical aids to the various processes associated with slaughtering, and, with your permission, I will describe briefly the problem I proposed to the engineer, and then explain the method adopted in its solution.*

IN SKYE.

The wind, laden with sleety rain, is shaking the window and sending forth great puffs of black smoke from the fireplace. I hear the din of London in the far distance, and I gladly pass away in a day dream to a remote island on the bosom of the Atlantic. The sun is high and bright in the heavens, the dark green waves are leaping and flashing in the bay, the breeze is blowing freshly, and before it we are bounding merrily to the shore. There is neither pier nor jetty: so taking the advantage of a huge wave, our boat is borne on its crest far up the beach, crunching the pebbles in its path. We are in Skye; there is no sign of human life to be seen, with the exception of a tiny column of blue smoke, rising in the shadow of a huge mountain, over which a lonely eagle is floating on its broad wings.

We shoulder our knapsacks and make our way for the schoolmaster's abode, and in a few minutes we come within hearing of his pupils enjoying their playhour, and filling the air with the wildest of Gaelic songs and shoutings. We peep into the schoolroom, and find the dominie in the act of filling his pipe, to which no light is applied until he has welcomed us back once more to the Island of Mists. Standing at the entrance to the schoolroom, we look north to where the Atlantic draws the horizon line; to the right, "the long waving line of the blue" mountains of Rosshire and the tossing waves of the strait between; to the left, a bleak stretch of moor, backed up by a range of black and rugged hills; and turning to the south, the volcanic peaks of the shattered and shivered mountain-rocks that form the island of Raasay. We deposit our knapsacks with the dominie, who luckily can spare his best apartment for our use, run down to the river and indulge in a rustic wash, and with this ceremony inaugurate our fortnight's holiday.

The dominie tells us we are in luck. There is a fulling or waulking of cloth in a cottage hard by, to which we at once proceed. The door of the cottage is amissing, but we find it on the floor surrounded by ten fair and dark maidens, who have set themselves at equal distances, and in a kneeling position. The piece of cloth is placed doubled up on the door. The girls commence their work by firmly rubbing the cloth on the improvised frame, giving it at the same time a circular motion that all parts of it may share equally in the friction. The business is enlivened by the workers joining in singing an "òran-luaidh," or rustic song, to which they keep time with the movements of their hands. Alas! alas! waulk or fulling mills are rising one after another, and the songs of the maidens of Skye over their work, of whatever kind it is, are being rapidly hushed into silence. There is one thing, however, to rejoice at. The old cottages are giving place to better habitations. The cottage in which the waulking took place was a sample of the ancient dwellings. It was built of rude stone, and the intervening chinks were filled with dry mould in place of lime or mortar. The roof consisted of six or eight rude cupples, made of unsquared timber, over which a few beams were laid to support the "kebbers," which, in their turn, support the turf and straw made use of as thatch. The house consisted of three apartments, separated by wattled work. The middle apartment is the one principally occupied by the family, the fire being in the centre of the floor, over which the "crook" for holding the pot is suspended from the roof. On one side of the fire is a wooden bench, or rude sofa, of sufficient size for the occupation of five or six people; while, on the other side, is the good-wife's "sunnag," or rustic armchair of plaited straw, near which are the cradle, spinning-wheel, cupboard, a large covered pot containing the kelt for family dress undergoing the slow process of indigo dye, and the other paraphernalia which are indispensable for family use. The inmost apartment serves the purposes of barn or bedroom, and sometimes both. The apartment next the door is occupied by the cattle.

It were in vain to attempt to recount the wondrous tales we have listened to when darkness closed down upon the glen, and the turf fire lighted the interior of this or that cottage with its warm ruddy light. Strange and terrible were the stories of the old seers, as they named those who were gifted with the second sight, and had prophetic visions of shrouds, funerals, corpses, the appearance of friends, or others who were at the time in distant countries; the arrival of strangers, swamping of boats, drowning at sea, dropping suddenly dead, and other such weird occurrences. We luckily, through the medium of an ounce or two of tobacco, got into the good graces of an aged crone, Peggy McDonald, who was regarded with mingled terror and veneration, as she was supposed to be endowed with magic power, which enabled her to sink the boats or kill the cattle of all those persons to whom she took a dislike. She was gifted, they said, with the evil eye, but she seemed harmless enough to us as she sat at her cottage fireside and smoked her "cutty." But of all the terrible legends, those of the corpse lights were the most sensational. These lights moved along in the course which some funeral procession would soon thereafter take, or twinkled in or about the bed in which some individual was about to die. So common was and is this belief, that a living friend of ours, one of the best educated parsons in a Highland pulpit, writes:—"Of the existence of such lights, whatever their cause, no shade of doubt can be entertained, as they have been frequently seen by several individuals at the same time, whose minds were tinctured neither by prejudice nor by the reveries of any superstition." It must be confessed that when we left the fireside of the hospitable family, and took our way home over the moorlands, that strange "eerie" feelings came over us as we passed in the starlight beneath the shadow of the black cliffs, or by the margin of the tarns, whose surfaces seemed to shine with a lurid light. The only proper place and time to tell or listen to a ghost story is among those highland glens, where the cottages stand half a dozen miles apart, and the silence of the darkness is broken only by the wailing wind and the murmuring stream.

It is scarcely to be wondered at that superstition should linger among such wild scenery. Take, for example, the mountain which encloses Quiraing, which may be said to have been discovered by the late Sir Thomas Dick Lauder, the genial friend of Scott and Wilson. Sitting over the dominie's fire, we can look through the little window of the kitchen and see the mountain towering up some 1,700 ft. or so. Quiraing is a secluded piece of level and grassy ground, concealed by tall, spire-like rocks, in the face of an almost inaccessible precipice. This green plot of ground is in the form of an oblong platform. It is studded all round with massive columns of rock rising up in lofty peaks by the intervention of deep chasms. All is a dreary solitude. We look out from one of the fissures, and far beneath us behold the sea-birds waiting for their prey, as they hover over the Sound of Rona. But the mist gathers over us, and the scene is suddenly changed. The mist floats slowly through the pyramidical rocks, and a night-like gloom falls on our thoughts and on all things around us. We quickly make our descent into the valley, and, looking back, see the mountain crowned with a coronet of silver mist, which glitters in the sunshine. There are many other scenes of grandeur and gloom, where lofty precipices tower above dark lakes, and not forgotten must be the mountain ridge of the Storr, which, when swept by a fog, appearances like those of lofty spires, castellated walls, and turrets emerge and disappear among the driving mists.

The antiquary and archæologist would revel

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* To be continued.

in this little nook of Skye. The ruins of cills, cells, or Caldee chapels abound all over the hills and valleys. Columba the Sainted founded a monastery on an island in the Lake of Columcille; but the lake is now cornfields, and the monastery a heap of stones, hidden by broom and briar bushes. Leaving the mainland, a brisk breeze takes our boat up the Sound, and in an hour we reach the island of Fladda-chuain, which, though only about three-quarters of a mile in length and 300 yards in breadth, is rich in antiquarian remains. Here are the ruins of what is called a Druidical temple, to which, according to tradition, the priests went yearly to worship and to feast. Within the memory of living men the altar was entire, and on it lay the nine smooth stones that were used by the Druids in their religious ceremonies. A few years before our visit these stones were stolen. Stolen, of course, by that class of curiosity-hunters who scratch their names on window-panes and carry off monuments by piecemeal. Nobody within the precincts of the Nook must doubt the existence of the Druids. Danish forts are frequent along the shore. We will not attempt to write their names, with one exception, and that is Dun Deirg, the erection of which is assigned to the Druids; for is it not well known that Dargo was a brave and warlike Druid, who attempted to restore the fallen dignity of his order? Ossian makes mention of Dearg nan Druidhean, or Dargo the Druid; and who, after that, can doubt his reality?

The roar of London breaks in upon the dream, and it is dispelled; and yet it is not a dream,—it is a memory of a quarter of a century gone by. The dominie still lives, and tells me that the people of the Nook are almost as primitive as they were of yore, and are as gentle and kind. No hotel for the accommodation of the tourist has intruded its white neck-clothed waiters and insatiable guides upon the simplicity and poetry of the glen. The fires are still kindled on the floor, and the smoke still wanders at its own sweet will where it listeth, through roof or door. Is it well that it should be so? In these days of improvement, so called, are not the humanities of life ignored? Be these things as they may, is it not pleasant to know that within twenty-four hours may still be found a spot where the stranger finds a kindly welcome and a sorrowful good-bye, and where the bustle and business of life have not withered and seared the affections of the heart?

THE "QUARTERLY REVIEW" AND SIR GILBERT SCOTT.

WE received the following communication just too late for our last issue:—

Sir,—In your number of the 9th instant Sir Gilbert Scott, the president of the Institute of British Architects, is reported to have said that:—"He had found out one thing that the (*Quarterly*) Reviewer did not like, but particularly hated, and that was the beautiful work that constituted the altar-screen in Westminster Abbey, because he thought that he (Sir Gilbert) had designed it; but it happened to be designed in the time of Henry VI."

Assuming that this curious report, now three weeks old, is still unchallenged and correct, I beg your kind permission to remark that there is not in either of the recent articles in the *Quarterly Review* the slightest reference to the altar-screen at Westminster; and that Sir Gilbert's declaration of the Reviewer's "thought" about the date of its design, a matter totally irrelevant, is pure invention, absolutely untrue.

No doubt, Sir Gilbert Scott will now be anxious to recant his error, and will denounce the authority that has so cleverly deceived him.

THE QUARTERLY REVIEWER.

We have submitted the above to Sir Gilbert Scott, and append his reply:—

In the article entitled "The State of English Architecture," April, 1872 (page 311), the Reviewer, after speaking of the *monuments* in the Abbey, proceeds thus: "Of these intruders many are of genuine and noble workmanship, and so become in character and fact consistent and appropriate additions to the building, which is itself of gradual construction, and in varied and successive dialects of art. Among such more worthy works, the choir-screen, reredos, pulpit, and communion-table, are not to be included. These are particularly weak and jejune specimens of the dull clerkmanship that architects of eminence live to supply, and thus, we venture to affirm, are more expensive 'lumber unremoved.' Compare them with the gateway to the chapter-house, or the De Valence tomb, and their sad worthlessness becomes immediately clear."

That the object designated by the Reviewer as the "reredos," and by the President as the "altar-screen," is one and the same, would seem clear from the fact that the retabulum over the altar-table, which might have been described by the former of these terms, had at that time no existence excepting in the form of a rough and tentative scribbling in charcoal upon papered canvas placed round the mosaic picture. To suppose this to have been alluded to would be to attribute to the writer a degree of carelessness hardly credible.

THE DRAINAGE OF CALCUTTA.

TEN years ago Sir John Strachey declared that the capital of British India was "a scandal and a disgrace to a civilised Government," and asserted that it was literally unfit for the habitation of civilised men. He declared that the most important streets and thoroughfares of the northern division of the city formed to all intents and purposes a series of huge public latrines, the abomination of which could not be adequately described. And he vehemently added, the other cities and towns of India were almost faultless when compared with the metropolis. Yet at that time sanitary questions were altogether unknown in India, and Miss Nightingale had reported that no one of the presidential cities of India had arrived at that degree of civilisation in their sanitary arrangements which the worst parts of our worst towns had reached before healthy reform in such matters sprang up in England at all. This reproach has now been wiped away from the Indian capital, and there are signs that Bombay and Madras will soon be rendered salubrious. At Norwich, in November last, Miss Nightingale was able to state that "the drainage of Calcutta bids fair to be a wonder of the world, and said that the city had become more healthful than Manchester or Liverpool, and might even be considered a *sanitarium* compared with Vienna or Berlin." How has the change been accomplished?

Calcutta lies in close proximity to a vast stagnant marsh, known as the Salt Water Lake. Even in its infancy the settlement was unhealthy, and as it grew in size its insalubrity increased. Cholera continually haunted it, fevers and dysentery made it their home, and when it had come to be termed the City of Palaces, it was equally well known as the City of Pestilence. But the traders who frequented its bazaars risked their health for the sake of the rupees which flowed into their coffers; the servants and officers of John Company had too many wars on hand, and too many States to annex, to pay much heed to the healthiness of the town, and to the soldiery the chances of death on the field or under the friendly guns of Fort William were about the same. But at length the mortality of Calcutta became so notorious that the Government could no longer overlook it, and a committee was appointed to inquire into the causes of the prevalence of perennial fever, and to propose remedial measures. This committee sat for several years previously to 1840, amassed a great amount of repulsive evidence, and in the end proposed the establishment of a fever hospital. The Medical College Hospital was accordingly founded; but while it afforded relief to the afflicted, and did save a few lives, such a solitary institution could not materially diminish the death-rate. At that time, and for many years afterwards, the affairs of the city were managed by a Conservancy Board, composed of two European and two native commissioners; but although these gentlemen were doubtless anxious to do their duty, they lacked professional skill to direct their efforts, and wasted their energies in futile projects. The night soil was collected from house to house by scavengers, and conveyed in open carts to the river, into which it was thrown at a point above the harbour. The stable refuse and house rubbish were shot into the streets and roadways, and subsequently carted away to fill up disused tanks and ponds, and to raise the foreshore of the river; while the surface water of the thoroughfares and compounds, the slops from the houses, including urine, and the storm water were allowed to find their way by surface gutters into the Hooghly and into the Circular Canal—a deep cutting which almost surrounds Calcutta to the eastward. The whole subsoil of the city was saturated with filth which had spread from innumerable cesspools, and with water which had percolated through from the Hooghly, or had fallen during the monsoons. Only vile drinking-water was needed to render the Indian capital the permanent abode of plague and pestilence,—and this was also provided; for wells and the river alike were impregnated with sewage matter. In the tropics with so much of the results of decomposition in air, earth, and water, it is surprising that life was at all endurable, and that the people submitted to the nuisance so long. But although the European inhabitants grumbled, the native Commissioners opposed all schemes for extensive reform; and affairs rolled on on the filthy old groove until, in 1855, Sir Frederick Halliday was appointed to the new office of Lieutenant Governor of Bengal. An administrator so able at once detected the foul spot, and succeeded in convincing the Commissioners that they were personally incapable of superintending the work of reform. By his advice a professional adviser was called in, and Mr. William Clark, C.E., was appointed to the post. In the following year that gentleman submitted a scheme, with estimates attached, for the drainage of the city, and a committee was appointed to report upon it. After deliberations extending over eighteen months, the committee reported favourably upon the project, and it was sent on with their endorsement to the Government. To make assurance doubly sure, the plans, about which little difference of opinion then existed, were handed over for supervision to Mr. Rendel, C.E., who happened to be in India at the time. By him they were carried to England; but after considering them for ten months he reported unfavourably with regard to them, and proposed a counter scheme of his own. Then the mutiny broke out; people had other work to do; and the whole affair was shelved for a time. However, when the rebellion had been suppressed the Government at an early date returned to its previous intentions, the rival projects were compared; the proposals of Mr. Clark were preferred, and orders were given to begin the work. It was in 1859 that the undertaking was commenced, and it is not quite complete now.

Mr. Clark's scheme comprised outfall works and large brick sewers in every part of the town, which lay within 1,000 ft. of the main-drainage lines, leaving minor pipe-sewers for future consideration. The larger sewers, five in number, and varying from 6 ft. to 8 ft. in height, extended from the river to the east at right angles across the town; and these sewers were connected at their eastern extremity by an 8½ ft. sewer placed beneath what is known as the Circular-road. From the middle of this road the outfall branched off in a due easterly direction in the bed of what was formerly the Entally Canal, which, being useless, was filled up for the purpose. The outfall sewer, 16 ft. high, was continued to a length of 3,284 ft., to a channel cut in the marsh or salt-water lake before referred to, and thence it is eventually to be conducted to a distance of ten miles from the city, and there discharged into the tidal stream of the Sunderbund. From the river, eastward, the level of the surface of the land falls at the rate of 3 ft. per mile, and eventually forms the Salt Water Lake. The waters of the Hooghly can thus be utilised at discretion, in flushing the sewers during the dry season; while, at other times, the storm water can be discharged into the river at low tide.

The perfection of the drainage scheme necessarily involved one for water supply. Accordingly, Mr. Clark proposed to take water from the Hooghly, seventeen miles above Calcutta, pump it into large settling reservoirs, filter it, and pass it down to the city in iron mains, 42 in. in diameter. Thence it was meant to pump it during the night into a large reservoir in the centre of the town, from which it could be pumped for distribution during the following day. This project was sanctioned in 1865; the works were commenced at the end of 1866, and were completed in three years. The daily delivery is about eight million gallons for a population of about 500,000 inhabitants. It is distributed, under a pressure of 50 ft. by engines fixed near the central reservoir. Stand-posts are fixed in the streets for supplying the poorer classes, while house-pipes may be connected with the mains if it be so desired. The cost of these works was about 600,000*l.*, which was advanced by the Government to the Municipality at 4½ per cent. After having served domestic purposes the eight million gallons of water are discharged into the sewers by the drains: this water flows by gravitation, with the subsoil water and the light shower water, to the pumping-station,

where it is disposed of as described. The sewers are divided into three classes. First, the large ones branching off from the river to the Circular-road, and ultimately to the pumping-station. There are ten miles and three-quarters of this sort. The second-class are also brick sewers from 3 ft. to 5 ft. high, and are laid along the principal streets at right angles to those of the first class. These sewers are twenty-three miles long, and both these and those of the first class are finished. The third class, which will drain the narrow lanes and the interior of the blocks of buildings surrounded by the first and second class, will consist of stoneware piping. They also are very nearly complete, and their total length is estimated at seventy-nine miles. Thus, when the whole network is finished there will be 113 miles of sewers, which represent the road mileage of the city.

Considerable difficulties attended the execution of the scheme, and there were some differences of opinion as to the mode of carrying it out, but they were overcome, one after another. Native bricks were employed; a large brickmaking establishment was set on foot at a place nine miles above Calcutta, and the native brickmakers soon succeeded in producing, with their simple apparatus, bricks as good as, and less expensive than, those turned out by the European machines which had been imported. For many years the brickfield had produced about 8,000,000 of hand-made bricks. As brick-dust, or what is known locally as "soorkie," is employed instead of sand with lime in making mortar, about 500 maunds of it were supplied every day. Stoneware pipes, varying from 6 in. to 12 in. in diameter, were supplied from Doulton's potteries at Lambeth; and when laid down the lowermost half of the openings was united by cement, and the upper half by puddled clay, through which the subsoil water was permitted to percolate. The saturated subsoil was a great obstruction to progress. A trench, dry overnight, would be found to be more than half full of water in the morning; and no amount of pumping was equal to the task of keeping the trenches dry enough. After many abortive attempts, Mr. Clark adopted the plan that has been followed in London of laying a stoneware pipe at the bottom of the trench, and covering it with a bed of concrete, upon which the brick sewer was built. The lowermost part of the inner circumference of the sewer was coated with Portland cement, and made water-tight, but the other half was unprotected. The walls varied according to the size of the sewers from 5 in. to 20 in. of brick-work in rings. The subsoil water enters the sewers either at the bottom, by means either of the small stoneware pipe or by percolation through the upper half of the brickwork; and the plan has been so successful that its level has been reduced by 7 ft. or 8 ft. The sewers are employed to remove the subsoil water, the drainage of the houses, and the rain-water. In a tropical country, the rainfall is a most important consideration, that of Calcutta varying from 75 in. to 90 in. per annum. Hence the sewers had to be made of exceptionally large size, and it is said they can take the equivalent of a quarter of an inch of rain per hour, which, if collected, would be represented by a running-stream 40 ft. wide, 8 ft. deep, and flowing at a velocity of 4 ft. per second.

During the monsoons, when the storm-water falls in sufficient quantities to overpower the pumps at the pumping-stations, it is discharged by special outlets into the Circular Canal, adjoining the Circular-road, whence it flows off into the natural streams of the country eastward. It is admitted into the sewers by gully-gratings placed at the sides of the footpaths, which gratings cover a deep pit provided to intercept the road grit, which is removed by manual labour. Such of the grit as finds its way along the sewers to the pumping-stations is intercepted there. The stable-litter, kitchen-stuff, and other more solid refuse of the town are removed from every house by municipal carts daily to a railway that runs along the Circular-road, carried by it to the Salt Water Lake, and there deposited. There have been various proposals for utilising the sewage-matter and litter at the place of their deposit, but no action has yet been taken, although it is very unlikely that such a profitable deposit will remain long without being turned to good account.

The Calcutta justices are empowered to compel householders to connect their premises by suitable drains with the public sewers, but they are reluctant to enforce their authority, and prefer leaving every man to his own discretion. It is very questionable whether their laxity is to be commended, for much of their outlay is thereby rendered unproductive, and the health of the whole city suffers. The city death-rate, however, has been reduced by more than one half. When the public sewers are not used the householders allow the drainage of their dwellings to gravitate into cesspools and ditches, and it is only when they have become an intolerable nuisance and a source of pestiferous exhalation which cannot be endured that they are cleaned out, and the contents, in a state of active decomposition, are carted away and shot into the sewers. It is gratifying, however, to state that the natives are beginning of their own accord to appreciate the advantages of the public sewers, and to understand the dangers attendant upon accumulations of filth, within and about their dwellings. Hitherto the cost of connexions and other private drainage works has acted as a deterrent to the smaller owners and holders. Recently, however, a shrewd native justice suggested that the English system should be adopted, by which such persons can have their premises drained by the municipal authorities, and pay off the combined interest and cost at a fixed annual rate. The project has been adopted, and it is anticipated will become popular.

The total cost of the drainage works of Calcutta, when completed, will be about 800,000*l.*, of which nearly 600,000*l.* have already been expended. The money has been raised partly by municipal debentures bearing six per cent. interest, and latterly by a Government loan. The benefits, however, amply compensate for all the expenditure.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At an ordinary general meeting of the session, held last Monday evening, the 1st inst., Mr. H. Currey, vice-president, in the chair, the following gentlemen were elected associates:—Messrs. C. Aldridge, Charles A. Legg, and John Wynne.

The Chairman announced that the Council had resolved to nominate Mr. Edmund Sharpe for the gold medal of the Institute for the noble works that he had produced in the promotion of architecture, and the matter would be taken into consideration on the 15th of March next, when a special meeting would be held in reference to the subject.

The Foreign Secretary proposed as honorary and corresponding member M. Emile Bœswilwald, of Paris, officer of the Legion of Honour, inspector-general of historical monuments in France, architect for the restoration of Laon Cathedral, and late architect to the Sainte Chapelle, Paris, as well as to the Cathedrals of Chartres, Bayonne, and Le Mans, who was elected by acclamation.

Mr. A. Darbyshire (fellow) then read a paper "On Public Abattoirs," with special reference to one recently erected in Manchester: this we print elsewhere.

The Chairman said that several gentlemen had been specially invited by the Council to assist in the discussion, and he had no doubt that their remarks would contribute very much to the benefit of the members.

Dr. Sedgwick Saunders, the City medical officer of health, in response to the chairman, said that there were one or two points which struck him with relation to the paper which might be worthy of a little more attention. He was not quite sure, from the author of the paper, whether the dado of the walls was to be of brick; if so, he thought that 5 ft. would not be sufficient to prevent absorption. With regard to condemned meat, it was important to know that ammonia was obtained from it which was worth 10*l.* per ton. Of course it would suggest itself to every one present that meat condemned by the inspector was a very valuable manure, and it consequently represented itself as of a great commercial value, to say nothing of the feet of the animal, which was used for special purposes. As to newly-erected abattoirs, it was very necessary that there should be no drains attached to them. It was very necessary that lairs should be separated from the slaughter-houses, for at certain periods of the year odours were given off by the animals which were very prejudicial to the meat. He laid special stress upon this for obvious reasons, and urged the necessity and importance of a strong partition to divide the two, which should extend from the floor to the roof.

Dr. Hardwicke said that in London, with the exception of the city, they had not yet arrived at the point where they could abolish the private slaughter-houses, and if they could put pressure upon that point they would, he thought, do a very great service to London by doing away with the iniquitous and barbarous practices carried on in the slaughterhouses in London, which were appalling to contemplate. They were a great nuisance, because they could not be placed under the same supervision as abattoirs with regard to inspectors. There was no doubt, too, that an enormous number of oxen were killed at private slaughter-houses which were not inspected at all, and consequently bad meat was the result; but at an abattoir there was always an inspector ready to condemn meat unfit for human food. With regard to the Act passed last year, it was, he was of opinion, smuggled through the House of Commons, which had given the Metropolitan Board of Works power to continue the nuisance of private slaughter-houses, which he trusted the public would not allow to remain as it stood. It was evident that the matter did not receive from Parliament that attention which it deserved, and there must be, he thought, some pressure put upon the Legislature with regard to the subject. With regard to the abattoir, the site was very important, and it was necessary that the details should be mastered; there ought to be, too, a place for the reception of the hides, and also a place for the boiling and melting processes, as well as for the offal. The lairs might well be kept some little distance from the slaughter-houses. With regard to the whole question, he thought that if the press called attention to the matter the public would see the necessity for taking it in hand. He did not see why abattoirs might not be constructed by a private association instead of a corporation.

Mr. Rudkin was of opinion that the plans and specifications shown of the abattoirs seemed to work admirably, though he thought that there was not as much economy of space as they could desire. With reference to the compulsory powers given to the local authority, he confessed that he was an advocate for it; for, having been connected with the meat trade all his life, he had no hesitation in saying that if they had compulsory powers in London to-day to do away with private slaughter-houses, and establish public abattoirs, it would be immensely beneficial to the public. If they were established, instead of increasing the price of meat it would reduce it; besides, too, the cost of the conveyance of cattle would positively pay the expenses of these abattoirs. It had been estimated that the cost of the transfer of the beasts from Edinburgh to London, owing to the decrease of their weight in the transit, represented about 1*l.* per head. He was an advocate for the slaughtering of animals in the country, and he was pleased to notice that the quantity of dead meat now sent to London was steadily progressing. In 1868, when the Metropolitan Meat Market was first opened, 130,000 tons of meat were sent to London, and last year, 160,000 tons. There was one point he must strongly impress upon the minds of every person who was concerned in the construction of slaughter-houses in any part of the country which was the absolute necessity of lairs being distinct from the slaughter-house, for slaughtered animals should not be allowed in the same compartment. The very instant it was killed it should be removed to cool. The offal was a matter of great importance to them; in Paris it was very much used for food, which was not the case in this country. In the Paris butcher-shops they never saw anything dirty, which was far different in London. Even in the small matter of sheeps' trotters, which were thrown away in London, in Paris they were washed, placed in a tank with boiling water, and then taken away to an adjacent chamber, scraped, again thoroughly cleaned, and the food produced from them paid more than double the cost of the process it had gone through. It was full of gelatinous matter. In the abattoir there should be a place for the reception of hides, and, in point of fact, the whole of the manufacture should be as clean and tidy as possible. He would like to see cattle housed as comfortably as the horses in a nobleman's stable; instead of that, they were ill-used, kept without food or water, and were slaughtered in such a manner that one did not marvel that there was so much food put before them that one could hardly get his teeth into it. After considerable experience, he thought that there was nothing which would do so well as stone flagging. The scheme of elevating the meat referred to in the

plans and specifications, and in not allowing it to be handled afterwards, was established at Deptford, and they had there something similar to the apparatus now shown; but the principal difficulty met with was that they could not elevate the meat sufficiently high in order to put it into the van. With reference to the question, the Corporation of the City of London had decided to construct twenty slaughter-houses rather than continue the present method. He believed that as soon as they were constructed, they would receive great support from the butchers, who were alive to the fact that it was much better in many respects that abattoirs should be established, especially as it would obviate the necessity of driving cattle along the streets. His opinion was, that the inspection of private slaughter-houses was a mere farce, for he knew from his experience that there was a large quantity of vile filth which was allowed to pass as food which was not fit for consumption.

Mr. Colam, secretary of the Society for Prevention of Cruelty to Animals, said that previous speakers had confined their remarks to the interests of men, but he proposed to advocate the interest of the dumb animals. It was utterly impossible to prevent cruelty to animals in private slaughter-houses in London, of which in this metropolis alone there existed 1,500, which rendered it really impossible for an inspector to visit all of them. So far as he knew, slaughter-houses were private property. Of course the inspector was never refused when he asked permission to view the slaughter-house, but it was impossible that he could inspect them all; but immediately they erected abattoirs similar to that at Manchester, it was quite manifest, he maintained, that the cruelty would be reduced to a minimum. In the first place, the building would be a public one; and, secondly, the men employed would be more efficient, for the most efficient men would be employed where the largest number of animals were slaughtered. If abattoirs were established, too, better means would be devised for the slaughtering of animals, for they had by no means got to proficiency in that respect. He was not here to condemn the English method of slaughtering animals, for he thought that the means now adopted were quickest and best in the hands of efficient men. A good thing in abattoirs was a proper entrance, for many of the slaughter-houses were totally unprovided with proper entrances, the animals in many instances being absolutely thrust in; and he knew of many places in London where the poor beasts were obliged to be taken down steps to be slaughtered. The cruelty, too, which takes place in the streets of London by the animals being driven through them would be reduced tenfold if abattoirs were erected. There was nothing, to his mind, which would recommend the scheme more to the public than by preventing the cruelty which took place whilst the cattle were being driven through the streets. The animals having previously been living in peaceful fields were packed to London, parched with thirst, and without food; no wonder, then, not being used to London life, they got confused and sometimes created a disturbance. It was of course manifest, under these circumstances, that drovers had a difficult task before them. In conclusion, he deprecated most strongly the slaughtering of animals in public shops, which occasionally took place.

Mr. Horace Jones thought that it would be beneficial and advantageous to the public that abattoirs should be established.

Mr. Jennings trusted that it would be necessary to bring about public abattoirs without having recourse to compulsory powers. It was necessary, he thought, to introduce one first, and if that succeeded to establish others.

Professor Kerr understood that some of the compartments in the building were to be lighted from the roof, but would it not be better, he asked, to light them from one side?

Mr. Roberts considered that the introduction in abattoirs of stone flagging signally failed. He advocated the building of abattoirs, but was of opinion that they should be erected some distance from towns, for slaughter-houses near cities were the greatest possible mistake.

There was exhibited by Mr. John Meiklejohn, of Dalkeith, an invention of "new and improved machinery and appliances to be used in hoisting, removing, dividing, and hanging on hooks, taking off those hooks again, and washing carcasses and other bodies in abattoirs, carcass and meat markets, and other places," which excited some attention.

THE DWELLINGS OF FRENCH WORKMEN.

THE French workmen, speaking generally, lack in their dwellings many of the home comforts which their brethren on this side of the Channel enjoy. Their houses in the small towns and in the country are mere lath-and-plaster erections, ill calculated to resist either the heat of the summer or the cold of the winter. To this rule, however, there are many exceptions, as in the case of the "*Cités Ouvrières*" which have been built in Paris, Marseilles, Amiens, and other towns. Employers also in many instances have followed the example thus set them, and have built good houses for their workpeople. Improvements are being made from time to time, and by-and-by we may, perhaps, learn that the homes of the working-classes of France are more comfortable, better drained and ventilated, and less suited for the development of epidemic diseases than what the generality of them now are. Much necessarily depends upon the system of drainage which may be adopted in French towns: the present is bad, nor is there a proper supply of water. In most of the French towns, however, there exist very strict police regulations forbidding all refuse to be kept within doors for longer than twenty-four hours, and compelling each householder who does not possess a cesspool to bring out at night the accumulation of the day, which the public scavenger removes before morning.

In Paris, workmen were formerly to be found in every part. In the lofty houses on the boulevards the lower floors were occupied by the wealthy classes while the poor inhabited the upper floors, and this distribution of the working part of the population gave them great advantages in the popular tumults which have changed the fortunes of the country. Then came the time when the complete demolition of whole quarters very materially altered this state of things. The workmen demolished their old haunts, and began building to an extent unknown before the Empire. In 1867 no fewer than 3,867 houses were constructed and 1,764 pulled down. The result of these alterations was a large increase in the number of apartments. The figures show that 11,141 were destroyed and 25,601 built. But the workmen could find no shelter for themselves there,—they were driven from the centres which they liked to the suburbs, which they can only reach by losing time or paying money. To compensate for this displacement several ranges of buildings have been erected on the outskirts of the city, both as speculations and as boons, but with doubtful success.

These buildings have been erected with every regard for the comfort of the working man, and the regulations are made as little oppressive as is compatible with the order and regularity which are essential for individual happiness where large masses of men are brought together under the same roof, still they have never been popular amongst the classes for whose benefit they were built. The French workman objects to supervision. When at home, after the hours of labour, he wishes to be in every respect a free man, especially to be master in his own household, and the consequence is, that for lack of a sufficient number of working-men applicants, many of the apartments in these buildings are let to a class for whom they were never intended. M. Audiganne, in his "Population Ouvrières," says on this subject, that "the repugnance of the working population does not arise from ignorance of the advantages promised. I found them well aware of the promise made. Their minds, nevertheless, refused to give the work their wished-for adhesion. A *cité* which brings into close contact a large number of families placed under exactly the same conditions, which generalises the use of all sorts of interior arrangements, requires, in addition to the provisions of the law concerning the relations of landlord and lodger, a special code of regulations. If, as must be the case, the lodgers are very numerous, these rules must be severe. This is what displeases the artizans. 'We leave the factory,' they say, 'where we are under the control of indispensable regulations. We have there masters and foremen. We are subject to fines, and then on getting home we should find more regulations stuck upon our doors, trammelling our most private acts. We should have, in the superintendence of the *cité*, more overseers. We should not be masters in our own houses.'"

The system which has been really a success is that adopted at Mulhouse, which town now belongs to Germany. The workmen's dwellings consist of rows of two-storied houses, each with a garden attached, and the condition of the lease is such, that a workman, after a certain number of years, can obtain the freehold of his house. There is no irritating system of supervision. The workman feels that he is the possessor of a real home; that in a few years he will become a proprietor; and that he has an actual interest on the side of order. This may be illustrated by the following anecdote: — A manufacturer in Roubaix had in his employ a most intelligent and able stoker, but who was a drunkard. On leaving the public-house one day, the man fell and broke his leg. While he was laid up, his employer visited him, and found him very anxious for the future of his family, as he had saved nothing. His master told him that he would still receive his wages although unable to work, and that he might pay him back by instalments as soon as he was in the shop again. As the stoker was confined to his bed for a long time, it was a year before he could repay the money advanced. At the end of the year his employer suggested the advisability of economising for the future, as he had done in the past, and to encourage him, said that two years' savings at the same rate would realise 1,200 francs, the value of the house in which he was living, and which might then become his own property. The stoker consented, and gave up drinking. The two years quickly passed, and on the day after he had entered into possession of his newly-acquired property, the clerk of the works handed him his full wages. This time, however, he refused to receive them, adding that he intended to become the possessor of other houses in the row; and such was the fact, for he is the proprietor of three houses. Several of the lodgings built in Paris for the industrial classes soon got the name of "barracks," and fell into disrepute. They were regarded as little better than cages, in which the tenants were kept under lock and key, and thus prevented from taking part in demonstrations against the Government. Such was the fate of the *cité* in the Rue Rochechouart, and others in the Boulevard Mazas, at the Batignolles, and at the Rue Montreuil. Perhaps the best specimen of this class of building is that built on the side of the hill which overlooks Marseilles. It consists of a single building of three stories, and containing 150 rooms, opening on long corridors. The rooms are let for 4 fr., 5 fr., and 6 fr. a month. The furniture consists of an iron bedstead, a table, two chairs, a cupboard, and a looking-glass. Only men are admitted. They have the use of a large restaurant in the house at very moderate prices, medical advice and medicine gratis, and hot baths every Sunday for a small sum.

A set of buildings, erected by a lady, Madame Renault, at Clichy la Garenne, rather more than three miles and a half from the centre of Paris, has proved more agreeable to the tastes of workmen than many of the others. The set consists of separate houses on each side of a broad street, from which they are divided by a frontage of garden. They are of different size, containing from two to four rooms, with a cellar and loft, and are two stories in height. The principal merit of this scheme is, that the prime cost of each house is kept within a limit which enables them to be let at a rent usually paid by the industrial class. The cost of average houses,—that is to say, of houses with a frontage of 17 ft. 6 in. by 18 ft. in depth is 192*l.*, including ground and garden, expense of purchase, and proportional share of the general outlay of the site, such as land lost in laying out the street, road-making, gutters, sideways, and other matters of general utility. Under these circumstances a yearly sum of 117*f.* (4*l.* 13*s.* 7½*d.*), funded for fifteen years, would enable the lodger at the end of this period to become proprietor of the house in which he lives, and it is for transactions of this nature that the set of houses is intended. By adding to this sum of 117*f.*, another sum of 26½*f.*, representing the interest on the capital at 5½ per cent., a total of 381*f.* is obtained for the annual rent, or about 32*f.* per month (1*l.* 5*s.* 7½*d.*), and although this is rather more than a common workman can afford out of his daily wages, it is very moderate, considering the advantages with regard to convenience of arrangement, and to health and comfort which such dwellings afford. It may be said that the 5½ per cent. on the capital bear the burden of all the rates and taxes, of the expense of the general lighting and supply of water, lodgings and wages of the porter, repairs for fifteen years, other than internal repairs,

and when these contingent expenses are deducted there remain hardly 3½ per cent. for Madame Renault. What may be done in building with a view to profit without Government assistance or private charity may be seen from an account of the buildings erected by the Comte de Madre, about five minutes' walk from the market of the Boulevard du Temple. There are 88 houses, containing 4,000 separate apartments. The area of the site is 35,600 square mètres. The houses are of three and four stories, with outbuildings and workshops intersected by passages 200 mètres in length, and presenting a façade of 1,981 mètres. Every 30 mètres there is a gas lamp. The price paid was 4*l.* the 100 mètres, and the average rent was 4*l.* annually the room. The rent of the dearest apartments, consisting of three rooms and kitchen, was 10*l.* 8s. 4d. The others, of two rooms and kitchen, let for 8*l.* 8s. 4d. Of the expenditure and receipts, it may be said that, a house built on a plot of 216 square mètres, with a façade of 1½ mètre, including an area built on 121·6 square mètres, with an interior courtyard of 94·5 square mètres, cost 2,144*l.* 7s. 6d., and returned in the shape of rent 170*l.* 8s. 4d., from which, if we deduct 31*l.* 3s. 4d. for taxes, gas, insurance, &c., a balance of 139*l.* 5s. remains, equal to 6½ per cent. of the capital invested. A workman having to choose between two apartments costing the same amount, the one created by charity or assisted by Government, and the other on speculation, will choose the latter to avoid the savour of pauperism which hangs about dwellers in buildings raised with public funds or by private munificence.

In Lyons the majority of the workmen occupy large houses of five or six stories, built expressly for them. The rooms are made sufficiently lofty to take in a jacquart loom, and are let separately. The largest part of the room is devoted to the looms, of which there are from two to six, while the remainder of the space, forming a kind of alcove, lighted sometimes by a window, is divided,—thanks to the height of the room,—into two divisions, one above the other. The upper part is reserved for the children and assistants; the lower half for the owner of the looms, serves as kitchen, sitting-room, and bed-room. The staircases are large and airy.

In Lyons there are no large buildings resonant with the noise of steam-engines. The manufacturer is to be found with two or three men in a small office at his desk, whence the loom-owner receives the quantity of material necessary for the intended piece of work. This the latter takes home, and has it placed on the loom by two women, and woven by his assistants. When the piece is finished and brought to the employer the loom-owner is paid for it so much per mètre, and he on returning home divides the sum among his assistants, who allow him half the proceeds of their labour for the use of the loom. He is in no way superior to them, and they owe him no submission or obedience except such as their mutual interests demand.

Where there are no Cités Ouvrières, the French workmen are usually lodged in a very comfortless way, for which they pay on the average 3*l.* 10s. per annum.

THE NORTH BRIDGE OF EDINBURGH.

Edinburgh is in certain notable respects celebrated for her bridges; and in nothing more than this curious particular that they cross no river. In London and Paris, as well as most capitals of modern Europe (not forgetting Venice), the bridges we have to boast of are all of a riparian character. In Edinburgh on the contrary, they are built over great chasms of land, and tremendous inequalities of surface. The Dean Bridge cannot be regarded as an exception, although the little rivulet, or rather common sewer, named the Water of Leith, flows through one of its magnificent arches. The aqueduct which carries the Union Canal over the Cramond Valley; and the viaduct which supports the Edinburgh and Glasgow Railway over that of the Almond, are both in their respective character most successful and skilfully planned pieces of work. But the North Bridge, which conjoins the Old and New Towns of Edinburgh is unquestionably the most extraordinary structure of the whole.

It was designed and built more than a hundred years ago, amidst great difficulties and at a period when the use of concrete foundations was little understood. The centre piers were planted in the middle of a dismal swamp known as the North Loch then recently drained into the foul burn; and it is hardly to be wondered at that during the course of construction the arches should collapse. Its construction, in fact, was a series of vicissitudes. During the course of last year the roadway has had to be widened in order to meet the increased traffic caused by the tramways; and it appears to us that considerable skill has been displayed by the engineers in the reconstruction and strengthening of the superstructure.

It appears that Edinburgh, like all fortified towns of the Middle Ages, began to burst its boundaries, and get beyond the city walls, so soon as its inhabitants were satisfied as to the consequences of the civil war and the fruits of Northern rebellion. To this end, the magistrates first of all built an exchange, and then they resolved to build a bridge. Oddly enough, they set the back of the Exchange,—most substantial rubble work, as we can testify,—to face the fields, to which they wished access by the bridge (a general architectural arrangement in Edinburgh, by the way), which has only been reversed by Mr. Bryce in the case of the Bank of Scotland within the last ten years. The county magnates opposed the scheme in the House of Commons, on the ground of a probable increase of taxation; but the magistrates eventually resolved, after several years' delay, to proceed in their purpose without an Act of Parliament at all.

In July, 1763, an advertisement was inserted in the newspapers, inviting plans and estimates. This set forth that it was greatly desired for the public convenience "that a road of communication should be made betwixt the High-street of Edinburgh and the adjacent grounds belonging to the city and the other neighbouring fields as well as to the port of Leith, by building a stone bridge over the east end of the North Loch, at least 40 ft. wide betwixt the parapets, and up an equal declivity of 1 ft. in 16 ft.; from the High-street at the Cap and Feather Close in a straight line to the opposite side leading to the Multree Hills." The foundation-stone of the bridge was laid on October 21st, 1763, by Lord Provost Drummond, the event being made the occasion of a grand Masonic procession and ceremonial.

The architect, builder, and contractor, went about the work with skill and diligence, and by midsummer in 1769 the arches were completed. But a sad disaster was impending. After several unmistakable premonitary symptoms, and after fair warning by the authorities that passengers should be more cautious in passing over it, on the 3rd of August the side walls and abutments at the south end gave way, when five people were killed among the ruins and eleven injured. The cause of the disaster was defective foundations. The usual squabbles about responsibility followed, but at length the North Bridge was finished in 1772. It eventually cost 28,000*l.*

As to its present widening, we have only to state that it has been done by means of tubular iron girders laid across the surface; and these are made to support the new and extended roadway and pathway. We have only to add that the engineers are Messrs. Stevenson, and the contract for the works was taken by Mr. Waddell, Bathgate, at the price of 12,275*l.* 18s. 6d., with an addition of 400*l.* for scaffolding.

ART GALLERY FOR THE AMERICAN INTERNATIONAL EXHIBITION, PHILADELPHIA, 1876.

It is now generally known that the one hundredth anniversary of American independence will be celebrated by holding an International Exhibition of arts, manufactures, and products of the soil and mine, in Fairmount Park, Philadelphia. The Exhibition will be held under the auspices of the Government of the United States, and will be opened on the 19th day of April, 1876, and closed on the 19th day of the following October.

The principal buildings in which the Exhibition will be held are the main building, the Art Gallery, the machinery-hall, the agricultural and the horticultural halls. In the aggregate they cover a floor-space of about 40 acres. The main Exhibition building is located immediately east of the intersection of Belmont and Elm avenues, on the Lansdowne Plateau. It will stand 170 ft. back from the north side of Elm-avenue, the area between the building and the avenue being used for special products which may be exhibited in the open air. There will also be a space, 300 ft. in width, between the building and the Art Gallery, on the north side, which will be ornamentally treated as ground for special purposes.

The main building is in the form of a parallelogram, extending east and west, 1,880 ft. in length, and north and south, 464 ft. in width. The larger portion of the structure is one story in height, and shows the main cornice upon the outside at 45 ft. above the ground, the interior height being 70 ft. At the centre of the longer sides are projections 416 ft. in length, and in the centre of the shorter sides or ends of the building are projections 216 ft. in length. In these projections, in the centre of the four sides, are located the main entrances, which are provided with arcades, upon the ground-floor, and central façades extending to the height of 90 ft.

The main portal on the north side communicates directly with the Art Gallery, and the main portal on the west side gives the main passage way to the machinery and agricultural halls.

Upon the corners of the building there are four towers, 75 ft. in height, and between the towers and the central projections or entrances, there is a lower roof introduced showing a cornice at 24 ft. above the ground.

In order to attain a central feature for the building as a whole, the roof over the central part, for 184 ft. square, has been raised above the surrounding portion, and four towers, 48 ft. square, rising to 120 ft. in height, have been introduced at the corners of the elevated roof.

The general arrangement of the ground plan shows a central avenue or nave 120 ft. in width, and extending 1,832 ft. in length. On either side of this nave there is an avenue 100 ft. by 1,832 ft. in length. Between the nave and side avenues are aisles 48 ft. wide, and on the outer sides of the building smaller aisles 24 ft. in width.

All Governments have been invited to appoint Commissions, for the purpose of organising their departments of the Exhibition.

International juries will be appointed. An official catalogue will be published in four distinct versions, viz., English, French, German, and Spanish.

The ten departments of the classification which will determine the relative location of articles in the Exhibition,—except in such collective exhibitions as may receive special sanction,—and also the arrangement of names in the catalogue, run thus:—

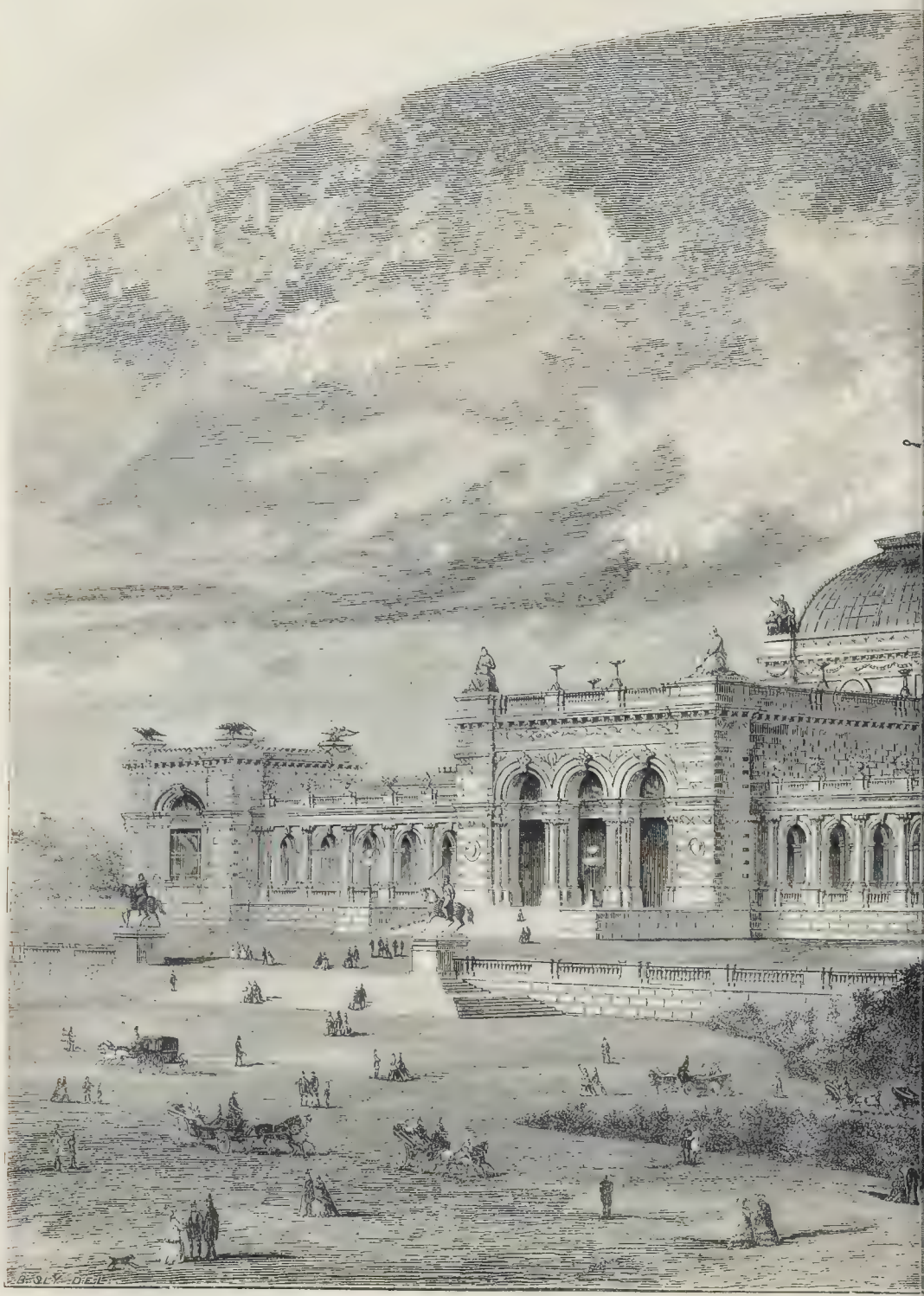
1. *Raw Materials—Mineral, Vegetable, and Animal.*
2. *Materials and Manufactures used for Food, or in the Arts, the Result of Extractive or Combining Processes.*
3. *Textile and Felted Fabrics: Apparel, Costumes, and Ornaments for the Person.*
4. *Furniture and Manufactures of general Use in Construction and in Dwellings.*
5. *Tools, Implements, Machines, and Processes.*
6. *Motors and Transportation.*
7. *Apparatus and Methods for the Increase and Diffusion of Knowledge.*
8. *Engineering, Public Works, Architecture, &c.*
9. *Plastic and Graphic Arts.*
10. *Objects illustrating Efforts for the Improvement of the Physical, Intellectual, and Moral Condition of Man.*

The foundation of the main building is being proceeded with, and the ironwork is being cast.

The erection of the Art Gallery is in a forward state, and we give an engraving of the design for this structure in our present issue. It is 365 ft. long, 210 ft. wide, and 59 ft. in height. The height of the dome above the ground is 150 ft. The materials used are granite, glass, and stone. The contractor is Mr. R. J. Dobbins.

LAND IN LIMEHOUSE.

It may interest some of our readers to hear that the Limehouse Workhouse lately used as pauper schools, and then known as the Limehouse Children's Establishment, which was advertised for sale in our columns last week by public tender, the vendors being the guardians of the Stepney Union, was sold at the guardians' meeting for 10,500*l.* The freehold land is 1a. 0r. 30p.; copyhold, 18p., and the property is sold with the workhouse, school-buildings, and infirmary as they stand thereon. It is near the Thames, but is much hemmed in, and has no important frontage or good access. The purchasers are Messrs. Taylor, Walker, & Co. whose brewery adjoins and occupies all the space between the property in question and the river.



ART GALLERY FOR THE AMERICAN INTERNATIONAL EXH



N, PHILADELPHIA, 1876.—Mr. H. J. Schwarzmann, Architect.

DISCOVERIES IN THE PUY DE DOME, FRANCE.

IN preparing the foundations for an observatory on the summit of the Puy de Dome, M. Mallay, one of the Government architects, has discovered the remains of a Roman Temple, dedicated to Augustus and to Mercury. The principal façade is laid open to the extent of 240 ft. Stairs of large dimensions, terraces, an exterior gallery, a large apartment with door and window, and some smaller apartments, have been brought to light, together with some sculptured marbles, and the pedestal of a statue inscribed to Mercury.

LIME.

OF all the materials used in construction, lime is perhaps the most important, and the following *resumé* of several series of experiments made by French engineers and others into its nature and treatment cannot fail to be acceptable.

I. *Pure or quick Lime, Oxide of Calcium*, is composed of 28·58 parts of oxygen, and 71·42 parts of calcium, a substance white in colour, caustic, pulverulent, absolutely infusible in the fiercest fire, susceptible of crystallisation in rhomboidal prisms, and of a burning and acrid taste; it quickly disorganises animal substances brought into contact with it, turns syrup of violets green, and gives to turnsole the same reddish blue colour as an acid.

Its specific gravity is 2·30. It dissolves in 900 or 1,000 times its weight of cold water, or in twice that quantity of boiling water. It is scarcely ever found in nature in a state of purity, except in some volcanic productions.

Brought into contact with water, it is transformed into hydrate; it gives out a quantity of heat which may amount to 300° centigrade, and is capable of igniting gunpowder; a part of the water escapes in the form of very hot vapour, slightly caustic, and a noise is produced resembling that caused by plunging red-hot iron into water; it melts or is reduced into impalpable powder, or into paste. This hydrate is *chaux amortie, chaux coulée*, or *chaux éteinte*, slaked lime, to distinguish it from quick or anhydrous lime.

II. *Physical Characteristics.* — When slaked, lime increases in volume; it swells according to its degree of purity, and sometimes attains a volume two or three times that of the quicklime from which it is produced. That which has absorbed a volume of water equal to 2·60 to 3·60 for one of lime is called *chaux grasse*, or fat lime; and which has only taken up 1 to 2·30 per cent. of water, *chaux maigre*. When the latter hardens, not only in the air but under water, it is called hydraulic lime.

III. *Limestone.*—Lime is obtained for industrial purposes by the calcination of calcareous stone, a substance composed of lime and carbonic acid, and which partly dissolves in weak acid, with more or less effervescence. The quantity of lime which it is capable of yielding is in proportion to the carbonate of lime contained within it.

Pure carbonate of lime is very rare; it contains 55·98 parts of lime, and 44·02 of carbonic acid. When calcined at a high temperature, it yields pure caustic lime.

Calcareous matter is one of the most common. In nature, it is usually mixed with silica, alumina, magnesia, quartz in grains, or sand, clay, oxide of iron, manganese, bitumen, and sulphur, or pyrites. The combination of these various substances constitutes several kinds of limestone, which are subdivided into many varieties.

Mineralogists distinguish several kinds of limestone, and point out varieties of form and texture in each; but that which is important for the builder to know is, that each kind furnishes a special lime different in colour, density, greediness for water, and especially in its practical results when mixed with sand.

The physical characteristics of calcareous stones furnish no certain data with respect to the kind of lime they will yield, and even chemical analysis affords but approximate results. Formerly it was maintained that the hardest, heaviest, most compact, and most homogeneous stones, with the finest grain, made the best lime; it is now admitted that these characteristics are not sufficient indices of the quality of the products to be obtained from them. It is only by trials and experiments that their value can be determined. The purer the limestone, the more the lime obtained will swell; if the carbonate of lime contain foreign matter to the extent of ten to twenty per cent., the lime after being slaked will swell very little or not at all, it is poor.

IV. *Hydraulic Limestone.*—As hydraulic limestone is the most valuable on account of its peculiarity of hardening rapidly under water, it is most important to ascertain what limestone will furnish it. For a long period scientific men were not agreed as to the causes which rendered lime more or less hydraulic; some attributed this peculiar property to the presence of metallic oxides, others to a combination of silica and alumina. Smeaton in 1756, discovered that the hardening by immersion was due to a certain quantity of clay contained in the limestone possessing that quality. MM. de Saussure, General Freussard, Berthier, and Fuchs, of Munich, have published remarkable papers on this subject, but no one has done so much for it from a scientific point of view as M. Vicat. Before his time there were not ten quarries in France in which hydraulic limestone was known to exist, but after travelling the country on foot for years, he discovered more than three hundred, and there is not a department in all France that does not owe to him the discovery of a mass of mineralogical wealth.

V. *How to recognise Hydraulic Limestone.*—Hydraulic lime being produced from the mixture of carbonate of lime with clays, it is important to know the quarries in which the variety is to be found. M. Vicat recommends that the strata should be deeply sounded, as the chemical composition of the lower layers may differ sensibly from that of the layers more exposed to the influence of the atmosphere. It has been remarked in general, that limestone of a dirty grey, ashy, or bluish tint, contains much more of the argillaceous or silicious principles than that of a compact or crystalline texture. The information obtained from miners and masons is very useful; and we must not be disconcerted by failures: they arise generally simply from misdirection of research. M. Châtean relates that for a long time Paris obtained her hydraulic lime from Senonches, at the cost of 80 francs the cubic mètre, while the quarries of the Buttes-Montmartre, the Buttes-Chaumont, and Romainville, which yield limestone that produces all the varieties of hydraulic lime, remained unexplored. For the testing of limestone, M. Vicat recommends the burning first of a small quantity, and afterwards on a large scale. The difference of the weight and the value of the products will thus set all doubt at rest.

VI. *Mode of Trial.*—The method proposed by M. Berthier is as follows:—

Crush the limestone, pass the powder through a silk-sieve and pour upon it little by little muriatic acid, or, in the absence of that, sulphuric acid, or vinegar, diluted with a small quantity of water, stirring it continually with a glass rod or a stick, and continuing the application of the acid until all effervescence ceases; evaporate the mixture with a gentle heat, and when all is reduced to a soft paste mix this up with about a pint of water and filter it; the clay, which will remain on the filter, must then be dried, either in the sun or before the fire, and weighed; or, which is better, calcine the clay to redness in an earthen or metal crucible before weighing it, then pour lime-water on the filtered solution so long as any precipitate continues to fall; collect this precipitate, which is magnesia, sometimes mixed with iron and manganese, as quickly as possible on a filter, wash it with pure water, dry it as completely as possible, and, finally, weigh it. The weight of the clay compared with that of the calcareous substance dissolved gives approximatively the rank which the mineral should fill amongst hydraulic limestones. It is important to note that after the first filtration no clay may be found, or only a mixture of fine sand with clay; in the former case, the limestone will only furnish poor lime; in the latter, the sand must be separated from the clay by washing and decantation, to ascertain the respective weight of each.

VII. *Lime-burning.*—In the burning of lime, all kinds of fuel are employed, according to the locality,—wood, heather, peat, coal; coke gives excellent results, charcoal not so good, besides being very dear. The form of the kilns varies with the customs of the place, and the kind of fuel employed: it should tend to economise the latter, but without endangering the quality of the product. In those regions where wood is abundant, the kiln is often a simple square or circular excavation, about 6 ft. wide by 10 ft. to 11 ft. in height, the interior being lined with dry stones, or, still better, fireclay bricks. The limestone is thrown in, but not too compactly, so that the flame may circulate, and the smoke escape; the fuel is then placed in a space left in the upper part of the mass. No arrangement whatever is made to concentrate the heat, the loss of which is enormous, and the burning of the limestone is unequal.

The forms employed for better-constructed kilns are the right-angled prism, the cylinder, the cylinder surmounted by a truncated cone, the reversed truncated cone, and the ellipsoid ovoide, with variations. The rectangular forms are used in the centre, south and east of France. Bricks and lime are burned in them at the same time. The limestone is placed below, filling up half the kiln, and the upper part is filled with bricks or tiles. When a large quantity of lime is required rapidly, the cylindrical form is employed; their construction is economical and easy, but they do not last long. The limestone is built up like a tower, and covered with beaten earth, the fire being introduced below.

The other kilns are built in a solid and durable manner; no bricks are burnt in them; the large stones are placed below, and the small upon them in the upper cone. The ellipsoidal and ovoidal kilns are for burning by means of coal or coke; their linings are of brick, 16 in. to 20 in. in thickness, set in mortar made of refractory clay and sand.

In the long-flame kilns, fed by wood and heather, the charge rests on one or two arches constructed of the same materials as the kiln; the fire increases with the draught, the mouth is kept filled with fuel, the flame makes its way gradually until the whole mass is in a state of incandescence to the very summit.

VIII. *The Kilns.*—A crowd of circumstances may affect the burning,—the quality of the fuel the direction of the wind, &c. Generally it takes 120 to 150 hours to calcine properly 70 to 80 tons of limestone.

It is almost impossible in long-flame kilns, 20 ft. to 25 ft. high, to burn the upper layers of limestone sufficiently without overburning the lower; in the case of rich lime this is not a matter of much importance, but in that of argillaceous limestone it is fatal, because if overburned it falls into powder and becomes good for nothing. The steam of the water contained in the limestone aids by its expansion in the burning of the upper layers: thus the limeburner prefers the stone just out of the quarry to that which has lost its water.

The burning of argillaceous limestone is also very difficult in kilns heated with coal, the latter being mixed with the stone. The draught is affected in many ways, by changes in the direction or in the force of the wind, by any damage done to the sides of the kiln, by the fact of the pieces of limestone being too unequal in size, and thus not being equally mixed with the coal, and many other accidents which cause the lime to be burnt too much or insufficiently.

IX. MM. Donopp and Deblinne set forth the differences which exist in lime calcined by means of wood, coal, and peat.

1. Lime burned with wood is generally whiter than that produced with other fuel.

2. Lime calcined with peat, slaked and mixed with an equal quantity of water, always precipitates more rapidly than that which has been burned with wood.

3. The calcination with coal produces lime which precipitates very promptly, when, after having been slaked, it is mixed with a certain quantity of water.

Consequently, it is in the interest of builders to employ lime burned with peat or coal, because as its residue does not contain the alkaline principles of lime burnt with wood by the mixture of the ashes, the mortars of which they form part will be of superior quality.

X. Rich lime is obtained from the purest limestone; it is called *chaux grasse*, because when slaked the paste is fine and greasy to the touch. This kind swells and throws out more heat than the others. Reduced to a paste and exposed to the air, it dries by the evaporation of the water which is not in combination with it, absorbs a portion of the carbonic acid contained in the air, and in time acquires considerable hardness; this hardening is much accelerated by the substitution of a current of carbonic acid gas for atmospheric air. In this state, and with the aid of small moulds, tiles and slabs may be made which take a polish when rubbed upon a fine stone, and resemble the finest white marble.

The following analyses of the composition of

several materials producing rich lime are by M. Berthier, engineer:—

Iceland Spar.—Pure carbonate of lime. The elements are:—

Lime	0·564
Carbonic acid	0 436
	1·000

Carrara White Statuary Marble.—The matter which is insoluble in acid is pure quartz. The elements are:—

Lime	0·554
Magnesia	0.001
Clay and quartz	0·010
Carbonic acid	0·435
	1·000

Limestone of Saint Jacques, Jura.—Compact, yellowish in colour, forms the basis of the Jura mountains. The elements are:—

Lime	0·546
Magnesia	0·009
Clay and quartz	0·015
Carbonic acid	0 430
	1 000

Limestone of the Jurassic formation, forming the superstratum of the iron mine of La Voulte in the Ardèche—compact, yellowish, shelly, density, 2·67. The elements are:—

Lime	0·541
Magnesia	0·006
Oxide of iron	0·005
Clay and quartz	0·022
Carbonic acid	0·426
	1·000

Coarse Limestone, tertiary formation in the environs of Paris, very shelly. The elements are:—

Lime	0·556
Clay and quartz	0·015
Carbonic acid	0·429
	1·000

Fresh-water Limestone of the environs of Nemours, Seine and Marne—compact, yellow, rather cellular, and very sonorous. The elements are:—

Lime	0·548
Magnesia	0·009
Clay and quartz	0 010
Carbonic acid	0·433
	1·000

Fresh-water Limestone of Œnigen, near Constance, Algeria,—composed of remains of birds, saurians, and fish, contains a large proportion of organic matter. The elements are:—

Lime	0·504
Magnesia	0·018
Clay and quartz	0 069
Carbonic acid	0·409
	1·000

The two following are due to M. Vicat:—

Vichy Limestone.—This stone, from the amount of clay which it contains, forms the limit of rich limestones. The elements are:—

Lime	48·80
Magnesia	4·76
Oxide of iron, clay, and quartz	2·80
Carbonic acid	43·64
	100 00

The composition of the lime produced from the above stone is as follows:—

Lime	86·00
Magnesia	4·76
Oxide of iron, clay, and quartz	5·00
	100 00

The rich lime, which swells most, is evidently the most profitable; but its employment should be restricted to ordinary masonry in elevations: if used for underground or water work, the mortar in which it enters will not harden, but crumble away.

XI. *Chaux maigre*, or poor lime, so called from the fact that when mixed with water, of which it absorbs but a small proportion, it is short and hard, not sticky and unctious, like *chaux grasse*,—it scarcely effervesces at all. It is produced from limestone containing mineral oxides and magnesian products in considerable proportions. Like the preceding, it is quite unfit for use under water or in damp places.

XII. *Hydraulic Lime.*—When *chaux maigre* possesses the special property of hardening under water, it is called hydraulic lime. M. Vicat subdivides the various kinds under three heads, according to their rapidity of hardening:

1st Class.—*Medium Hydraulic*, containing 82 per cent. of lime and 18 per cent. of clay.

2nd Class.—*Hydraulic Lime*, containing 74 per cent. of lime and 26 per cent. of clay.

3rd Class.—*Eminently Hydraulic*, composed of 70 per cent. of lime and 30 per cent. of clay.

The first sets after immersion for fifteen to twenty days; the second, in six to eight days; and the third in two to four days. The lime is considered to have set when it will support a knitting-needle, filed square at one end, and loaded with a weight of 10 ounces, without any sensible depression being produced. In this state it will resist the finger with a pressure of 10 to 12 pounds. A fragment of it will not bend, but break.

The hydraulic limes have little colour. They have generally a muddy grey, unburnt brick, or yellow tint. Their swelling, as compared with the unctious limes, is scarcely noticeable. The best and dearest of all the kinds known in France is that of Saint Quentin.

XIII. *Analyses of these Limes.*—The following table contains the results of analyses by MM. Berthier, Rivot, Delesse, and H. Deville, of the best known hydraulic limes, ten being of the class called "hydraulic," and six of that denominated "eminently hydraulic":—

Per-centage of the Elements of these Limestones.

	"Hydraulic."	"Eminently Hydraulic."
Carbonate of lime	51·33 to 89·2 per cent.	52·47 to 82·5 per cent.
„ magnesia	In 1 case 40·91; gen. 2 to 3 per cent.	44·25 in 1 case; gen. 1·5 to 4·5 p. c.
Clay	5·50 to 15 per cent.	3·25 to 23 per cent.
Gelatinous silex	15·3 in 1 specimen only.	None.
Quartz sand and clay	15.0 „ „	„
Alumina, with a little oxide of iron	2·6 „ „	„
Oxide of iron	Trace „ „	„
Carbonate of iron	0·58 in 1, and 6·2 in another.	3 0 per cent. in 1 case.
„ manganese	None.	1·5 „ „
Iron pyrites	0 80 in 1 specimen.	None.
Soda and potash	0·12 „	„
Water	1·0 to 4·5 per cent.	„

Per-centage of the Elements in the Limes made from the above.

	"Hydraulic."	"Eminently Hydraulic."
Lime	53·82 to 78·29 per cent.	53·05 to 70 per cent.
Clay { Silica	10·25 to 26·14 „	13·40 to 29 „
Clay { Alumina	1·54 to 8·69 „	Traces in 1 instance only.
Quartz sand	1·71 in 1 case; 35·93 in another.	„ „
Magnesia	From a trace to 1·34 per cent.	Trace to 39·71, in 3 cases only.
Oxide of iron	Traces.	1 to 4·10 per cent. in 3 „
„ manganese	None.	4 per cent. in 1 „
Sulphate of lime	1·15 in 1 case; 1·24 in another.	None.

The best manner of preserving these hydraulic limes, when they come from the kilns, is to strew the bottom of the receptacle, which must be perfectly dry, with slaked and sifted lime, to the depth of about 3 in., and to place about the same quantity, or rather more, of the same over the top of the lime when the receptacle is filled.

When the proportion of clay exceeds 30 per cent. in hydraulic lime, it can only be slaked by means of boiling water. Powdered and mixed, this lime sets immediately. It does not, however, retain its hardness, but falls into powder or paste, according to the state of the atmosphere. This is called *chaux limite*, but it constitutes by comparison the limit between lime, the cements, and the puzzolanos.

CEMENT PAINT FOR CARTON-PIERRE.

The application of the material known as carton-pierre for roofing purposes (better known on the Continent than in this country) has hitherto not been so extensive as was expected at its first introduction. Many roofs covered in with it had to be re-covered after a few years with a more lasting material, not only on account of the former not proving watertight, but also because it was found impossible to repair the damage done by exposure to the weather. The slabs of carton-pierre taken off roofs were generally found to be dry, cracked, brittle, without any elasticity, and, moreover, all the tar-oil it once contained evaporated in the material itself as well as in the coating given to it; in short, the carton-pierre was totally destroyed. The palpable cause of this destruction may be traced to the present imperfect mode of coating carton-pierre (tar with sand, chalk, and cement mixtures), the coat given not proving efficient in preventing the evaporation of the tar-oil. Experience taught that carton-pierre roofing retains its efficiency only so long as its material is able to retain the tar-oil.

The conviction that, by means of a suitable protecting coat, that degree of resistibility and durableness might be given which it at present lacks, induced Herr Mack, a manufacturer of oil and varnish, of Augsburg, to cover a new coach-house, which he had had built about two years ago, with that material, and give it a coating of oil cement paint specially prepared. So great was his confidence in the efficiency of the latter that he subsequently took out a patent for his process in Bavaria, in 1873. The roof was found quite as efficient as a zinc-covered roof on a building opposite, and when the coach-house was pulled down lately, to make room for some new buildings in course of erection, it was found that the cement paint had become as hard as stone, forming an indissoluble cover for the carton-pierre. The latter had lost nothing of the tar-oil it originally contained, and remained, moreover, as elastic as it was when laid down.

The process of coating is very simple. It must be done, however, as soon as the carton-pierre roofing is carefully fastened, and during the dry season, on a sunny day. Care must also be taken to put the paint on well at the joints; in fact, it is recommended to give the parts of the slabs overlapping each other a coating of diluted cement paint, this procedure ensuring the closest union of the slabs. The paint is best laid on with a broad stiff brush fastened to a handle about a yard long, so that the workman may put it on standing; but an ordinary paint-brush will do almost as well.

As a rule, two coats of the paint, previously somewhat diluted, are given. The first coat, while still wet, is covered with an equal layer of fine dry sand by means of a sieve, this latter operation being performed at once, and bit by bit, as soon as a small piece of the roof is painted. This prevents the workman treading on the fresh paint. The second coat is best put on after the lapse of a week, the sand which has not stuck to the paint being previously swept off with a hand-broom. This coating is not sanded, as its purpose is mainly to combine with the first coat and the sand and to form a hard indissoluble surface, and at the same time to impart a good appearance.

For two coats of 100 square yards of roof, about 40 lb. of oil cement paint, and 12 lb. of oil-varnish or linseed-oil for diluting, besides the sand, are required.

The cement paint consists of the following ingredients:—2 parts of washed graphite, 2 parts red lead, 16 parts finest prepared cement, 16 parts sulphate of baryum, 4 parts protoxide of lead, 2 parts alcoholised white litharge.

We get these particulars from the *Bayer. Industrie- und Gewerbe-Blatt.*

SPECIFICATIONS.*

THE profession of an architect can boast a variety in its labours. There are, perhaps, few callings in life in which more scope is given to an imaginative or artistic mind at the same time; there are few which have to contend with greater realities. It is with one of the latter I have to do, and in the few observations that I am about to make to you (scarcely, indeed, deserving the name of paper), I shall merely give you my poor ideas on the subject, hoping that, from the many I see around me, and so many, if not all, of those so far more able to treat on this subject than I am, we shall afterwards hear some excellent and practical ideas which may lead to an interesting and instructing discussion. Generally speaking, when an architect receives instructions to prepare plans and superintend to its completion a certain building, he visits the site of the proposed structure, makes his survey, and ascertains full particulars. He then returns to his office and prepares his designs and preliminary sketches, perhaps one of the most agreeable parts of his profession; he has then an opportunity of indulging in the delightful visions of fancy, regardless, I fear in some instances, of structural practicability, and perhaps completely ignoring the disagreable consideration, the proposed cost of the building? When, however, all has been brought to suit his client's tastes as much as possible, the architect commences to prepare his working plans and details; these are generally a long and anxious work, as how often do matters turn out, on accurate calculation, not to be so easily carried out as they appeared to be in the original design? When, however, these drawings have been partly, or, perhaps, altogether finished, the architect then takes up what forms the subject for our consideration this evening,—the *specification*. Now, it is quite unnecessary that I should tell you what the meaning of the word "specification" is. The dictionary tells us that it is "a written statement of particulars"; nor am I about to tell you, or, indeed, could I do so, what the correct form of a specification in the sense we are at present considering it should be; but let us for a moment try and define the word as referring to an architect's specification. Does it not mean that it is a document written out by the architect of a building to accompany his drawings, giving full particulars of the structure, so that another may by it be put fully in possession of his,—the architect's,—ideas. To draw out such a document it is obvious that the writer must be fully conversant with the building in question in every particular; so that, firstly, to write a good specification an architect must first have a perfectly practical knowledge of his profession: it amounts to almost as much as that he could actually do the work specified with his own hands. This is, perhaps, what makes the writing of specifications one of the most, if not the most, difficult branches of our profession. An architect's working drawings and details may often appear simple and easy of execution, but when we come to look at the various points with the mind's eye, and as it were picture the work carried out, as we should do when writing specifications, how many difficulties often turn up? And how many points requiring special reference in our specification? And, surely, if we are not able to mention in writing all peculiarities and particulars of the work, how can we expect to have our buildings properly carried out, contractors to send in tenders on equal terms, or that at the conclusion of the work we do not find ourselves hurled into that most unpleasant and doubtful of things,—a building lawsuit? I have often thought how a practical builder must smile to himself at many of the absurd specifications handed to him to tender or execute work from, and all the trouble he is put to by such faulty and incorrect documents; in fact, he has, when making out his quantities for tender, virtually to write a specification for himself. And it is no wonder, as men's minds are so different on the various points in the work, that we see lists of tenders for the same building sent in showing such absurd disagreement of amounts. To write out a document fulfilling all requirements, and going into every particular, and describing fully and accurately each different part of the work, must naturally cause such a composition to be a very lengthened one; but therein lies one of the greatest arts, I think, in writing a specification; that is, to draw the line of demarcation between having your documents running to almost an absurd length; upon the other hand, not to fall into a much greater error, namely, being too brief and concise. A very lengthened specification is perhaps the easier to write: it is simpler to go into fully, and describe fully the different portions of the work, mentioning, perhaps, the number of screws to be in the ordinary butt hinges, or the diameter and the exact position with respect to the riser of the water-closets' seats. Well, going into all this detail may be very right: we should all be able to do so; but are these very long specifications read by contractors, or their foremen in charge of the building? I fear very often they are not; indeed, it seems strange how little some builders read or study the specification, and it is produced to them rolled up, perhaps, in the smallest possible diameter, and apparently has been very little studied. This is, doubtless, much owing to the document being so long, but I think it is also frequently owing to the bad manner and rotation in which the various branches of the works are described, and the great difficulty any one except those conversant with the style of document, finds in discovering the paragraph having reference to what he requires. Now instead of such a lengthened epistle, if one had a specification written out in proper rotation, clear, concise, and easily understood, would it not be much more attended to? But therein lies, as I said before, the difficulty; that is, to have your specifications entering into every particular, but not at the same time running to too great a length and avoiding the needless repetition of words so generally used. But I am now coming to a very important point in a specification, and one to which I have alluded as causing specifications not to be read, and that is the rotation of the various paragraphs. It was formerly and is now much the custom to divide specifications into different trades; that is, to have paragraphs headed excavator, mason, carpenter, slater, plumber, and so forth. I must say I think that such is a bad and inconvenient arrangement, and was resorted to formerly when separate contracts were taken for different branches of the work; and for such purpose it is also perfectly applicable still; but at the present day, when it is so general to have one contractor to carry out the entire work, surely it is better to have a specification in a form more quickly and easily consulted, and not give the trouble and confusion of referring to several of the paragraphs respecting some one single portion of the work. Take for instance lead gutters, the boarding mentioned of course with the "carpentry," the lead with the "plumbing," and a down-pipe perhaps in immediate conjunction with the ironwork. But this is all very plain in comparison to documents of a kind I have seen, with wrought stone mixed up with perhaps the timber work of the staircase, or the footing courses following a description of the chimney caps. A builder must indeed be imbued with a great deal of patience to carefully wade through and understand such a document as I have last described. In my humble idea of what a specification ought to be, the person reading it should as far as possible be brought through the description of the work in the same rotation as the work absolutely executed,—that is, commencing with the preparation and excavation, and ending with the painting,—that is, assuming it to be an every-day work, and left out of hand complete by the contractor. But previously to any of those paragraphs, we commence almost any specification after the heading with the Observations and Conditions, as they form an important part of the document, although, generally speaking, they are a copy of a general form. By reading these "Observations" over, a person should be put into possession of the nature of the work; that is, that it consists in the erection of such and such a building according to plans, details, and specification, and to be executed according to a certain form of contract, the heads of which should be mentioned; but of these general conditions you are all fully conversant; and I do not think they differ as much with different architects as the after-part of the specification. In work situated in remote districts it is well to commence by saying that so-and-so is situated at such-and-such a distance from such a town or towns. It affords information to builders and saves inquiries. In the "Observations" should also be clearly set forth what materials may perhaps be provided by the proprietor; and also if any portion or portions of the work are not to be included in the contract. It should also be mentioned who is going to pay for drawing out of agreement and arrangement of the insurance; and, also, it is well to state the price of all articles thereinafter mentioned; that in the shop, exclusive of carriage and setting, and the internal diameter of all pipes; also, it is well to let proper and legal notice be given by the contractor to owner or owners of adjoining premises if so required, and all due information given, and payment made by him (the contractor) for the erection of hoarding, junction of sewer-pipes, &c. Mention should also be made of the preparation of framing and flooring at an early period, and the mixing of plastering-mortar; also that sub-letting will not be allowed except by sanction of the architect. And there are also various other matters which may occur to one's mind, and require notice in the paragraph of "Observations," such as respecting the use of materials, and many other points. And surely the information respecting them is much better introduced at this the commencement of your specification than to have the same mixed up in the various paragraphs of the document afterwards. After the "Observations" should come the paragraph of "Preparation." This should mention what is required to prepare the site of your intended building; whether removal of old buildings or otherwise. Also in this should be put forth the erection of hoardings, propping of adjoining premises if necessary; also scaffolding and other matters. You then come to the "excavation"; and, undoubtedly, is it not better, by your drawings and by reference to specification, to give the builder some decided data by figures of the sinking and filling, &c., he has to calculate on, than use the expression regarding excavation of walls, "Until a firm footing is obtained"? Such appears to me very vague, and, of course, any more or less than indicated, with this as with all other matters through the work, has been mentioned in the "observations" when describing the nature of the contract, is to be left to that judge of appeal, the architect. This giving something to calculate from is also necessary in your next paragraph as to the "well," if such to be: decidedly give a certain depth, so many feet in clay or gravel, and so many feet in rock. An approximate idea may be easily ascertained, be the same more or less afterwards. This is surely better than saying, "until an ample fall and sufficient supply be obtained." This latter, we all know, much depends on the season of the year at which the sinking has been made. We then come to "sewer," where mention the number of lineal feet when laid, and particulars of junctions, inclines, outfall, &c. Also here describe cesspools, if such have to be resorted to. After this we come to paragraph "Masonry," where mention the quarry or quarries from which the stone is to be procured, and the manner in which it is to be laid. This is generally in somewhat the same language in most specifications: you know it well. Respecting quarry beds, bond-stone, &c., describe first the foundations of dwarf walls; after, go into particulars of net walls or superstructure. After this comes "Brickwork": of course, mention from whence it is to come, the various kinds required, and afterwards go into the various parts of your building which are to be of this material, taking each afterwards in a separate paragraph, such as jambs and arches, brick lining to walls another, and so forth. These linings come in well in "Brickwork." "Wrought Iron" comes next: you again mention the locality from which such and such is to be procured; and this reminds me of a point which contractors often have reason to grumble at,—that is, being obliged by specification to go to a certain quarry. If such comes to the ears of the owners of the said quarry, they often demand exorbitant sums, so it is frequently well to say from such and such a quarry, or others of equal quality,—that is, if sanctioned by the architect. Wrought stone is frequently a long item in a specification; at the same time, it is a part of your work generally, or that ought to be given in detail to the usual ½-in. scale, along with the original working drawings. This, of course, shortens your written description much. And I am by no means an advocate for going over again in the writing the various matters fully figured and delineated in the details; if anything, I think this repetition, so to say, has the effect of confusing. Of course there are many matters not originally detailed, and for many of them you will find a sketch in the margin of the specification of greater service in making your ideas understood than a prolonged written account; and these latter can be adopted with advantage in nearly every

* By Mr. R. S. Swan.

paragraph of a specification: they reduce the voluminous nature of the document, and are, with a short description, much more explicit and easily understood than a prolonged written account. After the item "Wrought Stone," that of "Mortar" comes in well, the nature of which you describe, and afterwards you take up the item "Wall Timber," consisting of beams, studs, blocks, butts, &c. After this, the "Ground Floor" comes in well, describing what tiling, flagging, paving, &c., is to be included in the work or contract, as the case may be, and to follow this the paragraph "Timber Floors," mentioning the material and scantling of joists, and the various peculiarities which may attend their laying, the nature of flooring, &c. You then come to "Roof Timber," stating the various materials and scantlings, and the many difficulties, perhaps, of the roofing of your proposed building, which cannot be easily understood by the plans and details you have already given. After this, you mention "Lead and Metal Gutters," the describing of them in words, with which I am sure you are all familiar, no matter at what part of the specification they may be dealt with; and this brings me to a point it appears to me well to mention in specifications; that is, that a roof plan having been given, and some properly-figured breadth of sole of gutter, &c., and the turn up and dip of lead having been mentioned, that the contractor is to satisfy himself that such a quantity of lead will be sufficient, and the architect not to be held answerable for figures, which he gives to facilitate, and which no one, until the work has been actually carried out, and all drips, steps, and other matters taken into account, can say if they will prove exactly correct. The next paragraph in your specification is "Slating and Tiling"; this generally does not run to any great length. You have now, so to speak, erected the carcass of your building, so you come to the internal matters, commencing with "Stairs or Staircase," as the case may be. These are generally disposed of in a short item; then you come to "doors," and to describe them accurately the paragraph generally runs to a considerable length, you have such a variety of them to treat of: you generally have external doors of various kinds, and internal ones of different descriptions, but decidedly deal with one kind, and describe that fully, before you go on to the next; so you avoid the danger of mixing them up, which I have unfortunately seen; that is, one was not sure whether the hall-door was to be ledged and hung with T-hinges, and be secured with a 6-inch bolt, or that it was to be framed and moulded, and have the usual finish and elaborate details generally specified, or that the latter referred to the asbpit-door. This dividing clearly under different heads refers also to the next paragraph, namely, "Windows," and in this, as well as in doors, it is well to give the number that are to be treated, in such-and-such a manner, although at the same time it may be counted almost dangerous for the architect to go into such particulars, fearing he may make mistakes,—and decidedly doing so much increases his labour. I am altogether of opinion that hardware of all kinds comes in much better along with its respective door or window than being treated of in a separate paragraph afterwards. In windows I would also include glazing, and thus, so to speak, keep every part of the specification complete in itself as far as possible. The next subject to treat of would be cisterns, pipes, closets, &c.: this may require a great deal of consideration and lengthened description. I would include the timber of cisterns, &c., in this paragraph, but what requires such careful attention is the specifying of various supplies of hot and cold water, from whence they are to come, and having been used, how all are to discharge into the sewers without fear of contamination of water and escape of vitiated air. There are perhaps few portions of building more suitable for separate tenders than the internal plumbing. The next paragraph in specification is one called "Sundries," describing skirtings (indeed, are often with timber floors), any shelving and presses, &c.; also bells are well mentioned here, as also iron window-bars; but these and any iron railing may well be separately mentioned if on an extensive scale. We next come to internal plaster, going also into a description of the cornices and other details, to be followed by external plaster, giving external coating, cementing, and so forth. In this latter it is well to mention the name of the manufacturer from which cement is to be procured, so that the architect is to be fully satisfied as to its quality. Having now proceeded so far, we would next come to chimney-pieces and grates. It, however, frequently happens that these are not to be included in the contract. If, however, they are to be taken into account, give an idea of the description they are to be, and the cost price, and that they are to be chosen by the architect or proprietor, as the case may be, the contractor paying for carriage, and setting and providing hearths. The final paragraph in your specification will be "Painting." This is also often omitted, and merely priming specified. An accurate description of the finish by a decorator of the various parts of building. Even what can be at first done runs to considerable length, unless treated in very concise manner. When adjoining neighbours have to be dealt with in roofing, gutters, plastering, and other matters, it is often better to give a separate paragraph, calling it "Adjoining Premises," than to go into the various works with the different departments of your new building. I have now, gentlemen, very briefly indeed, if very imperfectly, sketched for you the heads of a form of specification, which, undoubtedly, in many ways fulfils the object. It may not do so in all respects, as it certainly makes a long, tedious, and voluminous document when written out; although the preparation, which may at the first give the architect some anxious study, it surely afterwards and during the progress of the contract, saves him much trouble, and perhaps an unfortunate bill of extras to deal with afterwards, consequent more or less on his not having fully provided for all parts of the work to be executed under the contract. At the same time, although fully in favour of a clear and consequently voluminous specification, I am inclined to think that, carefully-drawn out and accurately-figured details of the minor portions of our buildings, accompanied by a clear and accurate description of the various materials to be used, written out in as concise a manner as possible, would answer the purpose better than again going over and repeating the same scantlings and description in writing which are clearly set forth in figured drawings. A drawn-out detail shows itself at a look, whereas a written description entails reference to perhaps several paragraphs in your specification; and I should ask, which will in execution of the work be more frequently referred to by those employed in actually carrying the same out? Surely the detail drawing; and that a specification accompanied by the full details I speak of would partake more of the form of a memorandum than the long and tedious documents which it is at present, in many cases, the practice of the profession to furnish. There are a few further points to which I would wish to draw your attention in writing specifications; that is, to use simple language, as it frequently, if not always, happens that the document is in the hands, and most frequently read over, by a so-called uneducated man, although as a foreman he may be most competent to fulfil his duties. Firstly, to have it simple in language, and also in caligraphy, that is, written out in a clear and distinct hand. Avoid abbreviations of words and figures indistinctly written; and although there are several general scriveners fully competent to copy an architect's specification, we have often seen them copied in such a manner that the reading over and correcting would take almost as much time as to make the copy originally. At the same time, I am sure I speak to many who consider this copying of specifications a most irksome and unpleasant part of the duty of an architect, assistant, or apprentice. Another thing I am inclined for in specifications is, to give numerous marginal references. In architects' offices in my student practice it was and I believe it is a very general practice for you to prepare the drawings and details, and others to write perhaps every specification that issues from the office. Such is, of course, perfectly compatible with the profession. A man may be very good at working drawings, and but an indifferent hand at description or specification; and to a very high artistic mind the writing of a specification will be most irksome work; but surely, in every-day practice, the man who originally draws out the working plans can, with much greater facility, write out the specification for the execution of the same, than the man who, so to say, has first to learn his lesson. How many matters of finish and ideas occur to the man who has worked out the drawings, which may be ignored, or a different construction altogether put upon them, by another writing the specification, unless they are continually at each other's elbows? Then wherein lies the advantage of the division of labour?

ARCHITECTURAL ASSOCIATION OF IRELAND.

An ordinary general meeting was held at 212, Great Brunswick-street, Dublin, on Thursday, the 28th. ult.; the President, Mr. W. M. Mitchell, in the chair.

Mr. R. S. Swan read a paper on "Specifications," which we print *in extenso*.

Mr. Fennel, in proposing a vote of thanks, preferred the general arrangement of a specification to that suggested by Mr. Swan.

Mr. J. L. Robinson, in seconding the vote of thanks, alluded to the London custom of having the specifications prepared by building surveyors outside the office, a custom that cannot but lead to unpleasant results.

Mr. J. J. O'Callaghan said that the shorter the specification the better, and that a great number of detail drawings are preferable, and that it is impossible to finish the drawings and then write out the specification: both should go hand-in-hand. Nothing should be left in doubt, everything should be shown on the drawings.

Mr. Sandham Symes said that brevity is not only the soul of wit, but also of a specification; he liked the form of specification sketched out by Mr. Swan very much, and had found it to work very well. He thought that a specification for 1,000*l.* building should run over say twenty-five or thirty pages of foolscap, but that he had heard the specification drawn up by Pugin for Maynooth, which cost 30,000*l.*, was written on four pages of paper.

Mr. H. Brett said that engineers' specifications are brief, because the work is more simple and less involved than architectural work.

The Chairman, in putting the vote of thanks, which was carried by acclamation, said that he understood that the less an agreement or specification was hampered with vague and general clauses the more binding it was in law. Certain clauses, as to guard against bankruptcy are, of course, necessary; but his experience was that contracts drawn up by legal gentlemen, and running to thirty pages, were far more productive of litigation than short and simple agreements with a sixpenny stamp on them. He considered that the classification of a specification in trades after all was the best arrangement.

CHURCH BUILDING IN THE NORTH OF ENGLAND.

According to the Bishop of Durham's charge to the clergy of his diocese, just delivered, architects and builders have been actively engaged in the North of England within the last year or so.

His Lordship observed that within the last few years thirty-seven incumbents had died; eighteen new districts had been formed, and twenty-two churches had been consecrated or were ready for consecration.

Twenty-seven churches had been re-built, or so thoroughly restored as to render them, with regard to the benefits conferred upon the parishioners, almost equal to new churches.

Six of these new churches had been built, and three of them partly endowed, at the expense of some laymen interested in the locality. These works had been accomplished at the cost of 124,006*l.* Much more is yet required to be done, as there are now seventy-six cases in which the incumbents state that there needs the formation of new districts, on account of the mining population which had sprung up at a distance from the parish churches from one to five miles.

Apart from this the building going on at Durham Cathedral is of a heavy nature, and the places of worship erected by Dissenters in the North number, perhaps, more than those referred to by Bishop Baring.

Election of Borough Surveyor, Wakefield.—On the 25th ult., at a special meeting of the Wakefield Town Council, held at the Town Hall, under the presidency of the Mayor (Ald. Stewart), the recommendation of the General Works Committee to appoint Mr. John Pagan to the office of borough surveyor, at a salary of 250*l.* per annum, in the room of Mr. George Place, resigned, was unanimously confirmed. As we mentioned last week, there were sixty-one candidates for the appointment: these were reduced to four, and, although each of that number so selected seemed a very suitable man for the office, the committee were unanimous in their choice of Mr. Pagan.

THE GENERAL WATER-COLOUR EXHIBITION AT THE DUDLEY GALLERY.

THIS is the third large collection of water-colours open within the last month; and, considering the amount of work in this branch of art that now goes on, and the extent of exhibition-room open for it, it is really surprising that the standard should be kept so high as it is, and that such a large proportion of the drawings should be really good and interesting: a proportion much larger than we generally find in a similar number of oil paintings,—in English exhibitions, at least. The Dudley Gallery contains a most beautiful and original little drawing by Mr. Poynter (who has not always done himself equal justice in his contributions to this Gallery), illustrating a subject of pure myth,—Venus coming to Æsculapius to be healed of a wound in her foot by a thorn. The scene is in the court of the temple, a green enclosure, with a fountain in the midst, and overshadowed by thick foliage, through which the great white columns of a Doric temple are discerned in the rear. The four little nude figures, the goddess and her attendant graces, are beautifully delineated in pure water-colour; the delicacy with which the graceful little head of the goddess (the figures are only about 2 in. high) is finished, without the slightest hardness or painting up in body-colour, is a lesson to some of our figure-artists in water-colours, who have adopted a style quite foreign to the real spirit and technique of the art. The subject is most poetically treated, and it seems to us well worthy of being worked out on a larger scale in oil.

Among other prominent works in the room is a remarkable study of vulture nature and physiognomy, under the title of "Camp Followers," by Mr. Heywood Hardy (190); a set of these unclean birds in a row on the top of a hillock, with expectant looks turned in one direction. Much study has gone to this work, which is very powerful, both in drawing and colour. Mr. Clifford's portraits of the Earl of Tankerville and the Ladies Ida and Corisande Bennett (175, 189, 204), present novelty and artistic feeling as portraits; that of the last-named young lady, both in regard to subject and treatment, is a most attractive work. Of two portraits, by Mr. J. C. Moore, one represents "Robert, son of Norman Shaw, Esq., F.S.A.," and a fine little lad master Robert is, with a little too much ornamental furniture detail around him. The drawing is somewhat hard, though brilliant in effect. Mr. Jopling sends a half-length of a fine-looking damsel in hat and long ringlets, whom it pleases him to call "Sophia Western;" about the very last character the figure would be taken for by those familiar with Fielding's heroine. Among noticeable landscapes are Mr. J. Knight's "A Morass" (93), with a little too much of picture-making about it; Mr. Alfred Parsons's "The Dead and Dying" (79), *i.e.*, the trees in autumn, a very refined and thoughtful drawing; Mr. F. G. Cotman's "Wargrave Church" (44), very original in tone and treatment; Mr. Holloway's "Old Shoreham" (30); Mr. Bannatyne's "Ardchormel Castle" (141), a drawing with a good deal of originality and power in colour effect; Mr. A. B. Donaldson's "The Teme at Ludlow" (206); Mr. Dadd's "Autumn Evening" (246); and Mrs. Bodichon's "Cornfield, Sussex" (288). Mr. H. Moore sends one of his beautiful sea studies, "Calm in the Mediterranean" (303), the water lifting and swaying with the irregular motion left when a breeze has died away and is succeeded by calm. Among some not altogether successful studies, Miss Helen Thorneycroft has made a hit in her representation (264) of the perplexed student in red gown, with his half-closed book under his arm, wondering "what to think?" Mr. Arthur Severn sends a rather remarkable view of Venice (the ducal palace, &c.) under an unusual aspect,—in the midst of the whirling hailstorm, of June, 1872, the effect of which is powerfully depicted; but we do not understand how the hail comes to be pouring from the spouts in so concentrated a manner, as if it were a shower of rain: we have not seen hail behave so. The same artist's "San Giorgio, Early Morning" (319), is very good in a different way. Mr. A. Stock's interiors, especially "The Irish Weaver," have interest and character in treatment; and Mr. Hanbart's "Deserted Heath" (103) is a curious and well-executed attempt to interest us in the pathos of rust, shabbiness, and decay in a neglected or forsaken interior. Among drawings which have an architectural interest, Mr. Luxmoore's "Last of the Old Tabard" (337), and Mr. Severn's "Cheyne Walk, Chelsea, before the Embankment" (330), may be mentioned, as also a drawing of the "Street of Tombs, Pompeii" (418), by Mr. W. J. Ferguson. Among the small works on the screens are some admirable little drawings, of which we can only mention Mr. Luxmoore's "Hôtel de Ville at Dol" (520); Miss MacWhirter's "Ivory Venus and Casket" and "From Japan" (534-544), two good little bits of the kind; Mr. Poynter's "Wilden Pool," a somewhat curious study of reflections under strong sunlight; Mr. E. Smith's "Evening, Tivoli" (562); and Mr. Elmslie's clever little picture of a "Nigger" fiddling to his little boy (585), in which there is a touch of humour novel in its way. The drawings of the highest class may be counted on the fingers, certainly; but of those that are good enough to be very pleasant study there are plenty.

ARCHITECT, ENGINEER, AND WORKMAN; OR, THE THREE-BRANCH HAND OF THE FUTURE.

MARTIAL, the Latin epigrammatic poet, who lived in the first century, is credited with saying to a friend, who consulted him on the employment to which he should devote his son, "Don't make him a poet or an orator; he will more quickly learn to play the lyre or flute, but if the young man is dull and heavy make him an architect." I do not know whether the critic in the *Quarterly Review* has met with this saying, or has found out what were the opinions of the Romans on the profession. Whatever sentiments, however, they entertained as to the dulness or the brightness that characterised the members of the profession, there is one thing clear,—that the architects in ancient Rome were obliged to warrant their private buildings for ten years, and their public ones for fifteen. In respect to the former condition, arises the question, How were bands of roving masons, or master masons, who accompanied them, to be held amenable for a breach of their contract? Even supposing the master workman never went outside the boundary of his native country or city, and supposing also, as is asserted, he was only an "inspired" operative, what must have been his social position if the conditions of his contract were enforced? All the public and private buildings of ancient Rome must indeed have been built perfect, that the wear and tear of ten or fifteen years told as nothing, or a legion of unfortunate sureties must have suffered often for the scamping conduct of decamping architects or master workmen who might, for aught the citizens, consuls, tribunes, or other rulers knew to the contrary, be "off in the warres," or constructing Roman roadways or walls in Britain or other parts of Western Europe.

Critics, amateurs or disappointed, may write what they will, but it is as clear as the noonday sun that Rome and Athens had their responsible architects, who never left their native cities, and in the case of Rome it was impossible that guarantees could be exacted from one or a number of working master masons. There has always been an individual or a departmental responsibility belonging to architectural works; but, as in the conduct of armies, a chief was held amenable for the regulation or government of the whole. Rome and Greece, and other cities, had their organisation of labour as we have, under modified conditions. Buildings have been for centuries, and are still, carried on in Great Britain under separate contracts, and often with a number of foremen as representatives of the principal trades involved; but, except in buildings of small moment, there has been an architect, engineer, or chief, on whom devolved the responsibility of the entire work. To be sure, workmen have become architects, and may still become so, for there is nothing to prevent them if they have sufficient energy and talent; but they invariably cease to be workmen as soon as they can obtain practice sufficient to maintain the position which they assume. If all our Colleges, School Boards, Schools of Art, or technical Universities to be, were combined to effect the end proposed, of turning out a legion or two of operative architects, think you would they all, like young ducks taking to the water, take to the scaffold, the mason's shed, or the carpenter's or joiner's bench. Some, by the dint of energy, would, doubtless, make elbow-room for themselves as ordinary architects, and others who failed to find an opening in other walks of life, would, perforce, despite their better education, have to fall back into their respective branches of trade which they left as apprentices, previously to receiving their University polish. The utmost that can be effected (and in my opinion it is worth effecting), in the interest of the profession in the future, is to give the young lads intended for architects a good technical education, and make it be necessary for them to learn practically, at least, one branch of the building profession by a servitude in workshops and buildings. The young man in his student capacity can at the same time obtain a general knowledge of the routine and practice observed in building construction. When he enters for good the architect's office, the pupil's practical education can be further improved by his master allowing him to visit and report upon the works under his charge.

Admitting, for argument's sake, that it is possible, within the next fifty years, to sweep away the present race of architects, and substitute in their place a race of craftsmen-architects, what would be the result? Would the supposed working architect really work as the painter and sculptor works? And if commissions fast and furious came in upon him, in consequence of his "inspiration" and great ability, would he refuse to supply plans, elevations, or working drawings, for any other work than that upon which he was engaged as a working architect? Would he cut his fellows, and give up the trowel, chisel, or jack-plane, as the case might be, take chambers in Victoria-street, Westminster, and put up a brass plate with these words,—"John Jones, Operative Architect and Working Engineer," or merely "John Jones, Architect"?

Ah, sir, I know the secret and tendency that lies under all the Brummagem enthusiasm that has been beaten up in the interest of the workman of the future. It is the brainsweat of architects and architectural and engineering capacity, no matter through what channel it comes, that the skinflints and gradgrinds of this generation want. They are alike careless, whether they can extract it from clever architects or clever workmen. Concede them their wishes, back them up in their cant and rant, and plans, specifications, drawings, and quantities will be terms inclusive in the weekly salary of the "three-branch hand" of the future, their Hope of English Architecture.

The following illustrations from the advertising literature of the present time will perhaps reflect some light on the ways of the future:—

"Wanted, by the Paragon Fire, Life, and Endurance Company, an Architect, who will strictly confine himself to the business of the Board. One that has some knowledge of gas-fitting and plumbing, and who will not object occasionally to assist in the capacity of working foreman preferred. A fine opening for an 'inspired workman.' Salary, 150*l.* to commence."

"A travelling Civil Engineer, who has a practical experience of architectural drawings, wanted, immediately, by the New Diagonal South-Western and North-Eastern Railway Company. A fair knowledge of telegraphy and railway signalling indispensable. His other duties will consist in seeing that the permanent way is properly maintained, and of furnishing, when required, plans and drawings for new stations and alterations. No private practice allowed. Salary 220*l.* yearly, rising every five years by equal increments until the maximum sum of 250*l.* is reached. An Assistant County Surveyor not objected to, on the score of social position, if otherwise qualified."

"An Architect of experience in house repairs is required for a limited time by Messrs. Hookhim, Nailhim, & Co., house agents, auctioneers, and general valuators and undertakers. His first duty will be to prepare some estate maps, and to advantageously lay out some plots of land for building operations. Salary, 8*l.* monthly; or by the week, if required."

"The Rural Sanitary Authority of Hackney-wick require the services of a Sanitary Engineer, who is thoroughly acquainted with the storage and supply of water, the pollution of rivers, and the waste refuse of manufactures; a knowledge of smoke-consuming furnaces, and of the most economical methods of stopping dry-rot and curing smoky chimneys, would enhance applicant's value. Salary according to ability, to be settled after the first three months' service."

Is there not hope, then, for the architect and inspired workman of the future, as laid down upon the latest available information?

A PRACTICAL WORKMAN.

CHAUCER AND GOWER.

IN a black-letter "Chronicles of England," dated 1592, I find some particulars of the poets Chaucer and Gowry, and venture to send them to you, thinking they might not be altogether without interest.

I also give the dimensions of St. Paul's Church, taken from the same author's description of the fire in 1561. W. H. OSBORN.

1400. *Geff. Chaucer, Chief Poet of England New Time.*—The famous poet, Geffry Chaucer esquire, the first illuminer of our English language, deceased. This was a worshipful gentleman, and of fair possessions, whose abode was chiefly about Wodstocke (where he had a faire mannor) and Newelme (in Oxfordshire), which also was his, with diuors other manors: he was ofttimes imploied by K. Edward the 3 as ambassador to France, and into other forein lands. He had to wife the daughter of Paine Roete, alias Gwine, king-at-armes, by whom hee had issue Tho. Chaucer, who maried Mawd, daughter to Sir Barthol. Borwash, by whom hee had issue Alice Chaucer, first maried to Sir Joh. Philips, knight, after to the Earl of Salisbury, and thirdly to William Duke of Suffolk, who at his wiue's request founded an hospital called God's House, by the parish church of Newelme, which church he also builded. In this church lieth buried Tho. Chaucer, the best heire male, in an high marble tombe in a faire chapel on the south side of the quire, with this epitaph:—"Hic iacet Tho. Chaucer, armiger, dominus istius ecclesiæ, qui obiit 18 die mensis Novembris, ann. dom. 1434. Et Matildis, vxor eius quæ obiit 28 die mensis Aprilis, an. dom. 1436." William, Duke of Suffolk, was buried at Wingfield, a colledge in Suffolk; Alice survived, and was buried in the parish church of Newelme, on the south side of the high altar, in a rich tombe of allabaster, with the image in the habit of a vowes crowned lying over it with this epitaph: "Ora pro anima serenis, principis Aliciæ Suffolciæ, huius ecclesiæ patronæ, et primæ fundatricis hujus eleemosynariæ quæ obiit 20 die mensis Maij, ann. dom. 1475." Of which Duches Cooke More in Henry ye 6. the 28. of his reigne; but our first-named Chaucer the poet, by what occasion I know not, was buried at Westminster. His works for the most part are extant, first published in print by Wil. Caxton, sometime a mercer of London, the man that first brought the art of printing into this lande, since more largely collected into one volume by William Boteuil, *alias* Thin, esquire, chief Clearke of the Kitchin, and master of the housholde to King Henry the 8, unto whom he dedicated the fruite of that his labour about an. Christi 1540. The which volume was since again, to wit, in anno 1560, by viewe of diuers written copies, corrected by myself, the author of this history, who at that time also corrected diuers works of the said Master Geffrey Chaucer, neuer before imprinted, besides the history of Oedipus and Jocasta, with the siege of Thebes, translated and made into English verse, by Don John Lidgate, a disciple of the said Chaucer.

John Gowrie, a famous Poet.—Not long after deceased the like famous poet, Master John Gowrie, a man not much unlike the other in excellencie of wit, learning, or possessions: he builded a great part of Saint Mary Oueries Church, in Southwarke, then neue re-edified; on the north side of the which church hee prepared for his bones a resting-place, where, somewhat after the old fashion, he lyeth right sumptuously buryed in a tombe of stone, with his image, also of stone, lying over him; the haire of his head awburne, long to his shoulders, and curling vp, a small forked beard, and on his head a garland or chaplet of roses red, an habit of purple damasked doune to his feete, a coller of esses golde about his necke; under his head the likenesse of three bookes, which he compiled: the first, "Speculum Meditantis," in French; the second, "Vox Clamantis," in Latine; the third, "Confessio Amantis," in English, which last booke is extant in print; the second I have faire written; but the first I have not seene. His tombe arched, was beautified with his armes, and the likenes of angels with posies in Latine. Besides, in the wall were painted three virgins, crowned, one of the which was written Charity, and held this deuice, "En toy qui filz de Dieu le pere, saune soit, qui gist soubs cest pierre." The second, Mercie, with this deuice: "O bon Jesu, fait tu mercie, alme dont le corps gist icy." The third, Pitie, with this deuice, "Pour ta pite, Jesu, regard, et met cest alme en saune.garde." All which is now washed out, and the image defaced, by cutting off the nose, and striking off his handes, because they were elevated towardes heaven.

1561. *Paules Steeple on Fire.*—On Wednesday the fourth of June, betweene foure and five of the clock in the afternoone, the steeple of Pauls in London, being fired by lightning, brast forth (as it seemed to the beholders) two or three yardes beneath the foote of the crosse, and from thence brent down the sphere to the stone work and belles, so terribly, that within the space of foure houres, the same steeple, with the roofes of the church so much as was timber or other ways combustiball, were consumed, which was a lamentable sight, and pitifull remembrance to the beholders thereof.

The length of Paul's church in London is twelve score Tailors' yards, which is seuen hundred and twenty foote: the breadth thereof is one hundred and thirtie foote: the height of the steeple was fiue hundred and twenty foote, whereof the stone work is two hundred and sixty foote: and the spere which now is burnt, was likewise two hundred and sixtie foote: the height of the body of that church is one hundred and fifty foote.

DUBLIN MAIN DRAINAGE.

A MEETING of the promoters of this Bill was held on the 26th of January, 1875, for the purpose of considering the following statement, contained in the reply of his Grace the Lord Lieutenant to the Citizens' Memorial, on the 14th of December, 1874:—

"That, in addition to increasing the Government Loan from 350,000*l.* to 500,000*l.*, 'further important assistance will be derived by the ratepayers of Dublin from the Treasury grant, amounting, I expect, to 6,000*l.* a year, and from the proposed grant in lieu of rates upon Government property; and I may add that, if any fair proposal were placed before me by which this loan for sanitary purposes could be made either in the rate of interest' [now 3½ per cent.] 'or in the term of repayment' [now fifty years] 'less burdensome to the citizens, I should readily recommend it to the Treasury.'"

The Dublin Corporation have resolved:—

"That application be made to the Government for a loan not exceeding 500,000*l.*, to carry out the Main Drainage Works, upon the following terms and conditions as to interest and repayment, viz.:—The interest payable to be 3 per cent. per annum upon the net principal sum remaining each year; the loan to be repaid [in seventy-three years and a half] by the annual instalments of 6,000*l.* referred to by his Grace the Lord Lieutenant, which shall be granted year by year to the Corporation by Her Majesty's Treasury, as well as by a proportion of the sum to be allocated by the Government in lieu of the municipal rates upon buildings in the borough of Dublin, and estimated at 1,0 0*l.* per annum; the Government, accordingly, to introduce and effect the necessary amendment of the Dublin Main Drainage Act by a public Bill in the next session of Parliament, without cost to the Corporation."

The promoters of the Dublin Main Drainage Bill, 1875, have resolved that they are not prepared to take any step which might prevent the ratepayers from obtaining immediately the financial benefits which the granting of the foregoing application of the Corporation by the Government would confer; but wish to be understood as not expressing thereby any approval of the constitution of the body intrusted with the carrying out of the Act of 1871, nor as consenting to the engineering features of the scheme, either in its original or in its present form.

THE PROVINCIAL MUSEUMS IN PARIS.

ARRANGEMENTS are in active progress for bringing to Paris and uniting in one building for exhibition the most important antiquities, curiosities, pictures, and other works of art contained in the various provincial museums throughout France. The charge for entrance will be a franc, and the proceeds will be applied to the improvement of means for teaching drawing throughout the country. About 700 pictures are expected, many of which are altogether unknown in Paris.

The Accepted Designs for the Edinburgh University Extension.—The result of the competition between architects for the new buildings for Edinburgh University has been published. The successful designs are those of Mr. Robert Anderson, of Edinburgh, a gentleman who has acquired some celebrity as the architect of numerous ecclesiastical and educational edifices. The style he has adopted is the Cinquecento.

KITCHEN BOILERS.

SIR,—I have been a good deal interested in the notes in the *Builder* about preventing kitchen boilers exploding. The mischief is always from the top of the steam-pipe, which is generally brought out of the roof and filled with water, of course to the level of the supply-cistern, and getting frozen, and often the supply-pipe is also frozen: hence the boiler soon blows up. Instead of stopcocks and all other plans, I have adopted the simplest plan, and so thoroughly secure that it cannot get out of order. The steam-escape pipe (1-in. drawn iron) is taken up the inside of the kitchen chimney in a *corner* and bent through on to the roof: hence it never can become frozen; and if the supply-pipe should get frozen, the boiler just boils itself dry. W.

DUST.

WE shall all some day return to the dust from whence we came, but there is no reason why dust should be allowed to hasten that return in itself,—at any rate, without our making a vigorous attempt to at least ameliorate its destructive properties. In all large towns where there is much traffic, and where manufactures of various kinds are carried on, the air is very largely impregnated with dust, the quality and quantity of which are governed by the locality in which it is found. In the neighbourhood of ironworks, for instance, minute particles of the metals in use are found, together with their various oxides, and it is needless to point to the very many objectionable substances that pervade the air in the neighbourhood of chemical works.

Now, it is true that very little can be done to remedy this evil, so far as a complete eradication of dust is concerned; still there is a duty which should not be overlooked by Vestries, and that is the constant watering of our roads.

Many fevers and sicknesses of every description are undoubtedly propagated by inhaling dust, and it would be well if all parish authorities would bear this fact in mind.

It has, we believe, been the custom in the city to mix deliquescent salts with the water for laying the dust, and this should be carried out all over the metropolis, as the cost is comparatively trifling, compared with the immense amount of good that would undoubtedly be done by the simple fact of reducing the volume of dust inhaled by the population. Of course it is an utter impossibility to entirely free air from dust containing the interesting ingredients we have named, together with carbon from chimney-shafts; animalcules, seeds of fungi, and vegetable and animal tissues of various descriptions, can be undoubtedly kept under in a great degree by the only means at our command, the constant watering of our roads.

In crowded manufacturing districts, where a watering-cart is a thing only dreamed of, disease is at times fearfully rife: whenever an outbreak takes place among the poorer classes, the evil is usually attributed to the water supply. No doubt this is bad enough, but let some percentage of the evil be laid to the door of the various substances conveyed into the system through the lungs. If we travel some miles into the country we still find dust, but if samples of country and city dust are placed under a microscope it will not be difficult to determine the locality from which either is obtained. If we go to the sea-side we still find dust, and it contains, in more or less quantities, salts of sodium, thrown up by the spray of the waves, and an evaporation forming its quantum of what is known as dust. In the forthcoming summer it would be well if watering-carts, perambulated a little more frequently, and a little more generally: let them be seen in crowded neighbourhoods as well as our fashionable streets; for it is not only for comfort's sake that dust should be well laid, but, as we have shown, for health's sake also; it is, in fact, a sanitary matter of importance that should receive far greater attention than it has hitherto done.

Dust is also one of the prime destroyers of goods. Who can estimate the enormous depreciation of value in some of the large stocks of goods in city warehouses? Another reason for an increase in watering-carts. C. F. F.

Election of Sanitary Officers, Taunton.—Mr. Henry West has been elected inspector of nuisances under the Taunton Board of Health, and Mr. Whitwham has been elected assistant-clerk.

SIR STERNDALE BENNETT, M.A.,

MUS. DOC. CANTAB., D.C.L.

THE musical world has learned with profound regret the death of Sir Sterndale Bennett, which event took place at his residence, 66, St. John's-wood-road, last Monday, Feb. 1. Sir Sterndale was scarcely fifty-nine years old, having been born at Sheffield, April 13, 1816. His musical talent, both as composer and pianist, is too well and too widely known for there to be any need to dwell upon it here. It is but necessary to glance at the long list of his symphonies, concertos, overtures, sonatas, and other works, to feel how greatly indebted to him are all lovers of music, both at home and abroad.

When quite young, his Concerto in D Major induced Mendelssohn to seek an introduction to him, and the two great *maestri* remained fast friends to the end. Schumann also was his intimate acquaintance. "The May Queen," composed for the Leeds Festival, and "The Woman of Samaria," written for the Birmingham Festival, and thought to be his *chef-d'œuvre* of sacred music, are perhaps the most widely known of all his works, from the very fact of their having been first produced before such large audiences.

But it is not so much in honour of *the musician* as of *the man* that I now desire to add my "leaf to his laurel crown." For some six years past Sir Sterndale Bennett has been Principal of the Royal Academy of Music, and there his loss will be long felt as a great calamity, not only by men of his own age, but also by all the students, to whom he had endeared himself by his extreme kindness of manner, his wonderful patience, his ever-encouraging words, and his progress-compelling carefulness. His *private* pupils mourn him as a dearly-loved friend, and will find it a hard matter to replace their gentle yet lively, kind yet exact and painstaking, preceptor. It was while giving his lesson at our college that he was called to Windsor by her Majesty, in 1871, to receive his knightly honours. In him the poor have lost a warm-hearted friend and generous benefactor.* ETHEL HILL.

PROPOSED NEW COUNCIL CHAMBER, CITY OF LONDON.

A REPORT was brought up from the City Lands Committee, at the meeting of the Court of Common Council, on the 28th ult., submitting a model for the construction of a new Council Chamber, at the estimated cost of about 50,000*l.*, exclusive of fittings, and a plan for the re-arrangement and re-construction of committee-rooms and offices on the north side of the Guildhall, at the estimated cost of about 56,000*l.*

Mr. R. N. Phillips opposed the project, and said that although 50,000*l.* was the sum mentioned, it would in all probability be nearer 100,000*l.*, and he argued that it was quite unnecessary to incur such an expenditure, and that the present Council Chamber was quite sufficient for the purpose of their meetings.

Alderman Sidney also opposed the report, and reminded the Court that in a short time the two large law courts would no longer be required, and said that they ought at all events to wait to see what should be done when they had these courts at their disposal.

The report was, however, adopted. The proposed expenditure seems to us unwise and uncalled for. Under any new form of municipal government, and it is sure to come sooner or later, the present enormously large number of Common Councilmen (220) would certainly not be maintained.

THE METROPOLITAN RAILWAY COMPANY'S SURPLUS LANDS AND BUILDINGS.

AT the half-yearly meeting of the Metropolitan Railway Company, held last week, the Surplus Lands and Buildings Committee reported that during the past half-year sales had been effected to the amount of 23,903*l.*, and, in addition, the company had received 16,500*l.* as their proportion of sales of the lands held jointly with the District Company. The committee further reported that they had agreed with the Corporation of London for the sale to the City of the property in King-street, adjoining the works in progress for the extension of Smithfield Market, for the purposes of the proposed new Central Market, but that the sale could not be completed until the Corporation had obtained legislative powers by the Bill which they were promoting in Parliament. The committee also stated that they had not considered it for the interest of the company to press sales, although it might be advisable to realise, when favourable opportunities should arise. The sum of 27,677*l.* had been received during the half-year in rentals from freeholds and leaseholds.

* We are glad to be able to announce that the remains of the lamented composer will be interred in Westminster Abbey on, this, Saturday, Feb. 6, at twelve o'clock.—ED.

MASTERS AND WORKMEN.

Grinding Money.—Mr. Jenner, a decorator and builder, of Belgrave-mansions, appeared at the Westminster Police-court, last week, to an adjourned summons, taken out by William Bothwell, a carpenter, for 1*s.* 6*d.* due for work done. The real claim was for two hours' "grinding money." After the late strike in the building trades, conferences of the masters and men were held, and a code of rules regulating hours of work, wages, &c., was agreed on. In some firms certain time is given to the carpenters on their discharge to "sharpen their tools up," so that they should be fit to go to fresh employment, and this is called by the men "grinding money." No rule is made for it in the articles drawn up; but the men claim it as a "custom of the trade." Mr. Arnold thought that as the matter had been before Mr. Woolrych it had better be so again, and it was ultimately adjourned for that purpose. In the course of the week two or three discharged carpenters have applied to Mr. Arnold for summonses for the "grinding money," and he has referred them to the county court, being of opinion that it was not "work and labour done" within the meaning and intent of the Act.

Claim for Wages in Lieu of Notice.—At the Westminster Police-court, last week, Messrs. Jackson & Shaw, builders, of Earl-street, Westminster, were summoned by Samuel Bebbington, a foreman of carpenters and joiners, for 4*l.* 10*s.* for work and labour done,—viz., for two weeks' wages at 2*l.* 5*s.* per week, in lieu of notice. Complainant had been at work for the firm for two years, and about six months ago he was taken from journeyman's work and put as foreman over a shop, at 2*l.* 5*s.* per week: he should have given or expected a week's notice. After completing three days' work out of a week he was discharged without notice, and claimed for that week and another week, as for notice. Mr. Jackson said they never gave foremen notice, and it was not customary. Complainant was hired by the hour, not the week. Mr. David Charteris, the head foreman, was called, and his evidence showed that a weekly hiring had been agreed for. Mr. Arnold said this witness corroborated the complainant, and he thought the complainant was entitled to four days' work done and 2*l.* 5*s.* in lieu of notice. Mr. Jackson remarked if that were so a new rule would be made in the trade, and this would govern other cases, and be a great injustice to the masters. Mr. Arnold said this case would not establish a precedent; it stood by itself, and would not take effect as a general rule. He would, however, further consider it if the firm wished. The case was adjourned for that purpose.

Arbitration at Wolverhampton.—On the 29th ult., the operative carpenters and joiners of Wolverhampton and district made a demand for an increase of wages from 7*d.* to 7½*d.* per hour; also certain alterations in the trade rules. The masters resist it, and the matter is to come before a court of arbitration, with Mr. Rupert Kettle as umpire.

Non-payment of Wages.—John Dixon, builder, Saltburn, was charged at the Guisborough Petty Sessions, on the 26th ult., by Wm. Adamson, mason, of Skelton, with the non-payment of 2*l.* 8*s.* 5*d.*, wages and compensation alleged to be due to him. Complainant said that instead of being paid at the current rate of 8½*d.* per hour, defendant tendered him his wages at the rate of 5*d.* per hour. The defendant stated that the complainant occupied too much time in completing some ordinary window-sills on which he had been engaged. The Bench ruled that as the defendant had not complained to the complainant of the amount of work he had done, he was entitled to pay him at the rate of 8½*d.*, and made an order for the payment of wages.

Settlement of a Strike.—After a week's strike, the men employed at the Llandulas stone quarry, Abergele, resumed work on Friday, 29th ult., at the old rate of wages. They demanded 7 per cent. increase.

One Hundred and Twenty Thousand Men on Strike.—The colliers in South Wales having refused to accept a reduction of 10 per cent., a meeting of the masters' association on the 23rd ult. decided on a lock-out, and on Saturday last, at a confirmatory meeting of the masters' association, the lock-out was confirmed, and on Monday from 100,000 to 120,000 men were out of work, the total number of people affected being half a million, and the prospects of suffering and privation, if the struggle continues long, being something appalling.

CABMEN'S RESTS.

London.—The first of the cabmen's shelters in London will be opened on (this) Saturday morning, by the Hon. A. Kinnaird, M.P., at Acacia-road, St. John's Wood. A site has been granted opposite St. Clement Danes, Strand, and a shelter to be placed thereon is in course of erection, as well as one to be stationed at Langham-place. Three or four sites have been applied for in Paddington. The committee have decided to place a shelter at the cabstand at Knightsbridge on their own responsibility. Mr. Stanley Bird has built the shelter now to be opened.

Wolverhampton.—The third Cabmen's Rest, recently presented (by a lady) to the cabmen of Wolverhampton, has been placed in the position assigned to it near the cabstand at Chapel Ash.

PAINTED INSCRIPTIONS ON STONE.

SIR,—In reply to your correspondent "Inquirer," as to what paint will stand in cut letters on stone, and presuming that black paint is meant, I would mention that it is of primary importance that before any paint is applied to stone, the latter should be perfectly dry; after which write the letters in ordinary white paint, and, when this is dry, use a paint composed of three parts vegetable or ivory black and one part red lead, ground in good old boiled oil. Afterwards strain the paint; keep a few days before using, thinning with turps. G. D. SUMPTER.

HOUSE AGENTS' ACTIONS.

FLOOD *v.* WILLMOT.

IN this case, at the Marylebone County Court, before Mr. Serjeant Wheeler, Judge, the plaintiff sought to recover the sum of 2*l.* for work done. The defendant pleaded never indebted.

In the September of 1873 the defendant called at the plaintiff's office in Burlington-road, and said he wished him to let the house and shop in Romilly-terrace, Bayswater, and that he was to go to the house and make a list of the dilapidations. In October he went over the house and assessed the dilapidations, made a schedule of the same, and sent it in to the defendant, but it was returned. He also let a part of the house, by the instructions of the defendant, and the tenant was now in the house. In cross-examination plaintiff denied that defendant told him that he wanted the list of dilapidations because he expected his late tenant would soon be a bankrupt, but made some remarks about about his having become a bankrupt. After some further evidence, it was urged for the defence that the house was let by a Mr. Jeffrey, an oilman, living near to the house, but upon the tenant being called, he deposed that he first saw the name of Mr. Flood on the house, and not a card with Mr. Jeffrey's name. That he went to the plaintiff and got a card to view, but that he did arrange as to the taking of the apartments of Mr. Jeffrey. The Judge ruled that the plaintiff was entitled to his commission. He was not to be responsible for the laches of the defendant in not letting him know that he had put the matter into other hands. Verdict for the plaintiff.

COMPENSATION CASE.

HERD AND OTHERS *v.* THE GUARDIANS OF ST. GEORGE'S UNION.

THIS was a compensation case, at the Sheriffs' Court, Red Lion-square, and was remarkable from the valuations put upon the property, which was a piece of land at the back of Fulham-road, and required for the enlargement of the workhouse, on which, under a special Act of Parliament, about 80,000*l.* are to be expended. The case occupied the court to a late hour.

Mr. Huddleston, Q.C., with Mr. Gill of the Chancery bar, appeared for the claimants; Mr. Hawkins, Q.C., and Mr. A. L. Smith, for the guardians.

The land on the part of the claimants was valued at from 1,250*l.* to 1,700*l.*; on the part of the guardians from 220*l.* to 230*l.*

Mr. Under-Sheriff Burchell declared that he had never heard of so great a difference of opinion among surveyors, and he felt some interest to know how the jury would decide.

The jury deliberated for twenty minutes, and gave 900*l.* as the value.

SCHOOL BOARD SCHOOLS.

London.—At the last meeting of the London Board, the following report was brought up from the Works Committee :—

On the 20th of May last, the Board accepted the tender of Mr. Thomas Boyce, amounting to 994*l.*, for the erection of a department-to provide accommodation for 100 infants, adjoining the High-street, Stoke Newington, Boys' and Girls' School. The managers, however, have since sent urgent representations to the committee, recommending that the existing building, which they consider unfit for permanent occupation, should be rebuilt. The committee are of opinion that this course would eventually be found necessary, even if the school were repaired to make it fit for immediate occupation. They have accordingly obtained a tender from Mr. Boyce, for the erection of a new school to provide accommodation for 720 children, based upon the same schedule of prices as for the infants' department which it was originally proposed to erect. The committee recommend that this tender, amounting to 6,850*l.*, be accepted. Cost of site, 4,316*l.* 4s. 10d. Cost of building per head, 9*l.* 10s. 3d. The committee have invited tenders for the erection of a schoo, to provide accommodation for 816 children, on the site of Bonner-street, Globe-town. The following are the respective amounts :—

Brass	£10,986	0	0
Shurmur	10,195	0	0
Kirk & Co.	10,110	0	0
Williams & Son	9,979	0	0
Thomson	9,672	0	0
Pritchard	9,587	0	0
Sheffield	9,458	0	0
Wall, Bros.	9,277	17	7
Sargeant	9,098	10	0

The committee recommend the acceptance of the lowest tender, that of Mr. J. F. Sargeant, of The Triangle, Hackney, amounting to 9,098*l.* 10s.

Deptford.—Last week the new school erected by the London School Board in Duke-street, Deptford, was opened by Sir Charles Reed, the chairman of the Board. The style of architecture employed is that known as Queen Anne, the dressings to the doors and windows being of Portland stone, with red brick introduced at intervals. A certain height of the ground-floor is also built in stone. The building is constructed to hold 785 children, and was erected, from the designs of the Board's architect, Mr. Hobson, of Duke-street, Adelphi, whose accepted tender for the work was 5,589*l.* Mr. Phillips was the clerk of the works.

Newtown.—These schools, which have been erected in New Church-street, Newtown, by the Newtown and Llanllwchairn School Board, were formally opened by Capt. Crewe-Read, just twelve months after the laying of the memorial stone. The school is Gothic in style, having a clock tower 70 ft. in height. The plan of the building is of the letter L form. It consists of Board-room, 18 ft. by 13 ft.; girls' school-room, 40 ft. by 18 ft., with class-room, 18 ft. by 15 ft.; boys' school-room, 50 ft. by 20 ft., with class-room, 26 ft. by 20 ft. The whole is fitted up with lavatories and general offices. Mr. Benjamin Lay, of Welshpool, is the architect; and Messrs. Morris & Sons, of Newtown, builders, have carried out the work. Accommodation is provided for about 300 children; the entire cost, including site, being 2,411*l.* 12s. 6d.

STAINED GLASS.

Minterne Magna.—A stained-glass east window was last week placed in Mintern Church to the memory of the late Lady Digby. The window represents the scene at our Lord's sepulchre, when Mary Magdalene, and Mary, the mother of James and Salome, went very early on the first day of the week, bearing sweet spices to anoint the body of their Lord. The window was executed by Messrs. Heaton, Butler, & Bayne.

Rochdale.—The parishioners of St. Alban's, Rochdale, have decided to fill the west window of St. Alban's Church with stained glass, in memory of their late vicar, the Rev. J. W. Parker.

Stowmarket.—The east window of the church, which was destroyed by the great gun-cotton explosion, is now being restored, the reason for the long delay having been the proposal to put in a coloured window. The first instalment has been put in within the last few days under the superintendence of Mr. M. T. Gunn. The window is by Messrs. Camm, Brothers, of Birmingham, and the cost will be nearly 200*l.*

A Sanitorium for Central Warwickshire. At a conference of urban and rural sanitary authorities held at the Warwick Workhouse to consider the desirability of providing a sanitorium for the isolation of cases of epidemic disease, it was resolved, "That, in the opinion of the meeting, it is desirable to provide a sanitorium for the joint accommodation of the Rural Sanitary Authority of the Warwick Union and the Urban Sanitary Authorities of Warwick, Leamington, Milverton, and Lillington."

Miscellanea.

The Pollution of Rivers.—A conference of local authorities has been held at the Manchester Town-hall, for the purpose of considering generally what steps it might be expedient to take in relation to the subject of rivers pollution, and for the purpose of ascertaining to what extent such local authorities would be prepared to co-operate with the corporations of Manchester and Salford in urging upon Government the necessity of legislation with a view to the prevention, as far as might be practicable, of the continued pollution of the rivers. After some discussion, the town clerk of Manchester (Sir Joseph Heron) proposed the following resolution :—"That in the opinion of this meeting further delay ought not to be permitted in taking steps necessary for preventing so far as may be practicable, the continued pollution of the rivers and streams of this country. That this meeting is fully aware of the enormous difficulties by which the whole question is surrounded, and of the responsibility which necessarily attaches to any local authority who may concur in the representations proposed being made upon this subject to Her Majesty's Government; but, in their opinion, effective steps will not be taken, either by local authorities, or by traders, until it is fully understood and seen that Her Majesty's Government is prepared to promote legislation for the purpose of carrying out, to the extent that may be considered desirable or practicable, the recommendations made by the Rivers Pollution Commission." The resolution was unanimously adopted, and a deputation appointed to wait upon Government.

A Wooden Hall at Liverpool for Messrs. Moody and Sankey.—An immense hall of wood has been erected in Liverpool for the holding of Messrs. Moody and Sankey's services, at a cost of 3,500*l.* Its interior dimensions are 174 ft. long, and 124 ft. wide, having a clear central width of 72 ft., and on either side galleries of 26 ft. wide, and at the east end a gallery of 40 ft. wide. It will accommodate 8,000 persons, exclusive of platform seats. It is lighted by eighty-three windows, and there are twenty doors for exit, all opening outwards. There are five staircases for the gallery. Interiorly the sides or walls have been covered with canvas, and papered with oak paper. Ventilation is provided in the roof by two large trunks with outlets. In rear of the large hall are two "inquiry" and meeting rooms, and retiring rooms for ladies and gentlemen. About 30,000 cubic feet of timber have been used in the construction, and 3,200 superficial feet of glass. The erection has occupied altogether thirty-nine working days. It has been designed and constructed by Messrs. Haigh & Co., contractors, of Liverpool; Messrs. Barry & Parslow being the superintending architects under the direction of the committee.

Port-Glasgow Graving-Dock.—A new graving dock, which has been in course of construction for the past three years, has been opened. The original graving-dock, which has been replaced by the dock just opened, was the oldest graving-dock on the Clyde. It was designed by James Watt. The dimensions of the new dock are :—length of floor inside of gates, 325 ft.; width at entrance, 45 ft.; depth of water on sill, 15 ft.; width of body of dock at cope, 70 ft. The entrance and gate chamber, and a portion of the body of the dock, are founded upon a bed of soft mud, hard ground not being reached for a depth in some places of 27 ft. below the floor. This had all to be piled and sheet piled. A bed of concrete is laid up to the level of the top of the piles, across which are placed heavy beams covered with a platform of planking. Above this is another floor of concrete, above which the gate chamber, sill, and floor of the dock are built. The entrance and walls of the dock are built of ashlar masonry, and the floor is of concrete, paved with square whinstone. The cost of the works, including buildings, machinery, and pumps, is called 18,000*l.*

Opening of the New Hall at Gorleston, Great Yarmouth.—A new hall, intended for a drill-hall and a place for general entertainments, has just been completed at Gorleston, and was opened by the Mayor of Yarmouth, on Monday week. The hall is 60 ft. long by 40 ft. wide, is lighted by windows on both sides, and has a timbered ceiling.

Improvements in Steel Tempering.—The Government of the United States has acquired, for the sum of 10,000 dols., the following process, invented by MM. Garnant & Seigfield, for tempering steel :—The steel, heated to a cherry red, is sprinkled with sea salt, and worked in this state until it has assumed nearly the form required, the chloride of sodium being renewed from time to time. For the latter is afterwards substituted a mixture of equal parts of chloride of sodium, sulphate of copper, sal-ammoniac, carbonate of soda, and a half-pint of saltpetre. The steel is again heated, and the hammering is continued until the steel becomes refined throughout its whole substance, and assumes the desired shape. It is then again brought slowly to a cherry-red heat, and plunged into a bath of 3·7 litres (3¼ quarts) of rain water, 42·4 grammes (1·484 oz.) of alum, the same quantity of carbonate of soda and sulphate of copper, 28·3 grammes (1 oz.) of saltpetre, and 169·3 grammes (5·848 oz.) of chloride of sodium.

Society of Engineers.—The first ordinary meeting of the Society of Engineers for the present year was held on Monday evening, in the Society's Hall, Westminster Chambers, Victoria-street. At the conclusion of the ordinary routine business, the retiring President, Mr. W. Macgeorge presented the premiums of books which had been awarded to the following gentlemen for papers read during the past year, viz. :—To Mr. J. Phillips, for his paper on "The Forms and Construction of Channels for the Conveyance of Sewage"; to Mr. G. G. Andre, for his paper on "The Ventilation of Coal Mines," and to Mr. S. H. Cox for his paper on "Recent Improvements in Tin Dressing Machinery." The premiums having been presented, Mr. Macgeorge retired from the Chair, receiving a warm vote of thanks from the meeting. He then introduced to the Members the President for 1875, Mr. John Henry Adams, who delivered an inaugural address.

General Alliance of Operative House Painters.—Delegates, representing several thousands of the members of the General Alliance of Operative House Painters, with which is amalgamated the Manchester Alliance, have this week been sitting in conference at Leamington. At this annual gathering the past year's proceedings are reviewed, and the movements for the future carefully considered. The executives also submit their annual report, and the officers for the ensuing year are elected. Birmingham, Manchester, Leeds, Liverpool, Sheffield, and other large towns are represented at this meeting. There was a numerous attendance. The conference was opened on Monday morning, when the president (Mr. Shortlands, of Leeds) delivered an inaugural address, reviewing the principal movements of the alliance and the trade during the past year.

Stone Lunatic Asylum.—At the City Quarter Sessions, at Guildhall, on the 30th ult. it appeared from the report of the Committee of Visitors of the London Lunatic Asylum at Stone, near Dartford, Kent, that on the 17th of March last a contract was entered into with Messrs. Carter & Son, to execute the works for the enlargement of the asylum, in conformity with the plans prepared by the City architect, submitted to the Commissioners in Lunacy, and approved by the Home Secretary. Tenders having been invited from several firms, that of Messrs. Carter & Son, being the lowest, was accepted. The work thereupon commenced, and progressed with some unavoidable delays, to completion in December last. The building, which covers an area of 4,700 superficial feet, is two stories in height, and in its elevation and general appearance accords with the architecture of the main building to the principal façade, of which it forms no inconsiderable addition.

Dwellings for the Working Classes in Scotland.—A meeting to promote the movement for securing better homes for the working classes has been held in the Glasgow City Hall. The Lord Provost presided, and the hall was filled with an interested assembly chiefly composed of working men. The Rev. Dr. Begg delivered a long and interesting address on the subject. The first step in securing such provision Dr. Begg showed must be taken by the working classes themselves. By subscribing a certain capital, and keeping building and selling houses of a comfortable and commodious character, there may be no end to their operations. The instance of the Edinburgh Society was pointed to.

Ladies' Dressing and Retiring Rooms.—A proposition is in circulation for the establishment of a company of limited liability, for the purpose of providing retiring-rooms for ladies and poor women and children in the principal thoroughfares in London, and ultimately of extending the provision to the chief towns of the realm. The scheme is to provide for ladies and their children:—Retiring-rooms, dressing and washing rooms, and tea-rooms. Such rooms, all under the same roof, to be opened in connexion with shops in the principal streets. Some such arrangements are needed, but there are difficulties in the way.

Birmingham and District Architectural Association.—On Friday evening in last week, at the usual fortnightly meeting of this Association, held in their Rooms, 27, Temple-row, the Vice-President (Mr. W. H. Noble) in the chair, a lecture on "Stained and Painted Glass" was delivered by Mr. T. W. Camm, artist in stained glass. The processes of the manufacture of the varieties of stained and painted glass were described, and several hints were suggested for the designing of windows to suit their positions, and the purposes for which they are required, as well as to make them harmonise with the general design of the building of which they form so important a feature.

New Branch Bank, Widnes.—This new building, which was opened for business on Monday last, is Mediæval in style. The windows are for the most part mullioned. The entrance-door, which is on the angle, has been made an important feature by the carved corbelling and the stone columns and carved caps. The Bank ceiling is divided by beams of pitch-pine, and in lieu of the usual plaster cornice the architect has used timber. The chimney-pieces are also of pitch-pine, and are inlaid with tiles. The internal fittings have been made by Mr. Johnson, of Warrington. The building has been erected by Mr. T. F. Butler, builder, of Widnes, under the superintendence of Mr. William Owen, of Warrington, architect.

A Model Powder Magazine.—A small building has been erected in a remote part of the Plumstead Marches, three miles below the Royal Arsenal, which is intended to be a model of its kind for the nation at large. It is a magazine for the storage of the gunpowder and other explosives which may be seized by the Metropolitan and City Police, and it has been designed under the superintendence of Major Majendie, Royal Artillery, the Government Inspector. The building is of brick, but contains three cells or compartments, each being entered by a separate door from the outside, and having no internal communication.

Death in a Water-Pipe.—The Grand Junction Waterworks Company have been laying down a 36-in. main pipe between Hampton and Twickenham. On the 27th ult., Peter Wood, aged seventeen, whose duty it was to sweep out the pipes, crawled up them for that purpose, accompanied by the nephew of the foreman, named Charles Hunt. As they did not return, two other lads went up the pipes without finding them, and became overpowered with foul air. A pipe was broken into about a quarter of mile from where the lads went in. Wood and Hunt were discovered apparently dead, but Hunt was restored to consciousness. The other lad was found to be quite dead.

Air Force-Pump.—It is a well-known fact, that one of the principal obstacles met with by well and shaft sinkers, is the accumulation of foul air in the hole, and many lives have been lost by men going down foul wells to repair pumps, &c. To meet this difficulty, Messrs. Hayward Tyler & Co. have arranged a simple machine for forcing fresh air down wells, thus displacing the foul air. The machine can be mounted on wheels in the form of a barrow if preferred. The machine is so simple in construction, and its mode of use so evident, that our readers will not need any description of the engraving which appears in our advertising columns.

St. John's Schools, Newbury.—Through the munificence of Mr. Morgan, of London, father of the Rev. J. H. Morgan, Vicar of St. John's, a block of school-buildings has been erected on the west side of Newtown-road, forming an ornament to that part of the borough. The principal room is well adapted for parochial gatherings. Mr. W. G. Adey, of West Mills, is the contractor.

Stealing Tools.—John Styles and Horace Styles were charged at the Mark Cross Petty Sessions on the 26th ult., with stealing a number of carpenter's tools, value 10s., the property of Abel Shinglewood, at Wadhurst, on the 17th ult. Both prisoners pleaded guilty. The prisoners were each sentenced to six months' imprisonment in this case. The prisoners were then further charged with stealing, on the same day, a number of tools, value 5s., the property of Wm. Muier, and to this charge they also pleaded guilty, and were further sentenced to three months' imprisonment.

The Leeds Town Hall.—We understand that the Corporate Property Committee of the Town Council having had under consideration the decaying condition of the plaster work of the walls in the corridors of the Town Hall, are strongly in favour of tiles being substituted to a height of 6 ft. for the present coating of plaster. The borough engineer has received instructions to prepare an estimate of the cost prior to the matter being brought before the Council on some future day.

Proposed Art Gallery for Warrington.—A movement has been set on foot in Warrington for the erection of an art gallery in connexion with the School of Art in that town. The site, valued at 360*l.*, has been given by Lord Winmarleigh, and subscriptions amounting to 1,475*l.* have been promised, the estimated cost being 2,000*l.* The proposed building is also intended for the reception of Mr. Warrington Wood's piece of statuary; and its walls will be adorned with portraits of leading townsmen and other works of art.

School of Art and Science for Brighton.—At a meeting held under the presidency of Mr. Frederick Merrifield, a site upon the Grand Parade was selected for the erection of a permanent school of art and science for Brighton, Hove, and its vicinity. Including the ground, its total cost is estimated at 5,300*l.* It has been decided to proceed as rapidly as possible with the work. The building is to comprise a large elementary art-room, painting and modelling rooms, science class-rooms, and a laboratory, with a residence for an attendant.

Uninhabitable Habitations.—At Perth, last week, a farm servant sued his employer for damages for breach of contract in not providing him with a habitable house. From the evidence it appeared that the house in question was in a most lamentable condition. The sheriff held that the pursuer was quite justified in thus acting, as the house was not water-tight, and therefore not a proper habitation. The wages due to the pursuer were 4*l.*, and the sheriff awarded him 7*l.* in name of compensation and 3*l.* of costs—10*l.* in all.

The Balsall Heath Local Board.—The new premises of Balsall Heath Board are situated at the rear of the Wesleyan Chapel, in Moseley-road. The freehold and leasehold have been purchased for the sum of 1,335*l.* There is a capacious board-room, and at the rear a building originally intended for a schoolroom, which will be available for public meetings of the ratepayers, and for other purposes. There are also apartments provided for Mr. Inspector Taylor, who has long been connected with the Board, and his family.

Drainage of Artizans' Dwellings.—On Monday last a deputation from the Artizans and General Dwellings Company had an interview with the President of the Local Government Board, asking for a Commission to inspect their system of combined back drainage which the Metropolitan Board of Works require to be altered at considerable cost. The President said no doubt their system was the best, but he did not see how they could be assisted against local authority.

Haddenham, Isle of Ely.—The following tenders were sent in for the erection of the new school and teacher's residence at Aldreth:—Lord, Huntingdon, 797*l.*; Feast & Waters, Haddenham, 735*l.*; Christmas & Sons, Histon, 628*l.* The School Board, at a meeting held on the 27th ult., resolved to accept the tender of Messrs. Christmas & Son.

Sir James Fisher, of Melbourne.—Sir James Hurtle Fisher is dead. He was a son of the late Mr. J. Fisher, architect, of London, was born in 1791, and was knighted in 1860. From 1856 to 1868 he was president of the Legislative Assembly of South Australia.

The New Opera House, Charing-cross.—The Board of Works met on the 21st ult., for the purpose of considering the arrangement made by Mr. Mapleson with the Commissioners for the erection of a new opera-house in the street which is to be formed, consequent upon the demolition of Northumberland House, between Charing-cross and the Thames Embankment. The Board unanimously sanctioned the conditions whereby Mr. Mapleson has obtained a lease of the ground for eighty years.

The O'Connell Monument.—The acting executor under the late Mr. Foley's will, Mr. G. F. Teniswood, wishes to say that the statement in our columns that a lawsuit is likely to arise between the O'Connell Monument Committee and the representatives of the late Mr. Foley is unfounded. We are glad to hear it. Nevertheless, we are bound to say that the reports of proceedings in Dublin which reached us fully justified the belief expressed.

Drainage of Hurworth.—At the meeting of the Darlington Rural Sanitary Authority last week, the Hurworth Drainage Committee brought up the plans for draining the village of Hurworth, the estimated cost being 1,680*l.* Some discussion of the plans took place, after which the plans were sent to the Local Government Board. It was also ordered that the sanitary authority obtain borrowing powers for money.

Another Lighted Candle Explosion.—A serious explosion of gas has taken place at the residence of Mr. H. Jones, Grange-road, Bermondsey. The inmates having been nearly suffocated by the gas, one of them took a lighted candle to find the leakage in the pipe. A terrific explosion took place, blowing the windows, ceiling, and furniture to pieces, besides injuring several of the inmates.

Street Improvements in Leeds.—The Streets and Sewerage Committee have decided to ask the Town Council at its next meeting to authorise them to purchase all property in Land's-lane which may from time to time be offered for sale, and which may be required for the widening of the street, at such prices as they may think reasonable, not exceeding in the whole 20,000*l.*

Gift of a new Roman Catholic Church for Munich.—The Dowager Queen of Bavaria, who was recently converted to Catholicism, has undertaken to construct for the Roman Catholics of Munich a new church, the cost of which the municipal council of that city refused to pay. The expense is calculated at 200,000 florins.

Holy Trinity Church, Southampton.—A new font has just been placed in Holy Trinity Church, in the centre aisle close to the west door. It was designed in accordance with the style of the building by Mr. C. A. Monday, architect, and executed by Messrs. Dacombe, of the New-road.

Bust of the late Canon Kingsley.—Mr. R. Bell, the sculptor, of Buckingham Palace-road, who has just completed a statuette of Dean Stanley, has been entrusted by the family with a commission to execute a bust of the late canon, of whose features he has obtained an excellent cast.

Fatal Accident to a Stonemason.—A stonemason, named John Gillard, has died from lock-jaw at Stoke-sub-Hamdon. While assisting in the erection of a new school, a block of stone fell on one finger and thumb, which were crushed. Notwithstanding every medical care, tetanus set in.

Fatal Accident from the Fall of a Chimney.—The late gale seems to have extended over a considerable part of the north of Ireland, and in Ballymena a lady and her daughter were killed while in bed by the chimney-top falling through the roof of their house.

The Borough Surveyor of Salford.—The building committee of the Salford Corporation have decided to recommend the council to increase Mr. Fowler's yearly stipend by 200*l.* He is now receiving 600*l.* per annum, the amount fixed upon when he received his appointment two years ago.

New Collection of Persian China at the South Kensington Museum.—This museum has just bought a collection of Persian china and metal work. It consists of plates, water-bottles, incense-burners, rosewater-sprinklers, and other small objects of delicate workmanship.

on plan; a pleasanter arrangement for a dining-room than having a large apartment all visible at a *coup-d'œil*; it gives more room for a choice of places, and does not present such a formidable aspect, when full of diners in operation, as a square apartment. The second-floor contains public and private billiard-rooms in front, a large smoking-room behind them, and a private dining-room in the rear; whether it is desirable to have a second door in the private dining-room, so directly adjoining the door of the smoking-room, we should rather question. The third floor contains the kitchen (over the smoking-room), and rooms for servants, &c. The system of placing the kitchen at the top is becoming common now, in such cases, and has the advantage of keeping the premises much more clear of cookery odours than is usually possible when it is placed according to old fashion, in the basement. Of course there is a lift in immediate connexion with it. Lavatories and dressing-room accommodation for members are provided in the basement, and a convenient and light room there also for newspaper files; and beneath this is a cellared basement, to be let, we presume, for storage.

In the plan showing future extension, the library is shifted to the left of the entrance corridor, and the library shown in the first plan is made an additional reading-room. The additions on the other floors consist mainly in extra private rooms, a small smoking-room, a card-room, &c., without any alteration of the main divisions of the plan.

The architectural design for a club in such a narrow and confined street it is difficult to make much of. Considering both the nature of the site and aspect, and the associations of Walbrook as a part of Old London, we should have preferred something of the quietly picturesque type, since it is of no use putting a building of at all grandiose aspect, where it can never be seen more than a few feet off. Mr. Grayson apparently has not been unmindful of the nature of the position, and has avoided anything that can be called pretentious. The design is in a manner of which we are not without examples in London and elsewhere, in which classic feeling predominates, and mostly classic detail, but with touches borrowed from Gothic. The ground-floor is treated very plainly, with scarcely any decoration except the fluting of the broad pilasters between the windows: whether this story is intended to be faced with granite is not quite apparent; the handling of the large elevation in pen-drawing rather suggests this, but not very distinctly. The first floor, when the whole is completed, will present a series of five bay windows, segmental on plan, and with their lines abutting on heavy rusticated piers, which separate them, and which are sloped back under the main cornice, after the manner of buttresses. On the third floor, over the cornice, the wall is set back, and the elevation, as seen from below, finishes with a light balustrading, behind which are the windows of servants' rooms, and so on. The architect, in his perspective sketch in sepia, has rightly shown the front from something near the point of view from which alone it can be seen when built, in perspective from one end. The general appearance is solid and dignified, but undeniably heavy, especially the effect of the bay-windows referred to; and we cannot but regret that, in a comparatively secluded (though we can hardly say quiet) site such as this, there has not been an attempt made to give a little more of the domestic character to the architectural design,—a character which certainly is not unsuitable to a club. As it is, the building will look heavier in reality than it does in the drawing, from the narrow limits of the street; and in such a position it would be better to place any decoration that there is on the ground story, that being the only place where it can be seen, except from the windows of opposite houses.

Of the other designs (which we take in the order of hanging), "Experientia docet" shows a plan very similar in its main features to the last-named, except that the members' billiard-room is downstairs and the strangers' upstairs, which is not so suitable as the opposite arrangement. There is a well-executed view of the large dining-room, showing a handsome room with no very special features. The external design is in true club-house style, a mass of engaged columns and other well-known features, presenting a whole unsuited to the situation, though it would look as well as many other buildings of its class if placed with a wide space before it, as indicated in the perspective.

"Non quis sed quid" has devoted the whole front of the first floor to an enormous dining-room, like that of a "grand hotel," too large even to *look* comfortable, and certainly more than can be requisite in proportion to the scale of the other departments. The stairs are very conveniently packed out of the way, and project in part from the back of the building, under a glass roof in a kind of greenhouse form, but they are somewhat cramped in proportion and not central enough. The lavatories are rather ingeniously arranged over the centre part of the strangers' billiard-room, which is in the basement. The main part of the ground-floor is occupied by reading and writing rooms and libraries communicating with one another, with sliding folding-doors between, an arrangement in which we cannot see any advantage. The design is of a somewhat tame but not unrefined Classic character, with a frieze sculptured in basrelief, but broken into rather oddly by the pediments of the second-floor windows.

"Civis" shows a very compact, well-considered plan. He uses the mezzanine system by way of gaining height for his big rooms without exaggerating the smaller ones. There is a central entrance (one that will be central, that is, when the whole design is completed), with a large dining-room to the right on the ground floor, the library being over it. There is no special provision for a reading-room, this and the library being combined in one, and the library, when the plan is complete, is to extend right along the first-floor front, with coupled columns some feet from the walls, opposite each pier between the windows, and bookcases projecting at right angles from the wall to the columns. This is a very good arrangement, if the object be to treat a library so as to combine architectural effect with book stowage; but it is surprising the author should not have perceived how unsuitable such an arrangement must be for a reading-room, by shutting out light from everywhere except just by, or just opposite, each window. The elevation of two or three bays of the interior wall of the library is a remarkably nice little drawing, and shows agreeable treatment, but it is calculated to mislead as to the effect of the lighting when completed. The elevation is in a slightly heavy but dignified Classic style, the main features consisting of coupled pilasters on ground-story, coupled columns on first-floor, and coupled smaller pilasters ending in brackets under the cornice on the second-floor. The details show refinement and sense of proportion. The entrance-lobby is shown in a rather heavily-tinted perspective, with the staircase seen in the distance at the farther end: we think it a mistake to place it so far in. There is much merit in this set of drawings, which have been prepared with great care.

"Per non dormire" is a rather pathetic motto, seeing that the consumption of midnight oil apparently alluded to has brought the author no return but experience; but this may still be useful to him on future occasions. The plan would convey the impression of being by an inexperienced hand: it is very defective in arrangement and concentration, and so little care has been taken to modify the irregularities of the site that scarcely any room in the building has a right angle in it, the walls running parallel to the boundaries of the site. The elevation possesses originality, and shows an eye for the picturesque; the large busts (we suppose of eminent "Liberals") which form the finish to the projecting piers or buttresses, could never possibly have been seen at that height in so narrow a street, and convey the idea that the author could not be acquainted with the locality. But this is such a common fault in competition drawings, that one can draw no conclusion of that sort with certainty: there is scarcely any competition for town buildings in which the majority of designs do not seem to be made utterly independent of the consideration as to how they can really be seen in execution, and the perspectives contrived to give views of them which no one will ever see.

"E pluribus unum" occupies the centre part of the ground-floor with a large dining-room, or rather with two dining-rooms placed *en suite* one behind the other; an arrangement rather wasteful of space, and separating the two sides of the premises too completely. The entry is to the right hand of the front, and the lavatories are in the subsidiary plot at the left hand corner behind the main building, the route to them is thus a little too long for convenience. The first-floor is occupied by a library and reading-room, with folding-doors between; and the private dining-room, which seems larger than necessary. A good deal of room is occupied in corridors and stairs, and on the whole we cannot consider this a very well-planned building. The architectural design appears to us better suited to the nature of the site, being smaller in detail and quieter in treatment than any of the others; it is in what might be termed either Jacobean or Late Elizabethan, with touches a little too Gothic for the one and too Classic for the other: it is a pleasing design, worked out with considerable refinement.

On the whole, however, we think there can hardly be a question that the committee have chosen what is, taken all round, the best design of the set, only regretting that we can but partially sympathise with the architectural form proposed for the building, and that the opportunity was not taken to break a little more free from the accepted "club" style, on a site which seems to afford so good an excuse for doing so.

The other competitors are Messrs. Chas. Barry, Chatfeild Clarke, Cockerell, H. H. Collins, and Lockwood, but the designs are not identified.

THE ROMAN CAMPAGNA.

Once more an attempt is to be made to drain this pestilential tract of country, which contains about 3,900 square miles, or 3,000,000 acres. Independent of the indelible associations with which it is connected, and the glorious deeds of which it has been the theatre, its appearance produces an extraordinary impression on the mind of the beholder. Silence and desolation are around. A space extending from Otricoli to Terracina, above sixty miles in length, and on an average twenty in breadth, between the Apennines and the sea, does not maintain a single peasant. You look in vain for a ploughed field, a sheaf of corn, or even a house. There is nothing to indicate the present existence of man, but his former existence is marked by the tombs which line the road, and the gigantic remains of aqueducts striding across the plain, which once brought, and some of which still bring, the water cool and clear from the fountains of the Apennines to Rome.

Dickens thus graphically sketches the scene:—"An undulating flat, where few people can live, and where for miles and miles there is nothing to relieve the terrible monotony and gloom. Of all kinds of country that could by possibility lie outside the gates of Rome, this is the aptest and fittest burial-ground for the Dead City. So sad, so quiet, so sullen; so secret in its covering up of great masses of ruin, and hiding them; so like the waste places into which the men possessed with devils used to go and howl, and rend themselves in the old days of Jerusalem." But though a curse seems to have fallen on the country, as far as man is concerned, it is far otherwise with the powers of physical Nature. Vegetation springs up yearly with a vigour undiminished, since the days when Cincinnatus guided his plough through the fields of his Sabine farm. The herbage is so rich that the herds of savage buffaloes and cattle which pasture the district, are unable to keep it down, and the greater part of it becomes rank. The prolific powers of Nature are still more marked in the Pontine Marshes during the hot months, when the air is so laden with poison that it is dangerous, and felt as oppressive even by the passing traveller.

It was not thus in former times. The Campagna, now so drear and desolate, was once thickly inhabited, an historical fact of which its numerous ancient cities are alone sufficient evidence. The Pontine Marshes were inhabited by thirty nations. The freehold of Cincinnatus, the Sabine farm, stood in the now desolate plain at the foot of the Alban Mount. We read that so rich were the harvests, and so great the agricultural treasures to be collected in the plains round the Eternal City, that for two hundred years and more after the days of Romulus and Remus it was the great object of their foreign wars to gain possession of it. It is certain also that at a later period the vicinity of Rome was deemed insalubrious, for Cicero describes its site as "locum in regione pestilenti salubrem"; and Livy, speaking of the mutiny of the Roman garrison of Capua, in the year of the city 413, says that among other grievances they complained of having to fight in the pestilential marshes round the city. Strabo says that in his day the insalubrity of the air was confined to a few places in the neighbourhood of Ardea and the Pontine marshes; and it is well known

that during the first three centuries of the empire, the Campagna was studded with numerous villas, as their ruins still attest. At present it has returned to the state of abandonment and consequent insalubrity mentioned by Cicero and Livy; and this evidence proves that the air of the Campagna has differed at different periods. It has been healthy when peopled and cultivated, and insalubrious when comparatively reduced to a desolate wilderness, so it would seem that its healthiness or the contrary depended on its population and cultivation. We must seek for the active causes of the unhealthiness of the Campagna in its low level, in consequence of which it must, without proper drainage, retain the stagnant waters that fall in rain, that descend in torrents from the hills in the vicinity, or escape from the ruined aqueducts; in the quantities of annual and vegetable matters decomposed on its surface during the hot season; in the evaporations from its marshes and morasses; and, perhaps, in its proximity to the Pontine Marshes, for it is recorded that in the days of Trajan it was the opinion of many persons that Rome itself, although forty miles distant, was affected by the Pontine malaria. We learn from Geli's "Topography" that in the time of Theodosius the Campagna was a desert; and Gregory the Great expressly says, "The lands are depopulated. No one dwells in the fields." The only inhabitants of the Campagna are the shepherds, armed with long lances and mounted on small and hardy horses, who are occasionally seen following or searching in the wilds for the herds of savage buffaloes and other cattle; and the few wretched beings that are to be found at the post-houses.

Many attempts have been made, but with partial success, to drain the Campagna. About three centuries before the Christian era, Appius Claudius, the censor, surnamed the Blind, stood forward as the first restorer of this tract of country. He carried across the morass the road which is still known as the Appian Way, which in magnificence has never been surpassed. It was not, however, till a century and a half after the making of the Appian Road that Cornelius Cethegus, the consul, undertook to drain the Pontine Marshes. Dugdale, in his "History of Imbanking and Drayning," quaintly tells the story:—"In the year 593, when L. Amicius Gallus and M. Cornelius Cethegus were consuls, the Senate being in counsel concerning the provinces, because these seemed not sufficient use against the enemy for the ordinary forces of both the consuls (which are four legions besides the Auxiliaries and Socii), there was a motion made concerning the improvement of a great level of waste land lying under-water about forty miles from Rome, in Latium, which business was entertained with great approbation. . . . . The consuls A° 566 had herein given a president, who, lest their soldiers should be idle, employed them in making highwayes. Hereupon it was decreed that one consul should attend the enemy (in Gallia), and the other undertake the drayning of the Pompeine (Pontine) Marshes." The efforts of Cethegus were transient and impotent. Julius Cæsar found this large tract of country a prey to new desolation, and was about to restore it to fertility, when death suddenly put a stop to his plans. Augustus took up the work, and out alongside the Appian Way a canal which was destined to receive the stagnant water, and to afford it an outlet. It was on this canal that Horace and Mæcenas embarked on their way from Rome to Brundusium. After Augustus came Trajan, who was followed by Theodoric, and in more modern times by several of the popes, who attempted, with partial success, the restoration of the territory. It remained for Pius VI. to do more for the Campagna than any of his predecessors had been able to effect. Immediately after his accession, he went to visit the Campagna. One of his biographers states that "He shuddered, when, from the top of a hill, he saw at his feet the deep ravages of time, and of the inundations, the pestiferous fogs, which extended far and wide, and the dangers which ever threatened his sacred person, should he dare to tread the unsolid ground." On his return to Rome, he established a bank, under the name of Monte dei Marecagi, to receive the funds necessary for the enterprise, and in a little time the voluntary subscriptions amounted to 120,000 Roman crowns. Bolognini, one of the engineers whose plans had been submitted to Pope Clement XIII., was immediately put at the head of the undertaking; and in 1777 Sain, an eminent surveyor, was ordered to draw a plan of the ground, and to indicate the spots in which the works might be begun with the greatest probability of success. Pius succeeded in draining 9,000 rubbi which were constantly under water.

The work that Pius VI. left off is to be taken up—in fact, is already begun—by the King, at the earnest entreaty of Garibaldi. The king has headed the subscription lists, which are being rapidly filled up. With the wonderful appliances of the present time, it is to be hoped that in a few years more improvements will be effected than in the hundreds of years that have elapsed since Appius Claudius was Censor of Rome. It is scarcely too much to expect that Garibaldi may guide the ploughshare through the same fields which were cultivated by his great prototype, Cincinnatus.*

THE PALACE OF ESARHADDON AT NIMROOD.

In vol. iii., pages 111—124, of "Records of the Past," recently published by Samuel Bagster & Sons, one of the subjects is the second inscription of Esarhaddon, translated by Mr. H. F. Talbot, F.R.S. It is written in vertical columns on a hexagonal prism of baked clay, and was found near Nineveh on the mound of Nebbi Yunus (Prophet Jonah), and is now in the British Museum.

In the columns v. and vi. are found particulars relating to the Palace of Esarhaddon, which are interesting to architects and all connected with building:—

"I caused crowds of *captives* to work in fetters in making bricks. That small palace I pulled down the whole of it. Much earth in baskets I brought away, and threw it upon that spot; and with stones of great size I completed the mound.

I assembled 22 kings of the land of Syria and of the sea-coast and the islands, all of them, and I passed them in review: great beams and rafters of *abimi* wood, cedar, and cypress from the mountains of Sirar and Lebanon, divine images, basreliefs, stone *ilu*, slabs of *granite* and *alabaster*, and of various other stones from the mountain quarries the place of their origin, for the adornment of my palace, with labour and difficulty unto Nineveh they brought along with them.

In a fortunate month, and on a holyday upon that mound, great palaces for the residence of my Majesty I began to build. A great building of 95 measures in length, and 31 in breadth, which, in the days of the kings, my fathers, who went before me, none ever made, I made with beams of lofty cedar-trees. I laid its roof. Doors of *cypress*, whose wood is excellent, with cunning work of copper and silver I inlaid, and fitted them to the gates. Bulls and lions carved in stone, which, with their majestic mien, deter wicked enemies from approaching, the guardians of the footsteps, the saviours of the path of the king, who constructed them, right and left I placed them at the gates. A palace of stone and cedar-wood of well-contrived dimensions, for the repose of my majesty artificially I made. Lionesses of bronze, painted on the *hither* side and before and behind, on *sculptured bases* I placed within it.

Of fine cedar-wood and *ebony* I made the ceilings of the apartments. The whole of that palace of *veneered* slabs of ivory and *alabaster* I embellished; and I embroidered its tapestries; with flat roofs, like a floor of lead, I covered the whole building, and with plates of pure silver and bright copper I lined its interior.

The mighty deeds of Ashur, my lord, which in hostile lands he had done, by the skill of sculptors I erected within it. Cedars, like those of the land of Khamana, which all other trees and shrubs excel, I planted around it. Its courts greatly I enlarged, its stalls very much I improved for the stabling of horses within it. Wells I skilfully made, and I covered them properly. That great building from its foundation to its summit I built and I finished. I filled with beauties the great palace of my Empire, and I called it 'The Palace which rivals the World.'"

The words in italics are approximate translations, and possibly many other terms in the present state of our imperfect knowledge of the language may be equally conjectural, but the renderings of the erudite decypherer merit the utmost consideration, and are doubtless sufficiently near to afford us an accurate idea of the original description. T. L. D.

PARLIAMENTARY "NOTICES OF MOTION."

The formidable array of paragraphs under the above heading in last Saturday's papers, all commencing "That on Monday he would ask leave," or in similar phrase, was led off by a notice of Mr. Cross's to bring in a Bill "for facilitating the improvement of the dwellings of the working-classes in large towns." This has already been laid before the public broadly, and is alluded to elsewhere in our columns.

Subjects interesting to readers of the *Builder* are touched upon in other of these advanced pickets of Parliamentary work. Mr. Slater-Booth gave notice for leave to bring in a Bill "to consolidate and amend the Acts relating to Public Health in England," a proposition which at least leaves a wide margin for interpretation, and seems to hint at a general cleansing of we know not what extent of Augæan stables. In a more restricted sphere of operations our sanitary baronet, Sir William Fraser, gave notice of a resolution to the effect that "the condition of the metropolis in regard to paving, lighting, and cleansing, calls for legislation." The condition of the street-cleansing department, which leaves us for a decent crossing to the efforts of the lad who solicits your penny at every street-turn (and who, by the way, seems to sweep as diligently and anxiously on dry days as on muddy ones) is certainly not creditable. The crossing-sweeper is really a benefit to society in one sense, but for want of organisation and official recognition is only a nuisance in another sense. The man deserves his coppers for doing for us what there is no one else to do at present; but who can, in the most charitable mood, and with the largest reserve of small change, go to the trouble of continually administering such a dose at even half the crossings he passes? If it were so, indeed, these sweepers would be overpaid for their labour; which they are stated to be now, though we rather doubt it. But it is high time that some more systematic street-cleaning should be instituted, and in regard to this we hope that the drawings and models for sanitary apparatus of this nature, sent over by the French Government to the last International Exhibition, have not been lost sight of as suggestions. The paving is a more difficult question. In regard to cleanliness and quiet, there can be little doubt that the asphalte has the best of it so far; but we do think it a serious responsibility to continue and extend a system of paving which in wet or otherwise slippery weather, is absolutely cruel to the unfortunate horses, especially those which have to drag the over-heavy loads of our omnibuses. We have seen Gracechurch-street and Fenchurch-street on such days really reminding one of a slaughter-house or a knacker's yard—one unhappy animal after another prostrate on the roadway. To case horses' feet with iron pattens and then expect them to hold their ground on such a surface, is as absurd as it is cruel; and the ordinary process of "roughing" used for frost will not apply for asphalte, as the points do not penetrate it, and, if they did, would soon ruin the surface. There is talk of an anti-slipping shoe for the horses; but we have not heard of its development into anything practicable as yet. Unless something of the kind can be invented, the consideration of the "dumb driven cattle" ought certainly to form part of the question,—What pavements are to be adopted in future?

Colonel Beresford comes forward with a notice to bring in a Bill for improving the supply of water to the metropolis: a problem which is showing symptoms of becoming a very serious and difficult one, in view of the continual increase of the demand; and Mr. O. Morgan proposes to bring in a Bill "to amend the burial laws." Is this an avant-courier of cremation? Mr. Bruen is anxious "for the improvement of the dwellings of agricultural labourers in Ireland," which in plain English (or Irish) must be a Bill to compel landlords to do their duty better, as it is in the main a matter which chiefly rests with them. Apparently analogous to this is a proposal of Mr. Pease to "inquire into the position of tenants

* For General Garibaldi's scheme for diverting the course of the Tiber and improving the Campagna 100,000,000,000 francs are needed. The shares are to be 100 francs each. The King promised to use his influence in order to induce the Government to guarrantee 5 per cent. His Majesty heads the share-list. Garibaldi is said to be anxious to put himself in communication with engineers, especially English engineers. He has addressed a circular to the English newspapers, in which he says,—"I hope that the English people will support the project for the diversion of the Tiber and the improvement of the Agro Romano. I propose that the shares should be 100 lire each, with a guarantee from the Italian Government."

under the Dean and Chapter of Durham." Sir T. Chambers gave notice on Monday evening to ask what steps were to be taken to restore the Macclesfield Bridge in the Regent's Park, destroyed by the recent explosion. When we last saw the place the Doric columns half projecting out of the *débris* on the bank had a picturesque and almost poetic effect; but we have enjoyed this long enough, and the road will be better than a spectacle of ruin. The delay is causing great inconvenience.

Besides modern sanitary and constructive subjects, those in which our ancestors were formerly concerned are not overlooked; for Sir John Lubbock announces his intention again to bring in a Bill "for the better preservation of ancient national monuments." If it be the case, as stated in the daily papers, that the notice of this Bill was received with "a laugh," we take leave to say that it was the laughter of blockheads. The preservation of tangible records of the doings of past ages is a matter of the greatest importance and interest to students of history, and to all who recognise the fact that their country and their race have a "past" at all: and in many cases such relics and records are at present in the hands of those who ignore their value, and care little about sweeping them away, without note or comment, for a mere whim. In framing his previous Bill, Sir John Lubbock was at great pains to procure a schedule of objects worth preserving in every district of the country, and to frame conditions which would provide for their preservation without encroaching on the rights of property; and he received very poor thanks for his pains. We hope his new Bill on the subject will receive the support which it is pretty certain to deserve.

Among the notices of new Bills in regard to metropolitan government we should have been glad to see one in regard to the street nuisances and noises of London, a subject to which we have several times drawn attention. The barrel-organ nuisance has reached a development in the capital which is unknown in any other large town in England, so far as we are aware; and the presence everywhere of these idle vagabonds, who live by making themselves a nuisance, is becoming a plague to which those which Pharaoh suffered from were trivial. We will mention a single case which came to our knowledge not long ago, where a member of a family was dying from a lingering and painful illness, and every violent noise was something unbearable; when not only was the house besieged every day by these pests, who had to be driven from the door continually, not without insolence on their part, but the next-door "neighbours," with the petty obstinacy which is too often excited in such cases, insisted on their right to keep these instruments of torture before their own door, though perfectly aware of the special reason for sending them out of hearing; and relief could eventually only be obtained by the decisive interposition of the landlord. We believe the selfish offenders in this case were completely within the law, and we beg to ask whether that also is not a state of things that "calls for legislation," and what member will immortalise himself this session by a "notice of motion" to bring it about?

THE RESULT OF OVERDOING IT.

A correspondent of the *Daily News*, giving an account of the first *bal d'opéra* in the new house at Paris, states that the over-gorgeousness of the decoration has already palled upon the frequenters of the house, and the first interest and astonishment at its elaboration has given place to a feeling of dissatisfaction with a place which presents no repose anywhere for the eye. "A very clever woman," in confessing to the correspondent of the *News* a weariness of the gilding and polychrome statuary, said, "Just imagine with what eyes you would regard a 9th of November procession, if you were condemned to see it twice a week for a whole season. I feel that to enjoy music in this place we should be blinded, like the canary-birds in gilded cages." We are not at all surprised to hear of such a feeling. The production of effect by an overflowing lavishness of colour and decoration (so-called) has a tendency soon to pall on the taste in any case; and its introduction in the auditorium of a theatre is likely, besides, to have the result of weakening the effect of the scenery and the stage *ensemble* and distracting attention therefrom. In a short note we gave some time since of the new lyric theatre being built under Wagner's direction at Bayreuth, accompanied by a block section, it was noticed that the reformer of opera in Germany had insisted on the auditorium being kept plain and unassuming in character, in order that all attention might be directed to the stage. Hardly a question can be raised but that this is the true and rational method of looking at it, if the theatre is really intended for the display of dramatic and scenic art. Our own theatres are often too pronounced in the decoration of the auditorium; but in the great house at Paris ornament seems to have run riot, and in consequence disappointment is already being felt at the disproportionate result of all this expenditure of time and money. We fear the story of the French Opera House is but too like that of the Government under which it was projected, and that each has suffered under the attempt to be showy and brilliant at all costs.

NEW BATHS AND WASHHOUSES AT LIVERPOOL.

The Corporation of Liverpool have agreed to add to the existing number of baths and washhouses in the different districts within the borough, and at a meeting of the council held last week a discussion of much interest took place on the subject. The baths committee submitted a recommendation that certain plans for baths to be erected in Westminster-road, at the north end of the town, at an estimated expense of 16,000*l.*, be approved, and that tenders for the erection of the baths be at once invited. This gave rise to a discussion, in the course of which the claims of Windsor (a district in the West Derby division of the borough) for baths, were strongly put forward, and it was urged by Mr. Samuelson, a member of the council, that no further delay should take place in the erection of baths and washhouses in the last-named portion of the town. Mr. Robertson Gladstone (brother of the ex-Premier) endorsed the statements of Mr. Samuelson, and remarked that he really believed it was useless building schools, and trying to educate the people in the various parts of the town, without they at the same time gave the people a copious supply of water. He added that if there was a part of the town that required enlightenment and some assistance towards turning wretchedness and misery into something very much better, it was that particular district of Windsor. After some discussion, the council unanimously agreed to erect the baths in Westminster-road, at an expense of 16,000*l.*, as recommended by the committee, and they also passed a further resolution instructing the baths committee, without further delay, to proceed with the erection of baths and washhouses in the Windsor district of the borough, and that application be made to the Lords of the Treasury for permision to borrow such further sums as might be requisite for the purpose. The plans for these last-named baths are to be submitted to the council at their next meeting.

PORTLAND CEMENT.

At the last meeeting of the Institution of Mechanical Engineers, held in the Midland Institute, Birmingham, a paper was read "On the Manufacture and Testing of Portland Cement and the Machinery used in its Production," by Mr. Henry Faija, of London. Portland cement, he said, consists of carbonate of lime mixed with silica, iron, and alumina, and is made by mixing chalk with mud obtained from the banks of the Thames and Medway, in the proportion of about four of chalk to one of mud. In some cases gault clay is used instead of mud. The materials are mixed in "wash-mills," and the result, called "slurry," is run into large reservoirs or "backs," and allowed to settle; it is then dried and calcined at a high temperature, and afterwards ground between millstones to the requisite fineness. The wash-mill is a large shallow circular pan, built of brick, into which the barrow-loads of chalk and mud or clay are tipped; and, a supply of water being added, the whole is stirred and thoroughly mixed by a set of revolving arms, carried upon a central vertical shaft. The liquid material flowing from the wash-mill is raised by an elevator, or pump, and delivered into a reservoir, in which it is allowed to settle; the water is then drawn off by a sluice, and the reservoir re-filled from the wash-mill. This process is repeated until the reservoir is full of the deposit, or "slurry," which is then dug out and laid on a drying-floor of fire-clay tiles or iron plates, heated by fires underneath, and covered with a light roof. The dried slurry is taken to the kilns to be burned, being charged into them with alternate layers of coke. When sufficiently burned, the clinker is allowed to cool, and is then drawn out at the bottom of the kiln, and taken to the crushing-rollers, by which it is broken up into small pieces preparatory to being ground by the millstones. Having passed through the millstones, the cement is laid out on the warehouse-floor and allowed to cool, being occasionally turned over; this mixes the different day's work, and gives uniformity to the cement produced, and also allows any particles of lime still unslaked to slake by exposure to the air.

General Quality.—The quality of Portland cement is usually determined by its colour and its weight in combination with its fineness, besides which it is required to withstand a certain tensile strain when made into a "briquette" or testing-block, and to show no signs of either expansion or contraction in setting. Though at present considerable diversity of opinion exists as to what the tests for fineness and tensile strength should be, still, when it is remembered that the cement should be of one uniform good quality, capable of being gauged with two or three, or even more, times its bulk of sand for use, and that when the weight and fineness are in such proportions as to give a good carrying capacity for sand, the tensile strength is as a matter of fact assured, it then becomes possible to arrange such tests as will meet most requirements.

Tests.—In colour Portland cement should be of a dull bluish grey, and should have a clear, sharp, almost floury feel in the hand; a coarse gritty feel denotes coarse grinding, and the finer a cement is ground the more it approaches to an impalpable powder. It should weigh from 112 lb. to 118 lb. per striked bushel, and should be so fine that 80 per cent. will pass through a sieve of 2,500 meshes to the square inch; when moulded into a briquette and placed in water for seven days, it should then be capable of resisting a tensile strain of from 300 lb. to 400 lb. per square inch, and should during the process of setting show neither expansion nor contraction.

Weight and Fineness.—A light cement,—*i.e.*, one weighing from 100 lb. to 108 lb. per bushel,—is invariably a weak one, though it may be of the requisite fineness; at the same time, a heavy cement if coarsely ground is also weak, and will have no carrying capacity for sand. As the more the clinker is burned the harder and heavier it becomes, and therefore more difficult to grind in the millstones, the heavy cements to be met with are almost invariably coarse ones; and as an under-burned cement, from its softness, will be ground fine enough, but will be deficient in weight, it will be seen that the weight, unless taken in conjunction with the fineness, is no test as to the quality of the cement. It will therefore be found advisable to adopt a medium weight,—namely, from 112 lb. to 118 lb. to the striked bushel, as with that a finely-ground cement may be secured, and one that will suit most engineering and building operations.

Tensile Strength.—For the strength test a briquette is usually adopted, the breaking area or neck being 2·25 square inches. The cement should be ganged with as little water as possible in a mould of the requisite shape, and in 24 hours it should have set sufficiently to be removed from the mould and placed in a tank of water, where it should remain for seven days, and at the end of that time be tested, when it should be capable of resisting a tensile strain of from 300 lb. to 400 lb. per square inch of breaking area. This, though a universally adopted test, is in the writer's opinion open to objection on the ground that the cement is never used in a similar manner, and is in point of fact never, except in rare instances, subject to the strain of direct tension, though as a comparison between the strength of different cements it may be of use; still he thinks that some other test should be adopted which would be more in keeping with the manner in which the cement is ultimately to be used.

Expansion.—This defect, due to the cement being too hot, may be traced to various causes. It is to be met with most frequently in very heavy cements, from the fact of their containing in their original crude form a larger proportion of lime, which does not get thoroughly done away with in the process of burning in the kilns, consequently there remain small particles unslaked, which slake when the cement is ganged with the water for use; these eventually blow in the work, causing a general expansion. An

under-burned cement, or one that is used too soon after it has left the mill and before it has had time to cool, will show the same defect. The most simple test to detect expansion in a cement is by making small pats with a trowel, about 3 in. or 4 in. square, and placing them in water when set sufficiently, where they should remain a few days. The cement if good will show no alteration in form; but any cracks showing on the edges, or other deviations from the original shape of the pats, indicate that the cement is of this expansive nature, and therefore not to be trusted. But because a cement will not stand this test, it is not, in all cases, to be condemned as useless, as its expansive or blowing property may be attributable simply to the cement being used too soon after leaving the mill; in which case a proper process of cooling, by laying it in a thin layer on a dry floor for a short time before using it, will correct the defect.

Contraction.—This defect, due to the cement being over-clayed, is so seldom met with that it is needless to dilate upon it, beyond saying that it may be detected by a similar test to that for expansion.

In the discussion which followed, the advisability of adopting continuous kilns instead of the intermittent ones mentioned in the paper, as well as using the waste heat from the kilns for heating the drying floor, were considered, and it was decided that the intermittent kiln gave undoubtedly the best result, though with a greater cost of fuel; and that, except under special conditions respecting the site, the waste heat from the kilns could not be advantageously used for heating the drying floor.

CHELSEA SURVEYORSHIP.

WE understand that the vestry of this parish have appointed Mr. G. H. Stayten, C.E., the borough surveyor of Ryde, Isle of Wight, to be their surveyor, at a salary of 500*l.* per annum. There were over thirty candidates for the appointment, including the surveyors of several metropolitan parishes, the borough surveyors of Ramsgate, Margate, Kingston, &c.

THE MARYLEBONE NEW PAROCHIAL OFFICES.

A NEW block of buildings, consisting of a Board-room, and other administrative offices, together with a suite of offices for the registrar, are about to be erected for the Marylebone Union, on a plot of land at the corner of the Marylebone-road and Northumberland-street, adjoining the workhouse. The building has three frontages, the principal elevation being in Northumberland-street. The structure externally is entirely in Portland stone rusticated, the three frontages being in this particular uniform in architectural design. The building consists of one story, on the ground-floor only. The Northumberland street frontage is 117 ft. in length, and 19 ft. in height to the cornice, the south end of the elevation, where the Board-room will be situated, being carried to a height of 25 ft., in order to admit of the apartment being internally lofty. The central portion, which forms the principal entrance to the building, is also carried several feet higher than the general face of the elevation. This part consists of a projecting porch, 18 ft. in width, with two pilasters and columns, on either side, surmounted by a pediment. The doorway inside the columns and pilasters, which is 9 ft. in width, has also columns on each side, supporting an ornamental carved arched heading. There is a range of eight lofty arched windows on the south side of the entrance, and five on the north side, with ornamentally-carved columns and capitals between each window. The Marylebone-road frontage has a length of 38 ft., with a separate entrance to the registrar's offices. The west frontage is uniform in length with the east or Northumberland-street elevation, but not so elaborate in detail.

The principal entrance leads into a vestibule, through which is approached a spacious hall, 16 ft. by 11 ft. A corridor, 6 ft. wide on each side of the hall, is carried the entire length of the building, leading, at the south end, to the general clerks' room, an apartment 37 ft. by 20 ft.; also to the office of the chief clerk's assistant, and likewise to a committee-room for the use of the members of the Board. The Board-room is entered from the extreme end of the corridor. It is a commodious apartment, 44 ft. in length by 25 ft. in width, and is nearly 20 ft. in height from the floor to the ceiling. It will be ornamentally finished and decorated, the walls being divided into panels, with moulded columns between each panel, and surmounted by arches. The ceiling will also be divided into panels, and finished in a similar manner to the mural decorations. The whole of the fittings and furniture of the Board-room will be in mahogany. There is a cloak-room, immediately on the left of the entrance to the Board-room, for the accommodation of the members. At the north end of the building, on the west side of the corridor, there is a waiting-room, and adjoining it is the office of the chief clerk. The registrar's offices are altogether distinct from the other portions of the interior, being situated in that part of the building fronting the Marylebone-road, from which, as we have already stated, there is a separate entrance to them. They contain the general office for registration purposes, a large apartment, 25 ft. by 13 ft., together with the registrar's clerks' office, and a strong-room.

Mr. H. S. Snell is the architect, and Mr. W. Crockett the builder; the amount of his contract (which does not include fittings) being 5,900*l.*

A PLEASED EMPLOYER.

MESSRS. GEORGE TROLLOPE & SONS have recently completed the restoration of a mansion,—Fairlawn, near Tonbridge,—for Mr. Edward Cazalet, under the direction of Messrs. Mann & Saunders, architects. At a cost of several thousand pounds, the contractors may be said to have rebuilt Fairlawn, which is now a mansion of the Queen Anne style of architecture. The saloon which leads to the principal staircase is elaborately decorated, and leading from that is the billiard-room, appropriately furnished and decorated. From the staircase the hall leads to the drawing-rooms, large and small, and the library. In the large oval panel of the ceiling in the drawing-rooms, the genii of the four seasons, link themselves into a chain by their fruits and flowers under a cloud-flecked sky. Above each of the doors are subjects of amorini, painted on a gold ground, whilst the smaller cammei in the panels of the doors beneath bear reference to the subjects under which they are placed. In the dining-room is some fine old wood carving, rescued from the paint by which it was imbedded, and the decorations are elaborate.

The point we have to speak of, however, is this: that Mr. Cazalet, when all was done and the accounts paid, was so well pleased that on his return from abroad he instructed Messrs. Trollope to provide a dinner for the men. This took place at the "Criterion," on Saturday in last week, when about 250 dined in the great dining-saloon, under the presidency of Mr. R. L. Trollope, the member of the firm who conducted the work. The vice-chairs were occupied by the heads of the several departments, and everything went off most agreeably.

THE METROPOLITAN BOARD OF WORKS.

MR. GOOD'S CASE.

THE matter, so far as Mr. Good's observations on the committee are concerned, ended as we concluded it would. At the meeting last week, a letter was read from Mr. Good.

Mr. E. R. Cook then proposed the following resolution:—"That Mr. Good, district surveyor of Bow and Poplar, having, on Friday last, stated to the Board his willingness to withdraw, unconditionally, all such expressions as reflect upon the chairman and members of the Building Act Committee as were contained in the letter which he had addressed to them with regard to his proceedings in connexion with the houses which fell in Addington-road, Bow, the resolution passed by the Board on the 22nd ult., directing that Mr. Good be called before the Board, and reprimanded by the chairman, for having addressed to the Board a letter reflecting upon the Building Act Committee and their chairman, be rescinded."

Mr. Fowler, chairman of the Building Act Committee, seconded the motion, which, on being put, was carried unanimously.

It now remains for the Board to withdraw their assertion that Mr. Good had not done his duty.

THE "QUARTERLY REVIEW" AND SIR GILBERT SCOTT.

SIR,—Sir Gilbert Scott in his reply evades the point at issue, and has left his curious misstatement uncorrected and unjustified. In his speech at the Architects' Institute, he imputed to the "Quarterly Reviewer" a ridiculous, and, elsewhere probably, an incredible, mistake about the date and the designer of the altar-screen at Westminster, which screen was not in any way referred to in the *Review*, and which, moreover, was, as every school-girl knows, originally designed and made 400 years ago.

Instead of candidly retracting his assertion that I "thought he had designed" the screen, Sir Gilbert Scott would raise some new discussion on the notice of the reredos at the Abbey.

As to this matter, the suggestion in Sir Gilbert Scott's reply, "that the object designated by the Reviewer as the *reredos*, and by the President as the *altar-screen*, is one and the same," is palpably absurd. The altar-screen, an object perfectly well known by sight and name, extends entirely across the *east* end of the choir; the *reredos* or *retabulum* was not a screen, but a mosaic picture, with a temporary sketch enframing it, placed, as its name denotes, immediately behind the altar-*table*; and it was thus referred to:—"The choir-screen" (at the *west* end of the choir), "reredos, pulpit, and communion-table, are particularly weak and jejune specimens of the dull clerkmanship that architects of eminence live to supply." Here is no mention of the altar-screen, nor of the Reviewer's "thought" of its designer, nor of Sir G. Scott, nor of his designing any of these "objects." They are described as specimens of "clerkmanship," not of design, which is a greatly different thing, and are said to be "supplied by architects of eminence" (in the plural), not by any individual. There is, in fact, no personal reference whatever. The choir-screen was supposed to have been supplied by Mr. Blore, an architect of eminence, and the communion-table by another gentleman of the same class, whose name could not have added any value to a purely architectural and impersonal discussion. As to the reredos or retabulum, that new "object" seemed to be considerably above, just as the pulpit was below, Sir Gilbert Scott's accustomed line of manufacture, and was not, even in "thought" attributed to him. The individual purveyors of these ecclesiastical "objects" are not so well known as they may possibly suppose, or as in fact they well deserve to be.

Sir Gilbert Scott could therefore "find out" nothing of the writer's "thought" about the possible designer of the reredos or the altar-screen from any individual or nominal or even mental reference. The short description of the "object" is the only thing remaining that could possibly have led "the President" astray. Yet it would seem incredible and strange that when a monument is said to be "particularly dull, weak, and jejune," Sir Gilbert Scott should by this fact alone "find out" that he is "thought to have designed it."

THE QUARTERLY REVIEWER.

THE SANITARY CONDITION OF DISS.

ON the 29th ult., Major Hector Tulloch, Government Inspector, visited Diss, for the purpose of sanctioning the loan of 1,000*l.* for works of sewerage.

The Inspector, in taking his position, applied for plans, specifications, and estimates of the work which had been carried out. Plans and certain specifications were submitted, but no estimates, of which he complained, and said there was nothing to show the depth of excavation, length of drainage, or anything to guide him as to whether the work had been fairly done or not; it might be very cheap or very dear.

The Surveyor replied that it was not customary for him to furnish estimates, as the contractors worked them out themselves. He recommended the Board to accept the contract of Mr. Dennis, who executed the work, because he considered it very fair.

The Inspector said he could not, with the particulars furnished him, recommend Government to lend the money. He would visit the town on a future day, the time of which should be advertised, so that the ratepayers might have an opportunity of attending if they pleased.

After the meeting, Major Tulloch inspected the filters and tanks which have recently been constructed to receive the sewage, and pronounced the filters perfectly useless, as the soluble matter went into the river.

SCHOOL BOARD SCHOOLS FOR LONDON.

Another school has been opened by the Board during the past week. It is situated in Great Tower-street, Seven Dials, and forms a handsome block of buildings; a double arcade in the front elevation, and the central turret being treated in an effective manner. It contains four stories, with an extensive basement under, which is shut off entirely from the schools. The ground-floor forms a large covered play-ground, and contains the committee-room and various approaches. The infants are placed on the first, girls on the second, and boys on the top floor, each having a school and three class-rooms, with cloak-rooms, and sanitary conveniences placed in the turret, and on half-space landings. The number of children will be 780, and the cost of building 8,775*l.*, the contractor being Mr. John High, of Lower Clapton. The total cost per head, including purchase of land, &c., was 29*l.* 18s. 1d. The clerk of works was Mr. Tester. The building was erected from the designs of the Board architect, Mr. E. R. Robson. The cost was larger than usual, partly because the school is raised on arches, so as to afford a covered play-ground, and that a range of vaults had to be constructed underneath.

Deptford.—The school in Duke-street, mentioned in our last, was built from the design of the Board architect; Mr. Hobson was the contractor, not the architect.

SCHOOL BOARD SCHOOLS.

Huddersfield. — The new Board Schools erected for the Huddersfield School Board at Oaks, Lindley, and opened on the 11th ult., present a college-like appearance. The ground, containing 8,385 square yards, was purchased by the Board for 2,205*l.* 18s. 6d. Accommodation is provided for 856 children. The style may be classed as domestic Gothic, freely treated. The elevation of the façade is 120 ft. long. All the school buildings are one story in height, above ground. Twenty-one feet from the dexter side, and adjoining the lavatory, is the clock and tower entrance. The tower is 70 ft. high to top of finial, and 11 ft. square. The lower part of the tower porch is architecturally treated, having chamfered, sunk, and moulded jambs, with quoined buttress pilasters on the face of each angle. These are in three stages. The central one is wrought into a trefoil sunk gablet and roll mouldings. Elliptical pointed arches span the jambs, which have arched drip-stone mouldings and boss terminations. The next stage of the tower is built of solid ashlar masonry. On three sides there is a three-light trefoil arched window. The third stage contains the clock, with four dials and bell, costing 92*l.* 10s. Upon the bed of ashlar are fixed strong angle timber framed bindings, 24 ft. high, cross-braced, tied and bolted to the solid work of the lower stage of the tower. A panelled chamfered wood framing, filled with diagonal V-jointed boarding and blocks to receive the gutters, forms an outer base for the spire roof, which is covered with Westmoreland slate; and the whole is topped by a wrought-iron finial, indicating the four cardinal points. A cottage is built within the grounds. The whole of the buildings have been designed and superintended by Mr. Charles Fowler, of Leeds and Huddersfield, architect. The contractors for the works were:—Masonry, Messrs. Dyson Bros., Lindley, 4,489*l.*; joiner's work, Mr. James Christie, Huddersfield, 1,519*l.*; plumber and glazier, Messrs. Taylor & Co., Huddersfield, 359*l.*; plasterers, Messrs. Longbottom & Sons, Huddersfield, 161*l.*; slaters, Messrs. Pycock & Sons, Leeds, 500*l.*; ventilation, Messrs. Lawton & Hainsworth, Halifax, 138*l.* 4s.; painter, Mr. W. T. Earnshaw, Lindley, 95*l.*; Mr. James Brook, Huddersfield, fitted up the warming apparatus, the eaves, spouting, and other ironwork, 537*l.* The school fittings were estimated to cost 400*l.* The whole of the works, including site and fittings, will cost 11,142*l.*

Stoke.—At the monthly meeting of this Board on Wednesday, the 3rd inst., at the offices of the Clerk (Mr. W. W. Neale), Hay-lane, Coventry, tenders for the erection of Board Schools according to the plans prepared by Mr. G. Taylor were opened by the Chairman as follows:

Wormwood	£1,433	0	0
Hayward, jun.	1,300	0	0
Foster	1,590	0	0
Firth	1,360	0	0
Mayo	1,190	0	0

Mr. Mayo's tender was accepted.

Bawburgh.—At a meeting on the 5th inst. of the Bawburgh School Board, the following tenders were received:—

Read	£1,100	0	0
Hipperson	1,033	12	6
Wilkin	978	0	0
Youngs	975	0	0
Withers	932	0	0
Davy (accepted conditionally)	889	3	6

Birmingham.—The Sites and Buildings Committee of the Birmingham School Board on the 29th ult. reported that tenders for the erection of the schools in Smith-street have been received, and recommended that the one sent in by Messrs. W. & J. Webb, amounting to 8,060*l.*, be accepted. The report was adopted.

SCHOOL BUILDING IN SCOTLAND.

The undermentioned new school-houses, with teachers' residences, are proposed to be erected in the burgh of Wick and for the Landward parish, under the Education Act:—

At the Pulteneytown Academy, the number of children proposed to be accommodated is 380, at a cost of 400*l.*

To the South Burgh School two wings will be added. The area is calculated for 260 pupils, the extra space giving three class-rooms, two of which are 19 ft. by 18 ft. each; the "infant school" being 38 ft. by 16 ft. The ground, including school and separate playgrounds, occupies half an acre. The estimated cost is 800*l.*

The Burgh School is designed for 300 children, and is situated at Whitehouse. The plan embraces a Gothic structure, having a front elevation, with a Gothic window and bell-tower. This building consists of a square block in front, with two end wings receding to the back. The internal arrangements embrace a large mixed school, 67 ft. by 18 ft. broad, and 16 ft. 6 in. high. The cost is estimated at 1,500*l.*

The Landward Schools of Bilbster, Tannach, Stirkoke, and Whaligoe, are designed for 80 pupils. The dimensions of each of these schools are somewhat similar, and the estimated cost averages 1,000*l.* each, including the teachers' houses.

The Kilmster School, which will occupy half an acre of ground, is designed for 160 pupils. The mixed school is 47 ft. by 18 ft.; the infant school, 20 ft. by 17 ft.; and two smaller rooms, 12 ft. by 15 ft. The estimated cost of this school and teacher's residence is 1,480*l.*

The Thrumster School is similar in form to the Kilmster one. It is designed for 200 children, and has a mixed school, two class-rooms, an infant school, and teacher's residence. The cost will be about 1,500*l.*

An addition of a wing will be made to Staxigoe School, giving a room 34 ft. by 17 ft., available for 120 pupils. The estimated expense is about 600*l.* The old society house will be converted into a teacher's residence.

In the plan of the West Banks School the arrangement is for 350 children, with teachers' residences. Exclusive of the infants' school there are four class-rooms, the largest 73 ft. by 18 ft.; the infants' school-room is 33 ft. by 25 ft. 6 in.; and a teacher's residence. The ground occupied is half an acre. The estimated cost is about 2,000*l.*

Mr. Brims, the architect, has at present in hand, in addition to the foregoing, at Keiss, two schools, at a cost of 1,700*l.*; at Canisby (additions), 550*l.*; at Watten, 1,750*l.*; and at Bower, 1,000*l.*

The Dundee School Board have also the following buildings either in progress or about to be commenced:—

The Ancrum-road School, which is intended to supply the requirements of Lochee, is situated in a plot of ground bounded by Ancrum-road on the south, and Gibb's-lane (leading to Lochee) on the east and north, and measures 1 acre 26 poles in extent. In plan the building, which is Gothic in style, is almost that of a double I, and is divided into two departments—junior and senior. The principal elevation fronts Ancrum-road, and is relieved by two projecting gables, each having a spacious three-light window, with moulding on edge of stylobats and segment heads, over which label mouldings, springing from moulded pendants or drops, are carried. The portion between the two gables is filled in with four large windows, having moulded edges and cusped corners at the tops. The wallheads are finished with a corbel course, on the top of which runs a plain plinth surmounted with a moulded roan, which forms a moulded coping or cornice. The accepted tenders, exclusive of cost of heating and furniture, amount to 3,353*l.*

The site of the school at Dudhope, at the top of St. Mary-street, consists of 122 poles, exclusive of streets. In plan this school is a reproduction of that of Ancrum-road, while the elevations are also much the same, with the exception that the details are of a slightly plainer description. The accepted tenders for this school, which include enclosing wall round the whole four sides of the site, amount to 3,924*l.* 11s. 9d.

The site for the Hill-street School is at the top of Hilltown, and in extent consists of 77 poles. In plan this school is also a representation of those for Ancrum-road and Dudhope, the only difference being in the treatment of the elevation of the senior department fronting Strathmartine-road, which consists of one projecting gable in which is a large triple window, with cusped heads and label mouldings over; an ornamental iron finial forming the termination of the apex of the gable. A small gable is thrown over the central portion of this front, in which is also placed a three-light window, thus breaking up what might otherwise have been a monotonous straight line. The amount of the accepted tenders for this building, including the cost of enclosing the walls round the entire site, is 3,523*l.* 16s. Each school affords accommodation for 529 scholars.

At the Brown-street School extensive alterations and additions have been made. The principal addition is a large wing projecting from the central portion of the old school. The ground-floor consists of a room, 38 ft. by 24 ft. 6 in., in the north-east corner of which is the new entrance-porch, from which access is gained to the old and new school-rooms, and to a retiring-room for the master. The additions and alterations will accommodate 250 additional scholars, and the cost of the work when completed will be about 1,320*l.*

Hawkhill School is the first new two-story school proposed to be erected by the Board. The site is at the corner of Hawkhill and Peddie streets, and is in extent about 71 poles. The plan of the school consists of two wings, extending north and south, having commodious class-rooms, lavatories, retiring-rooms for master and mistress, and separate stairs for boys and girls. When finished, the buildings will accommodate 760 pupils. The cost of carrying out the work will be about 5,745*l.* 18s.

The Female Model Lodging-house in King-street having been purchased by the Board, extensive alterations and improvements are proposed to render it a commodious school. The site is in extent about 50 poles. The plans of the contemplated improvements are in an advanced state, and it is expected that the works will be shortly commenced. The estimated cost of the alterations is 1,100*l.*

At the Balfour-street school new offices have been added, and retiring-rooms for the master and mistress. The walls of the schoolrooms have been painted in oil, with stencil designs running along the top of wall linings and under the plaster cornices, and the woodwork grained in imitation oak. The cost of the new buildings will amount to about 6*l.* 16s. per scholar.

The plans for the above schools have been prepared by Mr. David MacLaren, of Messrs. Ireland & MacLaren, architects, Murrygate, Dundee; and the works are being carried out under his superintendence. Mr. MacLaren has also been commissioned to erect school buildings for the Boards of Brechin and Kinnell on the basis of the Dundee plans.

Sanitary Condition of Stafford.—Mr. W. E. Clendinnen, medical officer, at the meeting of the town council, on the 5th inst., reported that in a house-to-house visitation he found a "wretched state of things. The ashpits were in many instances full to overflowing, and the inspector informed him the work was so much in arrear that this state of things would have to remain for some time. I found, in the great majority of cases, the pump and the closet in close proximity, and I firmly believe that to this fact is due the great impurity of the water, and that it will take some time to effect a sufficient improvement in the water, so that it will be pronounced good and wholesome." To stop the continual percolations from these sources of impurity, the town council have been strongly recommended to at once adopt the Rochdale system of tub removal, or the cinder-sifting system, or both; to establish a depôt; and to organise the proper machinery for successfully carrying the system into effect.

CHINA, AND ITS ARTISTIC CAPABILITIES.

IT has been observed by De Quincy, that a sort of magic charm lies in the mere names of all world famous things, as in the names of the rivers of the world,—the Ganges or the Euphrates! They ring in the world's ear, and take us into the past of things, wherein distance and remoteness do so much. If this be true, it is surely fully exemplified in the more simple phrase, Celestial Empire, in the name of "Child of the Ocean," the river Yang-tse-Kiang,—Nankin city, and a host of others appertaining to that, even now, mysterious empire. It may be doubted, indeed, whether in the world there exists a place more enigmatical than China, or one more difficult to "account" for. It is not in a savage state, nor is it in what is here called in this Western world, a civilised state, vague as that term is, and of such uncertain signification. We suppose that it must be classed with the Eastern nations generally, and come under the term "barbaric." It is difficult to say which of its two states, its old or its modern condition, is the most to be wondered at. Its history would seem to date from a time far beyond, not only human record, but human memory, and to be changed in essentials but little; a country, indeed, without what is here called "progress." It is in reality unique in very many ways, is this antique Chinese Empire, and the attention likely to be given to it, consequent on the death of its youthful emperor, may make a few remarks on it, and on the special art which it has always and does now produce welcome, at present. Very much might be said on so vast a theme, but a few thoughts only, however few, may be better than nothing.

We do not dare to speculate on that strange fact,—the primitive isolation of the old empires of the world. Time must have been when this vast extent of the earth's surface was unoccupied, and when first occupied, however sparely, its people must have migrated from a probably distant source. How did the language, so distinct from others, come into being, and how did the peculiar art of China first come into existence, and how grow up? But speculation here would seem to be all but vain. We have nothing to go by; but of the actual and present state of China we may indulge in a thought or two, and, may be, speculate on its future. Its art and its architecture are alike unique and original, and the creation of the mental idiosyncrasies of the Chinese man. We may fairly determine that it is original and unborrowed, and that it is much the same as going to the very source of art, to study attentively so really genuine a specimen of pure and unadulterated art, and to compare it mentally with an equally pure example of, say, Greek art. Greek art, as we all know, is without rival, and the most strennous efforts of the most highly civilised and enlightened modern man, have been taxed in vain to reproduce it, and, if possible, to copy it. It is unique and *per se*, but not more so than that of the Chinese art, whatever rank that may hold in the scale of art; and the questions then come,—Are Chinese art, and architecture, and painting, and the forms peculiar to Chinese work, worth preserving by the world, or would it be better to supplant them, if that be possible, by other art, and then granting the inherent merits, whatever they may be, of Chinese art, is anything to be got out of it? Can English art be benefited by it in any way, and how so? Is it to be looked at merely?

In any endeavour to analyse the art and architecture of China, whether of the past or present, it must needs be confessed that we are sadly at a loss for sufficient *bonâ fide* evidence. We do not here mean that there is not enough of Chinese art-works to be found scattered about, but that the vast majority of the specimens of it are of very inferior value indeed. They are, if truth must be told, almost always "manufactured" art,—the results, as so much of art is here, of the system of art-manufacture. The Chinese are a quick-witted and imitative people, and very soon spy out—Cobden used to say, quicker than almost any people in the world—a new trade opening, and a new way to do business. They soon found out, too, what it is that the "foreigner" will be satisfied with; and the result is, and this is a fact not everywhere known, that there is what may be termed a Chinese manufactory expressly for the European and American markets. We have taken some little pains at divers times to come at this, and have gone through a considerable quantity of Chinese imported "goods," in the hope of getting at last at some genuine Chinese work, by the hand of the Chinese artist-workman, and made for his own country, and not for export. Of course, there is in Chinese work, as in all other work, an infinite difference in different specimens of it, consequent on the individualities, and skill, and power of each artist-workman. But we are here speaking specially of the *bonâ fide* character of the work, and of the absence in it of the special art-manufacturing processes. We wish we could make this quite plain and evident. It is very difficult to do so without the power of referring to a special collection; but yet, in spite of this disadvantage, a little may be done.

We have before us a specimen—and there are a few at South Kensington—of so-called Nankin ware, by a native artist, and it would be difficult to find an object more thoroughly characteristic or instructive in all ways. It, like many others occasionally seen in collections, is not perfect work, but it is Chinese, and that is the first thing needed; and then it is not a work of mere manufacture, but the work of the draughtsman himself, from first to last. The "dragon" form stretches across in quaint fashion the whole of the plate, and the tail is to be found at the back of it; the mere turning of the plate not having in the least degree confused the mind or the hand of the executive artist. It is wholly executed in the well-known, though so apparently impossible to imitate, "dark blue," on a dull white ground. It evidences that skill in draughtsmanship and in dragon-drawing is not confined to those who have received Academy teaching. We cite it to show how universal is the power of rendering forms, and of invention, and how great is, and must needs be, the interest to be found in original specimens of this drawing, and painting, and inventive power. It is not confined to one special race, or country, or time, but it is a common human gift. All countries are capable more or less perfectly of producing such for themselves; and it is of surpassing interest when you do come across fair and honest specimens of them. Chinese art is most surely second to none in point of individuality of interest and character, and it may well be a question worthy the attention of the powers that be, whether or no, the "improgressive trade" of China, might not be best stimulated by a little more attention to the importation of the *bonâ fide* and true native *art* of it for beauty and instruction's sake. It is worth State attention just now.

We may here again remind the reader that there is in the South Kensington Museum a collection of Chinese art well worth attentive looking at, but still requiring some care while doing so, for it is of a very *mixed* character. It is yet a desideratum, a *bonâ fide* collection of Chinese art, if it be only of ceramic art. It would do much, and be most instructive, and might even with some raise a doubt in the mind as to how far the Chinaman is to be "improved" artistically by European or Western, to adopt that expressive word, teaching and art influences. Surely there is a special value in each such individualised nationality in art and in its architecture as in anything else. The architecture and the buildings of China, so peculiar to it, must needs suit it, and the "ornament" on them expresses the peculiar artistic thoughts and feelings of the Celestial Empire people. It is all emphatically and peculiarly Chinese. Would it not be a loss to the world, we may ask, to lose this art of the Chinese in a foreign and but ill-understood and unfelt art? Is there not, then, in the future some better plan of affording help to the Chinese than that of Westernising them, and, in a measure compelling them to do things in a way foreign to what they can, and do, do so well as it is for themselves? As far as utility and "form" go, this becomes the more certain the further and deeper we look into matters Chinese.

And here, indeed, it is that we may well go to them, as indeed we do, rather than they come to us for instruction. It is impossible to even glance at a genuine Chinese *coloured* object, be it what it may, without perceiving at a glance the power of the Chinese mind over the arrangement, and selection, and harmonising of colours. It seems *instinctive* this faculty for colour, in them, as in most of the Eastern races of men. Has the almost constant sunlight anything to do with it, or is the great luminary here an actual workman? It matters but little what the object is, or what the size of it, or what the material, or what the tone of the colours. All blends together, and harmonises. However bright and purely primitive they may be, there is no vulgarity—a not little expressive word here,—no mere daubing of red and yellow. The tones and judicious quantities of the coloured glass of the middle ages seem to be in process of actual working out, and a fan or a coloured lantern may display all the colours of the rainbow, without it being possible for even the most fastidious to charge their workmanship, either with roughness, vulgarity, or coarseness. It is wonderful to note how the brightest of colours may be made to harmonise and blend together, and in the Chinese dresses and costume generally may be seen really marvels of colour combinations, hardly to be found elsewhere. Indeed, these things struck the minds of the great Venetian travellers themselves, used, as they must have been, to marvels in the way of coloured costume and things full of colour. And be it observed, that this fine colour instinct finds opportunities for display on all hands, and everywhere, and not in painting only. Here, as we know, the word hardly applies in an artistic sense, except when applied to actual picture-painting, while in old Venice and in modern Nankin it must have applied, and must now apply, to actualities, and the open street shows. We might go on and say a good deal even as evidence goes, on the gold and silver tinsel work of China, embroidery, filagree work, metal-chasing, glass-blowing, and ivory carving, in which really marvellous feats of art-workmanship are accomplished, but we must take other opportunities.

Much more indeed might be said on all hands here, for it must not be thought that the curiosity of the outer world has as yet done more than penetrated the superficial crust of this vast empire, for every now and then there is flashed to us some fresh marvel from Cathay. We seem to be able not only to penetrate there farther and farther into remote spots of the earth's surface, but into that of time itself, for things that are here looked on as quite recent and purely of Western and civilised invention and discovery, are found in China to be as old as the very hills themselves. All sorts of inventions, we are told, and discoveries too, claimed to-day as the inventions and discoveries of our own race in Europe and America, were indeed made in Cathay forty long centuries ago! They may not be of quite so dreamy and marvellous a character as those sought for by Marco Polo, and his Venetians, but they are in reality quite as wonderful. There are indeed vast problems to be solved in this oldest empire of the world with its third of population of the world to fill it, to keep it, and to delve it. It is a marvellous place every way, and it does seem a pity that some such "expedition" for discovery has not been inaugurated, either here or elsewhere, as has been done for the ice-bound Polar regions. One day this may be, and when it is, we would hope that the objects of it will be scientific, and *artistic*, as well as "trading";—not the bringing home here specimens of "wares and fabrics," bearing likeness to what we ourselves have; but of things purely Chinese, and of Chinese invention and growth. What do they, the men of the Chinese Empire do, *of* themselves, and *for* themselves? It is well worth action as well as thought, and he must be dead indeed to all intelligent curiosity who could pass without wonder from one to another of their "hundred" cities, all filled with their multitudinous and motley crowds!

SIR RICHARD WALLACE'S TOWN STABLES.

THESE stables, the fitting up of which has just been completed by Messrs. Musgrave & Co., of Belfast, are situated at the rear of Hertford House, Manchester-square.

The principal entrance opens on a range of loose boxes, at right angles to which on the left runs a long row of open stalls. The stables are spacious, and the colour throughout is harmonious, which arises in great measure from the use of Indian teak for the whole of the woodwork. This wood is found to be the best adapted to resist the kicking of horses, being, in fact, suggested for that purpose by its employment in H.M.'s dockyards for "backing" the armour-plates of men-of-war. It has also the minor advantage of being a rich walnut colour, which, taken in conjunction with the chocolate-coloured ironwork of the stables and the china slabs of glazed turquoise colour lining the head walls, gives a feeling of warmth and comfort, and good taste, which is very satisfactory.

In the fittings, wrought iron is used for every

piart liable to be broken, and cast iron for mouldngs and cappings.

Each loose-box measures 12 ft. long by 10 ft 6 in. broad, inclosed by wrought-iron railings and solid teak panelling, the end of each box towards the gangway having a deep iron railing, which enables visitors to have a good view of the interior of the boxes.

The doors are a combination of iron and teak wood framed up together, with hinges constructed to enable the door when open to fold back against the division, giving all the advantages of a sliding door without its disadvantages.

The latch consists of a flush-bar without spring or other complication, which the attendant can open either from the inside or outside of the box, but it is safe against the most tricky horse. The open stalls have divisions formed with teak, combined with iron vertical railing to match the loose-boxes, but with the addition of a sliding night-bar to every stall, to be pulled across the gangway each night and fastened in the opposite wall, for the purpose of confining each horse to his own stall in the event of his breaking loose.

Although the whole of the upper part of these stall divisions appears to be open railing, a closer inspection shows that this is not the case. A few feet at the head of the stall are filled in with plate iron between the bars, so as to prevent any horse seeing another while feeding, — an important provision.

The form of mangers adopted seems to be taken from the stone mangers which are sometimes seen in old Continental stables, and which consist of a block of stone extending across the end of the stall, with the feeding-troughs chiselled out of the upper surface, and the front rounded off for the safety of the horse. These new mangers are similar to this in external form, but differ materially in other respects, being fitted with a patent flush hay-rack and enamelled tipping troughs, for mashes and for water, the waste from which passes into the hollow chamber below, and is carried off to cleanse the surface drains.

The troughs lie flush with the top-plate, and are so arranged that a horse cannot by any possibility move them, while the attendant can tip them over or remove them entirely with ease. The water supply is laid on by means of a tap specially made for the purpose.

A thing worth noting is that the most confirmed crib-biter cannot lay hold of any part of this manger. Sharp projecting rims are avoided both in the rack and in the troughs, and yet the horse cannot toss out his food.

The tyings are partly chain, to guard against the horse chewing them, and partly leather, which runs noiselessly through vitrified bushings. There is no weight on the horse when at rest, and in case of an accident he can be let free by the turn of a screw.

The floor is laid with adamantine clinkers, and drained by patent iron gutters and stench-traps, which are cleansed every time the water-pot is emptied. The whole of the iron-work is finished in good style, and not without proper regard being paid to architectural effect. The walls of the harness-room are covered with polished mahogany cases. They are fitted up with Musgrave's patent harness and saddle brackets mounted on blue cloth, with cedar-wood cappings, which do not favour moths. In the centre of the room stands a polished pitch-pine table, with massive mahogany top, the lower part fitted with drawers for horse-clothing and cupboards. The work was carried out under the personal supervision of Sir Richard and his architect, Mr. Ambler. Mr. Hales was the clerk of works.

HEREFORD FREE LIBRARY AND MUSEUM.

THE Hereford Free Library owes its origin to Mr. Rankin, who, with great munificence, has founded the institution, practically at his own cost. He it was who bought the site, which alone cost something like 2,000*l.*; and it is at his sole cost that the library and museum buildings are carried out. The only part of the edifice, as it now is, that is not given by him is the basement-story in the main block fronting to Broad-street, the cost of which is borne by the Town Council. Having purchased the site, the donor's intention was, originally, to lay out only some 3,000*l.* in the erection of the building. But, determined while about it to make the fabric really worthy of the city and of the prominent situation it was to occupy, he subsequently increased his gift by another 1,000*l.* (making 6,000*l.* in all), the Town Council contributing then another 1,000*l.* for the inclusion in the plan of two shops in the basement,—adding by one story to the height of the main building, and so giving it a more imposing appearance than it would otherwise have had.

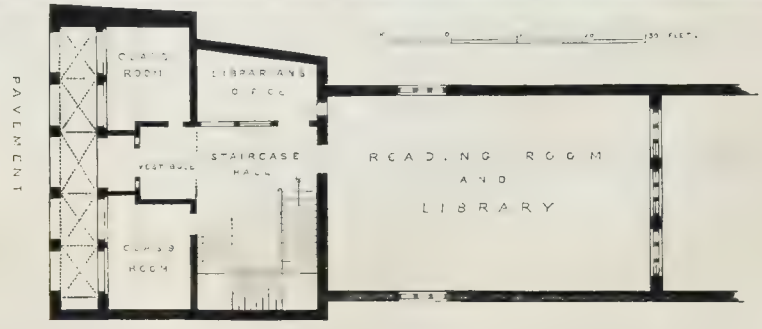
Mr. Rankin's proposal first reached the public ear in the early part of 1871. At that time, however, it was of a different nature; at least, it was not of so comprehensive a character as it subsequently became, nor was it known at that time, except to a few, who the intending benefactor was. All the public knew was that a county gentleman had expressed his willingness to provide a building to be devoted to the purposess of a museum, in which local antiquities might be accumulated and preserved. The only condition that attached to the proposal was that the museum so established should be maintained thereafter by the citizens. The subject was warmly taken up by the local press, and the *Hereford Journal*, in a leader on the 21st of January, 1871, expressed the assurance not only that the citizens would not grudge the comparatively small cost they would incur by the acceptance of the proposal of their then unknown friend, but that they would add to it a sufficient sum to enable them to enlarge the scope of the project, and to have a free library as well. By-and-by it came to be known that it was from Mr. Rankin that the offer emanated of a museum for the city. The matter came before the Town Council for the first time on the 7th of February, 1871, when Alderman (then Councillor) Symonds gave a succinct history of the circumstances which had led to the offer being made. Resolutions were passed by the Council heartily thanking Mr. Rankin for his generous offer, and pledging themselves to render every assistance in carrying through a work in which their constituents were so largely interested. A committee composed of representatives of the Town Council and the Woolhope Club was appointed to arrange as to the maturing of the scheme, and to report to the Council the result of their deliberations. This committee went to work without delay, and at the May meeting of the Council reported that Mr. Rankin had submitted to them the following as the objects of the institution he proposed to found:—1. To provide a Free Library for the people of Hereford, to be open at all hours during which it was likely to be used; the same to be provided with books of an instructive as well as of an amusing character. 2. To provide a museum where objects of natural history and scientific interest, arranged in systematic order, might be preserved, with a view to popular instruction; and wherein, also, scientific meetings might be held and lectures on literary and scientific subjects delivered.

It was resolved that a rate of one penny in the pound should be made by the Council from the time whence such premises were opened; and, finally, that a committee of management be appointed to direct the operations of the new institution. These recommendations were severally complied with. A committee, composed of members of the Town Council and other citizens and residents in the neighbourhood, conspicuous for their zeal in the cause of education and of art and science (of whom Mr. Rankin was one), was appointed to carry out the details in connexion with the preparation and opening of the temporary library and museum, and speedily there was something to show for their work.

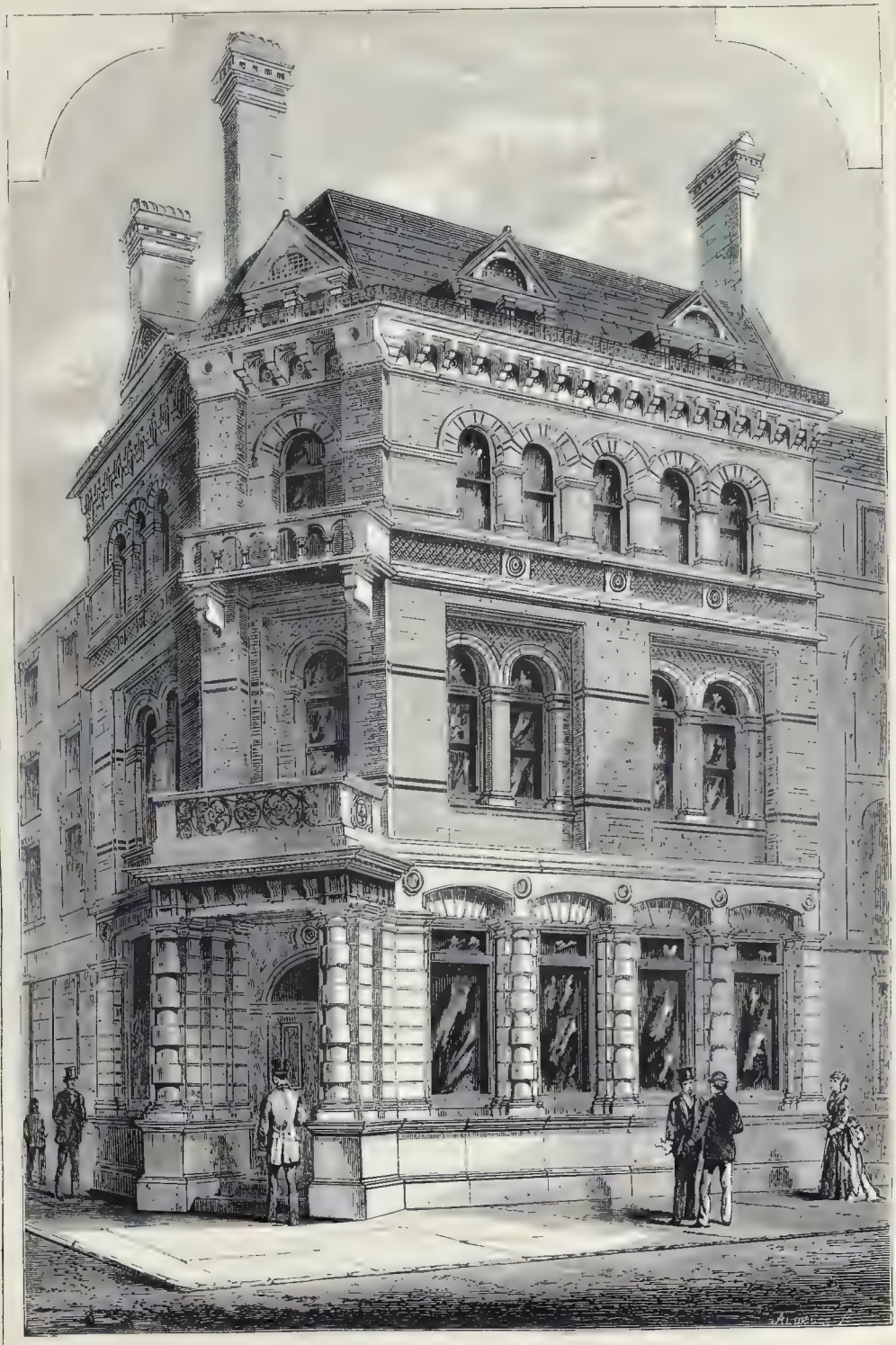
Mr. Rankin's action in connexion with the arrangement of the details involved in the carrying of his proposal into effect has been of a piece with his liberality in the gift itself. He has shown the most unselfish generosity throughout. Having agreed to provide the necessary funds for the erection of the institution which he desired so heartily to see established in the county town, he has been content to leave it to the citizens themselves to carry out the details. He has left their hands absolutely free. They might adopt any style of architecture they pleased; they might ornament it or not as they chose. They should select the architect and the contractor, and they should put up without a single reservation or objection from him, whatever building their fancy might lead them to prefer. All he stipulated for was, that it should be suitable to the purpose for which it was designed, and that it should be so administered as to be an institution of real value for the inhabitants of the city. Nor is it likely to fail in its purpose.

Having given now an outline of the history of the institution, we pass on to give a description of the building itself. An arcade of five arches occupies the entire ground-floor frontage of the building. The centre archway leads to a lobby entrance and staircase-hall, off which, on the ground-floor, are the reading-room and librarian's offices, and on the first-floor the museum and Woolhope Club-room. The two rooms on the ground-floor fronting the street are for the present to be let as shops, but they are designed for use as class-rooms in connexion with the institution. The reading-room and library occupy a large building at the back of the main block fronting Broad-street, and separated from it by the staircase-hall, the size of each room on plan being about 50 ft. by 30 ft. The reading-room is lighted by five large traceried and transomed windows. The museum is lighted from the ceiling; the light entering through the glass slates on the roof is transmitted and subdued by passing through a ground-glass panelled ceiling in the room. On the first-floor the frontage to the street is altogether taken up by a room 44 ft. long and 20 ft. wide, for the use of the members of the Woolhope Naturalist Field Club. The second and third floors of the block of building facing Broad-street are occupied by the librarian's apartments, one floor being arranged as a flat, with kitchen, scullery, sitting-room, store-room, &c., and the floor over is divided into bedrooms. The building generally is built of brick and stone, the front being entirely of stone, selected of different colours. The walling is a blueish grey stone; dressings generally a light brown Campden stone; the four columns on the ground-floor are of Radyr stone. The architect is Mr. Frederick Kempson, and the architecture throughout may be described as Anglicised Venetian Gothic. The carving is of early conventional character, and has been carefully and artistically executed by Mr. Robert Clarke and his brother. Animal life has been introduced freely and with effect. The band of carving under the Woolhope Club-room windows contains the signs of the zodiac, with their symbols. Immediately over the four piers which carry the arcade are four circular medallions, in two of which are introduced the arms of the city and Mr. Rankin's arms; in the other two are heads representing Science and Art. Most of the leading contractors of the city submitted tenders for the execution of the work; Mr. James Bowers's tender (being the lowest) was accepted. The capitals of the four great pillars which carry the building represent Europe, Asia, Africa, and America, and depict the squirrels of Europe, the monkeys of Asia, the crocodiles and waterfowl of Africa, and the cockatoos, toucan, and opossum of America. Above those we have a string-course, formed of the ancient signs of the zodiac and their modern interpretations, interwoven with the perennial foliage of the months which they govern. The next string-course symbolises birds and animals of the chase, which form no inconsiderable portion of the contents of a museum,—owls, a wild cat and bird, a fox, a dog and rabbit, &c., thus showing the hunting propensity in birds and beasts, as well as in man. The heads at the end of the second string-course,—those of a seal and a lion,—possibly have reference to Lord Saye and *Seale* (old spelling) and the corporation of Hereford, whose crest is the lion—thus representing ecclesiastical and municipal government. The third string-course is supported by the heads of a bull and a goat—the former being the crest of a gentleman who has taken a leading part in the management, Dr. Bull (playfully surrounded here by mushrooms, in allusion to his fungus-forays), the latter being the crest of the architect, Mr. Kempson. The elephant and the four-tusked babaroosa on the top course probably suggest the patient plodding and the laborious work which are the conditions of reaching a high position in knowledge. To complete our notice of the carving, we should add that the amphibious animals represented in the niches of the great entrance doorway are the water-shrew, the mullagong (Australia), the beaver, the walrus, the hippopotamus, the sea-elephant, the rhinoceros, the tapir, the otter, the sea-leopard, and the water-rat,—all of which follow in the order in which they are mentioned. The inner niches of the doorway contain carvings of reptiles, birds, and beetles. Of the terminations to the labial mouldings, two are foliated, while the others bear respectively the figures of a crab and a bat. Grotesque animals have been introduced upon the parapet to break the long level skyline. The carving was executed by Mr. Robert Clarke and his brother.





HEREFORD FREE LIBRARY AND MUSEUM.—Mr. F. Kempson, Architect.



CENTRAL BANK OF LONDON: BRANCH BANK, STAMFORD STREET, BLACKFRIARS ROAD

MESSRS. EDWIN NASH & W. HILTON NASH, ARCHITECTS.

CENTRAL BANK OF LONDON BRANCH BANK.

THE building, of which we give a view, and now in progress at the corner of Stamford-street and Blackfriars-road, is for a Branch of the Central Bank of London, of 52, Cornhill. It is chiefly in Portland stone and Farcham red brick, and will make a thorough change in the aspect of that spot, which had a kind of grim notoriety from the black-looking and neglected "haunted" house which stood there until recently. The new building contains in the basement an especially strong fire-proof and thief-proof room; on the ground-floor the banking department; and in the upper stories the residence of the manager. The architects are Messrs. Edwin Nash & W. Hilton Nash, and the contractors are Messrs. Rider & Son, at the sum of about 5,000*l*.

ON PUBLIC ABATTOIRS.*

I HAD not given the question of abattoir machinery much consideration before it became evident that the success of the whole establishment depended in a great measure on its proper and efficient application. In the first place, it was necessary to take into account the low order of intelligence possessed by the men who would have to use the machinery (this remark applies only to the slaughterers and not to the master butchers), from what I had seen of these men I concluded that the machinery must be of the simplest form, so as to involve no brain exercise or any mental effort whatever. In the second place, it seemed desirable to reduce manual labour to the minimum; and lastly, it appeared to me to be a *sine qua non* that meat intended for human food should receive as little handling as possible after being dressed, and on no account should it be transferred from the pendent position to the dirty and greasy backs and shoulders of the slaughterers. These being the main points constituting the desiderata of the question, it fell to the lot of Mr. John Meiklejohn, of Dalkeith, to devise a plan by which their realisation might be achieved. Following up the dressing of the carcass, the first thing to be done after the bleeding operation before alluded to, is to raise the carcass from the floor, so that the hide can be easily removed and other little matters attended to, such as decapitation; and at this point the machinery comes in to the assistance of the butcher; this machinery is simply a small hoist travelling overhead, moveable at the will and pleasure of the operator in the slaughter-house. The construction of the railroad is also simple; a girder is fixed transversely in the slaughter-house, with brackets cast to the bottom flange; these brackets support the rails upon which the hoist runs, and are deep enough to admit of the hoist running under the supporting beam. By this method all uprights or columns are avoided in the slaughter-house, thus leaving the whole floor area available. In the wholesale department these rail beams are carried from the slaughter-house across the roadway, and trasverse the carcass market transversely, thus enabling the butcher to run the carcasses from the extreme end of his slaughter-house to the street side of the market. As this little travelling hoist is the medium by which the whole work is achieved from the death of the beast to the moment when the carcass leaves the market as an article of commerce, it will be well to adhere nearly to the description given by its inventor in the "Blue Book." This hoist is mounted on grooved wheels, and is moved on the rails by a shaft or handle depending to the level of the hand, or is propelled by means of traction on the four wheels which are made to revolve by a grooved pulley fixed to the axle and driven from the hand by an endless chain. The rest of the machinery fitted to the framework consists of grooved driving pulley wheels and pinions giving a double power, chain barrel, chains, and pulleys. The larger pulley is driven from the hand by a rope, which pulley runs loose upon the spindle, trnsmitting its power by a small pinion fixed to a larger pulley and to wheel fixed to its spindle. The power is conveyed back to original spindle by a different wheel and pinion; on this spindle the chain barrel is fixed; the barrel is rigged with two chains, the end of one hanging down at one side of the hoist, and the end of the other chain at the other side of the hoist; while one chain is ascending the other is descending, so that while the end of one chain is at the top the end of the other will be at the bottom; one of the chains serves for hanging and taking carcasses off the hooks or loops on one rail, and the other chain for hanging and taking carcasses off the loops on the other rail. The two chains, besides being required for working right and left, save time in reversing, as there will always be one chain available and ready to hoist or lower a carcass as the case may be. The carcass being ready for lifting from the floor of slaughter-house, there is inserted in each hough, along with the cross-tree or way, a double-horned hook, and the chain being attached to the hook in the centre of the cross-tree, the whole can be partially raised by the hoist and checked at any point by a ratchet; and as the carcass is gradually raised up, can be skinned and disembowelled. The rail beams above are furnished with jointed swivel hooks or loops. These hooks or loops are attached to rail beams at distances apart corresponding to the length of the "tree," and when the carcass is raised up, the double hooks inserted in houghs along with the "tree" come immediately under two of the loops on the beams, and each double hook is hooked by one of these loops. When the hoist is lowered away, the whole carcass is transferred to the loops and to the double-horned hooks, and the cross-tree or way comes out of the houghs and frees the hoist, which is then available for raising another carcass. This is left hanging to the rail beam by a hook in each hough; here it is dressed and finished, and as soon as finished it is divided down the back, leaving a half hanging on each swivel, hook or loop, where it is ready for the market. To carry the half carcass into the market, it has to be transferred to the hoist, which is done by linking the chain of the hoist into the unoccupied horn of the double horn hook. When the hoisting takes place, the carcass is drawn up, followed by the jointed loop on which it has been hanging, and as soon as the chain has come to the perpendicular, the jointed loop falls out, leaving the weight of the carcass hanging to the hoist, with a ratchet holding it. The carcass is then ready to be moved along the rails to the market, which is done by means of the handle before described, or by the traction on the two fore wheels, which are made to revolve by a grooved pulley fixed to the axle and driven from the hand by an endless chain, all as before described. Upon arrival in the market, the butcher stops his hoist and the carcass opposite the hook or loop on which he wishes it hung; he is furnished with a rod with a hook at its end with which he lifts up the jointed hook or loop hanging from underside of rail beam as shown; the hook or loop when lifted up comes to a nearly horizontal position, and far enough out to catch the unoccupied horn of the double-horned hook on which the half carcass is hanging; when the hoist is lowered away the hook or loop grips, and as the lowering is continued the weight is transferred to the jointed loop which comes to the perpendicular, and the chain of hoist drops out leaving the half carcass hanging to the beam. The picking off for the purpose of loading in the cart of the purchaser is just the reverse of the hanging process, and to the same movement as that described in taking the carcass off the jointed swivel loop in the abattoir. The machinery just described applies also to the retail abattoirs, the only difference being that the carcasses are loaded at the door of slaughter-house and taken away for sale at the private shop or shamble of the butcher. The sheep and pig carcasses are hung in the market at a lower level than those of the beasts. A projecting corbel is cast on to the face of the columns, supporting the overhead hoistway; this corbel supports a small rail supplied with hooks sliding horizontally on its section. The demand for hanging space for these carcasses since the opening of the market has been so great that additional rails have been provided, held by suspending rods.

If I have succeeded in explaining and describing clearly the operation of Mr. Micklejohn's machinery, it will be seen that both the apparatus and the *modus operandi* are of the simplest nature, and, as the result has proved, highly successful, and worked with perfect ease and the utmost celerity. All I desired as part of my abattoir scheme has been realised. To sum up the advantages gained by the machinery and appliances above described:—A considerable amount of manual labour is saved; after the dead carcass once gets on the hoist, it never leaves the hanging apparatus overhead till the moment it drops into the cart which removes it from the establishment; also from whatever part of the market a carcass is purchased, this machinery enables the seller to detach it from the others and deposit it in the cart of the buyer without in any way disturbing the other carcasses hanging on the beam; and lastly, the handling of meat is reduced to a minimum, a fact which I think of great importance; and in all future abattoirs, constructed on scientific principles, I would recommend this as a desideratum always to be sought after and secured. From experience during the last two years, I am inclined to believe that it would be a matter of considerable difficulty to devise an apparatus superior to the above in its working qualities, which entirely supersedes such plans as the central crane and semi-circular hanging beam, in operation at Edinburgh, and the ingenious but impracticable hydraulic lifting power in use at the Bradford abattoir.

Having detained you quite long enough, I will draw this paper to an end as quickly as possible. It will naturally occur to any one interested in this subject that the drainage of so large an establishment as the Manchester abattoir is a matter of considerable importance. I will briefly describe the plan I adopted, and which I believe to be sound in principle. In an establishment of this kind there is an unavoidable accumulation of filth; and the main point to be observed in carrying out a system of drainage, is to prevent the admission of solid matter into the drains, which would have a tendency to choke them up, and cause useless trouble. I therefore determined that in this abattoir there should not be any openings into the drains, either in the slaughter-houses or cattle lairs; the floors are laid with an inclination from the walls, and a general fall towards the doorways into streets. During the process of slaughtering, all liquid matter finds its way out; and when the floors are cleaned by means of hose-pipes attached to a water-cock in connexion with the city water supply, the cleaners sweep all out at the doors. In the roadways close to the outside walls stone channels are laid the whole length of the elevations of the various blocks of buildings; these channels are provided at certain intervals with a special form of eyes or grids; the grids are hinged to fall back against the walls, and on being opened reveal a cast-iron box or chamber, with a flange all round the top edge, which rests on a rebate cast on the outer shell; this box is movable, and is perforated through the bottom and sides; under the movable box is another chamber opening direct into the trap, which is cast to the outer shell of framework. Nothing of any consequence in the shape of solid matter can get into the trap, but the liquid portion passes away purely. The scavengers of the Corporation attend to the movable boxes at regular seasons, and the contents are carried away to the manure depôt, under the control of the Health Department of the Corporation. The streets in the abattoir are drained and paved in the usual way, the surface and roof water going direct into the drains coming from various parts of the establishment. The grids, boxes, and traps were cast by Messrs. Bunnett & Co. to special pattern, and, in connexion with the plan of drainage, have answered their purposes thoroughly, and I should be inclined to recommend the system of drainage adopted in this abattoir, to those who may have similar works to carry out. The liquid manure is disposed of by the drains, and the solid manure from the live animals is deposited in a temporary pit, which is emptied at certain intervals by the servants of the Corporation. The blood, as before stated, is carefully preserved, collected during the process of killing, and taken to a large stove, where it is manipulated by a company on the premises, but not under Corporation control. After passing through a process in the storing-room, the blood is placed in shallow tin vessels furnished with a tap at one corner. After a time the drawing-off commences, whereby the albumen is extracted; the matter drawn off is an important and valuable ingredient in producing the famous aniline dyes. After the drawing-off is completed, the residue is a peculiar pink-coloured matter of the consistency of jelly, which can be divided by a knife. By a process recently discovered this jelly is converted into a valuable manure. When the carcass is being dressed, a certain portion of the interior is cut away and sold by the butchers as unfit for human food until it has passed through a manufacturing process; this matter is termed the offal, and consists principally of the stomachs and intestines. The stomachs after a process of manipulation become an article of trade known

* By Mr. Darbyshire. Read at the Institute of Architects. See p. 113, *ante*.

as tripe. At the Edinburgh abattoir the tripe is dressed on the premises, but the Market's Committee at the Manchester Corporation deemed it advisable that the whole of the offal should be removed from the site to the private establishment of the tripe dressers. The intestines, large and small, are taken to the gut-emptying room and then sent away, the large gut or intestine going principally to Germany to form cases for a well-known kind of sausage. The stomachs and intestines of pigs are all used for human food.

There are a few construction features in the Manchester abattoir perhaps mostly of a passing notice. The buildings are of red bricks, with Yorkstone stone used where absolutely necessary. The internal walls of the slaugher-houses are lined to a height of 5 ft. with white glazed enamelled bricks; blood stains or any discolouration on these bricks are easily removed by washing, no filth can accumulate on the surface, and a neat and clean appearance is the result. The Carcass Market also has a dado of the same bricks, with a band of cream-coloured bricks as the top course. The floor of the market is somewhat peculiar in its construction, and had to be specially prepared to withstand heavy weights from carts and trucks passing over. The entire floor area was first laid with good common bricks on edge, set on a firm bottom, and each brick having a space round it about ½ in. in width; boiled bitumen or asphalte was poured over all until the interstices were filled up, and several coats of the same material were laid on the surface, the finishing coat was mixed with Spanish sand, and carefully manipulated, until the bitumen was completely covered. The roadway in the centre of the market was formed in the usual convex section, the water channels at each side being formed by a slight concave sinking of the groundwork of bricks. By this method a jointless floor was secured, which can be cleaned with the greatest ease; and hitherto it has resisted all wear and tear, and remains as sound as when it was first laid. A variation of the method above described was used at the Bradford Abattoir, and, I believe, has since been patented by the inventor, Mr. Atkins, of Liverpool. Considerable difficulty was experienced in selecting a flooring for the slaughter-houses, owing to the chemical action they would be subjected to during the process of slaughtering, and after a lengthy investigation into various kinds of asphalte and concrete, it was determined to adopt Yorkshire flags. It would be very desirable that some material should be used for the floors of abattoirs, which would dispense with joints; the joints are liable to wear and become filled up with the dirt arising from slaughtering, and much trouble is entailed in efforts to keep the floors clean. The ventilation in this abattoir is regulated throughout with wood louvres; and by a simple device of attaching the nosing of each louvre blade to a continuous flat iron bar, the whole window can be regulated at pleasure. The establishment is supplied by the Corporation with water and gas under the usual municipal regulations; each slaughter-house being supplied with a stop-cock, to which a hose can be attached for the purpose of thoroughly cleaning the apartment. The total cost of the Manchester abattoir, exclusive of street paving and retaining boundary wall next the river Medlock, has been a little over 30,000*l*. This sum includes gas and water mains, gas fittings, street lamps, and also various fittings for the butchers, in addition to the mechanical appliances.

Having touched upon the main features of interest in the Manchester abattoir, it now only remains to be stated that the establishment has been in full working order for the last two years; and it is a source of satisfaction and pleasure to be enabled to state that it has fully answered the expectations of those interested. The slaughter-houses are let at a moderate rental to the butchers, and a few yet remain empty. The Market has proved a great boon to the trade, and so large number of carcasses are brought for sale, in addition to these produced on the premises, that it is feared the building will shortly want extending. Prior to the erection of this abattoir, the carcass trade was confined to a few hands; since the new market was opened, the number of carcass-butchers has been considerably increased, and an extensive and profitable trade has been developed.

I am informed by Mr. John Page, the Superintendent of the Manchester Markets, that during the month ending December 24th, 1874, there were 1,555 beasts, and 7,611 sheep and calves slaughtered at this abattoir; being 288 beasts, 1,507 sheep, and 44 calves in excess of those slaughtered during the same month in the previous year. These figures, I think, are satisfactory, as indicating an increasing appreciation of the usefulness of the abattoir I had the honour of carrying out for the Corportion of Manchester.

THE "A 1" MORTAR MILLS.

THIS is the name which Mr. F. W. Jackson, of Albert Works, Borough, gives to his new design of mills for steam, horse, and hand power. It is to the steam-power mill that we would specially direct attention, there being many improvements in it over the old mills. In the "A 1" mill two curved brackets cast of a T-section with large bases, do duty for the hitherto ungainly looking crosshead side frames and strut, a cast-iron turned and bored bush being fitted between these brackets in their centre, which are held together by four ¾-in. bolts fitted with nuts and lock nuts. These brackets are provided with slot bolts to permit the rise and fall of the rollers, and also with another slot through which the lay-shaft runs, and owing to their peculiar formation and having fewer joints they are more rigid and easily connected and disconnected than the ordinary mills. The upright shaft is of cast iron with a hole cored through the centre of it, at its bottom end is cast a cap on which the boss of the crown wheel rests: this shaft is turned at its top and bottom ends, and is keyed to the crown wheel which is bored to fit it. The crown wheel in its turn is bolted by six ¾-in. bolts with countersunk heads to the pan. The vertical shaft has a wrought-iron steel-faced toe fitted into its lower end, and prevented from turning round by means of a steel slug. This toe works in a toe box of cast iron. Another improvement is the use of wrought iron for the cross arms, which when made of cast iron are very liable to fracture. These cross arms are held by a single stout bolt on to the centre eye of cast iron, and in taking out the rollers, or replacing the worn-out cross arms, it suffices to withdraw this bolt, and the rollers or cross arms can be at once removed. The demand for these mills is, we hear, fast increasing, and they are now at work at the New Government and Duke of Sutherland's Works at Guildford and Brora, and many of the large works throughout the country.

THE COMMON RIGHT TO LIGHT AND AIR, AND DEFENCE FROM NOISE.

THE question of the right of one person to obstruct light and air from another person's premises has again been made the subject of a legal decision, in the case of Baxter *v.* Bower, heard last week in the court of equity, before Vice-Chancellor Bacon. This was a bill by the trustees of an independent chapel, Burlington-street, Liverpool, against the owner of a boiler-making works, situated on the south side of the chapel, and separated from it only by a narrow lane. The chapel was built in 1840, and in 1870 the defendants built, on what was then an open yard, a shed in which they had since been carrying on their business. Besides the obstruction of light and air, the complainants complained of disturbance by the noise of the work. The rights of the case will be understood by an abstract of the Vice-Chancellor's judgment:—

The Vice-Chancellor said, that the plaintiffs were entitled to relief on both points. The most serious opposition which had been made to the injunction as to light and air was the time which had elapsed since the obstruction was first erected and the filing of the bill. No doubt where a person slept on his rights, made no complaint, and did nothing to make the defendants think that he had any objection to what was being done, the Court would be slow to interfere. But in this case there was no ground whatever for that complaint, because on the 26th of June, 1871, the defendants' solicitor wrote to the plaintiffs' solicitor a letter in which no express mention was made of light and air, the defendants saying they would "take every precaution not to make any noise during the hours of service;" but they added, "We have also to express our assent to the effect that should it (*i. e.*, the working) at any future time become a nuisance and compel the trustees to take any proceedings, we are willing to assume that they are not damaged in their rights by delay." So that it could not be said that the question of light and air was not before the defendants at that time. As to the rest, the evidence was uncontradicted; it was impossible to say that the plaintiffs' light was not in some degree obscured. Then it was said that, because damages were prayed for, the proper remedy of the plaintiffs was at law. But here there was no case whatever for damages, the question being wholly whether an injunction ought to be granted or not. It was shown that no use could be made of the chapel for secular or other purposes owing to the intolerable noise during the hours of work, which were often continued far into the night, sometimes all night long. The plaintiffs were entitled to an injunction to restrain the defendants from permitting so much of the shed erected by them to remain as would intercept or obstruct the free and uninterrupted passage of light and air to the plaintiffs' premises, and from allowing to be made, or continuing, any noise substantially interfering with the due carrying on of religious services and ceremonies, and the due holding of meetings and day and Sunday schools; and the defendants must pay the costs.

DEPOSIT OF PLANS OF NEW BUILDINGS IN OFFICE OF SURVEYOR UNDER THE LOCAL GOVERNMENT ACT, 1858.

BY the Local Government Act, 1858 (21 & 22 Vict., c. 98, s. 34), a local board is empowered to make bye-laws as to the erection of new buildings, and as to giving of notices and deposit of plans by persons intending to construct buildings. The Local Board of South Shields made a bye-law to the effect that every person who shall intend to erect any new building shall give fourteen days' notice to the local Board of such intention, by writing, delivered to their surveyor, or left at his office, together with detailed plans, in accordance with the terms specified in the bye-law. A certain Nixon had begun building a house without having given the notice, &c., and was summoned by the surveyor for the offence; but the justices refused to convict, holding the bye-law *ultra vires*. Against this decision the plaintiff appealed, and the case came before the Court of Queen's Bench on January 20th, when the Justices, — Mellor, Lush, and Quain,—held that the bye-law was within the powers given by section 34 of the Local Government Act, and was reasonable.

THE HASTINGS TOWN HALL.

ANOTHER step, in retracement of the false position taken by the Hastings Council in November, was decided upon last week. Mr. Councillor Hill (Fowler & Hill, architects) brought up a report from the Building Committee, who had revised the "Instructions to Architects." The alterations now made, he explained, were that the large hall should have dimensions of 100 ft. long by 55 ft. wide, and that some of the committee-rooms should be struck out. The payment for the premiums is now to be absolute, independent of the commission, should the author of a premiated design be engaged to superintend the erection, but nothing will be allowed for travelling expenses. As mentioned in this journal a month ago, the total cost allowed for the building will be 20,000*l*.; of which 2,000*l*. are supposed to pay the cost of providing a good foundation, the under soil being a bog. The committee recommended that the "Instructions" should be reprinted, and sent only to those who had joined in the former competition; and that the new designs should be received up to the 22nd of April. This was unanimously assented to.

At the same meeting, it was agreed to apply to the Lords of the Treasury for permission to lease the site of the intended Aquarium and Public Baths to the Limited Liability Company, which has been formed, for a term of 500 years.

KENDAL.

AMONGST the latest improvements here must be mentioned the Tower Buildings, in Stramongate, which have just been erected by Mr. James Thompson, of Castle Meadows.

The Buildings comprise five excellent shops and dwelling-houses, the whole being four stories in height, and are in the Italian style of architecture. The centre shop projects from the rest, is more enriched in its details, and has a handsome balcony. The following is a list of the contractors for the new buildings:—

Walling and Masonry.—Messrs. E. Hutton & Son, Kendal.

Carpenters and Joiners' Work.—Messrs. Holliday & Scott, Kendal.

Slating.—Mr. Henry Goulding, Kendal.

Plumbing and Smiths' Work.—Mr. William Thompson, Kendal.

Painting and Glazing.—Mr. John Beadle, Kendal.

Plastering.—Mr. John Gosling, Kendal.

Slutters.—Mr. John Stones, Ulverston.

Cast-iron Work.—Messrs. Macfarlane & Co., Glasgow.

Floor Tiling.—Messrs. Craven & Dunnill, Salop.

The architect was Mr. Stephen Shaw; and under his superintendence the work has been carried out at a total cost of about 4,800*l*., exclusive of the site.

GIFT TOWARDS AN AQUARIUM IN LIVERPOOL.

MR. WILLIAM BENNETT, formerly an alderman of Liverpool, has intimated to the mayor that he is desirous of contributing 3,000*l.* towards three special objects with the view of benefiting the inhabitants and improving the health of the town. The first is the establishing of an aquarium; the second, the disconnecting of courts and court-houses from all sewer-gas influences; and the third, the testing by trial, what further supply of water may be calculated upon by sinking large bore holes in the immediate neighbourhood. He states that the only condition he attaches to the gift towards an aquarium is that it shall be connected with and form part of the Museum and Art Gallery now open in William Brown-street, and that a suite of upper rooms suitably constructed would answer the purpose. To the second portion of the gift he attaches no other condition than that prompt action be taken. He remarks that he has his own views as regards making the court-houses into healthy and well-regulated dwellings; but as the immediate cutting off of all sewer connexion is so important for the saving of life, he should attach no conditions that might cause delay. As to the boring for water supply, he stipulates for the right of approving of the engineer employed. Mr. Bennett has for many years past uniformly contended that there never has been any necessity for going to a distance from Liverpool for water supply, urging that there is abundance of well-water within easy reach of the town, and in the offer which he makes he adheres to this theory. He says:—"I do not admit that supplies beyond those we can at present control are required for the next half-century, but to satisfy the minds of those who think differently, and for practically ascertaining, by trial, the correctness of a theory I have long and strongly entertained, I will gladly expend 1,000*l.*, or more, if I find this sum is not sufficient."

THE BUILDING TRADE IN BIRMINGHAM.

ON the 5th inst. a meeting of master builders, bricklayers, and labourers was held in the Temperance Hall, Temple-street, to select persons to represent the different [parties on the Board of Arbitration to which the dispute respecting the demand of the men for an increase of wages is to be referred. The Mayor (Alderman Chamberlain) presided. The platform was occupied by the employers, the galleries by the bricklayers, and the body of the hall by the labourers, the attendance being large.

In respect to the bricklayers' dispute the following persons were nominated:—For the masters, Messrs. Briggs, Bloore, Hardwick, Davies, Moffatt, and Surnan; for the men, Messrs. Jackson, Anthony, Hartland, Humphries, Goodenough, & Haines. In the matter of the labourers' disputes the representatives were:—For the masters, Messrs. Briggs, Bloore, Hardwick, Barker, Parton, and Garlick; for the men, Messrs. Stephens, Roberts, Leonard, Garvey, Scott, and Rafferty.

The arbitrators afterwards met, and appointed Mr. Rupert Kettle as umpire.

THE MINERAL SPRING AT NORWOOD.

THE well-known mineral spring at Biggin Hill, Norwood, has recently been closed by the Croydon Board of Health, acting in concert with Dr. Bartlett, the analytical chemist, of the South-square Laboratory, Gray's Inn. Dr. Bartlett has just explained the circumstances under which the well has for the present been closed. He states that fifteen years ago, when he first resided in the neighbourhood, the water was in such request that he had seen long lines of people waiting in rotation to obtain a draught or bottleful. At that time there was only a feeble flow of about ten gallons an hour, and, having analysed the water, and found that it contained valuable properties for sanitary purposes,—an ounce of saline matter to the gallon, one-half being Epsom salts, and the rest consisting of sulphates of lime and soda, soluble silicates, and traces of iron,—the well was repaired so as to afford a plentiful supply, and its fame grew greater than ever. He then goes on to say that since that time the "roughs" have so injured the structure as greatly to impede the flow, and that it is now mainly dependent upon surface-water running into it. He adds that he has discovered by recent analyses, several times repeated, that the whole sources of the spring are now contaminated with sewage matters, which render the water almost poisonous. That nothing can be done until proper drainage removes the influx of such pollutions, and that he is informed that it will take at least nine months before these drains can be completed. Until then he has felt compelled to take action with the Croydon Board of Health to close the spring, which had lately been highly dangerous to the public health.

GAS METERS IN PUBLIC LAMPS.

At Paddington, on October 1st, 1874, the system of attaching a meter to every twelfth lamp, and so paying for whatever gas was consumed, was carried into effect. The Vestry at the same time purchased the whole of the lamp-columns in the parish, and engaged a staff of men to light and extinguish the lamps and attend to the cleaning of the same. The system having now been in working for more than four months, Mr. G. Weston, the superintendent, has prepared a report, which Mr. Dethridge, the vestry clerk, presented to the vestry. The report stated that as regards the quantity of gas consumed, the actual amount per lamp was 5,956·51 ft. per quarter, or 310·57 ft. less than 5 ft. per hour. The economy of the new system may be seen from the fact that when the gain by the reduction of hours and that by the use of the meters, are multiplied by the whole of the lamps in the parish, there is a clear saving of 1,485,986 ft. of gas, which in value represents nearly 400*l.* These are the returns of three months ending the 31st of December last.

NEW R.C. CHURCH AT NEW SHOREHAM.

THE Romish church here, which is fast approaching completion, is dedicated to St. Peter, and is situated on a piece of ground running from Ship-street into John-street, the principal front being in John-street. It is being built by Mr. R. B. Blaker, from the design and under the superintendence of Mr. Buckler, architect, of London, and at the sole expense of the Duke of Norfolk and his mother. The style adopted is Gothic, boldly treated, and the materials] for construction are stone, for quoins, window-dressings, jambs, window-mullions, copings, lacing-courses and weatherings, the general facework being clean white land boulders, the interior brick walls being plastered. The chancel is at the east end, divided from the nave by a stone arch, on the north side of which there are a lady-chapel and vestry. The flooring will be of boards and tiles. The roof is a bold open-timber one, divided into bays, and framed together with collars, Gothic principals, &c., all of clean picked stuff, securely bolted together, and to be stained and varnished, the upper side being boarded, and covered with red tiles, with a ridge cresting. There are six windows on each side, and two large ones at the east and west ends, all with traceried heads in stone, and with stone mullions of bold design. A stone corbelled eaves-cornice runs round the exterior, and there are buttresses, with weathered courses. The entrance-doors are of bold framed work, covered with jointed boarding, with ornamental wrought-iron work. The altar, a gift, is expected to be of elaborate design. The lady-chapel is nearly square. Warming and ventilation are provided for. The building will accommodate from 400 to 500 worshippers, and is expected to be opened by April next.

FOUL AIR IN WELLS.

SIR,—Your notice of Messrs. Hayward Tyler & Co.'s machine for forcing air down foul wells reminds me of an expedient that I have found very effective,—simply pouring water down the well either from a pail or, by preference, the rose of a watering-can. Where all other modes have failed this has succeeded, and yet I have found the most experienced well-sinkers unacquainted with it.

The explanation is, that foulness of air in wells very frequently, perhaps most usually, results from the presence of carbonic acid gas, for which water has such an affinity that a few pailfuls of water reduced to spray by the rose, or by falling, will clear a well of considerable depth. WM. WILLMER POCOCK.

*** The remedy is strengthened by dissolving some lime in the water.

ARCHITECTS' AND BUILDERS' LIABILITIES.

AT the Lord Mayor's Court, on Tuesday last, before Sir Thomas Chambers, Q.C., M.P., and a common jury, the case of Bouceneau *v.* Notley was heard. Mr. Macrae Moir (the counsel for the plaintiff) said that his client was a marble merchant, and the defendant was an architect. The latter had ordered from the plaintiff four stone moulded chimney-pieces, and stated that they were to be delivered to a certain person living near Staines. The charge for the same was 13*l.* 10*s.*, and that was the sum which the plaintiff sought to recover. Mr. Moir then read several letters, which showed that the goods were not for the use of the defendant, but for a Mr. Pither, a builder, of Sunninghill, Notting. In one of them also the defendant promised payment in case Mr. Pither was not prompt in settlement. The goods were sent to Mr. Pither, but it was only acting in accordance with the instructions of the defendant. The plaintiff had nothing to do with Mr. Pither, and had not even seen him.

The plaintiff, Mr. Bouceneau, said, that he carried on business in Wormwood-street, Fitzroy-square, at which place the defendant called on the 7th of July last and selected some patterns of chimney-pieces, requesting that an estimate of them might be sent him. A clerk of the defendant's subsequently called upon the plaintiff with the tracings of the mantel, and having seen the patterns asked the plaintiff to write to Mr. Pither for an order for the chimney-pieces; but being in communication with the defendant the plaintiff refused to accede to the request of the clerk. The goods had been supplied at the defendant's order, and the witness said he knew nothing whatever of the builder. It was to the defendant that he, throughout the transaction, looked for payment. After the present action was brought, Mr. Pither had sent a cheque.

In answer to his lordship the witness said that it was a very common occurrence for an architect to give an order for articles required for a house, and to give the name of his client; but the builder was never looked to for payment. The plaintiff was in the habit of obtaining payment from the owner of the house in such cases. His lordship pointed out that from the evidence of the correspondence and the witness it appeared that Mr. Pither, the builder, required the goods in question, had received them, and was debited with them by the plaintiff, and that the defendant had merely acted as an agent in the transaction. It did not signify in the least that the plaintiff had not seen Mr. Pither. Mr. Moir urged that the defendant was the person who gave the order, and to him the plaintiff had looked for payment. After some argument between his lordship and the counsel for the plaintiff, Mr. Moir accepted a nonsuit.

RECOVERY OF CHARGE FOR QUANTITIES.

GWYTHER *v.* GAZE.

THIS case, tried at the Court of Queen's Bench, before Mr. Justice Quain, and reported in the *Times*, raised a question of considerable interest to architects and surveyors, and to those who may employ them.

In 1873 the defendant was anxious to build a warehouse, dwelling-house, and shop in Finsbury, and he instructed the late Mr. Thomas Saward, jun., an architect, to prepare plans and specifications. Mr. Saward instructed the plaintiff, a surveyor, to take out the quantities. In October, 1873, three tenders were sent in by the builder to Mr. Saward. None of the tenders were accepted. It was proved that it was usual for an architect who prepares plans to employ a surveyor to take out the quantities, and that when a tender is accepted the builder pays the surveyor for taking out the quantities, but that if no tender is accepted the building owner pays him. In the beginning of July of last year the building was proceeded with on Mr. Saward's plans, with the exception that the height of the building was one story less than as shown in the plans. The builder employed had not any contract, but was paid as the work proceeded. Mr. Saward died in July of last year. In September the plaintiff sent in his account to the defendant. The builder employed to do the work was not one of those who had tendered, and he had not seen the plaintiff's quantities. The plaintiff contended that, according to the custom, as no tender had been accepted, he was entitled to be paid by the defendant, the building owner. He claimed 158*l.* 5*s.*, being 2½ per cent. on the amount of the lowest of the tenders sent in. It was stated that this was a customary charge.

His Lordship, however, said he thought that a custom that the surveyor should be paid 2½ per cent. on the lowest tender when no tender had been accepted would be unreasonable, and that the plaintiff would be entitled, if to anything, to what the jury might think a reasonable remuneration.

Mr. Peebles and Mr. Cooke, the former Member and the latter a Fellow of the Royal Institute of British Architects, were called, and stated that they thought that 2½ per cent. on the lowest tender was in the present case a reasonable charge. They said that from 2 to 2½ per cent. on the amount of the accepted tender was the charge usually made by the quantity surveyor, and that such a charge was reasonable; that sometimes 1½ per cent. was charged, but this was done by special agreement. On this point the builder at present employed on the work was called for the defendant, and stated that 1½ per cent. was the charge invariably made for taking out the quantities for such a building as that in the present case.

The plaintiff's claim included a sum of twelve guineas which he had paid for lithographing the drawings.

The case for the defendant was that the architect in the present instance had only a limited authority, and that he was told that the defendant had engaged a builder, so that there would be no necessity to take out the quantities to enable builders to tender.

His Lordship left it to the jury to say whether the architect's authority was limited in the way stated by the defendant, and told them that, if it was not limited, the defendant was liable to pay the plaintiff a reasonable remuneration for taking out the quantities.

The jury returned a verdict for the plaintiff.

It was agreed that his Lordship should assess the damages, and he assessed them at 83*l.* 10*s.*

The basis of his Lordship's assessment would seem to have been 1½ per cent. on the actual cost of the building, as estimated in the lowest tender.

TREATMENT OF BUILDERS.

Sir,—As you are ever ready to advocate fair play, we send you the following as a specimen:—

A short time since we tendered for pulling down and rebuilding a public-house in Margate for Messrs. Cobb & Co., brewers; Mr. W. L. Sear, architect. There were three tenders, but one was too late, and it was consequently ruled out of the competition. Ours was the lowest of all, but the amount was in excess of what the employers wished to spend. We were accordingly asked to enter the lists a second time, and submit with the other firm of builders a list of reductions and a reduced estimate. This we declined to do in a second *competition*, but offered to reduce the work at prices based upon our quantities, and we were then requested to do so, the list of reductions being prepared jointly between ourselves and the architect, who checked the prices against those in our first quantities, and also expressed his opinion to us that it would be satisfactory to the employers.

The next thing we know is by the receipt of a note some few hours after, stating that the contract had fallen to another firm, and which proves to be the one who submitted the highest original tender.

Richard Paramor & Son.

TENDERS.

Brown & Son	£2,107	0	0
Rogers (too late)	2,081	0	0
Paramor & Son	2,056	0	0

GAS EXPLOSIONS.

Sir,—Having in mind the frequency of gas explosions through the ignorance of servants, I beg to suggest that the gas companies should have little bills of "caution" printed, which it should be the duty of the inspectors of meters to see placed in such a position in every house that the servants could not fail of seeing them.

Meter.

ORANGE PEEL ON PAVEMENTS.

Sir,—Kindly give me space again to call attention to a great evil carried on in the streets of London and other towns. I refer to the common practice of throwing orange-peel on the pavements of the public thoroughfares. This is a most thoughtless, and, at the same time, dangerous proceeding; and I do think that in many instances, were people only aware of what serious accidents they might possibly be the cause, they would desist from this wanton habit, and either throw the peel into the roadway, or put it into their pockets.

A Daily Pedestrian.

WESLEYAN CHAPEL COMPETITION, WALTHAM, LINCOLNSHIRE.

In a limited competition for this chapel, Mr. J. Wills, architect, of Kingsbridge, Devon, has been successful. The building is to be of red brick, with Ancaster stone for dressings, windows, pinnacles, finials, &c. The style is Decorated Gothic, the tracery of windows being geometrical. The internal fittings will be pitch pine varnished. The roof will be partially open with diagonal tie pieces, under which is placed a four-centred arch, which finishes against the side walls on a light column; and this rests on a carved wood corbel. Estimated cost, including value of old material, 1,000*l*.

Mr. Wills (younger son of Mr. W. Wills, builder), has recently won several competitions for Wesleyan chapels and schools. At Tarwin, Cheshire, and Hook-Norton, Oxon; chapels and schools are being erected from competitive designs, which (as was also the case at Waltham), secured the services of the same Kingsbridge architect. Mr. Wills is also engaged for an elementary school at Portlemouth, Board Schools at Slapton, the Wesleyan chapel and schools at Dartmouth, and other small works in Devon, Cornwall, and Dorset. Lucky Mr. Wills!

GRINDING MONEY.

At Westminster Police-court, Edward Jenner, a builder, of Belgrave Mansions, appeared to an adjourned summons taken out by William Bothwell, a carpenter, for 1*s.* 6*d.*, claimed in lieu of two hours' notice for grinding his tools on discharge. This case, which, as we stated last week, was adjourned by Mr. Arnold for the decision of Mr. Woolrych, has now been decided. The simple question at issue was whether the carpenters and joiners in the building trade were, on discharge, entitled to two hours' notice for grinding their tools, and to be paid for that time, so that they might go to another job with sharp tools. The complainant was discharged, and the defendant paid him nothing for grinding; hence the summons.

Complainant now called a host of witnesses, some of them delegates at the strike in 1872, and they proved that at Trollope's, Smith & Taylor's, Holland & Hannen's, Myers's, Lawrence's, Jackson & Shaw's, the two hours were allowed. Defendant relied on the rules drawn up and printed at the time of the strike, in which this money was not mentioned, and besides that it was not a custom of the trade, and he verily believed the majority of the firms did not pay the money. He sometimes paid for an hour, but it was not a fixed rule.

Defendant was examined, and deposed that up to 1872 the two hours were allowed, but after the strike and rise of wages it was optional whether the masters paid the money, and the meeting was against it. For that reason the rule was not inserted.

Complainant also relied on the fact that Mr. Bridge, at Hammersmith, had decided this question in favour of the men, and so had other magistrates.

Mr. Woolrych said the rules were very imperfectly drawn up, and this regulation not being inserted he had to see if the payment of this money was customary in the trade. After the evidence of the witnesses called for the complainant it was clear that the custom prevailed in the trade, and he gave judgment for the complainant with costs of summons.

Costs were asked for, but Mr. Woolrych said the defence had been bonâ fide, and he would not order them.

SCHOOLS OF ART.

Wolverhampton.—The annual meeting for the distribution of prizes in connexion with this institution was held at the school on the 3rd inst. Mr. Rupert Kettle took the chair, in the absence of Mr. E. Edwards, the mayor, and said the number and quality of the prizes to be distributed that evening were evidence that the pupils of the school had not fallen behind what had been expected from them, and that the School of Art in Wolverhampton was making real progress. The chairman then distributed the Government prizes, expressing his gratification that four Queen's prizes and a larger number of second-class prizes had been awarded to the pupils in mechanical drawing—a most important fact, for mechanical drawing allied to mechanical skill was the bone and substance of the manufacturing and commercial prosperity of the country. It was easy to get capital for a good investment, but it was not so easy to get that knowledge of mechanical contrivance and the industrial arts which those prizes showed the youths to whom they were given evinced. Major Loveridge remarked that it was still more cheering to the friends of the school to know that in proportion to its numbers it had taken more prizes than any other school in the country.

Birmingham.—The annual meeting of the Birmingham Society of Art and School of Design took place on the 3rd inst., at the Rooms in New-street, Lord Hampton, president, occupying the chair. The Chairman said, it appeared from the report that 492 students had gone up for examination, and that 44 per cent., or very little less, had entirely failed. The fact that two silver and two bronze medals had been won was very gratifying, but he appealed to those present, whom he supposed to be more or less connected with the institution, to be stimulated to further exertions by the very fact that 44 per cent. had failed. His lordship then read a paragraph from the report as follows:—"The committee feels keenly the inadequacy of the public support it receives, and ventures to hope that, as its efforts become better known, it will receive more of that help which it greatly needs." He did not think it worthy of such a town as Birmingham to allow an institution like that to languish for want of means. He did hope that the proceedings of that evening would recall the wealthy population of this great centre of manufacture and industry to the duty which did rest on them of encouraging, so far as they could, an institution which called forth the talent of the rising population. He found that the balance of the institution carried from 1873 was 20*l.* 14*s.*, while the balance carried from 1874 was 107*l.* This was extremely satisfactory. Looking around him, he saw nothing that did not convince him of the great amount of rising talent of that portion of the population which had contributed the productions he saw. The best thing to be done to raise the education and talent of this country was to give every support in their power to institutions like their own, which he earnestly hoped might have, through many years to come, a career of increasing and permanent prosperity.

Newcastle.—The annual meeting of the friends and supporters of this School of Art and Science was held in the Town-hall. The mayor of Newcastle (Mr. W. O. Briggs) was voted to the chair, and in his address said it was a satisfaction to find the position of the school so encouraging. Mr. Bacon, the head master of the School of Art, had told him that Mr. Rhead, who had been some time his pupil, and latterly assistant master, had obtained a situation in an eminent manufactory in the Potteries as director of the art department. It was an important fact, because it was calculated to silence those cavillers who sometimes said the results were poor in connexion with the schools taking into consideration the grants which Government gave towards assisting those schools. The mayor expressed regret that there was no institution in the town similar to the Manchester Athenæum for helping the young people to continue their education after leaving school, and said he hoped that an institution of that character would soon be formed.

CHURCH BUILDING NEWS.

Harby.—The first stone of the new parish church at Harby was laid by Mrs. Jarvis, of Doddington Hall, on the 28th ult. Designs for this new church have been prepared by Mr. John Lee, architect, of London, under whose superintendence the work has been commenced. The style adopted is Early Thirteenth Century. The church is cruciform on plan, and consists of a nave and chancel (77 ft. long and 22 ft. wide), a chapel on the north side of the chancel, forming the vestry and organ-chamber, and a tower on the south side of the chancel, to be utilised for children's seats. The material employed for walling is from Mr. Kirk's quarry, at Lincoln, with Ancaster dressings. A contract for the church complete (without tower and spire), amounting to 1,800*l.*, has been signed by Mr. Wallis, of Wragby and Market Rasen. Accommodation is provided for 200 worshippers. The complete work will cost 3,000*l.*

Newark.—The appearance of the interior of St. Leonard's Church has just been greatly improved by the introduction of brass chancel-doors and a brass screen; also a massive corona gaselier, two gospel and epistle lights, and a lectern which springs out of the screen. The workmanship is of a superior character. The ornamental leaves of brass on the screen and gates are wrought by hand, and the total weight of the metal used is very considerable. It is intended to carry the work round the front of the pulpit, so as to make it more complete. The plan of a lectern rising, as it were, out of the screen is a new one. The whole of the things have been made by Messrs. Thomason, of Birmingham. They are a free gift to the church. Since their erection they have attracted a good deal of notice. A new diapason stop into the organ has been introduced.

Everton (*Liverpool*).—A new church, designed by Messrs. T. D. Barry & Sons, architects, of Liverpool, and dedicated to St. Cuthbert, is about to be erected in Robson-street, Everton. It consists of nave, 97 ft. by 24 ft. 7 in.; chancel, 25 ft. by 22 ft. 7 in.; north and south aisles, 83 ft. by 13 ft. 8 in.; organ-chamber and choristers' vestry at south-east, 23 ft. by 14 ft. 8 in.; vestry at north-east, 18 ft. 3 in. by 14 ft. 8 in.; tower at south-west angle, and an entrance porch at north-west. Advantage has been taken of the slope of land, which falls considerably from west to east, to provide a Sunday school under the east end for 380 children. The design is Early Decorated, and the church will be erected of the local red sandstone, lined internally with brick, and plastered, and faced externally with Burnley parpoints. Accommodation, without galleries, is provided for 750 adults. The contract has been taken by Mr. C. W. Mullin, of Kirkdale, for 5,129*l.*, including tower and spire and the school buildings underneath.

Faversham. — The work of re-seating, rearranging, partially restoring, and generally improving the interior of Faversham church, which has occupied a period of upwards of eight months, having been completed, the edifice has been re-opened for divine worship. The work, the entire cost of which is something like 4,000*l.*, was divided into two parts, the nave and transepts forming one, and the chancel the other. The former was done by voluntary contributions, the work being under the direction of Sir Gilbert Scott, and executed by Mr. Wilson, of Canterbury. The outlay in the chancel (about 1,000*l.*) is borne by the Ecclesiastical Commissioners, the architect being Mr. Christian, and the contractor Mr. L. Shrubsole, of this town.

The Building Trade in Rhyl. — The building trade was never more flourishing in Rhyl than at the present time. About thirty new houses are in course of erection, and it is contemplated to commence the erection of three more houses at the extreme end of West Parade, in addition to the new ones which have just been erected.

VARIORUM.

A RUSSIAN medical journal, according to the *Engineer*, gives an interesting account of some experiments that were lately made in a theatre at St. Petersburg, on the contamination of the air in theatres. It was found that notwithstanding the movement of the audience in leaving the theatre between the acts, the temperature of the building rose gradually, and the thermometer, which at the raising of the curtain marked 16° Centigrade, stood at 24° at the end of the first act, and indicated 25° at the commencement of the second. The degree of moisture increased less rapidly, but in two hours it had increased 30 per cent., and at the close of the fourth act was considerably more than that of the air out of doors. At the commencement of the performance the moisture in the air corresponded with that of well-ventilated rooms, while towards the end the amount had increased nearly double. With regard to the quantity of carbonic acid, it was found that at the end of the second act it was already more than six times that which is contained in the atmosphere in its normal state, or 1·9 per thousand cubic metres, and at the close of the performance the air in the theatre contained 4·3 c. metres of carbonic acid gas per thousand metres of air.——"How shall I carpet my drawing-room?" asks a writer in *Cassell's Family Magazine*, and then says:—"If you aspire to an Axminster carpet, see that your purse is well stocked with golden guineas before you give the order. I should be well content with Brussels, a good *bonâ fide* Brussels, than which none will wear more satisfactorily. If you find the outlay too great, get a Kidderminster. It will prove serviceable, and is less expensive, for it is a quarter of a yard wider than Brussels. The only objection to this make of carpet is, that custom has awarded it its place in the bedroom. Some people prefer a tapestry carpet, but the patterns of these are usually of so florid and glaring a character, that they detract much from the general effect as it ought to be. It is considered correct taste to represent the earth by the carpet, and the sky by the paper,—that is to say, the carpet should be dark in colour, and the paper light. If, however, it should happen that you are obliged to study economy, and to think of the future, I should advise you not to buy a carpet having a dark ground, for undoubtedly it will become shabby very much sooner than one having a light ground. Every dusty footmark shows on the dark carpet, and at the end of a year every place over which there has been much passing to and fro will show visible signs of the traffic; whereas on the lighter ground threadbareness is not nearly so discernible. The most economical colours are different shades of drab, but even a white ground is more useful than one of claret or maroon."——The *Leisure Hour* gives some particulars of Boxwood blocks for Engraving:—"Boxwood, as most of our readers are aware, is the principal wood used for wood engraving. When we consider the immense number of illustrated periodicals and books that issue from the press, not only in England, but on the continent and in America, together with the various other uses to which boxwood is put, it is a matter of surprise whence it comes. To England alone the quantity annually imported is above 10,000 tons, the average value being about 11*l.* a ton. Circassia is the chief place of supply. The preparation of boxwood blocks for engraving purposes is a special trade in the hands of very few persons, and is centred in the neighbourhood of Fleet-street. For making these blocks the wood is first carefully selected, and then cut up by circular saws into transverse slices about an inch thick, the length of ordinary printing type. After being cut, the slices are placed in racks something like plate-racks, and thoroughly seasoned by slow degrees in gradually heated rooms. When sufficiently seasoned, they are reduced to parallelograms of various sizes, the outer portion of the circular section near the bark being cut away, and all defective wood rejected. Prepared blocks of good box fetch about one penny per square inch, and the very best quality as much as 5d. per square inch. In the preparation of a large block—say for a newspaper plate, pieces are assorted as to size and fitted together at the back by brass bolts and nuts. So accurately do the edges of the wood fit together, that after the artist has finished his drawing on the smooth face of this compound block, the screws and bolts are loosened, and the pieces separated and given perhaps to several engravers for their individual manipulation, all that is needed after they have finished their work being to fit the pieces together and screw them up again, when they form one engraved block ready for the printing-press. In such a way are the large double and quadruple page engravings of our illustrated papers produced, and in such a way a block of almost any size can be prepared."——*Old and New London* gives a paragraph which will remind readers of a few facts as to the King's Mews:—"Thornton, in his 'Survey of London and Westminster,' published in 1785, tells us that on the north side of Charing-cross there is a large square, on one side of which is a handsome building used as stabling for his Majesty's horses, and generally known as the 'Mews' or 'Meuse.' The word is derived, as every antiquary knows, from the 'mew' of the young of the falcon and hawk tribe. It appears that, as early as the year 1377, this place was used for the purposes of the King's hawks and falconers, the sport of falconry being one of the most favourite pastimes of the aristocracy, and the chief falconer being one of the most important members of the Royal household. This office, which is hereditary, was granted by Charles II. to Charles, Duke of St. Albans, his son by 'Mrs. Gwynne,' and 'the heirs male of his body;' and it still continues attached to the title. At one time it would seem that the King's stables were at Lomesbury, or, as it is now styled, Bloomsbury; but these stables being burnt down in 1537, King Harry ordered the hawks to be removed, and the 'mews' altered and enlarged for the reception of his steeds; so from that day down to the reign of George IV. the royal stables stood here, and the word 'mews,' in London at least, has become equivalent to a range of stabling. It would appear, from such books of London topography as we have been able to consult, that the old building of Henry VIII.'s time having become decayed, a new and handsome edifice was begun, in 1732, by George II. It was built in the classical style, with central columns and a pediment, and adorned with cupolas and lanterns; but the effect of this architectural display was spoiled by the narrow space in front, and on either side of it, and by the small and mean buildings with which it was hemmed in. It stood as nearly as possible on the site of the front of the present National Gallery.——According to the *Pall Mall Gazette*, a new timber-producing district is said to have been discovered in the interior of Newfoundland, a region hitherto supposed to be utterly barren. Among its naked mountain ridges and dreary swamps, Mr. A. Murray, an officer of the Geological Survey Office at St. John's, has come recently, according to a correspondent of a contemporary interested in colonial affairs, upon a rich country, which is expected to develop immediately a prosperous lumber trade, and ultimately to attract agricultural settlers. This "treasure-trove" occurred in the valley of the Gander River, the lower reaches of which proceed from a very deep and serpentine lake running east and west between 54 deg. 21 min. and 55 deg. W. longitude.——In the new issue of the *Garden Oracle*, Mr. Shirley Hibberd propounds an extremely simple and somewhat novel theory of fruit production, under the title of "Golden Keys to the Fruit Garden." He first asks why fruit-growing is so peculiarly localised that we find extensive districts, where the soil is of the most productive character, absolutely destitute of fruit-trees, while in other districts fruit trees of all kinds abound, and appear to thrive almost as well on the poor soils as on those that are famous for fertility. We are asked to explain why there are few fruit-trees in Essex and many in Devonshire; why generally fruit production is a rare industry in the east, and a common one in the west of England. Mr. Hibberd avers that while a good soil is much to be desired, the one grand requisite is shelter. The late spring frosts frequently destroy the fruit crop in the bud, but the willingness of the trees to produce a crop is manifested by their abundant flowering. If we can but protect them from the frosts of April and May we may ensure a plentiful supply of fruit; hence to devise the means of affording shelter is the first thing to be thought of by those who purpose to plant fruit-trees. But this is not all. We are told that the trees produced in nurseries are in many cases of the wrong sort, the trade having been seduced into the raising of trees that are destitute of the vigour needful to production. We are asked to compare the vigorous standard trees of an old-fashioned garden with the puny pyramids the modern amateur delights in, and which certain writers advise him to pinch or prune to an extent that renders vigorous growth impossible. We do not understand Mr. Hibberd to object to pruning *in toto*, but it is quite certain he regards the process as, generally speaking, little less injurious than the spring frosts that shrivel up the bloom or cause the incipient fruit to fall from the tree. He declares that the "golden keys" are shelter, and a sheath for the pruning-knife.

Miscellanea.

Fatal Accident to Mr. George Jones, Town Surveyor, Cirencester.—We have to announce the death of a well-known and respected inhabitant of Cirencester, Mr. George Jones, of Dyer-street. The deceased had been for many years town surveyor, and in this capacity it is but right to state that he had been a valuable public officer. In no particular, probably, was his fitness for the post more conspicuous than in the question of flood-water, which had always at certain seasons inundated the cellars of parts of the town. Although he had not altogether cured the evil, he had greatly mitigated it. On Saturday morning, after giving instructions to his men with regard to certain obstructions in the river Churn which, he fancied, might have caused the overflow of the water, he started off on a journey on the business of his inspectorship. On his return, instead of going indoors at once, he went direct to the bridge, only a little lower down, to see if his instructions had been complied with, and their result. There is a stone near the bridge, by which he could tell the height of the water in the stream, and as this place is the only outlet for the water which flows through the town, it was his custom early and late to visit the spot. It was very dark, and he must have knelt on the bridge to look over, and by some sad fatality slipped, falling into the shallow stream on his head, and before regaining consciousness he was drowned.

The Chandor Light.—At a *conversazione* recently held in Edinburgh, Professor Archer drew attention to a new invention, the Chandor light. The apparatus is, in outward appearance, a little tube, 3 in. or 4 in. long, having at one end a revolving button which turns a screw, and at the other a minute angular point of metal, which also revolves, passing over a little orifice in the closed head of the tube. A continuous fuse, formed of a delicate strip of solidified collodion, with a ridge of hardened phosphorus on one of its sides, is slipped into the tube, and, once in position, can be moved upwards by the screw. By the same action which presses the upper end of the fuse against the opening at the top the metal point is turned against the phosphorus, and a small portion of the collodion is thereupon ignited. When the apparatus is affixed to a gas-burner, only a very transient flash is needed for the purpose of ignition, and not more than a seventieth part of the collodion fuse is in the operation consumed. Where, however, the wick of a lamp has to be lighted by the same means, a larger proportion of the fuse, the thirty-second part, in fact, is burned. The apparatus is either portable or adapted to the uses indicated. If a lamp goes out, it can be instantly re-lighted by the turn of a screw, instead of by opening the case, removing the chimney, and striking a lucifer match, where, perhaps, large quantities of straw are lying about.

Proposed New Wesleyan Chapel, Margate.—On the 2nd instant, a meeting was held in the school-room of the Hawley-square Chapel, to consider the best plan to be adopted to erect a Wesleyan Methodist Chapel at Cliftonville, and those present manifested a deep interest in the scheme. In 1871, a piece of land was purchased and given by Sir Francis Lycett and Mr. J. Riley, at a cost of 350*l.* The land in question has two frontages, and adjoins Northumberland-road and Dalby-square. It is intended that the chapel should seat 850 persons. Efforts are to be immediately commenced to raise the necessary funds. The Wesleyans are desirous of building a chapel that will be an ornament to the neighbourhood, and a credit to Methodism.

Fall of a Scaffold, Malmesbury.—Very serious injury is likely to arise from the fall of a scaffold in Ingram-street, Malmesbury, last week.

Seats for the Public in St. Pancras.—It was resolved by the vestry of St. Pancras, a few months since, to have seats placed in various thoroughfares of the parish, in order that people who have to walk along the streets, and are in want of a resting-place, may be able to rest themselves; for in the metropolis there are a very large number of persons who have to walk long distances, and do not wish, or perhaps have not the means, to go into a public-house, coffee-house, or other place to rest themselves. The vestry referred it to the Works Department to provide twelve such seats in the first instance, and on tenders being invited for the supply of them, that of Mr. Lazarus, of 287, Old-street, Shoreditch, was accepted. The sites selected for the first twelve seats are:—Hampstead-road, by Harrington-square; Euston-road, opposite Stephenson's statue; Guildford-street, by the drinking-fountain; Gray's-inn-road, opposite the Royal Free Hospital; Camden-road, by the Crescent; Swaine's-lane, near the Highgate Cemetery; West-hill, by St. Ann's Church; Haverstock-hill, by Maitland Park; Tottenham-court-road, by the chapel; Goldington-crescent, opposite the vestry-hall; Kentish-town-road, by Camden-gardens; and Junction-road. All our suggestions get carried out by degrees.

Destruction of Edinburgh Theatre.—The Theatre Royal of Edinburgh, the principal place of amusement in the city, was burned to the ground on Saturday last. The fire broke out shortly after two o'clock, just when the weekly payments had been made and the treasury had been closed. By the time the first engine arrived the flames had burst through the roof at the south end, and it was at once apparent to the spectators that there was no hope of saving the portion occupied by the stage and its accessories. So quickly did the flames spread that about twenty minutes to three o'clock they appeared through the roof immediately over the auditorium. The stage effects burned with great rapidity, and at three o'clock the northern half of the building was gutted. A few minutes afterwards the greater part of the roof of this portion fell in with a loud crash, and the fire had then full mastery. In less than an hour the whole interior of the theatre was completely destroyed. The cause of the fire has not been ascertained, but it is believed it originated from an explosion of gas connected with the lime-light apparatus used in the pantomime. This is the third time the Theatre Royal has been destroyed by fire within a few years.

The Haseley Waterworks.—The report from the Waterworks and Drainage Committee, at a meeting of the Warwick Town Council recently, said,—That "in accordance with your instructions they advertised for tenders for cast-iron pipes (contract No. 1), and for the laying of such pipes (contract No. 2), and in reply received tenders from the following parties. Contract No. 1:—Messrs. J. & S. Roberts, West Bromwich; the Clay Cross Company, near Chesterfield; Messrs. Cochrane & Co., Dudley; Messrs. J. Abbott & Co., Limited, Gateshead; Messrs. J. Oswald Gardner & Co., London. Contract No. 2:—Mr. C. Hart, Leamington; Messrs. Green & Son, Warwick; Mr. G. F. Smith, Milverton; Mr. A. Sheasby, Leamington; Mr. J. Walker, Crewe; Mr. John Walker, Leicester; Messrs. De Ville & Forest, London; Mr. Docwra, London; Mr. F. Dawson, Bury. Your committee have carefully considered the above tenders and with regard to contract No. 1 they recommend that the tender of Messrs. Roberts, at the following prices, be accepted:—16-in., 12-in., and 10-in. pipes, 7*l.* 2s. 6d. per ton; 8 in. and 6-in., 7*l.* 3s. 9d. per ton; 4-in., 7*l.* 5s. per ton; special castings, 10*l.* 10s. per ton." The report was accepted.

The Sewerage of Harrogate.—By the recent judgment in the Court of Queen's Bench, in the cause Wood *v.* Harrogate Local Board, the Harrogate Improvement Commissioners are required to take the whole of the town's sewage out of the Oak beck before the 1st of April next. The sewerage system had been laid down for the purpose of diverting the whole sewage over land specially prepared to receive and purify it. The Sanitary Committee of the Board have discovered that certain house property in Harrogate has not been connected with the public sewers, and thus the evil complained of has in a great measure arisen. The Board passed a resolution enforcing the immediate connexion of this property with the sewerage system.

Extinction of Fire.—At the Society of Arts, on the 3rd inst., Mr. Coleman, an American civil engineer, read a paper descriptive of an apparatus for the protection of buildings and ships from fire, and for the ventilation of ships. His plan was prevention, and consisted of iron standpipes, one going to the roof and others to the separate stories of a building, the cocks of the whole to be secured in a box in the side wall. These pipes he would work with a steam-engine placed within the building, or close to it. For ships he would have a somewhat similar apparatus. A ship of 1,200 tons could be fitted with his apparatus for 300*l.*, and by it all danger of fire at sea would be avoided. The ventilation of ships he would effect by the use of compressed air and perforated pipes, which would diffuse the introduced air all over the interior space to be ventilated. The principle had already been carried out successfully in the Mont Cenis Tunnel. The use of steam as a means of extinguishing fires he had ascertained by experiment to be an expedient of doubtful efficacy.

An Underground Church.—In Russell-street, Brighton, wherein the fishing population of Brighton is concentrated, there is slowly drawing towards completion a building designed to be a chapel of ease to St. Paul's. The floor of this building is over 30 ft. below the surface of the road in Russell-street, has its principal and only entrance and exit at the south-east corner, and has to be descended to by a long flight of stone steps. There is a nave, in length about 80 ft., measuring from the foot of the stairs to the north end; the altar being placed at the north end, facing the stairs. On the west side, and divided from the nave by six columns of Bath stone, having pointed arches springing from them, is an aisle somewhere about 20 ft. wide, at the north end of which is a vestry, having a gallery over it to receive an organ. In form the church is a long parallelogram, 132 ft. by 50 ft. Its cost is likely to amount to about 8,000*l.*, and will be borne by the Rev. A. D. Wagner. Mr. Wagner certainly never scruples to pay for having his own way.

Attempt to Burn Northallerton Church. On the 4th inst. two young men, named Walter Mayne and Wm. Marshall, residing at Northallerton, were standing about eighty yards from the parish church, when they heard a smash of glass and saw two lights, as if matches were struck, and immediately there was an illumination. They ran in the direction of the church, and discovered that a window-curtain was in a blaze. Raising an alarm of fire, they ran round the church wall, when, as they state, they saw a man dressed in a light-coloured suit running through the churchyard, making for the highway on the east, in the same direction as they ran, but no one was seen to scale the wall, which is about 6 ft. high. Several parties were soon on the spot, when it was discovered that a pane of glass had been broken, through which the lights had passed setting fire to the curtain.

The Liverpool Exhibition.—The report of the Fine Arts Committee upon the late autumn exhibition of pictures in the Free Library and Museum, Liverpool, states that the number of admissions by payments at the door amounted to 16,524 in the morning and 19,905 in the evening, making a total of 36,429, besides 795 season tickets, and about 18,000 pupils of educational establishments of all classes and denominations admitted gratuitously. The number of works exhibited consisted of 509 oil-colours, 568 water-colours, 43 pieces of sculpture and other works of art, forming a total of 1,120. Of these, 1,036 were for sale, and 338 were actually sold for sums amounting to 9,558*l.* 5s.,—205*l.* being expended by the corporation in works for the permanent Gallery of Art now in the course of erection.

Coins.—An interesting discovery has just been made at the watering-place of Bourbonne-les-Bains, in the department of Haute-Marne, France. In cleansing the reservoir of the thermal waters, over 4,000 bronze coins or medals, and a few gold coins, have been extracted from the mire. The gold coins have the diameter of an English florin, and bear the effigies of Nero, Honorius, Hadrian, and Faustina Senior. Besides these medals a considerable number of bronze pins and rings were found. One of the rings represents the fore-feet of a horse, others the head of a dragon or serpent; also several small bronze statues representing warriors and wrestlers. These statuettes are exquisitely worked and admirably modelled.

"Closets" in Churches.—At the Bermondsey Vestry last week, the surveyor reported the reception of a letter from Mr. Butterfield, architect to the new church in Jamaica Level, stating that he had never found water-closets required in churches; for many reasons he thought them objectionable. He believed the Church Building Society, to whom application would be made, would entirely object to the putting up of water-closets. The chairman said it seemed that Mr. Butterfield could never go to church. The surveyor observed that Mr. Butterfield was architect to some of the high church and fashionable buildings in the West End. The frontage plans were agreed to, but a wish for the water-closets was to be appended to the official notice.

Preservation of St. Werburgh's Tower, Bristol.—At a special meeting of the Bristol town council, on the 5th inst., the mayor said, as to the removal of St. Werburgh's Church, it was one that had his most entire sympathy. He looked upon such buildings as the tower of that church as milestones on the road of time; and although it was very desirable that, as the population had gone away from the neighbourhood of the church, the church should be removed to some centre of population where it would be a great deal more useful, yet he thought it would be a great loss to the city if the tower were removed. He thought the accommodation required by the public might be met by an archway through it. A motion and amendment on the subject were both lost.

The Channel Tunnel.—The scheme for tunnelling the Channel has got thus far, that two companies—one French and one English—have agreed to try an experiment on each side. They have the necessary concessions, and the needful capital, and are going to bore in earnest. When they have bored, the world will be in a position to judge of their prospects, and not till then. They hope to bore through chalk, to keep a chalk wall fifty yards thick over their heads, and to find no very serious "fault;" and if their hopes are justified, they may make the tunnel, and have no tasks remaining except to secure the needful air, the necessary passengers, and a profit.

Architectural Improvement, Romsey.—A short time since, the Wilts and Dorset Banking Company became the purchasers of the old-established banking concern of the Messrs. Footner, and it has not been long before they have demonstrated that they must march with the times. The first step towards such a desirable end has been the remodelling and enlarging of their banking premises. This has been done. A strong and fire-proof room has been built in the basement. The whole has been carried out from designs prepared by Mr. Parmenter, architect, of Southampton, and under his personal superintendence by the Messrs. Wheeler, of this town.

Dwellings of the Poor.—The following is the title of the essay to which the Howard Medal will be awarded by the Statistical Society in November, 1875. The essays must be sent in or before June 30th, 1875:—"The State of the Dwellings of the Poor in the Rural Districts of England, with special Regard to the Improvements that have been made since the Middle of the Eighteenth Century, and their Influence on the Health and Morals of the Inmates." Further particulars or explanations may be obtained from the assistant secretary, at the rooms of the Statistical Society, Somerset House-terrace, King's College, Strand.

Moody and Sankey's Visit: Danger Ahead.—An "Anxious Inquirer," in the *Liverpool Journal*, writes:—"Can you or any of your readers inform me whether the borough engineer is taking any steps to ascertain the sufficiency of the Victoria-hall, Victoria-street, for the purpose for which it has been erected? If I am informed correctly, the borough engineer is not satisfied with the construction, and, if that is so, the sooner the public are informed of the true facts of the case the better. Secondly, what arrangements are being made for the prevention of fire?"

Demolition of a House at Leeds Illegally Erected.—We understand that notice has been served upon Mr. Dobshaw, to the effect that if the house erected by him contrary to the building bye-laws, be not demolished within one month, the work will be done by the Corporation, and the expense charged to him.

The Paris Loan and Building.—Be its creditors who they may, Paris has launched its loan of 8,800,000*l.* with success, and the mason's trade looks up again. So does the architect's, for all the cash not spent in paying off old debts will go in building and decorations. I do not remember how many new churches are to be erected or beautified, but they absorb a sum, as we should think, quite out of proportion to the means of Paris (says the Paris correspondent of the *Daily Telegraph*). Talking of architects and churches, clericals in and out of the press are hysterically agitating for the removal of M. Viollet-le-Duc from superintendence of the repairs at Saint Dénis. M. le Duc's worldwide renown as artist and antiquary is not even questioned; but he lately confessed in public that it would not seem to him actual profanity and maranatha to set up a Republic. And, again, he has been publishing a series of most excellent articles, headed "Notes d'un Voyageur," in the *XIXme. Siècle*, thereby proving himself eminent in another realm of art. If the Ministry had not resigned, I make little doubt but it would have yielded to the pressure.

Water.—In the inquiry by Major Tulloch into the state of the Southwark and Vauxhall Company's water, which has been ordered by the Local Government Board, consequent upon an application of the Richmond select vestry for power to borrow money to provide a new water supply, Mr. Jabez Hogg and Dr. Thudichum were examined. They both spoke to the impurity of the water, the latter declaring it would take fifty years to clear the water above Teddington-lock, even if all contamination ceased. The inquiry is again adjourned.

Law Courts, Newcastle-on-Tyne. — Mr. William Crozier, county engineer and architect for the county of Durham, who successfully designed and carried out the additions and improvements to the Durham Assize Court, illustrated in our pages, has been requested by the magistrates of the county of Northumberland to prepare plans for similar improvements to the Moot Hall Courts, Newcastle-on-Tyne, in which the assizes for the county of Northumberland, and the county of Newcastle-upon-Tyne, are held.

Drainage of Sheerness-on-Sea. — At a meeting of the Local Board of Health, on Monday last, Mr. Cole proposed that the surveyor should be instructed to prepare plans, and report upon the best means to be adopted for improving the drainage of the whole of the district. The chairman (Mr. J. Ward), in seconding the proposition, expressed an opinion that the Board would be called upon to spend something like 10,000*l.* before the drainage would be made efficient. The proposition was agreed to.

Swimming in the Thames.—The first floating swimming-bath upon the River Thames was moored into position off the Victoria Embankment, close to Charing-cross railway bridge, at the spot previously used as a landing-stage, on the 4th inst. The Floating Swimming-bath Company constructed, about twelve months ago, the hull or lower portion of a floating-bath, and this was tugged up the river from Blackwall by two steam-tugs, and securely moored in the position it is intended to occupy.

The Proposed Metropolitan Gas Bill.—At a meeting of the Metropolitan Board of Works last week, a report was read from the Parliamentary Committee submitting the heads of the proposed Bill for the regulation of the gas supply of the metropolis, and recommending that a Bill be prepared accordingly. After a discussion, in which Mr. Leslie, Mr. Fowler, Mr. E. D. Rogers, M. Alderman Sydney, and other members took part, the report of the committee was agreed to by a large majority.

Narcissus in the United States.—Mr. Charles Hazeltine of New Bedford, of "Narcissus" fame has petitioned the Legislature, for the statuette seized from him last year. Mr. Hazeltine has draped a copy of the image in style of a modern fop and put it in the window of his New Bedford store with this label:—"A true copy of Narcissus 'clothed and in his right mind.'" The *State* holds Narcissus "unclothed" "and in his" wrong "mind."

Proposed Pier at Sidmouth.—We hear, on very good authority, that the manor trustees propose to carry out a pier at Sidmouth, at a cost of 15,000*l.*, provided the inhabitants of the town will subscribe 2,500*l.* towards the improvement.

The East Cliff Gardens, Brighton.—The drawings which have been made by Mr. Dawnay to illustrate the scheme for forming gardens and covered way on the East Cliff or Madeira-road, are about to be exhibited in Brighton. They consist of two pieces or frames, 10 ft. 6 in. long by 3 ft. wide, and four pieces, 4 ft. 6 in. long by 2 ft. 6 in. in width, and, when placed in a row, will thus be nearly 40 ft. by 3 ft. broad. One is a perspective showing the effect of the whole.

The Tyne Engineering Dispute.—The men employed by Messrs. R. Stephenson & Co., engineers, Newcastle, have had a meeting to consider whether they should accept the proposed reduction of five per cent. on their wages, which was to take effect on and after the 1st of March. After some discussion, it was almost unanimously agreed to accept the reduction. The decision of the men was at once made known to the heads of the firm; therefore the dispute is now at an end.

Penzance.—The foundation-stone of new infants' and girls' school for children connected with St. Paul's Church and congregation at Penzance, has been laid. The building will be situate on open and elevated ground facing the south—in Taroveor-road looking towards Belgrave-terrace. The stone was laid by Mrs. Henry Batten, widow of the clergyman to whose munificence Penzance is indebted for the church of St. Paul.

A Ride through a Sewer.—A subterranean inspection of the extensive sewer lately constructed near the New Boulevard of Brussels, was made a few days ago by a select party of English and Belgian residents. This sewer, constructed by the English firm of Waring Brothers & Co., and the completion of which occupied many English and other workmen for several years, was only finally terminated in the early part of last year.

Water for Hull.—At a meeting of the Council on the 4th inst., the Mayor presiding, the Waterworks Committees' minutes were confirmed in favour of a further boring. A motion was unanimously agreed in favour of referring to a special committee the consideration of extending the borough boundary. There had been no extension for forty years, and the town had increased from 50,000 to 130,000 inhabitants.

The Huddersfield New Waterworks.—The Corporation Waterworks at Deerhill and Blackmoorfoot are now in an advanced state towards completion. The Deerhill reservoir, which is estimated to hold 160,000,000 gallons of water, it is expected will be completed within six months, and the reservoir at Blackmoorfoot, with with a capacity of 670,000,000, early next year.

Manchester.—The works in connexion with the buildings to be erected on the Victoria Market site, near the Royal Exchange, Manchester, an account of which was given in the *Builder* recently (January 2), were commenced last week, and are to be pushed on as rapidly as possible. Mr. E. Grimes, late of the Royal Exchange, has been appointed clerk of the works.

Mr. Holloway's Sanatorium for Mental Disorders, Virginia Water.—The contract for the grand staircase lately advertised for public competition, to be executed in Portland stone, with Devonshire marble handrail, Mr. W. H. Crossland, architect, has been let to Messrs. Sharpington & Cole, of Westminster Bridge-road, for the sum of 833*l.*

Museum for Nottingham. — It has been decided to convert the ruins of the castle here into a Fine Arts Museum, the Government and town council promising substantial support if private subscriptions are liberal. On the 4th inst. those already sent in amounted to nearly 5,500*l.*, of which sum Mr. Morley, M.P., has given 1,000*l.*

Building Operations in Greenock.—Building work to the extent of 40,000*l.* was, the week before last, passed by the Dean of Guild Anderson. The buildings to be erected include arcade, and public market; schoolhouse and offices near St. Lawrence-street, Cartsdyke; and various shops and dwelling-houses.

The City Commission of Sewers have elected Mr. John Staples to the chairmanship of the Commission for the ensuing year, in the place of Mr. W. S. Gover, who, in accordance with the standing orders, retires.

Wrington.—A stained-glass window has recently been put up in Wrington Church, by Mr. and Mrs. Bodham Castle, of Clifton, in memory of the James family, Mrs. Castle's relatives. The subject is the Raising of Lazarus, and the work has been executed by Messrs. Clayton & Bell, of London.

The Sewage of Kingston-on-Thames.—The Corporation of Kingston-on-Thames have accepted the offer of the Native Guano Company to treat the sewage of the town at their own expense and risk, and the Company undertake that no nuisance shall arise from the process.

Keble College.—The exterior of the chapel at this college is now nearly completed, but the edifice will not be opened till St. Mark's Day, 1876, in order to allow time to finish the elaborate internal decorations. The building, when complete, will, it is said, have cost 30,000*l.*

National Provincial Bank, Leicester.—The interior of this building, in Granby-street, has lately undergone a thorough renovation at the hands of Messrs. Holland, Son, & Colt, decorators, Warwick, under the superintendence of Messrs. Millican & Son, architects.

The Bournemouth Winter Garden.—The contract for the erection, furnishing, and completion of the above building, has been let by the directors to "Messrs. Fletcher, Lowndes, & Company," of Great George-street, Westminster, and the works are to be commenced forthwith.

Statistical Society.—At the next meeting, to be held on Tuesday, the 16th inst., at the Society's Rooms, a paper will be read on "Improved Dwellings, their Beneficial Effect on Health and Morals, and Suggestions for their Extension," by Mr. Charles Gatliff.

Artizans' Scholarships in Hull. — Mr. William Bailey, of Hull, of the firm of Bailey & Leetham, steamship owners, has given 500*l.* for the establishment of a permanent artizans' scholarship in Hull.

Truro Waterworks.—Great interest is felt in the town regarding the proposed waterworks. Unfortunately up to this time the efforts to obtain water at Bosvigobridge have signally failed.

The Intended Opera House.—We understand that designs for the Opera House, intended to be built on the Thames Embankment, will be invited in a public competition.

London and County Banking Company.—The balance-sheet of the London and County Bank in our advertising columns serves to show the continuous prosperity of this corporation.

TENDERS

For alterations and additions to warehouses, Jewin-street, City. Messrs. Herbert Ford & R. Lempriere Hesketh, architects:—

Perry & Co.	£9,884	0	0
Elkington	9,748	0	0
Downs & Co.	9,497	0	0
Ashby & Horner	9,468	0	0
Scrivener & White	9,461	0	0
Morter	9,412	0	0
Brass	9,321	0	0
Killby	9,253	0	0
Ashby & Sons	9,191	0	0
Williams & Sons	9,041	0	0
Lawrance	9,019	0	0
Simpson	9,010	0	0
Nightingale	8,999	0	0
Adamson	8,834	0	0
Merritt & Ashby (accepted)	8,674	0	0

For alterations and additions to a warehouse, Jewin-street, City, E.C. Messrs. Herbert Ford & R. Lempriere Hesketh, architects:—

Perry & Co.	£2,484	0	0
Ashby & Horner	2,409	0	0
Elkington	2,395	0	0
Downs & Co.	2,351	0	0
Killby	2,329	0	0
Ashby & Sons	2,270	0	0
Simpson	2,238	0	0
Scrivener & White	2,233	0	0
Morter	2,220	0	0
Merritt & Ashby	2,197	0	0
Brass	2,197	0	0
Adamson	2,177	0	0
Lawrance	2,125	0	0
Nightingale	2,115	0	0
Williams & Son	2,040	0	0

For pulling down and rebuilding six shops in Camberwell-road, for Mr. A. Jones. Mr. J. H. Swan, architect:

Sabey & Son	£6,089	0	0
Pritchard	5,895	0	0
Rider & Son	5,787	0	0
King & Son	5,760	0	0
McLachlan	5,585	0	0
Tarrant	5,576	0	0
Deards	5,490	0	0
Thompson	5,380	0	0
W. & F. Croaker	5,259	0	0
Mitchell	5,250	0	0

For Wesleyan chapel, school-room, vestry, &c., Hook Norton, Oxon. Mr. John Wills, architect, Kingsbridge, who also supplied bills of quantities :—

Hopcraft & Bennett	£960	0	0
Bartlett	955	10	0
Orchard	939	0	0
Williams (accepted)	809	7	8½

For the erection of warehouses, corner of Duke-street and Exeter-street, Lisson-grove, Marylebone, for Messrs. Spencer, Turner, & Boldero. Mr. T. Parker, architect:

Trollope	£8,875	0	0
Hills	8,674	0	0
Peto	8,594	0	0
Simpson	8,560	0	0
Cross & Son	8,545	0	0
Dove	8,490	0	0
Smith	8,139	0	0
Morseman	8,075	0	0
Colls	8,040	0	0
Temple & Foster	7,090	0	0

For additions, alterations, and repairs to 11, 12, and 13, Bow-lane, for Mr. Edward Carhle. Messrs. Tress & Innes, architects :—

Hawtrey & Son	£947	0	0
Conder	915	0	0
Sewell & Son	886	0	0
Newman & Mann	855	0	0

For rebuilding No. 6, Hampstead-road, for Messrs. M. & N, Salaman. Mr. B. Tabberer, architect :—

Johnstone & Co.	£1,632	0	0
Cohen	1,560	0	0
Baugh	1,558	0	0
Downs & Co.	1,499	0	0
Crabb	1,375	0	0
Robinson	1,372	0	0
Palmer & Son	1,355	0	0
Mark	1,338	0	0

For alterations and additions to premises, No. 73, Mile-end-road, for Mr. T. Wickham. Mr. W. Mundy, architect :—

Marr	£863	0	0
Forest	777	0	0
F. & F. J. Wood	777	0	0
Stamp & Bowtle	763	0	0
Judd & Hawkings	749	0	0
Hearle	744	0	0

For building shop front, and alterations in the Essex-road, Islington, for Messrs. Sellers, Brothers :—

Batchelder	£387	0	0
Salter	350	0	0

For the reconstruction of the inner portion of the Upper Globe Dry Dock, Rotherhithe. Mr. Edward Charles Homer, engineer :—

Moodie & Co.	£3,000	0	0
Sheffield	3,000	0	0
Entrance to Dock.			
Kirk & Randall	£1,832	0	0
Sheffield	1,740	0	0
Chafen & Forrow	1,670	0	0

For rebuilding and enlarging the manor-house, Newnham, for Mr. Tom Goold. Mr. J. P. Moore, architect :—

King & Godwin	£3,350	0	0
Clutterbuck	2,900	0	0
Humphris & Co.	2,891	5	7
Fream, jun.	2,830	0	0
Coleman Bros. (accepted)	2,785	0	0

For school at Steeple Aston, Oxford, for seventy infants. Mr. William Wing, architect. The Committee find walling, stone, and haulage :—

Kimberley	£871	0	0
Franklin & Son	408	0	0
Hopcraft	385	0	0
Hopcraft & Bennett (accepted)	280	0	0

For the re-erection of a warehouse, in Wellclose-square, Whitechapel, for Messrs. Henry Smith & Co. Messrs. H. M. & W. Greller, architects. Quantities supplied by Messrs. William Waymouth & Son :—

Knight	£2,351	0	0
Oxlade	1,978	12	3
Little	1,949	0	0
Jacobs	1,899	0	0
Outhwaite & Son	1,718	0	0

For additions to schools, St. Mary Abbotts, Kensington, for the Ven. Archdeacon Sinclair. Mr. G. M. Hills, architect :—

Manley & Rogers	£6,998	0	0
Chappell	6,973	0	0
Hill, Higgs, & Hill	6,860	0	0
High	6,777	0	0
Bayes & Ramage	6,613	0	0
Hopley	6,600	0	0
Culam	6,629	0	0
Morland & Nixon	6,525	0	0
Grimwood & Sons	6,170	0	0
Dove Bros.	6,175	0	0
Stimpson	5,980	0	0

For St. Margaret's Church, Barking-road. Mr. F. W. Tasker, architect :—

Scrivener & White	£4,285	0	0
Bangs & Co.	4,223	0	0
Nightingale	3,763	0	0
Killby	3,758	0	0
Bostock	3,690	0	0
Linzell	3,660	0	0
Grimwood & Sons	3,568	0	0

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Any further information may be obtained from

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The Builder.

VOL. XXXIII.—No. 1672.

Working Details of the Artizans' Dwellings Bill.

THE great importance of the principle involved in the Bill for facilitating the Improvement of the Dwellings of the Working Classes in large Towns, to which we called the attention of our readers last week, has induced us to give a careful study to the provisions of the Bill. We feel sure that our readers will share our interest in the subject. An attempt is being made, fairly and honestly made, to grapple with one of the greatest causes of wasteful cost that resist public improvement. It is of primary importance that the steps which are authorised by Parliament for this end should first be maturely considered. The impression produced on our minds by the details of the Bill is, that it has been the work of draughtsmen more familiar with the law of the case than with the practical operations with which the Parliamentary requisitions that at present exist have familiarised the engineer. There is no doubt whatever that the provisions of the Bill, if they become law, will call the civil engineer into an activity to which he has long been more or less a stranger, as well as the architect. We do not wish to raise any question, or to refer to any question which has been raised, as to the relative importance of the medical and of the engineering profession, with regard to sanitary improvement. So long as this improvement is on paper alone, it is competent to any man to propose his own plans, or to discuss what should be done, with more or less acquaintance of the subject. But as soon as we begin to meddle with ditches and drains, with bricks and mortar, with culverts and outflows, proper professional aid becomes indispensable. The attempt to do without it will involve so much cost that, sooner or later, every one will be convinced that the only persons fit and proper execute sanitary works are those who have been practically educated to superintend. the operations of the builder.

The question, however, between the preliminary consultation of competent professional aid, and the resorting to it only when mistakes have been made, and cost incurred, is one of national importance. It is one, we may say, which has been signally kept out of sight in the preparation and in the administration of the last measures authorised by Parliament; and the mode in which the engineer will, in point of fact, be called into action under the proposed provisions of the present measure, proper and necessary as it is, does not seem to us to have been fully appreciated by the draughtsman of the Bill. For, had such been the case, we think that the wise preliminary measure of taking practical engineering advice as to the details of the measure itself, would have left more distinct marks upon the face of the record.

There can be no doubt that, up to a certain point, all advocates of sanitary reform will rejoice at the prompt manner in which the subject has been attacked by the Government. It is much to hear our own statistics, our own arguments, and our own inferences announced to the House of Commons from the lips of a Secretary of State. With the general object we are, of course, at one. Of one special obstacle to urban improvement on a large scale, the wasteful cost of Parliamentary and legal procedures, we have but too much experience. Of the value of a straightforward attempt to strangle that hydra, we are fully convinced. But the question remains, first, whether the provisions now brought before Parliament will, to such an extent as is desirable, effect that end; and, secondly, whether they are not susceptible of some improvement.

As regards the past, there can, we think, be little doubt that the exertions, and the fruits of the exertions, of private individuals, deserve quite the lion's share of any credit that has to be divided between the nation and the Legislature. Acts of Parliament have been passed enabling corporations to cede land and to raise money for the purpose of providing house accommodation for the working classes. The Act introduced by the hon. member for Finsbury, to empower the local authorities to demolish houses unfit for human habitation, was shorn of its original proportions in its passage through Parliament. Against these legislative measures, and those directed against overcrowding which have not been fully carried out, are set, on the side of private benevolence, the expenditure of a capital sum of 600,000*l.* by the Peabody trustees, and of a like sum by the two societies presided over by Lord C. Hamilton and Sir S. Waterlow. Other bodies of a similar kind have also done much for the labouring classes. How much, however, remains to be done may be estimated from the fact that the total of the accommodation afforded as the result of all their efforts, is stated as only adequate for 30,000 people; while the rate of increase that has long obtained in the metropolis adds half as many more than that number to the population in the course of every year.

We only re-echo the sentiments of the best known advocates of sanitary reform, both within and without the walls of Parliament, in congratulating the Right Hon. the Secretary of State on the firm grasp which he has taken of this long obnoxious hydra. Not only has he laid down principles which are in themselves indisputable, but he has taken the means to make himself personally acquainted with the evils of which complaint has been made, and with the various efforts which have been made in the chief centres of population,—in Liverpool, Glasgow, Edinburgh, —for their removal. Very wisely, and very distinctly, the Minister guards himself from anything that might be thought to interfere with the internal organisation of the great building industry, or with any form of private right, except such as may involve great private and public wrong. It is not, we fully agree, the duty of the Government to provide the citizens of the country with the necessaries of life, including the necessary number of habitable dwellings. It is not of the policy of a great statesman to encourage any class to depend, not on their own exertions, but on the charitable aid of the State, the parish, or the private benefactor. Nor is it in accordance with our habits of thought and principles of action for the Government to do, in the matter of providing homes, what some of our Continental neighbours are accustomed to do in the matter of providing food. Maximum rents are not to be established by Act of Parliament, nor is there any effort to be made to encourage, or to compel, local bodies to provide living accommodation for any class of persons at rates below the market value. Where the State ought to interfere is at that very point where individual action, and parochial or municipal action, are now arrested. An admirable appreciation of this point is shown by the measure contemplated by the Government. The question only is as to the means proposed.

If a disguised charity, in the form of an artificially reduced rent for healthful and adequate dwelling accommodation, is not to be enforced on the national or the local taxpayer or ratepayer, it may be asked, How can Government interfere at all in the matter? We want nests of pestilence swept away, seedbeds of disease exterminated, broad open roads cut to enable the wind to sweep through dense neighbourhoods which are now screened from its effects by intricacy of plan and narrowness of roadway. This work must be either remunerative or not, either self-supporting or not. In the former case, why is it not already done, as a legitimate speculation? In the latter case, how is Government to lend any aid without recourse to the taxpayer?

The answer is simple. All the more credit to those who have just pointed it out. Public improvements, in the actual state of our national civilisation, are prevented from being remunerative,—we mean in a direct pecuniary sense only,— by certain legal obstacles. These obstacles are twofold: they first give to individuals the power of resisting any improvement, unless they are paid their own terms, and they secondly involve every step in such a cloud of legal expenses, as to double the actual cost of the property acquired. Here, then, the Legislature has, it may be argued, the power of authorising an immense saving of outlay, and of thus diminishing the actual cost of the site of improved dwellings without taking a penny out of the pockets of any man. The lawyer, it is true, may demur to this statement, but the reply is ready,—if their aid is not necessary, why should it be purchased?

The new scheme proposes to lessen the enormous expense of special Acts of Parliament by a public measure applicable to any case, under the provisions of which it will be competent to the Secretary of State to give that authorisation, for the action of local authorities, which now has to be sought by so cumbrous, costly, and antediluvian a proceeding as a private Act of Parliament.

We now come to the machinery by means of which it is intended to diminish the actual expenses attendant on obtaining powers for urban sanitary measures, including those for the compulsory purchase of land, at fair and reasonable prices, from which so much relief is expected. We fear that, however truly the proposed measure may be a step in the right direction, it is not so simple or so efficient as might be gathered from the able speech with which it was introduced.

In the first place, the projectors of the new improvement works must take those preliminary steps which are now incumbent on any person applying for an Act of Parliament. We do not object to this. We do not see how it could well be otherwise. But it has been somewhat overlooked in what has been said on the matter. The able skill of a competent engineer or architect called in, in the first instance, to advise, to survey, to plan, and to estimate, will be as necessary for a local authority that is about to seek the authorisation of the Secretary of State, as it is, at the present day, for any association of private individuals who wish to make a railway, a dock, or any other public work.

"The completion of an improvement scheme," as provided by the Bill, involves very much more than is requisite at present for an application for an Act of Parliament. We are not saying that this is objectionable. We think, on the contrary, that the definition, in the preliminary stages of a great scheme, of matters

that are too frequently left to be fought out under pressure, is highly desirable. But it is important that local authorities, professional men, and Parliament, should carefully consider, and duly understand, this much.

On the completion, an advertisement is to be published in a local newspaper, during three consecutive weeks, describing the scheme, and indicating a fit place where the plans—no, it does not say the plans; the words used are "a copy of the scheme," which has no definite meaning to a surveyor,—may be seen. This is to be done in September, October, or November; and, in the following month, a notice is to be served on owners, lessees, or occupiers of lands proposed to be taken compulsorily, asking for their assent or dissent.

It would simplify all this very much to consider that power to take all land compulsorily is sought; that private agreement might preclude recourse to arbitration; but that, failing such agreement within a fixed time, arbitration would be resorted to in regular course.

The chief novelty of the Bill now occurs. On compliance with the foregoing provisions, a petition is to be presented to the Secretary of State, or Local Government Board, asking for authority to proceed with the scheme. This authority, at the discretion of the minister, is to be provisionally given; and the confirmation of this sanction is to be obtained from Parliament, at the instance of the minister, but, as a subsequent clause provides, at the cost of the applicants.

Here, then, at the first glance, is the place where the enormous saving of cost is to be effected. But we must not be in too much of a hurry. It is not by any means so simple a matter. Nor, indeed, in default of a thorough organisation of the sanitary administration of the country, such as we have long since indicated as the only proper arrangement, would the matter be simple. On receipt of the application, "the confirming authority" is empowered to direct a local inquiry. That is to say, the whole of the matter now fought out before a Parliamentary Committee in Westminster, is to be fought out before a local board arbitrator on the spot. There are, no doubt, great advantages to be obtained from this change. But it is no less true that there are great disadvantages, and that which is the chief disadvantage, in our opinion, is, that the arbitrator is only a provisional judge. In point of fact, there is a double arbitration, and there is room for the admission of vexatious opposition, hardly, if at all, less costly than at present. The office of the confirming authority is, in the first place, to hold a local inquiry as to the correctness of the official representations made, as to the sufficiency of the scheme, and as to the local objections. The first two items are within the province of the engineer, and the report of a competent man, on due investigation, would no doubt be adequate and satisfactory. But it is quite otherwise with regard to "local objections." Here the lawyer will demand to be heard. For example, "the extinction of rights of way, and other easements," is one of the objects to be secured by the sanction of the new scheme. There are often intricate and important questions, which no surveyor, architect, or engineer, would feel justified, in many cases, in deciding without a legal assessor. Here comes in the advocacy of counsel, and all the trouble and cost of a Parliamentary fight, without the authority of the decision. Then it seems that the owners of land which it is proposed to take by compulsion, or in other words the opponents of the scheme, may obtain of the confirming authority (see page 5, line 1) such order as the latter may think fit for allowance of costs, charge, and expenses properly incurred by him in opposing such scheme. The officer empowered to make the local inquiry is to have power to administer an oath (page 7, line 12), he is duly to advertise his inquiry, and he is to decide on the compensation payable to opponents. Thus he has not only to advise the Secretary of State as to the general character of the scheme, which is a proper professional duty, but has further to arbitrate as to private and public interests, rights, and compensation of opponents, and value of property taken, which is a very intricate and responsible task. And this is further complicated by the fact, that either party can appeal from the valuation of this officer, and that the appeal lies to a jury. This, indeed, refers only to amount of compensation; but it is a provision that appears to introduce into the whole case an element of risk, uncertainty, and cost. Instead of one inquiry, we have a series of inquiries. There is the report to the Government; then there is the valuation of contested claims, together with the allotment of compensation to claimants. But the award just issued, "after due inquiry and examination" (p. 15), is to be provisional only. Twenty-one days' notice is to be given for objections to be made to the award. After the objections have been fought out, at the discretion of the arbitrator, a "final award" is to be given. But from this final award is an appeal to a jury.

We are far from writing in a carping mood. We have given hearty testimony to what we believe to be the anxious wish felt by the Government for the adequate treatment of a most important national question. But it is better, plainly and honestly, to call attention to those points which seem to us to be objectionable in the Bill than to leave the criticism until it is too late to be of any real use. We believe that the main difficulty arises from the very cause which rendered the first measure so inoperative. It has been, we think, from the effort to carry on imperial measures by parochial machinery.

Improvement of over-crowded neighbourhoods is only one part of the great sanitary improvement demanded for the country. The machinery which alone can competently effect the one object, is very similar to that required for the other. It is quite true that it does not absolutely follow that the questions of watershed, outfall, disposal of pollutions of all kinds, will necessarily arise in every case of a local building improvement scheme. But, on the other hand, they may. And it is of essential importance that no such schemes should be so carried into effect as hereafter to prove obstacles to any direct sanitary measure. All this points to the absolute necessity for the collection and systematisation of all the information acquired on the subject,—a duty which none but a central authority can discharge. We want to have the great sanitary principles, which are to regulate all our future improvements, decided. We require to know, in the first instance, roughly, but taken with full accuracy, how the physical conformation of the country renders it necessary that the great outfalls, and great water supplies, are to be dealt with. All measures of sufficient importance to demand Parliamentary sanction,—direct or indirect,—must be regarded as likely hereafter to form a part of our complete system of water supply and drainage. If not so regarded, not only will money be wasted, but obstacles will constantly be created to all sound progress. With a good sanitary survey of the country, the recognition of the merit or demerit of any scheme, such as those now contemplated, would be far more readily dealt with. Questions of local compensation, detached from the more important question of the essential value of any scheme of improvement, could be settled by a far less cumbrous and costly method than the double award checked by an appeal to a jury. If the profession into the hands of which the final execution of a certain amount of work must come be called on, in the first instance, to establish those general principles sanctioned by the Government, and to acquire, plan, tabulate, and render accessible that physical information which is now acquired bit by bit, and is only useful to the special inquirers themselves, we think it would be possible to avoid great and unnecessary cost to the country,—to avoid mistakes, and to avoid that loss of time which too often means loss of life. This, however, must not be interposed now; Mr. Cross's Bill must be helped on, and every endeavour should be made to simplify its clauses.

We hope that we are correct in inferring, from the statements made in the House, that it is in the contemplation of the Government to obviate, or at least to alleviate, by the formation of districts of a sufficient magnitude, that central and suicidal vice of the last measure, which left the institution of sanitary improvement to the report of a single medical officer to a local authority, that lends every inducement to stifle the complaint. It is easy, as we have often shown, to remedy this evil. Unless, that be done, we fear that nothing will be done. The present state of the law is one that asks the cat to tie the bell on its own neck.

New Corporation Buildings, Dunfermline.—Measures are being taken for the erection of new Corporation Buildings, in the Kirkgate, at a cost of 18,000*l.*

LIVES OF THE ENGINEERS.*

The early engineers in this country were foreigners, chiefly Dutchmen. Mr. Smiles recounts how in the year 1607, shortly after the accession of King James I., a series of floods burst in the embankments along the east coast, but "for the honour of his kingdom" the king said "he would not any longer suffer these countries to be abandoned to the will of the waters, nor to let them lie waste and unprofitable, and that if no one else would undertake their drainage, he himself would become their undertaker."

A Commission having been appointed, it was found that not less than 317,242 acres of land required drainage; but who could do it, was the question; and there were loud calls for some skilled engineer to stay the mischief and reclaim the drowned lands; but no English engineer coming forward at the king's command, he called to his aid Cornelius Vermuyden, a Dutch engineer, a man well skilled in works of embanking and draining. During the same king's reign, Hugh Myddelton, a London goldsmith, a native of Denbighshire, cut the "new river" to bring the fine springs of water arising at Chadwell and Amwell, in Hertfordshire, to London, the distance being, as the crow flies, about twenty miles, but by the route of the new cut, which followed the contour of the hills to avoid deep cutting and embanking, nearly twice that distance. Myddelton's own money running short, the king made him a grant from the Treasury, in 1612, of one-half of the whole cost of the works, in consideration of his receiving one-half of the profits of the undertaking. The total payments made out of the Royal Treasury amounted to 8,609*l.* 14s. 6d., which is, as nearly as can be ascertained, one-half of the whole cost, which was about 18,000*l.* In 1613, the water was brought to Islington. The capital was divided into seventy-two shares, of 250*l.* each, thirty-six belonging to Myddelton, and thirty-six to the king, in consideration of his having borne half the cost. Charles I. regranted the "king's shares" to the company of proprietors, in consideration of a sum of 500*l.* a year being paid into the king's exchequer, which is paid in thereto to this day. At the present time each share produces about 850*l.* a year. Thus, at only twenty years' purchase, the capital value of each whole share at this day would be about 17,000*l.* In the course of time, most of the shares have become very much subdivided, the possessors of two or more fractional parts of a share being enabled, under a later decree, to depute a person to represent them in the government of the Company.

James Brindley, who made the first navigable canal, from Worsley to Manchester, which was opened for traffic in the year 1761, was born in 1716. Having learnt the business of a millwright, he commenced practice at Leek, and was largely employed in constructing waterwheels and mill-work, not only in that neighbourhood, but at considerable distances. He appears to have been employed on a survey of a proposed canal to unite the rivers Mersey and Trent, promoted by Lord Gower, whose land agent was Thomas Gilbert, whose brother John was land agent to the Duke of Bridgwater, and it was through the Gilberts that Brindley came to be employed to make the canal for the Duke, from Worsley coal-pits to Manchester, about ten miles in length. This canal was soon extended to Runcorn, on the Mersey, for the accommodation of the traffic between Liverpool and Manchester. Brindley conceived the capital idea, which he "early formed and determined to carry out, to construct a level of dead water all the way from Manchester to a point as near to the junction of the canal with the Mersey as might be found practicable." Hence, all the locks on this canal were concentrated at its lower end, near Runcorn, where the navigation descended, as it were by a flight of water steps, into the Mersey. He followed this principle also in laying out the Grand Trunk Canal, concentrating the locks in this case at the summit, near Harecastle. The Bill passed Parliament in 1766, and the works were at once commenced: Josiah Wedgwood cut the first sod on the declivity of Brambills. The other canals laid out and principally executed by Brindley, were the Wolverhampton canal, and those of Coventry, Birmingham, Droitwich, Oxford, and Chesterfield. He had no treasury of past experience, as recorded

* Lives of the Engineers. By Samuel Smiles. Illustrated by nine steel portraits, and 342 illustrations on wood. 5 vols., post 8vo. London: Murray, 1874.

in books, to consult, for he could scarcely read English, and certainly he could neither read French nor Italian: he could hardly write at all, legibly; and he talked as they do where he was born,—in the North Staffordshire Moorlands; but he could figure away with a piece of chalk most eloquently, upon the floor, when he had to represent to others what he would do.

John Smeaton and John Rennie are coupled by Mr. Smiles as the engineers of harbours, lighthouses, and bridges. The Eddystone Lighthouse is Smeaton's monument, but he did a vast deal of work of other kinds, most of which, however, was in connexion with water, in some form. Perhaps there never was an engineer so careful of details, so exact, or who gave so close a personal attention to his works. Smeaton's "Reports" are to this day offered as a model to those who would contribute papers to the Institution of Civil Engineers. He was born in 1724, at Austhorpe, near Leeds. It was the wish of his father, who was an attorney, that he should follow the profession of the law, and he attended for some short time the courts at Westminster Hall, but he could not repress his strong desire to pursue some mechanical occupation, and he sought out for himself a philosophical instrument-maker, and entered into his service; but young Smeaton did not live a mere workman's life, he was a regular attendant of the meetings of the Royal Society. In 1750 he lodged in Great Turnstile, and shortly after, when he commenced business as mathematical instrument-maker, he lodged in Furnival's-inn-court, from which his earlier papers, read before the Royal Society, were dated. In 1752 he made a series of experiments, upon which his great paper was founded, entitled "An Experimental Inquiry concerning the natural Power of Water and Wind to turn Mills," for which he received the Society's Gold Medal in 1759. It was of great benefit to Smeaton that he made a tour of the Low countries to see the admirable canal works there, making notes which were useful to him long afterwards. In 1757, on the 12th of June, he set the first stone of the Eddystone lighthouse, 2½ tons weight. The light was first exhibited on the 16th of October, 1759.

"On entering the English Channel from the west and the south, the cautious navigator feels his way by early soundings on the great bank which extends from the Channel into the Atlantic, and these are repeated at fixed intervals until land is in sight. Every fathom nearer shore increases a ship's risks, especially in nights when, to use the seaman's phrase, it is 'as dark as a pocket.' The men are on the look-out, peering anxiously into the dark, straining the eye to catch the glimmer of a light, and when it is known that 'the Eddystone is in sight,' a thrill runs through the ship, which can only be appreciated by those who have felt or witnessed it after long months of weary voyaging."

Smeaton was extensively employed in engineering works of various kinds,—bridges, mills driven by water-power, weirs, sluices, and dams. He was very particular in the execution and finish of his machinery. The water-pumping engine, which he erected for Lord Irwin at Temple Newsam, in Yorkshire, to pump the water for the supply of the mansion, is an admirable piece of workmanship, says the author, and still continues in good working condition.

The works of John Rennie, which are known to the greatest number of people, are Waterloo, Southwark, and London Bridges, over the Thames; but besides bridges, he was largely employed in harbour and dock works, and in the matter of fen-drainage he hit upon the capital idea of diverting the waters of the uplands by a separate channel, instead of allowing it to descend into and mix with the waters of the low ground. Cornelius Vermuyden, a Dutch engineer, and others, during the seventeenth century had been employed in draining the Fens, but it remained for Rennie to put in practice the true principles of fen-drainage. In canal works also he was extensively employed. The characteristics of Rennie's works are strength and beauty. He carried the quality of strength almost to a fault. When we have sufficiently well considered the circumstances in which a work is situated, and what forces it may be exposed to, and have further considered its own powers of resistance, and have proportioned all parts to each one, and each part to the whole, we have then gone as far in the matter of expenditure as we are justified in, for all beyond these requirements is waste. The best that can be said for a work which is over-strong for its purpose is that its designer has erred on the safe side. But whatever it be that the engineer may determine in his judgment to be necessary, the full cost of it should always be stated boldly, as Rennie always did. Mr. Smiles says of him in this respect, "In his estimates he was careful to conceal nothing, stating the full sum which in his judgment the work under consideration would cost; nor would he understate the amount by one farthing in order to tempt projectors to begin any undertaking on which he was consulted." When under examination before Parliamentary Committees, he could always give a strong, clear reason in support of any scheme he recommended, but when asked any question outside the line of his actual knowledge, he had the honesty to say at once, "I do not know;"; never guessing or attempting to give ingenious answers to show his cleverness. "His reports were models of what such documents should be. They set forth all the facts bearing upon the topic under consideration, in great detail; but with much plainness, force, and clearness."

Thomas Telford, the first President of the Institution of Civil Engineers, who died in 1834, at the age of seventy-seven, and who was our greatest maker of roads, together with the bridges they required, was born of poor parents in Eskdale, and served his time as an apprentice to a stonemason in the neighbourhood, whose business was of a very humble sort, and he continued to work as a journeyman at Langholm, taking a pride in pointing to the superior handiwork which proceeded from his chisel; and his tool-mark, says the author, is still to be seen on many of the stones of a bridge upon which he was employed. Having spent two years on first-rate work at Edinburgh, Telford set out for London, with his mallet and chisels, and his leather apron, and with a letter of introduction to Mr. John Pasley, an eminent London merchant, from his sister, Miss Pasley, of Langholm, who had been very kind to the mason's apprentice in lending him books. Mr. Pasley gave him letters of introduction to Sir William Chambers, the architect of Somerset House, then in course of erection, where he was immediately set to work. He superintended the erection of the Port Admiral's house at Portsmouth Dockyard, and several other buildings connected with the yard. Keeping his eyes open he saw the various operations necessary in the construction of graving-docks, wharf walls, and such works as were among the principal occupations of his after-life. His work at Portsmouth being done, he went to Shrewsbury to superintend some alterations at the Castle for Mr. Pulteney, member of Parliament for that town. During the progress of the work he was appointed county surveyor of Salop, about the year 1787. In the following year the Roman city of Uriconium, near Wroxeter, was discovered, about five miles from Shrewsbury. Mr. Pulteney, being lord of the manor, authorised Telford to conduct the necessary excavations at his expense. The discovery formed the subject of a paper read before the Society of Antiquaries in London on the 7th of May, 1789, published in the "Archæologia," together with a drawing of the remains supplied by Mr. Telford. His work as county surveyor, viz., roads, bridges, culverts, and such like, had in some measure qualified him for the appointment which he next received,—that of engineer to the Ellesmere canal. The success of the Duke of Bridgwater's canal had awakened the attention of the landowners throughout England, and Telford commenced the construction of the canal soon after his appointment in 1793. In the Chirk Aqueduct, and in another named Pont-Cysylltau, he used cast iron; in the one case for the bottom only, and in the other for both bottom and sides, of the trough of the canal, instead of clay puddle, as Brindley had done. Mr. William Jessop, C.E., who had been a pupil of Smeaton, was consulted by Mr. Telford on the subject, and it is believed that Mr. Jessop suggested to Telford the use of cast-iron troughs, but it appears to be generally conceded that the execution of the entire works rested with Telford, the acting engineer. After these followed his numerous iron and other bridges, including the well-known suspension bridges over the Menai Straits and the Conway river, and his harbour and canal works. And, in short, Mr. Telford was for many years at the head of his profession, and was employed on many and various engineering works.

As everybody knows, James Watt made more improvements in the steam engine than anyone else has ever done. His inventions of new parts, such as the parallel motion and the governor, were of themselves great inventions, but to condense the waste steam in a separate vessel, instead of in the cylinder itself, as Newcomen had done, was the greatest of all, and was tantamount to the invention of a new machine; and these, with double action and the use of the crank, constitute the ordinary rotary engine of to day. The employment of the expansive force of steam, whether in the one cylinder or in a second one, was another great discovery; and in the main our engines to-day are very much as Watt left them.

Boulton and Watt seem to have been well allied. "In the midst of his many troubles and difficulties, Watt's invariable practice was to call upon Boulton for help. Boulton was satisfied to take men as he found them, and try to make the best of them. Watt was a man of study; Boulton a man of the world. Watt was a master of machines; but Boulton, of men." Like Smeaton, Watt began his career as a mathematical instrument maker. He had the very great advantage of the intimate acquaintance of Dr. John Robison, professor of natural philosophy at Edinburgh, a man whose personal acquaintance must have been invaluable, and whose writings have been much appreciated by engineers. Speaking of the younger days of both, the author says "Robison was nearer Watt's age than the rest, and stood in the intimate relation to him of a bosom friend, as well as fellow inquirer in science. . . He was a capital talker, an accomplished linguist, and a good musician; yet with all his versatility, he was a profound thinker and a diligent student, especially in mathematical and mechanical science,—as he afterwards proved in his elaborate "System of Mechanical Philosophy," edited by Sir David Brewster, and his many able contributions to the "Encyclopædia Britannica."

The construction of railways for passenger traffic began, practically, with the Liverpool and Manchester line, which was opened in June, 1830. George Stephenson, the engineer to the company, had been engaged for many years previously in improving the locomotive engine, and on the Liverpool and Manchester Railway the first passenger trains were run at the average speed of seventeen miles an hour. In the previous year the directors offered a prize of 500*l.* for the best locomotive engine, and in October four competitive engines were entered for trial on a level piece of railway about two miles in length, at Rainhill. The "Rocket," made by George Stephenson and his son Robert at their locomotive engine works at Newcastle-on-Tyne, attained a maximum speed of twenty-nine miles an hour, and the average speed at which many journeys were performed was fifteen miles an hour. The performance of this engine (which, by the bye, is now set up in the Museum of Patents at South Kensington) far surpassed that of any other engine entered for trial. But this was by no means the first locomotive engine. Trevethick had used high-pressure steam in both road locomotives and on tramways, many years before, and Stephenson himself had done so at the collieries where he was employed in the neighbourhood of Newcastle. It was an improvement on former engines, but a very great one. "The commercial results of the Liverpool and Manchester line were so satisfactory, and indeed so greatly exceeded the expectations of its projectors, that many of the abandoned projects of the speculative year 1825 were forthwith revived. An abundant crop of engineers sprang up, ready to execute railways of any extent."

But well as the Rocket and similar engines could travel on tolerably level ground, they could not surmount inclines of even moderate gradient, and when the London and Birmingham line was made, of which Robert Stephenson was the engineer, the difficulties of the country were very great, seeing that it was necessary to cut down hills, however high, or else to tunnel through them, and to fill up valleys, so as to produce a line of easy gradients. The tunnelling was a new kind of work to most of the contractors, and Robert Stephenson's experience in the collieries of the North rendered him well fitted to grapple with such difficulties. "The most formidable excavations on the line are those of Tring, Denbigh Hall, and Blisworth. The Tring cutting, across the great chalk ridge of Ivinghoe, is 2½ miles long, and for a quarter of a mile is 57 ft. deep. The Blisworth cutting is one of the longest and deepest grooves cut in the solid earth. It is 1½ mile long and in some places 65 ft. deep. One-third of the cutting was stone, and beneath the stone lay a thick bed of clay

under which were found beds of loose shale so full of water that almost constant pumping was necessary at many points to enable the works to proceed." For a year and a half no substantial progress was made with this work by the contractor, and the engineer took the works in hand for the company, but the extraordinary difficulties encountered in forming the cutting had the effect of greatly increasing the cost of this portion of the railway.

But the Kilsby tunnel was the greatest difficulty of all. Though not the longest, this is one of the most interesting works of the kind in England. It is about 2,400 yards long, and runs at an average depth of about 160 ft. below the surface. The trial shafts indicated that the ground consisted of shale of the lower oolite, and the works were let accordingly. But they had scarcely been commenced when it was discovered that, at an interval between the two trial shafts which had been sunk, about 200 yards from the south end of the tunnel, there existed an extensive quicksand under a bed of clay 40 ft. thick, which the borings had escaped in the most singular manner. While proceeding with the work from the bottom of one of these shafts, the water burst in and drove everybody out of the tunnel. Robert Stephenson and his father took serious counsel together. George was in favour of pumping out the water, but Robert suggested the expediency of draining it off to the south end of the tunnel by a driftway. This being proceeded with, the excavators were soon close upon the sand-bed. One day, when the engineer, his assistants, and the workmen were clustered about the open end of the driftway, they heard a sudden roar as of distant thunder. On examining the inner end of the drift, it was found that the loud noise had been caused by the sudden discharge into it of an immense mass of sand, which had completely choked up the passage, and prevented the water flowing away. Engines were then erected, of an aggregate power of 160 horses, and they went on pumping for eight successive months. Mr. Smiles describes the peculiarities of this celebrated case, which are very interesting, and, moreover, very useful to those who have to work in a quicksand, anywhere.

We pass over all those other incidents of the lives of George and Robert Stephenson, which are so well related by the author, in order to save space for a mere mention of the vast difficulties which Robert Stephenson overcame, with the help of the original investigations into the strength of iron made by the late Sir William Fairbairn, and with other most able assistance, in making a line of railway from Chester to Holyhead; difficulties of line, difficulties of gradient, difficulties of crossing the Conway river and the Menai Straits; and, moreover, the difficulty of protecting the line in some parts from the wash of the sea. There was no great choice of line in this case, in any part, but least of all in passing the precipitous headland of Penmaenmawr, between Conway and Bangor. The line approaches the sea as near as it was possible; but a short tunnel of 10¼ chains in length through the point could not be avoided, the line being formed on the east and west sides by a terrace cut out of the cliff, and by embankments protected by sea-walls. The sea made great havoc with the work during its progress. After about three years' anxious labour, the work was finished; but Mr. Stephenson confessed that if a long tunnel had been made in the first instance through the solid rock of Penmaenmawr, a saving of from 25,000*l.* to 30,000*l.* would have been effected.

As to the bridge over the Menai Straits, called the "Britannia Bridge," it consists of two independent continuous tubular beams, each 1,511 ft. in length, and each weighing 4,680 tons, independent of the cast-iron frames upon the masonry towers and abutments. This bridge takes its name from a rock in the middle of the channel,—the Britannia Rock,—upon which Mr. Stephenson determined to found his central tower of support. As built, this tower is 230 ft. high. On each side of this central tower is another one, and outside of each of these is an "abutment." The spans are two of 460 ft. over the water, and two of 230 ft. over the land. Each of these immense tubes was built upon the shore, and floated to its position, being then raised vertically by hydraulic presses.

Considering how strongly the Stephensons and Mr. Brunel were opposed to each other in the matter of the gauge of railways, and in that of the atmospheric railway, it is consolatory to know that Brunel willingly helped Stephenson to raise his great tubes, and that Robert helped him to get his *Great Eastern* steamship off the ground into the water.

A LOOKING-GLASS FOR LANDLORDS.

Under this title Mr. Egerton Warburton has put forth, in the shape of a score or so of pages of very fairly-written verse, some thoughts on the difficulties and duties of county landlords, in the course of which considerations connected with buildings new and old are expressed with some humour and a great deal of good sense. It would be happy for architects if all their clients had as good a notion of what is required in a house as Mr. Warburton seems to possess; and though it would be beside our purpose to follow him through all his recommendations, we may notice, among other points, his objection to the *porte cochère*, which, though it may shelter a guest from rain,—

"Gives gather'd force to every wind that blows;

and also the not quite superfluous advice as to simplicity of the main thoroughfare plan in a house, which may remind the reader of Viollet-le-Duc's precisely similar remark in the little work we noticed a short time since, "How to Build a House":—

"Let not the way that leads thereto disgrace
The guesten-chamber's well-proportioned space,
A labyrinth of lobby, void of clue
To guide strange feet as lost they wander through.
Oft up five steps our weary knees we bend;
That level reach'd, again by five descend."

The "Lodge" is regarded as the most frequent stumbling-block of the architect:—

"Oft-times a plaything from the toy-shop ta'en,
With barge-board fringed and tipp'd with glittering vane;
Oft-times a round tower, shaped like chimney-pot,
By loop-hole lit,—a castellated cot!
Such Mrs. Grundy on her mantel fills
With cedar matches or with twisted spills."

An equal simplicity is demanded for the labourer's cottage, and a not uncalled-for rap is given to the frequent attempts at imparting "picturesqueness" to such structures by an imitation of half-timber construction, when the brickwork is concealed by,—

"Sliced planks of sawn attenuated deal."

The remarks on the relation between landlord and tenant in the present day as compared with the past—the stronger and more permanent bond which formerly united them, when the tenant's family were on the land from one generation to another, and there was a more intimate union than that of mere interest and economy, are in a very pleasing spirit, and to a considerable extent true; but we must remind the lover of the patriarchal system that there are two sides to the question. Mr. Warburton is an evident lover of old times and of old buildings; and in regard to the latter we can quite share his feelings, and may quote a part of a pathetic little history which he gives us as a fact, narrating the fate of a picturesque old cottage known in its neighbourhood as "The Nook," which one morning came, with the estate on which it stood, into the hands of a new owner, who cared not for the picturesque, and who sent to survey it a man

"Expert in stucco and in 'fronts' first-rate,"

accompanied by a lawyer, and who, while pretending to survey it, had already doomed its downfall, on the rational principle that

"Old houses patch'd will scarce patch up a bill,
New-built they bring much profit to the till.
'Sir, take advice,—if you have eyes to see
Your own opinion will with mine agree,—
Take my advice, rebuild it spic and span;
With your permission I will send a plan.'
The lawyer thought he understood the case,
Confirm'd the verdict and condemn'd the place.
'Not long shall such on this estate be seen,
Like parchment blot it must be scratch'd out clean.'"

And so, in spite of the lamentations of the inmates, who protested that they loved the place:—

"Workmen ere long with axe and hammer came;
Such e'en to them appear'd a deed of shame;
No taint of rot was in, or as dross to gold;
As when first mortised all was firm and sound;
Beams hard as iron turn'd the blunted axe,
Blow follows blow ere they their hold relax;
Relentless still its work Destruction plies,
'The Nook' at length a crumbled ruin lies.
Up sprang the new one, as unlike the old
As chalk to cheese is, or as dross to gold;
The roof-span flatten'd, and the timbers thin,
Cheerless within, and comfortless within;
No porch projecting, no wide chimney'd hall,
No chamfer'd mullion in the nine-inch wall;
Up from the ground it like a mushroom shot,
Our only hope it may as quickly rot!"

Two sketches of "The Nook" in 1860 and in 1870 certainly go far to justify the author's lament over the change. But can Mr. Warburton say what the drainage and sanitary arrangements generally of "The Nook" were like? We suspect very deficient. It is not safe to look at these things only as matters of "feeling." But there are two ways of making such changes, when they are inevitable, no doubt. The feelings of tenants for their old house (which they have sometimes as good right and reason to love as the landlord to love his "ancestral hall") are often far too little regarded, and we could cap Mr. Warburton's story with one in which a "noble" landlord, bent on improving his property, and appealed to by tenants, perhaps unwisely but not unnaturally, against the demolition of their old homes, met the appeal by explaining that he could do what he liked with "his own," and that "he had a right to kick them all out next week if he chose." That is *not* a pleasant way of doing it.

A little more care in correcting the punctuation would have been useful, and would have prevented in at least one place an apparent confusion of construction; but the pamphlet (for such it is, rather than poem) gives a pleasant idea of its author's sense of duty and responsibility as a landlord, and some of its suggestions on building matters may reach those who would scarcely read a more serious or technical essay.

THE SANITARY CONDITION OF BIRMINGHAM.

The report of the Sanitary Committee presented to the special meeting of the Town Council last week states, among other things requiring remedy, that out of the 70,000 houses which have been inspected, 20,000 have windows which are so constructed as not to admit of being opened at the top, thus rendering impossible that kind of ventilation which is indispensable to health and comfort. It also shows that 24,000, or one-third, are still dependent for their water supply on the sewage polluted surface wells of the town, while 101 houses have no water supply of any kind. It further appears that out of 307,500 inhabitants of these houses, 15,700, or about one-twentieth, are lodgers, whose peculiar social relations are required both by the rules of health and the law of the land to be duly looked after, but none of whom hitherto have been officially recognised, excepting those who live in houses coming within the technical description of common lodging-houses. This omission is now remedied by the regulations in regard to houses and parts of houses let in lodgings, which have recently been adopted by the Council, under which a systematic visitation of these houses may be carried out, and the provision of proper appliances, and the observance of proper precautions for securing the health of the inmates may be enforced.

The committee have decided to divide the borough into four districts, classed A, B, C, and D. Class A to be visited according to the medical officer's instructions, Class B to be visited every six months, Class C every two months, and Class D once every week. The officers will wear a badge. When a house is reported to be in an unfit state for human habitation through any fault of the landlord, he will be summoned in the first instance before the Sanitary Committee, and if he enters into a satisfactory arrangement with the committee to "put his house in order," he will not be brought before the magistrates, but in the event of his failing to do so, the inspector will at once apply to the Bench for a summons, and the proper sanitary regulations will be speedily enforced.

ASSOCIATION OF OFFICERS OF HEALTH.

A conference of medical officers of health, convened by the Manchester and Salford Sanitary Association, was held in Manchester on the 12th inst., under the presidency of Dr. Noble, the chairman of the Association. Officers of health were present from the chief towns of Lancashire and Cheshire. Derbyshire and Yorkshire were also, but less numerously, represented. The object of the meeting was to consider the propriety of establishing an association of officers of health for the north-west of England, with the view of obtaining united action in sanitary matters and furnishing legislation as to the public health. Such an association was formed under the name of the North-West Association of Officers of Health.

FRESH FIELDS FOR THE SKETCHER.

ONE result may be predicted as likely to arise from the recent discussions as to the "Hope of English Architecture." The study of draughtsmanship can hardly fail to receive a stimulus from the efforts made to disparage this primary study. This will notably be the case with reference to the first part of the labour of the draughtsman,—namely, the recording of the designs of past masters of the art of architecture. The measurement and delineation of the finest existing buildings have long been recognised as a professional occupation of no small value. It is well known to most of our readers how much stress is usually laid by the teachers of architectural science on the actual application of the 2-ft. rule. The principle, we doubt not, is sound. In this respect there is some difference between the duty of the surveyor and of the engineer, and that of the architect. In the former the great requisite is, to apply such metrical methods as will give the degree of accuracy proper to the end he has in view, and no more. Thus, if a survey be planned on the scale of 6 in. to a mile, it is abundantly accurate if the off-sets are stepped. An off-set staff may be applied almost, if not quite, as readily as the stride itself; but the best mode of measuring off-sets will be that which is most ready to the surveyor. For base lines, within certain limits, the chain is to be relied on, although the good practice of measuring the chain, between fixed points, at the commencement of every day's work, so as to allow of correction in case of need, should never be foregone. At certain stages we require a degree of accuracy superior to that of a roughly-chained line. And so we come to the details of trigonometric observation, and to the careful measurement of a true base line.

In architecture so much depends on extreme delicacy of detail, that the use of optical means of measurement, much as they save in time, is properly discouraged; and the actual application of rule or callipers is made a *sine quâ non*.

The point to which we wish to call attention is this. So much is now done, year after year, for the education of the draughtsman, that the science of architecture would be much advanced if the efforts were skilfully combined. It is the same thing, to a student, to measure a well-known and an unknown building. But it is a very different thing to the profession. The hundred and first measurement of a well-known object is admirable practice. But the dimensions, when noted, are of no value. They add nothing to what we knew before. They add to the skill of the student,—not the facts, which he could have obtained from books; but — the practice, which is what we cannot obtain from books. But if the time and care which have been thus half applied and half wasted had been applied to the measurement of a previously unknown building, the whole value of the work would have been secured. The student would have gained practice; the profession would have gained a knowledge of facts.

A reference to the "History of Modern Architecture," recently re-issued, will enable those who have the leisure and the means for foreign travel readily to see to what quarters it is most desirable for the architectural draughtsman to penetrate. Thus the modern architecture of Portugal is dismissed with less than two pages of letter-press, and a single illustration. Mr. Fergusson questions whether there are any buildings of Renaissance style in Portugal worthy of note; and adds that, if there are, they must have escaped the attention of artists and tourists. We will not limit our remarks by the use of the term Renaissance; as to the exact range of which various theories are sustainable. But as the monuments described in the volume on modern architecture reach back to the work of Brunelleschi, who was born in the latter part of the fourteenth century, we speak within compass when we say that there is an extraordinary amount of modern architectural detail to be collected in Portugal. The curious palace at Mafra is hard of access, but Lisbon contains evidence of the outlay of vast sums in ecclesiastical buildings. In no part of the world, with which we are personally acquainted, is there evidence of so lavish a display of architectural effort, succeeded, within so short a time, by so profound a decadence. We do not consider that art, in Portugal, ever attained a high degree of purity or of grace. On the contrary, much of the decoration is of a rudeness approaching the grotesque. Such is the case with the famous "Por bem" chamber in one of the royal palaces. The story has been often told of this Portuguese version of the establishment of the Order of the Garter. The King being surprised in the act of paying some attention to a fair lady of the Court, the tongues of the ladies who were not thus honoured were unchained; and the chorus was so loud and unanimous that his Majesty thought it needful to take positive measures to silence it. For this purpose the reception-room was closed for a time, and when re-opened was found to be covered on the walls with numerous representations of a jackdaw, each bearing a scroll in its beak, inscribed with the words "Por bem" (for good), in token of the honourable intentions of Royalty. We may hint that if it had been also added, in good Portuguese, "This is a jackdaw" to each bird, the explanation might not have been altogether out of place. We cite from memory this instance of the rudeness of Portuguese art. As to its magnificence, the story is very different, and the remains are such as to offer ample material for the sketching tourist.

The palace at Cintra is a spot which illustrates both the wealth and the poverty of art in Portugal. Less difficult of access than Mafra, it was connected with the capital by what, some years ago, was the only practicable road in Portugal. It is now, we believe, approached by railway. Its lofty height, perched on a hill that commands a wide view of the Atlantic, is not only delightful for the prospect, but luxurious for the relief which it offers from the intense heat of the summer in Portugal. But selection of site, as well as original design of the palace, was due, we believe, to the Moors. The Mauresque element is strong in the fantastic pile; and barbarism came in when the Moors went out. A breath of Damascus lingers in some of the apartments. There is an open room, walled on three sides only, on a terrace on a lofty part of the building, paved with marble, and inviting the lounger to a cool *siesta*. But when he advances to a certain distance on the floor, his weight sets in play a hidden piece of mechanism; and jets of water from above, beneath, and around, open their fairy artillery upon him; a sheet of falling water at the entrance threatening instant ducking if he seeks safety in flight. The two enormous cones which form the chimneys of the kitchen are the most conspicuous features of the palace, as one approaches Cintra. Their foolscap proportions have been immortalised in "Childe Harold." But with all that is ugly, and all that is puerile, the combination of prospect, atmosphere, shade from tufted oaks and glossy-leaved trees, and the lulling charm of the fresh Atlantic breeze, render Cintra one of the most magic places in the world.

Mr. Fergusson refers to a palace at Lisbon, and more than hints that the earthquake of 1751 has been made to play the part attributed, by Caleb Balderstone, to the fire at Ravenswood. We are not writing with Mr. Murray's handbook on the table, or attempting to give a description of the art and architecture of Portugal. We are only drawing on the memory of a short sojourn in the country, some years back, with the object of pointing out how much there is to reward the visitor who will go for the purpose of enriching his portfolio with architectural and picturesque sketches not to be found in our galleries and museums. There is an enormous pile of building, a little way out of Lisbon, to which the sovereign used to repair to hold the *Basamanos*, or levées; one end of which was left unfinished, with the ladders of the workmen reared against it, till they fell asunder from very rottenness. The great church at Belem, on the banks of the Tagus, is a wonder of elaborate detail. But the most striking feature of Lisbon to the stranger, and we may add to the man of science, is the evidence which it affords of the capricious, or rather of the ill-understood, path of the earthquake. Four different geological strata come to the surface within the area of Lisbon. On each of these the effect of the great earthquake was different. On one formation, that clay deposit known as the Almada beds, every building was thrown down. On the limestone, hardly a stone was shaken from its place, although there stands, on this rock, a narrow and lofty aqueduct, which looks as if it would go down, like a row of cards, on the slightest shake. On the sand, but little damage was done. As you ride through the streets of Lisbon you pass suddenly from a busy and inhabited area to one covered with untended ruins. You have merely passed from one formation to another, and thus stepped upon the traces of the earthquake. With the great Minister Pombal, who fed and restrained the populace after that terrible calamity, the ancient spirit of Portuguese enterprise seems to have departed. The parts of the city which were ruined in his day are still in ruins. If ruin be a main element of the picturesque, no European city is more picturesque than Lisbon.

We can cite another part of Europe, which is now more accessible, or at all events more agreeable for the tourist, than the Iberian peninsula, in which rich treasures await the enterprising draughtsman. Italy may be thought to be well known, and well represented in our architectural publications. Such, no doubt, is the case with many portions of Italy. With Rome, as the metropolis of Christian art, every educated man is more or less familiar, either at first, second, or third hand. The stones of Venice have become eloquent, in very fervent English. Ravenna, one of the four great ecclesiastical centres of Italy, the primates of which ranked next to the Pope, holding jurisdictions independent of the Papal See, has also been carefully studied. Florence, Genoa, Milan, Turin, Naples, all these are houses of call for every tourist. But the eastern shores of Italy, to the south of Foggia, the verge of the Adriatic and of the Ionian Sea, the parts about the heel of the boot, are very little known indeed. A quarter of a century ago they were practically inaccessible, except to persons commanding abundant means and some influence. Now, though pierced by the line which carries our Indian mails to the old Roman port of Brundusium, they have not been studied as they deserve. Were our architects and art students aware of the treasures that there await the draughtsman, we should see a regular exodus to this region, the Magna Grecia of old times. The purely classical remains of the three noble temples that now reflect the evening sunbeams over the bay of Salerno form the terminus of most travellers. Those temples are known in every detail. Even the cathedral of St. Nicolas at Bari, the second of those four great dignities of which we spoke, has yielded to our guide-books and hand-books the representations of its pillared doorway; the columns of which are supported by quaint forms of monstrous animals. The grand mosaic which the Archbishop of Brindisi threatened some time ago to root up from the floor of his cathedral, is to be found represented in the Italian works on art and antiquity. But there is an enormous amount of work, some of it chiefly remarkable for its age, but much for its exquisite beauty, in this part of Italy, which is not accessible to the English student. An ancient monastery in the city of Lecce, which is now the palace of the Prefect of the Department, is an instance. Human figures, of life size, grow out of the walls, and form a row, projecting from the waist. The stone of this district is a travertine, so soft to the chisel, and so hard to the tooth of time, that every mason buds out into a sculptor. Charming little fancies are carved on the lintels and the door-posts of almost every abode. One almost expects to find the pig-styes adorned. The people are rich and industrious. The wheaten flour and bread made from the corn of the great Apulian plain are the whitest and the best in Europe. Poverty, in its grimmest form, is unknown in these favoured regions, which may well be regarded as a cradle of architectural decoration.

Not far distant from the old city of Bari, from the mouldering defences of which a cannon is annually fired in the direction of Venice, to commemorate the relief which the Venetians afforded to Bari when besieged by the Saracens, is the city of Bitonto. The visitor to this unique spot finds himself transported to the full Middle Ages. Every householder in the little city is noble. Every house is a palace. The visitor may walk through streets of ancient and noble houses; may note their elevations, so far as they open away from their interior *cortili*, or courtyards; may enter the church, when open for service; may eat what refreshment he has brought with him *al fresco*; and may return to Bari with horses that have not seen the inside of a stable. More he cannot do, unless he possesses an introduction to some of the *Signori*, an introduction not easy to obtain. But even this is much. Rare material for the sketch-book is to be collected at every turn. The climate is enchanting; the novelty of the scene is intoxicating. The people are quiet and courteous; and if no door is open to a stranger, no incivility will dog his footsteps. A very large amount of architectural detail is thus to be collected.

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If, indeed, the magic pass-word be given by any member of that ancient and exclusive nobility, Bitonto is another scene. If the doors open to you at all, they open *à deux battans*. If you are admitted to their carved halls you are admitted as a brother or a son. The noble ladies address you at once by your name, without any preliminary title. The names which they bear are those which were famous when Charles V. was emperor and king. The representative of Lannoy, Viceroy of Italy, and victor at the battle of Pavia, may be cited as an example,—a man full to the brim with historic knowledge, but so familiar with Mediæval Italy as to remember how very recently it was that the House of Bourbon acceded to the throne of France, on the extinction of the House of Valois. You step, as you ascend one of the ancient flights of stone steps that lead to the *piano nobile*, or first-floor, of one of these secluded palaces, from the nineteenth into the sixteenth century. Tastes differ; but, as far as our own are concerned, it is an enchanting change. Perfect courtesy and perfect ease are assured by the possession of definite and unquestionable rank, status, and name; where no one seeks to intrude, not even the feather of a plume ruffles in dread of an intruder. Where no splendour of residence, equipage, attire, or table could add anything to the splendour of an historic name, all these accessories are for the most part extremely ample. A single meal in the course of the day is the only serious matter, in the way of eating or drinking, in this part of the world. A glass of iced water is the only refreshment needed for an evening's entertainment. Thus it is that the little gatherings, first at the theatre and then at one or another of the ancient *palazzi*, are so free, so charming, and so unrestrained.

We fear that we have been induced, by pleasant and grateful memories, to run away from our more immediate theme, that of counselling the architectural student, and the artist out for his summer holidays, how and where to employ his time. If one writer can, on the spur of the moment, draw upon his own memory for such indications, what will be the result of a combined attempt to systematise such recommendations? How many men there must be among us who are able to say "Ah! if you only went to such a place! If you penetrated a little farther than I did five years ago; if you sketched that tower, where I had no paper on which to draw it; if you entered that church, which happened to be closed during the little time that I remained in the town! To such and such a place no one seems to have gone. It is worth while to visit it if only in order to know that it contains nothing. Such another spot is difficult of access, but it is said to contain treasures of no ordinary value." The classical student has yet to determine, in these regions, the site of the battle-field of Cannæ, and the spot of the landing of Sylla. The sunken fleet of Pompey the Great yet lies under the protecting bar that impoverishes the harbour of Brindisi. Monte Vulture, now a silent and smokeless cone, was an active volcano in the time of Hannibal. Some of the most remarkable objects in *terra cotta* that are to be found in the Ceramic gallery at South Kensington have been only recently excavated in Apulian soil. The archæologist, the landscape-painter, the portrait-painter, the botanist, each will find enough to reward a sojourn of years in this favoured district; and, as we have before hinted, the magnificent travertine so tempts the chisel of the mason, that there is scarcely a house of any magnitude that has not a message for the architect.

It would be a profitable toil for some of those who devote their attention to the culture and advance of the noble profession of the architect, to endeavour to collect indications of those untrodden parts of Europe, within access of our improved modes of communication, which contain virgin soil, likely to repay the explorer. We are as yet entirely without anything that approaches an architectural survey of Europe, to say nothing of other parts of the world. The most famous buildings may be known, and, in many instances, their careful delineations are now within the range of art literature. But when we can speak, from personal knowledge of how very much yet remains to be garnered in Italy, well trodden as that enchanted land has been by tourists of every nation, when we can point to the blank in our latest accounts of the architecture of the peninsula, and when we remember how inaccessible other regions, now within the reach of ordinary enterprise, have long been, we think that it will be a matter deserving thanks and praise to endeavour to fill up the gaps now existing in our knowledge. It is impossible to predict the value of a single discovery. It is not for every one to have the good fortune to light upon such a splendid discovery as that made by Canon Tristram of the palace at Meshita. But it should be remembered that, in architecture, minute details are sometimes as instructive as large remains. Very much yet remains wanting to a full and exhaustive survey of the historic development of different styles and schools.

DISCUSSION AS TO THE TEMPLE OF DIANA AT EPHESUS.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

An ordinary general meeting of the session was held last Monday evening, the 15th inst., under the presidency of Sir Gilbert Scott. The secretary (Mr. Charles Eastlake) announced that the council had awarded the prize of the "Pugin Travelling Studentship" to Mr. James Neale, of 56, Wigmore-street; that Mr. G. D. Oliver had gained a medal of merit; and that Mr. E. J. Munt, Mr. E. J. Langham, and Mr. May had been honourably mentioned. The drawings of these gentlemen were on view. The president drew especial attention to them by stating they deserved careful inspection, especially the one of St. Alban's by Mr. Neale, which was almost a perfect drawing of the Abbey.

Mr. J. T. Wood then read a paper on the "Temple of Diana at Ephesus."

In the discussion which followed the paper, Mr. Hyde Clarke said that he could scarcely discuss the paper, as Mr. Wood had described the Temple of Diana rather than the city of Ephesus. He (Mr. Clarke) was more conversant with the general subject of Ephesus than the one which Mr. Wood had made his own. He thought the Institution should be congratulated that their friend, Mr. Wood, had been the means of effecting this remarkable discovery, for although he had had some controversy with Mr. Wood and Mr. Newton on some points, he never denied the exactness of the discovery made. He had seen Mr. Wood pursuing his labours in every part of Ephesus, not only as an archæologist, but as an architect; and he (the speaker) could testify to the earnest zeal he had shown to furnish the members of this Institute with every particular, and all the details of the great school of art at Ephesus. It was from no fault of Mr. Wood's if the results were insufficient to give them an adequate idea of the Temple of Diana, for what the meeting had listened to rather tended to whet their appetites than to appease them. It was evident that the great architects, sculptors, and painters of Ephesus did exercise a great influence on the different schools of architecture, and he was struck by the contrast of the paintings on the Temple wall which Mr. Wood had referred to. The more he studied the Asiatic and the Grecian schools, the more he was enabled to see the influence the one exercised on the other, and later discoveries might make them doubt whether they were right in attributing to the Egyptians the influence their architecture exercised over that of the Greeks. Referring to the difficulties under which Mr. Wood had laboured, Mr. Clarke said that these discoveries had been achieved by very great labour, even at the risk of his life. They were sometimes unjust to explorers, for it was thought by some that explorers had simply to dig a little hole to find some great work of art; but, on the contrary, Mr. Wood had had to labour under great disadvantages, which he had not explained, and his discovery was the result of two expeditions, in which he had devoted many years' labour, and spent a large sum of money. Mr. Clarke went on to say that the results had brought as much disappointment as pleasure, for he would have been much more gratified if Mr. Wood had found fifty drums instead of two or three, as these would have added so much to their knowledge of the subject, particularly as it was pointed out by Mr. Wood that these columns were contributed by various kings and various cities, and that they were specimens of a distinct school of architecture. Mr. Clarke regretted that he could not add anything else to the subject; he had only been able to do an act of justice to Mr. Wood for his labours, and he expressed a hope that he would lay before the Institute the result of his explorations on a future occasion.

Mr. Penrose had not been to Ephesus, nor had he made a study of the Ionic architecture; he therefore would like to know in what state Mr. Wood had left the excavations, and whether they were going to be filled in in order to protect them from the Turks and other spoilers. With regard to the subject itself, one remarkable thing was the broad platform outside the column. He knew no instance of a broad platform in any temple. Mr. Wood had spoken of that platform as a Roman structure. It certainly was unique, so far as he knew, in Greek architecture. He would also like to ask Mr. Wood whether there were any remains of plinths on which the base of the Temple stood?

Mr. Wood, in answer, said that as regarded the site of the Temple, he had bought the ground, consisting of eight acres, which included the Temple itself, and a considerable portion of the ground around it. It was now in charge of his ganger, who had a passionate love for Ephesus. The ganger had strict injunctions from him (Mr. Wood) not to touch the inscriptions on the Temple, and to prevent any one from destroying them. Mr. Wood went on to say that he felt convinced that there were many drums of columns beyond the site explored. He had already dug out 500 ft. With regard to giving a history of the explorations, he had already taken three days at the Royal Institution to give a rough idea of eleven years' work. He only waited for money to start off again to continue his excavations.

Mr. Burton said that Mr. Wood had done a great service to art and to the world by his discoveries which were made at the risk of his life, and at the expense of his health. The most interesting part of Mr. Wood's discovery to him (Mr. Burton) was the light the discoverer had thrown on Greek art, and although the result of his labours was not very large, the value must not be estimated by their mere extent. With regard to the fragments of the drums, they appeared to Mr. Burton to be of very great value, as they had been able to fix, within a few years, their absolute date, which he considered a matter of very great importance. It seemed to him to belong to the second Asiatic School, and it was a great lesson to them to see the noble style in which the columns were treated without any over-attention to details; and it was difficult to form any idea of the effect these columns, —almost living forms,—had upon the people. He thought, from that point of view, the meeting could not sufficiently thank Mr. Wood for what had been done.

Professor Kerr wished for a description of the statue, and wanted to know whether there were any traditions existing concerning it, and whether also it had been an image of worship? In referring to the Government assisting explorers, he said that the country had a great deal more money than it knew what to do with, and the small sum which it would cost would no doubt bring most important results, and extend their knowledge of architecture.

Mr. Wood said that the statue referred to was a copy from a print of a statue at Naples.

Sir Gilbert Scott requested to be informed further as to the previous temples, and what their character was?

Mr. Wood said the large column which he had found belonged to the last temple but two; and the foundations were laid 500 B.C., by Chirsiphen and Metagenes. The fragments of the last temple but two had been carried away and sent to the British Museum, where there were fragments of all the temples; but he had not had an opportunity of arranging them yet, as it required a very large space to do so.

Mr. Cates said he had not had an opportunity of visiting Ephesus, but all must feel great interest in Mr. Wood's assurance that there was much more still to be discovered, and he thought it would be a great service if they could do something towards facilitating that object. With regard to Government assistance, he said some two years ago it was supposed that the supply of funds would come to an end, but representations were made to the Government, and Mr. Wood was enabled to continue his excavations; and he (the speaker) hoped that he would still continue to obtain those funds which were so desired. The English Government could not say that they stood alone if they furthered the object, because last year the German Parliament voted 10,000*l.* to commence explorations on the plain of Olympia, they having entered into an arrangement with the Greek Government to excavate on that plain. This fact, he considered, ought to be a precedent for the English Government, particularly as the

freehold of the land at Ephesus belonged to the English Government; and it was only the cost of excavation that had to be considered; and he thought it would be a pity for the Government to refuse assistance now.

The President reminded the meeting that there was a standing committee for ancient monuments and tombs, and wished to know whether it should be taken into consideration as to the memorialising of Government on the subject.

Mr. Wood said that he believed the Government had only to be asked for aid, and that aid would be forthcoming.

Mr. Dawson said with regard to arranging the fragment of the Temple they might very well press the Government to get this done, and for this purpose Mr. Wood was certainly the proper person, as he was better acquainted with the subject than any one else; and he suggested that a temporary place should be erected for the fragments to be arranged.

Mr. Hyde Clarke said that there were a great many remains of archaic art in Ephesus which were well worthy of consideration, and if Ephesus were explored there was some probability that the results might be as interesting as those of Dr. Schliemann. The remains of the places around Ephesus were very remarkable indeed; and he thought that the Ephesians must have been a people enjoying great civilisation, and their culture could not have originated at so late a period as the legends stated.

The President thought that the extreme importance of Mr. Wood's discoveries had been underrated, for Mr. Wood had not discovered the Temple of Diana by seeing only a piece of the wall of the city, but by induction, which he (Sir Gilbert) considered the first way of proceeding in that work. If a man came across a piece of stone, and declared it belonged to the Temple, they would not give him very much credit; but, in Mr. Wood's case, by a most laborious process, the Temple had been traced, and dug out. They had nothing in the archæological discoveries of the day more noble, and this would have been passed over by Mr. Wood unless he had been asked to give an account of it. The discovery had been traced from two gates, a very great distance from each other. As to the discovery being small in its results, he did not think so, for Mr. Wood had been enabled to explore the whole plan of the site; and portions of the most remarkable columns which were to be found in antiquity; but a column, 6 ft. in diameter, whether in one range or more, he did not think existed in Classical antiquity; and it was extremely magnificent. Mr. Wood had said he considered it exceeded in refinement any column that was known. Perhaps it was not so fine as the sculpture of Athens, but it was very beautiful. The capitals were less ornate than those of Athens, but they were fully as noble in their design. The great pilaster, which was in the British Museum, was very magnificent. Taking it all in all, it was unquestionably the greatest discovery made in the present day. The question was whether they were to leave the excavation alone, or were they to allow the Government to suspend the work, and were they to suppose that there were other great drums around what had been discovered? He thought everything possible should be done to force the Government to help to carry out this great work.

THE PREPARATION AND APPLICATION OF LAC VARNISH IN JAPAN.

AN instructive communication on the above subject has lately been forwarded through the Imperial German Minister resident at Yeddo, Herr von Brandt, to the Hessian "Gewerbeverein," accompanied by specimens of native lac, lac materials, &c., as well as lacquered goods manufactured in Japan, which are exhibited in its museum. The report is published in a late number of the organ of the society, the *Gewerbeblatt für das Grossherzogthum Hessen*, from the pages of which journal the particulars that follow have been extracted:—

The tree yielding the resinous substance known as lac is called *urushinoki* by the Japanese, and thrives everywhere in Japan, but grows especially in the provinces of Oshu and Owari, where it is extensively cultivated. The lac of Oshu, and more particularly the kind produced in the district of Aidzu, is said to be the best. The trees are tapped in September by making cuts in several places in the stem, and suspending vessels beneath for catching the escaping sap. This is purified afterwards by straining through woollen cloth, and the liquid thus filtered is the lac as it comes into the trade under the name of *kidjomi*. It is sold retail at 3·5ths of a Mexican dollar (about 2s. 9d.) per lb. (English); but no doubt wholesale it is much cheaper.

The workman must be careful not to let particles of lac come into contact with his body, as this is productive of malignant ulcers at such places. The Japanese cure these sores by bathing them with water in which crabs have been boiled. It is said that a crab thrown into a vessel containing lac has the curious effect of separating it into a watery liquid and a compact mass.

The principal lac varnishes are the following:—

1. *Roiro*, dull black (literally, wax colour). This varnish is produced by mixing *kidjomi* with the wear or abrasion of grindstones, known in the trade by the name of swarf or wheel-swarf, and obtained by rubbing a piece of iron on a soft grindstone, copiously wetting the latter. The proportion of mixing it is one part of wheel-swarf with forty parts of *kidjomi*. This mixture is then stirred in shallow wooden basins of the diameter of about 2 ft., placed in very sunny places, with large staffs having shovel-like ends, till its colour is black, and its volume has been reduced through thickening by half. Instead of swarf, a substance called *ohaguro*, used by the Japanese women for blackening their teeth, may be applied. This latter material is produced by putting into a mixture of ten parts of warm water and one part of *sake* (the arrack of the Japanese) a piece of red-hot iron, and letting the whole stand by the side of a moderate charcoal fire for three days, when its colour changes to black, after which by adding ground gall-nut it is ready for use,—the painting of the teeth, as is the custom with Japanese women.

2. *Hanaurushi*, shiny black. Its preparation is the same as that of *roiro*, with this difference, that little less swarf, and in its place *yenoabura* (the oil of *Sesamum orientale*), to the extent of 15 per cent., is added to the lac substance.

3. *Hakushita*. Is the same as *hanaurushi*, but with only 10 per cent. of *yenoabura*.

4. *Shuurushi*, reddish colour. This consists of a mixture of 100 parts of *kidjomi*, 30 parts of *yenoabura*, and 1-300th part of gamboge, which must be properly stirred, in a sunny place, in the manner described above.

5. *Tame*. Proportion of mixture, 100 parts of *kidjomi* and 30 parts of *yenoabura* stirred as before.

6. *Shinkei*. Like *tame*, but only 20 parts of *yenoabura*.

7. *Nashidji*. Green, unripe plums are peeled, dried in the sun, and then put into *kidjomi*, perhaps one plum to 2 lb. of the latter. The whole is left standing for a few days, so that the juice of the plum is well extracted. The pulp remaining is then removed from the *kidjomi*, and about 1-300th part of rhubarb is boiled twice in water, the decoction in each case added to the *kidjomi*, and the mixture stirred finally in the sun.

8. *Yoshino urushi* is the finest description of *kidjomi*, of medium liquidity.

9. *Seshine urushi* is a very liquid kind of *kidjomi*.

10. *Nakanuri* (medium ground or priming colour) is *hanaurushi* which has not received a proper lustre in its preparation.

11. Finally, a mordant or stain used in the process of japanning ought to be mentioned which is prepared from *kakis* (*Diospyros kaki*), and is known by the name of *shibu*. Unripe, acid *kakis* are crushed in a mortar, water three times the quantity of the crushed mass is added, and the whole left standing for a month, care being taken to have it well covered over. The pulp is then removed, all the liquid being well squeezed out. The mordant thus obtained is *shibu*. A red colour is prepared from *shuurushi* by the addition of cinnabar, from *tame* by the admixture of the respective mineral colouring matter, brown, green, &c. Yellow is obtained by adding yellow sulphuret of arsenic.

The Laying-on of the Lac Colours.—An extract description of the manipulations in use cannot very well be given, as it is next to impossible to give precise general directions. Moreover, the Japanese workmen are not bound by any defined theories; each one follows his own particular method of putting on the colours, and relies for the production of the required lustre upon the knack which long practice has made his own. Only the most remarkable manipulations, considered to be the most essential features of the process, will consequently be noted here; all else is left to individual ingeniousness and patience. In all varnishing work proper, where it is desired to produce surfaces of lacquer which shall not permit the wood to shine through, a ground of a compact mixture of *seshime*, *urushi*, and *tonoko* or *djinoko*, is first put on the article to be japanned. *Tonoko* and *djinoko* are nothing else but two kinds of finely-powdered and well-washed clay. This ground, which is obtained by one or two applications, is rubbed, after drying, with a suitable whetstone until it forms a smooth surface, after which a coat of the shade of colour which it is desired to produce, either *roiro*, *hanaurushi*, or any other kind of varnish, is given. The laying-on is done either with a brush or else by means of a horn or spattle. The article thus coated is put into a box, as a protection against draught or wind, for three days to dry. The lacquered surface is then rubbed down with a kind of charcoal called *roiro dzumi* by the Japanese, and obtained from the *honoki* tree. This rubbing destroys the lustre, but prepares the surface for the reception of a new coat of varnish. For this second coat, *yoshino urushi* is taken, and when put on the article is again placed in a box for three days to dry. When sufficiently dried, it is rubbed down first with *tsunoko*, a finely-powdered and well-washed chalk, and then polished, partly by means of the spattle, partly by other polishing tools, but partly also with the help of the hand-ball, until the surface assumes a fine lustre. This last manipulation is the most difficult operation of the whole process, and only the most expert workmen know how to do it efficiently. In articles where the grain of the wood is to shine through the varnish, the surfaces to be lacquered are first well planed, and then three or four coats of *shibu* are applied. When this ground has been properly dried, *tame* or *shinkei* is laid on, which imparts a brown colour. This mode of japanning is very much in use for doors, window-frames, furniture, &c. Many japanners put on a second ground varnish, and use for it *naka urushi*. For this also a three days' drying is necessary.

Lacquering of Japanese Stringed Instruments.—The Japanese stringed instruments are made of *karin* wood (*karin* is a kind of quince). Before varnishing, the different surfaces are rubbed down with *Equisetum* (Dutch rush, or horse-tail), and two different whetstones, *awasedo* and *nagura*, which renders them very smooth. A mixture of cinnabar and dissolved gum is then put on, whereby the numerous pores and possible cracks in the wood are filled up, but it is wiped off again very carefully, so as to leave the composition only in the holes, and not on the surface, of the wood. The kind of lac called *yoshino* is then rubbed into the wood by means of a woollen rag, but wiped off again directly with a clean rag, leaving only a thin layer of varnish. Finally, the lacquered surface is rubbed with a cotton rag or a piece of soft leather until a fine lustre is produced; to accelerate this process, a little nut-oil is applied. Some workmen are also said to use *shuurushi* with cinnabar, instead of the gum solution, for filling up holes or cracks in the wood.

IMPROVEMENTS FOR EDINBURGH.

THE reconstruction of new streets under the Improvement Trust has made some progress. Jeffrey-street is still much as it was; but a fair start has been made in Chambers-street. The corner block, opposite the University, is almost completed, so far as the exterior is concerned. This block takes a semicircular form, and is a very effective example of street architecture. Bold projecting solid piers, rising from the ground to the cornice, mark the respective divisions, and projecting balconies and richly-decorated dormer windows, produce a picturesque diversity of outline, whilst the height of the building gives them an imposing aspect. In this instance the Scottish Domestic style has not, as heretofore, been adopted, being considered out of harmony with the surroundings, a late Renaissance style having been preferred.

A scheme for improving the new vegetable markets is under the consideration of the council. Mr. Morham, city superintendent, proposes to cover the whole area up to the level of Princes-street, and upon the roof to form a promenade with flower-borders surrounding the spaces left for light and air. The same gentleman has submitted plans for a wholesale fish-market in Mac-

dowall-street, and a retail fish-market in the line of Jeffrey-street, next the railway. The former is a plain serviceable structure of stone and wood; but the latter, being in a more conspicuous position, has an architectural character given to it by the introduction of coupled semicircular-headed windows.

The corn-market is also to be extended westward. The existing market has an ambitious Italian frontage, not at all suggestive of the nature of the building. Mr. Morham, whilst adhering generally to the characteristics of the original, has endeavoured to stamp the addition with a certain individuality.

"THE QUARTERLY REVIEWER" AND SIR GILBERT SCOTT.

Sir,—Far be it from me to refuse to retract any statement I have mistakenly made as to the opinions of "The Quarterly Reviewer." I can only assure you that I have, now for nearly three years, undoubtingly supposed that he intended to include the "*altar-screen*" of Westminster Abbey in his list of objects animadverted on; and, though the censure would have been absurd enough, the supposed application of the word "*Reredos*" to an "altar-screen" would have involved no absurdity at all,—such application of the term being frequent. The "Glossary of Architecture," in the last edition revised by Professor Willis, describes a reredos as "a wall or screen at the back of an altar," and adds:—"Reredosses of this kind not unfrequently extended across the whole breadth of the church."

I may have been confirmed in my misapprehension of the writer's meaning by the words of a, possibly imitative, censor which appeared immediately afterwards in another publication, and which in a parallel *index expurgatorius* include "*the new altar-screen*" in so many words, though giving also an item of "appurtenances," &c.

When the idea first occurred to me that the Reviewer might have spoken of a mosaic picture, the joint work of a painter and a mosaicist, with a paper border scrawled over with charcoal, as one of the "specimens of dull clerkmanship that architects of eminence live to supply," I was disposed to dismiss it as involving a degree of carelessness scarcely credible; but being now assured by the only man who knows that such was really the case, I am bound to accept it.

For the rest, I care not to reply. It had, indeed, called to my memory some unpleasant passages in "The Faerie Queene," canto i.; but, like old Thomas Fuller, when under similar circumstances, my better thoughts fall back contented on 2 Kings xix. 36.

Geo. Gilbert Scott.

PROGRESS OF THE ST. GOTTHARD TUNNEL.

According to the report issued by the Federal Council on the progress of this undertaking to the end of 1874, the gallery driven on the north side of the tunnel at Göschenen had been advanced to 1,771 yards, and on the southern end at Airolo to 1,455 yards; total progress, 3,226 yards. Only 95 yards, however, of the vaulting had been finished on the north side, while on the south side 357 yards of the tunnel had been vaulted. At the present time upwards of 1,000 workmen are employed at either end of the tunnel. As regards the kinds of rock met with in the boring, on the north side the rock bored has been principally hard granite, without great deviation of the different beds. The moisture was only inconsiderable. At a distance of 1,741 yards only slight percolations were met with; after that only moist spots appeared here and there. About 1,740 yards from the opening the tunnel passed under the bed of the river Reuss at a depth of 262 yards. The boring of the gallery proceeds regularly at the rate of about three yards per day, that distance being accomplished by the aid of six of Ferroux's machines. On the south side, at Airolo, the gallery runs almost constantly through hornblende, difficult to pierce and of a very tenacious nature. The greatest influx of water was met with at a depth of 1,402 yards, amounting to two litres per second. In this working, seven of Dubois & François's machines are used with the daily average progress above recorded. Boring operations had to be suspended during the whole of December on account of the want of ventilation, caused by the fall of the waters of the Tremola. Snow and ice also hindered the operations very much. Up to the 12th of December three of Someiller's machines had been in use for widening the tunnel; from that date four of MacKean's machines began working. In several places boring operations were also carried on by hand. As regards the railways in the Tessin Valley in connexion with the tunnel, over 660,000 cubic feet of earth had been cleared away; the total number of workmen employed there at the present time is on the average 2,952, and on the whole St. Gotthard Railway 4,914.

THE ARCHITECTURE OF THE BRITTANY COAST.

Architectural Association.

At an ordinary general meeting of the members, held on Friday evening, the 5th inst., under the presidency of Mr. Birch, the following gentlemen were elected members:—Messrs. Peter Fowke, Henry T. Porter, T. Milton, F. W. Lacy, and T. R. Braham.

The thanks of the meeting were voted to Mr. Norman Shaw for his courtesy in allowing the members to visit Lowther Lodge, Kensington.

It was announced that two donations of five guineas had been presented to the prize fund by Mr. J. H. Goode and the President.

Mr. R. M. Fulford then read his paper entitled "Notes on the Architecture of the Brittany Coast," which was illustrated by the magic lantern. Mr. Fulford remarked that Brittany offered a large and varied field of study for the architect, and as he had been there four times, he might perhaps be allowed to read a few notes of his travels in that picturesque quarter of France. Proceeding to St. Malo, the traveller would find at the Hôtel de France (the birthplace of Châteaubriand) a decidedly picturesque quadrangle. The cathedral was much hidden by the surrounding houses; but the west front was a hideous specimen of the Renaissance. Internally it presented a fine Romanesque nave, considerably "classicised," with a First Pointed choir, restored by the late emperor. The old walls, completely encircling the town, still remain; but there is next to nothing in the way of domestic architecture. The church of the populous suburb of St. Serran is a modern Classic building. The Tour de Solidor, dating from the fifteenth century, is beautifully situated at the mouth of the Rance. Twelve miles up this river is "lovely Dinan," where there is a fine old Gothic bridge, with two pointed arches and a drawbridge. The church of St. Sauveur is a highly interesting building: the lower part of the west front is Romanesque, but the upper part is Flamboyant. The subdued yet rich tone of the interior is particularly striking, owing mainly to the warm colour of the granite piers, arches, vaulting ribs, &c. There is a charming little Decorated vaulted chapel projecting from the south wall, and a south transept of the same date. The choir ends in an apse, the ribs of vaulting and arch-mouldings dying into the shafts without a cap, a treatment which the reader of the paper did not admire. The picturesque streets abound in fine old timber houses, supported on columns, forming a covered way for foot-passengers. The other church, dedicated to St. Malo, is a fine specimen of Flamboyant work, and was rebuilt in 1490. At Lehon are the ruins of the abbey, not very extensive, but in an unusually good state of preservation. Adjoining the abbey is the little parish church. There are extensive remains of the castle, dating from the twelfth century. In the neighbourhood is the Gothic crucifix of St. Esprit, the groups of figures on the summit of which are much mutilated. Three miles from Dinan are the ruins of the castle of La Garaye. The remains are mainly of the Renaissance of the sixteenth century. At Dol there is a fine old cathedral, dedicated to St. Samson. The west front, which is much dilapidated, has two towers, of which one is unfinished. The Porte Episcopale, at the extremity of the south transept, dating probably from about 1355, must have been very beautiful when the statuettes, destroyed at the time of the Revolution, filled the now vacant spaces round the arches. The interior is very grand, the choir having a square east end, with an eight-light window filled with old glass, under which is a semicircular arch divided into two openings by a central shaft and two pointed arches, through which a peep is obtained of the restored chapel of St. Samson beyond. The church was burnt in 1203, and reconstructed during the thirteenth century, which accounts for its uniformity of style. In the Grand Rue many of the old houses remain, their upper stories supported on monolith pillars of granite, with curiously carved capitals. The desecrated church of Notre Dame *sous* Dol, now used as a corn-market, has a Romanesque nave, the south aisle and west window being Flamboyant, there being a Decorated tower at intersection of nave and choir. At Combourg there is a perfect specimen of a fifteenth-century castle. Near Bécherel are the remains of the Abbey of St. Jacques, which are not extensive. Lamballe has its church situated on a rocky eminence. The nave is of early thirteenth-century work, the the choir belonging to the fourteenth century, and having a square east end. The arch is curiously treated at the springing: there are three small shafts at the jambs, and the arch is unmoulded, with flat soffit, there being a sort of stop-chamfer above the caps. Guingamp has an exceedingly picturesque market-place, with a Renaissance fountain in the centre. Many of the old timber and stone houses remain, with quaint dormers and corbelled angle-turrets. The Church of Our Lady is a highly interesting building. Near the neighbouring village of Grâce is the chapel of the Abbey of St. Croix, a fine twelfth-century building, now used as a stable. The ruins of the Abbey of Beauport, finely situated on the coast, near Paimpol, are worth visiting. The Cathedral of Tréguier is a very fine building, mainly of decorated work. Lannion, in Lower Brittany, where Brézonec is universally spoken, has some very interesting buildings, and an Early Gothic bridge. In the neighbourhood is the fine church of Brelevenez, approached by a flight of 200 steps; the church is of Romanesque and Transitional work. At Plonbezre is a sixteenth-century church, with a fine tower, and three miles distant are the remains of the grand old castle, which are of great extent and in good preservation. Morlaix is a wonderfuly picturesque old town, and is also notable for a railway viaduct 200 ft. high. The streets contain many good timber houses, and the church is a mixture of Renaissance and Flamboyant work. In the neighbourhood of St. Thégonnec are many good wayside crosses of granite. The churchyard of St. Thégonnec is about a mile and a half from the station, and is entered under an archway, on the left of which is the ossuary, on the right the calvary, and in front the church, the whole group being in the Renaissance style. The calvary was built in 1610, and is of the dark green Kersanton stone. It is very elaborately sculptured. On the exterior of the charnel-house were rows of skull-boxes, in niches. It is a custom in Brittany not to allow the dead to remain unmolested in their graves, and the survivors, as a mark of respect, are expected to remove the skull and bones from the coffin, and place them in niches or skull-boxes, the name or initials of the deceased being written across the fleshless brow. At St. Pol de Leon is the Church of Notre Dame de Kreisker, with its fine spire, 400 ft. high, said to be the work of an English architect, though there is nothing in the treatment to support the allegation. Owing to the absence of visible buttresses, and to the corbelling-out at the base of the spire, the tower has the appearance of being rather top-heavy. The cathedral, which has two spires, has been restored since 1865, on the whole fairly well, though the effect is marred by the stripy effect caused by pointing the joints with a very dark mortar. Roscoff, three miles off, has a fine Renaissance church, with a spire of very original design. The Church of Le Folgoat, near Lesneven is very interesting; the west door is beautifully carved, but the great gem of the church is the rood-screen of bronze-like Kersanton granite. At Plongastel the church has been rebuilt in the poor Gothic of the modern French school, with very slender mullions, reedy mouldings, and wood vaulting. On the south side of the church is the renowned calvary. The remains of the Abbey at Daoulas has been restored, but in a strictly conservative spirit. Quimper possesses a fine cathedral, of fifteenth-century work, recently well restored. At Tady, five miles from Pont l'Abbé, is a very interesting twelfth-century church; the vault, of rubble work, is semicircular, with only transverse ribs of square section, resting on shafts which rise from the floor. Having visited Quimperlé and Vannes, Mr. Fulford proceeded to Vitré, the streets of which abound in timber houses, and the extensive remains of the town walls and gates, with their conical roofs, &c., all

combine to give this town a completely Mediæval aspect. At Fougeres, one of the frontier towns of Brittany, are the extensive remains of the castle, in a good state of preservation. After visiting Mont St. Michel, Mr. Fulford returned *viâ* Pontoison and Dol to St. Malo, and thence by boat to Southampton. In concluding his paper he expressed a hope that this, to the English architectural tourist, comparatively unknown but interesting part of France would be more widely explored by the lovers of the picturesque in architecture.

In the brief discussion which followed, the President said that the paper was a most interesting one on account of the connexion between the architects of Brittany and the architects of this country,—a connexion which, he was of opinion, it would be interesting to trace still further. Mr. Fulford had dwelt upon the wonderful Druidical remains which existed in Brittany, and were to be found at Carnac; but at this place the stones found were not so large as those at Stonehenge, although the remains covered a much larger area.

Mr. Phené Spiers said that his knowledge of the architecture of Brittany was very limited, but his idea respecting any resemblance existing between the architecture of the two countries was that it had been filtered through Normandy.

DOOR-PLANING BY MACHINERY IN AMERICA.

DURING the past few years the number of doors manufactured in the United States has amounted, according to the *Manufacturer and Builder*, from which we condense the particulars we are about to give, to 45,000,000 annually, while the labour of producing them, with the single exception of smooth-planing (the last planing they receive), is done by the use of machinery. Each door requires, after its several parts are united, to have all projections of the joints removed before it can receive the final smoothing by rubbing with sand-paper. These projections and rough places are generally removed with hand-planes, at an expense varying from five cents to one dollar for each door. All similar panel-work, whether parts of furniture, wainscoting of buildings, railroad cars, refrigerators, cottage organs (of which hundreds of thousands are made annually), or anything else, has to be treated in the same manner. The result has been an annual outlay of at least $9,000,000, which is equal to a cost of 10 cents to each door, or its equivalent; that is, the smooth-planing of the doors and similar panel-work has cost each year $9,000,000.

Intercourse with manufacturers of doors, furniture, organs, railroad coaches, &c., must impress every one with the existing need of a good machine that will obviate the use of hand-planes in finishing the surfaces of parts made of different pieces of wood, the grains of which run at varying angles to each other. In the various branches enumerated, all work except the surfacing is done by as perfect machinery as it seems possible to devise, while the surfacing has thus far all been done by hand, at the enormous outlay of wages estimated above.

In order to save a great portion of this large amount of labour and expense, Mr. O. G. Howes, a large manufacturer of doors, at Fort Ann, N. Y., has invented and constructed a machine which he calls a diagonal planer, and which he has had in use during two years for planing doors and blinds, at a cost less than one cent. each. It will plane all kinds of panel-work, such as doors, blinds, shutters, wainscoting, and similarly constructed parts of furniture without injury by splitting off corners. It has been the practice of those having wide planers and manufacturing small articles, to run them through the machine in such a manner as to present the grain diagonally to the cutting knives. While this plan has been perfectly successful in the case of articles not over 2 ft. long, it could not be used in the case of articles of greater dimensions.

Other manufacturers, seeing the usefulness of this machine, wanted Mr. Howes to construct others for them. He has done so; and after several were in use, he transferred his interest in the manufacture and sale to Mr. Norris, of West-street, New York City. He furnishes them on the condition of being paid wholly from the amount saved by their use, and has been induced to make this offer by reason of the present dull state of the manufacturing interest.

The machine as at present manufactured has a small circular saw attached, which trims the tenons and edges while the door is being planed. We have called upon Mr. Norris for facts and figures, and give some of them here for general information. One boy large enough to handle the articles attends it while in operation, planing, in the case of doors of ordinary size, the average number of fifty per hour. The ratio of cost of machine to hand labour is at least as one to ten, and in some cases of hard wood, of one to twenty, or more; and as the cost of hand-planing of some work is an important part of the expenses, this machine, if worked to its utmost capacity, may save thousands in a single year, perhaps enough to convert a losing business into a profitable one.

ILLUSTRATIONS OF THE MILITARY AND RELIGIOUS LIFE OF THE MIDDLE AGES.

M. PAUL LACROIX, whose books on the Arts and on the Manners and Dress of the Middle Ages are not unknown to our readers, has supplemented these works by one specially devoted to illustrating the Military and Religious Life of that period;* in other words, the special habits and conditions of the two great classes which may be said to have made, or at least moulded at their own pleasure, society in the Middle Ages. The subject, as the author observes, is therefore "not wanting in grandeur;" and he endeavours to throw out into relief these two parallel forces, of which he regards the church as having been the civilising and humanising agent of the period, and the military as, in general, an independent force placing itself for the most part at the service of the church.

Having thus briefly stated the aim of the book, it is not our purpose to enlarge upon it from the historical or social point of view, which would lead us into considerations more or less foreign to the objects of this Journal. It is rather with the manner in which, in the elucidation of his main subject, the author brings forward illustrations of the art and the science of the period, that we are concerned; with the concrete and outward productions and methods of the times, rather than their abstract spirit and social organisation. And in regard to illustration, M. Lacroix's book affords a good deal of interest, since he has been able, through the peculiar facilities afforded by his position in the Imperial Library, to obtain facsimiles of old drawings, as well as representations of objects of archæological interest, which have never before been published, or only in books not easily accessible.

In the opening chapter we have a general sketch of the rise of Feudalism, and its subsequent decay through the aggression of the Communal spirit, which repeats pretty nearly the now generally accepted view of the subject, in its historical aspect. That this period of strife between the two social theories was regarded by those who lived under it as a somewhat turbulent *régime*, is indicated by the curious engraving of the "tree of battles" (p. 29), from a fifteenth-century manuscript in the Burgundian Library at Brussels, where a tree is represented with a dozen or so of figures, typical of various classes of society, perched among the branches and occupied in "a free fight"; among them are two mitred ecclesiastics digging one at another viciously with their croziers. A chromolithograph facsimile of an illuminated drawing of the fifteenth century from the collection of Herr Brentano at Frankfort, representing the trial of the Duc d'Alençon before a "bed of justice," held by Charles VII. of France, will furnish to many a more intelligible notion of the arrangement of that ancient form of court than they at present possess. Here we see the court in a kind of bird's-eye perspective, looking from corner to corner, the opposite corner to the spectator being the place of state occupied by the king, in a plain robe of rather priestly than royal character, under a canopy not unlike the head of a "tester," while beneath a row of seated ecclesiastics radiates from the corner along each side, leaving the centre space clear. The drawing gives the idea of the lozenge-shaped space being temporarily formed by a framed partition, looking somewhat like the backs of the old high pews, set up in the midst of a larger apartment and thus dividing off the judicial tribunal from the spectators and from the accused and his guards, who stand on the stone floor without the partition. The sides, floor, and canopy of the "bed" are covered with a purple lining, with gilt *fleur-de-lis*, and behind the sides adjoining the state corner are high screens of green, white, and red grounds alternately, with elaborate floral ornament, all which is minutely depicted in the drawing. Among other illustrations to this chapter is a copy from a manuscript in the National Library of Paris, representing the type of a French feudal castle in the Middle Ages; this is compared with Viollet-le-Duc's view of the restored Château de Pierrefonds on the opposite page. The old drawing shows square towers, which, at least, was not a common method in the château of the period, so far as actual remains testify. The manner in which the popular re-action had become a fact in the minds of men even in the fourteenth century is curiously indicated by the stone figure of a soldier in the uniform of the Van Artevelde Militia (whose deeds an English poet has immortalised), which formerly stood in one of the niches of the belfry at Ghent; a grim and menacing figure enough, now, says the author's note, "among the ruins of St. Bavon" at Ghent.

We must pass over lightly the chapters on military and naval warfare, in which the history of tactics is summed up, as far as the time when these were revolutionised by gunpowder. Among a few illustrations of weapons is one of a remarkably fine and villainous-looking Moorish dagger (p. 45), from the collection of M. Onghena, at Ghent, with a handle carved into the form of a cross-legged skeleton grinning down upon the blade. The German "free-lance" system occupies a considerable portion of attention; and an engraving of "Soldiers of the German Bands" (p. 64), from a painting by Joachim Bucclear, gives a pleasant idea of the style of men our old friend Dugald Dalghetty was accustomed to command. In the naval chapter, we meet with a representation of the Spanish caravel in which Columbus discovered America, a facsimile from a drawing (p. 85) said to be by Columbus himself, and placed in the undated edition of the "Epistola Christofori Columbi." It would be very interesting to know certainly whether this was really the handiwork of the great navigator; for it shows power and freedom in the drawing of the foreshortened curves of the hull. It is singular to think that the first voyage across the Atlantic, with all its new experiences and dangers, should have been achieved in a ship which (for it must have been something like this representation) no company would now dream of insuring for such a voyage, and the mere appearance of which in a dock would furnish Mr. Plimsoll with a stronger case than he has ever had yet. That energetic reformer might find something to quote from M. Lacroix too; for the author places on record that "it is to the credit of these benighted ages, too often accused of barbarism and social anarchy, that in most of the Mediterranean ports overseers were appointed, whose duty it was to inspect and survey everything"; and that it fell among their duties to measure the space allotted to each passenger, and to see "that all merchandise entrusted to a ship's captain was properly stowed away in the hold, and not left on deck"; that when a large powerful ship fell in with a smaller one, which claimed its protection, it was bound to throw it a hawser, "so as to fasten the two vessels together, and enable them to assist one another";† a provision in which the philanthropy is eminent, even if the seamanship be doubtful; and that in cases of attack by pirates, the merchant passengers were expected and prepared to give all aid in defence. It is only the other day that a proposition was made in a letter to one of the papers that passengers in our crowded emigrant-ships should be put through a drill, so as to enable them to give efficient help for themselves and the ship in case of fire or wreck. Altogether, the mediæval seamen and shipowners seem to have been beforehand with us in some important matters in the regulation of maritime traffic.

The chapters on the history of the "Crusades" and on "Chivalry" are somewhat extended, and form an interesting and comprehensive summary of the incidents and the results of the first-named extraordinary movement, and of the leading characteristics and tendencies of that prevalent feeling of the Middle Ages, for it can scarcely be more specifically defined, which we know by the name of chivalry. Among the

* Military and Religious Life in the Middle Ages and at the Period of the Renaissance. By Paul Lacroix, Curator of the Imperial Library of the Arsenal, Paris. Illustrated with chromolithographic prints by G. F. Kellerhoven, Régamy, and L. Allard; and numerous woodcuts. English translation.—London: Chapman & Hall, Piccadilly.

illustrations to the Crusades is a facsimile of a curious woodcut of the end of the fifteenth century, from the Burgundian Library of Brussels, representing Godfrey de Bouillon on horseback and crowned with the instruments of the passion, which are planted in his head-dress with a singular mixture of reverence and (as it seems now) absurdity. The coloured miniature representing the Knights of the Order of the Holy Spirit embarking for the Crusades (from a MS. of the fourteenth century among the statutes of that order at Naples) is curious from its business-like reality in the representation of the luggage going on board, &c., which renders the scene in some burlesque we recollect, where Richard I. arrives from the Holy Land with his carpet-bag, not so much of an anachronism after all. The "Chivalry" chapter gives us some interesting representations of old combats also; and there is one (p. 161) in which two knights in complete armour are railed in, in the middle of a field, to do their worst at one another, the general arrangement of which seems curiously similar to what the papers tell us of a modern prize fight; only this was a combat to be decided by "the judgment of God," as indicated by an angel flying overhead unfolding a scroll.

The culmination of the military history of the Middle Ages, however, is in the foundation of the great orders of knighthood, one of the most remarkable and romantic institutions, perhaps, which the world has seen, and which in its first idea at least was heroic in the extreme, though unfortunately too soon exemplifying the inherent imperfection of human institutions. Of the influence of these bands of military ecclesiastics, as they might be termed, upon certain forms of architecture, we have interesting proofs and remnants in our own country, one or two of the highest architectural interest. Of the fortress of the Knights Hospitallers in Syria, as restored, a view is given, which we reproduce; if possessing but little architectural interest, it is a significant indication of the power and resources of the order that they should have erected so large a fortress in a foreign land where they went for a temporary object only. The specimens of embroidered gloves which we give are from the illustrations to the same chapter, and were worn by the king of France as head of the order of the Holy Spirit, before referred to, which consisted of a body of 100 knights, selected from the most eminent ranks, and specially presided over by the monarch.

The orders of knighthood in the military profession are the counterpart of the religious orders of ecclesiastics of the Middle Ages. In sketching the history of the latter, M. Lacroix remarks upon, though he does not much emphasise, the contrast between the origin of the two institutions; the conventual theory of retirement from the world and of self-mortification having commenced not, like the knightly orders, in a banding together of many for a common purpose, but in the self-appointed seclusion and devotion of individuals, who thus became types for imitation and emulation. In connexion with this portion of the subject is introduced the very interesting engraving of a statuette of the third century, of St. Anthony, which we give. In spite of the want of proportion, there is a good deal of character in this comparatively rude figure, which serves to illustrate the state both of religious thought and of sculptural art at the time. In regard to the latter point, we cannot but observe here that all trace of classic feeling has departed, though this feeling was up to a considerable period after the Christian era so strangely blended with the new and, as we may term it, moral spirit of Christian art. In regard to works of ornamental art, such as it was, we see this classic spirit still existent in the cruet from the Vatican Museum, of which we also give the engraving, and which in form and in its flat delicately-relieved ornament is almost purely classic in general design, and on the rim a rough version of the Greek anthemion finds place. It is interesting to compare this piece of pre-Mediæval church furniture with the curious perforated hand-bell of the twelfth century, and which in feeling and execution is as absolutely typical of Mediæval art as anything could be; yet even here we see, in the flowers of the lower part of the bell, the anthemion still distinctly traceable, not yet lost in the free foliated ornament of the full Mediæval period. Few ornamental details have shown such enduring vitality as the anthemion, which seems to blossom anew, in the course of ornamental art, over and over again. While on the subject of church utensils, we may allude to the engraving of the knife used for cutting the consecrated bread, which is sixteenth-century work, weak enough in design, but interesting from the curious fancy of engraving devotional sentences, with the music added, on the blade; and it is also worth note that the Latin sentences are the origin of the most usual form of "grace" before and after meals, transferred subsequently from the Holy Office to the everyday worship of the family. M. Lacroix's remarks as to the traditional dress of the clergy should be of interest at present, as coming from an evidently devoted churchman. He observes that the priest, when in the exercise of his office, was not expected to make any change in his dress. "From the fourth to the ninth century everything seems to show that his proper costume was always white"; another remainder, by the way, from pre-Christian ceremonial. "White was not mixed with other tints in the dress of the clergy till towards the ninth century; the five hues admitted by religious symbolism date only from the twelfth century." Thus the variations and embellishments of costume upon which some persons set so much store at present as included in the correct order of the Church service, are at best only the restoration of an innovation, not any return to primitive custom or ordinance.



Silver-gilt Cruet, showing its different sides: on one side the head of Christ, with a nimbus; and on the other that of St. Peter. First or second century.

The chapter on pilgrimages contains a good deal that is interesting both in matter and illustration; among others is an engraving of "A Memorial of the Middle Ages, burnt during the Bombardment of Strasburg in 1870," viz., the ancient banner of the city (p. 386), with an image of the Madonna, crowned, and with arms outstretched, the whole blazoned with armorial bearings and symbolical decoration. This is a very grand design in its way; for the purpose for which it was made, it could hardly be more impressive and appropriate, and is in the true spirit of decorative, as opposed to pictorial, design. Into the chapter "On Heresies" we can hardly go; but it furnishes, *apropos* of the great subject of martyrdom, an illustration of the funereal lamp from the catacombs,—a piece of work of the third century, preserved in the Vatican Museum, and representing, on the handle, the head and arms of a young Christian woman, bearing the palm-leaf. There is something very touching and beautiful in this silent memorial of the strivings and sufferings of a long past age, thus preserved for us in so simple and commonplace an object. The chapter on "Funeral Ceremonies" gives us an illustration which was hardly worth reproducing, but which in its ferocious spirit is a singular contrast to the last named: it is the carved half-length figure of a beheaded knight, holding his skull in his hands, and with the ominous inscription, "Une heure viendra que tout paiera,"—an hour will come that will square everything,—the allusion being evidently to the vengeance of the family upon the murderer; this is from the Namur Museum, and dates from 1562; there is a sinister grandeur about it, but it also illustrates fearfully the more than pagan ferocity and resentment of injuries which characterised society in the Renaissance period.

The book concludes with this chapter on funeral ceremonies,—a matter which is also attracting unusual attention at present, though in a sense rather different from what the author of the book before us would contemplate. M. Lacroix is a devout Catholic; a point in regard to which we have assuredly no quarrel with him, save in reference to one influence which his sympathies have exercised upon his in general valuable work; and in England it would probably cause amusement rather than any other feeling, were not the subject so painful, to find that the chapter headed "The Inquisition" is illustrated entirely by woodcuts representing the tortures inflicted by Huguenots upon the devout Catholics of France. That there is more to be said on that side of this miserable section of history than is generally admitted by Protestant writers, we are of course fully aware; but we fear M. Lacroix will scarcely find it possible to square accounts in this way. Suffice it: this book should be found in all our public libraries.

LECTURES ON TOOLS.

SOCIETY OF ARTS.

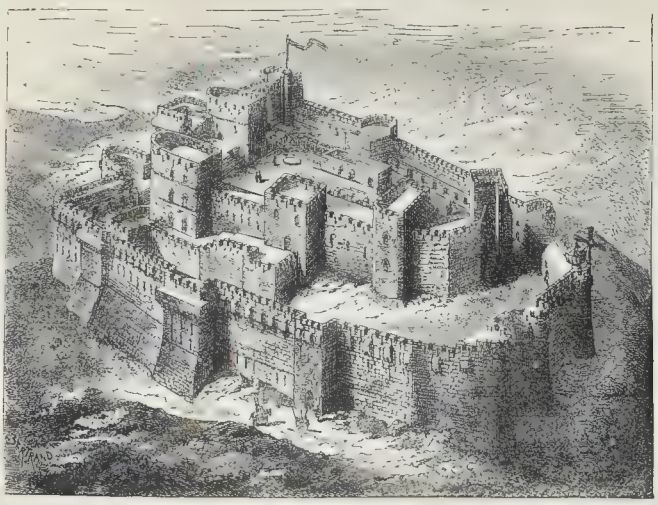
THE second course of Cantor Lectures, now in course of delivery, is by the Rev. Arthur Rigg, M.A., on "The Material, Construction, Form, and Principles of Tools and Contrivances used in Handicraft."

The lecture on Monday last was on "Hammers and Mallets." The remaining lectures will be delivered as follows:—Monday, 22nd February, "Hammers and Mallets" (continued); Monday, 1st March, "Picks, Axes, Adzes, Chisels"; Monday, 8th March, "Planes, Knives, Shears, Saws"; and Monday, 15th March, "Saws and Dove-tailing Tools."

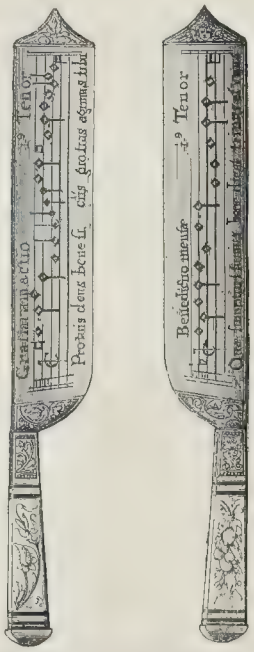
Members can each introduce a friend to the Cantor Lecture. The lectures are fully illustrated by photographs and drawings.

Cookley Church, Kidderminster.—This church, after undergoing improvements and alteration, at a cost of 700*l.*, was re-opened on the 9th inst. The principal improvement is the enlargement of the church, which will afford accommodation to seventy additional persons. The tower is being raised at the expense of Mr. W. Hancocks, of Wolverley, and pinnacles will be added to it. The work has been carried out from the plans of Mr. J. T. Meredith, architect, of Kidderminster.

MEDIÆVAL AND RENAISSANCE ART.



Fortress of the Knights Hospitallers, in Syria, taken from the Kurds by the Franks about the year 1125, and rebuilt in 1202. As restored.



Knife with which the consecrated Bread was cut. On the Blade may be read, on one side, a prayer for a blessing on the food; on the other, a thanksgiving: both with music. Sixteenth century.



State Gloves, of embroidered silk, gold, and silver, with the monogram of Christ, formerly belonging to Louis XIII.



Romanesque perforated Handbell, representing the symbols of the four Evangelists. Twelfth century.



Stone statuette of St. Anthony,—third century,—showing what the holy doctors thought of the great anchorite of Egypt. He is treading under foot the devil. The closed book is to show that he learned the Scriptures, without study, by hearing them read. The bell signifies the power of driving away the evil spirit.



WAREHOUSES IN GOSWELL ROAD, LONDON.—MR. ROWLAND PLUMBE, ARCHITECT.

WAREHOUSES IN GOSWELL-ROAD.

THESE premises form the front portion of a block of warehouse buildings, now being erected on a plot of land having frontages in Goswell-road and Sycamore-street. Each warehouse has a basement and four stories over, with a frontage of 20 ft. by a depth of 50 ft. The rear block is planned for four warehouses of a similar description. The fronts are of an exceedingly simple character; the ground stories having two entrances—one leading direct to the staircase, so that the upper stories can be let separately. The upper floors have loophole frames and jibs, for the removal and entry of goods.

The ground-floor piers and caps, with lintels and cornice over, are of Bath stone; the remainder of the building is faced with white bricks relieved with red brick bands and arches, stone being used for the window lintels, and the copings of gable and eaves cornice.

The whole of the buildings, together with a stone-fronted warehouse but a short distance away in Old-street, are being erected as a speculation by the proprietor, Mr. George Day, contractor, of Clerkenwell, who is himself executing the work.

The buildings have been designed by Mr. Rowland Plumbe, architect, who has endeavoured to give such individuality and picturesqueness of outline as the simple requirements of the buildings would allow.

EDINBURGH THEATRE AND PROPOSED NEW ONE.

WE have already mentioned the destruction of the Theatre Royal, Edinburgh, by fire. It has not been definitely ascertained what was the cause of this catastrophe, but it is supposed to have been produced by an escape of gas. This is the third theatre upon the same site which has met a similar fate. The late building was erected in 1855, from plans prepared by Mr. D. MacGibbon. The principal façade, towards Broughton-street, alone had any pretentions to architectural merit, and it was a not very happily-proportioned example of the Italian style. The means of entrance and exit were, moreover, very defective, owing, probably, to the circumscribed nature of the site; but the auditorium was a very pleasing and elegant specimen of its class.

All the costly stage machinery is gone; the decorated proscenium, the crystal chandeliers of the auditorium, and the drop-scene by Telbin, are reduced to ashes; the actors have lost their wardrobes, the orchestra their instruments, the manager his manuscripts, and the spirited lessee about 3,000*l.*, as we understand. The building was insured in the Phœnix, to the extent of 12,000*l.*, irrespective of stage fittings; and Mr. Wyndham, for his share of stage appointments (irrespective of costumes) to the extent of 4,000*l.* Had this fire occurred during the period of performance, as it most fortunately did not, the loss of life would have been fearful.

The theatre is situated at the head of Leith Walk, and occupies a considerable site fronting Broughton-street and Little King-street. It is thickly environed with densely-populated buildings (chiefly occupied by the working classes). What is more, it stands in dangerous proximity to the Roman Catholic Chapel of St. Mary, which has thus three times narrowly escaped total destruction. During the great conflagration of 1865, a portion of the north wall of the theatre crashed through the vestry of the chapel, with the loss of several lives; and it was, we remember, while engaged in the process of rescuing one of these men, that Mr. Lorrimer, the Dean of Guild, and four other unfortunate men, lost their lives by being also buried in the falling masonry. Again, it occupies an equally dangerous position with respect to the United Presbyterian Church in St. James-street; and, finally, the Episcopal Church of St. Paul, in York-place, stands within 200 yards of this spot. Given the necessary conditions, a high wind and a scarcity of water (by no means uncommon circumstances in Edinburgh), and who shall guarantee the safety of this building among the rest?

The question immediately occurs here, then, is not this altogether a most inappropriate site for a theatre? The question of site with respect to a theatre is of vital importance; and we are glad to observe that the Edinburgh municipal authorities have at length become alive to it. Our own opinion is well known. A theatre should always be an isolated building.

As to the construction of the Edinburgh Theatre, some useful lessons may be gathered. It was, as we have mentioned, for the second time burned to the ground in the year 1865. But in little more than six months after this disaster, a new building was erected from plans prepared by Mr. David M'Gibbon, architect. It is worth while to note that previously to the opening of this theatre for public performances Mr. Adam Beattie and the late Dean of Guild Shennan, who were appointed by the Lord Provost and Magistrates to inspect it, reported that "the Theatre was sufficient in all respects," adding that "the apparatus for preventing the spread of fire, should fire occur, and the means of exit, are of the most satisfactory kind." The theatre was seated for 2,591 persons. The apparatus for preventing the spread of fire consisted of an iron revolving screen similar to that which we have seen at the Paris Exhibition, made specially by Messrs. Clark, of London, and hung at the proscenium, to be worked by hydraulic power. As an additional precaution, there was placed immediately above the stage a cistern capable of containing 2,000 gallons of water. Hose was always attached to pipes connected with the cistern, ready in case of an emergency, but on the day of the fire as usual there was no chance of bringing the apparatus to the test of actual trial. The great heat evaporated the 2,000 gallons of water, and the tank burst about four o'clock with a loud report, heard above the roar of the fire.

The next day the interior presented a scene of desolation and destruction, such as those alone who remember similar disasters can adequately realise. The iron pillars which supported the boxes and galleries were broken and twisted, the connecting rods bent like slender wire, and the whole embedded in a chaos of rubbish. The fireproof iron curtain, which separated the stage from the proscenium, and of which so much was expected in such a contingency, was, to quote the pithy expression of the reporters, "crumpled up like brown paper." The iron beam which supported this screen was removed next day by order of the fire-master, and the tottering walls alone remain a witness of our modern system of combined stone and iron construction.

So far as we have been able to learn, the origin of the fire remains, as yet, unexplained. An explosion of some kind there must have been, but whether this took place in the gas-room or in some other part of the stage there is no evidence forthcoming to show. The gas-room, it may be mentioned, is fitted up with apparatus for the generation of the oxygen and hydrogen gas necessary for the lime-light, so much relied upon by stage managers for the brilliancy of their effects. In this room, however, there were never more than very small quantities of the chemical substances required, any vitriol in stock being invariably kept in the lane adjoining St. Mary's Church, and never within the theatre.

So very defective were the arrangements of this house that, for several years past projects have been mooted for the construction of a new theatre upon an entirely new site, and at the present moment a model and plans are being exhibited for a new theatre and winter garden upon the vacant ground in Castle-terrace, between Cornwall and Cambridge streets. The designs for the exterior have been prepared by Councillor Gowans, and while harmonising with the part of Castle-terrace designed by that gentleman, show less of that eccentricity of detail which characterises his work than in former cases. The principal façade towards the east extends to the length of 300 ft., in the centre of which the theatre is shown occupying a third of the frontage. The south wing has a frontage of 100 ft., and extends backwards along Cornwall-street 156 ft. The north wing has also a frontage of 100 ft. towards the terrace, and a return of 90 ft. along Cambridge-street. The west side is blocked in by the backs of the houses forming the east side of Grindly-street, and is therefore not treated architecturally. The central portion forming the theatre, rises three stories above the street level, and is flanked by square towers, which assume an octagonal form above the cornice, and are finished by domes which attain an altitude of 145 ft. The wings rise two stories above the street level, and at the north-east and south-east angles are octagonal towers, surmounted by domes, rising to the height of 120 ft. The fenestration consists of large arched windows, and the doorways are also arched producing an effect of breadth and dignity which is relieved by balconies and statues.

The wings are to be laid out as a winter garden, and, as the ground is greatly below the street level, the sunk stories are to be used, the one as an aquarium, and the other as a concert-room.

The interior has been planned by Messrs. Pilkington & Bell. The carriage entrance to the theatre is through the north winter garden which communicates with the lower vestibule of the dress circle, as well as with the vestibule of the pit and stalls.

The staircases from the lower vestibule lead to an upper one, 45 ft. by 35 ft., communicating with a corridor giving access to the dress-circle and boxes, which are on the same level as the principal floor of the winter gardens, in the southern portion of which a *cafe* is provided. The entrance to the gallery is from Cornwall-street, and ample means of entrance and exit are provided to all parts of the house. The stage has an area of 120 ft., and is furnished with double docks. The pit and stalls are so arranged as to suit promenade concerts as well as the opera. The amphitheatre is divided into two portions, that in the front containing two rows of seats, and that at the back four rows, each having separate entrances.

Three thousand spectators can be accommodated, but the size can be reduced by shutting off a portion of the pit and amphitheatre.

The concert-room has an area of 15,000 ft., and is 40 ft. in height.

In the towers there are immense water-tanks, by which the whole area could be flooded, and the arrangements generally are such that in case of fire the risk to an audience would be reduced to a minimum;—at least in theory.

THE SAND BLAST FOR INDUSTRIAL PURPOSES.

IT is very interesting to watch the progress of an idea. Years ago we had to tell our readers of the notion then broached that a jet of sand propelled at a high velocity by a steam or air blast might be used for cutting stone and for producing ornamental carving on stone and engraved patterns on glass and other materials. Afterwards we had to describe the process as in operation experimentally, and now we see it engraving lamp-globes at the rate of a gross an hour, and supplying 200,000 grave-stones to be erected in America to the memory of those who fell in the civil war! Mr. W. E. Newton read a paper on the subject at the Society of Arts last week, some portions of which we print:—

This new process in the arts is based upon the fact that when grains of sharp sand are driven with a high velocity against a hard surface, such as glass, stone, slate, marble, wood, or iron, the surface is cut away more or less rapidly. The greater the pressure of the steam or air which produces the jet, the higher is the velocity imparted to the grains of sand, and the more rapid and powerful their cutting effect upon the surface exposed to their action. When driven at a high velocity the impact of the grains of sand will cut substances much harder than themselves. Corundum can thus be cut with quartz sand, and quartz rock can be cut by small lead shot. The hardest steel, chilled cast iron, or other metal can also be cut by a stream of quartz sand. The action of sand driven at a high velocity on the hard surface of glass, wood, stone, or slate, is very rapid, and if a sheet of plain polished glass be subjected to the sand-blast it will be quickly depolished or ground, but if a portion of its surface be protected by covering it with some soft or elastic substance, such as india-rubber, paper, or other suitable material (cut to any particular pattern or device), all those parts so covered will remain intact, while the exposed surface will be ground or cut away by the impact of the sand. By means of stencil plates, letters or designs can be engraved upon stone, slate, and other hard substances; also by varying the shape, number, and direction of the jets of sand, and traversing them over the work, cuts or holes can be made of any shape or size. For ornamenting stone, marble, slate, granite, or wood, iron templates made of the required pattern are used to protect the stone or other material from the action of the sand at all such parts as are not to be cut away. These templates, which are of cast iron, are very easily made. The process adopted is to draw or transfer the pattern (either in pencil or ink) on to the surface of a piece of

wood of proper thickness, and then to cut out the design with a fret saw. The wooden pattern thus made is used to produce a mould for an iron casting in the ordinary manner. An iron template formed in this manner, and about 3-16ths of an inch thick, may be used 100 times to produce the same pattern on stone of moderate hardness. If made of malleable iron, the template will last about four times as long. It will be evident from the above explanation that almost any design an architect may make (however elaborate it may be) can be cut in flat-relief in stone, marble, slate, or wood. The peculiar feature of the sand-blast process which distinguishes it from the other methods of cutting and grinding is, that each grain of sand acts by its own velocity and momentum, like a bullet or projectile, and pulverises or indents the object it strikes. In consequence of this peculiarity of its action, some substances (which, though comparatively soft, are also tough or elastic, and cannot, therefore, be pulverised by a blow, such as copper, lead, paper, wood, or india-rubber), are less rapidly cut and ground by the sand-blast (particularly at moderate velocities) than much harder substances of a brittle nature, such as stone, glass, or porcelain. A peculiar advantage of the sand-blast is that its action takes place with equal effect upon irregular surfaces, and therefore recesses hardly accessible to ordinary methods of working can be cut. Steam is generally found most convenient for the impelling blast, particularly for high velocities, as when operating on stone or marble, but in some cases air is preferable. Steam of all pressures has been used up to 400 lb. per square inch, and its efficiency has been found to increase with the pressure. The sand is fed into a funnel, which is connected by a flexible pipe with an iron or steel tube of any convenient length, and of about 1-6th in. bore. This sand tube is secured exactly in the centre of a brass casing, which forms the steam chamber. The annular space between the two tubes is closed steam-tight at the back end; and at the front end or orifice the casing is shaped with a tubular neck, and brought to the same length as the sand-tube. The neck of the casing is bored out to a diameter of ¼ in. to ½ in. for a length of about ½ in. from its end. For about ½ in. in length from the end, the sand-tube is reduced to 0·23 in. external diameter, so as to leave a uniform annular opening of 0·015 in. in width, extending backwards for a length of about ¼ in., and then enlarging gradually to the full diameter of the casing. This annular passage forms the opening through which the steam-blast issues. The casing or steam chamber is connected with the boiler by a flexible pipe, so as to allow of the jet apparatus being turned and moved in any direction. A tube, called the nozzle-tube or gun, about ½ in. bore and 6 in. long, made of wrought iron, steel, or chilled cast iron, is fastened on the neck of the casing by means of a set-screw. The end of the sand tube is accurately adjusted and fixed in the centre of the steam aperture, so that the annular opening is everywhere of the same width all round.

For cutting a design upon glass, the covering stencil plate must be of a strength and durability proportioned to the thickness to be cut away. Toughness and elasticity and the absence of brittleness appear to be the qualities needed for resisting the cutting action of the sand. India-rubber (particularly when vulcanised) possesses the desired properties in an eminent degree; parchment and parchment-paper also possess considerable durability. Stencil plates made of paper or thread are rendered more durable by covering them with a tough or elastic varnish. A design can either be drawn on the glass with a composition applied by a brush, or the glass can be covered all over with a preparation of gelatine or glue, and the design cut through the protecting coat when dry, so as to expose certain parts of the action of the sand-blast. A layer of wax resists a sand-blast having a pressure of up to 5 in. or 6 in. of water. A film of bichromatised gelatine produced by photographic processes is capable of resisting the action of a blast of the same fine sand, during a sufficient time to allow of the exposed portions of the glass being cut or engraved by the sand-blast; and photographic pictures have been engraved by this means. The finer the sand used and the lower the pressure of the blast, the finer is the grain of the depolished surface, and the weaker and more delicate may be the texture of the covering substance used to produce the design. Any of the processes by which a design can be produced or transferred in a sufficiently tough medium may be used to prepare a surface for being engraved by the sand-blast. Many natural objects, such as plants, leaves, &c., which can be fastened flat upon a surface, offer sufficient resistance to a blast of fine sand to admit of their outline being thus engraved. When wood is subjected to a sand-blast of moderate velocity, the softer and more brittle portions are more rapidly and deeply cut away than the others, and the grain of the wood and the hard lines and knots are thus brought out in relief. When the sand-blast at a moderate velocity is directed upon a metallic surface it removes but little of the metal, but the grains of sand make innumerable small indentations in the surface, and produce a frosted or deadened appearance; and by means of stencil plates any design can thus be engraved on metallic surfaces. It will be evident from the above explanation that a special peculiarity of the process is, that not only can many kinds of work which are ordinarily done by hand be produced by it automatically, and at a very trifling cost, but other things can also be done which cannot otherwise be produced at all at anything like a reasonable cost. As an example of this kind, inscriptions can be cut in granite with raised polished letters; the cost of this by hand work would be very great, but it is done by the sand-blast process with great facility and expedition. The mode of executing this work is by first polishing the surface of the stone, and then cementing upon it metal letters forming the intended inscription, and subjecting the whole to the sand-blast; the surface of the stone is by that means cut away uniformly wherever it is not protected by the metal letters; and on removing the metal templates the inscription will be left in relief, with letters polished on the face and finished with fine sharp edges. The operation is effected with a single steam jet moved backwards and forwards over the work at the rate of about 20 ft. per minute, and the stone is traversed slowly at the same time in a transverse direction, until the jet has passed once over the surface; the cutting of a specimen shown, 10 in. square and 3-17ths in. depth of cut, required only eight minutes with a pressure of 60 lb. steam, and it was done with the steam jet exhibited with ⅜ in. bore of tube. A pierced ornamental marble panel exhibited was cut at two operations by placing a thin iron template on one face of the marble, and sinking the pattern half through its thickness by means of the sand-blast; the marble was then turned over, and the template fitted upon the other face exactly corresponding in position with the first side, and then subjected to the sand-blast until cut completely through. A perforated design is thus formed, having the edges all regularly chamfered from each face, on account of the tapering form of the holes cut by the sand-blast. A specimen of marble shown, about half a square foot area and ¾ in. thick, was completed in thirty minutes with a steam jet of 50 lb. pressure, and a similar specimen cut in sandstone was completed in only ten minutes.

TWO SIDES TO THE MUSEUM QUESTION.

Sir,—Nothing more completely exhibits the weakness of a country, in any special direction, than its tendency to imitate foreigners in that direction. In maritime affairs, engineering, or cotton-spinning, we never dream of imitating other nations. But in military affairs and art, we have for years been exhorted to imitate France; and when French military organisation broke down, to imitate Germany. Our clamorous advisers never seem to be aware that those who are content to follow will surely remain behind, and that in order to be successful, and to the "fore," we must be original, or at all events rational in our proceedings. We must not go in for endless museums, on the mere fact that our foreign neighbours are partial to them, or if we will insist on following an already beaten track, let us at least choose that pursued by Greece and Italy, from whom we derive our perfect models of art. We should consider our constitution as a nation, our national idiosyncrasies. We have always succeeded best when we have pursued an independent course, as we have in maritime affairs, science, and the drama; and, as we hold, we ought to endeavour to do, not only in military organisation, but the organisation of education, general and artistic. The proposal to establish a multitude of museums would, if carried out, lead to an extravagant expenditure of public money.

The public must be put upon its guard lest it be carried away by this *furore*. The museum fever is catching, and even thinkers, in the faces of the physicians, Evidence and Fact, are liable to the seizure. For instance, we find in an article in the *Times*, on a Museum of Inventions, the following passage:—

"Seeing that the immense wealth and astonishing development of the resources of this country during the last hundred years are due, first perhaps, to coal-mines and other natural advantages, but next to the genius for scientific invention, for which we are famous throughout the world, and which has enabled us to carry as many different branches of industry to marvellous perfection, one might naturally expect that the Patent Museum of London would be a great and renowned institution, one of the principal attractions of the metropolis, and without a rival in any other capital."

Now the writer, in the foregoing paragraph, clearly demonstrates that a museum of inventions is not essential to the development of the mechanical genius of the nation, for according to his own showing England has attained to the foremost rank in mechanical invention without possessing more than a shadow of such an institution, and that too, only quite recently. The educational importance of a museum of inventions is, therefore, a *non sequitur* to his facts. And I hope to show that we ought naturally to expect, not as the writer in the *Times* does, that the order of things in London and Paris should be reversed, but just as it is, or in fact that our patent museum should be "cramped, chaotic, miserable," whilst the Arts et Métiers should be "a complete public institution"—"in short, an admirable school of practical and technical instruction."

That we ought reasonably to expect things to be, relatively, just as they are in London and Paris, and not as the advocates of museums think they should be, is explained by the two following principles of political economy.

1. That the intellectual development is not in direct proportion to the amount of educational appliances brought to bear upon it.

2. That the most direct and economical way of developing the human powers is to make it worth men's while to exercise them.

Tender the intellect too much assistance and you destroy its native powers,—its self-helpfulness, its energy, its independence. In confirmation of this truth we need but refer to the fact that Italy, the very museum of Europe, a museum filled with the most glorious examples of art beyond the power of this or any other country by investment to obtain, has not prevented the Italians, with all their veneration and natural capacity for art, from sinking into artistic nothingness. With all these splendid possessions the fine arts have been at a stand-still in Italy during a period as long as that in which they were founded and built up, without museums be it remembered, by the only vital and direct process of developing them, viz., the continuous employment of painters, sculptors, and architects on great public and national works. The possession of abundant art-treasures, then, is by no means the important element it is commonly supposed to be in the development of art. Ask any of the great European artists whether they owe their positions to copying in galleries and museums, or by a direct and independent study of nature? We know that their answers would be, without exception "by the latter." The art and art-manufactures of Greece, Italy, Spain, and the Netherlands were not the results of studying in museums but of a public recognition of the value of art, and not merely a theoretical recognition, but a consistent and continuous demand on the powers of the artist. Museums and national galleries are quite modern institutions, and innovations on the ancient and direct educational methods of the great schools. They are luxuries, not utilities, for it is shown that the highest rank in mechanical invention has been attained by a nation which does not possess an "Arts et Métiers," and in the fine arts by peoples having no national galleries. Shall we then in the face of these facts endeavour to encumber England with a multitude of such institutions? Shall we still persist in erroneously imagining that we can educate the people by such means? Shall we still persist in endowing institutions, bricks and mortar, and curators instead of intellect?

Museums and picture-galleries are doubtless the delights of amateur mechanics and amateur artists, and of those who have nothing in particular to do, or who want some-

thing to see. But to the general public they are lounges, and are scarcely thought to be agreeable ones unless they are provided with the extremely educational "refreshment buffet." Without prospect of reward, at this goal, we might, we fear, offer in vain to play the cicerone through miles of canvasses, marbles, or of heterogeneous curiosities, to our gaping country cousins. There is no objection to museums and galleries within certain narrow and well-defined limits, either for the sake of lounging in ourselves, or for disposing of our visitors for several days in succession, but let us have no more rhodomontade about their educational importance.

I have no objection to a National Museum or two of curiosities and rarities at our great centres. But shall we waste our money in establishing a little British Museum, a little National Gallery, a little College of Surgeons, a little Museum of Inventions, a little South Kensington, &c., in every important town in the kingdom? Where should we be able to draw the line? Special museums are of great, I may say of most use, when attached to special places of instruction,—special colleges, for here they afford illustrations, or are aids to explanation. The Royal Academy and the National Gallery, if the latter were of the great importance to modern art it is by many people supposed to be, ought to be still as they formerly were, yoked together. But it was thought advisable to sever that connexion, though, seeing that some of our teachers were raving about the importance of the old masters to students, the act did not appear to be a very consistent one. When the bringing of museums to everybody's door is contemplated, we should not forget the constitution of the human nature we desire to benefit, and that there would be no yearning, no enthusiasm, no instructive pilgrimages, if the Meccas of men's desires were at their own thresholds. It was with this consideration, perhaps, that the Royal Academy and National Gallery were severed, and that the Science and Art Department was established at Brompton?

In a recent article in the *Builder*, "By whom are Inventions Made?" the writer's facts support the view that separation and unfamiliarity with special forms of manufacture stimulate invention, furnishing yet another argument against the establishment of museums, and the policy of exhibiting everything to everybody. This writer ably shows that "the great substantive inventions were made by persons unconnected with the manufacture or art to which those inventions relate; and we can readily see why this should be. The person who has been brought up to pursue any particular manufacture has, even before he had sufficient knowledge to be able to appreciate the merits and the principle of the processes he was taught to follow, been trained to the belief that 'certain ends are to be attained by particular means.' Under such circumstances it is difficult for even a powerful mind to break through the trammels which have been imposed upon it, and to approach the consideration of the subject of the particular art with the same broadness of view, and power of diluting and grasping the true principles upon which that art is based, as would be possessed by a mind devoting itself to the subject for the first time, and thus the man untaught and unprejudiced in the art is more likely to make a substantive invention than is one who has been trained in it from his youth.* Improvements of detail such a person may make; but there, in all probability, will be the limit of his inventions." A museum of foreign inventions, applicable to special industries, might be useful at the centres of these industries, if the trade guilds would employ men to hunt for foreign inventions superior to our own, but I very much doubt whether a very extensive building would be required to house these, or whether even in this case the record of such inventions would not be amply sufficient.

But the true way of promoting art and mechanical invention would be to let our own painters and sculptors make our National Gallery, and our best mechanical skill be found in those great museums of inventions, the workshops of England. The steam-engine, the power-loom, the railway, the electric telegraph, &c., do not, as already stated, owe their invention to museums. The great things that are to come will, as the great things which have preceded them, come out of that prolific and constructive fount, the properly-constituted intellect. You cannot, by any educational forcing whatever, raise that order of mind which is of most service to a State, and which always procures for itself if not easily, by hook or by crook, the mental food it requires. We have of late become blind to the importance of the "*ingenium*," and erroneously fancy that the "*labor*," with mechanical appliances, will effect everything. This is a fatal error which must be promptly corrected. We must henceforth give more heed to the "*ingenium*" wherever that may hail from, and no longer stifle England under the bolster of mediocrity. Let us take care of our geniuses, our men of large general powers; other men can better take care of themselves. This is the way for a nation to become progressive, victorious in all departments; in art, literature, science, and manufacture.

Of late we appear to have been trying our hardest how not to effect reforms. Our two universities elect amateurs to teach them art; South Kensington cries out for more museums; and when it gets them, and the world is not entirely righted, still cries, "More museums!" It is proposed to do away with the patent laws and to deprive inventors of the profits of their inventions,—of their own,—painters languish whilst *dilettanti* wrangle over and prevent the decoration of St. Paul's. Thus amateur incompetence and meddling are everywhere marring the reputation of England where most people know too much of everything and not enough of anything.

CHARLES BURTON.

* A great improvement in the manufacture of glass has recently been effected by a French farmer.

BUILDING FOR HEARTS OF OAK BENEFIT SOCIETY.

THIS flourishing society has removed to the freehold premises which it has purchased in Charlotte-street, Fitzroy-square. The building, which stands on the site of Percy Chapel, was recently erected by Messrs. Chamen & Sons, for their own use, and having come into the market on the death of Mr. Chamen, sen., the society became the purchaser for the sum of 12,500*l*. A further outlay of over 5,000*l*. has been incurred in preparing the premises for the special business to which they are devoted. The entrance in Charlotte-street gives access to the pay-office, an extensive chamber paved with encaustic tiles, and the most striking feature of which is a horse-shoe counter, the inner side affording room for an ample staff of cashiers, while the outer area will accommodate with ease the crowds of contributors who may be expected to assemble at busy seasons. Beyond this are the general offices, and specially noticeable is the lofty and capacious central room affording accommodation for about fifty clerks. In the rear is the large committee-room, a chamber 42 ft. by 26 ft., surrounded by pilasters and entablature, with a handsome roof, designed by the society's architect, Mr. T. Chatfeild Clarke, whose plans have been carried out by the contractor, Mr. S. Simpson, of Tottenham-court-road. Among the other arrangements that might be named are a warming and ventilating apparatus, by Messrs. Stuart & Smith, of Sheffield, a fire and thief proof room, and a pair of large lifts, by Messrs. Lawrence, Brothers, which during the day do duty as bookcases, and which at night, by cleverly-contrived machinery, sink noiselessly with their load of ledgers and cash-books into the safe keeping of the strong-room beneath. Mr. E. Thurbon was the clerk of the works.

CO-OPERATION IN EMIGRATION.

SIR,—A few weeks since some articles and letters appeared in the *Builder* upon co-operation amongst emigrants. I now beg to inform such of your numerous readers as may feel interested in the subject, that an office has been opened at 110, London Wall, E.C., for the purpose of carrying out the proposal of "A Lover of Progress," and as soon as a sufficient number of members are enrolled the Company will be registered in one of the Australian Colonies. A small registration fee only is demanded in this country, as will be seen in your advertising columns, but mechanics must give a satisfactory proof of being able to pay a balance of 24*l*. 10s. on arrival, and clerks and such as have hitherto been unaccustomed to manual labour will have to satisfy the Company that they will be prepared to invest 100*l*. on arrival. A large portion of the capital has been already promised, and it is desired that as many mechanics as possible may be secured before the list is closed.

SAMUEL HARWAR, Sec. *pro tem.*

"ASHES TO ASHES."

SIR,—In my letter in the *Builder*, of the 23rd of January, I attempted to prove that *cremation* is the mode of resolving human remains most conducive to the commonweal of Nature; that *cremation* is, in fact, pre-eminently Nature's mode of resolving the entire material world. I might have gone a step further, and proved that all chemical action is cremation,—is so many different modes of combustion. Every mode of resolving matter is only therefore a quicker or slower form of cremation. Without heat, Nature would be at a stand-still: consequently, as administrators of Nature's laws, we have to choose that process of cremation which is the best,—is the least noxious to all the interests concerned.

Since writing my letter of the 23rd ult., I have obtained data which set the state of things resulting from our present mode of sepulture in its most appalling light. The registered deaths in the United Kingdom for 1874 were 699,747. Taking this as a rough annual death-rate for Great Britain, and allowing ten years for the complete resolution of the body on our present system of interment,—a period, it is believed, considerably within the mark,—we have in the United Kingdom nearly seven millions of dead bodies lying in various stages of decomposition, giving off their noxious exhalations by percolation to the air, and sending down contaminating matters to our springs. These, however, are not the only injurious results of the present system of sepulture, for the elements of 7,000,000 human beings which are necessary to the building up of the new race are imprisoned, withheld, in the earth, and denied free circulation and appropriation.

Calculating for London alone, there were, in 1872, 76,634 deaths; there are, therefore, at a rough estimate, nearly a million of bodies festering in its neighbourhood, and without mentioning the carcasses of animals also interred, and in various states of decomposition. So little thought has been bestowed upon this matter that our cemeteries are for the most part established on clayey soils, and bodies interred in them are locked up in these clay vaults, which allow no egress to the dissolving elements, neither escape of gas by percolation into the atmosphere, nor the filtration of poisonous matter into the springs beneath. These graves are, therefore, nothing more nor less than cesspools of human remains, which only give forth their noxious vapours when broken into for some fresh interment, as many a mourner has experienced at his or her cost. Bodies buried in sandy soils are resolved in some six or seven years. Interments in sandy soils, however, are more likely to endanger,—to contaminate the purity of our springs. Other soils there are, like that of St. Giles's, which actually arrest decomposition, and in some way mummify the bodies buried in them. If bodies were buried in quick lime, their dissolution would be much more rapidly effected; but this would only be a slower form of cremation. Why not therefore, and at once, resort to the more direct, rapid, and thorough method of *cremation*, as that word is generally understood; thus rapidly purifying earth, air, and water, and strengthening men?

Mr. Haden, in his letter to the *Times*, says that "it is impossible for Nature to err." Now, whether this be the fact or not, there is one axiom of modern science on which we can rely, viz., that it is impossible to resolve the chemical elements of any substance in any but a natural way. The question for discussion, therefore, is this,—which is the better mode of resolving human remains, with less injury to the living, and to promote the commonweal of nature, the present system, Mr. Haden's proposed plan, or cremation? Having myself considered the subject in all its bearings, I unhesitatingly declare for cremation.

W. C. T.

Cottage Building Club at Ilkley.—A plot of land has been purchased in Leeds-road, Ilkley, by trustees, on behalf of a building club, for the erection of working-men's dwellings. It is claimed that this system of erecting houses enables the members, if they are tenants of the house, to become their own landlords in the course of a short term of years, by monthly payments very little in excess of the ordinary rent; or, if a member lets his house, he will become the absolute owner by paying into the hands of the treasurer a trifle more than the rent he receives from his tenant. Much depends on the manner in which the business of such a club is conducted.

WHAT IS "COMMON SENSE DRAINAGE"?

SIR,—It looks uncommonly like cheap philanthropy on the part of Mr. ex-Alderman Bennett, of Liverpool, to offer 1,000*l.* for the improvement of court-houses in that town, on condition that "a common-sense system of drainage" is introduced! I apprehend that if he reserves to himself the right,—as is most likely,—of adjudicating upon any rival systems which may be submitted, he, who is well known to be a most determined opponent of every system of drainage,—will not be satisfied with any one of them. The position is somewhat similar to that of the Yankee editor out West, who in one of his weekly issues offered a thousand dollars for a story which should make his hair stand on end. Of course his readers, to most of whom he was personally unknown, supposed in their innocence that he wanted a modern sensational story. Not so a rival editor, however, who the following week announced that the gentleman who made the offer was possessed of a head as bald as a bladder of lard, which, indeed, was the fact. Of course, under those circumstances, the offer was not quite disingenuous, and I shall have little difficulty in showing that Mr. Bennett's offer belongs to the same category. Any one who knows Liverpool will be aware that the greater part of the town is built on the slope of a hill, and is therefore admirably adapted for drainage. The low-lying parts about Paradise-street and Whitechapel, which, not so very long ago comparatively, was a creek of the Mersey, can, by no other means than pumping, be effectively drained. This spot is, however, the exception to the generally well-adapted position for a really good system of drainage. All that is wanted is that a separate system of sewage-drains be provided, distinct from the storm-water drains, and that every house be provided with a water-closet and supply of water, instead of the abominable midden which now prevails, and that the accumulated sewage be pumped away into the country, for the use of farmers, as at Leamington, where, I hear, wonders are being done by the Earl of Warwick, in root crops especially, as much as 84 tons of mangold wurtzel having been produced by a single acre last season. That is what I call a common-sense system of sewage, but it by no means meets Mr. Bennett's views. He objects to drainage altogether. In a letter addressed by him a few weeks ago to a gentleman in Salford (where as yet no effective system of drainage has been attempted, and where the water committee are putting an embargo upon water-closets by charging 1*l.* per annum per house extra where they are adopted, and 10*s.* per annum where a bath is put in use, so much do they value decency and personal cleanliness), a copy of which letter I have by me, the worthy gentleman exposes his true sentiments. Speaking of "Dry *v.* Water Closets," he says:—

"I am glad to hear from my friend, Mr. Morrell, that you advocate the former, and hope you will succeed in preventing the Salford authorities from committing (as in Liverpool) the fatal mistake of tunnelling their town for the purpose of converting the whole substratum into a huge cesspool, poisoning the inhabitants from its gases, and the waters by percolation. A more successful plan for raising the death-rate it is difficult to conceive. The death-rate in Liverpool is now 30 per 1,000. A very large per centage of this I attribute to the evil arising from the general use of water-closets. I trust Salford will take the lead in substituting the modern dry closet in lieu of the vile open cesspool (query midden), which, except the cottage water-closet, I consider the worst of nuisances in the crowded districts of a large town. Water-closets have had their day, and however modified and improved, can never regain their late sanitary position. The feeling that all organic matters ought to be kept out of our drains, sewers, and rivers is now predominant. Your Manchester neighbour, Dr. Angus Smith, will, I think, render you valuable assistance. The underground cesspool he detests.

"(Signed) W. BENNETT."

Now, Sir, I think it will be palpable to any person who understands the subject, that Mr. Bennett in the above letter overreaches himself in his statements of fact, and at the same time shows a want of knowledge of cause and effect. Granted, that Liverpool is not a healthy town, it does appear to me that the cause of its unhealthiness lies not so much in the drainage from its water-closets, of which there are comparatively few in number, but rather in the number of horrible middens the town contains, places in back-yards where garbage and excreta lie festering and rotting for months at a time, in all weathers alike, under chamber windows, which dare not be opened for fear of the abominably poisonous stench rushing in. Another cause of disease, apart from the drainage, is the closeness of the courts. The houses are so small and packed together that there is not breathing-room. These should be entirely removed, and properly constructed dwellings, where some light and air could penetrate, substituted for them. A very considerable number of the lower class of grog-shops might be entirely closed with great advantage to the public health, and, I may add, morals also. These are causes which tell heavily upon the death-rate of Liverpool, and Mr. Bennett is most unjust to the very partial use of the water-closet in Liverpool, when he charges it with so much mischief. There is, however, a special danger in drains in Liverpool as at Scarborough. Being on a declivity, the gases rise rapidly towards the houses, and the drains should in no case be permitted to enter, but be stopped off and ventilated outside by a standpipe to the roof in every case. All this however is now well understood by men who have studied the subject, and most people are now beginning to see that carriage by water is the easiest, cheapest, and most innocious method of disposing of all fæcal matters.

E. GRIMES.

AN INDIAN LANDSCAPE.

THERE is something besides arid plains and tumble down dwellings to be seen in India, according to the following description of a scene from a Hill station, written by an officer on absence in the Hills:—

"The valleys below, with their carpets of brilliant green, yellow, and red; the rocks, to a certain height, covered with lovely ferns; the hill-sides clad with the fir, hill oak, and stately deodar; the everlasting snow topping all, glittering in the morning sun, with a background of cloudless violet sky. Would that you could see this picture!

At sunset the colouring is, indeed, beyond description. First of all the scene is viewed in brilliant light, gradually the deep valley assumes a sombre tone, the hill-sides change from a golden light to warm soft tints that only last too short a time; then the snow, no longer white, becomes of a lovely rose colour. The valley is now in darkness, and the hill sides are in deep shadow, the snow no longer visible, and a deep neutral tint mingles and blends with the deep shadow below, and the star-lit sky above, and night reigns supreme. No painter could possibly do justice to such a scene; no one, be he ever so perfect a master of language, can find words to describe, even in a faint way, the glories of such a picture. The morning brightness, the midday brilliancy, the evening shades. At times one feels as if one could not leave the spot, but must remain feasting the eyes by gazing on the star-illuminated heavens, till the sun, once more rising above the lofty peaks, should cast its golden beams upon the upper eternal snow. The cold, chilly night air, however, suddenly arouses one, and drives one to the tent, there to ruminate in perfect stillness over the late superb landscape."

PERSONAL: IMPROVED HOUSES.*

SIR,—The editor of the *Builder* must look on the present movement in Parliament to legislate for house improvement with some degree of pride,—I was about to write with "satisfaction"; and I have no doubt but that you are satisfied and gratified that improved legislation should at length have come about after the years of labour you have devoted to the cause. The articles in the *Builder* first directed the attention of the late Prince Consort to the subject, the model cottages of the Exhibition of 1851 having been one result. Since this date the *Builder* has not ceased, in season and out of season, to reiterate the cry of improved dwellings for the working classes as the first step in true sanitary progress. I as a sanitarian, and a reader of the *Builder* for the last thirty years, know and appreciate your untiring labours, and I ask that you will permit me to say so in the pages of the *Builder*. A list of your separate publications (including "A Glance at the Homes of the Thousands," "Town Swamps and Social Bridges," "Another Blow for Life," "Overcrowding in London," "Address on Health" at the Leeds Congress), and your articles, would make a tolerably full catalogue, and I trust some day to see your writings on the subject of house improvement in a collected form. We decorate soldiers, sailors, statesmen, and lawyers, and now and then distinguish doctors and architects. You, in my opinion, have earned distinction in the threefold capacity of architect, editor, and author; and I, with the profession generally, will feel proud, at no distant date I hope, to salute the editor of the *Builder* with some addition to his name.

ROBERT RAWLINSON.

LIFE AND DEATH IN '74.

ACCORDING to the Registrar-General's quarterly return, 1,119,469 births and 699,747 deaths were registered in the United Kingdom during the year 1874. Without any correction for defective registration in Ireland, the birth-rate was 34·5, and the death-rate 21·6 per 1,000 persons estimated to be living. The excess of births over deaths registered was 419,723. This natural increase of population, however, was diminished by the emigration of 201,482 persons of British origin from ports at which emigration officers are stationed. In the previous year the number of emigrants was 226,133.

The number of immigrants in the year 1874 is not yet known; but the Board of Trade returns for 1873 show that the number of persons landed in this country from passenger-vessels was unusually large, viz., 86,416, against 70,181 in 1872, and 53,827 in 1871. As the number of emigrants in 1873, after distributing those whose nationality was undistinguished, and exclusive of foreigners, was 235,982, and the number of immigrants was 86,416, the net loss to the population under this head in 1873 was 149,566.

In England, 854,297 births and 526,701 deaths were registered during 1874. The birth-rate was equal to 36·1 and the death-rate to 22·3 per 1,000 persons living. The birth-rate exceeded by 0·7, whereas the death-rate was slightly below, the mean rates in the ten years 1864-73.

The 526,701 deaths included 128,728 of infants, under one year of age, and 127,278 of persons aged sixty years and upwards. The rate of infant mortality, measured by the proportion of deaths under one to births, was 151 per 1,000, against 149 both in 1872 and 1873. The annual rate of mortality among persons aged sixty years and upwards was 72·0 per 1·000 persons living at these ages, against 66·7 and 72·3 in the two preceding years.

The Registrar elsewhere remarks,—"Lancashire still remains remarkable for its high mortality. Over Darwen offers an illustration of some of its sanitary defects, to which the natives appear to be accustomed and reconciled. Improvement would soon be apparent if the same admirable skill which has hitherto been expended on cotton yarn and other manufactures could be devoted everywhere to the production of healthy dwellings. Can this country yield no leaders in such a beneficent movement?"

WHAT IS TRESPASS?

THE law of trespass is one of the most difficult to understand, on account of the very undefined nature of the injury which may be inflicted, and the various ways in which the offence may be committed. A few weeks ago the Courts of Law were asked to decide whether a horse kicking another horse through some railings that divided the lands of their respective owners, was "trespass"; and decided in the affirmative. In the Court of Queen's Bench, the question has just arisen whether one of two parties having joint use of a drain can legally deepen the drain so as to effect a proper junction with a new sewer, without first obtaining the consent of the other party; and, if he does so, whether he commits a trespass. The point was involved in the case of Finlinson *v.* Porter, and the facts are as follow:—

By indenture executed by both parties, defendant conveyed to plaintiff, in fee, certain land, "subject nevertheless to the joint ownership and right to the use by the defendant and the owners and occupiers for the time being of certain adjoining land as then enjoyed by him or them, but no further or otherwise, of the drain running through or laid in the land conveyed, and the course and direction of which was delineated on a plan, and subject to the right of the defendant, &c., at all reasonable times to enter upon the land thereby conveyed, for the purpose of repairing the drain and laying on or replacing pipes therein."

The Local Board of Health, under sec. 49 of 11 and 12 Vict., c. 63, after the above conveyance, constructed a new sewer (in lieu of the old one, into which the drain discharged the sewage from the plaintiff's and defendant's premises) at a lower depth; and the defendant thereupon lowered the drain between 2 ft. and 3 ft., in order to adapt it to the new sewer, but in the course of the old drain. This was the act of trespass complained of by the plaintiff.

The Court, consisting of Justices Mellor, Lush, and Quain, held that the effect of the deed executed by both parties went either to create a tenancy in common in the drain between the plaintiff and defendant, or only an easement in the defendant, but that in either view the defendant had done no more than the deed gave him the right to do; and judgment was accordingly given in his favour.

CABMEN'S SHELTER, BRISTOL.

THE Western city is in earnest to rival her Northern example in the provision made for cabmen. Mr. Henry Taylor (of the firm of Taylor & Low, timber merchants, of the port) originated the movement, and ordered one on the model of the Birmingham Rests. The order was entrusted to Mr. A. Krauss, Colston-street, Bristol, builder and contractor, and by him it was executed and placed upon the drawbridge stand, where it is much used and enjoyed by the men. Since then, Mr. J. Derham, Mr. C. Fisher, and Mr. R. D. Hodgson, M.P., have each borne the cost of a Rest, and some friends (per Mr. Henry Taylor) have completed a subscription for a fifth, the whole of them being now in the hands of Mr. Krauss for execution, and they shortly will be placed as their generous donors may direct.

* Some excuse may be necessary for the insertion of the following too flattering communication. The esteemed and eminent writer of it, however, having attached his name, and called upon us to print this letter, we could scarcely refuse to comply.

ANOTHER PEG FOR THE HOME SECRETARY'S BILL.

TYPHOID fever having alarmingly increased at Pittington, near Durham, the medical officer, Mr. E. C. Jepson, thus reports upon this abominable plague spot and other places where the wealthy and titled land and pit owners continue to brave the Local Government Board with the old song, "It was their fathers' custom, and so it shall remain."

"Five cases of fever have been brought under my notice all of the same character, and arising from the same cause. The village of Pittington is in a most dilapidated condition, without privies; the ash-pits, used for *excreta*, are filthy in the extreme; the gutters blocked up with here and there accumulations of water too vile to admit of description. The drains are of the rudest and worst description, made of rough lime-stone slabs, and, in some instances, running under the houses. I believe the water is polluted with sewage, and the whole admits of easy explanation of the origin of the typhoid fever. The ash-pits are frequently left in a worse state than they were before the rubbish was taken away, the bottoms and other places where the accumulations have laid being all exposed. The houses are old ones, built in the old-fashioned style. Considering the insanitary state of the district, it is a matter of surprise that the death rate is not much higher. A large proportion of the mining population living in a state of semi-barbarism, their houses are dirty in the extreme, their children uncared for, and themselves devoted to excessive drinking. Their houses are extremely bad, ill-ventilated (some windows not opening at all), and the floors are of the roughest and worst description, and they are built on undrained land.

The river Wear, that receives the whole sewage of no less than 160,000 inhabitants, forms the sole supply of water to the whole city of Durham; and the baths and washhouses are supplied by water taken out of the river in close vicinity of two sewers.

During the warm months of summer, from time to time, the water is run off to admit of certain repairs, not only exposing the mouths of sewers, and thereby flooding the houses connected with sewer gas, but also laying bare the bed of the river, and exposing it to the sun, and so rendering the whole place foul in the extreme. This proceeding, strange to say, is sanctioned by the Dean and Chapter of the city of Durham, despite repeated remonstrances."

The Chairman observed that it would require a strong arm to alter this dreadful state of things. Many attempts had been made to do it, and failed,—

"It was their fathers' custom; and so it still remained."

THE EARL OF SHREWSBURY ON COURT HOUSES AND WORKING MEN'S DWELLINGS.

AT the annual meeting of the Strand Buildings Company (established for the purpose of erecting improved dwellings for the working classes in Eagle-court, Strand), held last week, the chairman, the Earl of Shrewsbury, made some interesting statements on the subject of court-houses and overcrowding. He said that some time ago he had become the unknown lessee of some houses in the neighbourhood of those of the Company, obtaining, as middleman, something like 13 or 14 per cent. return. Overcrowding of rooms in those houses was prevented, and the position of the inhabitants was improved thereby, but the leases fell in, and he was turned out. He suggested that if some large company were started to lease a large portion of the houses in the courts adjacent to populous streets, in the working men's districts, good might be effected, because he believed that working men preferred living in separate buildings, and not in the same tenement with each other. There was a great prejudice amongst the working classes against living in what they regarded as institutions, and the object should be not so much to build such places as to take existing houses and improve them; for the working classes did not like the idea of living in a charitable institution when they paid an honest and fair rent for the accommodation they received. Mr. Woodcock, one of the directors, added that the noble earl had allowed his modesty to stand in the way of stating what he had really done with respect to the houses in the neighbourhood of the Company's buildings, which had been leased by him. He had said nothing of the degraded condition of the locality, or of the improvements which he had silently and quietly introduced. The report submitted at the meeting showed that the rental for the year had continued satisfactory, and enabled the directors to declare a dividend at the rate of 5 per cent. per annum. The buildings had been efficiently maintained, and the necessary repairs and restorations had been executed at about the average outlay. The chairman observed on the report that the houses were in excellent repair, and the tenants respectable. Taking the philanthropic object the Company set out with, he thought 5 per cent. dividend for the last ten years a good return, although building speculations, in order to succeed, were expected to return 7 per cent.

MASTERS AND WORKMEN.

HITCHEN *v.* WAGNER.

A CASE of some importance to the trade was heard last week at the Brompton County Court, which was a claim made by the plaintiff, a journeyman bricklayer, for 2s. 3d. (three hours at 9d. per hour), for not being able to resume work on the morning of the 10th ult.

Mr. Newman, solicitor, appeared for the defendant, and stated the facts of the case, which were as follow:—Mr. Wagner, of the Victoria Works, Buckingham-gate, who is now rebuilding the Black Bull Tavern, Fulham-road, for Messrs. Watney & Co., visited the job on the afternoon of the 9th ult., and found some twenty men absent from their work, he thereupon gave orders to the foreman not to allow them to start again in consequence of their thus absenting themselves. They were accordingly discharged the following morning, and made out their own time sheets, which were duly signed by the foreman, who allowed each man one hour's pay for walking to the office for his wages. Upon their arrival at the office, they were paid in full. Plaintiff then obtained a summons for three hours' pay, which he alleged he was entitled to through being detained. The case was fully argued, and in the end the Judge gave a verdict for the defendant.

Summers *v.* Wagner was the next case. This was precisely the same as the before mentioned, and resulted in a similar verdict.

THE STRIKE AT MESSRS. JACKSON AND GRAHAM'S.

WALTER HIBBERT, jewel-case maker, and Adam Weiller, cabinet-maker, were brought before Mr. Knox, at Marlborough-street, on a warrant, charging them with unlawfully conspiring together to molest and obstruct Mr. William Edgar Graham, and others, with a view to injure them in their business as cabinet manufacturers, &c., in Oxford-street.

The information of Mr. William Edgar Graham was as follows:—

"The information of Mr. William Edgar Graham, of the firm of Messrs. Jackson & Graham, 30 to 38, Oxford-street, cabinet-makers, and others, taken on the 11th of February, 1875, against six persons, showeth that they did unlawfully conspire, &c., to molest and obstruct Messrs. Jackson & Graham, with a view to coerce them to alter their mode of carrying on their business. The said William E. Graham on oath says.—My firm have workshops in Ogle-street, where a large number of cabinet-makers are employed. Up to the 13th of November the said shop was conducted as a day-shop; but on that day notice was given to the workmen that from and after the following Monday the shop would be conducted as a piece-shop, and that those men who thought proper to work as piece-workers could do so. It was intimated to us that the men could not accept the proposed terms until they had consulted the society. On the following Monday a number of the men did not come to work as usual, and I was asked whether I would receive a deputation on behalf of the society. I consented, and three members of the Alliance Cabinet-makers' Association, named Ham, Reed, and Bright, waited upon me as a deputation. I declined to alter the terms of which notice had been given to the men. During the interview Bright asked me whether it had occurred to me that I should be unable to get men. On the 17th November I received a letter from the secretary of the said society, to which letter I replied on the 19th. On the 24th our shop was picketed, one of the pickets being a man named Matthews. Our shop has been continually picketed from that date down to the present time, and continues so. Ham and Reed, and the persons before mentioned, have acted as pickets, as also Weiller and others, whose names are unknown to me. The said system of picketing consists of watching our workshops, and the persons so picketing accost all persons coming to our workshops for the purpose of getting work, and these persons induce them, sometimes by offers of money, and at other times by threats and intimidation, to abstain from offering themselves to our firm as workmen. In consequence of this system of picketing, I have had considerable difficulty in obtaining workmen.

(Signed) W. EDGAR GRAHAM."

Subsequently, Richard Reed and Henry Ham were apprehended and brought into court; and evidence having been given in proof of the information,

Mr. KNOX said he had no wish to do anything oppressive in fixing the amount of bail. All he wanted was to secure the prisoners' future attendance.

Mr. E. Lewis (for plaintiffs) said the prisoners would find no difficulty as to bail, they being put in motion by the Cabinet-makers' Society.

Mr. KNOX fixed the bail at 100*l.* for each prisoner.

Being prepared with good bail the prisoners were released.

SANITARY LEGISLATION.

WITH reference to the measure upon this subject about to be introduced into Parliament, a deputation from the Birmingham Town Council, headed by the mayor and town clerk, waited, on the 11th inst., upon the President of the Local Government Board in order to suggest several amendments. Amongst others were the following:—"That clauses should be inserted in the new Sanitary Bill enabling corporations and other local authorities to purchase waterworks on principles of valuation to be fixed by the Act or by the Local Government Board; that for facilitating the formation of a Drainage Commission, powers to promote the scheme, and to levy rates for the whole of the watershed area should be given; and further, that there should be excluded from sewers and rivers deleterious matters arising from manufacturing processes in accordance with the recommendations of the Government report of the Rivers Pollution Commission." In reply, the President said that all he had heard should have his best consideration.

THE EXPLOSION OF KITCHEN BOILERS.

AT the quarterly meeting of the Salford Borough Council, Councillor W. H. Bailey moved "That the Building Committee be requested to consider the propriety of taking steps to prevent, by legislation if necessary, the risk of explosions in the use of bath or kitchen boilers, or of the pipes in connexion therewith." He said he had given notice of motion on this matter in consequence of the recent accident through the explosion of a kitchen boiler in Eccles New-road, by which a servant-girl lost her life. He exhibited a model of the kind of boiler that had exploded in Eccles New-road, and said it was a common thing at the present time to fix boilers upon this system. The water was drawn into the boiler from a cistern above, and in order to prevent damage being done through leakage of the pipes, taps were placed at the top of the pipes, so that when that was turned off there was no means of escape for the pressure which was generated in the water below. In this way many explosions had been caused, and he enumerated many instances of serious accidents in consequence of this system. A very simple and sure preventive of these accidents would be a safety-valve for the escape of steam. Mr. Fletcher, the chief engineer for the Boiler Association, has been examined upon this matter, and he had had the advice of the Manchester Society of Engineers, of which he was a member, and they had expressed very great surprise that these kinds of boilers were allowed to be fixed by the authorities. There was not the slightest doubt that the deaths of 50 persons within the last few years might have been prevented by the application of a safety-valve to kitchen boilers.

The motion was carried unanimously.

SUMMER AND WINTER HOURS FOR MASONS AND BRICKLAYERS.

THE Bishop Auckland bricklayers and masons have withdrawn from work, owing to a dispute that has arisen between them and their masters, and the cause appears to be that in winter time the men work from daylight to dark. On Monday week they commenced to work the usual hours for the summer months.

It had formerly been the custom for the men to be paid 3*s.* a week more for summer than for winter work, the wages being 33*s.* a week for the shorter hours and 36*s.* for the longer hours. The masters now refuse to pay more for summer than for winter work.

A number of the hands are migrating for the south and other parts, where trade is very brisk, although in Bishop Auckland business in the building line is far from being slack at present.

THE VENTILATION OF FOUL WELLS.

"There is no new thing under the Sun."
Ecclesiastes i. 9.

Apropos to Hayward Tyler & Co.'s air force-pumps, whose obvious usefulness was alluded to in the *Builder*, the thought occurs how surprisingly long it takes mankind to adopt the most simple remedies for the preservation of their health or life. The apparatus in question is in nowise a novel one in principle, though it is none the less useful on that account. Whether there is anything new under the sun, certain critics have doubted, and to our knowledge there is one clever living and well-read clergyman of the Church of England, who knows Greek and Hebrew as well as his mother tongue, who has proved to his own satisfaction, and to that of other people, too, that all our great modern inventions are to be found in the Bible. Even before a public audience in this kingdom, some years ago, he advanced his arguments to prove that the mariner's compass, gas, photography, telegraphy, and above all that steam locomotion, are referred to in the Bible; nay, he asserted that an actual and accurate description of the steam locomotive is in the Bible. All, however, is a riddle,—an absurd riddle,—to us common mortals, who are unable to unseal the sealed mystery of Daniel.

But to the question. In the "Transactions of the American Philosophical Society," held at Philadelphia, vol. iii., 1793, now before us, we find a paper entitled "An Easy and Expeditious Method of Dissipating the Noxious Vapour commonly found in Wells and other Subterraneous Places," by Ebenezer Robinson, of that city. The author says, "I was led to consider how I could convey a large quantity of fresh air from the top to the bottom of the well; supposing that foul air would necessarily give way to pure air. With this view I procured a pair of smith's bellows, fixed in a wooden frame, so as to work in the same manner as at the forge. This apparatus being placed at the edge of the well, one end of a leathern tube (the hose of a fire-engine) was closely adapted to the nose of the bellows, and the other end was thrown into the well, reaching within 1 ft. of the bottom. At this time the well was so infected that a candle would not burn at a short distance from the top; but after blowing with my bellows only half an hour, the candle burned bright at the bottom. Then, without further difficulty, I proceeded in the work, and finished my well." The author goes on to speak of the usefulness of his invention in cleaning vaults or working in any other subterraneous place subject to damp. Whether Ebenezer Robinson was from the mother country or a native-born American we do not know, but in the absence of Scriptural proof, the discovery of the value of a smith's bellows for ventilating foul wells must be accorded to the Philadelphian well-sinker.

C. H.

MONUMENTAL.

Monument to the late Mr. Kirtley.—After the death of Mr. Kirtley, who was superintendent of the locomotive and carriage departments of the Midland Railway Company for nearly thirty years, there was a general desire on the part of those who had worked under him to erect a monument on his grave in testimony of their affectionate remembrance of him. A committee was formed for the purpose of carrying out this object. From a large number, and a great variety of designs for the monument, which were submitted, two, by Messrs. Alex. Macdonald Field & Co., of Aberdeen, were selected, and so combined that the best parts of each appear in the one adopted and erected in the Derby Old Cemetery, Uttoxeter-road. It is a gray granite obelisk, 26 ft. high. The base is octagonal, but as it rises it assumes the form of a square column, upon the polished side of which is the inscription. The makers are Messrs. J. & E. Wood, builders, of Derby.

Nynehead.—A monument in memory of the late Mr. E. A. Sandford, has recently been placed in the family monument chamber, which has been added to the north transept of the parish church. It consists of an altar tomb in a recessed arch placed under the north gable end The arch and base of the tomb are of rose Peterhead granite, and the body of the tomb is of grey Aberdeen granite, dressed, but not polished. The slab on the tomb is of rose granite, moulded and polished, having under the angles columns of green Cornish serpentine with alabaster bases and capitals. The back of the arch is lined with a slab of Egyptian green marble, having a cross of statuary marble in relief on it. The work has been executed by Messrs. Macdonald & Field, of Aberdeen, and London, and the enamels by Messrs. Powell, of London.

Bust to the Late Mr. Euing.—A meeting, convened by the directors of the Sailors' Home, Glasgow, was held on the 11th inst., to witness the unveiling of a bust to the late Mr. William Euing, a gentleman who gave liberally to the funds of the Home.

Jersey.—The inhabitants of Jersey have raised upwards of 100*l.* to defray the cost of a monument to the emigrants who left the island and embarked on the *Cospatrick*.

CHURCH BUILDING NEWS.

Cotebrook. — The chapel of St. John and the Holy Cross has been consecrated. It is situated without the boundary of the hamlet of Cotebrook and in the township of Utkinton, and will be the chapel-of-ease to the parish church of Tarporley. The site, which with the adjoining yard, is about a rood in extent, was given by the Earl of Haddington. The cost of the building is 1,800*l.*, and the style is Early English, the exterior very plain. The masonry has been executed by Mr. Charles Holland, of Queen-street, Chester, from the plans of Mr. George Street, of London, architect. The joinery work has been carried out by Messrs. Vernon & Done, of Tarporley; and the plumbing by Mr. John Utkinson, of the same place. The exterior walls are built of Eddisbury red sandstone; the building is roofed with ordinary red tiles, and is provided with a square turret, with a small bell chamber. Seating accommodation is made for nearly 200 worshippers in open pews, of pitch pine. The floor of the body of the chapel is paved with common red tiles, while that of the chancel is ornamented with Staffordshire tesselated tiles of neat design. The vestry is underneath the chancel, and is gained by a descent of steps from the chapel. A font, executed by Mr. Holland, the builder, from a design by Mr. Street, has been placed near the entrance door.

Hexthorpe.—During the last few years there has sprung up on the land originally dividing Doncaster from what was in olden times known as Hexthorpe, a number of habitations, chiefly occupied by persons engaged at the Plant, on the railway, and numerous works at what may now not inaptly be designated New Hexthorpe. Until within the past few months these people have had no Episcopal fabric wherein to worship, without either going to the district church of St. James at Doncaster, or to the distant fabric at Balby. The Rev. J. Campion, in whose parochial districts these new erections are included, seeing the necessity of providing a place of worship for the inhabitants of that part of the parish, which might also be used as a school on week-days, mooted the subject to his friends, and offerswere at once made to help forward the work. A communication was received from the Education Department intimating that additional school accommodation must be provided for 130 children. A site was accordingly selected near the newly-erected maltkilns, and the erection of the building placed in the hands of Mr. John Athron. In the meantime, the plans of the projected school were approved by the Education Department. The first stone of the fabric was laid by the vicar on the 31st of August last, and it has now been opened for public worship. The building, which has been erected in the Gothic style, measures 51 ft. long by 22 ft. wide; is 12 ft. high to the eaves, and has been constructed to accommodate 150 hearers. It is built of brick, with stone dressings; is lighted by eight lancet windows, roofed with slate, and entered by two doors. When used as a school the interior will be divided by a movable screen, and the room is fitted up with reversible desks. The cost of the whole has been about 700*l.*

Horton.—Notwithstanding the death of the Rev. R. G. Foot, the restoration of the chancel of Horton Church will be completed as originally intended. The cost, it is estimated, will be about 500*l.* The plans were prepared by Mr. R. Brandon, architect, of Clement's-inn-square, London; and the work is being carried out by Mr. G. W. Harley, of Slough. The church deserves peculiar interest from the fact that the body of the mother of Milton is buried in the chancel.

Alton Pancras.—Last month, the parish church of Alton Pancras, ten miles from Dorchester, was reopened after restoration. A new burial-ground was also consecrated. The tower is a plain structure, with an Early English window. The tower arch is of the same style. The nave has flat-headed windows with cusped lights, apparently of the time of Henry VII. The chancel arch was of the rudest Norman type, with a "squint" or hagioscope in the wall on each side. In the north and south walls were a single lancet window; in the south a two-light Decorated window was discovered to have been walled up. The church was built of some kind of local stone, with Ham-hill dressings. It had become exceedingly dilapidated, and might be said to have "nodded to its fall," when measures were taken for its renovation. It was found necessary to take it down entirely, with the exception of the tower, but wherever possible the original features have been preserved. The work was commenced on March 26th last year. The nave has been rebuilt on the original plan. The foundation of the old chancel arch was so defective that all attempts at preservation were hopeless; and it is replaced by another of the Early English period. At the east end a triple lancet window has been inserted and filled with stained glass, the centre light being the figure of the Saviour. This was supplied by Lavers & Barraud. In the north wall of the chancel the single-light lancet window has been renewed, and in the south the corresponding window has been replaced, and the ancient Decorated window has been opened and utilised. A new vestry has been added on the north side of the chancel. The north porch has also received a new arch, of the Early English character. In the doorway from the porch to the church there are still some remains of the original Norman church. In place of the old flat roof an open stained deal roof has been constructed, supported by carved Ham-hill stone corbels. The exterior of the church is covered with plain tiles. The seats throughout are open, those in the nave being of pitch-pine, and in the chancel of oak. The altar-rail is of oak, supported on iron standards. The ancient oak pulpit has been placed on a Bath stone base, with a red Mansfield shaft. The chancel has received an open-boarded roof, and is paved with Minton tiles; the nave is paved with tiles from the Poole Pottery. The tower has been newly floored, the four bells re-hung, and a flat lead roof put in. A new heating apparatus, on Porritt's system, has been placed in the church. The length of the nave inside is 47 ft., and the width, 21 ft.; the chancel is 20 ft. long, and 15 ft. wide; the new vestry 12 ft. by 7 ft., and the porch inside, 8½ ft. by 8 ft. The whole work of church and churchyard has cost rather over 1,300*l.* The architects were,—for the chancel, Mr. Ewan Christian, London, and for the rest of the building, Mr. G. R. Crickmay, of Weymouth. The work has been carried out by Messrs. J. Wellspring, of Dorchester.

Gressenhall.—Several improvements have been made in the parish church. The old gallery has been taken away, and the font, which formerly stood in a pew, has been removed to a more suitable position under the west window. New seats have been erected at the west end to accommodate the late occupants of the gallery. In the chancel one new window has been put in, and the others have been restored, and the whole re-glazed with cathedral glass. The old square pew belonging to the rector has been removed, and two modern ones erected in its place. Seats have been provided for the choir. A stained-glass window has also been put in the west end.

Shanklin. — The ceremony of laying the memorial-stone of a new church took place here on the 25th ult. The church is to be built in the Early English style of architecture, from designs by Mr. C. L. Luck, architect, of London, the edifice being estimated to seat about 600 worshippers. In the first instance, however, it is intended to leave out the side aisles, and to provide accommodation for 350 persons.

Saxby.—The re-opening of St. Peter's Church, Saxby, after extensive restoration, took place on the 21st. ult The work has cost some 700*l.* The restoration has been carried out under the direction of Mr. J. Goddard, architect, Leicester; the building contract being taken by Mr. G. Firn, and the carpentering by Mr. Foister, both of Leicester. The tiling has been done by the Coalville Tile Company; and the furnishing of the church by Messrs. Jones & Willis, of London.

Budbrooke (near Warwick).—The old parish church (St. Michael's), which dates from Norman times, has been reopened, after restoration. During the twelfth and thirteenth cen-

turies numerous alterations were made. The church appears to have been undisturbed during the fourteenth century, with the exception of having, probably about this time, a new roof of oak erected over the nave. In the fifteenth century the east gable was rebuilt in the Perpendicular style. The subsequent alterations have, however, been distinguished by their want of taste, as well as by their Renaissance character. The works now completed and embodied with the church in its restored and improved state are,—restoration and repointing of the walls generally, and replastering inside; removal of the old box-pews and flooring, and substitution of new stained and varnished open benches, and choir-seats of pitch-pine in the chancel; the raising of the low chancel-arch, the old voussoirs or arch-stones being refixed at higher level, and the jambs made good; settlements and flaws restored; the chancel-floor raised two steps above the nave; encaustic tile floor laid to chancel and sanctuary; new gables to transepts, to correspond with the old roof-lines; three lancet windows, with cusped and moulded heads, and drip-mouldings being inserted in each gable; removal of the gallery, and restoration of the tower-arch; the tower-door blocked up, and the window restored, and the lower part of the tower converted into a baptistery. The timbers of the old roof were so much decayed that a plain open collar-roof has been erected in lieu thereof, plastered and coloured between the rafters. The old roof over the chancel has been removed, and has given place to a roof of the same style as the chancel, of pitch-pine. The transepts also have new roofs, and all the new woodwork throughout is stained of a quiet tint and varnished. There is accommodation now for 183 persons. The amount of the contract was 907*l*. The work was originally undertaken by Mr. Mason, builder, of Leamington, but was subsequently carried out by Mr. Foster, contractor, of the same place. The architect is Mr. John Cotton, of Birmingham.

STATUES IN CRETE.

THE monks of a convent which occupies the site of the ancient and once celebrated town of Aptera have made an interesting *trouvaille*. It consists of two life-size statues, representing females draped after the graceful manner of the ladies who moved in fashionable society three thousand years ago. The *Levant Herald* says,—The question as to the identity of these statues has raised a lively controversy amongst local archæologists. A barely legible inscription on the pedestal of one of the statues has inspired some wiseacre with the idea that they represent a daughter of the Emperor Claudius. The supposition is highly improbable, for the inscription is so clumsily cut as to present a rude contrast with the exquisite chiselling of the figures themselves. It is more likely that the inscription was made by an inexperienced hand at a comparatively recent epoch. The statues are now on view at the conak, and they daily attract crowds. They will be sent at an early opportunity to Constantinople, where the learned director of the Stamboul Museum will no doubt succeed in settling the question of their origin and identity.

THE SANITARY CONDITION OF LIVERPOOL.

THE Liverpool Corporation have just had under discussion the question of improving the courts and dwellings in the lower parts of the town, which, now that the Bill of the Government on the subject has been introduced, is invested with more than ordinary interest. The question came before the council on a motion proposed by Mr. Balfour, that the health committee be requested to report to the council upon the proceedings which had been taken under the Liverpool Sanitary Act of 1864, for the improvement of courts, and the amount expended; and also whether they considered it advisable that any and what further improvements should be undertaken, under the provisions of the Act, and the amount available for the purpose. Referring to the proceedings of the recent Sanitary Conference in Birmingham, where it was proved that Liverpool was the most unhealthy of all the large towns, Mr. Balfour said he admitted that the health committee had done a great deal of hard work, and had succeeded in removing many of the evils which existed; but in the face of the fact elicited at the Sanitary Conference, he thought that the committee might go further than they had yet done in dealing with uninhabitable houses. He strongly urged the great necessity there was for improving the dwellings in the lower parts of the town, with the view of decreasing the very high death-rate which at present prevailed in Liverpool.

Mr. Forwood, another member of the council, followed on the same side, fully corroborating the views put forward by Mr. Balfour. There was no question, he observed, that the death-rate in Liverpool was very largely, if not altogether, due to the over-crowding of dwelling-houses, and the over-crowding of tenements on the area of the land, there being over 1,000 inhabitants to the acre in some parts of the town. Under the Sanitary Act of 1864 for the improvement of courts, the Health Committee had improved 400, but placing that against the 3,000 courts there were in the town, the council must at once see that what they were doing was very small compared with the amount of work that was to be done. Out of these 3,000 courts he found that 1,750 had an entrance not 4 ft. wide, 1,150 had entrances through tunnelled passages, and 2,890 had the houses built back to back, so that practically there was no free ventilation. Nothing would cure the evil of overcrowding except they carried out a scheme such as that adopted in Glasgow. They had spent in Liverpool, under the Act of 1864, no less than 87,000*l*. for improving 400 courts. That money had been spent on private property, and had no doubt increased private rentals. By improving these courts property had become of greater value to the landlords, so that the council had been compelled, instead of paying 100*l*. for a house, the former value of court houses, to pay as much as 150*l*. Every difficulty had been thrown in their way in taking down houses in courts. Of course he admitted that they had largely improved the health of the town, still their action under the Act of 1864 was only perpetuating the evil of an inferior class of dwellings existing in the town, because it was a sort of patchwork improvement. Adverting to the Government Bill now before Parliament, he suggested that a deputation should go to the Home Office, and urge upon the Government to insert in the Bill not only such provisions as would enable municipalities to purchase whole blocks of property, and demolish buildings unfit for habitation, but also giving them powers to erect new dwellings. There was another point which should also be urged upon the attention of the Government, and that was that at present every individual owner could call for an arbitration, whereas what was wanted was that there should be one tribunal to assess the value of the whole instead of having a number of arbitrations. The enormous amount of legal expenses under the present system also required attention. In carrying out of the Act of 1864, Mr. Forwood stated that out of the sum of 87,000*l*. expended, 8,500*l*. had gone to the lawyers and the valuers. He considered it desirable to have a clause inserted in the Bill by which there would be no necessity for legal conveyances of the property purchased from the owners to the corporations.

Dr. Taylor, the chairman of the Health Committee, and a medical man in large practice, made some practical remarks on the subject worthy of attention. He said that under the Act of 1858, which was only adopted by the council in 1864, persons had power to extend their dwelling-houses over land adjoining to them, and even to erect workshops, stables, or buildings of any description whatever. So that the owner of a house contiguous to a crowded court might enlarge his premises by building workshops or warehouses on the adjoining land, and thus block up the ventilation of the neighbourhood. Yet because his house was built and the land acquired before the council adopted the Act, he had power to do this, and could not be prevented. So that when Dr. Trench (the medical officer of health) called on the Corporation to expend a certain amount of money in improving and ventilating courts, the owners of property at the same time were submitting plans to the Health Committee to build up the back parts of their houses, or to erect warehouses. These people were, in fact, doing the very same thing which the committee was trying to undo. Now this was a matter which ought to be brought under the notice of Government in connexion with the Bill which was now before Parliament. He suggested that the Government Improved Dwellings Act should contain powers for an extension of the present Act, and also powers to prevent people from building on the land adjoining their houses, which now acted so prejudicially against the health of the poor persons living in courts already too overcrowded.

The motion proposed by Mr. Balfour was adopted, as also a further motion by Mr. Forwood, to the effect that if necessary a deputation from the Council wait upon the Home Secretary and the Local Government Board, with the view of increased powers being given to municipal authorities for the acquisition and demolition of buildings.

DAVIS'S SAFETY APPARATUS FOR LIFTS.

EVERY now and then the suspending rope or chain of a lift breaks, damage is done, sometimes life is destroyed, and so the more general introduction of a very useful arrangement is retarded. If when a chain so breaks a wedge were placed at the bottom of the lift, flush with one of the guides, the descent would at once be stopped. The provision of wedges ready for use, and so hung as not to come into use until needed, is the sum and substance of Mr. Davis's invention, which, simple as it is, seems to us an excellent one. The wedge with iron teeth is suspended independently of the lift or hoist by a cord working in connexion with the gearing. The cord of the wedge is passed over a pulley at the top of the guides, and is then attached to the balance-weight. We have great pleasure in drawing attention to Mr. Davis's apparatus. It promises well.

THE BIRD SHOW AT THE CRYSTAL PALACE.

THE feathered songsters demand a word in their favour at our hands, and we willingly give it them. The twelfth annual show, comprising some fifteen hundred entries,—and we should think even a greater number of birds,—is the finest probably ever held in Paxton's Palace or elsewhere. Admirable facilities exist here for exhibitions of this sort,—in a house within a house, as it were. The immensity of the Palace is set off by the large marquee erected for holding the cages of the feathered tribe near to the central transept. The canvas structure, although dwarfed by its surroundings, is really of very respectable dimensions, and besides its four parallel rows of imprisoned birds, contained at the time of our visit, probably not fewer than one thousand pleased admirers of their beauties of plumage and song. The canaries, of course, are the great feature of the exhibition, and are present in all the gradations of shade from deep orange to nearly white: from the cinnamon to light-yellow, speckled and variegated, even and uneven marked, crested and spangled, lizards and broken caps, jonques and buffs, Scottish dons and Lancashire coppies, green canaries and wild canaries, and perhaps the most wonderful of all, "a talking canary," which is said to possess the remarkable powers of imitating the human voice clearly and with distinctness. So many indeed are the varieties that fully thirty classes are registered to include them all. Amongst the other birds collected from every clime may be seen all the colours of the rainbow. The dresses and attire of the ladies, who are busily scanning the caged inmates, look positively dull viewed beside the brilliant scarlet coat of the parrot or the varied hues of the Australian or Weiner collection.

As we plead week by week for ventilation for some portion of mankind, so we now ask on behalf of the ornithological inhabitants for more air. The point we refer to, although too late to be of service to the present show, may be useful in other exhibitions, as the defect has been observed elsewhere, and really deserves attention as affecting the comfort and health of these merry little caged fellows, which, of course are not free to help themselves.

As the Palace officials state, means are adopted for preserving an equable temperature and excluding drafts within the precincts of the show, and hence one of the objects of the awning. The erection is partially open at each end, whilst the normal temperature is raised by artificial means, largely accelerated by the crowd of visitors present. No care seemed to us to be taken to draw off the air and renew it; it may have been that dependence was placed on the porosity of the canvas for the air to rise through, and so openings were not left in the roof. Be this as

it may, we found the atmosphere stagnant and oppressive, even with a short sojourn. Ladies were glad to avail themselves of the cooler and fresher air of the transept, overcome with languor. We watched many a little feathered fellow drooping for want of air. Some were active enough, and, as we thought almost frantic to escape through the cage-bars, yet others were past this stage, and with difficulty held their perches.

The brilliant effect of the georgeous plumes of the feathered tribe was heightened by an effective floral display in the centre of the tent, consisting of many tinted hyacinths and primulas, the modest lily of the valley, and bright-foliaged plants, some of them highly odorous. At this point the want of ventilation was felt strongly, and the air seemed saturated with oppression; when the sweet-scented blossoms became mal-odorous, and the little twitterers, we thought, were continuously crying out for—More air! More air! We repeat the cry for them.

FEVER HOSPITALS.

SIR,—Mr. Sidney Smirke has twice applied to the public press in favour of his scheme for placing the fever hospital in the mid-channel of the Thames. He states, fifty years' practice in his profession, and a knowledge of sanitary matters, warrant his conviction that this is the most desirable site.

Fairly considered, I believe such a selection is almost as objectionable as it would be possible to make for such a purpose.

The leading essentials in the consideration of a site for such a purpose would be ample space, isolation, and free and superabundant water supply. Whence does he propose to derive the latter? Surely not from the Thames, charged and redolent with sewage matter! Is the air-and-water-tight hull of a vessel the best means of isolating fever cases?

F.R.I.B.A.

ARTIFICIAL SKATING GROUND.

SIR,—Permit me to ask, through your correspondents' column, if some of them can say, from experience, what material had best be used for forming the sound and even surface, and also the substructure, for an artificial skating ground? The artificial skater will be of the usual kind, with rollers; and the floor will be in a garden in the open air, and exposed to heat and frost. Any information respecting the above will be thankfully received.

VORTEX.

Books Received.

Pocket Calculations for the Use of Timber Merchants, Builders, Contractors, &c. By W. RICHARDSON. London: Kelly & Co., Great Queen-street. 1875.

WE have here in a handy form for pocket use various tables essential, so long as wood is sold by different standards, to builders and all trades dealing in timber. A great amount of information appears to be compressed into a small compass. The little volume contains also a catalogue of the distinguishing brands of deals, battens, and flooring boards, by referring to which the quality for which any particular parcel was imported can be ascertained.

VARIORUM.

"DEBRETT" is so much a household word that nothing more can be necessary each year than to announce the appearance of new volumes on which the same amount of careful revision as of old has been bestowed. We have before us the new issues of "Debrett's Illustrated Peerage, and Titles of Courtesy"; and "Debrett's Illustrated Baronetage, with Knightage," and can state without fear of contradiction that they fully maintain the reputation of the works.——"The City of London Directory for 1875" is published by Messrs. W. H. & L. Collingridge, *City Press* office. We willing admit with the proprietors that it presents several important points which are worthy of note. For example, in the Streets Directory the information is so arranged that it may be seen at a glance on which side and in what part of the street a house is situated, to what parish it belongs, in what ward it is situate, where the nearest post-office is to be found, and what part of the house each individual occupies. The Alphabetical Directory furnishes not only the names of the firms, but of each member of each firm, with such additional particulars as have been deemed of interest. We have before now mentioned with praise that it contains many curious particulars respecting the Livery Companies and their charities, and has a good coloured map, showing the boundaries of the wards and parishes.——*Nature* says,—There has been just issued by the Queen's printers the Eighth Annual Report of the Warden of the Standards, Mr. H. W. Chisholm, on the proceedings and business of the Standards Department of the Board of Trade. When we remind our readers that the Standards deposited in that department have been the result of the labours of many men of science, including Davies Gilbert, Wollaston, T. Young, Kater, Baily, Sir J. Herschel, Earl of Rosse, Lord Wrottesley, Sir E. Sabine, and lastly, but most of all, W. H. Miller and the present Astronomer Royal, we need scarcely say there should be much in this Annual Report worthy of our notice. We confine our notice here to that part of the business of this department which is most likely to interest our readers, without referring to its various official or State duties. One part of the business of this department appears to be the conducting of comparisons and other operations with standards of length, weight, or capacity, in aid of scientific researches or otherwise. Chemists and physicists are glad to rely on the accuracy of their measures or weights, as compared with our own or foreign standards, and to be assured of the constancy of the units employed in their researches. This part of the business of the Standard Department would appear therefore to be of practical use to those whose researches require such accuracy. To maintain uniform the weights and measures of our laboratories is not only aiding individual research, but facilitating the exchange of scientific experience.——The *Gardener's Magazine* contains an article on the "Geometry of Beauty." The object is to show that everything in nature is geometrical, and that everything that is beautiful is based on geometrical laws.

Miscellanea.

Tewkesbury Abbey Church.—This venerable pile having for some time been in a dilapidated condition, steps have been taken to restore it, and a committee, with Sir E. A. H. Lechmere as chairman, have undertaken the responsibilities attaching to the work. Up to the present time a sum of 2,400*l.* has been secured as a commencement, and the committee, having consulted Sir Gilbert Scott, have decided upon beginning at once the more necessary work,—1, the restoration of the choir as far as and including the eastern arch of the tower; 2, the four eastern bays of the nave; 3, the tower, with its northern, southern, and western arches; 4, the stalls and the other fittings of the choir; and, 5, the boarding off a portion of the nave and aisles, and providing temporary fittings for holding divine service during the progress of the first part of the work. A faculty has been obtained, and the works are commenced by the contractors, Messrs. Collins & Cullis.

Inhabited House Duty.—A memorial is now in course of signature in Southampton, headed by the principal bankers, magistrates, and chief of the leading firms. The memorial prays for the reduction of the impost to the ratable instead of the gross value, and a reduction to 6d. in the pound on all private houses. The reduction to 6d. in the pound on all shops where goods are exposed for sale took place in 1869, and then public-houses, inns, and coffee-houses did not come under that Act; another alteration was made in 1871, and they are now only 6d. in the pound, thus only leaving private houses now subject to the full tax. This is a move in the right direction. And yet there are some advocates for *increasing* the tax on houses as a substitute for the income-tax! In the face of the present desire for better houses for the working classes, another tax would seem to add further obstacles to progress in the sanitary improvement now demanded.

Water Supply for Skelmersdale.—At the last meeting of the Skelmersdale Local Board, Mr. G. W. Goodison, of Liverpool, produced plans, showing the water tower, engineer's house, and the line of mains proposed to be built and laid down, and submitted an estimate of the cost, amounting to 15,633*l.* 2*s.* It was agreed that the plans should be left for a few days, in order that the members might inspect them at their leisure before they are sent to the Local Government Board. Mr. Goodison also laid before the board plans of the proposed offices, assembly-room, ante-room for library or other purposes, surveyor's residence, and buildings for police purposes.

The New Brownroyd Reservoir, Bradford.—The new reservoir at Brownroyd, which has been constructed by the Corporation of Bradford, to supersede the New Miller's Dam, upon the site of which the Great Northern Railway Company are constructing their sidings for the new Brick-lane Station, was formally opened on the 10th inst., by the Mayor of Bradford. The new dam is situated on the Bradford Beck, about 200 yards above the head of the old dam, and has been formed by a strong embankment which has been thrown across the valley. Its capacity is 10,000,000 gallons, and the area of water, when filled, 3 acres 3 roods. The maximum depth of water is 12 ft., and the minimum 10 ft., the banks being very steep. The reservoir has been designed by, and the works carried out under the supervision of, Mr. Gott; the plans and drawings having been made in the borough surveyor's office.

Proposed University for Ladies.—Mr. Holloway will find the money for erecting the proposed university. As regards the building, for which a site has been secured at Egham, at a cost of 25,000*l.*, he says the plans are prepared. It is intended that the building shall be in the style of the French Renaissance, and whatever is necessary to complete it will be forthcoming; in fact, he has set apart a quarter of a million for the purpose: if more is wanted he will give it. On its completion he proposes to hand it over to the nation, to which he will also leave the work of carrying out the objects for which the college was intended.

The Holborn Station Hotel.—Mr. Forbes, the Chairman of the London, Chatham, and Dover Railway Company, at the meeting on the 11th inst., stated that the Holborn Hotel was in course of construction, the tender of Mr. Webster, the well-known contractor, having been accepted for the erection of the building for the lump sum of 70,000*l.* On its completion it would be immediately occupied and opened at a rent which would pay 6 per cent. on the outlay, in addition to which the company would receive 10 per cent. on the profits of the business of the hotel and refreshment departments of the station.

The New Park, Swansea.—At the meeting of the Town Council on the 10th inst., the liberal offer of Mr. John Dillwyn Llewelyn of forty acres of land for the purposes of a people's park for the upper parts of the town, was unanimously agreed to. Mr. Llewelyn is stated to have offered 1,000*l.* in addition for forming the necessary approaches thereto, and laying out the same, besides a large number of shrubs, plants, &c. Mr. Llewelyn has also signified his intention of supplementing his donation of 1,000*l.* by a second 1,000*l.*, to be paid during the second year of the acceptance of the offer by the Council.

Cause of the Lewes Epidemic.—An elaborate report on the recent epidemic at Lewes has been made to the Local Government Board by Dr. Thorne, the official inspector. He ascribes the origin of the disease chiefly to the direct connexion of the water-mains with closet-pans from which foul air ascended the pipes when they were empty. In other cases he discovered water-pipes carried through sewers, one of them having a hole in it at the intersection. The local water company is said to have arranged for giving a constant high pressure supply.

A Loan Collection of Scientific Apparatus.—A meeting was held at South Kensington on Saturday last, for the purpose of discussing the advisability of bringing together a Loan Collection of Scientific Apparatus. It was generally understood that the main objects of the exhibition would be to show modern apparatus for teaching and for research; the applications of science to industry; and such apparatus as is historically interesting from the occasions in which, or the persons by whom, it had been employed. The exhibition will be opened at the commencement of June.

Burnham. — At the meeting of Burnham Overy School Board, on Friday, the 12th inst., the clerk said he had eleven tenders for the erection of the projected school buildings, which were examined by the Board. Mr. Colman, architect, was in attendance to explain matters with regard to construction, and it was ultimately resolved to accept the tender of Messrs. Smith & Spooner, of Fakenham, subject to the approval of the Education Department, and to the conditions that satisfactory references and bondsmen would be given and required.

"Howard Medal"—We have already mentioned that the council of the Statistical Society have selected the following as the title of the essay to which the medal will be awarded in November, 1875:—

"The State of the Dwellings of the Poor in the Rural Districts of England with special regard to the Improvements that have taken place since the middle of the eighteenth century; and their Influence on the Health and Morals of the Inmates."

We should add that candidates for the Prize will be expected to give some account of John Howard's cottage-building at Cardington, near Bedford; and will be allowed to illustrate, by plans and elevations, the arrangements which they deem best adapted to preserve the health and morals of the poor—such plans not to fill more than two pages of the Society's Journal.

Feock, Cornwall.—Interest was manifested at Feock, on the 9th inst., in the laying of the foundation-stone of the new church by the Hon. Mrs. Gilbert. The contract price for the erection of the building is 2,200*l.*, and the time will be up in March, 1876. Towards this amount we hear that a large sum has been promised, Mr. Davies Gilbert and the Rev. T. Phillpots, late vicar of Feock, being large subscribers. The architect is Mr. J. Piers St. Aubyn. The carpentry work will be done by Mr. Salmon, of Truro, and the masonry, plastering, and slating by Messrs. Clemens, of Truro.

Stoke Newington Green.—At the meeting of the Metropolitan Board of Works on the 12th inst., the Parks, &c., Committee submitted a plan, specification, and estimate, amounting to 1,208*l.*, for the laying out, planting, and fencing of Stoke Newington-green, and recommending that the same be approved; that the committee be authorised to invite tenders, and have the work carried out forthwith; and that the Islington Vestry be informed in reply to their letter of the decision arrived at by the Board. After some opposition the adoption of the report was carried.

Alterations to St. Pancras Workhouse.—At the meeting of the St. Pancras Guardians on the 11th inst., Mr. Bridgman, architect, submitted reports and plans of the proposed alterations and additions to the workhouse, to meet the requirements of the Local Government Board. Mr. Joseph Salter moved that the plans lie in the clerk's office for the inspection of the guardians, and the report be printed, and the subject be placed on the agenda for that day fortnight, which, after some opposition from Mr. Watkins, was carried.

Manchester Waterworks.—The *Journal of Gaslighting* says:—The loss on the Manchester Waterworks during the past year appears to have been 10,008*l.*, and the estimated deficiency for the present year is set down at 3,084*l.* While admiring the public spirit which makes Manchester submit to these losses, we can only once again protest that the deficiencies ought not to be made good out of gas profits. The public water-rate should be 5d. instead of 3d., and it would appear that the waterworks would then pay their expenses.

Wooden Pavement in Parliament-street. The Westminster Board of Works, at their meeting, on the 12th inst., had under their consideration the question of the roadway in Parliament-street. The present macadam road, in spite of the enormous cost for repairs and cleansing, is the subject of continued complaints. The Board have now decided on the adoption of wood pavement, providing they can obtain from the Government any intimation as to the widening of the remaining narrow part of the street.

The Drainage of Cheshire Towns.—For some time past Mr. M'Kenzie, the surveyor to the Altrincham Rural Sanitary Authority, has been engaged in preparing plans for three suburbs of Manchester. The plans are now completed, and have been submitted to and approved by the Local Government Board, London. At the meeting of the Altrincham Rural Sanitary Authority last week, in reply to a question, the Chairman (the Rev. T. Brierley) said that 34,000*l.* might do for the drainage of these three townships.

Demolition of the Colosseum.—It is said that the Colosseum in the Regent's Park, bought by Mr. Stanley Bird, of Upper George-street, is to be converted into a terrace of mansions. The building was originally planned by Mr. Horner, the land surveyor, and erected by Messrs. Peto & Grissell, from the designs of Mr. Decimus Burton.

The Museum of Patents.—In the Commons on the 12th inst., Mr. Mundella asked the First Commissioner of Works whether he was able to inform the House of the decision of the Government with respect to the removal of the Museum of Patents and Inventions. Lord H. Lennox said the Government had decided upon providing a suitable site at South Kensington. The exact nature and extent of the accommodation he should mention to the House when he proposed the vote.

A Masonic Hall.—On Thursday afternoon, the 11th inst., the foundation-stone of the new Masonic Hall at Bridlington Quay was laid with due formality by the Worshipful Brother, Mr. T. P. Bell, M.D., P.G.D. of England, and D.P.G.M. of North and East Yorkshire. The project originated with Brother W. H. Porritt. Brother William Bakewell, of Leeds, is the architect, under whose superintendence the work is being carried out; and Brother Hudson, of Sowerby, is the contractor.

The Grammar School, Darlington.—We understand that several of the architects of Darlington are now busily engaged in executing competitive designs for the premises to be erected on the site secured by Alderman Arthur Pease, and that in about a month's time these designs will be selected from by the managers, assisted by a London architect called to their counsels. The author of the plan selected will be entrusted with the carrying out of his own design.

The Moorfoot Scheme for Edinburgh Water Supply.—At a meeting of the Edinburgh and District Water Trust, held on Thursday last, a lively discussion took place on a recommendation of the Works Committee to appoint a resident engineer for the new works of the Moorfoot scheme. The recommendation was disapproved by a majority of nine to seven. The contract for the aqueduct from Gladhouse to Edgelaw was let to Mr. Young, Glasgow, at 13,000*l.*

Widening of the Great Western Railway between London and West Drayton.—A work of great magnitude and no small difficulty,—the widening of the main line of the Great Western Railway between Paddington and West Drayton,—is being carried out by the contractors to the company for the purpose of affording greater facilities for the passage of the enormous and fast increasing traffic upon this railway.

Joiners' Wages in the Wigan District.—The Wigan Masters' Association have received from the committee of the Carpenters' and Joiners' Association, Wigan, an application for a reduction in the working hours from 55 to 49½ per week, and for an advance of a penny per hour in their wages, which are at present sevenpence per hour. The masters agreed to refer the men's application to arbitration.

Tower of London.—The Commissioners of the Treasury have notified that her Majesty has been graciously pleased to sanction the free opening of the Tower of London for the admission of the public on two days in each week. "My lords would at the same time observe that the regulations which it will be necessary to lay down for the admission of visitors will have to be carefully considered."

New Roman Catholic Church, Bournemouth.—A new Roman Catholic Church was opened at Richmond-hill, Bournemouth, on Thursday, the 11th inst., by the R. C. Bishop of Southwark. The architecture is late Gothic, and the building will contain 400 worshippers. Mr. Clutton, of London, was the architect, and Mr. Saunders, of Southampton, the builder.

Columbia Market.—The Columbia Market, recently given by Baroness Burdett Coutts to the Corporation of London, for a fish-market, but returned to her on its proving a failure, has been taken by Mr. D. Tallerman, the Australian meat importer, who will convert it into a grand restaurant for the supply of cheap dinners to the people.

Fall of a Scaffold.—Great alarm was created in St. Leonards, on Saturday afternoon, by the falling of a scaffolding, at a new house in Silchester-road. With one exception, the men at work on the scaffold had time to note their danger, and cling to the fixed upright poles. The other man was thrown to the ground and greatly hurt.

Resignation of the Widnes Surveyor.—At the meeting of the Widnes Local Board last week the Law-Clerk read a letter from Mr. Anthony Shelmerdine, tendering his resignation as Surveyor of the Board. The resignation was accepted, and the Clerk was instructed to advertise in the local and other papers for a Surveyor at a salary of 250*l.* per annum.

Result of the Peabody Fund.—By a report of the trustees of the Peabody Fund, it is shown that 380,284*l.* have been expended on the objects of the gift, and that 213,342*l.* remain; and also that at the end of last year there were 594 families, consisting of 3,815 persons, residing in the various blocks of buildings erected as dwellings for the poor.

The Penrhyn Quarrymen.—Lord Penrhyn and his quarrymen seem to be at present on specially friendly terms. His Lordship has just contributed the sum of 2,000*l.* towards the reconstruction of the workmen's club; and the late manager, against whom some hard speeches were directed during the strike, gives 500*l.* towards the same object.

The Chelsea Surveyorship.—We mentioned last week the election of Mr. Slayton. It is only fair to mention that Mr. S. Ford was in the first instance elected, but found himself unable to comply with a requisition to produce certificate of his birth showing he was under forty years of age, and so withdrew.

Cabmen's Shelters.—The Paddington vestry has granted permission, as an experiment, for a shelter to be erected in the Harrow-road, near Blomfield-crescent. The shelter which was erected in Acacia-road, St. John's-wood, has, during the first week of its existence, proved self-supporting.

A Naval College at Dartmouth.—There is a rumour from Dartmouth to the effect that the Government have determined to build a naval college on the Raleigh Estate, on the right bank of the Dart, and that the *Britannia* will no longer be used as a training ship for cadets. It is said that the cost of the college will be 400,000*l.*

The City Liberal Club Competition.—We mention, to the credit of the Committee of the new Liberal Club, that they have sent a cheque for 50*l.* to each of the unsuccessful competitors in part payment of their expenses, without any previous understanding to that effect.

Workshops for Cripples.—The new workshops erected in connexion with the National Industrial Home for Crippled Boys, at Kensington, were opened on the 9th inst. A public meeting was held, at which Lord Shaftesbury presided.

New Lifeboat Station.—Miss Hannah de Rothschild has presented to the National Lifeboat Institution 2,000*l.*, to form and endow a lifeboat station, in memory of her father, Baron Mayer de Rothschild.

British Archæological Association.—The papers to be read on Wednesday, the 24th of February, are,—On the Church of Stone-juxta-Faversham, by Mr. J. T. Irvine; and on Cromwell's Sceptre, by Mr. H. W. Henfrey.

The Literary Fund Dinner.—His Excellency the Comte de Jarnac, Ambassador from France, will preside at the approaching anniversary, which is fixed to take place at Willis's Rooms on the 5th of May.

Damage to the Braunton Breakwater.—The breakwater near the Braunton Lighthouse has been greatly damaged by the late rough weather. It was only constructed a few months since, at very considerable cost.

The Building Act Committee of the Metropolitan Board of Works.—Mr. Selway has been named Chairman for the remainder of the official year, *vice* Mr. F. Fowler.

Sessions House, Clerkenwell.—Considerable works are about to be done here. 1*l.* per foot superficial is the price named for the additional land to be taken in.

New Protestant Church at Jerusalem.—Bishop Gobat consecrated lately the new Arabic Protestant church at Jerusalem. This is the third Protestant church there.

"An Underground Church, Brighton."—The depth of the floor is 16 ft. 4 in. below the street; not 30 ft., as stated; and there are two entrances.

The Fulford Drainage.—At a meeting of the York Rural Sanitary Authority, on the 6th inst., the chairman (Lord Wenlock) said that four tenders had been sent in for the execution of the work, namely, Mr. Voase, of Great Ouseburn, 534*l.* 7*s.*; Mr. Bacon, of Victoria-street, York, 608*l.* 10*s.*; Messrs Jackson & Spencer, St. Paul's-terrace, York, 2,300*l.*; and Mr. Lawson, Cemetery-road, 599*l.* 5*s.* The estimate which Mr. Hornsey had given for the work was a little over 600*l.*, including 20*l.* for any extras. On being put to the vote, five hands were held up in favour of Mr. Lawson, and thirteen for Mr. Voase, whose tender was accepted; substantial security to be given for the due performance of the work to the satisfaction of Mr. Hornsey, the surveyor.

TENDERS

For Methodist free church and schools, Wanstead, Essex. Mr. F. Boreham, architect. Quantities by Mr. C. Brooks:—

Tongue	£1,998 0 0
Ennor	1,880 0 0
Blackmore & Morley	1,832 0 0
Pavitt	1,793 0 0
Catley (accepted)	1,695 0 0

For detached house and stabling at Brackley, for Major Cartwright, M.P. Messrs. Gadsden, Ellis, & Co., surveyors. Quantities supplied by Messrs. R. L. Curtis & Sons:—

	House.	Stabling.
Symm & Co.	£5,497	£1,570
Hill, Higgs, & Hill	5,319	1,353
Franklin & Son	4,851	1,357
Rider & Son	4,642	1,272
Sharpington & Cole	4,455	1,200
Claridge (accepted)	4,441	1,189

For the erection of St. Peter's vicarage, Folkestone. Mr. S. Slingsby Stallwood, architect.

Holdom	£1,275 0 0
Dunk	1,193 0 0
Prebble	1,180 0 0
Webster (accepted)	1,174 0 0

For repairing the roofs, &c., of thirty-three houses upon the Mora estate, in the parish of St. Luke, Old-street. Mr. James Harrison, architect:—

Thomas	£163 0 0
Huckett	142 0 0
Starkey	136 0 0

For repairs, &c., to premises, Mare-street, Hackney, for the Borough of Hackney Liberal Club. Mr. Fowler, architect:—

Norris	£513 0 0
Perry	490 0 0
Bowtel & Co.	489 0 0
Flaxman	425 0 0
Winship	424 0 0
Williamson	420 0 0
Steele	410 0 0
Jay	363 0 0
High	335 0 0

For painting and repairs to the Davies-street Baths and Washhouses, for the Commissioners of Public Baths and Washhouses for the parish of St. George, Hanover-square:—

Nichols	£338 0 0 1
Morris	309 0 0
Simpson & Coulthard	278 0 0
Thomas	254 10 0
Curtis	209 0 0
Heath	206 0 0
Reading	183 0 0 1

For new shop-front and additional show-rooms, 53, North-street, Brighton. Mr. Arthur Loader, architect:—

Lockyer (accepted)	£270 0 0
Howard	265 10 0

For new conservatory, additional wing, and stabling, to the residence of Capt. Hene, Harting, Sussex. Mr. Arthur Loader, architect.—

Marvil	£3,170 0 0
Burton	2,927 0 0
Jenner & Son (accepted)	2,918 0 0

For putting in new front to the Red Cow public-house, Mile-end-road, for Mr. A. Billinghurst. Mr. Treacher, architect.—

Stokes	£450 0 0
Palmer	399 0 0
Judd & Hawkings	389 0 0
Hunt	241 0 0

For the erection of new premises, No. 1, Poultry, for Mr. Charles Tighe. Messrs. J. & J. Belcher, architects. Quantities supplied by Messrs. Franklin & Andrews:—

Peto, Brothers	£5,916 0 0
Braid, Joplin, & Co.	4,794 0 0
Colls & Son	4,735 0 0
Jarreth	4,440 0 0
Coleman	4,415 0 0
McLachlan & Son	4,215 0 0
Brass	4,155 0 0
Foster	3,968 0 0
Bracher & Son	3,980 0 0
Downes	3,939 0 0

For the erection of a villa residence at Hendremynech, Barmouth, for the Rev. E. Anwyl Jones. Mr. Thomas Roberts, architect:—

Jones	£1,387 0 0
Owens	1,180 0 0
Williams & Parry	1,150 0 0
Williams & Edwards	1,140 0 0
Griffiths & Humphreys	1,112 0 0
Hughes	1,130 0 0
Pritchard	1,120 0 0
Griffiths & Adams	1,059 0 0

For buildings on the Harlech estate, Harlech, for Mr. Samuel Holland, M.P. Mr. Thomas Roberts, architect:—

Farm House at Lasynys.

Williams (Masonry)	£178 0 0
Evans (Carpentry and Joinery)	152 0 0
R. Evans (Slating and Plastering)	72 0 0

Gardener's Cottage.

Williams (Masonry)	70 0 0
Evans (Carpentry and Joinery)	45 0 0
R. Evans (Slating and Plastering)	29 0 0
Jones (Glazing and Painting)	5 3 0

Market Hall.

Williams (Masonry)	70 0 0
Evans (Carpentry and Joinery)	80 0 0
R. Evans (Slating and Plastering)	45 0 0
Jones (Painting and Glazing)	12 6 0

For internal and external repairs and painting to north and east wings, and alterations to front gates, of the Provident Bookbinders' Asylum, Ball's-pond-road. Mr. W. McNab Soul, architect:—

Sabey & Son	£103 0 0
Hall	294 0 0
Boyce	270 0 0

For additions, alterations, and repairs, to the Colville Hotel, Portobello-road, Notting-hill, for Mr. W. G. Wakely. Mr. W. McNab Soul, architect:—

	Alterations.	Bar Fittings.
Homan	£619 0 0	£110 0 0
Shapley	448 15 0	59 10 0
Hopton	438 0 0	130 0 0
Boyce	435 0 0	87 0 0
Witham & Son	413 0 0	—
Temple & Foster	379 0 0	—
Whitley	301 0 0	142 10 0
Hill	—	141 0 0

For new house and gallery, 148, New Bond-street, for Mr. F. Davis. Mr. H. H. Collins, architect. Quantities supplied by Messrs. Batstone & Sons:—

Simpson & Son	£4,499 0 0
Waldram & Co.	4,130 0 0
Orton	4,090 0 0
Manley & Rogers	3,997 0 0
More and & Nixon	3,867 0 0
Newman & Mann	3,841 0 0
Merritt & Ashby	3,833 0 0
Poole	3,800 0 0
Kirk & Randell	3,780 0 0
Simpson	3,750 0 0

For rebuilding a warehouse, Milk-street, City, and decorations to two warehouses, Wood-street and Milk-street. Mr. Herbert Ford, architect:—

Perry & Co.	£5,273 0 0
Browne & Robinson	4,710 0 0
Lawrance	4,603 0 0
Adamson & Sons	4,434 0 0
Ashby & Horner	4,421 0 0
Scrivener & White	4,323 0 0
Kirk & Randall	4,270 0 0
Conder	4,250 0 0
Downs & Co.	4,159 0 0
Newman & Mann	4,155 0 0
Brass (accepted)	4,010 0 0

For alterations to Nos. 11 and 12, Godliman-street, Doctors' Commons, for Mr. S. H. Beddington. Messrs. U. S. Joseph & Pearson, architects:—

Browne & Robinson	£3,080 0 0
Newman & Mann	3,005 0 0
Lidstone	2,909 0 0

For new German church and new house at Dalston, for the trustees of the German Hospital. Messrs. E. Habershon & Brock, architects:—

Newman & Mann* (accepted)	£7,110 0 0

* Amended estimate.

For Baptist chapel, Enfield. Mr. T. Lewis Banks, architects. Quantities by Mr. A. J. Gats:—

Hill, Higgs, & Hill	£2,320 0 0
Gardiner	2,250 0 0
Carey	2,194 0 0
Patman	2,059 0 0
Bayes & Ramage	2,018 0 0
Toms	1,965 0 0

For alterations to the Prince Albert, Princess-terrace, Regent's Park, for Mr. Jackson:—

Toms, accepted.

For bar fittings, &c., Queen's Tavern, St. George's-road, Regent's Park. Mr. F. Fred. Holdsworth, architect:—

Whittaker	£218 0 0
Mark	166 0 0
Toms (accepted)	147 0 0

For works at 107, Holloway-road, for Messrs. J. & W. Foster. Mr. Henry R. Cotton, architect:—

Williams & Son	£408 0 0
Toms	392 0 0

For works in extending Oetzmann & Co.'s premises, Hampstead-road. Mr. C. Eales, architect:—

Pritchard	£4,949 0 0
Browne & Robinson	4,638 0 0
Clark & Bracey	4,574 0 0
Scrivener & White	4,733 0 0
Kelly, Brothers	4,414 0 0
Macey	4,287 0 0
Adamson & Sons	4,278 0 0
Dubs & Son	4,269 0 0

For constructing sewers, shafts, junctions, and other works for the Town Council of Brighton. Mr. P. C. Lockwood, engineer:—

Stenning	£11,300 0 0
Newnham	11,295 0 0
Burton	11,250 0 0
Wigmore	10,300 0 0
Lockyer	9,999 0 0
Cheesman	9,840 0 0
Dover & Co.	9,632 0 0
Wells & Hunter	9,575 0 0
Howard	9,285 0 0
Ritson	8,942 0 0
Marshall	8,425 0 0

For taking down and rebuilding part of the "Ship," Talbot-court, E.C., for Mr. Peter B. Harris. Mr. W. S. R. Payne, architect. Quantities supplied by Mr. Edward Mortee:—

Lathey, Brothers	£2,130 0 0
Outhwaite & Son	2,082 0 0
Nixon & Son	1,992 0 0
Tarrant	1,980 0 0
Blott	1,855 0 0
Lawrence	1,841 0 0

The New Warehouse, Duke-street and Exeter-street, Marylebone. Our tender for these works was 7,990*l.*—TEMPLE & FORSTER.

TO CORRESPONDENTS.

J. G.—B. & Co.—E. W. T.—Vortex. J. T. B.—W.—J. C.—W. H. P.—E. T.—W. S. S.—C. T.—H. M.—J. H.—H. C. R. R.—E. R.—S. F.—W.—Mason.—C. B. Mr. T.—R. C. Artizan. The rights and privileges of the Building Act then would require to be known before answer could be given. Take advice on the spot.—A. B. (too late for consideration this week).—G. R. W. (ditto).—Statesman (ditto).

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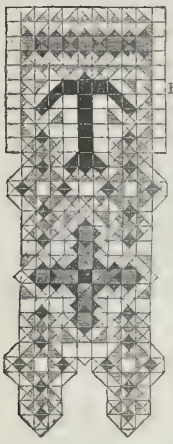
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VOL. XXXIII.—No. 1673.



The Strike in Wales.

THE OUTLOOK of the mining industry of Wales is, we are deeply grieved to see, gloomy. While we desire to hope to the last moment, it is yet impossible to doubt that the risk of an industrial calamity of magnitude, only to be compared with that of the cotton famine caused by the American Civil War, menaces that important district of the United Kingdom. The question is no less than that of the employment of some hundred and twenty thousand bread-winners. To rate the activity of so many, men and boys, as the source of a weekly return to the labourer of 120,000*l.* per week, or six-and-a-quarter millions of pounds sterling per annum, is probably very far to understate the case. What addition to the permanent wealth of the country is made by that expenditure in labour is another question, and one of far larger amount. But for the moment we prefer to look the matter in the face from the point of view most interesting to the workman: with him we have, not only the bond of philanthropic sympathy, but that of the brotherhood of craftsmanship. We know, from long and wide experience, much of the noble qualities of the English workman; his skill, his patient industry, his rare and prodigally exerted strength; the thorough and reliable character of the work which, when he is in his normal condition, he takes a pride in turning out. We know, too, something of his failings,—failings which he will himself be the last either to deny or to justify; and we know, and this is the most painful part of the whole story, how some of the best principles of his character, his sturdy independence, his self-reliance, his self-respect, even the increased knowledge of the relations of labour and of capital which is slowly spreading amongst us, are too often adroitly turned to his disadvantage. No appeal is so dangerous as that which is made to a man who is told part of the truth, on the pretence that this part is the whole.

There can be no doubt that this country is now passing into, or it may be through, one of those constantly recurring periods of restriction, which have hitherto always followed periods of great extension in industrial activity. Not in Wales alone, but wherever coal is won, or ironstone is quarried, or iron is made, in Great Britain, the order-books of the manufacturers show that the scale has turned. The very principle of the regulation of commercial and manufacturing industry by unrestrained competition, is a cause of this oscillation of the pendulum from the full to the empty side of the pocket. It is possible that some such ebb and flow is inseparable from human affairs; but it is certain that a great deal that some persons declare to be advantageous to mankind has a great effect in exaggerating the differences. If we were asked to trace these disturbing causes to the very egg, we should say that the egg is the introduction of the principle of working in competition rather than in co-operation. So long as we consider that the order of things most suited to Englishmen is an independence which may at any time take the form of hostility; whether we see it in the form of manufacturer tendering against manufacturer, instead of working together in a vend or syndicate; or in the form of the owner of labour holding himself as distinctly interested from the owner of capital; or in the form of an attempt to limit the labour of any man, by any rule but his own capacity, conscience, and power of working,—so long as these things not only exist, but exist without sense of wrong, shall we find the industry of our country to be disturbed by periodic and violent fluctuation.

The extraordinary rapidity and magnitude of the last movement in the direction of increased wages may be estimated, with great accuracy, from some statistics lately communicated to the daily press by the manager of a joint-stock colliery. Mr. J. T. Johnson, C.E., states his own experience that, in 1871, the price per ton for cutting coal was 1s. 9d. It is plain that this is only one of the numerous items which go to make up the total price for which coal can be delivered to the consumer. Still it is the best item to select as a sample of the whole. The work of the getter, or coal-cutter, is, in point of fact, the limit of production. Although it is probable that improved machinery will, sooner or later, make a material difference in this respect, we must regard the matter as it is, not as it may become. As it is, then, the coal getter has been, for a considerable time, the master of the situation. The cheerful industry of all other persons employed in the winning of coal must depend on his good pleasure. And, although he will only stipulate for his own price, and may leave other labourers to shift for themselves, it is the case, without doubt, that a rise or fall in the price of coal-cutting will represent pretty accurately a corresponding rise or fall in every detail of this important industry.

In the years 1872-73, the price of coal-cutting, in the colliery superintended by Mr. Johnson, rose, by successive steps, from 1s. 9d. to 3s. 6d. per ton; that is to say, an increase of 100 per cent. The price of coal-cutting in those two years was exactly doubled. It is certain that no increase in difficulty of operation, and that no increase in the cost of living, can have occurred, within the period in question, in any way tantamount to so enormous an increase of price. It was, no doubt, a result of the state of the labour-market. The principles of political economy came into play. Not only so, but they acted in that rough, violent, and unchecked manner which we confess that we believe to be a social evil, and a result of political ignorance. But it is the mode of action in which most writers on the subject appear to think that it is the highest wisdom, not only to acquiesce, but to acquiesce with delighted wonder, at the happily self-regulating power of the principle of supply and demand.

Be that, however, as it may, we are in face of this important fact. The colliers, so far as their general body is represented by the coal-cutters of this particular colliery, have taken advantage of their position, as controlling the supply of one of the great necessaries of life, to exact, within two years, a double price for their labour, compared with that which they received during the year 1871. In so doing they did what the theoretic writers on political economy teach them they had a full right to do. We are not about to discuss the question as a point of conscience or of morals, whether a man has the right to extort the utmost farthing which it is in his power to grasp. What we want to know is—the colliers having this power, and being told that they have the right to exercise it—are they wise in so doing, and in using that power to the full?

If we had put this question during a rising labour market, we might well have expected to receive a somewhat contemptuous answer. We should very likely have been told that we were arguing the case of the consumers, being, probably, consumers ourselves; that we were using the usual plea of the weaker and worsted party in a contest,—an appeal to the merciful consideration of the victors—on some metaphysical grounds of a moral or religious nature; that our turn was over; that labour was king, and meant to reign; and that the whole outcome of the most advanced philosophy of the day encouraged King Labour to take his ease; and that having (like Leo X.) obtained so ample a fulfilment of his most sanguine hopes, nothing remained for him but to consider how he could enjoy himself the most fully. Such, in fact, if not in exact words, would have been the reply we should have received.

But what has been the grim logic of fact? What has been the comment of that change which is the staple of contemporary history? The enormous increase in the price of coal which is the necessary, or at least the natural, consequence of a rise in the price of cutting it, of so apparently insignificant a value as 1s. 9d. per ton, has acted as a damper upon the activity of all industries fed by coal, or dependent on steam. The stone, once set rolling, has accumulated, like an avalanche, at every bound. The result, indeed, is not immediate. Were it possible for this to be the case, for the result of any action, especially of any combined action, to be at once apparent, a great safeguard would be present, which we actually lack. Prices always rise when there is some increase of demand for that to which they apply. It is here that there is room for a fallacy which we conceive underlies very much of what is said on the subject of supply and demand. We are dealing with two disturbing causes, which are perfectly distinct from each other in their origin, and in their field of operation, although at certain points they pull together. The two elements, in the present case, are the need for coal, and the available amount of labour at the command of the collier. So it was, that in the state of prices ruled by the wages of the colliers in 1871, a brisk industry was everywhere becoming brisker; more coal was demanded; and so widespread had been the preparations for increased activity, that a moderate and reasonable rise in the price of coal would hardly have checked them. Even an immoderate rise in that price could not check them at once. Contracts were made; arrangements were in progress; new capital was invested; a course of activity had commenced which could not be immediately arrested. We all know how it sometimes happens that something must be acquired, at whatever cost. Thus, if a ton of coal was only to be obtained, on a sudden, at the price at which two tons could be reasonably supplied, no one was at liberty to cease to burn for that reason. The drag, it is true, would be immediately put on. But the impetus of the machinery was so great that much time would necessarily elapse before the full effect, or even any serious effect, of the drag was felt.

We can measure, by the same scale as that which we applied to the process of inflation, the manner in which the restrictive action has hitherto come into operation. In two years we saw prices doubled. For six months there was a calm. It was dead high water. Then the tide began to turn. In June, 1874, the ebb was perceptible. It was indicated by a reduction of 3¾d. per ton in the price of coal-cutting. This was only, it is true, a reduction of about 9 per cent. on the prices of January, 1874; but it was a reduction of 18 per cent. if calculated with reference to the prices of 1871. In September the process was repeated. A second reduction of 3¾d. per ton was made in the price

of cutting. After this reduction, the price still stood at 2s. 10¾d., or 65 per cent. in advance of the price of 1871. But no signs of attaining the low-water level have followed this reduction. It might have been possible, let us admit for the sake of argument, that the activity of 1871 would not have been materially checked by a rise of 65 per cent., although it was so checked by a rise of 100 per cent. That is not the point we want to make clear. What we mean, and what the logic of events shows to be the case, is that the ill effects of an undue inflation of prices are not to be obviated by a return to what might have been the normal rate of prices at a fixed period. The probability is, that the ebb will be as exaggerated and undue as is the flow. In the most sensitive, because the most readily affected, of all the gauges of commercial activity, the Bank rate of discount, this may be constantly remarked. So long as the rate of discount merely follows the market, its variation is gradual, and no one is inconvenienced. But when the state of things is reversed, and the efflux of gold is such as to menace (owing to the fact that a bank-note is not really a bullion deposit note) the position of the Bank, the screw is put on, as it is called. That is to say, a change is made in the rate of discount, with the express purpose of giving a turn to the market. We have seen 10 or 12 per cent. demanded by the Bank for this object, and with the anticipated result of an almost immediate change in the direction of the efflux of bullion.

In the Bank returns these things are now becoming patent to any intelligent observer. From the rapidity with which effects follow causes, in the case where money dealing alone is concerned, we may learn much as to the certainty with which effects follow causes in those more complicated and lengthened transactions in which manufacturing industry is concerned. The money bargains existing at any time, so far as legitimate commerce is concerned—we mean that part of monetary bargain that depends on the discounting of good commercial paper,—is a question of a few, rarely more than ninety, days. The time required for maturing any transaction involving great physical exertion—such, for instance, as the accomplishment of a contract to deliver 50,000 tons of rails,—must extend over a much longer period. By the length of such periods, usually measured not by months, but by years, the speed with which the effect of a change in the cost of production is attained and displayed must be measured. Thus while the money market may go through its full cycle of change in a few weeks, the effect of any undue inflation of the cost of manufacturing production will not become sensible for many weeks; nor will the result of any remedial measures be more rapid and more readily perceptible. Thus it is almost certain that the downward movement will continue till it reaches a point below the true level which would have been maintained by an equable and rightly paid industry.

In the Merthyr, Aberdare, and Rhonda districts, we learn from the able and painstaking special correspondent of the *Standard*, that, owing to local causes, the rate of wages has not been uniform, either in amount or in fluctuation. From 1871 to 1872, the fluctuations are represented by six rises of wages, amounting to 55 per cent., and four falls, amounting to 35 per cent., leaving a gain of 20 per cent. to the workmen at Dowlais, Sirhowy, and Tredegar, and of 25 per cent. at Abernant, Cyfartha, and Rhymney. In the collieries, the rate of day wages had advanced 30 per cent., and the piecework price of coal-cutting 22½ per cent. The coal-cutter, however, could get as much as he chose, within the limit of his strength; the other workmen only earned a fixed amount. In the Aberdare Valley, however, the rate of wages was, at the earliest period, from 10 to 15 per cent. higher than the rate in the iron districts. In the Rhonda Valley the excess was still greater. The fact is accounted for by the great deficiency of house and of market accommodation in these districts when the pits were first opened. This established a higher rate of wages as necessary to attract the miners from more convenient localities. The rate once fixed, the brisk demand for the coal prevented a reduction when, as very soon was the case, the deficient accommodation was supplied. We thus approach pretty fairly to the outcome of the calculations of Mr. Johnson. The demand for the smokeless coal of these rich carbonaceous deposits has been so great, that the sale which, in 1844, was little over 70,000 tons, rose, in 1870, to above 3,340,000 tons. The Associated Masters in 1871 owned eighteen pits in the Aberdare Valley, and eight in the Rhonda Valley, and employed 10,000 men.

It is no part of our present purpose to endeavour to apportion the blame,—we cannot call it less than the crime,—of causing so great an amount of human suffering, as must ensue from the suspension of a mighty industry, that feeds some half million mouths, between the owners and hirers of labour,—the masters and the men. No one can doubt that the terrible privations of a lock-out are viewed with the gravest anxiety, by both parties. While to the men, or to such of them as have made no provision for a rainy day in the time of their power of fixing their own remuneration,—which was also, unfortunately, the time of their executing the smallest quantity of work,—a lock-out means either starvation or mendicancy,—not for themselves alone, but for the helpless women and children; for the masters the cost is enormous. The blowing out of a furnace has been long stated to involve a cost of a thousand pounds. With regard to the most improved and costly furnaces, we have recently heard it stated at more than double that sum. Then the special peculiarity of all underground work is, the need of constant vigilance, and constant activity. Whoever may sleep in a coal-mine, there is one mighty agency that is always active. Gravity never sleeps. Over miles and miles of subterranean boring this great natural force is constantly acting, in order to fill up the gap made by man in the solid strata of the earth. The effect of this activity varies, according to the soil. A constant rain of small particles from the roof characterises certain strata. An upward rise of the floor, known as creep, occurs in others. Everywhere the miner is called on for the sharp eye, and the ready hand. Here it is a pollingboard that has to be inserted; there it is a prop to be strengthened,—everywhere, almost, have the giant struggles of the steam pump to be kept up night and day. The abandonment of many workings, for a period of not a very great number of days, is enough to necessitate an amount of work equal in toil, and far more than equal in danger, to that of the first opening of the galleries; a toil, moreover, which, unlike that of the opening, is entirely unremunerative.

Men and masters, then, are already bound over under such heavy penalties to keep the peace towards one another, that very powerful causes must be in operation in order to place them in a mutually hostile attitude. It is our conviction that the causes are not what Lord Bacon would call true causes. We believe that a profound ignorance of the laws which regulate labour must exist, before two parties so intimately dependent on the welfare of one another can be driven to opposite poles. We believe that this ignorance is maintained and fostered by theoretic writers, and more than theoretic speakers, under the pretence of superior knowledge. We cannot place two armies in hostile array without incurring immediate risk of open contest. It is of no use to put arms in a man's hands, and then to counsel him not to use them. It is of no use to teach the labourer that he is independent of capital, that his only duty to himself is to earn as much money by as little toil as possible; to organise his energies for that very purpose; and then to be taken aback when the other party to the contract acts on the same principles. War is war, and a terrible and bitter evil it is. Nor is the ultimate force of war, the infliction of death, so terrible when inflicted by the bullet and the bayonet on the volunteer soldier as it is when inflicted by the slower torture of hunger and want, or the involuntary masses of women and children. For that ultimate stress and misery of war those men are responsible who lead the labourer to organise the supply of labour as a distinct and independent interest from the hiring or consumption of labour. Those who come between man and wife are not more obnoxious to the condemnation of all good men than those who come between master and men. It may be done,—and in some cases is done,—from good and upright motives. But if moral obliquity be absent from the counsellors of contest, intellectual obliquity is only the more apparent. When master and man remember that the fable of "the belly and the members" applies to them, brisk prosperity, true alliance, and material happiness are the result. When they forget this truth,—when the head says to the hand, or the hand to the head, "I have no need of thee,"—famine and pestilence, hatred and malice, the closing of manufactories, and the decay of commerce, are questions of time alone. Every victory, of the one hand over the other, is a loss to both hands, and to the entire body. How many days of lock-out will pass before this great truth is grasped by our intelligent brothers in Wales?

THE KENSINGTON VALHALLA.

The idea of emp'oying and promoting the revival of the art of mosaic decoration, by filling the wall-arches in the South Court of the Kensington Museum with portraits of great artists, executed in this medium, was a very fortunate one, calculated, if worthily carried out, to provide a series of figures, artistically and in some cases historically valuable, and to furnish a high class decoration of a permanent character. We say advisedly that some of them are historically interesting, for of course some of the figures are purely imaginary, and in other cases the likeness would have to be drawn from doubtful and insufficient sources. The spaces are now all occupied, with the exception of the two northern bays of the east wall, where two coloured cartoons, representing Luini and Van Eyck, fill temporarily the space ultimately to be occupied by mosaic. There are other figures in the collection which, though finished in mosaic, we may hope are to be looked upon as temporary also, though it would be invidious to particularise these too precisely. But we may take a general look round at this mosaic portrait gallery, with the view of noting what there is that is most successful in it.

The series of portraits at present stand thus:—On the east wall, commencing at the north end, we have the two temporary figures already mentioned; and then the following list, arranged in pairs in the bays formed between each roof-principal:—Phidias, Apelles; Nicolo Pisano, Cimabue; Torrel, Gonjon; Wykeham, Giotto; Ghiberti, Fra Angelico; Donatello, Gozzoli; Della Robbia, Mantegna; Giorgione, Francesco d'Uma. Crossing to the west wall, and following now from south to north, the chronological order (in the main, at least) from earlier to later, we find the following names represented:—Leonardo, Raffaelle; Torregiano, Peter Vischer; Luini, Blondel; Velasquez, Maestro Giorgio; Holbein, Michelangelo; Titian, Palissy; Inigo Jones, Gibbons; Wren, Hogarth; Reynolds, Mulready. The first thing one is struck by in contemplating the groups thus formed by the architectural division of the structure, is the singular manner in which names are combined which have no affinity under the sun. What claim has Palissy to stand by the side of Titian? or could any grouping be more oddly assorted than that of Torregiano and old Vischer? Yes, there is one still more singular; that which links Archbishop Wykeham, a mere *dilettante* promoter of architectural work, with such an original and self-inspired artist as Giotto. It may be said that those who are responsible for the arrangement took not into consideration the architectural division, but merely regarded the mosaics as so many figures in a row. Even in that case they seem arranged in a rather capricious manner; but it was a mistake to ignore the architectural subdivision, because the spectator cannot possibly ignore it. The figures form themselves to the eye into groups of two each, whether you will or no; and they should have been classed accordingly.

The first two figures, from the design of Mr. Poynter, representing Phidias and Apelles, form, however, a group perfectly in relation to each other, and are evidently intended by the artist as representing and contrasting the arts of sculpture and painting. The sculptor of the Parthenon appears in a nearly plain green tunic descending to the knee, and in an attitude in which the slightest possible suggestion of archaic stiffness of line gives a certain sculpturesque effect in keeping with the subject. The painter of Phryne and the Venus Anadyomene is a complete contrast, in attitude and costume, to the sturdy figure of Phidias: he appears as a young man with dark luxuriant hair, standing in an easy and *dégagé* attitude, the flowing lines into which his figure falls contrasting with the comparative angularity and squareness of the other figure, and the costume presenting warm and glowing colours, in which orange and crimson predominate. He holds in his hand a picture of Venus. There is admirable artistic thought and feeling in these two figures, which are executed, the one in English glass mosaic, and the other in Salviati's glass mosaic. Comparing those panels which have been executed in glass and those that

are in terra-cotta mosaic, of which there are several, it is difficult to say that either is in any marked degree superior to the other in effect; indeed, at the ordinary distance the difference is hardly perceptible, except when the spectator stands so as to view the surface at an acute angle (when nearly under the picture, for instance), when the contrast between the dead surface of the terra-cotta mosaic and the glitter of the glass becomes apparent. On the whole, perhaps, the slight lustre from the glass mosaic is an advantage to the decorative effect. Next come Mr. Leighton's two figures of "Nicolo Pisano" and "Cimabue," of which the first, in a long red gown, and holding a small bronze image, presents no striking individuality; the second is a very characteristic figure in costume and pose, and is interesting as showing how faithfully the artist has kept to that ideal of the forerunner of the Renaissance painters which he formed years ago when he painted his first important work the "Procession of the Madonna." Whether one can altogether admire the figure, so curiously spread out as it appears to be above by means of the short cloak, and narrowed to the utmost at the base by the position of the feet, is a question, and the white dress has rather a staring and bald effect. The two figures, however, like those of Mr. Poynter, contrast well. Mr. Burchett's figure of "Torrel," which follows next, has considerable power in regard to drawing and pose, but the colour is far too dingy and heavy, more especially for mosaic work, which requires decided tones of colour for decorative effect, an object which should never be lost sight of in mosaic. The companion figure of "Goujon," to which no designer's name is attached, has colour enough to render the deficiency of the other picture the more marked; the attitude is easy and graceful. "William of Wykeham" is a figure in robes and mitre, and with a crozier, and that is pretty nearly all that can be said; and "Giotto" (no designer's name) is represented in his sheep-keeping days, with a wide-brimmed straw hat, and a cloak looking the worse for wear, and (like the bishop) he also holds his crook. The figure is certainly not effective as a mosaic design; and Giotto deserved to be treated also as a person of more importance than is given to him here. The figure of "Ghiberti" (anonymous) is not fortunate: his action suggests that he has some good patterns to show, and represents a firm of dealers in ornamental and artistic metal work. His companion, "Fra Angelico," has fal'en into congenial hands in being entrusted to Mr. Cope, whose quiet, subdued, and reflective style the figure of the saintly painter, with face upturned as if seeking inspiration, well illustrates; there is a fine sway and flow of line in the composition. The portraits of "Donatello" and "Gozzoli," by Messrs. Redgrave and Armitage respectively, form, whether intentionally or not, as odd and marked a contrast as could well be seen; the sculptor of St. George being represented by a figure appropriately bright in costume and energetic in pose, to which Gozzoli's wizened face and stiff figure serve as an admirable foil. "Della Robbia," in the next compartment, is a heavy and not interesting figure, and Mr. F. R. Pickersgill's "Mantegna," next to it, is disappointing, seeming deficient in the dignity and grandeur of style we naturally associate with Mantegna, in spite of the long cloak which envelopes the figure, and which requires more breaking up and arrangement, as a piece of drapery, to be effective. Next to this is what we should call without doubt the most artistic and effective design of the collection, that of "Giorgione," by Mr. Val Prinsep. A close-fitting dress, very effective in design and colour, allows the figure to be freely seen; the artist stands sideways to the spectator, palette and maulstick in hand; the broadly-striped trousers are not only pictorially effective, but the stripes give the means of indicating the contours, by their slight turns and twists, to an extent which mere shading can hardly accomplish in mosaic. This is quite an artist's figure, in idea and costume, and does high credit to its designer. The figure of "Francesco d'Ulma," by Mr. Westlake, concludes the series on the east wall rather poorly. We presume those who placed the figure here knew who Francesco d'Ulma was. Jacobus von Ulm, otherwise called Giacomo d'Ulma, we know of as an artist in stained glass in Germany in the fifteenth century; but of Francesco d'Ulma we know not, and biographical dictionaries give no word of his existence. Has there been a mistake in the name? The figure is in the dress of a monk, examining a piece of stained glass.

On the western side some of the greatest names in painting are not very happily illustrated. We commence with "Leonardo" and "Raffaelle," of whom the former, as portrayed here, is but a kind of lean and slippered figure, with little dignity or impressiveness. In the figure of Raffaelle the drapery is finely treated, in long sweeping lines, giving movement to the figure; but the colour is not fortunate, and the face lacks brightness and expression. This can only be considered a very insufficient treatment of so beautiful a subject. These designs, which are unnamed, are, we presume, "home-made." In the next panel Mr. Yeames has given us his idea of "Torregiano," who stands heavily robed, mallet in hand, and with a fearless and self-confident action in keeping with his character, though not presenting the aspect of the bully which he is commonly considered to have been, in virtue of his assault and battery of a greater artist. Mr. W. B. Scott's "Peter Vischer" groups with this, and is taken in costume and attitude, if we mistake not, from an historical portrait, either in painting or sculpture. Following these are "Luini" and "Blondel": the former being the executed mosaic of one of the cartoons before alluded to as temporarily placed in niches on the east side; it strikes us as a weak and mannered figure. That of Blondel is much more effective in attitude and in the disposal of the drapery; but we can discover no certain indication as to which of the several owners of the name known in art-history is here represented; whether it is one of the two architects, or whether it be Jean François Blondel, noted for his engravings and etchings; we incline to suppose the latter. The figure of "Velasquez" which follows is not unlike his own representation of himself in one of his pictures, from which it is taken; but as a single figure in a panel it is hardly effective. The companion figure of "Maestro Giorgio," if we mistake not, was designed by Mr. Hart, and was exhibited in one of the International Exhibitions: it is marked by considerable individuality of treatment in attitude and expression, and the colour is rich and effective. How many visitors to the "South Court," we wonder, know who "Maestro Giorgio" was? Well, he was an artist in jewelry and silversmith's work, and is appropriately represented holding up a specimen of his workmanship to the light to examine it more closely; but it seems rather singular to find him here in a list from which Cellini is absent. Mr. Yeames's "Holbein," in his long blue robe, looks sturdy, pleasant, and matter-of-fact, and would make a very good companion, in style and character, to one of his own portraits. The "Michelangelo" which follows it we repudiate utterly; the figure is so posed as to make it look short,—a great mistake for decorative painting, especially as seen from below; and altogether it is an awkward-looking and uninteresting figure, quite unworthy of its subject. Nor can we feel much satisfied with Mr. Watts's "Titian"; the head appears to us to be too large, if we accept Titian's own representations of himself as correct, and there is a stiffness in the attitude not, to our thinking, in accordance with the traditions of the painter's courtly habits and patrician manner of life. Mr. Townroe's "Palissy" is a good figure; we alluded above to its singular unsuitability as a next-door neighbour to Titian. "Inigo Jones," by Mr. Morgan, is a fine commanding figure, which architects may contemplate with pleasure, as that of a worthy representative of their profession; and "Gibbons," who succeeds him, is made as much of, perhaps, as is possible with a costume which lends itself so very ill to mosaic design. Then we come to architecture again in the portrait of "Wren," designed by Mr. Eyre Crowe, and in which the ease of manner and the slight bend of the figure, as if engaged in paying some courtesy by speech or manner, not only symbolise very pleasantly what is on record of the amiable character of "the Surveyor," but also form a very effective contrast with the Inigo Jones portrait just mentioned. "Hogarth," by the same artist, is equally characteristic in treatment; the well-known broad face upturned, and the legs crossed in a careless and awkward manner, suitable enough to the artist who asserted that he knew the "line of beauty" so well, in theory, but could never carry it into practice. The inevitable dog appears of course. The "Sir Joshua" of Mr. Phillips is not a very satisfactory representation of the courtly P.R.A.; the action is peculiar, rather wanting repose, and not explaining itself quite; and this figure, again, appears to us too short. We finish the series with the only figure in the costume of the present day, that of the veteran "Mulready," by Mr. Barwell; the dress is certainly not adapted for decorative effect, but the figure, holding a drawing for examination by the opposite corners (which the artist's friends remember as "his habit when he lived"), is very good and truthful in attitude and expression, and strikes us as one of the most successful on this side of the room.

It is a pity, as it seems to us, that a desire to introduce representatives of all branches of art should have led to the filling up of some of this limited number of panels with representations of those whose names are without general fame, and with whose portraits, true or imaginary, no great general interest could be connected. And we must think that the artistic power and interest of the designs themselves are very unequal, and that not a few niches might be advantageously re-filled, when opportunity serves, with work of a higher and more lasting interest.

THE QUEEN ANNE AND OTHER FORMS OF FREE CLASSIC ARCHITECTURE.

ARCHITECTURAL ASSOCIATION.

AT an ordinary general meeting, held on Friday evening, the 19th inst., Mr. G. H. Birch in the chair, Mr. J. Young was elected a member.

Votes of thanks were passed to Mr. Ewan Christian and the Rev. D. Eldsdale for the convenience offered to the members on the occasion of a recent visit to the Church of St. John the Divine, Kennington.

The President stated that he had received a communication from Mr. A. Marks to the effect that the Oxford Arms, Paternoster-row, was advertised for sale by auction, intimating that photographs of the building, one of the few old hostelries in London now remaining, would be on sale: four views would be taken, and the cost would not exceed 10s. 6d. per set.

It was also announced that the Secretary of the Statistical Society had stated, in reference to the Howard Medal of 1875, that the title of the essay was "The State of the Dwellings of the Poor in the districts of England, with special regard to the Improvements that have taken place since the Middle of the Eighteenth Century, and their Influences on the Health and Morals of the Inmates."

Mr. J. J. Stevenson then read a paper, entitled "Queen Anne and other Forms of Free Classic Architecture." In the course of his remarks he said that their modern architecture had lately been abused on the ground that it did not progress like engineering or shipbuilding, which continually produced new developments different from anything the world had seen before; but contented itself with reviving and reproducing the results of the art some centuries old. The assertion was, to a great extent, true; but it did not follow, as those who made it would imply, that this was not the best and indeed the only course open to them. For there was this difference between architecture and engineering, or shipbuilding, that in these latter there was no limit to the progress, or at least they had not as yet attained to the limit. They had lately immensely improved, and were constantly improving, the sailing qualities of their vessels as regarded speed; and they would probably never be able to assert that they attained the utmost speed possible. But architecture, in so far as it ministered to their taste and their love of the beautiful, might have already solved its problems. It might continue to change after it had, in pursuing any course, reached the highest perfection possible for it in that course. From the necessity for change, and love of nobility implanted in man, it must continually change; but the change in taste was not necessarily in advance; on the contrary, history told them that it was frequently retrogression and deterioration. Greek sculpture could not go on advancing in refinement and beauty for ever. Its period of highest development was limited to fifty,—in some cities to thirty,—years. The great Italian schools of painting gradually reached a climax from which they gradually declined. Gothic architecture finished itself in Beauvais Cathedral in its supreme effort after height and tenuity of construction. There was no reason why the proportion and beauty of their rooms should continually go on improving, or their ornamentation become daily more refined and beautiful, any more than that a people should constantly advance in courtliness of manners, or strictness of morals, or religious observance. On the contrary, it might be a characteristic of

an age, and the truest sign of its advancement, to look back with admiration on some former time to find its life in reviving the sentiments and feelings of that time, and adopting the forms in which they found expression. Such a movement, therefore, as the Gothic revival was perfectly natural and legitimate, and it was unavoidable that every one should be affected by it who was not too ignorant or too dull to be influenced by the best thought of his time. Such a revival adopted so much of the past sentiments and modes of thought as was consistent with the present life; and so the earliest architecture of the Gothic revival at Strawberry Hill and Abbotsford was a mere outside show of castellated Gothic features thrown over the common vernacular, and not the natural outgrowth of that. It was a mere sentiment, which did not really affect the ordinary daily life, and perhaps truly expressed the extent to which the romantic revival had influenced modern times. But whether or not the early attempts at Gothic,—a mere surface sentiment on the ordinary life,—truly represented the depth of the Gothic revival, it was impossible that the revival could rest content with them. It was inevitable that, with the study of old work which everywhere commenced, and the consequent perception of its logical consistency and beauty, the imperfection and absurdity of such representations of it should be felt. Architects had shown the way by a few original men who had learnt its secret, drunk in its spirit, and expressed in new works, which it was false to say were mere copies of old. It was a curious phenomenon, showing how truly Gothic had become a part of its admirers, that in the minds of most of them it went through the same natural changes as in its original growth of Early English or Early French, of Decorated, and now with some, Perpendicular. In all these styles, the Gothic revival had achieved marked success in churches, and it was now established in the proper style in which to build places of worship, to whatever sect belonging. It embodied traditional sentiments and feelings which still influenced them. Another reason why it would continue to be used for churches, even though some other style might be used in houses, was that constructively, it was suited for them, but not for ordinary dwelling-houses. By Gothic he understood the development of arched construction in the pointed arch, in vaulting, and in traceried windows, which the architectural genius of the Middle Ages produced. The progress of the style was a development of these features, none of which had a natural place in modern houses. They were suitable for such buildings as churches or great halls; but not for houses divided into a number of comparatively low stories; and, therefore, even in the Middle Age houses, the style never properly showed its peculiar and characteristic features. Gothic architecture did not grow up as the expression of domestic wants, and in attempting to express them, even in Mediæval times, could not properly make use of its most characteristic features. Hence, in this country in the Tudor age, Gothic architecture developed into Perpendicular; in France, at the same period, into the earlier style of Francis I.; and then it gave place to Classic. It was, therefore, to be expected that in its late revival difficulty should have been found in applying the style to domestic buildings,—a difficulty increased by the fact that Gothic houses were an innovation in established custom, which affected every hour of the life, while Gothic churches continued in use from old time, and had been familiar to every worshipper. From its nature unsuitable for domestic purposes, and a serious innovation on established habits, Gothic architecture in the late revival, while appropriating the whole field of ecclesiastical, had little affected domestic buildings. He believed that by using these styles for houses they better expressed the true spirit of Gothic than by copying for this purpose Gothic forms. One chief characteristic of the Gothic revival was a turning with interest to the past, and finding in it elements suitable for their own use, which to their loss had been neglected and lost sight of. Now, while for churches the revival of the past meant the revival of the thirteenth and fourteenth century architecture, while they found these perfectly suitable for modern use, it was not so as regarded houses. The Italian cities, whose period of greatest power and wealth, even its Middle Ages, possessed still some noble Gothic palaces; but in North Europe, and in this country especially, the *Renaissance* seemed to have brought with it an increased material well-being as regarded dwelling-houses, which had caused the replacement of the earlier Gothic houses by new ones of that date. The fact that Middle Age houses were mostly of wooden construction, and therefore more perishable than stone or brick, might all account for their disappearance. The revived use of brick, so strangely neglected in this country during the Middle Ages for the older wooden houses, had left their old towns, not Gothic but *Renaissance* in style; and, for a revival of old brick architecture, sent them to a much later period than the Middle Ages. With the exception of a few unimportant and mutilated relics, there were no remains left to turn to for guidance, and an unprejudiced study of these remains would, he felt, surely convince them that they were the products of habits and manners which were not those of their day. That turning to the past, therefore, which was a main feature of the Gothic revival, found food for itself, not in Mediæval but in *Renaissance* Domestic architecture. Gothic was developed originally for ecclesiastical not domestic buildings, and, when applied in the late revival to the latter, a new development of the style had to be created, which, consequently, had more of modern than ancient character, and, somehow, had adopted the worst characteristics of modern architecture, — pretentiousness, flashiness, coarseness, and loudness. This was one cause why those who loved old Gothic had become disgusted with modern Domestic Gothic, and had abandoned it for the free Classic styles, in which they found the simplicity and quietness of old work, its picturesqueness and quaintness, its want of formality and freedom from restraint, and especially that flavoured of the past, the returning to which was a chief motive power of the Gothic revival. One of the most powerful arguments in favour of Gothic, as opposed to the Classic, which prevailed at the time of its revival, was its freedom and pliability; that it was, not like Classic, governed by rules, which it insisted upon till it crushed out individuality and life. In abolishing this tyranny, the Gothic revival did good service. But this freedom of Gothic the free Classic styles which succeeded it inherited. Symmetry, though aimed at as a rule, was not essential, and regularity was freely abandoned. One of the principles which the Gothic revival insisted on with energy and eloquence, was the necessity of *truth* in architecture; that the construction should be made apparent and beautiful, and should not be hidden under some fair-seeming mask, which had no affinity with it, or even represented a different mode of construction. And in this sense a reform was certainly needed, which the Gothic revival did a good service in promoting. But this element of truth was not the peculiar possession of Gothic architecture, and, alas! modern Gothic has too often found the temptations of a deceitful age too strong for it, and had fallen into the sins of the style it attempted to displace. The principle of absolute truth in architecture had to bend to many modifications in actual practice. Domestic architecture must be pleasing. Modern Gothic had rightly, he thought, modified its high pretensions in regard to truth both of material and construction. Still, to the noblest architecture, which could seldom be domestic architecture, both were essential; but if they carried them out in modern times, the result would not be Gothic, either modern or ancient. He held that the free Classic styles of architecture, of which "Queen Anne" was one of the least important, though it had given its name to the recent movement among Gothic architects in their favour, furnished a means of expressing the most valuable characteristics of the Gothic revival, and that it was natural and inevitable that those who, imbued with its spirit, had lived over again in their own lives the successive phases of its historical development, should make the same advance from them which had been made in the Renaissance age. For there were elements of modern thought and sentiment which the Mediæval revival did not express. As to the Gothic age, formerly the Renaissance succeeded which sympathised with Classic art in its expression of the beauty, and richness, and fulness of natural life, which found expression in the gorgeous colouring of Titian, so the Mediævalism of the day had been followed by the revival of a similar spirit, which, in the province of architecture retaining much that it had learned from Gothic, sought besides expression of modern feelings and convenience, which it found in the various developments of the free Classic styles. His object in this paper had been to explain the fact, of which there was sufficient evidence, that these free Classic styles were now practised by architects, who, not long ago, were such exclusive admirers of Gothic that they could sympathise with Mr. Ruskin's denunciations of the foul tide of the Renaissance. He had no desire, even if it were practicable, that any one who loved and admired Gothic architecture, and felt that it was the style which best expressed his thoughts, should give up practising it, and, from grounds of reason or logic, endeavour to adopt a style which he thought ugly, or did not care for. He would think that a misfortune to their art, for it mattered little what style was used provided the architect understood it, and could use it correctly; and, in using a style which a man admired and loved, he would best give expression to those qualities which gave architecture its value,—beauty and refinement, picturesqueness and grandeur, and nobleness. Therefore, if they loved Gothic, they need not abandon it, but should endeavour to master its principles and forms. Having no desire to urge the adoption of these styles, he had not attempted to defend them from the faults of which architectural critics accused them. They were not faultless,—far from it,—they had not the purity of Greek, or of thirteenth-century Gothic; but they appealed to him as a true expression of the domestic life of the present time, when raised above commonplace; and, touched by art, to him they were living styles, and, therefore, better than the purest Greek or Gothic, if it was not the natural outcome of their life and daily thoughts. Though he had no wish to argue in favour of the general adoption of these styles, he could not help mentioning one practical advantage in employing them, namely, that fundamentally in their systems of construction, in their forms of moulding, they were the same as the common vernacular style, which every workman had been apprenticed to, had been used to work in, and consequently understood. To produce good architecture generally throughout the country, it was essential that those who guided the art should choose paths where the workman could follow; for, as it had been so it would be, a large proportion of the building of the country would be done by builders and workmen without architects. In conclusion, he said that the free Classic styles were the vernacular architecture, with a spark of life added, —a touch of interest and art. Dared they hope that the spark might revivify the mass, that the interest and the guidance of those who cared for art might give artistic life to the current commonplace traditions, that they might see again a living national architecture?

Mr. L. W. Ridge said that at the next meeting he was to read a paper on the same subject as Mr. Stevenson's. He had a distinct notion of treating the matter in regard to the influence on the Gothic school, but desired to lay aside the idea that he was necessarily taking a view of the subject antagonistic to Mr. Stevenson, for he believed that no essential difference of opinion existed between them, and felt that it would be the greatest mistake if the profession were divided in opinion upon the subject,—a mistake from which the profession had suffered many years in consequence of the division between the Gothic and the Classic schools. In one respect he shared the admiration of Mr. Stevenson for the free Classic styles, and that was because they were free, not because they were Classic.

Mr. E. J. Tarver considered that great watchfulness was necessary in the use of the Queen Anne style for the exterior; he had found it of greater use internally.

Mr. R. Phené Spiers said he considered that the views put forward by Mr. Stevenson were somewhat of a novel and startling character. Speaking from personal experience, Mr. Spiers said he might mention that about twelve years ago he returned from France imbued with strong Classical notions, and a great dislike to anything Gothic. He had to fight his way for years with students who were strongly imbued with Gothic predilections, and he experienced a difficulty in finding arguments in support of his views, seeing that he had been educated in argument in France, where they had it all their own way. But now the tide was turned, and if the present question had assumed the form of general discussion, he should have felt disposed to take up the style of the Gothic in preference to the Classic. He differed from Mr. Stevenson in many respects, and especially with regard to the view he took of the Perpendicular style, which, Mr. Spiers was of opinion, was first taken up by the modern Gothic revivalists, the purer forms

being better fitted for revival; so much so, that, if it had been possible, the Norman structure would have been raised as being of a still purer type; but it was out of the question, on account of the thickness of the piers and smallness of the windows. Supposing Mr. Stevenson's view correct, what was to become of all the designs of the Elizabethan and Jacobean periods? He was at a loss to understand how long the Queen Anne movement was going to last. But what he feared the most, in connexion with the Queen Anne movement, was its baneful influence over students. If the Classic architecture was to be learnt at all, it must be learnt by going back to the earlier elementary examples, and it was impossible to learn what really were the principles of that style by taking decadent and debased examples of Queen Anne, as exemplified in Queen Anne. He maintained that the method adopted in the French school, of imparting a knowledge of Classic architecture, was the proper one, the students being thoroughly grounded in Classic principles. In England, some of the best architects were not brought up in the Gothic school; and he was sure that no student, starting with Queen Anne, could meet with the success of Mr. Norman Shaw. Mr. Stevenson had recommended Queen Anne on the score of convenience, and its applicability to domestic architecture; but they wanted principles on which to reason, such principles being entirely wanting in the Queen Anne style. In conclusion, he confessed his surprise at the views enunciated by a gentleman who was formerly attached to the Gothic school.

Mr. T. B. Blashill said that whatever fault might be found with Mr. Stevenson, they must at least give him credit for consistency. As in dress so in architecture, there were changes of fashion, and so it was incumbent upon them to suit the tastes, and endeavour to meet the wants of the times. Instead of aiming at the reproduction of what was antiquated and out of fashion, students ought to have impressed upon them the necessity and importance of complying with the requirements of the age, the want of aptitude in that direction being so often charged against architects. The "Queen Anne" style was merely a change of fashion, not of style; it was abject copyism, not of beauty but of ugliness. The reason they had the "Queen Anne" style was on account of its adaptability to domestic requirements; and he argued with Mr. Stevenson that the Gothic was an ecclesiastical style, and not adapted to ordinary requirements. Architects had no alternative but to suit the convenience of their clients, and, in spite of want of uniformity, the buildings must be adapted to the purpose for which they were designed. Students should keep before their minds the necessity of fitting their architecture to the period of the people, and not be continually thinking of the old styles. They must think more of fitting clients with the buildings they wanted, and look more to the actual wants of the period.

Mr. Stevenson, in replying, said that he had no wish to persuade one man to take up one style of architecture more than another, but had merely attempted an explanation of how certain things had come about, and the style had been manifested. He did not deny the possibility of having laid too much stress on the sequence of styles of Gothic taken up in the revival, yet was the style more nearly akin to Classic. He considered that those who had been trained with Gothic freedom were not so successful as those who had been brought up steadily by going through the five orders. It was desirable that the students should, in the first instance, be made acquainted with those laws and principles which had been ascertained and settled by human experience, and which were, to some extent, embodied in the orders. If a style was perfected, it was better to follow it than to make futile attempts at originality.

Machinery Accident at Halifax.—On the 16th inst. an accident occurred at the Saw Mills of Messrs. J. Charnock & Sons, Pellow-lane, Halifax. About eight o'clock John Poulter, aged 40, of 30, Brook-street, Mount-pleasant, went into the cellar beneath the room where the saws work, for the purpose of mending a strap; and, having done this, he was putting the strap on the drum, when his leg was caught in the machinery, and he was whirled round the shaft at a terrific speed. He was instantly killed, and as the shaft was nearly close to the ground his body was almost torn to pieces.

THE ADULTERATION OF FOOD AND DRUGS BILL.

THE Bill brought in to repeal the Adulteration of Food Acts is so strikingly reactionary as to demand the careful attention of all who are interested in the subject, and would maintain any of the advantages which the existing Acts afford. There may be weak points in these, and individuals may find some of the clauses operate harshly. The experience of some of those who have administered the law under these might be usefully appealed to with a view to improvement; but to get rid of the Acts altogether, and substitute so inefficient a measure as that now before us is most undesirable, and would be very opposed to the public welfare. The nature of the Bill may be shown in a few lines. Clause 4 provides that "no person shall *knowingly* mix, colour," &c. Clause 6 says "no person shall *knowingly* sell any article of food, or any drug, which is not of the nature and quality of the article demanded," &c., with certain exceptions, and amongst the exceptions appears "where, according to the usage of trade, it is sold in a mixed state." And so it goes on, and we maintain that under such clauses it would scarcely be possible to obtain a conviction. Further, the arrangements for obtaining an analysis are much too complicated.

FALL OF HOUSES.

THREE large houses in course of erection, in a street leading out of Earl's-court-road, Kensington, fell to the ground, just before the men left work, on Wednesday in last week. They were up, nearly ready for the roof. Two or three of the bricklayers were hurt, but, we believe, not seriously. Our object in mentioning the disaster is not to bring any increase of trouble to the parties concerned, but to lead builders to think of what may be the result of haste, inattention, or cheeseparing. The whole seems to have gone down like a house of cards. In five minutes, what was a good property had become a heap of rubbish. A slip in the foundation of one of the party-walls, the predominance of bats over bricks, the fact that there was no dangerous excess of lime in the mortar, and the occurrence of two or three freezing nights, may or may not be at the root of the accident. Anyhow, other builders (and surveyors to estates) will do well to remember that such things will happen under certain conditions; and, having that knowledge, act accordingly. As long as walls stand, a speculative builder usually considers it is quite impossible they can fall. It is only when they are in a heap at his feet that he says, "What a fool I was."

IMPROVED DWELLINGS AND THEIR BENEFICIAL EFFECT.

AT the last ordinary meeting of the Statistical Society, Mr. C. Gatliff read a paper on "Improved Dwellings, and their Beneficial Effect on Health and Morals, with Suggestions for their Extension." He said that in the year 1841 an association was formed for building improved tenements for the working classes, with full compensation to the capitalist for the money invested. A favourable public feeling was created by the formation of this company (the Metropolitan Association for Improving the Dwellings of the Industrious Classes), and in 1843-4 and at subsequent periods other societies had been formed, till at the present time 7,558 improved dwellings, capable of containing a population of 36,078, had been erected at a cost of about 1,233,786*l*. Many of the associations had still considerable funds in hand, and were extending their operations, or were prepared to do so when suitable sites could be obtained at reasonable cost. From statistics which have been carefully compiled he could assert that the rate of mortality in the improved dwellings belonging to the Metropolitan Association during the last eight years had not exceeded 14 per 1,000, whereas the rate of mortality in the metropolis generally had been upwards of 24 per 1,000. At the same time an analysis of the causes of death compared very favourably with a similar table of the Registrar-General's, there being a much less proportion of deaths from zymotic and developmental diseases. The mortality among children under ten years of age was also but half the percentage which was noted among the general population of London. One material fact which had been elucidated in the erection of these buildings by the Metropolitan Association was the comparatively small space which they occupied, even if the large courtyards left for recreation and ventilation were included, as in Westminster, which is the most densely populated part of the metropolis, the population was 235 persons to the acre, while in the dwellings provided by the Metropolitan Association the average was 1,140 to the acre. It was obvious, therefore, that if the promoters of the various metropolitan improvements were compelled under their respective Acts of Parliament to reserve sites for improved dwellings in the immediate locality from which they displaced so many of the labouring population, such improvements might be carried on with great benefit to the working classes. In addition, however, to the great decrease in the rate of mortality and disease which was noticed in these model dwellings, the check given to immorality and crime formed an appreciable benefit, as the supervision carried on effectually cleared the building of all persons of bad character. In offering some suggestions for the extension of these improved tenements he (Mr. Gatliff) would remark that to facilitate the obtaining of sites the assistance of Parliament might be required to give compulsory powers to purchase and pull down many of the existing dens of disease and crime, and to erect improved houses in their place. He would vest the necessary powers for such works in the Metropolitan Board of Works and the Corporation of the City of London, and should an additional rate of 1d. or 2d. per pound be incurred by this action he considered that such additional charge would soon be amply recouped by a reduction in the rates at present occasioned by disease and crime. A rate of 1d. per pound on the rateable value of property in the metropolis would produce nearly 90,000*l*., or sufficient to pay the interest on a loan of two millions sterling, and to redeem the principal in forty years if the money was raised at 3½ per cent., and this sum of two millions if raised would remove many of the present disease-stricken courts and alleys, and would replace them by improved dwellings. The Public Works Loan Commissioners might also be empowered to make advances for such purposes at a reduced rate, and the scheme might be further assisted if the Government made it compulsory upon all the railway companies to carry working men at the rate of a penny for at least ten miles, as some were obliged to do at the present. With such an encouragement of cheap travelling a large number of working men would be induced to reside in improved dwellings erected a little way from town, and this would tend to reduce the overcrowding in London. He would further state that the erection of improved lodging-houses in the metropolis might be regarded as a safe investment, and in support of this he referred to the audited accounts of the Metropolitan Association for the last year, which showed a gross rent-roll of 12,257*l*. 5s., of which 12,101*l*. 1s. 3d. were actually received, leaving a deficiency of 156*l*. 3s. 9d. only of the gross income for unavoidable vacancies during changes among 706 weekly tenants, and during repairs of 3,032 rooms, and from all causes. He would, in conclusion, refer to a still less fortunate class of persons to that which occupied the present improved dwellings—persons who, from their small and precarious earnings, could not afford to pay the rents (varying from 2s. 6d. to 9s. 6d. per week) charged in such houses; and he felt that the greater the facilities which were given for the erection of improved dwellings in London the more would the lower classes benefit, as they would be relieved from their present overcrowded state.

THE COTTAGE HOMES OF ENGLAND.

THE JUNIOR PHILOSOPHICAL SOCIETY.

AT the ordinary meeting held on Friday, the 19th inst., at the rooms of the Society, No. 6a, Victoria-street, Westminster, a paper on "The Cottage Homes of England" was read by Mr. Francis Butler, member.

The paper dealt first with the history and condition of the cottagers themselves, from early times, touching also on the history of agriculture as far as was necessary.

The many and various points connected with cottage building were then taken in order,—the lecturer showing that if we wish to build cheaply and well we must build *naturally*—by conforming in nearly all cases to local style and workmanship, and also and perhaps chiefly to local materials—making of course such improvements as recent years have seen introduced, especially

with regard to the general plan and the number and disposition of the bed-rooms. The latter for an ordinary cottage should not be less than three in number.

The lecturer said that if these points were attended to the modern cottage—while being a better habitation, would also present the same satisfactory appearance in the landscape which the old cottage is so well known for.

The "cob" walls of Devon and elsewhere were shown to have advantages, and thatched roofs, while allowing of a natural and gradual system of ventilation, kept the interior of the cottage at a warmer and more even temperature than could be attained perhaps by any other form of roof.

The influence which the cottage exercises either for good or evil as an object in the landscape was illustrated by plans and sketches, and the absolute necessity of using the materials found on the site was again urged.

With regard to the all-important question of cost, Mr. Butler maintained that if the various points he had raised were attended to, cottages could be built so as to yield a fair return upon the outlay. A more important question now, perhaps, than formerly was, owing to various causes, the old ties which had bound the labourer and his forefathers; and which, if not altogether severed, would bind his children also to the one spot, seemed likely to be disturbed, thus creating in the minds of some landlords and employers a disposition to look at cottage building from a five or six per cent., instead of from the old point of view, which regarded the labourer more as one of the family.

As an illustration of the possibility of this class of building to return a fair interest on the amount expended, and also as offering a suggestion on the subject of accommodation, the lecturer showed a scheme for a co-operative Home for twelve or more single labourers, each having a separate bedroom in a building comprising a large common or club room, kitchens, washplaces, and lockers for the men; while outside were tool-sheds, workshops, and allotment-gardens; a skittle-alley also was not forgotten.

Inclusive of the cost of land, a return on the outlay was shown in this case of more than six per cent.

The President of the Society, Mr. Frank Clarkeson, F.G.S., expressed the thanks of the members generally to Mr. Butler for his paper, and discussion followed, in which Messrs. Willcocks, Hilder, Walmesley, Goodhart, Coombs, Bartlett, and others took part.

MARINE AQUARIUM FOR SCARBOROUGH.

A BILL is now before Parliament authorising the grant of powers to the Scarborough Marine Aquarium Company (Limited) for the purpose of acquiring a site for the construction of an aquarium, and other purposes, in the northern "Queen of Watering Places." The capital of the company, amounting to 37,500*l.*, has already been subscribed, and Parliamentary powers are needed for the alteration of certain roads by the company, and the construction of the aquarium on a site to be granted by the Corporation of Scarborough on the seashore. Under the contract with the Corporation the work must be completed ready for public use by the 1st day of November, 1876, and a minimum sum of 20,000*l.* is to be expended in its construction. The site is to be leased to the company for 999 years at a yearly rent of 200*l.* a year, and contains in the whole about 7,500 square yards. In addition to the aquarium there will be conservatories, ferneries, &c., a concert-room, and refreshment-room.

RAVENSTHORPE DRAINAGE.

THE main drainage works of the Ravensthorpe district being now in an advanced condition, the Local Board have instructed the engineer, Mr. Malcolm Paterson, to prepare a complete scheme for the drainage of the private streets, &c., which hitherto have been provided with merely temporary drains. In accordance with such instructions, Mr. Paterson attended at the last meeting of the Board, February 18, with the necessary plans and sections, together with a report describing the proposed scheme, as well as the existing sanitary condition of the district, and recommending that, if the consent of the owners of property can be secured, the Board do proceed to carry out the whole in one contract. The district is of a very flat nature, with a sandy alluvial subsoil, necessitating careful treatment in the execution of works of sewerage. The total cost of the main drainage works now nearly completed by the Board will amount to about £11,000. This includes cost of land and arbitration expenses, sewage pumping and precipitation works, storm overflow and main sewers, cost of superintending, &c. The length of private drains proposed to be carried out is about three miles.

THE CHANNEL TUNNEL.

THE Bill for granting Parliamentary powers to the Channel Tunnel Company (Limited) gives power to the company to acquire, under the Lands Clauses Act, within three years from the passing of the Act, certain lands, houses, and buildings at the foot of the cliff in St. Margaret's Bay, in the parish of St. Margaret-at-Cliffe, Kent, lying between Ness Point and Covey Burrow Point, and including the beach and foreshore abutting on the said lands.

MARKET HALL, CHESTERFIELD.

SOME time back, the corporation of Chesterfield purchased the Market Hall property, and Mr. J. Crossley, of Newark, has decorated it for them. The ceiling is divided into three large panels, the ground colour being a warm vellum; the centre of each panel has a pendant of gas, round which is a floriated ornament conventionally treated in various colours. The panels are divided by an orange-coloured border, with an interlaced ornament in brown, and divided by lines in gold colour and a cresting of warm orange and pink. The cove, 7 ft. deep, has a fluted ornament in rich brown, with white and gold coloured ornaments upon it, and out of which spring the vine and rose alternately, also conventionally treated. The cornice below this is picked out in vellum, neutral green, crimson and gold, with a fringe of soft warm red and gold colour. The wall beneath is divided into square and semi-circular panels, which are papered with an ornamented raised paper, and painted a warm vellum colour, with a soft red border. The sunk part of the moulding round the panel is painted a turquoise blue, with a small pale blue ornament, and raised gold beads. The upper circular part of four panels is a soft pale pink, upon which is painted arabesque ornament in various colours, springing from a centre medallion, upon three of which are painted female heads, representing Music, Science, and the Drama. In the fourth, facing the entrance, are painted the borough arms. These medallions are well painted, and have a very charming effect. The styles round the panels are a greenish gray. The lower portion of the wall or dado is tiled with Minton tiles, the colour of the diaper being black, soft deep slate, and gold colour, with a rich border in various colours. The windows, which are circular-headed, are painted a copper colour. The mouldings around are vellum, with a blue border and white ornament. The doors and other woodwork, including the stage, are also painted copper colour, each panel of the door and stage having a border of black, with a gold ornament, the frames round the doors having an ornament in black and gold. The work has been done under the direction of Mr. S. Rollinson, architect, Chesterfield.

COMPETITIONS: *e.g.*, THE WEST HERTS INFIRMARY.

SIR,—Is there not some one able to remonstrate effectively with the Governors of the West Herts Infirmary as to the course they propose to take? Can they hope for an effective architectural competition under the following circumstances?

The advertisement and the rough specification recently issued give the required accommodation at forty in-patients, at least eleven resident officials, an out-patient department, dispensary, &c., and proper outbuildings. Plans and elevations, and estimates of cost for these not inconsiderable buildings are invited from architects.

1. The drawings submitted are to remain the property of the Governors.

2. The Governors do not bind themselves to accept any one of the competing designs.

3. There is no promise to appoint a professional referee.

4. The only premiums offered are 50*l.* and 30*l.*, and nothing is said about the carrying out of the work.

It would be unfair to our profession as a body to indulge in reproaches, or even in ridicule, of propositions of this kind. No greater mistake could be made by any one than to suppose that any thoroughly competent man will contemplate such a venture at all seriously.

But should not some good friend of the Infirmary make clear to the governors that they appear to be misusing the funds entrusted to them?—throwing away in a useless,—necessarily inefficient,—competition, money that might serve useful ends?

There seem to be only three explanations possible, and they all point to a (however unintentional) misapplication of the subscribers' money:—

1. That some architect has been virtually selected by some of the governors, and that a *sham* competition has been devised in order that he may win an obvious victory, and secure and justify his unquestioned nomination for carrying out the works.

2. Or that some architect has been actually selected; and the governors desire to supplement his knowledge of the neighbourhood by ideas from a distance.

3. Or that the governors are acting through ignorance of building matters, and of the architectural profession. They cannot know that the terms of their competition are out of the domain of all reasonable consideration, and that the Royal Institute of British Architects is certain to explain this to them forthwith.

Before concluding, may I venture to ask what further action the Institute is going to take about monstrous competitions. When at the second conference I voted steadily for professional interests and reasonable payments, and assisted thus in framing many excellent rules for guiding competitors and competition committees, I had an impression that all the work was serious. Professional union was to bear fruit to every one's satisfaction. I thought that shortly no competition would be advertised without conformity to our rules; or, if by chance some remote district betrayed ignorance of our professional laws, a written communication or a personal interview would, as a matter of course, bring unsatisfactory conditions into harmony with the general lines laid down by the professional parliament. But, sir, the advertising columns of your journal often read just as they did before all those present and represented at the Congress were bound in honour to stand by the regulations determined on there. . . . . As I take it, these advertisements represent the Institute failures, where suggestions and the warning voice of that professional body have been unheeded. Can no remedy be devised for such cases? Would it be unfair, for instance, for the Institute to advertise the names of the competitors in every shabby competition, in order thus to show the profession and the public that those who are pledged to keep faith with one another uniformly do so? The *guerillas* would have little reasonable ground of complaint; they could only desire such records of their actions as pleasant uncostly advertisements, differing in many ways, as each of them must, from

A MEMBER OF THE CONFERENCE OF ARCHITECTS.

International Horticultural Exhibition at Cologne.—An International Horticultural Exhibition is to be opened on the 25th of August till the 26th of September, 1875, in the grounds of the Flora, Cologne. Her Majesty the Empress and Queen of Prussia, together with the Crown Prince, encourage the scheme. Negotiations for the nomination of commissioners from foreign Governments have already begun by the Minister of Agricultural Affairs. Under the head of garden architecture it is to include:—Plans and models of gardens, pleasure-grounds, and parks of all kinds; glass-houses of all kinds—their heating, ventilation, shade and cover contrivances; summer-houses, pavilions, verandahs, arbours, tents, marquees, as also ground-floors in squares, tiles, mosaic, cement, asphalte, or other materials; garden furniture; bridges, wharfs, ferries, aviaries, swan and duck houses, &c.; construction of roads and walks; rock, tunnel, and grotto work; fences, garden-gates, espaliers of various kinds; models and plans of the constructions specified in list *b* and *h*, together with an estimate of prices.

PROFESSOR BARRY'S LECTURES AT THE ROYAL ACADEMY.

No. 1.*

IN opening a new series of lectures, it is a pleasure to me to meet once more the students of the Royal Academy, and particularly those devoted to the art of architecture,—an art so glorious and so full of interest.

Pleasure in so doing, however, is tempered largely with anxiety, lest from personal shortcomings, I should fail to do justice to so great a subject, and that, as a consequence, these lectures should be barren of good results upon your artistic progress.

In these days of copious writing, and unlimited talk on art and every other subject, the question must doubtless often occur to others, besides the students of the Royal Academy, "What is the use of lectures?" Not much, certainly, if the idea is that they will make artists. It was but lately that a well-known art-writer declined to give an isolated lecture, on the ground that no solid advantage could be conferred by it, and that by such lectures a mere superficial show of interest is often fostered, leading to shallow presumption and self-deceit.

Lectures to students, however, stand on a different footing. They are based on the assumption that study goes with them hand-in-hand, and that they are attended not as a mere dry form of mechanical duty, but with a *bonâ fide* desire of progress in that noble art to which, if he wish to succeed, the art-student must devote all his energy, powers, and industry. Where this is the case, he may find lectures of use as an aid and encouragement to studies pursued elsewhere, although taken in themselves, they can do little for him.

Lectures cannot, as I have said, make artists; for this purpose genius is required—the divine and incommunicable quality which is the gift of that Supreme Authority whence spring all good things. True genius will often disdain adventitious aid, but let no one delude himself by thinking that neglect of such assistance will bring him genius.

I dare say many excellent persons are somewhat perplexed at the utterances they read now and then on the subject of architecture—utterances distinguished by the utmost confidence, but unfortunately also by every species of discord; and it may perhaps occur to some of us that rash and hasty judgments would be less common, if the critic were aware that he could not venture to rely on the indifference or want of knowledge of his readers.

One of our first statesmen has recently told us that in England too little is thought of art, and that our countrymen would be the better for giving a freer scope to artistic influences. I think none can doubt the truth and wisdom of this opinion, an opinion which may possibly have been created, or strengthened by the official experience of its distinguished author.

To spread appreciation of art is the true way to encourage its progress, and in this will, I think, be found to reside the hope of architecture.

I sincerely trust that in the Royal Academy the art of architecture will never be thought a matter of indifference by those of you who are votaries of painting and sculpture, and, *vice versâ*, I hope our architectural students will gladly learn the lessons which you can teach them of the beauties of colour and form.

If therefore, discourses on art from this place can in any way strengthen the bonds of union among artists, and so nourish a spirit of mutual appreciation of each other's art, they may not have been given in vain.

To appreciate is to estimate, to value. This requires knowledge. No one can make an estimate while ignorant of the various circumstances which, taken together, affect the value of any article. You do not expect a teetotaller to be a connoisseur of wines, or a Hindoo to be a judge of skating.

I have on former occasions pointed out to you the complexity of our art, and the variety of the influences that have affected it at different times. It will therefore be apparent how difficult it must be fairly to appreciate its present position and prospects, however easy it may be to rush in, with a *cœur léger*, to announce crude ideas and startling theories.

Let us briefly examine this evening one of these theories, to which I referred, in passing, in one of my former lectures.

We are sometimes told that our art is in a state of decadence, and our architects inferior to their predecessors. Some of our grandest old buildings are pointed at, and we are asked to name any worthy modern competitors. Everything that is now done is said to be based on unsound principles, and therefore worthless, and our whole system is wrong. The architect is no longer to be the ruling mind of the work, and his place is to be taken by the master-workman, one of whose most conspicuous merits is to be, that he is not to work from drawings.

In expressing my dissent from the above doctrines, I have no desire to express perfect satisfaction at our present position. Those of you who may remember portions of my introductory lectures last year, will not need to be reminded of the anxieties I then expressed on this subject.

But before we embark in revolution, we may fairly ask who are to be our leaders, and what are the prospects of success. I may have a word or two to say on these points by-and-by.

In the mean time, it may be remarked, by way of consolation, that in no time or country have prophets of evil ever been wanting, and that in our own day every institution becomes in turn the theme of dismal vaticinations; so that if our architecture is not made an exception to this rule, we may at least find some comfort in being in good company.

If we receive without hesitation all the doctrines referred to, we shall have to confess to an almost universal deterioration. Art is dead, religion a form, public virtue extinct, the England of to-day a feeble remnant of departed greatness. I must decline to accept such pessimist conclusions, and prefer to inquire whether they are not as baseless in regard to our art, as I feel them to be in their general application.

Is our art, then, in a state of decadence? I doubt it much, in the face of the great revival which we of this generation have seen. I doubt it more when I look round on the works of the rising architects of the day. Putting out of the question those of us who have already achieved a reputation, whether of good or ill report, I can fearlessly assert, from my knowledge of the younger generation of architects, that there has never been a time in my recollection when they were more fully actuated by artistic aspirations, and thorough devotion to their noble calling.

To acknowledge the truth of this conclusion may be inconvenient to those who have too hastily committed themselves to the doctrine that "all is vanity"; but I am convinced that it will be recognised by calm and unprejudiced inquirers. We have been passing through a period of transition, a transition perhaps still incomplete; but the evidence around us on all sides is, I think, conclusive that our architects will be able to carry out satisfactorily any works that may be entrusted to them, and that when opportunities are offered, they will perform their task with at least as much ability as the members of other professions display in their several callings.

And here let me add a word as to the opportunities open to architects. This leads me directly to that question of public appreciation to which I have already referred. If the community is so apathetic or careless as to have no opinion on what is good or bad in architecture, it is not reasonable to charge upon architects the responsibility of the inevitable result.

We sometimes read in the public press advice on the construction of our houses, with vehement condemnation of architects on grounds for which they are far less responsible than the editor with his almost unlimited power of influence. Not one in a hundred of the habitations of this metropolis has had the advantages of architectural supervision, and the hundredth has probably been fettered in a variety of ways, such as local necessities, costs, or tenure of site.

The same thing may be said with reference to much that is at the present moment going on around us to the disfigurement of our thoroughfares and the vitiation of good taste. Far be it from me to deprecate criticism of such buildings, however severe it may be; but I would gladly see the responsibility for them fixed in the proper quarter.

If our public works are but too often feebly conceived, and imperfectly carried out, it should be remembered that architects are not responsible for public policy. Only the other day your late Professor of Architecture, from his chair as President of the Institute of Architects, felt it necessary to speak a few words of grave and pregnant warning on the unwisdom of a petty economy applied to a great public work now in progress. Such warnings would not be necessary if we found among our rulers, and in society the spirit of appreciation of art on which I am now insisting. Such a spirit would encourage and direct architects, and would be a source of advantage to the public.

But we are told that modern architecture fails to interest us when we compare it with the monuments of antiquity. No one has ever excelled the Parthenon, nor have our old cathedrals any modern rivals. Doubtless if this is true there is cause for serious reflection. If deficiencies exist, are they inherent, or derived from removable causes? May it not be that we shall have to take into account a great variety of circumstances before we can form a sound opinion on this point? Social and religious customs [in many cases become obsolete] must have their place in any review of the architectural past.

If it be a fact that ancient architecture is more interesting than modern work, it does not necessarily follow that it is the modern architect who is in fault. Take, for example, a great cathedral. It is probably a monument of the art of a long period, perhaps of several centuries. A great abbot began the crypt, a famous bishop completed the nave, a later chapter added the cloisters, and perhaps pulled down some of the former work to rebuild it in the fashion of the day.

Here we have a labour of love, pursued without regard to time or cost. If any member of the religious body interested had a special gift, we may be sure it was gladly offered for the service of the sanctuary. If any exceptional work of difficult elaboration was required, it would be delayed until the right man appeared to do it. There was no hurry, no insistance on cheapness before everything, no determination to cut down the plan to the barest requirements of necessity.

You will see at once how differently modern works are conducted, but it is not the architect alone who must bear the responsibility. He has to work under conditions imposed from without, and must do his best, in the circumstances in which he finds himself.

Before therefore we compare a modern building with an ancient monument, we must consider all the facts; we must not expect to find the same interest in a work of five years as in one of five hundred. We must not look for the charms of antiquity in a thing of yesterday. The archæological and antiquarian side of architecture is so fascinating, that a taste for it lends itself only too readily to a depreciation of the every-day work going on around us, and its exaggeration is therefore to be guarded against. I fancy many of our old favourites would fail to delight us, if we could see them clean and new with their mouldings and carvings fresh from the workman's chisel.

To weigh well these considerations is the task of appreciation in art, and without it, a fair comparison of architecture of different ages would seem to be impossible.

But we are told that all modern work is unsound in principle, and therefore worthless. Is this so? It is not very easy to define what are sound principles, except in the sense of their being the principles of the writer who uses the words. It reminds one of the saying that orthodoxy is my "doxy," and heterodoxy is other people's "doxy." Mr. Fergusson in his "History of Architecture," appears to regard the Reformation as the turning-point of modern architecture, for he says:—"It is perhaps not too much to say, that no perfectly truthful architectural building has been erected in Europe since the Reformation." And he proceeds to visit with impartial condemnation St. Peter's and St. Paul's, as well as what he calls our more recent "Gothic fashions."

What, then, are we to consider sound principles? If we are to neglect the teaching of antiquity in the search for a new style, unlike anything that has been seen before, we shall be seeking that which no age or country has ever found, and shall doom ourselves to inevitable disappointment. If novelty is to be the great desideratum we must at once cede the palm to the civil engineers, who have given us structures the like of which were assuredly never seen before.

The truth is that perfection, rather than novelty, should be the aim of the architect, and the search for perfection must be based on a knowledge of the past.

Take for example the Parthenon, perhaps the most famous building in the world for perfection of finish, and refinement of sculpture,

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* Delivered February 22nd.

curvatures, and mouldings. A recent critic says, truly enough, that for three centuries there had been a gradual and moderate improvement in the architecture of Greek temples. But the Greek temple is, as you may see for yourselves, one of the simplest of architectural designs. When once the general principle of the plan was fixed, in accordance with religious prescription, there was little or no room for architectural novelty, save in the details of capitals, columns, mouldings, and sculpture.

The Greeks, therefore, the most fastidious of critics, were content that there should be only a gradual and moderate improvement in architecture, spread over several centuries, although in other things we know they were eager for novelty, at least in their later days, when, as St. Paul tells us, they were ever inquiring for "some new thing."

We must remember that things may be new without being true, and original only in unprecedented ugliness.

The Mediæval architects seem to have had little dread of what we should call copying, their piers, mouldings, and details generally, and even their plans, being often similar to each other, during the several great periods of Mediæval architecture. Does this deprive their works of interest? I think not; there is always enough of local colour or peculiarity to prevent sameness, and to please the spectator. You need not, therefore, fear the reproach of "unsound principles" if you base your practice on the achievements of the past, provided you bring intelligence to your developments of them.

Whether you think that the art of Greece or the art of the Middle Ages is the purest and best, you will find that the road to success is through the study of beauty, simplicity, and a truthful freedom from affectation, and that those principles faithfully applied will lead to any novelty of treatment for which the circumstances of each case may naturally call. If you will bear this in mind, with a resolution ever to do your best, it will not, I think, be easy hereafter to argue that all modern work is worthless because constructed on unsound principles.

It is of little use, however, to dwell upon principles as the road to success, if we are wrong at starting, and there are those who tell us that this is the case.

An architect, according to these critics, is a mischievous surplusage, if not an impostor, and the first thing for us to do is to abolish architects. This will seem to many as promising a scheme as a suggestion to reconstruct the army by removing its officers. You will find the proposal, however, set forth in all its fulness in the pages of one of our principal reviews.

The argument first assumes that all modern work is bad, and then seeks to trace the cause to the existence of architects. Master-workmen, it contends, were ever the leaders in the arts, and the way to insure success now is to revert to the old system, and employ, not architects, but workmen, on our great works of architecture.

It is not quite clear how harmony is to be secured among the workmen, for I suppose each master-workman is only to understand his own trade, and is not to be "Jack-of-all-trades, and master of none"; but this would probably be thought a trifling difficulty in the way of a revolution, which we are told is the "only path" that leads to excellence in art, because in the master-workman we are to recognise the only real "hope of English architecture."

If we ask who and what is the master-workman, we are told that, in the language of Plato, "The master-workman does not work himself, but is the ruler of workmen"; that he was a simple workman in his origin, and probably by family descent; and that his duties were to "make the plan, arrange the elevations, and be, in fact, the foreman of the work."

It is argued from this definition of his duties, that he must always have been on the works, and it is affirmed, on authority which is far from clear, that Ictinus thus built the Parthenon. We are further asked to imagine a dozen architects employed in this way on the foundations of the New Law Courts [and I suppose any number of dozens more on the superstructure], in order that we may recognise the difference between the good old way and the degenerate customs of modern times.

That architects should be draughtsmen is denied. Callicrates and Ictinus, we are told, were architects of the Parthenon; but they worked under the orders of Phidias, who was appointed by Pericles director and overseer over all. It is contended that Phidias was only "a carver," although the "noblest of the workmen"; but how this is to be proved it is difficult to say, as it is also to recognise in the above description of his duties any great variation from those of an architect-in-chief at the present day.

We know how delicate are the curves and other refinements of the best Greek art, and we are asked to believe that these, as well as the beautiful details of Gothic churches are "the direct expression of the working men of various grades, but always present at the building."

It will be evident to you, that if this theory of the master-workman be good for anything, it must be made to apply to later works than the Greek temples, and we accordingly find it asserted that whether in Romanesque, Lombard, Byzantine, or Mediæval works, whatever is good, is due to the master-workman, whose thoughts were manifested as they arose, and whose "changes of detail or of plan were prompt, open, and decided"; by which we must conclude that it was a merit in the master-workman that he had no clear idea at the outset of what the work would be on its completion, and that he did not sit down and count the cost before he began to build.

It is curious to note that the propounder of this theory is so much in love with it, that he relates with satisfaction that Ædnothus, one of his model master-workmen, built a church-tower in the Isle of Ramsay, in Huntingdonshire, which, before it was finished, began to crack. It might at first sight be thought that this was not a very pleasant state of things; but it presents no difficulty to our author, who evidently considers it in some way a support to his argument.

He tells us "the labourers approached the towers by the roof; and going stoutly to work, razed it to the very ground, dug out the treacherous earth, made the foundation sure, and again 'rejoiced to see the daily progress of the work.'" Delighted with this result, he exclaims, "What a contrast, all this to our present condition and practice!"

If we ask what there was to cause this joyful exclamation, we are told that the nobleman who paid for the work was noted for "the sanctity of his deportment," that the Bishop "could make a plan," and that the builders were "twelve brethren in one village, who had cast behind their backs the lusts of the flesh, and were warmed with divine love."

Nevertheless, I should not advise any young architects of the present day to rely upon such reasons to justify him in building a tower of unsound construction, or to think that when it falls, his employers will delight in the daily progress of the work of rebuilding.

In the story quoted we are told this was the case. Indeed, the narrator seems so pleased with this pulling down, and building up again, that we almost expect to hear of a further catastrophe; and consequent increased delight with the progress of the third tower. He concludes his account by declaring that his retrospective view confirms the holy Oswald's prescient declaration, "Verily, this is another Eden, preordained for men destined for the highest heaven."

I have given you this story as much as possible in the words of the writer, as I do not wish to weaken them, but time would fail me to follow him into all his illustrations of his supposed universal theory.

If we ask how it came to pass that trouble entered into this architectural Eden, the answer given to us is that in Italy, five centuries ago, a draughtsman was employed to make designs for a "foolish work," and then began the "decadence of architecture." Who was this draughtsman? No other than Giotto. What was this "foolish work?" You will perhaps be surprised to hear it was the Campanile at Florence, a building which has been the admiration of ages for its architectural beauty. Many of you have probably seen this tower; all of you, I hope, will do so; and though there must of course be differences of opinion as to its merit, I venture to think that you will require a very high scale of excellence in the works approved by a critic, before you consent to submit yourselves to his judgment in condemnation of this architectural glory of fair Florence.

It is true that its censor is gracious enough to admit that it is saved from absolute debasement by the carving of Andrea Pisano, Lucca della Robbia, and Donatello; but this does not prevent the whole work from being "a folly," "without artistic growth," "a thorough modern work," "without life, or art relationship, or any influence in architectural development and history." Here, again, I use our author's words, that there may be no mistake as to his meaning.

Giotto's unpardonable sin was then, it seems, that he agreed to be the draughtsman, or, as we should say, the architect of a tower which the Florentines had determined should "exceed in magnificence, height, and excellence of workmanship, whatever of the kind had been achieved by Greeks and Romans." "Like Phidias, as the greatest of the workmen, he directed all, and was overseer of all; and yet the building had great artists of the works." A great error, truly, in the eyes of the critic, who condemns him so mercilessly for breaking into the paradise before pictured of the master workmen, men destined for the highest heaven!

After this severe condemnation, however, we are a little surprised to read in the next paragraph, "But Giotto was a real 'master-workman,' and himself assisted in the sculptured decoration of the tower." Can it be, therefore, that his crowning error was that the tower stood, and if he had let it down as Ædnothus did his work, and had called in the Florentines to rejoice with him on the daily progress of putting it up again, he might have been more leniently dealt with? As, however, he was undoubtedly guilty of making drawings, I fear he could never have ranked with the "twelve brethren warmed with divine love," but he might surely have claimed to be praised with the bishop for his ability to "make a plan."

Michelangelo, we all know, was architect, painter, and sculptor, the latter art being his favourite. He consequently fares little better with our critic than Giotto. His supremely noble work in the Sistine Chapel is, we are told, spoiled by having been designed in a technically unskilful way, so that his pictures are surrounded by a barbarous medley of Renaissance forms, a half-pretence of solid architecture, absurd in principle, and clumsy in effect.

Raffaelle, we find, was ignorant "of the sense and scope of decorative art," and from St. Peter's to the latest building of "New Rome," Italian architecture is but "a dreary evidence of luxury, a record of expenditure and folly."

But is Italian architecture alone to be denounced? By no means. It appears that some sixty years ago an ancient vellum drawing of Cologne Cathedral was discovered. I should not propose to you Cologne Cathedral as a perfect illustration of Mediæval art, but our author does not think it necessary to say a word of its merits or demerits. He at once denounces it wholesale, in consequence, apparently, of the existence of this parchment, which, he says, accounts at once for the faults of the building.

To some of us this discovery of an ancient drawing may not seem to agree exactly with his general theory of the master-workmen who worked with "thoughts manifested as they arose," free from all guidance from draughtsmen. It at least raises a strong presumption that Cologne was not an exceptional case, and that "ancient vellum drawings" may have been prepared for other similar architectural monuments. However this may be, our author decides that Cologne Cathedral is a "gigantic folly, and a total waste, unless it prove a warning."

Having thus cleared the ground, we are referred to some specimens of master-workmen's labours in modern times, and are called to declare that as architects have so demonstrably failed in all they have done, the workman is to take their place, and inaugurate a new series of triumphs of all that is true and beautiful in architecture.

I hope I have not wearied you by the above extracts. It has seemed to me desirable to place them before you, as far as possible, in the words of the critic, for it is clear that if his conclusions are to be accepted, they must strike at the root of all our work here, and the Royal Academy may give up its care for the education of architects. Many of you who are familiar with the actual practice of architects nowadays have probably already formed an opinion on our author's proposals for the future, on which I now wish to offer a few remarks.

And first let me direct your attention to the name "master-workman." What does this mean? Apparently the chief of a trade, for Phidias is called a master-carver, and Giotto is admitted to have been a master-workman as regards his sculpture. The system pressed upon us would therefore amount to this, that for our great modern buildings requiring a variety of trades, a variety of chiefs must be

engaged,—one at least for each trade, and, indeed, for some trades several, if, for example, we adopt the suggestion of a dozen such chiefs working on the foundations of the New Law Courts.

But this body of chiefs must, we should think, have some superior, if only to define the application of their respective trades.

Is a roof to be handed over to the master-mason for a stone vault, or to the master-carpenter? Is a screen to be of wood, iron, or masonry? Who is to be responsible for the safety and propriety of the thoughts which are to arise, and render necessary sudden changes of detail or plan? or who is to see that all trades so work together, that cracked towers are not to be too common? Clearly there must be some one to do all this, to say nothing of other duties now falling to the architect. Oh! but some will say, there is to be no architect. Be it so, and we will call him a master-workman, which only brings us back to the conclusion that there must be some supreme authority over architectural works, whether we call him architect, surveyor, master-workman, or anything else.

This is, in fact, what is meant by the Greek word ἀρχιτέκτων, with its derivation from ἀρχη, the beginning, origin, or cause, and τευχω, to contrive.

No one feels more strongly than I do the desirability of raising in every feasible way the artistic status of the workman. There can be no doubt that much of the charm of old buildings may be traced to the harmonious working of many minds in its details, but this is no argument against a general design and supervision of the whole by some one, who, whether he be called architect or by any other name, is to secure harmony both of plan and execution, in a great and complicated work.

We shall require an amount of proof which has not as yet been forthcoming, before we can admit this theory of the master-workman in times past; and even if it were proved to have been the ancient rule, much would need to be considered before we could conclude that we must necessarily take a step backwards, and adapt our customs to those of past centuries.

It is of little use for critics like our author to rail at the refinements and luxuries of modern days, and declare that "greed" is the curse of modern England. All this may be very true, and well worthy of our attention as moralists, but such declamation helps us but little in our study of architecture. With every desire to uphold the dignity of a noble profession, too much responsibility must not be laid by us upon it. It is not the province of architects to reform the world, but to bear their share honourably in its daily work and progress.

You, gentlemen, who are to be the architects of the future, are in little danger of being permitted to forget that your lot is cast in the nineteenth century, and that you must please in order to live.

Let us assume, for a moment, that all this argument about the master-workman of old is proved, what does it amount to? Surely to this, that in the course of time the plan was found inconvenient, and has been laid aside for good and sufficient reasons. When we are called on to surrender present habits, and to retrace our steps, the burden of proof clearly lies on those who demand what on the face of it appears unreasonable.

Consider for a moment the complexity of modern buildings, with their almost infinite requirements of construction. Can we reasonably compare them with the simpler structures of antiquity? If we are to be told that this is but a proof of our decadence, and that we should return to simpler habits, I reply, in the first place, that this is a moral rather than an architectural question; and secondly, that it rests with the objectors to prove their case.

It does not follow, as some would seem to think, that every departure from ancient custom is necessarily a step astray. I was lately in a modern Gothic country-house, in which the absence of dressing-rooms was explained by the dictum of the architect, that dressing-rooms were never used in Mediæval times,—a principle which might be pressed much further than he perhaps realised.

New wants and habits will, of course, arise as the world grows older, just as surely as the habits of an adult will vary from those of a child.

The simplicity of plan of the Greek temple is patent to all. The atrium and cella on one floor only, enclosed by windowless walls, themselves surrounded by unbroken ranges of columns of uniform design, called for no complication of design. The Parthenon may, in fact, be looked upon chiefly as a frame for sculpture, and in such a case the chief responsibility would properly fall upon the sculptor.

In a modern work this is reversed. We are told to picture to ourselves a dozen architects at work on the foundations of the Law Courts, because it is assumed that with a chief or two Ictinus built the Parthenon, and because four master workmen were engaged on the foundations of the Temple of the Olympian Jove at Athens. Surely this argument can scarcely be serious. Think for a moment of the actual realities in the case of the new Law Courts, or any great modern building. I have not seen the plan as now finally arranged, but I am able to direct your attention for a moment to one of the plans prepared in competition, which will serve, as well as another, to give you some idea of the difference of complexity between such a building, and the temples of ancient Greece.

Nor is such complication an exceptional or isolated circumstance. There can be no doubt that what we call civilisation tends to complication. We see proofs of this all around us. It is a matter of common observation, for example, that the cost of Government increases daily, and this is because the wants of modern society are daily growing, and demand of its rulers an increase of public work, both as regards quantity and quality.

Modern science also is daily teaching us subtleties of fact and suggestion which do not always agree with the simpler rough-and-ready theories formerly adopted.

In ancient Britain, as now in countries which have preserved their primitive customs, the rain from heaven, and water from the spring or well, sufficed for man's requirements of water supply. With us this is a problem taxing our skill and knowledge to the utmost, and unfortunately far from having been solved.

The same may be said of ventilation. Our ancestors may have been contented with their cheerless halls, with a hole in the roof for a chimney, or a huge caverncus fireplace, roasting those who were near to it, and leaving the rest unwarmed and uncomforted. The floor of rushes, foul with moisture and dirt, the draught-admitting doors and windows, may also be among the customs of the "Good old times," so many affect to deplore, but they are not likely to return.

Some people may tell us that hardiness and rude health may have been promoted by such rough habits of life, but if so, it must have been at the cost of infinite suffering to the weak and delicate. We cannot suppose that our ancestors differed greatly from ourselves in physical constitution, so that we may fairly conclude that thousands fainted on the way, which led only to "the survival of the fittest."

Do you think, however, that this is the way in which the world will again consent to walk, even if invited to it by the siren voices of architectural critics? And if you do not think so, what becomes of their denunciations of the complexity of modern requirements?

It may perhaps have struck you by this time, that our reformers have undertaken what President Lincoln called "a big job," in their proposals to revolutionise the practice of English architecture. Not only are architects to be abolished, but the whole course of modern life is to be changed, and as our critic says, "Of course the trash that fills the Bond-street shops would disappear." Not a very simple programme this! nor one to be solved by a stroke of a pen; but there is more behind, as we shall see when we examine the description given to us of the working men who are to be the salvation of our architecture.

I said before, that when we are invited to join a revolution, we may ask ourselves who are to be our leaders, and what are the chances of success. Let us see what our author has to reassure us on these points.

He is quite certain that architects are the cause of all our troubles. They actually make designs as Giotto did; they are the acme of imaginative incapacity, and in this censure he includes, as we have seen, Giotto, Michelangelo, and Raffaelle. Let us see what he has to tell us of the men on whom the world, tired of such pigmies, is for the future to rely.

We shall be a little startled at the outset, to find that the first preliminary is a general improvement of the morals of the working-man, and while we are pondering how this truly great object is to be effected, we shall be perplexed to be told that "the change must be made not in the upper, but in the lower orders of society," because "morals do not descend."

So that in addition to the rather extensive programme already announced, we are now committed to a general reform of morals, before there can be any hope for English architecture. In the meantime, what do we read of the present state of things in the class from which the master-workmen are to spring? This is the description which our author wishes us to accept.

"Our present working classes are profoundly vulgar. The increase of wages and of general comfort does not much improve them, and instruction only serves to give them larger means to demonstrate their coarseness. Those who know them in their houses tell us that as their wages, rise they revel in expensive luxury and display."

Most clients would think this a not altogether satisfactory presentation of their case by a self-chosen advocate, even if he admits, as he does here, that "In this they imitate their betters."

But some of us will ask, How about education? We have been told we must "educate our masters." Will this do nothing for them? Nothing, according to our author, as long as we follow our present methods, which only tend to the debasement of the imagination. For the latter learning is no efficient substitute or supplement; as without imagination "every man is brutish in his knowledge."

In much of this I concur. Education is not a nostrum capable of itself of raising a nation,—if we mean by education a system of instruction alone. We cannot safely neglect the imaginative and emotional part of man's nature, and it is this conviction which has led to a general consensus of opinion, in this country at least, that religious teaching must form part of anything that deserves the name of education, however we may differ amongst ourselves as to the wisest mode of regulating such teaching.

But the admission into our scheme of culture and of the development of the imaginative faculties leaves us still a long way from the goal to which our author seeks to attain. If our workmen need this development, are they alone in their requirements? Moreover, are we justified in giving such an unqualified description of their present state as that on which their advocate has ventured? I think not.

In all large classes there must, of course, be wrong-doers; and it is the characteristic of some minds to dwell on the exceptions, rather than on the general rule.

Our writer might have been expected to test his theory by personal observation before indulging in a sweeping denunciation of millions. He speaks, however, of working-men avowedly on the testimony of others who, he says, know them. This imparts to his scheme an air of its having been evolved out of his own consciousness. But is his picture true? I cannot admit it.

I decline altogether to draw up an indictment against whole classes; for they are classes, and it is foolish and misleading to speak of working men as if they formed one great class apart from the rest of their countrymen. They have their own various grades and customs, and (apart from the influences of trade-unions) are as independent of each other, and as little ready to be dictated to, as any of us.

If the description quoted were true of the majority to whom it refers, we may see how great a danger would threaten the State, a danger in which all anxiety for art might well become merged.

While, however, we cannot assent to our author's description of his clients, he is bound to admit it as against himself, and we may well ask how does it tell in favour of his proposals? Are we to change everything into an architectural chaos, in the hope that from its ruins our workmen will gain refinement and cease to be "vulgar"? If his description of the class be true, or anything like true, what encouragement does he himself give us to place ourselves in his hands?

Much as we may all value, and rightly value, the improvement of the workman, it is too much to expect that our works of architecture should be devised with no other object than his elevation. Our art must aim at utility, as well as beauty, and its works should be devised for the convenience and pleasure of society at large, and not for any partial object, even if that object should be the improvement of morals in the working class.

Moreover, it remains to be proved that the attainment of this object would render necessary the adoption of any revolutionary theory.

Let us suppose, *pace* our critic, that our architects survive the storm he would raise, is there no room, in the present system, for that elevation of the status of the working-man on which he dwells so emphatically? I think that those of us who have had to deal practically with the difficulties of work will smile at this question. Unquestionably there is abundant scope in the every-day practice of our art for the skill and taste of the individual workman. Nay, this scope is enlarging itself from day to day, and deserves all our encouragement.

It is too much to expect that every name among a numerous class should receive recognition; but in all exceptional cases of merit, the name of the workman should be duly honoured. There can be little difficulty in this, in an age when special skill of any description is the surest road to fortune.

In the meantime, we must demur, on our author's own statements, to his conclusion that there should be a sweeping transfer of power from architects to master-workmen. It has long ceased to be held as an argument against our modern commercial policy, that we ought to produce everything for ourselves, and be thus independent of our neighbours. It is, in a similar way, too late to ignore that division of labour which we are compelled to recognise in modern times, and of which our system of professional architects is but one of the most natural results.

Before concluding, there is one other point on which I must dwell for a few moments. We have considered the steps to be taken in our reformed practice, and must now inquire of our counsellor what are our chances of success if we place ourselves at his discretion. Drifting on the ocean of change, who is directing our course, and to what port is he steering?

We have seen how fastidious is our leader. Giotto having dared to make "a fine design for foolish work," is not to be accepted as anything but a warning. Michelangelo fares no better, and his Farnese Palace is described as at best "a majestic misery, cheerless as a prison, and incapable of human sympathy or popular delight." Of Raffaelle we are told that his architectural painting in the Loggia ceilings of the Vatican shows "how little he had discovered of the sense and scope of decorative art." We remember how Cologne Cathedral has been dealt with, as containing "nothing lovely or of interest,"—"a folly and a waste." Of William of Wykeham we read that his work at Winchester is "a desperate collapse of art," and that "he touched nothing that he did not deface."

After this somewhat wholesale shattering of architectural idols, it will be a relief to some of us to find that there is at least one modern work in this metropolis, which we may venture to admire, as the latest instance of "true building master-workmanship." No intrusive architect has ventured on a suggestion, but the whole of the design, as well as the labour, has, we are told, been contributed by the working-men themselves, many of them "working till twelve o'clock at night."

From a natural anxiety to discover what under the guidance of our new leader was to be the architecture of the future, I hastened to see the result of his theory, against which Giotto and the rest so greatly erred, and I am therefore now able to lay before you an elevation of the building for your inspection. It is situated at 93, Regent-street, Westminster, not far from the Penitentiary, and is called the Portcullis Club. It is executed in stucco.

I am not about to transgress the necessary rule of the Royal Academy which forbids criticism of the works of living artists; but as I have placed before you with impartiality the denunciations of our critic, it seems fair that you should have an opportunity of seeing for yourselves what he is content to accept. Let me counsel you to go and see the original for yourselves.

A very few words in conclusion. I have now asked you to examine a theory of reform which appears to be wholly impractical, but I do not wish to be misunderstood. I do not for a moment intend to say that there is no room for reform in the practice of our art. I look for this (just as we must look for any general social improvement) to the gradual diffusion of taste, knowledge, and refinement. We all know how in modern times the manners of the upper classes have been changed, and softened by the silent action of imperceptible causes.

When the public understands and demands good architecture, it will be a hopeful thing for our profession. At present, those who know well, from their general experience, that to choose a bad doctor or a bad lawyer is one of the most costly follies in which they can indulge, too often seem to think that architecture is a thing so simple, and easy, that any one may be trusted with it.

Great works are usually put to competition, too often with very unsatisfactory results. Not to speak of the difficulty, which would almost seem to be insuperable, of securing candour and fair play, why should it be thought an inalienable privilege appertaining to those who have the conduct of public works that they should have the right to invite the architectural profession to a scramble, whenever any important building is to be erected?

Who would think of expecting the heads of the legal or medical profession to devote months of their precious time to his case, on the chance that one in a hundred might possibly be honoured by a commission? Is it reasonable to complain if architectural competitions so often result in failure? Their direct tendency is to encourage showy pretentions which deserve to fail, while they must degrade any profession which tolerates them, until they render it less and less able to attract learned and sensible men to recruit its ranks.

If people will continue to delude themselves by the belief that by competition they can obtain designs for nothing, they deserve little commiseration if it should turn out that the designs so procured should be worth exactly what has been given for them.

Whatever steps are from time to time taken by the Royal Academy or by our professional societies to improve the education of architects, steps which deserve our best support, all must be futile as long as excellence and knowledge give no guarantee of success, when opposed to the meretricious deceptions of an architectural lottery.

I am not concerned to deny that the writer to whom I have alluded may have done good service by his strictures, and I feel sure that few architects who are accustomed only to undertake such work as they are able personally to direct, will doubt the advantage of a more intimate connexion between themselves, and the master-workmen. They may, however, differ from the writer as to his practical conclusions, just as we may enjoy roast pork without thinking it necessary to set fire to the house, in order to cook the pig.

The master-workman has no better friend than the architect, none who desires more ardently his elevation and artistic progress. We must however decline to enter upon a course of architectural revolution, on the speculation that when all our established customs have taken flight, there may perchance remain at the bottom of the casket "Hope," as applied to English architecture.*

* Since this lecture was written, the subject of it has been discussed at the Royal Institute of British Architects; and, while some of the arguments have been anticipated, I am glad to find that nothing has occurred to weaken their application. E. M. B.

THE CITY LAND AND BUILDINGS PROJECT.

The comprehensive project now before Parliament for enabling a company to purchase large quantities of land and several buildings for the purpose of constructing an underground railway station and subways, and also for the erection of a number of new buildings, has caused a considerable amount of alarm amongst tradesmen and others residing in the neighbourhood of the property which will be affected, and last week a meeting was held at the City Terminus Hotel for the purpose of organising an opposition to the Bill when it comes before the Parliamentary Committee. It was urged against the project that a clause in the Bill confers compulsory powers on the promoters for seven years, and that in all probability during this period everybody would be left in the greatest uncertainty as to what was going to be done. The project was to raise a capital of 500,000*l.*, with borrowing powers to the extent of 100,000*l.* or 200,000*l.*, whereas at least 5,000,000*l.* would be required to purchase the property over which they sought to have powers. There was no doubt that the gentlemen who were promoting the Bill were respectable, although the speakers knew nothing of them. It was said that an Englishman's house was supposed to be his castle, but if the Bill under consideration passed, there would be an end of any such maxim. A surveyor of eminence had given his valuation of the property affected by the Bill as 4,532,800*l.*, reckoned on an area of a little over five acres, at 25*l.* per foot, and in addition to this the promoters of the Bill asked to have purchasing powers over the adjoining twenty-nine acres, if they thought fit. The fact probably was that the very existence of their powers would depreciate property, and they could then buy it to speculate with. It was added that there was nothing whatever to show that the Bill was not merely for the purpose of financial speculation with the land in question. It was also stated that the Bill had already passed the examiner of standing orders, and would next have to go before the standing order committee to have the preamble proved. A Committee was formed for the purpose of petitioning against the Bill, and it was also agreed to ask the members for the City to oppose the Bill when it came before the House.

Mr. Haywood, in his report to the finance and improvement committee of the Commissioners of Sewers, on the several projects affecting the City, states that the Bill seeks for powers to acquire the whole of the property on the eastern side of Walbrook, and the tower and porch of the church of St. Stephen, Walbrook. The Bill also contains a clause enabling the company to stop up Walbrook, Budge-row, Tower Royal, Sise-lane, Bond-court, Barge-yard, Oxford-court, and Walbrook-buildings; and portions of Cannon-street, Queen-street, and Queen Victoria-street. He also states that the promoters have informed him that they propose making Walbrook and Bucklersbury throughout 60 ft. wide, and to form a footway 20 ft. wide, leading from Cannon-street into Queen Victoria-street; also to make subways beneath the Poultry and Mansion House-street from the Royal Exchange, connecting them with the intended new railway station included in the promoters' plans, provided suitable contributions towards such improvements are made by the Corporation, the Commissioners of Sewers, and the Metropolitan Board of Works.

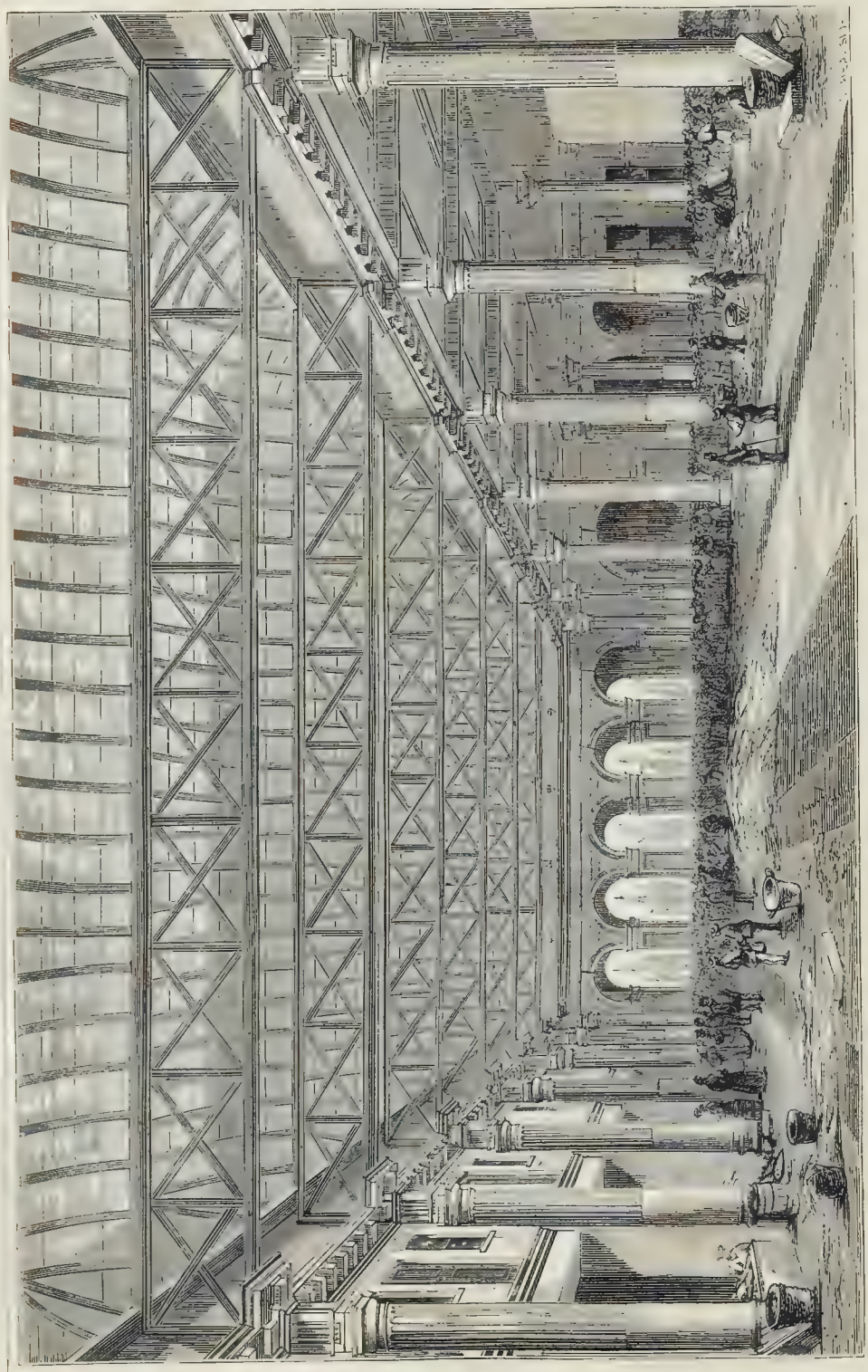
THE ARTIZANS' DWELLINGS BILL AND THE NORTH OF ENGLAND.

Mr. Joseph Cowen, one of the members of Parliament for Newcastle-on-Tyne, has, at the instigation of the miners in the counties of Durham and Northumberland, who have so long suffered from the abominable state of their villages and dwellings, given notice of an amendment to Mr. Cross's Artizans' Dwellings Bill, which amendment proposes to extend the operation of the Bill from large towns to all districts having Urban Sanitary Authorities.

This, if carried, will apply the Act to quarters that have hitherto defied every authority,—to out-of-the-way villages and small towns where over-crowding, filth, and disease are more rife than where the population is 25,000 and over. The proposed clause will place the Home Secretary in the same position as Lord Palmerston, who when manufacturers declared that it was impossible to abolish smoke, and, as they thought, had demonstrated it to the then Home Secretary. "Oh, yes, I know gentlemen," replied his Lordship. "Yes, it is as you say; it cannot be done, and all that; but it *must* be done," and done it was. The Bill requires many modifications.

NEW BILLINGSGATE MARKET.

In our last volume (pp. 867, 925) we published a plan of the intended Billingsgate Market, now in progress, and a view of the exterior next the river Thames. To these illustrations we now add a view of the interior of the market. The architect is Mr. Horace Jones; the contractors are Messrs. John Mowlem & Co. We may repeat that the total area of the market will be 40,000 ft. superficial. The basement, about 24 ft. in clear height, will be used as a shell-fish market. The market proper will be covered with louvre glass roofs, carried on lattice girders, of 60 ft. span. The height to the ridge will be 43 ft. Above this market will be a gallery, approached by stairs from the staircase-halls at the north and south ends of the building. The columns supporting the roof-girders are of iron, and about 31 ft. in height.



NEW BILLINGSGATE MARKET, LONDON: INTERIOR VIEW.—Mr. Horace Jones, Architect.



THE GREAT EASTERN RAILWAY COMPANY'S NEW STATION, LIVERPOOL STREET, LONDON.—MR. EDWARD WILSON, ARCHITECT.

THE GREAT EASTERN RAILWAY COMPANY'S NEW STATION, LIVERPOOL STREET.

THE approaching completion of the Great Eastern Company's new main passenger station in Liverpool-street adds another to the several large and extensive structures of this character connected with the different leading railway companies having their chief termini in the metropolis. So far as regards its actual area we believe we are correct in stating that it will be the largest of the metropolitan passenger stations, inasmuch as it covers no less than ten acres in extent, and is 2,000 ft. in length from Liverpool-street to its extreme north-eastern boundary, in the direction of Bishopsgate and Shoreditch. The architectural features of the station buildings themselves are bold and striking, the structure having four lofty frontages uniform, to a great extent, in the Gothic character of their design, in addition to a fifth elevation fronting the interior of the station. The west elevation is 320 ft. in length, the central portion of this frontage, which projects several feet beyond the general face of the elevation, rising to a height of 90 ft. That portion of the frontage at the angle bounded by Liverpool-street also projects to the extent of 18 ft., and is uniform in height with the central part of the elevation. The other portions of the frontage are 67 ft. in height. In addition to the ground-floor the elevation contains four stories. The windows of the second-floor form one of the most striking architectural features. They consist of a range of twenty-four traceried windows, 12 ft. each in height. The fourth floor of the central portion of the frontage, and also that at the Liverpool-street angle, are surmounted by a gable enclosing a range of four segment windows, with a circular window above, and two dormers on each side. A cresting of ornamental ironwork surmounts the high-pitched roof. The east elevation closely resembles that just described, the frontage being the same in length, viz., 320 ft. The general height of the frontage is 67 ft., the central portion, to the width of 80 ft., being carried to a height of 90 ft., with an ornamental iron cresting above the ridge of the roof. The traceried Gothic windows in the second-floor are uniform with those in the west frontage. The Liverpool-street frontage is 70 ft. in width, and 90 ft. in height, and generally uniform with the south angle of the west elevation. There is also a wing at the north angle of the west elevation, running westward. The south elevation of this wing is 72 ft. in length, and 68 ft. in height, terminating with a tower and spire or turret at the extreme west angle, 150 ft. in height to the apex of the vane. The station front of the north wing is 146 ft. in width, and four stories in height in the central portion, all of which is enclosed by the station roof. The materials used in the general face of the several elevations are white Suffolk brick, with a free introduction of Bath stone for dressings and ornamentation.

The interior of the station has its main approaches at the west elevation, in front of which there is a spacious area, descending on an incline, considerably below the Liverpool-street level. There are eight passenger-entrances at this frontage, together with three carriage-entrances, and an exit. The main-line booking-offices are on the ground-floor of the central portion of this part of the building already described. This is the largest and noblest apartment in the entire structure. It is 90 ft. in length by 50 ft. in width and 49 ft. in height, being carried up to the ceiling of the second story, and lighted not only from the ground-floor and first-story windows, but also by the large ornamental Gothic windows of the second story, both in the east and west elevations. The ceiling is in ornamental panels, with white and grey mouldings. A gallery is carried round the apartment, leading to the different offices in the upper portions of the building. On the south side of the booking-offices there are a ladies' waiting-room, 18 ft. by 19 ft., and a large second-class waiting-room, 27 ft. by 31 ft., together with a parcel-office, 33 ft. by 46 ft. On the north side of the booking-offices there is a first-class waiting-room, 36 ft. by 26 ft., together with a waiting-room for ladies, 23 ft. by 20 ft., whilst at the north-east angle there is a spacious refreshment-room, 40 ft. by 28 ft., and 29 ft. in height. Almost immediately adjoining the refreshment-room, on the north side, is an apartment called the suburban waiting-room, specially for the accommodation of this class of passengers. Its dimensions are 31 ft. by 18 ft., and attached to it there is also a ladies' waiting-room, 21 ft. by 12 ft. In close proximity is the suburban exit-passage, 10 ft. in width, and beyond this again are the cloak-room and the general despatch-office. In connexion with the cloak-room there is a lift carried up to the top of the building, one object of which is the convenience of passengers, there being a booking-office for the suburban traffic on the floor above, approached from the higher level, in Liverpool-street. There is a similar lift from the parcel-office, and also from the refreshment-room to the top of the building, all the lifts being worked by hydraulic power. At the south angle of the ground-floor level there is a large area, 97 ft. in length and 85 ft. in width, set apart for the company's horse and carriage traffic. The suburban traffic booking-offices on the first-floor, approached at the Liverpool-street frontage, as already stated, are 60 ft. in length by 34 ft. in width, and in immediate connexion with them there is a ladies' dining-room, 27 ft. by 15 ft., together with a spacious general dining-room, 40 ft. square. These dining-rooms are approached from a gallery.

A number of the general offices for the clerks of the company are also on the first floor. And here it may be stated that the whole of the numerous apartments in the building are intended to be exclusively set apart for the business of the company, the whole of which will be conducted on the new premises. These offices are approached by an entirely distinct entrance from the Liverpool-street level, along a corridor 10 ft. in width, leading to the principal entrance, which is 20 ft. square. The offices on the first floor will be occupied by the clerks in the departments of the secretary, land agent, law officer, and transfer superintendent; and the general station superintendent's office is also on this floor. The second floor, which is much more lofty than the other portions of the building, is exclusively set apart for the offices of the chief representatives of the company, and contains, amongst others, the private offices of the chairman and deputy chairman; also the secretary's and engineer's offices, the general manager's offices, and also committee-rooms, together with the board-room, a large and handsome apartment, 37 ft. by 20 ft. This apartment is ornamentally finished and decorated, and a dado in polished oak is carried round the room, whilst the ceiling is artistically divided into panels. A luncheon-room, 26 ft. by 24 ft., adjoins the board-room. A corridor, 8 ft. in width, runs the entire length of this floor. The floors of all the corridors are laid with Portland cement in concrete, and flagged with York stone. The third floor will be occupied as offices for the clerks and subordinate officers of the company, whilst a portion of the dormer floor will be set apart for the housekeeper's residence and servants, the remaining portion being spare rooms. There are no less than 150 rooms and apartments in the first and other stories of the building.

The station area, which contains double lines of rails and ten platforms, is covered in by a roof, consisting of two bays, 109 ft. span each, with two side roofs 30 ft. span each, and the extreme width of the station is 314 ft. The roof is carried on iron columns, with a double row in the centre, and which, being hollow, also serve to carry the water off. These columns support iron girders, and the roof covering is chiefly of glass, with a lantern light running its entire length for ventilation purposes. The length of the roof over the main line portion of the station is 730 ft., and the length of that over what is called the local department of the traffic, 450 ft., the height of the roof being 76 ft. above the platform level. The several platforms vary in width from 10 ft. to 34 ft. The main line platforms are 1,000 ft. in length, and those for the local traffic are 550 ft. long. The general signal-box is placed about the centre of a network of rails, between Primrose-street and Shoreditch, and it contains 100 levers for the purposes of interlocking and working the signals.

The station buildings are already externally completed, and the internal portion of the work is rapidly proceeding. The roof over the station area is also considerably advanced, as well as the platforms, and it is fully expected that the station will be opened for traffic on the 1st of May next.

Mr. Edward Wilson, the company's engineer, has also acted as architect; and the works are being executed by Messrs. Lucas, Brothers, the ironwork having been supplied by the Fairbairn Engineering Company, of Manchester.

EXHIBITION OF THE ROYAL SCOTTISH ACADEMY.

THIS Exhibition opened to the public on Saturday, the 13th inst. The number of works exhibited is 1,029, and nearly an equal number has been rejected. What sort of works the rejected are we shall have an opportunity of judging, as a supplementary exhibition is to be opened in a saloon in Castle-street, where the majority of them may be seen and judged of. "To err is human," and it is possible that one or two works of merit may have been overlooked; but if we consider that at least a fourth of the works in the rooms are below mediocrity, we may reasonably conclude that the discontent amongst the authors of the rejected works arises from the fact that men are not impartial judges of their own performances.

This year the works by resident artists are, as a whole, very disappointing; and if the pictures which have been already exhibited at the Royal Academy were abstracted from the collection its attractiveness would be almost entirely gone. Amongst these are examples of Alma Tadema, John Pettie, Peter Graham, Sir John Gilbert, Birket Forster, Orchardson, J. McWhirter, Erskine Nicol, &c.

Artists are not exempt from the instinct of humanity to follow a leader. Since the time when Mr. Millais began to paint landscape, and produced his "Chill October," many figure-painters have followed his example. Amongst these Mr. G. Paul Chalmers may be specially alluded to, as his works are strongly characterised by the peculiarities of this school. One of these peculiarities is to choose a subject which has nothing in itself to recommend it, a bit of nature which no one in search of the picturesque would for a moment linger over, and this is rendered in a realistic manner with broad touches. In "Running Water," we have a composition of which the background is entirely occupied by a bank of trees, through which only a few very small particles of a grey sky are visible. These trees are so darkly rendered that it is with extreme difficulty that the reticulation of the branches, where at all attempted, can be discerned, and yet the rest of the picture suggests broad daylight. The rush of water, as it hurries down a confined slope towards the spectator, is rendered with great force and dexterity, and the stones and vegetation on the fore-part of the bank are generalised with a broad and skilful touch. The whole picture bears the impression of a large study painted on the spot, the rich tones of which are blended in a manner not usually found in the works of the generality of landscape-painters.

"The Warning before Flodden," by Mr. John Faed, represents the scene in which James IV. was warned against his intended attack upon England by an unknown visitor. The figures are happily grouped, the incident is graphically told, and the execution is careful; but the texture is meagre and the colour unsatisfactory, each garment being of a definite colour, without blending or harmony of tone.

An early work of Sir George Harvey's "The Covenanter's Communion," which has been presented to the Academy, is exhibited. It is interesting, as showing the complete change both as regards subject and manner which has taken place in the work of the president. A subdued harmony of colour, befitting the solemnity of the occasion, pervades the scene, and an all-absorbing feeling of devotion, without exaggeration, is expressed in the faces and action of the members of the small congregation, whose temple is a secluded nook on the hill-sides. Sir Noel Paton's "Christ and Mary at the Sepulchre," does not impress us with a like feeling of solemnity; the idiosyncrasy of the artist is too obvious throughout the work, which is rendered in his usual smooth, polished style. The figure of Our Saviour is wholly surrounded by that phosphorescent light which Sir Noel delights in reproducing, and which does not appear to us an improvement upon the simple nimbus, and even that is now generally omitted in works of this class.

Freshness and vigour characterise the large sea-piece by W. McTaggart, "Through Wind and Rain." A brisk gale has sprung up over a stretch of sea, causing a fleet of fishing-boats to run for shelter. The nearest boat, manned by bronzed fishermen, who adjust themselves to the leeward slope of the vessel, dashes impetuously towards the spectator: the feeling of rapid motion is here expressed in a masterly manner. The scud of the waves, the drifting spray and clouds through which the line of boats is seen bearing on in

single file till lost in the distance, are given with a breadth of touch and truthfulness of expression which contribute to the general effect aimed at.

Mr. R. Gavin's "Moorish Women at a Well" has a look of reality about it. There is a lithe gracefulness about the women distinctive of their nationality, and their postures and grouping are natural and unrestrained. There are fine phases of colour, too, in the work, particularly in the drapery of the woman who balances a jar upon her shoulder. Mr. Gavin also utilises his Eastern studies by producing a Scriptural subject,—"Naaman the Leper and the little Jewish Maiden," which contains good work, but is not so satisfactory as his rendering of the every-day incident. Mr. Fettes Douglas's speciality used to be the rendering of bric-a-brac, old furniture, tapestry, &c. The contents of the "Lumber Room," in which a lady is ransacking an "Old Bureau," are however given in a slovenly manner, and the lady who is engaged in that occupation must certainly have discovered something very wonderful to account for the ghastly pallor of her emaciated countenance. Probably the discovery is the confirmation of long and harassing doubts. Be that as it may, the picture is neither attractive nor instructing.

The effect arrived at by Mr. Sam Bough in "Peel Harbour" is similar to that given by Mr. MacTaggart, but he has hardly imparted to it the same unity, force, and vigour. A stone pier in the foreground is crowded by spectators, who are watching a ship in distress, to the assistance of which the lifeboat is getting under way. The pier and figures are cleverly put in, and from the pier-head onwards to the distance the sea and sky are powerfully expressed, but the nearer portions of the sea are hardly in keeping with the rest.

"Margaret of Anjou and the Outlaw," by Mr. Robert Gibb, is an ambitious attempt, but it has an artificial, commonplace look about it. Mr. O. T. Lyde, in "The Return," shows a cottage interior, in which an old man, seated quite alone, listens with anxious expectancy to a familiar footstep, which pauses at the open cottage-door, against which leans the prodigal, overwhelmed with grief, and hesitating to enter. The scene is graphically rendered in a subdued and harmonious tone. We always revert to the works of Mr. Hugh Cameron with pleasure. What can we say regarding them that we have not said before? The subjects are of the same homely nature, the touch as delicate, and the colour as pure as heretofore. Such a work as "Good Night," where a mother holds her infant to a sister a year or two older to be kissed, is one we would delight in possessing, and never be tired of. Mr. Cameron has, we understand, taken a studio in London, and will shortly join the company of his countrymen located in the metropolis. The works are a reflex of the man; there is no humbug about either of them.

"Kelp Burners in Gigha," by J. O. Stewart, is a seaside scene after the manner of Hook. There is a fresh open-air effect pervading the scene, and the figures are happily grouped, and the whole painted with a firm touch and brilliancy of colour.

Mr. W. F. Vallance now devotes himself to the production of comical Irish incidents. "Och Hone," "Contraries," &c., are feeble when compared with similar productions by Erskine Nichol. Mr. Vallance may relish Irish wit, and be amused by the display of Irish characteristics; but he has not probed to the bottom of them. Mr. Vallance, by the way, is another of the figure-painters who has taken to landscape. His "View in Glenfinlas," of a waterfall, shows considerable dexterity of handling, but fails in impressiveness.

"The Turning Point," by Alexander Johnstone, if it did not suggest so strongly the temperance movement, would be more readily accepted as a worthy work of art. The story is the too common one of a young and rather handsome man, who prefers the society of the public-house to that of his sensitive-looking wife, who is using all her power of persuasion to prevent him joining two boon companions, who are signalling to him through the cottage window. The artist enlists your sympathy in favour of the better cause, but leaves it to appear extremely doubtful which side will win.

Society of Engineers.—On Monday, the 1st of March, a paper will be read on "The Construction of Modern Piers," by Mr. J. W. Wilson, jun.

THE FUTURE OF ARCHITECTURE.

Recent discussions have shown that there is no desire on the part of the profession to disguise the defects, the demerits, and the failures, which have in so large a measure exhibited themselves in connexion with our modern architecture, and the system to which we are indebted for our architects. The main practical conclusion we have now to face is that the production of our architecture has passed into the hands of an immense multitude throughout the country, of whom it is impossible to say that they are the fittest minds for the task they have undertaken, or, that if so, there is any guarantee of their qualifications. This is a condition of things with which it is impossible immediately to deal; any amelioration must be gradual, progressive, and prospective. No system of compulsory examinations could be set up, or the absolute necessity of a diploma before practice enforced, as things now are; and we fear that the offer of voluntary examination, and the advantages which might accrue in professional status by being fortified by such a guarantee would be responded to to a very slight extent. Hence, as we have said, any remedial measures must be regarded chiefly in their prospective aspect. What we have now to determine is, whether we can fairly and safely hope that there are elements in the present condition of things, which will, if slowly, yet surely, work their own cure. In the present intermingling and jostling, as it were, of engineer, builder, and architect on the same field, may it be hoped that the gradual improvement of public taste, and a higher tone in the patronage upon which architecture depends, will eventuate in a demand which will be unable to tolerate that which now passes for sufficiently good architecture, and in the end so far eliminate the bad, that false, mediocre, and pretentious work will sink to its level, and that which the true architect can alone supply meet with its fitting place? We are very distinctly of opinion that it is fallacious to indulge such a hope. It must be a fact within the knowledge of all who have thought upon fine art in any of its branches, be it architecture, painting, sculpture, music, or poetry, that "taste" is a most variable quality, and grows by that which it feeds upon. Illustrations innumerable might be given as to this, but we will confine ourselves to a single cognate instance. Can there be a question that, even among minds of an average range of culture and susceptibility to æsthetic influence, that after being accustomed to a low type of art, say in architecture, and perfectly satisfied with this, because knowing no higher or better, the sight of indubitably finer buildings would at once raise the taste, and render that before tolerated with complaisance almost insufferable. Now, this we take to be the key of the whole question of an advance in the public taste as to art, and it decides at once what we believe must be found to be the truest ground upon which any hope can be built, that the "architecture of the future" will prove any positive advance upon what is now in its main extent a somewhat mongrel and unsatisfying state of things. The public taste can become debauched or perverted by showy, pretentious work, which will not bear investigation upon any principles of true architecture; and which, if capable of startling and creating a "sensation," will not answer to that one criterion of true art, its sufficing to afford an abiding source of pleasure. All this character of art is increasingly abundant around us, for evidence of which we have only to point to the majority of new edifices which arise in the process of rebuilding now so rapidly going one. The issue of all this cannot be such a purifying and ennobling of public taste and art-patronage as will lead to the production of works which will stand the test of lasting admiration, but rather their degradation, and will leave few precedents to posterity such as the thoughtful, noble works of Greek and Mediæval times have been to subsequent ages. How, then, are these tendencies to be corrected and the foundation laid for a pure and noble system of art-culture and development? While our architects, or the large body who undertake our architectural works, are either incapable of anything better, or persist in pandering to a false taste, there *can* be no improvement, and the present conditions of patronage are such that the chances are that the meretricious will outbid a higher and truer class of art. Nor will improvement come, as some fondly imagine, by a dissemination among all classes of some knowledge of the principles and practice of art. The *utmost* that can be done in this way will go so little towards forming a correct taste that it cannot be taken into reckoning with what we have stated to be the practical means which creates, fosters, and maintains true taste in art, viz., the exhibition of instances of such noble works as gradually, if not at once, make themselves felt, and adjust the standard of what is satisfying against inferior and ignoble work. The consideration of this question has often been before us, and we can only resort to what we have already stated, that, in the present condition of English architecture, the admitted failure of the pupil-system, the impossibility of enforcing a system of examinations and degrees, and the fact that our present architecture is in the hands of such a numerous band of practitioners and aspirants, there is no *immediate* prospect of the application of any means which can act as a direct remedy. But there is a *prospective* one, and this we think, to all who will give the subject a candid and thoughtful attention in its present aspects and bearings, will be found to consist in the establishment of architectural colleges. These would provide an arena for the combined and sustained study of architecture in all its fulness as a fine art unaffected by the chance influences of misapplied patronage and misinformed public taste to which our architects are now necessarily subject, and, if rightly organised, would attract only that class of minds which find in architecture an expression of the art faculty with which they are endowed. The cultivation of any art beyond the limits of those who can enter upon it with some sort of original creative faculty is a mistake and waste of effort, and in modern times has given us that plethora of mediocrity in nearly all the fine arts which has been their bane and misfortune. But architectural colleges of the nature we have in view, would send forth trained bands of men agreed upon the common principles at the base of all architectural practice in varying constructive modes and the unity of decorative effects; which, as matters of ascertained truth could not be diverged from, as now, at the dictate of any caprice; while leaving a full field for the exercise of that individuality and originality which must ever form a considerable factor in all true art.

It is comparatively easy to point out the defects of our present architecture and the system which promotes them, and, by a converse process, to arrive at what might be regarded as an ideal condition of things, which might well be taken to be such a state of the public taste as could not tolerate the exhibition of bad architecture; and hence the necessity that our architects should be only those who could satisfy such a high demand. But, as we have seen, the cultivation of the public taste is the direct product of that which is placed before it, and higher results can only be attained by beginning with those in any age and nation best calculated to be the purveyors of art to those who have it not. There is one all-important point in regard to architecture which applies with less force to the other fine arts. An architectural work, whether we will or not, *must* come under our notice, and must exercise an influence from which we cannot escape, either for good or evil, in the elevation or lowering of our taste. Herein lies the *raison d'être* for seeking to confine the production of our architecture to the best minds and hands; and, after the fullest consideration of the whole subject, in view of the actual condition of things amongst us, there seems nothing which offers any prospect of a remedy other than the combining of the best contemporary genius and talent in the study of architecture in such a form as shall be able so to take the lead that the public will not be long in judging what are true art-products and what are not, and in rendering honour and aid to those alone entitled to deserve them. A system of architectural colleges effecting this result would soon winnow the chaff from the wheat, and be able to dispense all those distinctions that are now wanting in the architectural profession.

We cannot but regard the present as a time of crisis in the history of architecture in this country, and though we have before in a detailed manner pointed out the place and special value of something of an architectural collegiate system for the satisfactory cultivation of the art, and the formation of a genuine architectural profession in the midst of the divided heterogeneous influences of the present time, we would again commend this aspect of the subject to the earnest attention of our thoughtful professional readers. Art now stands in a different relation

to society to what it did in any former time; we cannot restore old conditions, but must meet the new ones as best we may, and the two points which have now to be conciliated, are the providing scope for the best art-faculty amongst us, and such a cultivation of the public taste as shall reduce patronage of the inferior and mediocre to a minimum. A well-organised system of colleges, whether affiliated to the universities or not, would effect the one, and general art-congresses in their public and popular aspects would do not a little in effecting the other. It is to be hoped that the admirable bequest of Chantrey for the encouragement of the highest art in painting and sculpture may meet with some imitator in the interests of architecture; a similar sum in trust in the hands of a few of our most devoted and distinguished architects and connoisseurs would go a long way towards setting on foot an influence upon our architecture such as the present mercantile and fictitious repute notions which govern its patronage can never afford.

FIRES CAUSED BY RAILWAY ENGINES.

THE spectacle of a steam thrashing-engine puffing forth sparks in close proximity to a stack of wheat or hay is by no means uncommon, and yet it is comparatively seldom that one hears of the destruction of such property by fires engendered in this way. This fact is probably due to the circumstance that there are always workmen at hand, who are ready to extinguish the first outbreak of fire, should one occur.

But with locomotives the case is different. These engines traverse miles and miles of country, without being within sight of a human being, and as they are continually emitting red-hot cinders, it is at first sight highly probable that they will set fire to some inflammable material, which is out of sight again before the driver could perceive any mischief, and might burn away without attracting any one's attention.

The extensive tracts of blackened turf and smouldering furze which one so frequently sees on the railway banks during the summer months are sufficient proof of the damage that can be inflicted by a chance spark from a locomotive chimney falling on dry materials, and fanned by a gentle breeze. Farmhouses are often situated near railways, and stacks of wheat and hay, with barns and other wooden outhouses often thatched with straw, are of frequent occurrence near the iron track. In the summer-time whole fields of dry hay and corn are liable to be "licked up" by a fire engendered by such a little cause; and as a matter of fact these conflagrations do sometimes occur.

The question is, how far is this cause of injury preventible? In America, where nearly every railway engine uses wood as sole fuel, the chimneys of the locomotives are built in a special manner, and provided with a special grid or grating, to intercept

> "The burning sparks that fly
> Like chaff from a thrashing-floor,"—

or rather, that *would* fly, if this precaution were not adopted. In this country, however, and elsewhere where wood is scarce, coal or coke is the chief fuel used; and though occasional red cinders are cast forth, there is no such continuous stream of sparks as the American engines would supply,—a stream that would quickly set ablaze whole tracts of prairie and of forest during the hot summers of that continent.

The cinders falling from the ashpan of a locomotive, though larger and more numerous than those ejected from the funnel, are not a very immediate cause of injury in this way, as they principally fall on the ballast of the line, and do no harm: though we have met with instances where the "sleepers" themselves, especially when pickled or pitched, have been charred away. We have again seen huge masses of glowing "clinkers" poked forth from the furnace by the stoker, and cast "overboard" on the wayside,—to fall wherever they list. This, however, is not a common cause of danger, though the practice is reprehensible: and the possible injury from sparks flying from the chimney is the most important consideration.

The recent case of Berens *v.* The London, Chatham, and Dover Railway, in which the complainant claimed and obtained damages to the amount of 95*l.* from the company, for the damage done to woodlands in his possession between Bickley and St. Mary Cray, Kent, by fire caused by a spark from an engine in the spring of 1874, has brought the question prominently before the public. In this case the engine alleged to have caused the injury was said not to have been fitted with proper appliances for intercepting sparks.

Several methods are adopted in this and other countries for effecting this object. One plan is to have an improved ash-pan, with a perforated fender in front of the damper, thus allowing the air to pass through, but preventing the passage of cinders. A second plan is the adoption of a "turban" or wirework cap placed on the top of the funnel, and intercepting the cinders, which consequently fall back into the smoke-box below the damper, and beyond the influence of the draught. An objection to this mode is the fact that the steam rots the wirework, which again, in time, gets choked up with smoke deposits and cinders. Another contrivance much used in America and Switzerland is an umbrella-shaped cap, which prevents the cinders from flying out; but an objection to its adoption in this country is the fact that it is too high to pass under the railway bridges. Another method known as the "grid," consists of crossbars, with transverse rods at intervals of ⅜ in., fixed on the smoke-box below the blast-pipe, where it cannot be fouled or injured by the escape of steam from the blast-pipe. Some engineers object to this plan, because they say it throttles the draught, and prevents the engine from doing its work efficiently, though on the South Western and the Lancashire and Yorkshire Railway, and on other railways here and abroad, where the danger of fire is greater in consequence of the heat of the climate, these "grids" are in use.

No specified plan is enforced by the Board of Trade, but railway companies are, under the General Railway Act, obliged to use every reasonable precaution to prevent injury to life and property in any way. Unquestionably, injury by sparks is of common occurrence, and railway directors are bound to prevent such injury as far as possible. Even if no actual damage to private property, such as that alluded to above, were caused, the destruction of hay and grass on the companies' own embankments would amount to a serious item if it could be properly estimated: for the area covered by these banks is very large, and might produce a large amount of hay if preserved and properly harvested.

THE CLEANSING OF THE CLYDE.

THERE is an old rhyme to the effect that "The Annan, Tweed, and Clyde, fall all out of one hillside." This is almost literally the fact, as the three rivers issue from one clump of rising grounds. The hills at the sources are very lofty, and one of them, denominated Erickstane Brae, is famed for the steepness of one of its sides, along which a road is carried at a great height above the narrow vales below. Scott in his novel of "Redgauntlet," thus speaks by the mouth of Pate-in-Peril:—"You must have seen the place as you came this way: it looks as if four hills were laying their heads together to shut out daylight from the dark hollow space between them. A deep black blackguard-looking abyss of a hole it is, and goes straight down from the roadside as perpendicularly as it can go. At the bottom there is a small bit of a brook that you would think could hardly find its way out from the hills that are so closely jammed round it. It is called the Marquis of Annandale's Beef-stand, from the Annandale thieves having put their stolen cattle in there." Amid such rugged scenery the Clyde is born. The river within a very few miles of its source assumes a considerable size through the accessions of several mountain streams, the most remarkable of which is Glengonar Burn, which is distinguished by the mineral wealth of its banks. About four hundred years ago an attempt was made to dig gold upon its margin, but the work was not repaid by the results; occasionally, however, the shepherds pick up little nuggets in the neighbourhood of the stream. At the source of this stream 1,300 ft. above the level of the sea, the little village of Leadhills flourishes amidst a wilderness of dismal heathery mountains. Yet among such wild scenery Allan Ramsay tuned his harp and sang his songs in praise of the home-land of his birth,—

> "Where mineral springs Glengonar fill,
> Which joins sweet-flowing Clyde."

Those who have travelled between Carlisle and Edinburgh or Glasgow on a wild winter's night know what a howling wilderness this pastoral portion of Clydesdale is. On flows the river until Lanark is nearly reached, when it suddenly narrows between rifted rocks, and with mighty leaps from chasm to chasm gains its lowest level, and, broadening out, flows slowly to the sea. It is at New Lanark with its crowd of cotton-mills that its pollution commences. When Thomas Campbell, the poet, was installed as Rector of Glasgow University he paid a visit to Lanark, one of the scenes of his boyhood, and thus wrote:—

> "And call they this improvement to have changed,
> My own fair Clyde, thy once romantic shore,
> Where Nature's face is banish'd and estranged,
> And Heaven reflected in thy wave no more.
> * * * * *
> And for the daisied greensward down thy stream,
> Unsightly brick lanes smoke and clanking engines gleam."

As the Clyde passes the town of Hamilton it receives a new accession of pollution, and when it has passed under the arch of the far-famed Bothwell-bridge and reached the town of Blantyre, with its cotton-mills and dye works, the poor river may be said to be murdered, and to float seaward a liquid mass of pestilence. Glasgow is reached, and the sewage of the city, added to the tribute of all imaginable horrors sent down by the river Kelvin, crowns the dreadful work. A song-writer of the western city, fifty years ago, has told us that he was wont, with his sweetheart by his side, "to wander many a night in June along the banks of the Clyde," a thing that nobody but a madman, or one of suicidal tendencies, would think of doing at the present time; and as for the Pear-tree Well, on the banks of Kelvin-grove (!), it is but a trysting-place for rats and other loathly creatures.

In the beginning of the sixteenth century the channel of the Clyde for about thirteen miles below Glasgow was interrupted by fords and shoals, and the smallest of sailing-boats found great difficulty in reaching as high as the Broomielaw, the quay of Glasgow. In 1556, by the united exertions of the inhabitants of Glasgow, Renfrew, and Dumbarton, the river was cleared of many obstructions, and small craft could ply with tolerable ease between Port Glasgow and the city. In 1769, James Watt, the engineer, examined the river, and drew up a report for the guidance of such as the Town Councils might employ to finish the undertaking. A Mr. Goulbourne, of Chester, in 1775, fixed up 117 jetties along the banks of the river, and effected 6 ft. of a depth of water at Glasgow. He was followed in 1798 by a Mr. Spicull, chief superintendent of the works, who gained a depth of 9 ft. 6 in. at the Broomielaw. And now, where, in the days of our great grandfathers, "vessels from Dumbarton, Greenock, and other *distant* parts," were wont to unload their cargoes of peat and fish, the hugest of ocean-going steamers are moored with ease and safety, and it is within the memory of many persons far younger than the "oldest inhabitant" that the good folks of Glasgow used to wade the Clyde at low tide at the spot from whence now the tourist-steamers take their departure.

But while all this attention was paid to the embanking and deepening of the river, its sanitary state was entirely neglected, and now, when it has become a nuisance to the eyes and nostrils of all who dwell upon its banks, the matter will bear shunting no longer. It has been placed in the hands of Sir John Hawkshaw, and it is to be hoped something will be done, and that speedily. There are great tracts of waste land down the river-side, to which a large portion of the sewage might be carried with profit.

EVERY SHIP ITS OWN MOVER.

AN invention for utilising the motion of ships at sea by the compression of air to be used instead of steam for their propulsion has been patented by Mr. R. Browne, of Kidwelly, Carmarthenshire. The *modus operandi* is as follows:—Chambers are fitted to a ship either entirely outside or partly inside and partly outside her outer skin, open at the bottom but closed at the top, except a pipe connected with an air reservoir, placed on board the vessel. In this connexion pipe a valve is fixed, which allows the air to pass from the chambers to the air reservoir, but which prevents its return, and also a provision to stop water from passing with the air into the reservoir. This is the machinery, and the compression of the air is to be effected by the rise and fall of the vessel, caused by the action of the waves. When the vessel rises, the chambers are freed from water and filled with air, and when she falls this air is compressed by the weight and impetus of the vessel in falling

to any degree required, the water, owing to its *vis inertia*, acting *pro tanto* as a solid body, against which the air in the chambers is pressed and compressed by the weight and impetus of the ship. For economical working, it is proposed to use the air at an effective pressure of 60 lb. to the square inch, and this is regulated by a valve in the air-reservoir. The invention is automatic, working of itself at all times when the ship is moved by the waves, but it may be thrown out of gear at any time by simply turning a couple of stop-cocks. Chambers in the aggregate of about the size of a first-class steam launch on each side of a ship are sufficient to compress air enough to supply the place of steam to a vessel of 2,000 tons register. The invention will always be effective when a ship rises and falls 4 ft. or 5 ft., and it is rarely that vessels do not do this when fairly at sea.

From experiments made on board the Channel squadron in 1873, and also by a gentleman during a voyage from Australia, it has been ascertained that ships in a seaway rise and fall (taking their rise and fall and rolling as one motion) from nine to fourteen times per minute. And it is this motion of ships in a seaway which it is intended to utilise by this invention.

With regard to any risk of the chambers being carried away in rough weather, when fitted entirely outside a vessel, as paddle-boxes, false sterns, and other projections stand stress of weather, the inventor maintains that there is no reason why these chambers should succumb, and when fitted inside the outer skin (except a small portion of the chambers) no such risk attaches. Any obstruction to the way of a ship caused by the projection of the chambers when fitted entirely outside a ship, the projector thinks, may be readily neutralised (when sail is carried) by a little additional sail, but in no case would this obstruction amount to much, and when the chambers (all but a small part), are fixed inside the outer skin of the vessel the area of the projecting portion will be so small that the obstruction will be infinitesimal.

Experiments on a large scale are, of course, needed. There is an immense amount of power at large in the motion of the sea: the difficulty is to devise means to utilise it efficiently.

PROPOSED AQUARIUM IN PLYMOUTH.

A scheme for the construction of an aquarium in Plymouth is maturing. According to the plans which have been prepared, a Classic building is to be erected as the front edifice facing the sea. On the ground-floor will be a lobby, with rooms on the left for the secretary, the Board-room, and clerk's office. On the right are to be a refreshment-bar and dining-room. At the end of the passage are the turnstiles to admit visitors and subscribers to the aquarium. This has a double corridor, with tanks right and left. In the centre, under a dome, will be the orchestra. At the end will be a rockery, and a waterfall, fountain, &c.; and to the left of the extreme end will be a concert-hall capable of holding 2,000 people, with all the necessary accommodation for the band and chorus, and a retiring-room. A skating-rink, 140 ft. long by 60 ft. wide, will be provided. Then there will be rockeries, ferneries, and picturesque flower-garden, with fountains dotted about.

On the first floor are a billiard-room, a reading, writing, and smoking room, a dining-room, with waiting and service rooms. Above this again, and in the upper tower, are the kitchens. The roof in the centre is to be flat, to afford, for those who prefer the open air, a cool tea, or a quiet smoke, and a view of the regattas, the entrance of the fleet, or the varied passing and re-passing of the vessels in the Sound and in the offing. The site is not definitely fixed upon. The designs have been supplied by Mr. Bedborough, the architect for the Westminster Royal Aquarium and Summer and Winter Garden. Messrs. J. E. & A. Dowson are the engineers.

Institution of Surveyors. — The next meeting will be held on Monday evening, March 1, when a paper will be read by Mr. E. Ryde, entitled "The Rating of Country Mansions." After the reading of the paper (the discussion on which will be postponed until the next meeting) Mr. J. R. Bonny will call attention to the provisions of the Home Secretary's Bill for facilitating the improvements of the dwellings of the working classes in large towns.

LEAMINGTON WATER SUPPLY.

Leamington derives its supply of water from the river Leam, on the banks of which it is situated; a river which takes its source about twenty miles off, in the county of Northampton. Charges having been made, rightly or wrongly, against the purity of the water, the governing body of the town, naturally desirous to remove any doubts which might exist, determined to obtain, if possible, a supply from the new red sandstone, and after much discussion they resolved to bore, and in 1872 they commenced boring, near to the sewage pumping station, which proved unsuccessful. Although disappointed, they decided, under the advice of Mr. Thomas Dale, C.E., of Hull, to again sink a well and bore a hole, near the Campion Hills, on the same geological formation as the previous one. The result of this, as shown by gaugings made by Mr. E. Pritchard, C.E., of Warwick, is that the supply would be insufficient.

It is still the opinion of the engineer, however, that by boring yet deeper, and driving adits, a proper supply might be obtained. One of our correspondents thinks that the water of the Leam is quite good enough; but of this we are doubtful.

NEW SCREEN, WINCHESTER CATHEDRAL.

The screen erected in Winchester Cathedral in memory of the late Bishop Wilberforce and Dean Garnier, from the design of Sir G. G. Scott, is now nearly complete. It has been executed by Messrs. Brindley & Farmer. It is of English oak; the colour is merely toned down with oil used to preserve the wood. The screen rests on a base of polished grey marble, and fills the space occupied by an old one. The *Hampshire Advertiser* gives a fuller account of it, and says,—It has two "returns," and in the northern one, within a glass-protected panel, will be placed the jewelled pastoral staff of the eloquent and energetic Wilberforce, the gift of many laymen and women of the Church. The various spandrels of the lesser arched panels are filled with spirited and accurate representations in high relief of the flowers, foliage, and fruit of the vine—an emblem of the Saviour and of the Sacrament—of the oak, the ivy, briony, brambles, hawthorn, maple. The larger spandrels of the open arches have all foliage in them interspersed with dragons and other apocryphal animals peculiar to Gothic carving, whilst the finials, crocketing, and quatrefoils, &c., have foliage, dog's head, and various ornaments, which, by the carvers' cleverness, convert solid oak into delicate tracery. Perhaps the most beautiful parts of the work are the small heads in the cusps of the lesser arches. These are very varied, extremely clever, and have each an individuality, and a grotesque humour, such as make them equal to the ancient carvings in the choir. The central arch will be fitted with gates in metal-work.

BRICK-MAKING MACHINERY IN HOLLAND.

Mr. S. W. Del Campo has addressed the following communication to the Society of Arts. It is worth the attention of some of our readers:—

The most important material for building houses, pavements, bridges, &c., in this country is clay, found in nearly every part of the country, but of different quality on the slopes and beds of the rivers. The bricks made from it are of red or yellow colour, the tiles red or black, and the size of them differs from 160 to 240 millimètres in length, half that measure in breadth, and a fourth part in thickness. Those bricks are nearly all hand-made and very coarse, 500 to 600 millions being produced this way a year. In the last years, however, English machines for making bricks came in use, and a description of them in the number of this *Journal* for the 23rd of October last, induced me to say a few words about their introduction in this country. When those machines were introduced in Holland a few years ago, they were rejected, being too expensive, not only by purchase, but also in their working; they did not give any profit with our cheaper manual labour, and were soon laid up in a dark corner to rust away. It was rather a great disappointment, as English machinery in general is much admired in this country, and preferred to our own make. I took the trouble to examine those ill-favoured products of English skill, in the interests of our brickworks as well as in that of the manufacturers in England, and found generally those machines having strings, cutting the bricks from the clay, very inefficient, leaving the edges not sharp enough to our desire, and the bricks wanting in consistence. In Vienna, before last year, my attention was drawn to Mr. Page's clay-pugging mill from Bedford, preparing clay for 5,000 bricks in a day, and to Ruston & Proctor's mill from Lincoln for 12,000 bricks a day with Murray's cutting table, described in the *Journal* of the 23rd October last, and also to a very heavy machine of Messrs. Bradley & Craven, Wakefield, of which there are two sorts, both being rather expensive and requiring much motive power, but working very well by pressure. I gave a description and illustration of this useful machine in my report on the progress of industry in the last ten years in relation to the Vienna Exhibition. The bricks are herewith pressed out of the clay as soon as it leaves the pugging-mill, and formed on a circular moving mound table, producing two bricks at a time; in this way 20,000 very good bricks can be made in ten hours.

I should like to see English manufacturers improving those kind of machines in this way, that they were less costly and more efficient, and I will give an example how this might be done.

As English machines did not come in favour here, a machine was made in this country of very simple construction, consisting of the usual pugging-mill with perpendicular revolving cutter, and a set of screw-like knife blades fixed to it, forcing the prepared clay underneath into two moulds, containing five well-formed bricks, the whole machinery being drawn by three horses. Those iron-moulds are wetted, strewn with dried sand before they are filled, and scraped off with rollers after that. In this way 20,000 excellent bricks are made daily at the brickworks of Messrs. Van Keukelom & Co., Utrecht, with a machine costing no more than 150*l*. Those bricks and the masonry made from them were awarded a medal of merit at the International Exhibition at Vienna, and judged by the international jury to be of a very good quality; they are of great resistance in sea-water and on pavements, and therefore 1s. higher in price than hand-made bricks as a proof of their superiority.

The way of preparing clay for bricks here is somewhat different from that in England, as the bricks are made soft with a large quantity of water, and set up and dried in sheds, before they are burned. English brickmakers hold this addition of water to be useless, but in reality it binds the clay better and gives more coherence and strength to the burnt brick; moreover, it makes the working of the machines much easier; bricks made in this way are really metal-like; they sound like metal when they are knocked against each other.

The price of those bricks is different, from 15s. to 40s. per 1,000; that of a cubic mètre of brickwork about 2*l*.

The quality of this building material and the manufacture of bricks are of great importance in the building trade, and for every durable construction; this may justify this communication on the question in Holland and the English brick-making machines sent to that country.

THE DENS IN ST. PANCRAS.

Instances of the miserably unhealthy hovels which abound in different portions of the metropolis, and have been described in our columns again and again, are constantly being spoken of. A case of this kind was brought to light in the course of a coroner's inquiry last week. Dr. Hardwicke held an inquest on the body of an old woman who had been found dead in the back-kitchen of a house in Munster-street, St. Pancras, and whose death was said to have been caused by the unhealthiness of the house in which she lived. It further appeared that the landlord of the house is a medical officer of health for one of the metropolitan districts. Among the witnesses examined was a man named William Lovell, a locksmith, who stated that he resided in the house, and that it contained six families in eight rooms. The deceased, he said, lived in the back-kitchen, which was in a dirty and unhealthy state. Damp came through the walls, and the deceased had to put pails to catch the water. There was stagnant water in the yard, and the inmates suffered from the offensive smells in the house. A man named William Clarke, formerly residing in the house, but now a patient

in University Hospital, also stated that the stench in the house was abominable, and he had frequently to leave it and take a walk, to avoid being poisoned by the foul drains. He thought if the floorings of the kitchens were taken up that stagnant filth would be found underneath. He believed that the death of the deceased was accelerated by the foul atmosphere of the house, which was farmed out in tenements, and the complaints of the lodgers were ignored. William Rouch, the sanitary inspector of St. Pancras, deposed to visiting the house on the 18th of last month, in consequence of complaints which had been made, and found that the walls of the back-rooms were wet. The back-kitchen, in which the deceased resided, was exceedingly damp, and when she opened the door the stench was awful. The closet was without water, and the front area drain was untrapped. On the 9th of this month, in company with Dr. Stevenson, the medical officer of health for St. Pancras, he again viewed the premises, and found the yard flooded, and the closet still without water. The coroner's jury had also visited the house, and complained of the condition of the house, one of them stating that the place was altogether so filthy that no man would keep his dog there. It was the worst place he had ever known a human being to inhabit. The jury, in giving their verdict, expressed their hope that in the case of this house the provisions of the Sanitary Act would in future be strictly enforced.

HOUSE AGENTS' CHARGES.

SIR,—The attention of the Institute of Estate and House Agents having been drawn to a case reported in your paper of January 23rd (Finlayson *v.* Brickwood), where an agent has made a double charge for commission, and states that it is customary to make a charge against vendor and purchaser, the council will feel greatly obliged if you will allow them to state they consider such charges altogether extortionate, and no member of this Institute would be allowed to make a double claim.

I beg to enclose you a list of the members, by which you will see we have forty-two members, including nearly all the principal firms in London, and it has been established, amongst other objects, to maintain a uniform scale of charges, and to protect the public from overcharge or imposition.

HENRY HATCHETT, Secretary.

ARCHITECTS' ACTIONS.

BUTTERWORTH *v.* KING.

THIS was an action, tried at the County Court, Ipswich, to recover 24*l.* 15*s.* for preparing tracings from drawings of Felixstowe Railway, making second set of tracings of Orwell Railway, and stationery and expenses. Mr. James Butterworth, architect, Ipswich, was the plaintiff, and the defendant was Mr. Charles B. King, civil engineer, Dowgate-hill, London.

The action had been adjourned from the last court, on the application of Mr. Watts, who was instructed for defendant, on condition that a certain sum was paid into court.

The Judge inquired whether Mr. King was there then, and Mr. Watts replied that he was not. He had written to Mr. King four times, and had received one letter from a gentleman purporting to be his private secretary, who said Mr. King was too unwell to attend to business.

Mr. Butterworth was sworn, and proved the engagement. Letters were also put in, in one of which, Dec. 12th, defendant stated that he should be in Ipswich the following week, and added "when I will discuss your account, which is enormous, and in which I think there must be some mistake. You told me 5*s.* per hour. We pay in London 1*s.* an hour, but as I agreed for the 5*s.* I don't mind that. I fail, however, to see how your account has been made out even on this basis; however, as I said before, we will discuss it when I next see you."

An account was handed to the Judge, from which it appeared that Mr. Butterworth charged 10*s.* an hour for his own time, and his Honour said he could not stand that; it did appear to him monstrous for tracings.

Mr. Butterworth explained that the original order was extended so that he had to work himself till eight o'clock two nights.

The Judge said he did not suppose it did him much harm. He said he should not give judgment for a farthing more than 20*l.* 5*s.*, remarking that lawyers' bills were fools to this.

The Albert Memorial.—The statue of the late Prince Consort by the late Mr. Foley, to be placed under the canopy of the Memorial in Hyde Park, has been safely cast. Earlier completion was delayed by an accident to the mould. The statue now only requires the final chasing.

SOMETHING LIKE A FOREMAN.

A GENTLEMAN in Herefordshire inserts the following advertisement:—

"Wanted, an experienced General Foreman, to act as resident Clerk of the Works under the steward on a gentleman's estate. He must be a good practical builder and draughtsman, capable of superintending all repairs, indoor work, and the planning of new buildings. Must understand the profitable conversion of timber, the management of timber-yards, saw-mills, gas-works, and general steam-machinery; be competent to set out, measure, and value all descriptions of masons' and joiners' work, make working drawings, and keep proper accounts. Must be business-like, and of unexceptionable character. Large family objected to. Salary, 100*l.* per annum, with free house and garden, and 6*l.* yearly allowance for fuel."

The advertiser evidently thinks talent cheap. If he can find half a dozen such "foremen" at the price, we shall be glad to take them off his hands, and allow him a profit.

SERIOUS INJURY TO A BUILDER.

MASON *v.* THE GREAT NORTHERN RAILWAY COMPANY.

THIS was an action in the Court of Exchequer, on the 20th inst., to recover compensation in damages for serious personal injuries sustained by the plaintiff when riding in a third-class carriage of the defendants on the 20th of October, 1873, whilst the train was passing up an incline near Moorgate-street, such injuries arising as alleged through the negligence of defendants' servants. The defendants did not deny their liability.

The plaintiff was a builder and a mason. He was in the habit of executing large contracts for bridges and other works connected with railway and similar extensive undertakings, and nearly up to the time of the accident was actually engaged in the fulfilment of contracts with the Great Northern Railway, as well in the execution of works for private parties. The accident in question was occasioned by a collision with two trains, which occasioned a dreadful shock to the passengers. The plaintiff, who up to that moment was a remarkably strong and healthy man, received such injuries as rendered him utterly unable to follow his vocation or to do a day's work.

The jury returned a verdict in his favour—damages, 2,500*l.*, being in addition to the sum of 150*l.* lodged in court by the railway company.

THE "STRIKE" AT JACKSON & GRAHAM'S

SIR,—Please allow me to differ with you as to the correctness of your heading in the report of the prosecution of certain workmen by Messrs. Jackson & Graham. You had it, "The Strike at," &c. Now, Sir, there has been no strike in connexion with that affair. There was a question of overtime before the above firm, and the deputation that conveyed it were informed that they should receive an answer in the course of the day (this happened on Friday, 13th November, 1874), and so they did in the following arbitrary manner:—The foreman called all the workmen together at five o'clock on Friday evening, told them that they were all discharged at one o'clock on the morrow; and he (the foreman) would remain at the shop until three o'clock to receive applications for work on the new system, that being piecework (which means a reduction in wages). Now, Sir, if you call this a strike, I do not; so you will oblige by inserting this in your next impression. I might have stated that only one out of thirty-nine men ask to be reinstated.

ANTI-STRIKE.

DANGEROUS HOUSES AND HOUSELESS POOR.

MR. NAPIER, of the dangerous Structure Department of the Metropolitan Board of Works, applied to Mr. Arnold, at the Westminster Police-court, for an order to forthwith remove the inmates from the house No. 17, James-street, Buckingham-gate, in consequence of the dangerous condition of the building.

Mr. Vulliamy, architect to the Board, and Mr. Edward Drury, the district surveyor, had both certified that the building was unsafe, and the fall of snow would render it yet more dangerous, as one of the chimney stacks had fallen outwards some inches.

After hearing evidence to this effect, Mr. Arnold issued his order to forthwith remove the inmates, and the warrant was entrusted to Emmanuel Davis, 234 H, to execute. There were no fewer than seventeen persons in the house, mostly children, and they all had to go out into the snow, which was then falling heavily, leaving their furniture and belongings behind them. Those who had nowhere to go were offered the workhouse adjoining, but they refused it. The house is one of the oldest in Westminster, situate in Brewers'-green, close to the Blue Coat School. The doors were all padlocked, and on Davis returning to the Court and informing Mr. Arnold of the execution of the warrant, the evicted persons applied to know what they were to do, as they were homeless.

Mr. Arnold said he could give them no advice. The structure had been proved to be dangerous to live in, and they had better take the best means under the circumstances to find shelter for themselves and families.

CEMETERY CHAPELS, GOOLE.

THE Burial Board of Goole, on Friday in last week, examined twelve designs submitted in competition by architects for their new cemetery chapels. The one prepared by Mr. William Watson, of Wakefield, was selected, and he has since received instructions to proceed with the work. The cost is to be 3,000*l.*

Books Received.

The Local Government Directory and Guide for 1875. Knight & Co.

THE thirty-fourth issue of this serial shows the large proportions to which the subject has grown. The length of the lists of the urban and rural sanitary authorities printed ought to give assurance that few parts of the country are now unattended to. The names and addresses of the surveyors should appear in the long list of unions.

A curious exemplication of the divided manner in which our laws are administered, is afforded by the fact that the scope of this Directory is not supposed to include the Metropolitan Board of Works and the metropolitan district surveyors, to whom the discharge of important sanitary duties is intrusted.

VARIORUM.

THE *Printing Times* thus carries on one of our propositions:—

"The *Builder* recently contained a very useful suggestion in regard to our national library. It was remarked that 'there is no special room in the reading department of the Museum for periodicals and the quarterlies, and what may be termed the *current* literature. All complete books, and printed matter of all kinds, first go into what may be termed the private apartments of the Museum; to that portion of the library, that is, wherein the public are not admitted. There they remain,—for such we believe is the rule,—for a certain time before they get into the regular library, and so to be asked for and obtained for the purposes of reference or reading in the usual way. It is difficult for those who do not use the Museum as a matter of necessity to estimate the inconvenience of this rigid rule.' We may add, as frequenters of the room for several years, that the *Builder* might have placed the inconvenience in even a stronger light. In that portion of the library appropriated to works which have not to be written for, are placed the reviews, Parliamentary debates, Annual Registers, and similar books of reference published periodically. It requires usually about *twelve months* for a volume of Hansard or the *Quarterly* to reach the shelves to which they belong. What is done with them in the mysterious regions behind and around the reading-room we do not know, but we can certainly testify to the inconvenience of the present apparently unnecessary and unjustifiable system. The *Builder* says:—'Might there not be a separate room,—say the *old* reading-room, in use before the new circular building was erected,—put apart, and to be used expressly for quite *new* books and numbers as soon as published, and for all periodicals, and magazines, and reviews, and books which come out in parts. These books, and monthly and weekly literature, to be written for, and given out to readers, and returned by them in the usual way, so as to prevent this room being used as a mere place of pastime.' If the suggestion of the *Builder* is carried out,—and there is really no reason why it should not,—our contemporary will have earned the gratitude of all literary people."

——The Japanese Government is in just the same position as that of India. They want engineers, and they have established a college to supply them. The *Engineer* gives some interesting particulars:—The Imperial College of Engineering was established at Tokei in 1873, "under the orders of the Minister of Public Works, with a view to the education of engineers for service in the Department of Public Works." All the students are Japanese, and all the professors are British. The principal is Mr. Henry Dyer, C.E., M.A., University of Glasgow, while the professors of natural philosophy, mathematics, chemistry, drawing, and English literature are all men of high attainments. It reflects no small credit on students who have acquired their information through the medium of a foreign language,—English,—that they appear, on the whole, to have passed with much credit to themselves and their instructors. The principal reason we refer to this college here is to show the admirable manner in which it is proposed to combine theoretical with practical instruction. "The course of training will extend over six years. During the first four years six months of each year will be spent at college, and six months in the practice of that particular branch which the student may select. The last two years of the course will be spent wholly in practical work. By this alternation of theory and practice the students will be able during each working half-year to make practical application of the principles acquired in the previous half-year. The system of instruction will be partly what is usually called professorial and partly tutorial, consisting in the delivery of lectures, and in directions and assistance being given to the students in their work." English youths have no such facilities for learning their profession as those afforded by the Japanese Government. We must not omit to add that the entire cost of the student's education, maintenance, and clothing is defrayed for six years; the student binding himself, in return, to give his services as an engineer to the Government for seven years, dating from the time at which he leaves the college.

Miscellanea.

Look to the Drains.—Dr. Whitmore, the medical officer of health for Marylebone, has just issued his report for January. The death-rate was 29·11 per 1,000 of the population, or 3·89 per 1,000 less than the rate of the previous month, but 3·25 in excess of the corresponding month of last year. As to sewers and drains, Dr. Whitmore says that the systematic examination of sewers throughout the parish, on which the surveyor was still engaged, had led to the discovery of many being in the most poisonous, filthy, and dilapidated condition. There was reason to fear that these defects had already in many cases been the remote cause of typhoid and other zymotic diseases. Many of the best houses in the parish, situated in the most aristocratic streets, still had brick drains constructed twenty, thirty, and even forty years ago, and it was only reasonable to infer that most of them were more or less defective. Where such was the case, Dr. Whitmore remarked, the sanitary condition of a house was necessarily very imperfect, and the health of its inmates might, and probably would, sooner or later suffer. He could therefore only advise, and did so most earnestly, that all householders would look to the condition of their house-drains. Whenever they were found to be brick and in any degree defective, let them be taken up and replaced by the best glazed drain-pipes, taking care at the same time to make provision for their proper ventilation, and to see also that they were carried directly into the street sewer.

Restoration of Salisbury Cathedral.—A meeting of the committee for the restoration of Salisbury Cathedral has been held at the Deanery. It appeared that after deducting 1,000*l.* for the choir pavement which had been ordered at a previous meeting, there remained on the Hamilton Memorial account 1,900*l.* This sum the committee voted for the restoration and completion of the stall-work in the choir. A plan was produced by Sir G. Scott of a choir-screen, which is formed in part of the returned stalls and the canopies above them. The Dean stated, on the authority of Sir Gilbert Scott, that the following fittings have still to be provided in the choir:—Altar-rails, sedilia, the carving of the stalls, canopies to the stalls, the grille-work on both sides of the reredos (it will be remembered that Earl Beauchamp has promised the reredos as a memorial to his ancestor, Bishop Beauchamp), a throne, a pulpit, a litany-desk, an ornamental case for the organ (a lady of the diocese undertaking to defray the cost of remodelling and augmenting the present organ), pavement in the choir-aisles, which is at present in very bad condition. It is impossible to estimate these works at less than 9,000*l.* to 10,000*l.*

Industrial Partnerships.—A severe blow has fallen upon the advocates of industrial partnerships as a means of solving the difficulties which so often occur in the relations of masters and servants. In their report for the past half-year the directors of Henry Briggs, Son, & Company, Limited—the great Yorkshire colliery concern which has over and over again been pointed to as having brought about a state of things which would render strikes and lock-outs a simple impossibility,—state that disputes have recently arisen with the men on the question of wages; and the directors deeply regret that they can no longer recommend the continuance of the system of industrial partnership so far as respects the payment of a bonus on wages earned by the *employés*. The men for their part make no secret of their desire to stand on the same footing as the other colliers in the district, and are probably resigned to the abandonment of the bonus plan agreed to at the meeting of the shareholders on Monday.

Michelangelo.—A discovery has been made at Pisa. According to the *Academy*, the noble family of Pesciolini possessed at Pisa some interesting works of art, among others a statue of St. John given to Donatello. This palace, long uninhabited and neglected, was sold to the Count Rosselmini, when the statues were submitted to the judgment of the sculptor Signor Salvini. He pronounced the supposed Donatello to be a statue by Michelangelo, and in all probability that St. John which, as Vasari relates, was sculptured by the great master for the Duke of Urbino,—that is, Lorenzo de Medici, father of Catherine of France. Other artists have confirmed this view.

Wesleyan Chapels.—The report of the Wesleyan Methodist Chapel Committee has just been issued, containing 146 pages. The ordinary income of the chapel fund this year amounts to 9,036*l.*, being an increase of 516*l.* The legacy of the late Mr. Fernley, 20,000*l.*, has been paid by the executors, and has been applied to the loan erections branch of the chapel fund, in accordance with the terms of the will. The following cases have been sanctioned by the Conference:—130 chapels, at an estimated cost of 214,955*l.*; 9 ministers' houses, 4,900*l.*; 21 schools, 11,959; 40 organs, 2,022*l.* Of the 130 proposed new chapels, 47, to accommodate 11,306 hearers, are to be erected at places where there were previously no Wesleyan Methodist chapels, and the remaining 83, estimated to provide accommodation for 21,437 hearers, are to supersede former erections. The total amount contributed in twenty years towards the removal of debt and the cost of new erections and enlargements has been 3,419,919*l.*

The Iron Trade.—Messrs. Wm. Bird & Co. say:—The decline in prices, foreshadowed in their annual report, progresses in every direction, and even the serious and important "lock-out" in South Wales fails to enliven the languishing demand. Pig iron quotations fluctuate greatly, but present rates represent a fall since the commencement of the year of about 3s. per ton on Scotch, and about 2s. per ton on Cleveland, and 7s. 6d. per ton on Hematite qualities. Rails are quoted at 5s. to 10s. per ton lower, and manufactured iron, except for special brands, may be taken at 5s. per ton lower in Wales, 10s. to 15s. per ton lower in the North of England, and outside Staffordshire brands of bar iron are offered 30s. to 40s. per ton under list prices. They add:—"It saves trouble to throw all the blame of the collapse of trade on cost of the various labour processes, but up to the present it is very evident that, even if wages were reduced to or below the standard of 1871, trade would still remain stagnant awhile."

Lighthouses.—The following statement of the sums expended for new works, in building lighthouses, &c., in the United Kingdom, from the 1st of April, 1873, to the 31st of March, 1874, appears in a Parliamentary paper just published:—Wolf Rock, 731*l.* 13s. 8d.; Longships, 6,183*l.* 0s. 11d.; South Foreland, 1,073*l.* 16s. 2d.; Hartland Point, 2,503*l.* 9s. 5d.; Light Vessels, Nos. 46 and 47, to replace Nos. 2 and 4, 1,350*l.* 8s. 1d.; Caistor-Leading Lights, 188*l.* 3s. 2d.; Scattery Island, 7*l.* 1s. 9d.; Straw Island, 99*l.* 17s. 3d.; Carlingford, 13*l.* 19s. 10d.; Pladdy Lug Beacon, 89*l.* 3s. 1d.; Galley Head, 4,089*l.* 3s. 1d.; Dunree Head, 30*l.* 7s. 10d.; New Store at Kingstown, 59*l.* 16s. 2d.; Duheartach, 287*l.* 1s. 7d.; Chickens Rock, 9,843*l.* 19s. 9d.; Turnberry Head, 1,407*l.* 17s. 6d.; new steamer, 20,149*l.* 9s. 9d.;—total, 48,108*l.* 9s. The amounts received for Light Dues during the period in question were as follows, viz.:—Trinity House, 326,818*l.* 6s.; Irish Lighthouses, 22,083*l.* 12s. 11d.; Northern Lighthouses, 50,205*l.* 3s. 10d.

Use of Adjoining Wall.—A case which created interest among the building trade in the district, was decided by Mr. E. J. Meynell, judge, at Bishop Auckland County Court, on the 9th inst. Mr. Joseph Wealands, cabinetmaker, sued Mr. John Braithwaite, builder, for 10*l.* 2s. Plaintiff stated that he had a house in Hexham-street, and defendant had built a new house adjoining it, using his gable and refusing to pay for the same. Edward Foster, licensed valuer, valued the gable at 20*l.* 4s. He said it was a custom, when built against a gable, to pay half the value. The gable had been used by the formation of the flues, but the timber did not rest upon it. He produced a holdfast which had been taken out of the gable. Defendant called John Vickers, who built the house, and who denied having used the gable in any way. His honour gave judgment for plaintiff for 10*l.* 2s.

An Architect as a Working Men's Candidate.—If the desired representatives are to be the "ablest and best working men," who really belong to the working classes, by birth, occupation, and not merely official connexion, then we may ask for a single individual now sitting in Parliament who deserves the name. He cannot be found. Mr. Walton, the workingmen's candidate for Stoke-on-Trent, is a successful architect, and if a successful architect can, by any stretch of words or imagination be considered "a labour candidate," why not a successful merchant or a successful banker?—*York Herald.*

Arbitration in Trade Disputes.—Mr. Rupert Kettle met a deputation of the Arbitration Board of the North of England Iron Trade on Monday last, at the Midland Hotel, Derby, to finally settle the working rules. Saturday (to-day) is appointed for the meeting to determine the difference in the Birmingham building trade. On Monday next Mr. Kettle will commence the sittings at Newcastle-on-Tyne, to hear and adjudicate upon the coalowners' notice further to reduce colliers' wages; and if both parties are ready, and time permits, he will enter into the question upon which evidence has been so long in preparation, of the dispute between employers and workmen as to the practical mode of getting steam coal in the Northern coalfield. Monday, the 8th, is the day appointed for Mr. Kettle to sit at Saltburn-on-the-Sea, to settle by arbitration the contest as to the price per ton for working ironstone in the Cleveland district.

Rumoured Difficulties in the Building Trade.—It is announced that a series of difficulties are likely to arise in the building trades of Liverpool, Birkenhead, and the vicinity, should the demand of the men for increased wages be not acceded to by the masters on the 1st of May. The disaffection exists amongst the stone-masons, bricklayers, plasterers, and joiners, who have preferred a claim for a reduction of hours and an advance of wages of one halfpenny per hour, the general effect of the claim being that the men should work a fewer number of hours per week and earn the same wages as before. At present the attitude of the masters is very firm in opposing the demand, but on each side there appears to be a willingness to refer the impending dispute to arbitration. Should this course not be adopted, and matters proceed to an extremity, over 4,000 men will be thrown out of employment owing to the strike and lock-out resulting.

Condition of our Villages.—Mr. Bennett, sanitary inspector, who, in consequence of a fever epidemic, has been examining into the condition of the village of Gerstage, in Weaverham lordship, Cheshire, says, "I have never, in all my experience, seen human habits or habitations so calculated to produce filth, fever, and immorality. The district is almost without drinking-water, none being available nearer than the kennels of the Cheshire Hunt. . . . . Nine-tenths of the houses are without drains, and the consequent stench arising from the stagnant drainage from pigs and other animals, and house sewage, is worse about some houses than I will attempt to describe." Mr. Bennett does, however, describe things almost too shocking to mention. Fever has, of course, been raging at Gerstage "with its greatest virulence and its most fatal effect."

A Timber Yard destroyed in Liverpool. Last week a fire was discovered in the saw-mills and timber-yard occupied by Mr. Peter M'Muldrow, in London-road. The frontage of the yard is in London-road, the premises extending in the rear to Oakes-street, and bounded on each side by Anson-place and Norman-street. In the yard was a brick building of two stories and a basement, the former being used as a workshop, and the underground portion as a saw-mill, while the yard itself contained a large quantity of timber in immense piles. The damage is estimated at over 3,000*l.*, which is covered by insurance in the Home Insurance Company of New York, and the Aziendan Assicuratrici, of Trieste. The building was the property of Mr. Joseph Holme, and was insured in the Royal Insurance Company.

Appointment of Waterworks Manager, Bradford.—At a special meeting of the Waterworks Committee of the Bradford Town Council last week, Mr. Alexander R. Binnie, of London, was appointed waterworks manager in that borough, at a salary of 400*l.* per annum. Mr. Binnie is thirty-six years of age; he served his articles with Mr. Bateman, the eminent engineer; he is a member of the Institution of Civil Engineers; and latterly he has been connected with the Public Works Department of India. The number of applicants for the office was forty-nine, and the choice of the committee was, after the inquiry of a sub-committee, circumscribed to a selection of four.

Blackpool Surveyorship.—Mr. T. Sunderland, an assistant in the Borough Engineer and Surveyor's Office, Salford, was appointed Surveyor to the Blackpool Local Board of Health on Tuesday, the 9th inst.

Public Improvements, York.—The alterations about to be carried out under the direction of the Corporation, in Museum-street, near to Lendal Bridge, considered in conjunction with the extensions now in hand and nearly completed by the Philosophical Society, will doubtless improve very considerably the appearance of the space between the new entrance to the Museum and the bridge, and will render the whole somewhat more in keeping with the important property on the opposite side of the street than it is at present. The chief features in the work contemplated by the Corporation are to lower the walls at the end nearest the Museum and also the top battlements to the depth of 13 ft. for a distance of about 60 ft., to alter the buttresses and palisadings fronting the moat accordingly, and to effect sundry much-needed repairs in the other portions of the fabric. The work has been entrusted to Mr. Joseph Clarke, of Barker Hill, who will commence operations on Monday.

Worcester School of Art.—The annual meeting of the above was held at the Art School, Pierpoint-street, on Tuesday evening. A large and influential audience assembled, under the presidency of the Right Hon. the Earl of Dudley. In opening the proceedings, his lordship expressed the hope that future annual meetings would render it necessary for the committee to call them together in a larger room, and that there would be in the future even more interest shown in the School of Art than there was at the present time. He congratulated the city upon their determination to purchase the Music Hall, so that in days to come, until they had a much larger room, they would be enabled to hear there the very highest class of music.

Restoration of St. John's Church, Newcastle.—A committee meeting was held in the vestry on the 10th inst., the vicar (the Rev. W. E. Houldey) in the chair. The architect, Mr. [J. Johnstone, laid before the meeting the draft plans for the proposed alterations, and on the motion of Mr. Councillor Owen, seconded by Mr. Sang, they were unanimously adopted. A large increase of sitting accommodation will be gained under the new arrangement of pews, and the church will be opened its whole length of 140 ft., producing a good effect, as well as largely adding to the comfort of the worshippers. The galleries will be all removed, the organ placed in the chapel by the north transept, and the whole work made as complete as possible.

The School in Hunter-street, Southwark. This school, which was erected under the superintendence of Mr. F. W. Roper, the architect, was completed and opened on the 5th January, 1874. A dispute, however, arose between Messrs. Merritt & Ashby, the contractors, and the architect, as to the amount due to the former, and both parties agreed to refer the matter to the Board architect as umpire, the reference being sealed by the Board on the 25th November last. The amount for which Mr. Roper was prepared to certify was 8,221*l.* 8s. 11d.; the contractors, however, having sent in a claim considerably in excess of this amount. The committee have to report that the Board architect has now given his award at 8,534*l.* 14s. 9d.

Winter in Berlin.—I scarcely dare to think (says the Berlin correspondent of the *Daily Telegraph*) what the consequences to the poorer inhabitants of London would be of such a season as that now, I sincerely hope, fast drawing to its close in Berlin. Double windows are almost unknown in the British capital; and even they have proved a miserably inefficient bulwark against the cold here for some weeks past. In those rooms unprovided with them, despite the heating kept up night and day by means of delf stoves that devour such a terrible amount of costly fuel, a coating of ice from three-quarters of an inch to an inch and a half in thickness has formed upon and steadily adhered to the inside surface of the window-panes.

The Lock-out in South Wales.—The Lock-out has been accompanied by a lamentable fatality. In the bitter weather and the falling snow several poor people were engaged in collecting bits of coal from the huge tips. A man who was standing by saw a lad busily occupied in his search just below an overhanging block which looked particularly unsafe. The man went to the lad to remove him from the dangerous situation, and while so employed the threatening mass fell and buried them both. When they were extricated life was extinct.

Lighting-Gas from Mud.—M. Albert Sindermann has lately made known to the municipal authorities of Breslau the fact that he manufactures lighting-gas from excrementitious matter and mud on one of his estates outside the town. According to the *Gazette* of Silesia, the process is as follows:—The apparatus, placed in a vault, consists of a reservoir, which collects the matters and distributes them by a sluice into a retort situated at a lower level. From this retort the gases escape into a tar-well, and then into the condenser. The purifying is accomplished by means of lime-water, and lastly the gases are made to pass over pure water, when they are collected in the gasometer.

Railway Projects for London.—Mr. Haywood, the engineer to the Corporation of London, has made a report respecting the railway and other projects now before Parliament affecting the City. These will for the most part interfere largely with the sewerage of the districts through which they are proposed to be executed, and, as regards railways, will involve the reconstruction of very considerable lengths of sewer immediately on their line and in adjacent places. Some of the most important public ways will also be interfered with by the proposed railways during their construction, although not permanently. The total area scheduled in the various schemes is over fourteen acres.

Effect of the Cold on the Metropolitan Death-rate.—In London 2,488 births and 1,726 deaths were registered. Allowing for increase of population, the births were 31 below, whereas the deaths exceeded by 91, the average numbers in the corresponding week of the last 10 years. The annual death-rate from all causes, which, in the two previous weeks had been equal to 25 and 24 per 1,000, rose last week, under the influence of the recent lower temperature, to 26. The mean temperature of the air was 34·5 deg., or 4·5 deg. below the average in the corresponding week of the 60 years 1814-73.

New St. Peter's Church, Maidstone.—The following tenders have been received for the erection of the New St. Peter's Church, Tunbridge-road, Maidstone. The new building will occupy an elevated position on a piece of land given by Mr. F. Scudamore:—

Turner	£6,750	0	0
Avard	6,535	0	0
Vaughan	6,390	0	0
Gibbons	6,347	0	0
Dove	6,330	0	0
Wallis & Co.	5,849	0	0
Naylar (accepted)	5,216	0	0

Gloucester.—The following tenders have been received for the erection of stables on a site adjoining the Cattle-market, for the Corporation. The plans were prepared by Mr. T. Small, city surveyor, and each contractor took his own quantities:—

Cullis	£416	0	0
Jones	388	0	0
Peters	385	17	0
Niblett	380	0	0
Green	379	0	0
Meredith	369	0	0
Sims (accepted)	365	0	0

New Schools at Humber.—On the 15th inst., the new schools for this parish and district were opened by the rector, the Rev. P. Scudamore Stanhope, in the presence of a large number of parishioners and friends. To the schools, which though situated about a mile from the church, are in the centre of the district, is attached an excellent residence for the master and mistress. The schools and class-rooms, built to accommodate sixty children, are lofty and well ventilated, and fitted up with all the latest improvements, the architect being Mr. Hinch, of Hampton Court, Leominster.

Order for Six Miles of Water-Pipes.—Nearly the largest, if not actually the largest, order for ironwork which has been given out for some time, has been awarded within the last few days to the Staveley Company, near Sheffield. It is for several thousand tons of very large-sized water-pipes, to form nearly six miles of water-main, for the principal water company in Yorkshire. The competition was very severe; all the leading northern and local firms were competitors. The price was understood to be considerably under 7*l.* per ton, or 30s. below recent rates, owing to cheaper fuel and wages.

Rebuilding of Trinity Church, Dorchester.—Messrs. Tilley, the contractors for rebuilding Trinity Church, have received instructions to proceed with the work of demolishing the present building. Their contract is 3,300*l.*, including everything.

Fever at Greenwich Hospital Schools.—At a meeting of the Greenwich District Board of Works the other day the district medical officer reported the outbreak of fever of a low malarious character among the boys of the Greenwich Hospital Schools, no fewer than fifty-nine cases of illness having arisen within a period of seven days. The cause of such outbreak he attributed to the breaking and carrying away of the soil of the old burial-ground of Greenwich Hospital for the formation of the tunnel of the new line of railway between Greenwich and Woolwich.

Memorial to the late Archdeacon Hony. It has been decided to place a pulpit, to be designed by Sir Gilbert Scott, in the nave of Salisbury Cathedral, as a memorial to the late Ven. William Edward Hony, Archdeacon of Sarum, and Canon of Salisbury Cathedral. The probable cost will be about 500*l.* Several subscriptions are announced, and among them the Very Rev. the Dean, 25*l.*; Mr. Alfred Morrison, 25*l.*; Mr. Alfred Seymour, 10*l.*; Mr. C. Raikes, 5*l.*, &c. Accounts and subscription lists are opened at all the Salisbury banks.

The Artizans' Dwellings Bill.—In a discussion on Saturday last on the provisions of the Artizans' Dwellings Bill, at a meeting of the Association of Medical Officers of Health (of the metropolitan district), the Bill was admitted to be an important step in the direction of sanitary reform. It was held, however, that to be effective it should be compulsory on local authorities to carry out the recommendations of the health officers to require the provision of house accommodation for occupiers before the demolition of condemned buildings.

A large Chimney Blown Down.—Last week, during the prevalence of a strong gale, a large chimney connected with the Bede Chemical Works, East Jarrow, was blown down. At the time, three men, named Thomas Holleran, Hugh Cain, and Forest Mitcheson, were engaged in clearing old plant about eighty yards from the chimney, which, in falling, struck Holleran, and killed him on the spot. Cain was severely injured, and Mitcheson slightly. The chimney also fell on the building, and the whole damage amounted to about 3,000*l.*

Improvements on Clapham Common.—The Metropolitan Board of Works, who are now the conservators of Clapham Common, and in whom the manorial rights, &c., are vested, have sanctioned improvements, and an avenue of trees has been planted and guarded from destruction and the roads and paths repaired, and the ponds are to be drained and cleansed, but the common will in other respects remain intact and preserved in its present park-like condition. The Metropolitan Board paid 17,000*l.* to the Lord of the Manor for his interests.

Fall of a Railway Bridge.—A fatal accident occurred on Saturday last, near Hays and Harlington Station, on the Great Western Railway. For several months past a large number of workmen have been engaged widening the line between London and West Drayton. On Saturday they were taking down a portion of a brick bridge over the line near the Hays and Harlington Station, when a part of the bridge fell in with a loud crash. Several of the men were buried.

The Military Depot at Worcester.—The site for the depôt, extending over 25 acres, and situated on the Worton-road, about three miles from the city, is now the scene of active excavating and other building processes. It is expected that the work will be completed in about two years. Colonel Manners, R.E. (Pembroke), and Major Hawthorn (Newport), are directing the operations, Mr. Louch undertaking the more immediate personal supervision. The amount of contract is between 50,000*l.* and 60,000*l.*

The Regent's Park Canal Bridges.—On the 17th, at the sitting of the St. Pancras Vestry, a report from the General Purposes Committee stated that the Metropolitan Board of Works had consented to pay the moiety of the cost, estimated at 9,000*l.*, in re-erecting and widening the canal bridge at the entrance to the Regent's Park at Gloucester-gate, and also the bridge in Chalk Farm-road, and the Vestry resolved to carry out the work.

New Barracks.—The War Department has commenced the erection of extensive new barracks at Warrington. The contract, which we believe amounts to about 69,000*l.*, has been let to Messrs. Robert Neill & Sons, of Manchester.

Lower Gornal Parish Church.—On Sunday morning, 14th inst., a considerable amount of plastering fell from the roof of the church over the children's gallery during divine service. The noise produced great consternation among the congregation, as it was generally thought that the tower of the church was giving way. Fortunately no one was hurt, and on the churchwarden stating the real cause, most of the congregation remained in their seats.

Election of Sanitary Inspector, Bishop Auckland.—At the meeting of the Auckland Rural Sanitary Authority on Tuesday, 18th inst., the election of an assistant inspector of nuisances, at a salary of 200*l.* per year, in place of Mr. J. Watford, deceased, created a great amount of interest. There were no less than fifty-six candidates for the office. At the last meeting the number was reduced to ten, and on Thursday, after two votings, Mr. W. Robson, of Durham, was elected.

Accident to a Plumber at Wolverhampton.—Last week, Benjamin Clarke, a plumber, in the employ of Mr. Ward, Snowhill, fell from the top of a three-story house in George-street. He was removed to the Hospital, where he was examined, and was found to have sustained a scalp wound. He was detained as an in-patient. The cause of the accident is stated to have been a rotten stave in the ladder on which he was standing.

City of London School.—We learn that the City School Committee are discussing the propriety of rebuilding the school upon another site, to give a greater amount of accommodation. In the present building the boys have no proper space for work or play. The committee consider they would be able to realise a large sum for the present site, sufficient to erect a building upon an improved plan, which would meet the requirements of the school.

New Congregational Churches in Wales. The number of these churches in Wales, and especially English ones, is apparently on the increase. An official report says that in Glamorganshire alone no fewer than fifty-four new Congregational churches have been built, and twenty-seven old churches rebuilt and enlarged, during the past fifteen years. The total cost was nearly 130,000*l.*, and this in addition to 10,000*l.* which has been spent on repairs and alterations.

Large Donation to Melbourne University. A munificent gift has been made to the Melbourne University by Mr. Samuel Wilson, of Ercildoun, a squatter, whose liberality has previously been displayed in other directions. He has placed at the disposal of the authorities of the University the sum of 30,000*l.*, for the erection of a hall in keeping with the design of the present buildings, the donation to be free from any conditions whatever.

A Sudden Lock-out.—The men employed at the Union Foundry, Bolton, to the number of 304, were suddenly told, the other day, about eleven o'clock, that they must cease work, and quit the premises as soon as possible, the law officers having seized the works under a distraint. The announcement caused great consternation among the men, who, however, lost no time in packing their tools and departing.

The Blackburn Waterworks.—The Corporation of Blackburn have purchased the works and rolling-stock of the Blackburn Waterworks Company, and have guaranteed to pay to the latter a fixed percentage of 9 per cent. for a period of five years, and at the expiration of that time the sum of 9½ per cent. for ever. The value of the works is expected to be 200,000*l.*

The Sheffield New Workhouse. — The Chairman moved "that the Local Government Board be requested to issue an order authorising the guardians to borrow the sum of 60,000*l.* for the purpose of erecting a new workhouse for this union, the sum to be borrowed in such amounts as may be required from time to time." Mr. Stracey seconded this resolution, which was carried with three dissentients.

The Land-Tax collected in Great Britain produced 1,071,991*l.* in the financial year 1873-74, being 23,955*l.* less than in the preceding year. The Inland Revenue Board find that there are about 2,000 parishes in which the land-tax payable is under 10*l.*

The Port of London.—Dr. Harry Leach, the medical officer of health for the port of London, has just presented his half-yearly report to the Corporation. It contains many interesting particulars.

Garibaldi's Tiber Scheme.—Garibaldi, it is stated, has entrusted to Messrs. Wilkinson & Smith, engineers, of Westminster, the preparation of the plans for forming a harbour in connexion with the intended ship canal to Rome at Fiumicino, near the present mouth of the Tiber. The plans are to be prepared with all expedition to enable the works to be commenced as early as possible.

Cremation.—The Council of the Cremation Society have, we learn, made a progress towards their object. A piece of ground has been secured for the erection of a building in which the religious rites can be performed prior to the incinerating process. The estimated cost of the proposed building is 3,500*l.*, towards which 1,000*l.* has been promised. Further subscriptions are requested.

Cabmen's Rests.—At the meeting of the Paddington Vestry last week, an application was received from the Cabmen's Rest Association applying for leave to place a "shelter" on the stand in the Harrow-road, near to Bloomfield-crescent. The Chairman of the Highways Committee moved that the application be granted as an experiment, subject to the Committee of the Vestry approving of the position selected.

The Female School of Art.—The annual distribution of prizes to students, including the Queen's scholarship, the Queen's gold medal, national bronze medals, Gilchrist, and other prizes, will take place in the theatre of the Museum of Geology, Jermyn-street, on this Saturday, the 27th. The Earl of Aberdeen will preside.

Langham Hotel Company.—The directors have declared a dividend (free of income-tax) at the rate of 18½ per cent. per annum, which will absorb 7,945*l.* 13s. 2d., and leave 7,257*l.* 6s. 8d. to be carried forward as against a like free-tax dividend of 17½ per cent. per annum, declared and paid at the corresponding period of last year.

A Charge of Vandalism.—Mr. E. Lumley, of Surbiton, draws attention to the fact that the old wall which separates the Hampton Court Palace grounds from the towing-path has been despoiled of its beauty by the destruction of the ivy which covered it. He asks who is responsible for this act, and protests against it on behalf of those who, like himself, love to linger by the charming old palace and gardens.

A New Appointment. — The committee have recommended that an additional officer be appointed in the Superintending Architect's Department (Metropolitan Board of Works), to make detailed valuations of the several items of tenants and trade fixtures in cases of compensation claims, and to discharge other special duties in that department, at a commencing salary of 150*l.* per annum.

Good Orders.—Mr. Thomas Holloway has just given Mr. W. H. Lascelles an order for the Joiners' work in the main building of his Sanatorium. It is to be completed in six months. The value of the work is about 10,000*l.* Mr. Lascelles has just completed an order from the London School Board for 11,000 pitch-pine desks and seats for their new schools.

Gift to Saltley Training College.—By the munificence of an anonymous donor, Saltley Training College, Birmingham, has been provided with a sum of 3,000*l.*, to provide lectures and teachers on the laws of health, with a money prize for proficiency.

Casting of the Maximilian Memorial.—The casting in bronze of the fine work of art for the Maximilian Memorial, to commemorate the late unfortunate Emperor of Mexico, has just been successfully effected at the Imperial Foundry at Vienna.

Certificates of Competency.—The Royal Institute of British Architects have informed the Metropolitan Board of Works that the Council have granted certificates of competency, to perform the duties of District Surveyor, to Mr. J. Hebb, Mr. F. C. Notley, and Mr. T. C. Sorby.

Withdrawal of the Metropolis Gas Bill.—In the Commons on the 16th inst., on the motion of Sir C. Forster, the order for the second reading the Metropolis Gas (New Works) Bill was read and discharged, and the Bill was withdrawn.

Demolition of the Old Paris Opera House.—The old Opera House is about to be pulled down to make way for a projected new street.

TENDERS

For taking down and rebuilding Nos. 67, 68, and 69, Houndsditch, for Messrs. Henry Hobson & Son. Mr. W. C. Banks, architect:—

Staines & Son	£3,340 0 0
Merritt & Ashby (accepted)	3,300 0 0

Tenders for building a laundry, at Homerton, for the guardians of the City of London Union. Mr. G. Judge, jun., architect. Quantities supplied by Mr. C. Kirkby:—

Gough	£3,437 0 0
Langmead & Way	2,997 0 0
Lewis	2,839 0 0
Messrs. Roberts	2,797 0 0
Perkins	2,787 0 0
Waldram	2,739 0 0
Harper	2,725 0 0
Shurmur	2,632 0 0
Warr	2,675 0 0
Thompson (accepted)	2,463 0 0

For house and factory, New Brompton, Kent, for Mrs. M'Farlane. Mr. A. C. Morton, architect:—

Tunell, Brothers	£750 0 0
Smith (accepted)	530 0 0

For public-house and shop, Tabernacle-walk, Finsbury, for Mr. P. Turner. Mr. A. C. Morton, architect:—

Allen & Son	£2,350 0 0
Channing	1,577 0 0
Wheeler (accepted)	1,189 0 0

For two shops, at Upper Norwood, for Mr. James Swift.

Merritt & Ashby	£2,330 0 0
Downs & Co.	2,229 0 0
Blake	1,989 0 0
Bowyer & Sons (accepted)	1,748 0 0
Hobbs	1,648 0 0

For pulling down present entrance, and reconstruction of new works to the Deptford-green Dry Dock, for Messrs. W. Walker & Co. Mr. E. C. Homer, engineer:—

For New Entrance.

Cooke & Co.	£5,225 0 0
Kirk & Randall	3,950 0 0
Watts	3,357 0 0
Sheffield (accepted)	3,350 0 0

For Part of Inside Work.

Kirk & Randall	£2,200 0 0
Sheffield (accepted)	2,000 0 0

For alterations and additions to No. 44, Tottenham-court-road, for Mr. J. Powlesland. Mr. T. Newell, architect:—

Baugh	£287 0 0
Watson, Brothers	247 0 0
Perkins (accepted)	231 0 0

For the erection of offices, restaurant, and shops, in Gracechurch-street. Mr. F. W. Stent and Mr. J. W. Morris, architects. Quantities supplied:

Bracher & Son	£17,347 0 0
Watts	15,195 0 0
Ellis & Sons	14,977 0 0
Waldram & Co.	14,775 0 0
Kirby	13,920 0 0

For pulling down and rebuilding the King William the Fourth, Grosvenor-road, Pimlico, for Mr. T. Barrett. Mr. G. Legg, architect:—

Heath	£5,682 0 0
Fish	5,600 0 0
Carter	5,567 0 0
Chappell	5,419 0 0
Timewell	5,335 0 0
Stephenson	4,756 0 0
Toms	4,666 0 0

For alterations and additions to No. 2, Thomas-street, Whitechapel-road, for Mr. De Meza. Mr. C. A. Legg, architect:—

Hearle	£449 0 0
Moyle	398 10 0
Judd & Hawkings	389 0 0
Hunt	368 0 0

For alterations and additions to Nos. 263 and 265, Oxford-street, Stepney-green. Mr. J. F. Richardson, architect:—

Bremeyer	£530 0 0
Judd & Hawkings	377 0 0
Gill	255 0 0

For the erection of a warehouse, in Eagle-court, St. John's-lane, Clerkenwell. Mr. L. H. Isaacs, architect. Quantities furnished by Mr. L. C. Riddett:—

Fatman & Fotheringham	£2,338 0 0
Browne & Robinson	2,270 0 0
Macey	2,220 0 0
Elkington	2,013 0 0
Scrivener & White (accepted)	1,994 0 0

For alterations and additions at Nos. 11 and 12, Godliman-street, St. Paul's Churchyard, for Mr. S. Beddington. Messrs. Joseph & Pearson, architects:—

Browne & Robinson	£3,090 0 0
Newman & Mann	3,005 0 0
Lidstone & Son	2,902 18 0

For alterations, painting, &c., at the Shakspere Tavern, Shakspere-road, Stoke Newington, for Mr. Ponton. Mr. J. Groom, architect:—

Coward	£230 0 0
Cole	220 0 0
Jenkins	198 10 0
Whitby	183 0 0
Staines & Son (accepted)	178 0 0

For the erection of stables and loose boxes, at Hill-street, Finsbury, for Mr. M'Namara. Mr. J. Tosh, architect. Quantities supplied by Mr. A. J. Bolton:—

Chamberlain, Brothers	£1,571 0 0
Carter	1,567 0 0
Anley	1,512 0 0
Crabb	1,500 0 0
Downs	1,497 0 0
Bowman	1,479 0 0
Waldram & Co.	1,439 0 0
Crockett	1,420 0 0
Kirk	1,414 0 0
Browne & Robinson	1,397 0 0
Williams & Son	1,380 0 0
Ennor	1,357 0 0
Aitchison & Walker (accepted)	1,295 0 0

The Builder.

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On "The Artisans' Dwellings Improvement Bill."

AT a meeting of the Social Science Association, on Monday evening last, the Earl of Rosebery in the chair—

Dr. George Ross, the Medical Officer of Health for St. Giles's, read a paper with reference to the Bill now before Parliament. In the course of it he said:—Now, I will suppose that in clearing sites and disposing of them at a certain price, as provided for by the Bill, the ratepayers sustain a loss, and I ask the question, which many men of high political intelligence have asked before, and some have answered in the negative, whether it is the duty of society to contribute to the erection of houses for working men, so that they may pay a rent less than the fair value. Why, in fact, should society provide house-room any more than food or clothing at less than it cost? This, it is said, is charity, and it tends to undermine the independence and to impair the self-reliance and dignity of the working man. This, it appears to me, is not the main question in issue. The primary question is sanitary and not economical. Society is bound by a law analogous to the personal law of self-preservation to protect itself. If any section of society have become a focus of poison, disease, and premature death to the other sections, it becomes the duty of the whole body in self-defence to abate or suppress the evil. If scarlet or typhoid fever infest one street, and thence radiating to the surrounding streets, carry death to neighbouring households, then it is the duty of the community to make such ordinances as may be necessary to root out the mischief. The argument that justifies palliative measures will justify the destruction of the houses, if it be proved necessary, in the interests of all, to be thorough in the work. But it is apparent that, merely to demolish the houses and to scatter the inhabitants into neighbouring habitations, is not to effect a permanent benefit. It is to be cruel and not merciful, to be selfish without being wise, and the further step is necessary to provide suitable habitations for the dispossessed population, so that the evils that have been suppressed on one spot should not be revived in another in possibly a more deadly form. I leave out of consideration all the sentimental emotions in relation to this matter. I do not invoke the indignation of Christian men at the un-Christian way in which tens of thousands of our poor are huddled together in filthy and sordid habitations. I simply say that it is a duty society owes to itself to banish the abominations that destroy health, vigour, and manhood. If the poor be the first to benefit, all will benefit in the end; and what appears, superficially, to be a boon intended exclusively for the working man, is, in fact, a blessing for the entire community.

Whilst I lay down this as a maxim, antecedent to and transcending all merely politico-economical axioms, I by no means wish to assert that it is the duty of the State in every one of its organisations to be at the sole charge and responsibility of this work. That is another matter: and here the second question comes to be considered,—as to how this work ought to be done? This question, in fact, involves the principle of Mr. Cross's measure, and by that, so far as I can judge of the matter, I abide. In the present state of public opinion, Mr. Cross proposes to do all that any minister can safely attempt, but no more than the case imperatively demands. He proposes, in short, to demolish bad property—houses "engrained with disease,"—and to charge the rates with the cost. Having cleared the sites, he proposes to let or sell them to any parties who will undertake to erect upon them buildings for working men upon agreed conditions. . . .

I can point to streets and courts in this metropolis where a death occurs, on an average, in each house every year,—that is to say, if there be sixty houses in that street there will have been sixty deaths in those houses in the preceding year. The mortality will run up, in some bad years, as high as 70 per 1,000. In the course of his speech on the introduction of his Bill, Mr. Cross stated that the Medical Officer of Health for Manchester had reported that there were courts in that city where the deaths had been at the rate of 60 and 70 per 1,000. This is simply frightful. Yet these figures do not state the whole of the question. If we would understand aright the baleful effects of these malarious poisons we must take into account the sickness as well as the mortality, the suffering, the decrepitude, the prolonged disablement which they occasion. Better, in many instances, that a man should die early than to continue to live a few years longer in pain and sorrow, and weariness of body and mind, a burden to himself, his friends, and the community. In my district there are 21·5 cases of sickness, so severe as to require medical attention, for one death. The average of our excess of deaths over the metropolitan rate is one-sixth. Our average number of deaths per annum is 1,528: consequently we suffer annually 218 deaths more than our quota of the entire mortality, representing 4,687 cases of sickness and disablement.

Each case of sickness lasts, on an average, three weeks, and costs the community about 30s. Thus the expense to the district of this excess of sickness is about 7,030*l.* annually. This is a very large sum, but is still much below the actual cost of all cases of preventible sickness, because all over London there is an undue mortality from this cause, and I have taken as a basis for this calculation the *mean* death-rate of London, and not the minimum or theoretical death-rate left after the subtraction of the mortality from preventible diseases. It is quite time, therefore, that this question should be considered simply as a matter of public economy; and I feel satisfied that the most rigid economist would relax his opposition to a sanitary improvement if he would go into the subject with a fair and unprejudiced mind.

Let us suppose for a moment that 7,000*l.* a year could be saved by the reduction of the mortality of St. Giles's to the level of the ordinary mean-rate of London. That sum is about a fourth of what is paid toward the poor-rate, which, we should hope would be reduced to that extent by the corresponding diminution of pauperism. This 7,000*l.* a year represents, at 3½ per cent., a capital sum equal to 20,000*l.* This amount, regarded as a net cost after deductions made for value of land sold, is equal to an expenditure of half a million expended in the purchase of land and houses for the purpose of effecting their improvement. Now, half a million of money would effect a vast improvement in the worst portions of this district; and the savings in the poor-rate would pay the interest. I do not doubt, from calculations I have made on a large scale—calculations agreeing with those made by Sir Sydney Waterlow,—that a rate of 1d. or 2d. in the pound would suffice to meet the interest and recoup the principal of the largest sum yet named as requisite to improve the most wretched and disease-infected parts of this metropolis. . . .

I have pointed out the sources of failure in previous Acts, and I will now show that in the present Bill an attempt has been made to avoid them.

1. The incidence of rating does not fall upon a single parish, but in London on the entire metropolis, and in the provinces, on the town or municipality. The local authority is not a vestry, but in London either the Commissioners of Sewers of the City or the Metropolitan Board of Works outside of it; and in the provinces it is the urban sanitary authority or town council.

2. If property cannot be taken amicably by agreement, power is given in the Bill to take it by *compulsion*.

3. The obstacle to improvement on a large scale in "Torrens's Act," owing to the absence of any provision for compensation, is removed. The local authority will have power to award compensation for property at its *fair market value*. Whilst justice will thus be done, care is taken that the price given for dilapidated and ill-conditioned property shall not be more than its worth.

4. As regards a "standard of habitability," this is not so important in relation to the new measure as it is to Torrens's Act, because the two measures are founded on different bases; the Artisans' Dwellings Improvement Bill being constructed in relation to *areas*, and Mr. Torrens's Act in relation to *houses*.

Further, the legal expenses incidental to large

schemes of improvement have hitherto been so great as to restrict enterprise in this direction; but the Home Secretary proposes to give a provisional order to authorise the carrying out of the proposed scheme. This order will have to be sanctioned by Parliament; but a large proportion of the expenses of a private Bill will be obviated, unless, indeed, it should happen that the Bill was intemperately opposed, which is scarcely likely. Even this possibility may be guarded against by some provision as to costs. . .

Is the medical officer of health the proper person to take the initiative? I think so. Many persons have a fear that he may be deterred from discharging his duty by the repressive influence of a board or vestry indisposed to carry out the Act. Experience will show whether such a forecast is justified. I hope and believe it is not; but if the district medical officer should be supine, the Home Secretary has provided an alternative by giving power to the confirming authority, in the 9th section, to appoint a medical officer of health, whose duty it will be to make a special inquiry into the sanitary condition of any part of the metropolis, and he must make an "official representation to the Board, in the same manner, and with the same incidents, as if he were a medical officer of health of a district."

The district medical officer might feel encouraged and spurred on if, in the 4th section, he were occasionally set in motion by a letter from the local authority or the Local Government Board, requiring him to report on the sanitary condition of a special district, and I think such an addition to that section would be desirable.

In the 10th section power is given to the confirming authority to appoint an officer to make an inquiry into the correctness of the "official representation," and as to any area being an unhealthy area, and as to the sufficiency of the scheme for its improvement. He will be empowered to administer an oath. There is one point that requires careful consideration. It is this:—There is no power given in this Bill to enlarge an area that has been defined by the medical officer. It is true that the scheme might be returned, first to the local authority, then to the district board or vestry, and then to the medical officer of health for reconsideration, and the proceedings would be recommenced *de novo*; but I am of opinion that, as we cannot allow that the judgment of every medical officer is infallible, there should be a power of enlarging his area in the successive authorities to whom the revision of the official representation is entrusted. It might be, for example, necessary to pull down other houses than those he has indicated, in order to get a site better adapted for the purpose, to let in more air, and to obtain better approaches; and I do not think that any medical officer of health would object to such an improvement of his area. When the debate on the second reading took place, Mr. Cross is reported to have said that certainly such a power of enlargement was intended to be given, and that if it was not in the Bill it should be inserted, so that this suggestion is met by anticipation.

My friend, Mr. Liddle, has also suggested to me that there should be power given to any two or more district boards or vestries to combine for the purpose of forming an improvement scheme. Such a power would be expedient so long as the initiative rests with the district boards and vestries, as it not unfrequently happens that an unhealthy area extends over two or more parishes.

At the close of the paper,

Mr. Godwin said they were much obliged to Dr. Ross for the agreeable and lucid manner in which he had laid before them the scope of Mr. Cross's Bill. It must be gratifying to those who had worked long years in rendering known the condition of our large towns and forming public opinion on the subject to find that the Government had made so earnest an endeavour towards remedying part of the existing evil. It would be wrong, however, to expect too much from the Bill: its object was, after all, simply to lessen the cost of obtaining sites for better houses, and what the present meeting would probably think they had to consider was, whether or not this was done in the best possible way. There were some obvious objections to the Bill. He still thought, notwithstanding what Dr. Ross had said, that to trust wholly to the Medical Officer of Health for putting the Act into operation would in many places be futile; that medical officers, being so dependent as they are on guardians and the members of other Boards who had elected them and were often their patients, and who might be materially effected by their report, would hesitate long before taking action in the matter. Again, he considered that to require the signatures of twenty persons to put the medical officer into perhaps unwilling action, was undesirable; ten or even less would be ample. Then the cost of obtaining a separate Act of Parliament, in each case, as was required by the Bill, would, he feared, be great. This, as it seemed to him, might be avoided; perhaps by the passing of one Act of general clauses, which might apply in all cases. Moreover, the arrangement of the arbitration might, he thought, be considerably improved. To allow, after delivery of the award, of an appeal to a jury, with all the expenses of a new trial, seemed to him unnecessary. Why should not the award be final? But in that case it would be necessary to elect the arbitrator in a different manner from that stipulated by the Bill. According to that the Confirming Authority names the arbitrator, who consequently would possibly have the confidence of neither party. It would be better, as under the Lands Clauses Act, for the two parties to agree mutually upon an arbitrator; in default of their doing so, the Confirming Authority naming one. Without then going into other criticisms, the speaker said he would merely add that he thought the scope of the Bill should be extended. At present its provisions were to apply to Urban Sanitary districts only where there was a population of 25,000 persons and upwards; he would have it apply to all districts wherever there were urban sanitary authorities. He felt sure that the Government would not consider suggestions at that meeting made in any carping spirit, but from a desire to improve the measure. For his own part he had the strongest wish to render the Bill a good one and to help it forward. Admitting it to be only a Bill to facilitate the purchase and clearance of sites, that of itself would do much. There were sites in all our large towns, sites in London, which were the hot-beds of disease, immorality, and death, and where circumstances made the interference of individuals or of societies unlikely, if not impossible. He would take, for example, the courts and alleys behind Drury-lane and Gray's-inn-lane, or that extraordinary and frightful part of London,—the Golden-lane district. Nothing could be done with these as a building speculation, but with such powers as those given by the Bill they might soon be made to present a better form. There was one district in the City, it occurred to him to say, where improvement might possibly be effected without loss as a building speculation, even under present powers; he alluded to a remarkable congeries of courts bounded by Lothbury on the south and Moorgate-street on the west. Assisted by this Bill, a wonderful change could certainly be easily effected there. Knocking down a poor neighbourhood and putting up better houses had not usually been found profitable in a pecuniary point of view. Some time ago he had inquired very carefully into this, and found that in most of the cases investigated the money loss had been 30 or 40 per cent. Much of this, however, had resulted from obstacles thrown in the way, law costs, and costly arrangements of claims made by parties concerned, much of which might be got rid of under a proper Act of Parliament. But if these improvements did cost money, the money would be well spent, and in due time would bring back a good return. We had here in London four millions of people heaped together, and the lodging of nearly a thousand additional people had to be provided for every week. There was nothing more costly than disease and crime, and both these were involved in the question. The provision of proper dwelling-places for the labouring population of our towns was a burning question; the existing state of things which brought up this question was a burning shame. After some further observations, he moved that the paper be referred to the Joint Health and Social Economy Section of the Social Science Association, with a view to their taking such active steps in the matter as might seem to them desirable.

Dr. Hardwicke said he fully agreed with the observations of the preceding speaker, and seconded the motion.

Mr. Frederic Hill strongly approved of the measure introduced by the Government, and thought it was the duty of the Association to give it its hearty support. He differed with Mr. Godwin in some of his views. He thought that such an immense amount of good would be effected by doing what the Bill proposes that he for one would be loath to hazard the attainment of that good by attempting to do more. If it were sought only to benefit London a great good would be done. And the Bill, taking in every town of 25,000 inhabitants, was a very large measure indeed. Increasing the magnitude of a measure tends to increase the amount of opposition which may be brought to bear against it. And by introducing an element of delay the result often is that we get no measure at all. Every year that such a provision is delayed is attended by a vast amount of unnecessary deaths and unnecessary sickness. Most people would agree with him in saying that the legislation which had been the most successful in this country had generally commenced on a moderate scale. He would instance in illustration the improvement which had taken place in the civil law of the country by the establishment of County Courts. These were the consequence of the establishment of similar courts in the first instance in Scotland. If it had been attempted to establish them at first in Great Britain, we should very likely never have had them. It was a great advantage of the present Bill that it began in a moderate way. If it did good its scope would be increased by Parliament. Mr. Godwin was afraid that the working of the Bill would be hindered by the expense of obtaining the authority to set it in motion; but as he (Mr. Hill) took it, there was no necessity for a special Act of Parliament, but only one to sanction proceedings proposed to be taken. One of the most excellent principles of the Bill was, that it relied upon the commercial principle. He did not think it failed us in this matter any more than it did in respect to water or gas works; but that, on the contrary, the Bill would allow it to act freely. Together with the power of buying a district which is in fault within the meaning of the Act, there should be a power of buying a good broad margin surrounding that district, for otherwise to the owners of these you give a very great boon in the shape of improved property, to which they have not a particle of claim. By improvements made from time to time, the land would take an increased value, and that without the slightest infringement of the commercial principle, or the slightest departure from the strictest rules of political economy.

Mr. R. Freeman said it was incumbent upon us to make the Bill as practical as possible, and we should best do this by finding out its real weaknesses. If the Bill passed in its present form it would be a dead letter. It was not capable of being worked, and there would be a great cost in purchasing property. Viewed from the economical standard, if sanitary improvements were wanted we must be prepared to suffer the loss, and this should be paid out of the public rates. There was a great evil in our midst,—children were dying off like flies, and much else was bad. And if this were the case, surely it was a matter for which we ought freely to subscribe to abate the mischief. The way to do this was to buy up the bad property which caused it. It was right, proper, and sound policy to get rid of such property. A similar principle had been adopted in the metropolis for many years past in the Main Drainage works. And with what result? Nothing directly, in a commercial point of view, but a great improvement in the health and happiness of all. And, viewed in this light, the expense has been a sound investment. And the measure now proposed, if adopted, would decrease sickness and the number of candidates for the workhouses, and by the higher principles of morality it would induce would diminish the number of inmates in our prisons. He (Mr. Freeman) therefore thought it would be sound policy, with these ends in view, to levy a rate upon the metropolis at large to buy up the objectionable property. And having gone so far as this, he would here allow the commercial principle to come in. No difficulty would be found, he thought, in getting people to build upon the land, and he would not take any public money to do this. But he thought it was no use deceiving ourselves with the thought that all this would cost us nothing. He objected to the number of persons required in the Bill, and thought six quite sufficient to take the step intended. There should be a kind of appellate jurisdiction. If the medical authority failed, let the six mentioned be sufficient to initiate proceedings, and then, on their requisition, let the central authority send a medical officer. This, he conceived, would be a more efficient arrangement than leaving the action to the Metropolitan Board. He thought the present Act a better on

than Torrens's, because that was a purely voluntary Bill, and for that reason it came to nothing. Nevertheless, the machinery as to taking the property he looked upon as very imperfect. It determined the "fair market value" in a very ineffective way. The conflict of opinion in matters of arbitration was well known. It would be well to have Torrens's Act incorporated with the Bill, or a power similar to that it gave in regard to this, and the land surrounding the black spots should be treated under the Land Clauses Act. Why, in regard to arbitration, should there not be one for the whole? One investigation before one arbitrator, and then if necessary an appeal to the Court of Queen's Bench, was all that was required. He hoped the Bill might be satisfactorily amended, so that it might be thoroughly worked, and by its action get rid of all the black spots which now exist. The Bill contemplated areas too much, and this would make it very expensive. He would be glad, where two, four, or six houses had fallen into a bad condition, to give authority to deal with them. It was not necessary to take the whole street in dealing with a single house.

Dr. Gibbon, as a medical officer of health of one of the plague-spots, expressed his opinion that Torrens's Act was an extremely valuable one. It had none of the faults which had been mentioned as belonging to the present Bill. It gave power to pull down where necessary two or three houses. No compensation was given by it to bad property. It would not give the amount of fourteen to twenty years' purchase, when perhaps at a valuation which took into account the illegal nature of the property, it was worth only three years'. It was highly desirable that in these days such a Bill should have no tendency to communism. He was sorry it gave the power to do more than create sites. A better principle, he thought, would be to exempt such property from local taxation for some years. Undertakings to provide improved dwellings did not pay. Sir Sidney Waterlow's scheme did not really pay, for everything was so cut down, that the charges which might be expected to appear, were not paid, and it was a mistake to suppose that by it dwellings were provided for the labouring classes. It was a misnomer to call this Bill a Bill for Improving the Dwellings of the Working Classes. He did not think there would be the difficulty supposed in regard to the medical men, for if the Bill passed in its present form, in his own case he was quite prepared to find the landowners driving him on to condemn their houses for the sake of the advantage they would derive. The difficulty would be, he thought, rather to restrain action than to induce it. Still he looked upon the Bill with the object it had in view as a very useful measure. Although the clearings resulted in loss as the Corporation of London had learned to its cost, yet the indirect benefits of improvements were immense, and if the Legislature could enable the poor to have the benefit of improved dwellings it would be a great advantage to them.

Mr. William Botley concurred in Mr. Godwin's views, and fully agreed with his general criticisms on the Bill. The views of that gentleman, and those of Mr. Freeman, were in agreement with the remarks of Mr. Stansfeld and other speakers in the House. They thought there was too much of the permissive character in the Bill. If it had rested with the people to take the initiative in introducing sanitary measures in the city in which he (Mr. Botley) resided, its present high position in that respect would never have been reached. The measure under consideration was as much required in the smaller towns and villages as in the larger. He hoped, with the modifications suggested, that the Bill would pass.

Sir John Kennaway, M.P., proposed a vote of thanks to Dr. Ross for his paper. He said the Bill intimately affected the hopes of many of our fellow-countrymen, and aimed, and he hoped successfully, at removing a great evil from our midst. It was a matter of public morality, in the first place, and he hoped it would result in a great success. It had been compared with the expenditure on sewers, which no one has grudged, and which has brought so much improvement. No doubt there would be much opposition to the Bill; for there are those who are interested in maintaining the present state of things. There is a great jealousy of interfering with the rights of property, and some fear we are embarking on Communistic principles; but, on the other hand, it has been said we are only going a step further in the direction of the poor-laws. These have induced a feeling of contentment in the working classes, who had the assurance that there was a provision made for them which would prevent them from starving. We have also taken another step in the same direction in providing education. The present Bill led us still a step further. But it did not seek to provide dwellings. Mr. Cross had no such intention, but wished to remove all obstacles in the way of providing for improvements, and trusted that the great wealth of the country, and its accumulations, would be employed in bringing health and happiness, and therefore wealth, to the inhabitants. His attempt had been met with a hearty welcome, and he (Sir John Kennaway) believed much was owing to him for having made it. It remained to consider the Bill in Committee, and Mr. Cross would do his best to introduce such amendments as would in his judgment make the Bill a workable one.

The Rev. Mr. Simpson seconded the motion for a vote of thanks to Dr. Ross. He said there was no measure which had been proposed for the past twenty years which was more likely to be of so much benefit as the present one, if it were put in workable order. Within his own experience he knew something of the evils against which it was directed,—conditions which produced all kinds of misery. If the Bill had not thorough safeguards against local jobbery or that *vis inertia* which was one of the greatest obstacles in the way of all improvement, it would become, as had been said, a dead letter. He was well aware of the secret springs of parishes, and knew that it would be impossible, how much so ever a man might set his face against jobbery, to free himself from the meshes which might involve him, and form the underworking of currents. It was too much to expect of a man of ordinary courage to condemn sites perhaps the property of men who employ him professionally, and upon whom he is, in some measure, dependent. In doing so he would raise a hornets' nest about his ears. He (Mr. Simpson) favoured the initiation rather by six than by twenty, as proposed. He hoped also that the law expenses in the case would be diminished. In matters of this kind affecting the vital interests and the lives of our fellow-creatures, to get rid of the dead weights which impede the progress of legislation, would be to confer upon them a great boon.

Mr. William Storr thought that before such a Bill as the present could be successful, we must have a Municipal Government for the metropolis, and that, therefore, it would be better to defer it until such a provision was made. In places where this existed, it was easy to educate the people up to such a measure, but here, where there was really no Municipal Government, and, rightly or wrongly, a general distrust of the Metropolitan Board of Works, such a thing was not possible.

Mr. C. E. Parker Rhodes strongly objected to put any further burden upon the rates of the metropolis. It was only with great difficulty that numbers could now pay them. He looked upon the Bill as one to remove diseases, but did not think it was possible to effect it in the way proposed. He thought its result would be to get bare and open areas, such as were sometimes seen now as the result of taking down numbers of houses. If superior houses were built, people could not pay the rent, and they would be forced to huddle together in localities already overcrowded.

On the motion of Sir George Campbell, seconded by Mr. H. W. Freeland, the discussion was adjourned until Monday, the 8th of March.

ON CERTAIN NEW OR REVIVED PROCESSES IN DECORATIVE ART.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary general meeting of the session was held last Monday evening, the 1st inst., under the presidency of Sir Gilbert Scott, R.A., when Mr. John H. Middleton was elected Associate.

The Secretary said that it would be gratifying to the members, no doubt, to know that Mr. Wood, who read a paper a fortnight ago on "The Temple of Diana at Ephesus," had recently received a pension of 200*l.* a year from the Government.

The President said that most of them had doubtless noticed an announcement in the public press of the death of Professor Willis. He could hardly pass over that event without making some allusion to a man whose merits they all knew. He was the most learned and acute antiquary that they had in connexion with Gothic architecture, and he knew a great deal of the antiquarianism relating to other styles. He was especially famous for his extraordinary knowledge of Gothic architecture; and, as early as 1835, he published his first book, which was an "Essay on Gothic Architecture," which chiefly related to that of France and Italy. Somewhat later he published his most wonderful account of Canterbury Cathedral, the most complete, and, in fact, the best monograph of any building of the kind that Sir Gilbert Scott knew of. It was not artistic, but antiquarian and historical, and unique of its kind. Since Professor Willis published that work he, year by year, gave almost *extempore* essays, one after another, at the meetings of the Archæological Institute. Unfortunately, however, he published but very few of them, and this fact was now to be greatly lamented. Sir Gilbert had only read a few of them, but was of opinion that they were the most extraordinary that could be imagined. No man was ever more quick than the late Professor, nor more correct in the views which he took of the buildings that he examined. Besides his work on Canterbury Cathedral, it might be well to mention that he gave an account of York, which was contained in one of the volumes of the Archæological Institute's papers, and which was also a very remarkable production. One would think, to look at York, that it had very little architectural history, and on a cursory glance the architecture appeared to be all of one type; but Professor Willis gave a most extraordinary account of its development through centuries. He also published papers on Winchester and Glastonbury Abbey; also, very recently, he had completed a work, which he had been for some time engaged on, with regard to the monastic buildings of Canterbury. Then, in 1849, he published an "Essay elucidating the Architectural Nomenclature of the Middle Ages." He has also written "Architectural History of the Church of the Holy Sepulchre," a "History of the Middle Ages," and many others. No doubt many of those present had heard him lecture, and the way in which he brought together the documentary evidence, and the evidence derived from an examination of the buildings themselves, and, added to that, his wonderful power of work, were things which were very surprising. In conclusion, Sir Gilbert thought that they never had had a man with such qualities of mind, and with such remarkable breadth of view regarding the architectural profession.

Mr. T. H. Wyatt, as an old member of the Archæological Institute, wished to fully bear testimony to all that had been said by the President regarding Professor Willis. Mr. Wyatt had been charmed at all times with the Professor's explanations, which were so marked by their clearness and simplicity. He would suggest that a strong expression of the condolence of the Institute should be sent to the relatives of Professor Willis in their bereavement.

It was then resolved that the secretary should be instructed to send a letter of condolence and sympathy to the late Professor's relatives.

Mr. G. T. Robinson, contributing visitor, then read a paper "On Certain New or Revived Processes in Decorative Art." In the course of his remarks he said, that in the Renaissance period of art-history the intimate union between structural and decorative art existed; indeed, to such an extent was it carried, that it was difficult to classify the artists of those days, and the fame of their more portable works in painting or sculpture,—works which came under the notice of the many,—had often buried beneath the laurels these had brought to the artist his reputation as an architect; and whilst a style of ornamentation handed down his name in a generic term, his style of architecture was popularly almost unknown. Indeed, at all the best epochs of architectural history, this conjunction of the building with the decorative power was to be remarked, and its greatest artists were those who had excelled in both. Probably they become the greater in each branch of their art from studying the other; the study of the minor accessories refining the detail of the major building, whilst the architectural severity and precision inculcated by that gave vigour and force to the decorative details. It was impossible to examine the works of those almost forgotten, and rather ungratefully treated, architects of the last century,—Sir William

Chambers and the brothers Adam,—without being struck with the very great attention they paid to the minor embellishments and accessories of their buildings, and the nice distribution of their ceilings and wall spaces for decorative appliances. Scarcely a technic process of their day existed with which they were not acquainted, and for most of these they designed some special application. Ready-made decoration did not please them; but they, from the materials at their disposal, set forth something new and good. Even the simple implements of every-day life received their care, and had impressed upon them by their artist hands the stamp of elegance and refinement. Nor were they alone then; in many of the old houses of the last century they came upon the evidence of much loving thought for decorative detail, and much cunning knowledge of decorative processes, which showed that their architects were not unmindful of the fact that it was possible to be great in little things, even when the status of the art and the architect was declining. At the commencement of the present century that status was indeed a low one, and the profession had sunk to such a depth of degradation that a vigorous struggle was needed to keep it from being entirely extinguished. Nowadays, the title of an English architect was recognised as one a gentleman might be proud to bear, and the bearing of which stamped him as a gentleman. Quite recently had passed away from them one, who, for many years of his life, strove hard and successfully to make the title of an English architect a world-wide synonym for a master of design in all its branches, and the name of Owen Jones would, he was sure, cause a proud yet painful feeling to thrill amongst them as he recalled it. In thus drawing attention to the past history of, and the present need for the study of, decorative processes by architects, he must not withhold the fact that dangers belayed the pleasant path. In decorative art,—

> "Nothing is thought rare,
> Which is not new and followed; yet we know
> That what was worn some twenty years ago,
> Comes into grace again."

Of entirely new processes in decorative art there was but little to record, but in many of the revivals of the old ones, new elements entered. Long ago, a very wise man, who knew a good deal about decorative art, and who sought far and wide for its professors, and their processes, declared that there was "nothing new under the sun"; but, nevertheless, they had discovered some new things since he recorded that, even to him, ancient maxim. In spite of this, they found an eloquent living writer mournfully proclaiming that, "The Renaissance, the spring-tide of modern life, with its genial freshness, is far behind us. The creative period is past, the accumulative has set in; genius can now do nothing, the day is to dull industry." When men first hung their wigwams with hides, or the early product of their rude looms, to secure comfort and privacy, their next thought seemed to have been to decorate these sheltering accessories, and painted cloths made their appearance long before art and mechanical skill had so far allied themselves as to produce woven tapestries. Rastell told them that "Mayster Thomas More, in hys youth, devysed, in hys father's house in London, a goodly-hangyng of fyne paynted clothe, with nyne pageaunts and verses over every of these pageaunts." Sir Thomas More's interest in Holbein might have been fostered by his early essays in the painter's art, and it would be well if leisured men, in these days, would take some practical and individual part in the decoration of their homes; they would then better appreciate the work of others, and the more value its result. Painted cloths, however, did not seem to have been devised by men of the like wit or learning to Sir Thomas More, and some of the old dramatists were severe on the weakness of their poesies;—

> "Who fears a sentence or an old man's saw,
> Shall by a painted cloth be kept in awe,"

says Shakspeare in his "Rape of Lucrece," and the unknown author of "The Match at Midnight" makes Bloodhound say that he would have a posey "which shall savour of a saw," obtaining the derisive answer that "'twill smell of the painted cloth," the which in its new state was by no means savoury. As the wealth of the country became greater, and the introduction of the products of the loom from foreign countries became more common, these painted cloths passed into desuetude, and so early as 17 Elizabeth the painters of London prayed the Commons to restrict the importation of foreign manufactures by "merchaunts strangers," as thereby their craft was in danger, and that "payntyng on cloth is decayed," and henceforth stencil work on the plaster, or afterwards paperhanging, took their place in the commoner apartments. These painted cloths were principally painted in oil, but distempered cloths were in free use for commoner purposes; and that doughty knight, Sir John Falstaff, was of the opinion that "a pretty slight drollery or the German hunting in waterwork is worth a thousand of those bedhangings and their fly-blown tapestries." M. Guichard, after many experiments, had recently found out a process by which the linen cloth is either printed, stencilled, or painted, with any device and in any colouring, and cloths were now woven so wide as 10 ft., and of course any length which could ever be required, without seam. He (the speaker) had just had some made 38 ft. long, and was perfectly satisfied with the process as a wall-covering. It was easily attached to the walls, could be taken down and replaced without destruction or difficulty, and might be sponged or shaken without danger, and this in London was no slight advantage. Moreover, as a ground-work of hand-painting, it offered an excellent opportunity of producing an effective and by no means costly means of decoration, borders being obtained so as to margin the cloth or divide it into panels in any fashion deemed desirable. The fabric was made of unbleached linen, and when it was desired that the fabric should form the ground-work this was decidedly the best material; but when the whole surface was covered with painting a thick cotton rep was available at a much lower price. The question of cost depended entirely on the amount of art employed, but the blocked or stencilled patterns cost from six shillings per yard upwards, and the hand-painted work, according to the fineness of the finish and the value of the artistic labour bestowed upon it. It seemed to him that the revival was a useful one, offering a relief to the flat and hard wall-papers, and providing them with the means of giving an individuality to their rooms at no ruinous cost, while at the same time it classes the wall decorations with the moveable furniture of the tenant, an important consideration in these nomadic days. Tapestry was really an imitation of these painted cloths, copied with the most jealous care from coloured cartoons; but he who would preach against the use of all imitations and condemn tapestry on this account would not be very much regarded, nor would he be very right. Staining woods of a different colour to that which nature had given them had never seemed to him a greater sin against truth than dyeing wools, though to many this gnat was irritating in the throat. Yet in the best days of the Renaissance stained wood, either homogeneously tinted, or shaded or particoloured, entered largely into the decorative furniture and joinery designed by some of the greatest and most graceful of that great and graceful period. The process to which he would draw their attention was one bearing the excessively unarchitecturally word-built title Xylatechnographia. The process was in principle exceedingly simple, and its inventor, Mr. F. A. Brophy, thus sets it forth:—"In order to stain wood in various colours, according to any suitable design, leaving, if desired, parts of the wood unstained, so as to obtain an imitation of inlay, I proceed as follows:—I first apply varnish which will fill the pores of the wood, and exclude the staining liquid from such parts of the surface as are to remain unstained, then when the varnish or solution is dry I apply over the whole surface the lightest stain I intend to use; this stain being dry, I again apply the varnish, or stopping, coating with it such parts of the surface as I desire to retain of a colour corresponding to the lightest stain, and so I proceed until the desired effect is obtained, the last stain applied being usually black, or a very dark stain. The surface having been cleaned off, may, if desired, be varnished or polished all over, or it may remain as it is left by the last staining process." It was, in fact, an analogous procedure to that known to etchers "as stopping out and biting in," the various coloured stains taking the place of the acid. Much care was, however, required in treating the various woods, and in adjusting the stain and varnish to their absorbent or non-absorbent qualities. As a decorative treatment of all joinery it was particularly available, and where the vexed question of imitating inlay of real woods obtruded itself, the designs might be so carried out as to be absolutely a painting in transparent colours on the wood, in such a manner as to be beyond all the power of tarsian work to imitate it. To ceilings, doors, dados in private houses, to partitions and fittings of banks and commercial offices, this process was, he conceived, exceedingly applicable, and to the larger and less movable pieces of furniture it was not misapplied. An analogous process had lately been applied to marble in Belgium, by which this material was rendered susceptible of polychromatic decoration. Nature, it was true, had been very liberal in her bounteous display of colour in this material, yet the cost of cutting it and inlaying it had induced many attempts to produce the effect of inlay by an easier process. To this process the same objection might be raised as those noted in treating of stained woodwork, yet for wall treatment, in their dull and moist climate, it was suggestive of many applications. Few materials were less used amongst them than marble, and yet, in the whole range of Nature's bounties, there was, perhaps, none more beautiful or more permanent in colour for internal use. Of late years, throughout Italy, France, and Belgium, there had been a great revival of the very ancient art of mosaic, and as a wall decoration in vitreous pastes it had been much used in this country; but he thought he might claim for himself the first introduction of the marble *opus incertum* into this country as an available article of commerce. Its durability was incontestable; and as an illustration of how it bore both traffic and exposure, he would refer to the entrance-hall of the "Criterion" as one of the first specimens laid under his superintendence in England; and the external vestibule, exposed to all weathers, was paved with it, too. As to its cost, it might be considered as being about double that of tiles,—good plain floor and margin being laid at about 20s. per square yard, and from this price it was easy to ascend; but a floor, fairly executed, with ornamental borders and centres, could be obtained for 35s. or 40s. per yard,—of course, depending on the proportion of the surface the plain ground-work bore to the ornamental details, and also upon the intricacy of these. Ceramic processes presented almost endless applications to internal decoration. These were much more largely pressed into service on the Continent than they were here, and those amongst them who visited the Industrial Exhibition at Paris last year could not fail to have been struck with the beauty of the faïences of MM. Deck, Parvillée, and other French potters. In M. Parvillée's work the pattern was modelled in low relief, and then painted over with opaque enamel colours. Dados, borders, architraves, friezes, and other architectural features were executed in both these processes, offering decorative resources of very great artistic value. In conclusion, he said that the subject was an almost inexhaustible one; but he would beg to say that a very great variety of these, and many other decorative processes, such as sgraffito-work and printing on tinfoil, already brought before their notice in former papers, and many illustrations of Continental terra-cottas, glazed stones, metal-work, &c., were to be found in a museum of decorative art which the Messrs. Trollope were establishing, under his direction, in Halkin-street, Belgrave-square, where any member of this Institute would always be welcome, and he would be glad to aid any of them in their research and inquiry into decorative processes, so as to foster the cultivation of decorative art, and insure that refinement it must receive when it is placed under the hands of the architect.

Mr. Aitchison said that he had been engaged lately in some decorating processes, and he hailed with extreme satisfaction many of the means suggested by which more costly forms of decorative art could be reproduced, especially those which treated of the staining on wood. He was of opinion that the system of staining would be revived at considerably less cost than the estimate put forward by Mr. Robinson in his paper. With regard to marble, it would be of exceeding value if it could be more extensively used; but he was afraid that its very great expense almost precluded its use, except in certain cases. The pavement Mr. Robinson had introduced was certainly one of the most valuable that they had, and when it was more known it would be more largely used. The tiles referred to by the author of the paper might very well be used for dwelling-houses and staircases. With regard to the painted cloth, it would, Mr. Aitchison thought, be extremely effective, and he did not know anything which

would give more pleasure to those who cared for it than tapestry; a great objection, however, to it was that it harboured dust.

Mr. Crace thought that the various processes which Mr. Robinson had brought to their notice might be useful to the members of the profession; and his specimens of painted cloths would be found, in many instances, of great service, especially in country houses. With regard to the stained woods, the process brought forward was, to a certain extent, novel. He thought it was rather a question how far it was desirable to carry artistic imitations of stained wood to any great state of refinement. His own feeling was, that if he had the money to spend upon elaborate specimens, he would prefer to spend it in a simpler manner. He had always used the staining of woods and different colours of woodwork; but he had no acquaintance with the stained marble process which Mr. Robinson had mentioned. In all marble work the chief objection to its use was the extent to which it absorbed dirt; for in London, in a very few years, all the colour became indistinguishable. Its great cost rendered it such that it could hardly hope to be used to any great extent at present.

Mr. W. White considered that the price of the hangings was rather costly of this kind of work. There was one process, though it had not been in use for some six or eight years, he would like to call the attention of the meeting to,—wood tapestry, which was not much thicker than paper, mounted on canvas, the canvas being mounted on wood, so that it was almost impossible to tell it from a solid board. It might be of different colours, with mouldings to run round it, which had the effect of a wood panel, the cost being about 1s. 6d. or 1s. 9d. per foot super. for the framework, while the cost of the various materials to make up the panel would be about 6s. or 7s. in solid wood. He had seen some which had been up for five or six years, and it seemed to him to have worn wonderfully well, and was like a plain piece of woodwork.

Mr. Phené Spiers said that as far as the production of ornamental vases was concerned, there was a rival to Messrs. Doulton in the person of Mr. Martin, a sculptor, who had produced some of the most artistic jugs and vases of the kind; they were marvellous in their design and execution.

Mr. Aitchison said that the atmosphere of London was very bad for marble; but in Venice, where the climate was much better, nothing could be more beautiful than the crumbling marble; whilst in the metropolis all marble became the same colour as the stone,—a dirty brown or black.

Mr. Morris said that formerly there were some excellent specimens of leather hangings manufactured in France, which were there made to a very great extent; and it was a remarkable fact that some of the most striking and splendid specimens of paperhangings were imitations of leather work.

Mr. Jennings urged the adoption of glazed bricks, which he maintained would stand every kind of weather.

The President expressed the great pleasure he felt at seeing brought before him a number of new modes of decoration, and some old processes revived. Some of the speakers had referred to marble as a revived system. He had seen marble used in old buildings in Italy, and also in English buildings; the work was most delicate, and had stood very well. With regard to the hangings, the subject offered a great deal that was worth their consideration; while, on the other hand, there was a danger of cheapening their ideas of things, and producing what was and ought to be really valuable and high-class work by very cheap means, and, to use the expression of an enemy, "making all things common and unclean."

GAIFFE'S APPARATUS FOR LIGHTING GAS.

THE lighting of the hall of the National Assembly at Versailles is effected by a number of chandeliers and sconces, carrying together 256 burners. Formerly the gas had to be kept lighted during the whole duration of the sittings, but since the painted ceiling was replaced by a glass roof, the gas was lighted only at the setting in of dusk. As it was found, however, that by the process of lighting up at that time the deliberations of the Assembly were much disturbed, the practice was adopted of lighting the gas before the commencement of the sitting, leaving little flames burning all the afternoon. The desire to save gas, as well as to obviate the disagreeable heat produced by so many burners, especially on hot summer days, led to the idea of lighting all the burners at one and the same time by electricity, a means which has proved effective.

The apparatus for lighting is by Gaiffe, and is described in the *Bulletin de la Société d'Encouragement*, &c. It is located in a cupboard or closed recess near the door, at the left-hand side of the president's tribune, where are also the cocks for the different gas-conduits. In this cupboard is likewise a Rhumkorff electrical apparatus, of medium size, with self-acting mercurial interruption. This Rhumkorff spindle is connected with an electric battery of four elements (after Leclanché), in which the zinc has a surface of 4 square decimetres (about 64 square inches). These elements, of considerable surface, are about equal to three Bunsen's elements of medium size; but they act much longer than the latter. The Rhumkorff apparatus produces sparks of 15 centimetres (5·9 in.) long, for transmitting electricity to the different chandeliers, &c. A separate conduit (wire) is provided for each chandelier and sconce; but the reconduction of the electricity is along a common wire. The conduits are formed of copper wire, covered by three coats of india-rubber, tarred thread, and linen cloth coated with caoutchouc. In places where this cable rests upon bearers or brackets, it is further enveloped in an india-rubber pipe of 2 millimetres thickness, and the bearers are formed of blocks of hard india-rubber pierced with cylindrical holes, through which the wires pass. Isolation is consequently perfect.

Each conducting wire ends in an isolated metallic knob, which is brought in connexion with the induction wire of the Rhumkorff spindle by means of a discharger ending in a ball, and connected with one end of the induction wire by means of a chain. The discharger has a handle of hard india-rubber; all the knobs are on an isolated iron plate, and are numbered. The other end of the induction cylinder is constantly in connexion with the re-conducting wire. Both wires, the conducting and re-conducting ones, are united in the chandelier which it is intended to light by a p rfectly isolated metallic conductor, and have as many interruptions as there are burners. To this purpose a thick block of hard india-rubber is inserted at the basis of each burner and between the metallic disk bearing the ball, through which pass two copper wires ending in platinum points. The different apparatus are united to each other by intermediate wires, and the ends of this interrupted chain are joined to the conducting and re-conducting wires. In each lighting apparatus the distance intervening between the two platinum points is from one-third to half a millimetre; one of them dips into the escaping gas current, the other is somewhat above and outside it. Thus, combustible matter is always present at the point of passage of the spark. The spark passing over at the two ends of the conductor is much shorter than that produced in the apparatus; its length decreases from 15 centimetres to 25 millimetres; but, notwithstanding this difference, the discharge is sufficient to overcome with perfect safety the fifty-four interruptions of one-third of a millimetre which are in the conductors of the larger chandeliers.

When the gas is to be lighted, the spiral of induction is put in motion by closing the current of the galvanic battery by means of a lever provided with an india-rubber handle; the gas cock is then opened, and sparks are produced by means of the discharger on the knobs corresponding with the different conducting wires. The process of lighting up lasts scarcely fifteen seconds. The sconces of the tribune, which must be served by very extensive conductors, take one minute and a half to light; they must be lighted separately. At the moment of ignition, the apparatus is fully charged with electricity, accumulated while not in operation. The discharge is consequently more powerful than is absolutely necessary for obtaining the desired effect. This advantage secures the proper operation of the apparatus, even in very damp weather. If the apparatus were used a number of times in rapid succession, it would cease to have the desired effect. Tested to its utmost limit, it was found possible to ignite the gas twenty times in rapid succession without mishap. The efficiency of the apparatus is therefore established.

As the electric battery is in use for only two or three minutes daily, its wear and tear is inconsiderable; it is, however, advisable to take care not to leave the current closed after its use. To prevent this happening, M. Gaiffe has so arranged the lever interrupting the current as to secure its being pressed down by the letting down of the sliding door closing the recess.

The conducting wires have a length of 1,400 metres (1,526 yards). The saving in gas effected by the use of the apparatus is said to be considerable.

THE ARCHÆOLOGICAL SOCIETIES.

IT is with regret we have to announce that the negotiations for amalgamating the two London societies have been abandoned by the Archæological Institute. The suggestion for reuniting was made by Lord Talbot de Malahide at the meeting at Ripon last year. Whereupon Mr. Tucker (Rouge Croix) "took up his parable." He being a member of Council of both societies has worked warmly and strenuously for the bringing together of the two bodies. The Archæological Association, urged on by what was believed to be greater forwardness of action on the part of the Institute, resolved to address the associates, and the result of a circular was that ten to one have been in favour of entering into negotiations. It now appears that the Institute had not arrived at a point so advanced as to issue a circular, although it had been drawn up, and the Council has definitely abandoned the matter.

This conclusion has been communicated by Mr. Tucker to the Hon. Treasurer of the Association, and thus for the second time, after themselves opening the question of amalgamation, has the accomplishment been, at any rate, postponed by the Institute.

PROFESSOR WILLIS.

AT a late hour on Sunday evening last this eminent man died at his residence in Cambridge. He was born in London, in February, 1800, and was educated at Caius College, whence he graduated as ninth wrangler in 1826. He was soon afterwards made a fellow of his college, and in 1837 was elected to the Jacksonian professorship of natural and experimental philosophy in succession to Professor Farish, a position which he has since filled until very lately. Professor Willis was author of some most valuable works on architecture and archæology, while his handbooks on the principles of Mechanism and a treatise on the Teeth of Wheels were held in great repute. Some notice of his works by Sir Gilbert Scott will be found on another page. His scientific attainments were acknowledged far beyond the University. He was a member, and frequently president, of several learned societies, and notably was President of the British Association for the Advancement of Science on its visit to Cambridge. The late Professor married a daughter of the late Mr. Charles Humphrey, banker, of Cambridge, by whom he leaves a numerous family. He was a delightful lecturer, as hundreds of those who have attended the Congresses of the Archæological Association and the Archæological Institute could testify.

INDIAN RESTORATIONS.

SIR JOHN STRACHEY is giving his serious attention to the restoration of the great temple of Govind Deva, at Muttra, which has been allowed to fall into a lamentable state of disrepair. The other architectural remains in the same district have been inspected by the Lieutenant-Governor, and a correspondent of the *Pioneer* writes that a report has been directed to be prepared, embodying brief notes on all the buildings which possess sufficient interest to justify public interference on their behalf. It is also proposed to provide funds for the execution of any repairs that can be proved to be necessary. The principle upon which these restorations will proceed is, that restoration shall only mean preservation. No missing portions are to be replaced; nor will any portion of any architectural monument worth preserving be destroyed simply because it may happen to be ugly, or of later date than the rest of the building.

Science College for Birmingham.—On the 23rd ult. the foundation-stone of a college for the teaching of science was laid at Birmingham by Sir Josiah Mason.

PROFESSOR E. M. BARRY'S LECTURES AT THE ROYAL ACADEMY.

No. 2.*

In my last lecture I asked you to examine with me a theory put forward as a basis of prophecy for the future. I now propose to cast our eyes backward on the past. It will be our task to-night to remember that this year marks the completion of a fourth century since the birth of a great master, and mighty artist, and to devote ourselves for a time to a consideration of the events of his long and honourable career. We hear so much nowadays of natural laws, averages, and systems, by the side of which mere individual efforts are futile as a fly on the wheel of some vast engine, that it may not be without advantage to us to dwell sometimes on the lives of those great men whose names shine out so brightly in history, and who have made their mark on the annals of their time. Such a one was Michelangelo Buonarotti. There are names which bear with them a magic charm, and his is one of them. Sculptor, architect, painter, and poet, as well as patriot and politician, he seems, as we look back, to stand out more and more, in any picture we may frame for ourselves, of the times of the Italian Renaissance.

Michelangelo was born, as I have said, just four centuries ago. In these 400 years what important changes have occurred! States have arisen, and have been blotted out. The old world has burst its bounds and discovered a new one. Religions have altered their course. Everywhere there has been change, and yet the name of Michelangelo retains its charm, as when the impatient Romans of his day rushed to the Sistine Chapel to admire his last new work. It is the almost divine prerogative of art to know no change, and to preserve its principles universal, immutable.

We shall see hereafter that Michelangelo was a good citizen, as well as a noble artist; a Florentine first, and a sculptor afterwards. In his days, none could have dreamt of the United Italy, which has but lately arisen under our eyes, where politicians have seen for ages only a "geographical expression;" but we shall find him devoted to the freedom and independence of his darling Florence,—Florence the beautiful, and the proud.

Let us glance for a moment at the state of society into which Michelangelo was born. From the thirteenth century, rival parties in Florence had been fighting for the mastery. Guelphs and Ghibelines divided themselves into opposing camps, and shared the vicissitudes of victory and defeat.

These titles became in time mere party nicknames, and lost their original meaning. They arose in Germany, and are said by some to have been first known in the twelfth century at the battle of Winsberg, in Suabia, between two rivals for the Imperial throne, Conrad, Duke o Franconia, and Henry, Duke of Saxony, of the house of Wölf. A corruption of the latter name became the rallying cry of the partisans of Henry, while the soldiers of Conra t took their opposing title from Weiblingen, a town of Würtemberg, the patrimonial seat of their leader.

It was not, however, till about the year 1240, on the excommunication of Frederic II. by the Pope, that the names of Guelphs and Ghibelines were generally adopted in Italy, the Guelphs supporting the Pope, and opposing the Imperial authority, which was upheld, more or less, by the Ghibelines. In later times the Ghibelines were regarded as the supporters of the aristocratic principle, while the Guelphs professed an admiration for a more popular form of Government.

Such were the parties Michelangelo found contending for supremacy in his native country. Let us now inquire for a moment what was the state of society, and morals.

It was a time of general corruption in high places, of treachery, poisonings, and violence. Petrarch, in one of his letters on Rome, writes:—"Such is the modern Babylon, whatever of perfidy or fraud, whatever of cruelty and pride, whatever of impurity and unbridled licentiousness, you may have heard or read of, whatever of impiety and of the vilest manners the world has elsewhere witnessed, you will behold all such evils accumulated in fullest measure here." "Here in Babylon all that is good expires. In this kingdom of avarice, nothing is deemed a loss, excepting the loss of money." What is told us of hell, is treated as fabulous: the resurrection of the body, the end of the world, the coming of Christ to judgment, are esteemed fables. Here truth is deemed folly, abstinence rusticity, chastity a signal reproach, licence in sin, magnanimity and praiseworthy freedom."

This language can, it is to be feared, be hardly called exaggerated, and it reveals a state of things at the Papal Court which doubtless contributed, in no slight degree, to that cry for reform which echoed over Europe at the beginning of the fifteenth century, and which [raised previously by Wycliffe in England,] was then taken up in Bohemia, Moravia, and Germany, with such important results to the world at large.

The sovereign Pontiffs, at this time, seem to have merged the priest in the king, and to have hesitated at no means to compass their plans of State. Sixtus IV., and his successors, Innocent VIII. and Alexander VI., under whom, the childhood and early manhood of Michelangelo were passed, stand out in a bad preeminence, even amongst their not too scrupulous contemporaries. Conspiracies, assassinations, and vicious indulgences mark their reigns, and it is well known how the last of them, Alexander VI., with his natural son, Cæsar Borgia, made his name a by-word of infamy, and finally perished by poison treacherously prepared by him for another.

From this brief account of the social corruptions of his day, it may well be imagined how fraught with peril must have been such a state of things to the character of young men entering life like Michelangelo. Himself of noble descent (for the Buonarotti, or as they called themselves, the Buonarotti-Simoni, were among the most distinguished Florentine families), he would naturally have plunged into the dissipations around him, had it not been for the proud uprightness of his character, which was fostered by the influence of a great reformer, and most remarkable man.

This man was Savonarola, a patrician by birth, a priest by profession, and a reformer by conviction. An ardent enthusiast, he preached with the zeal of an ancient prophet, pointing to Rome as the mystic Babylon and mother of abominations. Austere and incorruptible, he denounced the impurities of the cloister, the corruptions of the church, the tyrannical cruelties of the State. His speech, at first marred by an infirmity, like that of the Greek orator of old, at length electrified such congregations as had never been seen before.

Led by the occurrences around him to take a lead in politics, the aim of Savonarola seems to have been to establish in Florence a theocracy, in which religion and law should be one and the same, very much as was contemplated by our own Puritans. His burning zeal made him many enemies, and betrayed him occasionallly into extravagance. An instance of the latter was the destruction of works of art; which he induced his followers to devote to the flames, in the public place opposite to the palace of the seigniory in Florence, so well known, doubtless, to many of you. From the corruption of the times, there can be little doubt that some of the pictures and books and other works thus condemned by wholesale may have deserved their fate; but when we read that Frà Bartolomeo was so carried away by enthusiasm, that he brought his life-academy studies to be consumed on the pyre, we cannot but regret that the story of Savonarola's noble life should be disfigured by this outbreak of monkish bigotry in opposition to taste and genius.

I must not, however, dwell on the intensely interesting life of Savonarola, which was spent in the denunciation of the vices of the town, and of the iniquities of the Papal court. His end soon came. Excommunicated by Pope Alexander VI. in 1497; deserted by friends; and insulted by a fickle populace; he was strangled and burnt, in 1498, in the Piazza dei Signori, now the well-known Piazza Gran. Duca, in the forty-sixth year of his age.

Such was the untimely end of this great reformer; but his work did not perish with him, nor the powerful influence which he exercised on some of the best artists of his day. Notwithstanding the indiscriminate character of the artistic burnt sacrifice already referred to, Savonarola was not destitute of appreciation of artistic beauty. He had devoted followers among artists and their families, and among his earliest adherents was Frà Bartolomeo, whom we have already seen devoting his works to the flames at the bidding of his friend. This great artist was so deeply affected by the tragical fate of Savonarola, that he renounced his art, and buried himself in a cloister, whence all the entreaties of his admirers were needed to induce him to emerge, and resume his artistic pencil.

I must do no more than mention Lorenzo de Credi, with Luca della Robbia, and Andrea his nephew, as among the disciples of Savonarola; also the architect, Cronaca, who crowned the Strozzi Palace with its massive cornice.

The young artist was about twenty-four years old when Savonarola was put to death, and we may believe that his character was greatly influenced by the teaching of the great preacher. We are told, indeed, that Michelangelo ever regarded his memory with affectionate veneration, and that in his declining years the Holy Scriptures, and the writings of Savonarola, were his favourite study.

It was into this stormy condition of affairs that Michelangelo was born, and in which he lived. Let us now trace some of the principal events of his life.

The day of his birth was the 6th of March, 1475, and the place, the Castle of Chiusi and Caprese, of which his father was governor for the year. His father, Ludovico di Lionardo Buonarotti-Simoni, was sprung from an ancient family, being descended from the Counts of Canossa. The mother of the future artist was Francesca Rucellai.

On the return of his parents to Florence, on the expiration of the elder Buonarotti's year of office, the infant Michelangelo was put out to nurse with the wife of a stonemason, living a few miles from Florence. In after days, when spectators used to marvel at the energy of the young sculptor, who made the flakes of marble fall under his chisel with astonishing rapidity, Michelangelo used jestingly to refer to the circumstances of his infancy, and would declare that he imbibed a love for the chisel and mallet with his fostermother's milk.

It is clear that the artistic tastes of the future artist were early developed, and that somewhat against the wish of his parents, who were disposed to regard with dissatisfaction the devotion of one of their sons to a profession, which they seem to have regarded as derogatory to patrician lineage. Family pride and even personal harshness was, however, of no avail. The lad of fourteen gave even then a foretaste of the strong will of later days, and, happily for art, Michelangelo remained steadfast, and on the 1st of April, 1488, was articled to Ghirlandajo, at that time an artist of note, and having many pupils and a large practice.

This was the real commencement of Michelangelo's artist life, and his genius was not long in showing itself unmistakably. He was encouraged in his ardour by a friend and fellow-pupil, Granacci, a youth about five years older than himself, and to whom he turned for encouragement and advice.

According to Vasari, the two friends were working one day at the Academy of S. Marco, at Florence, when the attention of the reigning Duke Lorenzo de' Medici was attracted to the head of a fawn which Michelangelo was imitating from an antique model. Looking kindly on the young artist, the Duke said,—"How is it you have given your fawn a complete set of teeth? Don't you know that such old fellows are sure to have lost some of them?" Next time Lorenzo saw the bust some of the teeth had been removed, and their sockets cleverly displayed. The Duke being pleased with this courtier-like appreciation of his criticism, inquired the name and age of the sculptor, and ended by taking the youth under his especial patronage. This was the beginning of the public life of Michelangelo, who from that time became habituated to the intercourse of the leading men of his time.

But Michelangelo was well aware that the smiles of the great would be of little avail, if he did not master the principles and details of his art, and we find him, at this time, not only drawing, painting, and modelling, but also deep in the study of anatomy and the uninviting mysteries of the dissecting-room. He thus gained that marvellous knowledge of the human frame which hereafter distinguished his works.

He soon made great advances in his studies, and seems to have incurred some ill-will from the envy of his fellow students, for one of them, Torrigiano, having insulted him, an encounter followed, when an unlucky blow from his antagonist broke the bridge of Michelangelo's nose, and disfigured him for life. We can form an idea of the favour in which he was held at this time, from the anger of Lorenzo with Torrigiano,

* Delivered March 1st, 1875. See p. 183, *ante*.

who was at once banished, while Michelangelo grew daily in favour, and took up his abode with his patron.

Lorenzo de' Medici was at this time in the plenitude of his power. He had just successfully escaped from a plot against him, known as the conspiracy of the Pazzi, which cost his brother, Giuliano, his life. This conspiracy had been fomented by the reigning Pope Sixtus IV., and it is suggestive of the state of society at the time, that the place selected for the murder of the two brothers was the Church of Sta. Maria dei Fiore, and the time the celebration of mass by Cardinal Riario, one of the conspirators, and a relative of the Pope.

The signal was to be the bell which signifies to the silent congregation that the most solemn mystery of religion is being celebrated. In the tumult that arose, Lorenzo was struck in the neck by a dagger, and though he escaped with life, his brother was less fortunate. Nevertheless the conspiracy failed in its object, the Pazzi family were all but annihilated, and Lorenzo's power was more firmly established than before. He was then the better able to turn to the arts of peace, for relaxation from graver duties, and his court became a home for literature, philosophy, poetry, and art. In such an atmosphere we may be sure that Michelangelo breathed freely, and found ample scope for his genius.

But this unclouded prosperity was not long to continue, for in 1492 Lorenzo died. Michelangelo was at this time scarcely eighteen years of age, and felt keenly the loss of his powerful friend and protector, whose nobler qualities had not descended to his son and successor, Piero de' Medici.

Piero soon gave himself up to sports and pleasure, and, among his transactions with Michelangelo, we are told that he commissioned the latter to form a statue of snow in the courtyard of the palace. It was a time of dissipation, folly, and superstition, and the expulsion of the Medici family was not far off.

Michelangelo was too keen an observer not to be troubled by signs of coming distress, which escaped the notice of his careless master. The prophetic denunciations of Savonarola were ringing in his ears. The woes announced by the latter seemed about to burst on the devoted city, and likely to involve him in the ruin of the Medici. After some hesitation, he determined to fly, and left Florence for Venice, just before the advance of an invading French army forced Piero, who went out to meet it, to surrender himself a prisoner. All offers and negotiations proving abortive, Piero was allowed by his conquerors to return to Florence, but was soon expelled as a traitor by the infuriated populace.

Michelangelo did not long remain in Venice. He had at this time but few resources, and his slender funds were soon exhausted. He therefore returned to Bologna, from which he could more readily observe, and take advantage of any improvement of affairs at Florence. It is said that on his entry into Bologna, he got into trouble. Every foreigner entering the gates had to present himself to an officer, who marked his thumb with a seal of red wax. Michelangelo, neglecting this custom, entered the city with no seal on his thumb, and was consequently arrested, fined, and imprisoned.

From this state he was released by Signor Aldovrandi, a leading Bolognese citizen, who ultimately persuaded him to abandon any intention of proceeding further, and to remain with him, as an inmate of his house. Scarcely had Michelangelo agreed to this proposal, when his late master, Piero, arrived, with his family, to seek shelter in Bologna, after their expulsion from Florence.

It was at this time that Michelangelo designed the well-known kneeling angel holding a candelabrum, which is still to be seen at the church of San Petronio, as an adjunct to the shrine of St. Domenicino. This work caused much ill-feeling, as the Bolognese were very jealous of strangers, and Michelangelo soon determined to return to his native city. Here all was changed; the very name of the Medici proscribed, their art-treasures dispersed, and the artist society which gathered around them shattered and dejected. The influence of Savonarola was supreme, and a more than Puritan austerity had succeeded to the gay and careless days of the Medicean rule.

Michelangelo, however, still found friends, and settled down to his artistic life. A cousin of Piero, Lorenzo de Medici, had remained in Florence under an assumed name, and for him several commissions were executed by the young sculptor. One of these works, a Cupid, for which Michelangelo received 30 ducats, was sent to Rome, and there sold as an antique for 200 ducats.

The purchaser in Rome was Cardinal San Giorgio; the same Raffaelle Riario who said mass in Florence as a signal for the attempted murder of Lorenzo de' Medici and his brother. The cardinal having a suspicion of the trick which had been played upon him, sent to Florence to make inquiries as to the genuineness of the sculpture. The result was an invitation to Michelangelo to come to Rome, which the latter accepted. He set out at once, and arrived in the Eternal City on the 25th of June, 1496.

Michelangelo's first visit to Rome may fairly be regarded as an epoch in his life. He was in his twenty-first year, full of youthful hope and strength, and thirsting for distinction. His delight at what he saw at Rome is expressed in a letter to his patron Lorenzo, at Florence. He found, he says, so many beautiful things, that he had not been able to find time to deliver his letters of introduction, excepting the letter for the cardinal. He had tried to recover his Cupid from the dealer, who had abused his confidence, but in vain, and he had purchased marble, and was about to work on it at once.

Few of us are, I think, unconscious of a spell which the very name of Rome exercises upon us, a spell deepened into enthusiasm by presence in the midst of it. We can the better sympathise with the ardent young artist, so excited by the works of art around him that all his business cares are forgotten.

It may, perhaps, be interesting to try to realise what he saw; for it was not our Rome which Michelangelo entered. The rock of the Capitol was bare, and he could not have foreseen that group of palaces which he afterwards placed there, and which are to us one of the great features of the city. The narrow streets, thronged by day, were closed at night by chains. From the Capitol there was no sign of modern St. Peter's, nor did there exist any of the countless domes, which to the modern visitor, seem to be associated with the very name of Rome.

The old basilica of St. Peter's was still standing, and squalid houses covered the space now occupied by the great square, with its encircling colonnades, and rushing fountains.

The Vatican, a small and poor commencement of the present huge structure, was dwarfed by the Castle of St. Angelo, than as now the citadel of Rome. From his chamber at the Vatican, the Sovereign Pontiff could pass by a covered passage to his castle,—a facility not to be despised when cardinals, with their attendants, might be seen galloping about in complete armour, and corpses were daily to be found in the streets, victims of the dagger or the poisoned bowl.

Such was the Rome of Michelangelo, as regarded its every-day aspect. Its old-world life, however, must have been explored by him with absorbing interest. The marvels of old Rome were spread out before him, as before ourselves, and we can picture the intense delight with which each newly-excavated statue from temple, bath, or villa, would be welcomed. Each day would bring to light fresh wonders of art, and seem to link together the Past and the Present.

Michelangelo remained at this time only about two years in Rome, but before he left it he had established a commanding reputation, although his connexion with the Cardinal de San Giorgio was soon terminated,—not to the loss, probably, of his fame, or safety.

Some doubt hangs over the works which Michelangelo is supposed to have executed at this time, but his statues of Cupid and Bacchus are well known.

The great work, however, which stamped him as the first of living sculptors is the celebrated Pieta, now in St. Peter's. Other works of Michelangelo may better reveal his power than this masterpiece, but nothing can test his skill for delineating the softer emotions. The attitude of the youthful mother bending over her son, inconsolable, but yet sublime, as his yielding form rests in her arms. A fac-simile of the latter is before you, and the perfection of the details and the grace of the composition combine to mark the whole work as one of the triumphs of plastic art. As such it was regarded at the time, and Michelangelo's position was at once established. His fame soon spread from Rome to the city which claimed him for its own, and about the year 1500, soon after the death of Savonarola, he was induced to return to Florence.

Resuming his labours with characteristic vigour, he set to work on a Madonna, and some other works of sculpture, including fifteen marble statues for Siena, but the work which chiefly marks this period of his career is the famous "David."

A great block of marble, 18 ft. high, was lying in the courtyard of the cathedral workshops. Originally intended for the colossal statue of a saint for the decoration of the exterior of the church, it had been only partially worked. From some cause the sculptor, Simoni di Fiesole, had withdrawn from the work, and the idea had in consequence been abandoned. Michelangelo was then appealed to, and he undertook to produce a colossal statue of David from the block as it stood, and without any addition being made to it.

Two years were allowed for the task, and he at once began on the marble. He is said to have been so eager to commence, that his only work of preparation was a little wax model, and he devoted himself to the statue with such absorbing application that he trusted no hands but his own, and from the first touch, in 1501, to the last, in 1504 (for he was a little beyond the stipulated time), he did the whole of the work himself.

A difference of opinion ensued as to its ultimate position. Some thought it should be placed in the Loggia, others in a church, or in the courtyard of the palace. It is interesting to notice the opinion of Giuliano di San Gallo, then in the height of his fame as an architect. He pronounced in favour of the Loggia, because, he said, the marble was tender, and would be injured by exposure, as has indeed been the case. In this advice he was supported by Leonardo da Vinci, but as Michelangelo did not approve the suggestion, his views naturally prevailed, and the "David" was placed in the square, near to the gate of the palace.

Four days were taken in moving the colossus from the sculptor's studio, and on the 18th of May, 1504, it was finally placed in position. During its progress, such was the jealousy with with which Michelangelo seems to have been regarded by rivals, that stones, we are told, were thrown at it, and a guard had to be appointed to defend the statue from the attacks nightly made upon it.

Florence was at this time the centre of the arts, for Michelangelo, Leonardo da Vinci, Raffaelle, with other artists of lesser eminence, were all contending there in honourable rivalry. Michelangelo had always deemed himself a sculptor before anything else, but he was now induced to enter the lists, as a painter, with Leonardo.

The Florentine Government wishing to decorate with paintings the two great side walls of the council chamber in the Palazzo Vecchio, entrusted the commission for one wall to Leonardo, and that for the other wall to Michelangelo. Unfortunately for art, neither task was fully executed. Michelangelo did not proceed beyond the preparation of his cartoon; and Leonardo da Vinci, though he commenced his painting on the wall of the council-hall, never finished it, and the part which was executed faded away in consequence of some defects in the colours, or the ground, such as those which have so fatally dealt with his "Last Supper" at Milan.

The subject of Michelangelo's cartoon was suggested by the war which had been raging, more or less, for centuries, between the Florentines and Pisans. The cartoon shows a group of Florentine soldiers, bathing in the Arno, where they are surprised by a sudden attack. It has always been considered a most masterly study of the nude, and Benvenuto Cellini declared that "though the divine Michelangelo afterwards painted the great chapel of Pope Julius, he never again fully realised the force of these, his earlier studies."

The fate of this great work is melancholy, for it seems to have been purposely destroyed, from unworthy motives of envy, in 1512. Vasari attributes this work of Vandalism to Bandinelli, a rival, and disciple of Leonardo da Vinci, but however this may be, it is certain that the cartoon was cut into fragments, and mutilated. Some scattered portions found their way to different places, and were afterwards engraved by Marc Antonio and Andrea Veneziano.

There is a copy of the first of these engravings in the "Illustrations of the Genius of Michelangelo Buonarotti," by the late Commendatore Canina, Professor Cockerell, and Mr. Harford; and I think you will find it well deserving of attentive study. In it, three soldiers are repre-

presented just emerged from the water. One is climbing the bank, another leaning over it to offer a hand to a comrade in the water; the third is pointing to the enemy, who is seen in the background, masking his advance through a group of trees. These figures in the original were the size of life, and were drawn in black chalk, with white lights and brown shadows.

It is certain that the cartoon was regarded by his contemporaries as a new triumph of its author, and Vasari attributes to its influence the first inspiration of the grand style of art to Raffaelle. Sir Charles Eastlake so far agrees in this view, as to point out that from the time when Raffaelle studied the cartoon of Pisa (as it was called), a closer study of anatomy and form is to be seen in his works.

Michelangelo had now shown his power as a painter, as well as sculptor, while literary studies did not cease to engage his attention. The best prose writers of his country, and the works of the Tuscan poets, were the delight of his hours of relaxation from his heavy artistic labours.

Such were the daily habits of Michelangelo in Florence in the prime of life, and strength; when he was summoned to Rome by the Pope. Julius II. now wore the tiara, and was resolved to distinguish and exalt his rule by all possible means.

We have before met with the architect San Gallo in council at Florence. He was now in Rome, and being imbued with admiration for the genius of Michelangelo, he brought the name of the latter before the Pope, who at once called him to his presence.

The Pope, determined above all things to give lustre to his rule, was also a real lover of art, and wished to assemble round him artists and men of letters. He was the originator of the modern St. Peter's, the paintings in the Sistine Chapel, and the halls of the Vatican, and with his name will ever be connected those of Bramante, Raffaelle, and Michelangelo. To the latter he at once accorded his especial favour, and entrusted him with a design for a mausoleum, to be erected in his honour in the old basilica of St. Peter's.

I shall take another opportunity to call your attention to this work, which may be said to have embittered the rest of Michelangelo's life. At present all was sunshine, and the Pope used to visit the great sculptor in his studio, without ceremony, and, as Michelangelo himself said, with the cordiality of a brother. After a time, however, a coldness seems to have arisen, and Michelangelo was not the man to tolerate a slight from any one, however exalted his station.

An instance of his manner of dealing with such cases had previously occurred in Florence, in respect to the picture of the Holy Family, which Michelangelo had painted for Agnolo Doni for 70 ducats. When Doni received the picture, he said the price was too much, and forwarded only 40 ducats. The artist, on this, sent a messenger to say that the picture must be at once returned by the bearer, or an increased price of 100 ducats paid for it. Doni then offered the original price of 70 ducats, but was astonished to be told that in consequence of this insult he could now only be allowed to retain the picture if he instantly paid 140 ducats, which he was forced unwillingly to do. We may suppose that he did not again attempt to bargain with an artist so resolved to uphold the dignity of his profession, and we may further conclude that such a man as Michelangelo then was, brought to his transactions with Pope Julius a spirit as proud and lofty as his own.

An outbreak soon occurred, and Michelangelo took grave offence at a refusal of audience. It has been asserted that Bramante was jealous of another's influence with the Pope, and that he had sought to cool the ardour of his master on the subject of the mausoleum, by suggesting that it was an evil omen for a man to build his own tomb.

The Pope, always impetuous, may have also been irritated by what appeared to him the slow progress of the work. However this may be, Michelangelo saw in the refusal of audience a studied insult. He exclaimed to the officer who repulsed him, "You may tell the Pope that should he wish to see me again, he will have to seek me elsewhere."

Waiting for no reply, he rushed from the Vatican, took horse, and by two o'clock on the following morning was at Poggibonsi, on Florentine territory, and beyond the limits of the Papal rule. He had written to the Pope before leaving Rome, and Julius had at once sent messengers to stop his departure, and to bring him to his presence, even by force if necessary.

Michelangelo's movements were, however, marked by his characteristic energy, and when his pursuers came up with him he was on Florentine ground. He flatly declined to turn back, and went on to Florence, where he was received with open arms. Julius, not accustomed to be foiled, at once sent a brief to the Florentine Government demanding that they should send the fugitive artist back to Rome.

As this was not complied with, other briefs followed, and it became evident to the Florentine rulers that Michelangelo could only remain at Florence, at the cost of war with the Pope. This was a serious state of things for which they were not prepared, and Pietro Soderini, who was the ruling spirit at Florence, hit on the expedient of sending back Michelangelo to the Pope as the ambassador of the Florentine Republic, and thus protected from his wrath.

Michelangelo was at last induced to consent to this arrangement. He had hitherto shown a resolution at least equal to that of the Pope, and had declared that if his countrymen forced him to leave Florence, he would transfer his services to the Sultan, and would fix himself at Constantinople. The new proposal, however, seemed to promise an escape from all difficulties, and on the 21st of August, 1506, his letter of recommendation was made out, and our artist found himself invested with ambassadorial dignity.

Julius was about this time at Bologna, which had just been taken by the Papal troops. Here he was found by the new ambassador, who was soon taken again into favour. The Pope, proud of success, requested Michelangelo to execute a statue to commemorate his victory. This was to be a bronze statue of the Pope, for the Church of St. Petronio. Michelangelo at once undertook the task, for his supposed diplomatic duties were evidently nominal, and had already served their purpose.

The character of the Pope peeps out in the history of this statue. The sculptor's design gave the right hand raised, in the attitude of benediction, and it was suggested to place a book in the left hand. The Pope, however, objected, and when asked what he wished to have, said, "A sword. I was never addicted to letters." Nor was he contented with the position of the right hand, until assured that the attitude would do as well for one of menace as for blessing. "Holy Father," said the artist, "it menaces the people, in case they should prove rebellious." The statue was finished, and placed in its niche; but, unfortunately for art, it was destroyed by popular fury some years afterwards.

We now find Michelangelo, after a short visit to Florence, returned to Rome, and fully reconciled to his imperious patron. But his absence had not been without its effect. The impatient zeal of Julius had found other objects to pursue, and the mausoleum had already been half-forgotten.

Bramante had a commanding influence at court, and the rebuilding of St. Peter's was in progress under his auspices. Great works were also being carried on at the Vatican, where Raffaelle was already engaged. Michelangelo thus found himself in the midst of new faces and new influences; and though restored to the Pope's favour, was conscious of a change in his position.

Julius now cared little for the mausoleum, and surprised Michelangelo by inviting him to paint in fresco the vaulted ceiling of the Sistine Chapel; so called from its having been built by Sixtus IV. It has been suggested that the Pope was instigated to offer this work to Michelangelo by the unworthy advice of those who, foreseeing a failure, hoped thereby to sow distrust between the artist and his patron. It is more reasonable, however, to conclude that as Julius must have heard of the famous cartoon of Pisa, and of Michelangelo's readiness to execute the work in fresco at Florence, he was resolved to obtain from the artist a masterpiece, similar in kind, while greater in degree.

The fiery nature of the Pope brooked no contradiction; and although Michelangelo declared that painting was not his profession, and set about the work with unconcealed reluctance, he was forced to submit. Once resolved, he threw his whole soul into the subject; for whatever this great artist undertook, he did with all his might. When his cartoons were completed, he sought aid from Florence, to assist him in transferring his designs to the building, and one of the first who responded to his summons was Granacci, the friend of his youth.

Several other artists of the day were only too proud to work under Michelangelo, and came from Florence for the purpose; but Michelangelo soon found all assistance useless. Genius is incommunicable; he could get no efficient aid from those respectable mediocrities, and felt compelled to efface their work, and dispense with their services. His mode of doing so was characteristic. We have seen how stoutly he could maintain the honour of his profession, how bold and haughty he could be before princes. Towards his friends, however, his manner was full of consideration, and he could not muster courage to tell his coadjutors to leave him. In this difficulty he suddenly shut up the chapel and went away. His friends could find him nowhere, and, guessing what was intended, took the hint, and quietly returned to Florence.

And now Michelangelo was again at work, untrammelled and absolute. In solitude he toiled, and when at last the gigantic work was finished, he was fully entitled to the proud boast,—"Alone I did it."

Difficulties of various kinds presented themselves, difficulties with the scaffolding, difficulties with the colours, difficulties, above all, with the overbearing temper of his patron; but at length one half of the ceiling was completed, and as the impatience of Julius could no longer be curbed, the scaffolding was removed, and before the dust of its removal was dissipated, the Pope entered the chapel.

Then came the painter's triumph. Envy and detraction were silenced, and Michelangelo was revealed as a painter of the very highest rank, in addition to his allowed position as the first of sculptors. In after-life, Michelangelo often complained that his work had been hurried by the impatience of the Pope, who on one occasion had threatened to throw the artist from the scaffold, if it were not at once removed.

Julius, however, had too great an admiration for Michelangelo for us to receive this anecdote as more than a piece of idle gossip, or pleasantry, and he was soon urging the painter to resume his work, in spite of intrigues attributed to Bramante, to induce him to entrust to Raffaelle the execution of the remaining half of the ceiling. This suggestion, however, was at once repelled, and Michelangelo proceeded forthwith to complete his work with such energy that the whole is said to have been finished in the incredibly short period of twenty months.

The chapel was thrown open to the public on All Saints' day (November 1st), 1512, by a service at which the Pope himself attended.

Thus was completed this wonderful achievement, which more than all else has rendered glorious the name of Michelangelo with undying fame. We see in it the genius of the artist in its highest perfection. Criticism has of course much to say about it, especially with regard to the freedom of treatment of the nude human form. Having regard to the awful character of the subjects, it may be doubted whether it is given to mortals adequately to delineate such dread realities. With this reservation, however, few I think can stand in the Sistine Chapel, and view the paintings of Michelangelo unmoved, and without feeling that those awful themes of the Creation, the Fall, the Redemption, and the Judgment of Man, are there delineated with a grandeur of design, and sublimity of conception, without a parallel. No wonder if the enthusiastic admirers of the artist have bestowed on their beloved countryman, the title of "il Divino."

We have seen that Michelangelo deemed himself a sculptor, rather than a painter; but by this mighty work he has associated his name with the art of the latter, rather than with the former, and it is perhaps from his work in the Sistine Chapel that his fame as an artist will be chiefly estimated.

If he had any lingering dissatisfaction with the Pope, all coolness seems to have been now at an end. We may suppose that each had learned to respect the other. The character of Julius, headstrong though it was, did not want a certain imperial grace and dignity, and he appreciated fully the moral courage and honesty of purpose which were ever displayed by Michelangelo. Few dared to speak to him with the freedom habitual with the latter, and towards the close of his life, he relied more and more on Michelangelo as on a faithful friend.

One instance of successful remonstrance is recorded. The Pope wished Michelangelo, after the work was completed, to retouch it with gold so as to give greater distinction to the saints delineated. This Michelangelo was unwilling to do. "Holy Father," said he, "the sainted

characters there shown were poor men, they wore no gold." "Without gold," said the Pope, "the work will look poor." "They were not only poor men," the artist rejoined, but "they were also saints who despised riches." The point was not further pressed by Julius, and no additions were made.

Relieved from the pressure which the Sistine Chapel had put upon him, Michelangelo now turned his thoughts again to the mausoleum, which was to be proceeded with on a reduced scale. But everything was soon thrown into confusion by the death of Julius, in February, 1513.

The new Pope was Leo X., whose Pontificate will ever be memorable for that sale of indulgences which seemed to give the chief impetus to the Reformation. Leo himself seems to have been an easy, careless man, very different in character from his predecessor.

We are principally concerned here with his treatment of Michelangelo, and it was by him that the skill of the latter as an architect was now to be demonstrated. A member of the Medici family, his thoughts naturally reverted to Florence, and he wished to signalise his reign by some conspicuous work in his native city. He found such a work in the completion of the façade of San Lorenzo, which contained the remains of many of his family. He therefore invited Michelangelo to prepare a design for a marble façade, and, Vasari tells us, applied also to Raffaelle, Sansovino, and Giuliano San Gallo. The result was a commission to Michelangelo to carry out his design, which he was unwilling to do, as he wished to be left undisturbed at Rome to finish the mausoleum of his old friend Pope Julius.

Leo was resolute, however, and insisted on obedience; Michelangelo was, therefore, obliged to submit, and prepared to return to Florence. He was compelled to go to Carrara to superintend personally the quarrying of the marble, and after much waste of precious time, some of the details of the façade arrived in Florence. The work, however, was never completed, and was abandoned before the death of Leo X., in 1521.

Michelangelo was so discontented with the treatment he had received, that for a time he would touch nothing in his work. But Cardinal Medici, who now ruled Florence, appreciated his genius, and ultimately induced him to undertake the addition of a chapel instead of a façade to the church of San Lorenzo. This chapel was to contain tombs of Lorenzo and Giuliano de Medici. Michelangelo soon produced a design, which was at once accepted, and, as all visitors to Florence are aware, has been carried into effect.

The seated statues of Lorenzo and Giuliano must be reckoned among the sculptor's finest works, and the allegorical figures of Day and Night, Aurora and Twilight, introduced a fashion of allegory in monuments which soon spread over the whole of Europe. It is for sculptors to point out the wonderful skill and the anatomical knowledge exhibited by these works of Michelangelo's genius, which has mastered the difficulties of place and material; but all can recognise the beauty of the forms, the dignity and the power which are here displayed.

Unfortunately, the chapel was never finished, for in 1534, before its completion, Michelangelo had left Florence for ever. Had the work been fully achieved in accordance with the views of Michelangelo, it would have exemplified the truth on which he ever insisted,—that architecture, painting, and sculpture must not be looked upon as rivals, but can only be fully appreciated where they are employed in combination, each supplying an essential ingredient to the perfection of the whole.

But before the partial completion of the sacristy of San Lorenzo, important events had occurred which not only interrupted the artistic work of Michelangelo, but exhibit him to us as one of the leading men in Florence, socially and politically, and make us regard him more than ever as a "King of Men."

The premature death of Raffaelle, in 1520, was soon followed by that of his patron, Leo X., who was succeeded in the papal chair by Adrian VI. The new Pope had a short reign of eighteen months, and was succeeded by the Cardinal Medici, then ruling at Florence, who took the name of Clement VII.

Pressing forward as Pope the design he had commenced as Cardinal, he urged Michelangelo to proceed with the work at San Lorenzo, without reference to his engagements respecting the still unfinished mausoleum of Julius.

There had been many difficulties, pecuniary and otherwise, with the latter work, and at Clement's suggestion these were now determined by a scrutiny of accounts, which proved that Michelangelo's conduct throughout had been worthy of his reputation, and that a large sum of money was due to him from the executors of Julius.

An arrangement was now made, in virtue of which Michelangelo was at liberty to proceed with the Medici statues, as so strongly desired by the Pope. He thereupon fixed himself at Florence, and was quietly working there when all Italy and Europe were startled by the sack of Rome, in 1527, by the Constable de Bourbon. Rain, massacre, and pillage ravaged the streets, and Clement was only saved by flight to his Castle of St. Angelo. On the news reaching Florence, the party opposed to the Medici saw their opportunity, and proclaimed a republic.

Clement having been accustomed to look upon Florence as belonging to his family, took great umbrage at its defection, and when he was able to make his peace with his enemies, stipulated for the restoration of the Medici as the rightful lords of Florence.

This meant war with Florence, and in the emergency the citizens turned to Michelangelo. Their defences were neglected and weak, and he was asked to accept the office of Commissary General of the Fortifications. He had no affection for the Pope: he loved the liberties of his native town: the Medici of the day were only nominally the descendants of his former patron, Lorenzo: he therefore accepted the distinction thrust upon him, and soon made his influence apparent.

He devised new works at San Miniato, and visited Ferrara to study its fortifications, which had a great reputation. His energy and activity inspired the citizens with confidence, but on finding that Malatesta Baglioni, a Condottiero captain, was supported by the signory, in spite of his avowed suspicions of treachery, Michelangelo left Florence in disgust, and went to Venice, where he was treated with honour and distinction.

In the meantime, the rulers of Florence had discovered their mistake, and on his receiving from them expressions of apology and regret, coupled with pressing requests for his return, he left Venice, and once more arrived in Florence, where he was joyfully received by the citizens. His suspicions of Malatesta Baglioni were soon justified, for by this man's treacherous conduct the Imperial and Papal troops were admitted within the works on August 12th, 1530, and the siege of Florence was at an end.

Michelangelo was excepted from the general amnesty which was granted by Clement, and he was obliged to hide for his life. The Pope had no wish, however, to lose his inestimable services at San Lorenzo, and a special order was consequently soon issued that his pardon might be relied on, if he would come forth and resume his labours.

At this time, gloom and melancholy oppressed the soul of Michelangelo. He worked incessantly. His health was bad, and his undaunted spirit broken. He was between fifty and sixty. Age was advancing, and his friends feared he was working himself to death.

Public affairs were in confusion, the liberties of Florence were a thing of the past, and the present ruler, Alessandro de' Medici, brother of the Pope, made no secret of his dislike of Michelangelo. It was under these discouragements that the great artist worked,—a lesson not, perhaps, to be lost on some of us. He had to visit Rome occasionally, but the Pope would not hear of any intermission of his labours at Florence.

It was thus that the weary artist found his task irksome, and progressed with a heavy heart. At length, in September, 1533, Pope Clement died. Michelangelo at once discontinued the work, and in the following year left Florence never to return to it alive.

The new Pope, Paul III., eagerly sought the services of Michelangelo, and begged him to proceed with the painting of the "Last Judgment" in the Sistine Chapel, which had been ordered by Clement shortly before his death. With this view, a new agreement was entered into with the Duke of Urbino, as the surviving executor of Pope Julius, with reference to the mausoleum of the latter. The design was now still further reduced to the state in which we now see it in the Church of San Pietro in Vinculi.

While the negotiations were in progress, Michelangelo received a friendly visit from the Pope in his studio, and the latter completely reconciled the artist to the proposed changes by his kindness and compliments. On seeing the "Moses," the Pope exclaimed, "Surely this one statue would suffice to immortalise Pope Julius."

Michelangelo now addressed himself to the vast painting of the "Last Judgment" which had been commenced in 1533. It was finished in 1541, in the sixty-eighth year of the great artist's age.

He subsequently painted the Pauline Chapel, at the pressing solicitation of the Pope, who had called the chapel after his own name. Those only who are acquainted with the labour of fresco-painting on a great scale, can appreciate the physical difficulties of such a task; Michelangelo was upwards of seventy-five years old when this latter work was finished, and it is believed to be the last production of his pencil.

We have thus traced the life of Michelangelo to the commencement of the infirmities of old age. His busy, honourable, and arduous life appeared to be near its close; but before this great man was to be lost to the world, he was destined to establish yet further claims on its gratitude. As painter and sculptor he had left imperishable records of his genius. He was now to connect his name with the great monument of modern Rome, for at the end of 1516 he was appointed architect of St. Peter's. At this point let us now leave him, strong in the favour of the Pope, unblemished in character, in the full enjoyment of artistic power, even if bodily enfeebled.

We shall hereafter have to return to him in my next lecture, as an architect, and may then trace the circumstances of his remaining years. We shall find in his architecture the same boldness and power which have marked all his productions. In the meantime you may do worse than ponder over the lessons of devotion to art, industry, high purpose, and integrity, which may be learned from the life of "the divine" Michelangelo.

POST OFFICE, BOMBAY.

This building was originally designed in two stories to form three sides of a rectangle, by Mr. James Trubshawe, to be erected on the Wellington Reclamation, close to the landing-pier: this was subsequently altered and it became advisable to place the accommodation provided in the wings in a third story, in order that the buildings might be suitable to its new position opposite the Public Works Offices. The alteration was made by Mr. Walter Paris, late architect to Government, the original features in the design being retained as far as was consistent with the alteration.

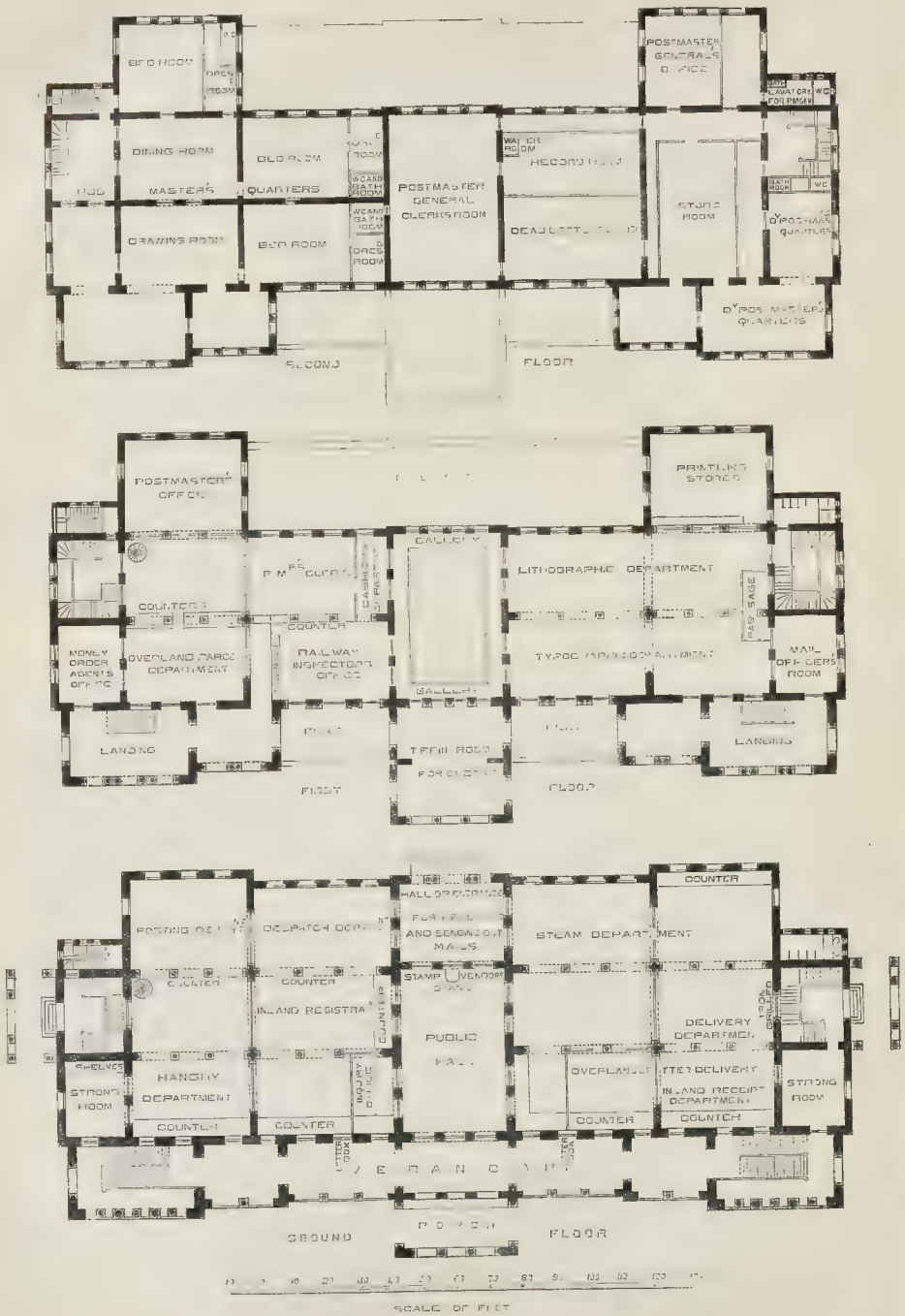
The walls are built of blue basalt rubble masonry faced with a buff basalt stone, called "Coorla stone," slightly rough on the face in courses of from 4 in. to 5 in. in height, no stone being less in length than twice its height. The dressings are principally in a calcareous sandstone (similar to Bath stone), commonly known by the name Porebunder stone. The columns are generally of Coorla stone, and a few of a red basalt from the Deccan. The floors are paved with Minton tiles on the ground-floor; on the first-floor Minton tiles over concrete, and Porebunder stone, 2½ in. slabs, laid on teak girders and joists. On the second-floor planking is laid over concrete sounding and slabs, teak girders and joists. The two principal staircases are in blue basalt. The roofs are covered with the Broomhall Tile and Brick Company's Patent Red Roofing Tiles, over teak framing. The building was erected departmentally on the petty contract system, and has cost about 9d. per cubic foot (cubical contents above ground being alone taken). These tiles, we may say, are found very much cooler than slates or zinc, and are said to resist successfully the crows, who often displace the native tiles. They have been much used in Bombay.

The building faces the Public Works Offices, of which we gave illustrations in our last volume.*

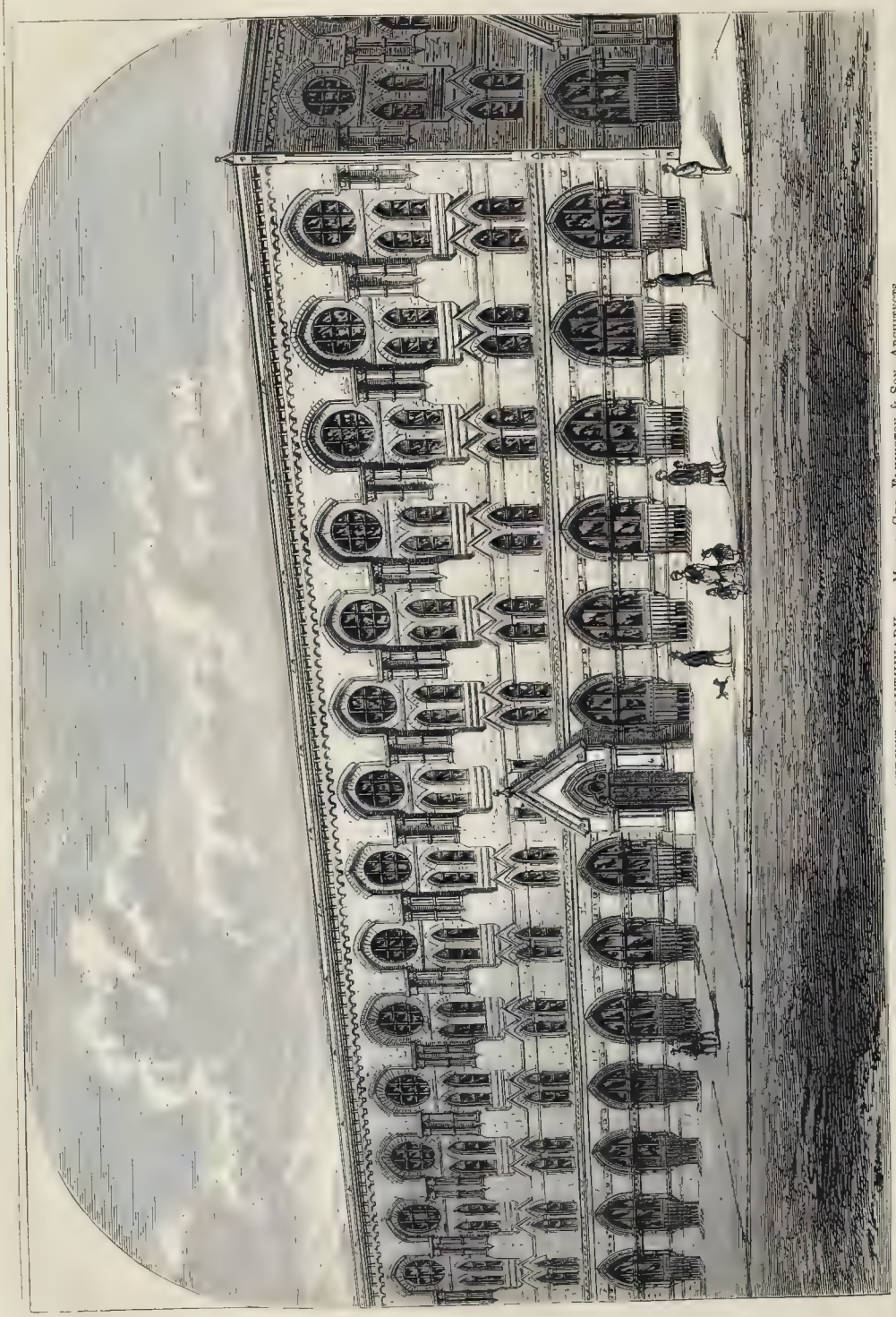
The works were under the immediate superintendence of Mr. Muncherjee Cowasgee, assistant engineer.

A Chapel superseded. — Trinity Chapel, Conduit-street, Regent-street, London, is about to be pulled down, and it is intended to convert the premises into a shop.

* Vol. xxxii., pp. 437-9.



NEW POST OFFICE, BOMBAY.—*Plans.*



WAREHOUSES, WESTON STREET, SOUTHWARK.—Messrs. Geo. Elkington & Son, Architects.



NEW POST OFFICE, BOMBAY.—Mr. James Trubshawe & Mr. Walter Paris, Architects.

MESSRS. BARROW & BROTHER'S LEATHER WAREHOUSES, WESTON-STREET, SOUTHWARK.

The new warehouses which have been recently erected for Messrs. Samuel Barrow & Brother, tanners and leather manufacturers, are situated in Weston-street, Southwark, occupying a frontage of 162 ft., and extending from Maize-pond and St. Thomas-street, to Sparrick's-row.

The principal fronts are of malm facings, the arches, strings, labels, tops, cornice, and dressings, being executed in white Suffolk bricks; the entrance doorways, shafts, and dressings to ground-floor windows are chiefly of Portland-stone; the panels under ground-floor sashes are faced with white ornamental diaper pattern bricks. The plinth is of Haytor granite. The offices for principals and clerks are on the ground floor, with a dining-room for clerks and two private rooms on the first floor. The walls and ceiling are finished with matched linings, stained and varnished. Housekeeper's apartments and kitchen are provided on the second floor. On the basement story is an engine and boiler house, 35 ft. by 21 ft. 6 in., arched over with rolled iron joists, the rods and brick arches in cement, and having distinct entrance from back roadway. The basement floor is asphalted throughout. The whole of the rain-water pipes have been conducted into a tank next Sparick's-row, capable of containing 9,000 gallons of water, which is pumped into the several cisterns throughout the premises, and also works the hydraulic cumulator lift for hoisting and loading goods.

The works have been carried out by Messrs. Thomas Rider & Son, builders, of Union-street, Southwark; Messrs. George Elkington & Son, of Cannon-street, City, being the architects.

ARCHITECTURAL DRAWINGS IN THE ROYAL SCOTTISH ACADEMY.

On looking round the walls of the water-colour room we are struck by the fact, that whereas the number of architectural designs has been gradually falling off, pictures and studies by artists of old buildings have been increasing. In the present exhibition the latter exceed the former fourfold. It is not solely on the ground of their intrinsic merit as architectural works that such subjects are chosen for delineation by painters, but in a great measure it is the charm imparted by age and accidental accessories which forms the attraction. We have no doubt, therefore, that in the course of time buildings which are now new and raw will possess a similar charm, and become the subjects of future artists.

If the architect is not to be considered an artist, as has been recently contended, he certainly originates no mean part of the material requisite to the artist, and not only are architectural structures subjects for delineation, but they are the caskets which contain the treasures, and the casket is, not unfrequently, a finer work of art than the gems it contains. Only the actual handiwork,—the mere drawing, it seems,—is to be considered as an artistic production, and not its realisation in solid material.

In this point of view, very few of such drawings, and certainly none of those here exhibited, would deserve much consideration. But we do not look upon them in this light, but as they are, —designs, the preconceptions of works which have been, or are intended to be, realised; and in this respect it not unfrequently happens that a drawing which aims at being a work of art *per se* is inferior to another which makes no such pretension.

Taking up the designs for churches in the order of the catalogue, the first which comes under notice is a "Competitive Design for Episcopal Church, Merchiston, Edinburgh," by Hippolyte J. Blanc. In designing this exterior the endeavour seems to have been to attract the notice of a committee rather than to produce a thoughtful work. The proportions of neither church nor spire are fully considered, and numerous gables and much fretwork give a fussy pretensiveness to the whole. Competitions have a tendency to encourage such designs, but they are not generally successful when those who have to adjudicate upon them are men of culture.

The "United Presbyterian Church, Camphill, Glasgow," by William Leiper, is the very reverse of the preceding; it is admirably proportioned, simple, reserved, and dignified.

Mr. Blanc's design has much of the character we have been accustomed to see in Nonconformist places of worship. Mr. Leiper eliminates such elements from his designs for whatever denomination.

"Dysart Free Church," by Campbell Douglas & Sellar, is a very good example of a class of churches which border the rocky sea-coast. It is a solid-looking structure, culminating in a bulky broached spire, fitted to buffet with fierce gales. In the church interior by J. Russell Walker, the object aimed at appears to be to place the bulk of the congregation as near the chancel as possible, and this is effected by having a large vaulted open space at the intersection of the transepts. There is nothing novel either in the idea or in the manner in which it is worked out.

The "Interior of the Parish Church at Southdean," by J. Rutherford Wright, is an endeavour to give the pulpit and accessories of a Presbyterian church somewhat of the effect of a chancel: it flavours too much of upholstery work.

We expected to see several of the designs prepared for the School Boards, but there are only two such. The "Leith Walk Public School for the Edinburgh School Board," by Messrs. Moffatt & Aitken, is a good example of its class, Early Gothic in style, and perhaps a little suggestive of the convent. "The Bathgate Burgh School," by Thomas Begg McFadgen, is a one-story block, spread over a considerable space of ground. A good arrangement where the ground is not dear. It is simple and effective, and tells its purpose unmistakably.

The "Mansion House, Logan, Wigtownshire," by Messrs. D. & J. Bryce, is, as usual with such structures emanating from the same source, designed in the Scottish Baronial style, and it is strictly conservative in detail.

Mr. David Bryce is particularly happy in his additions to buildings of this kind, as in the "recent additions to the Glen, Peebleshire"; in such circumstances, indeed, he generally produces a finer effect than when he has to produce a design *de novo*.

Mr. Alexander Skirving's "Club House" is a well-balanced design, Neo-Grec in style, elegant and appropriate. Its effect will greatly depend upon the manner in which the detail is carried out.

In the "North Berwick Marine Hotel," Mr. William Beattie has adopted the Scottish Baronial style, but has not quite caught its spirit. The building is large, but is neither dignified nor picturesque.

Mr. James Henderson's "Drinking Fountain" is Gothic in style, suggested apparently by the canopied tombs in the interior of Mediæval churches.

In closing this notice we would call attention to a series of small drawings of architectural subjects in Italy by Mr. Birket Foster. The accuracy of the drawing, the manner in which minute details are suggested, and the general character of the buildings indicated are worthy of careful study.

OLD LONDON BUILDINGS.

BUILDERS' FOREMEN AND CLERKS OF WORKS' INSTITUTION.

Mr. Henry B. Wheatley lectured to the members of this Institution, on Wednesday, February 17th, at the Institution, 9, Conduit-street, taking for his subject "Old London Buildings." The chair was occupied by Mr. Mark H. Judge, who briefly introduced the lecturer.

Mr. Wheatley said:—The subject I have taken is a large one, and even a very rapid sketch of Old London Buildings would require a course of lectures for its development rather than a single one. But I do not propose to take advantage of the vagueness of my title, as speaker and hearers cannot too soon understand each other, and I shall, therefore, stake out the country I wish to inclose, and then I shall know where I am to lead, and you where you are to follow. In the first place, the buildings with which I wish to deal are the domestic residences of our forefathers, and as the chief characteristics of these Old London houses consisted in the material of which they were constructed, I shall chiefly treat of the timber buildings that existed almost universally in London down to the period of the Great Fire of 1666.

When I see before me so many experts, I feel I am treading on dangerous ground, for I must at once admit that I know nothing of construction. It would be useless to describe the houses without first attempting to show what the place was like where the houses stood. London is very like the old knife, that first had new blades fitted to it, and then a new handle to its blades. It has never been regularly rebuilt upon any system, and in many respects it would be true to say that we are still living upon the old Roman lines. The outlines of London fixed by the Romans sufficed for the growth of many centuries after they left Britain. The cities of the New World are laid out with geometrical precision, but the cities of the Old World have grown up as they could, in a most unsystematic but often a picturesque manner.

Before speaking of the timber buildings of the Middle Ages, and the appearance of the City then, it will be well to take a glance at Roman London. The materials used by the Romans were chiefly brick and stone, but it is by no means improbable that some of the superstructures raised upon the walls that have been discovered many feet below the level of our present streets were built of wood. Geoffrey of Monmouth's vision of a great British city of Troynovant must be relegated to the limbo of myths; and it has even been doubted whether a British London ever did exist. At all events, if the name of London, which is supposed to have a Celtic origin, causes us to believe in the existence of a British settlement on the banks of the Thames, we may be sure that the huts of the semi-barbarous inhabitants were of little importance, and quite unworthy of notice as "Old London Houses."

Seneca started the dictum that, "wherever the Roman conquers he inhabits," and the condition of Roman Britain proves the saying to be true. The tesselated pavements that have been discovered in many out-of-the-way places where harvests have been reaped for many centuries, show that spacious villas were spread over Britain, and history informs us that when the Roman legions were finally withdrawn, this island contained more than fifty walled towns. Before trying to picture in our mind's eye what Roman London was like, it is necessary to bear well in mind that it existed for nearly four centuries, a period long enough for a new city to have arisen upon the ruins of the old. Let us also for one moment think of the desolation that must have reigned over this Roman city when the last Roman left the British shores. The soldier husband perhaps leaving behind his British wife, as depicted in the famous picture by Millais, exhibited a few years ago. Experts differ as to the extent of the early Roman settlement, but all agree that it was comparatively a small city. The remains of cemeteries, which were always situated outside the Roman towns, have been found within the present city walls, and at the time the foundations for the new Royal Exchange were made an old gravel pit was discovered there. When the Romans left the Island, Londinium was about a mile in width from Ludgate in the west to the site of the Tower on the east, and about half a mile from London-wall on the north to the Thames on the south. In addition to the wall on the north, east, and west sides of the city, there are reasons for believing that the Romans did not consider the river a sufficient protection, and that a wall ran along the south. Besides London within the walls, substantial remains of Roman houses have been laid open in various parts of Southwark, particularly on both sides of the High-street, up to the vicinity of St. George's Church, in which district the wall paintings and other remains indicated villas of a superior kind. The ancient inhabitants of Londinium must have had some convenient means of transit from the north to the south banks of the Thames, and as a ferry would probably not be sufficient for their needs, there is no difficulty in believing that the Romans built a bridge. Mr. Roach Smith sees in the fact that large numbers of Roman coins were found in the bed of the river, on the site of Old London Bridge, strong corroborative evidence of the existence of such a bridge in Roman times.

Hallam very justly observes that,—"No chapter in the history of national manners would illustrate so well, if duly executed, the progress of social life as that dedicated to domestic architecture. The fashions of dress and amusements are generally capricious and irreducible to rule; but every change in the dwellings of mankind, from the rudest wooden cabin to the stately mansion, has been dictated by some principle of convenience, neatness, comfort, or magnificence." To bring before you a few materials for the production of such a chapter is my object to-night.

Up to the present it has been tolerably plain sailing, but we have now arrived at a difficult portion of our journey. With regard to Saxon London we have to rely entirely on conjecture as there are no remains of it left. The habits of the Saxons were antagonistic to those they found established in Britain. They objected to living in walled cities, and in some instances they founded a city of their own outside the Roman city, but this they did not do in London. All along the banks of the Thames are places, the names of which are compounded with the Saxon word "hithe," which meant a settlement, haven, or port. Among these may be mentioned Chelchith, now Chelsea, and Lambhith, or Lambeth, in the west, and Rotherhithe in the east. In course of time the Saxons overcame their repugnance to a walled city and occupied London. They doubtless treated the Roman villas with little respect, and built their own wooden houses in place of them. The history of the city during the Saxon period may be said to consist pretty much of notices of the two destroyers,—fire and the Danes. Alfred the Great is reputed to have rebuilt London, and about his time it again comes into political prominence. The inhabitants of London sympathised with Harold, and the consequence was that when William the Conqueror took possession of the city he at once set to work to build the Tower of London, in order to awe his turbulent subjects, and London became the Chamber of the King, a name it retained for several centuries.

Let us now return to the consideration of materials of construction. The use of brick went out with the Romans, and did not come in again until the thirteenth century. In fact, bricks were very seldom used until the reign of Heny VI. The Saxons and Normans used stone for ecclesiastical buildings and castles, but their houses were built of timber. Although the Saxons used stone occasionally, they preferred wood, and of this material they often constructed their palaces and churches. One reminiscence of the Saxon wood church still remains at Greenstead, in Essex. The Normans changed the aspect of London by erecting many grand buildings, but the dwellings of the masses appear to have remained the old timber houses. In the year 1189, we learn from the City Records that an attempt was made to enforce building with stone, but without effect. The oldest houses of which we have any record were very simple, and we can judge of their appearance from the representations in illuminated MSS.

During the many centuries in which most of the Old London buildings were constructed of wood, it stands to reason that the carpenter was a much more important personage than he is at present,—that he was, in fact, the ordinary architect. It will therefore be well to pause here awhile in order to take a glance at the position of the carpenter, and of the "Master, Wardens, and Commonalty of the mystery of Freemen of the Carpentry of the City of London." When wood was a universally used material for the construction of every variety of buildings, the carpenter was in constant request, and the specimens of his art as exhibited in the exterior of many elaborate old houses, and in the massive timber roofs of large halls, give us a lively idea of his skill and taste. The carpenter is a figure in literature. Chaucer does not forget him:—

> "In youthe he lerned, hadde a good mistere;
> He was a well good wright, a carpentere."

And Dr. Donne writes:—

> "A firm house, though the carpenter
> Perish, shall stand."

The Carpenters' Company came into existence early in the fifteenth century, and exhibited great life and activity up to the period of the Great Fire, after which the mystery of carpentry declined to a level much below its original importance. The first notice of any difference with the joiners occurs in 1621, when a committee was appointed to meet a committee of the joiners, "to treat with them about difference of works in the same companies." About ten years after this, certain joiners were committed to prison for intermeddling in the trade of carpentry, but this high-handed proceeding caused Robert Stone, one of the joiners, to institute proceedings in the Court of Queen's Bench; the ultimate consequence of which was that articles were drawn up with a view of settling all differences between the two companies by describing minutely the several branches of trade to be pursued by each. Although the carpenters and joiners were so constantly falling out, they could agree together in order to prevent the incorporation of the sawyers.

James I. issued a proclamation commanding all persons "to build their fore fronts and windows either of brick or stone, as well for decency as by reason all great and well-grown woods were much spoiled and wasted so as timber for shipping waxed scarce." The Carpenters' Company were much alarmed and took counsel's opinion on the matter. In 1619-50 they drew up a memorial in which they "gave their reasons that timber buildings were more commodious for this citie than brick buildings were."

The Act of Parliament "for rebuilding the City of London," passed after the Great Fire, gave the *coup de grâce* to the carpenters as house-builders. It was enacted "That all the outsides of all buildings in and about the City should be made of brick and stone, except doorcases and window-frames, and other parts of the first-floor story to the front between the piers," for which substantial oaken timber might be used "for conveniency of shope." The Carpenters' Hall, although within the City walls, was, oddly enough, one of the few buildings that escaped the flames: it was, therefore, let out for the use of the other companies whose halls had been destroyed, and several lord mayors made the house their official residence.

Old London must have been a handsome city,—the old maps give one that idea, and those who know the present condition of some of the old German towns, with their quaint old gabled houses, will find it easy to picture in their mind's eye what London was. The roads never seem to have had much pains taken with them, and in the year 1090 the roadway of the avenue of Cheapside, the very heart of the City, was formed of such soft earth that when the roof St. Mary-le-Bow was blown off by a violent gale of wind, four of the beams, each 20 ft. long, were so deeply buried in the ground that little more than 4 ft. remained above the surface.

On the morning of Sunday, September 2nd, 1666, the Great Fire commenced in the house of Farryner, the king's baker, in Pudding-lane, Monument-yard. At first little was thought of it, and Pepys put out his head from his bedroom window in Seething-lane, Great Tower-street, and returned to bed again as if it was only an ordinary fire. The Lord Mayor took little notice of it; but when it was seen how great was the danger, all concerned seem to have gone distracted. In four days 13,200 houses, 400 streets, and 89 churches, including St. Paul's Cathedral, were destroyed. The distress must have been fearful. The larger proportion of the wooden houses of which we have been speaking were swept away, and a new city was rebuilt in brick. Within a few weeks of the fire, three plans were designed for arranging a handsome new city, but Wren's, Evelyn's, and Robert Hooke's plans were all neglected, and the streets were rebuilt in systemless confusion on the lines of the old streets. A great opportunity was lost, and Londoners have suffered inconvenience on that account for two centuries.

Every endeavour should be made to preserve around us the noble relics of the past, but the inconvenient, tumble-down buildings that have only antiquity to recommend them must go, for a thriving city cannot spare space for useless antiquity. Outside the area destroyed by the Fire, the old houses were left standing, and some of them are still in existence. There are several old wooden houses, with overhanging stories and balconies just below the roof, in Shoreditch, Bishopsgate-street, Fore-street, Aldersgate-street, Fleet-street, Holborn, and other streets. The Sir Paul Pindar public-house in Bishopsgate-street Without occupies the remaining portion of the highly-ornamented and noble mansion of that munificent merchant, whose gardens outside the City walls were renowned for their beauty.

We have visited so many places in imagination and passed through so many centuries of time that I expect you are mentally tired, and I shall therefore end my rambling talk to you with a moral,—but do not be alarmed at the word, it shall be short. It is most remarkable that although most of England's intellectual giants have at some time lived in London, there is little in literature that I could quote to you as giving a poetical description, either of the external appearance or the hidden life of this great city of ours. Hood could see that the old bridge across the Thames might be as fit a subject for poetic treatment as any in far-off lands, and he has transferred the Bridge of Sighs from Venice to London,—but it was left for a lover of external nature, a shunner of cities, to put in a few magic words those deep feelings of solemn awe, that a sleeping city must always awake in the thoughtful mind. I, of course, refer to Wordsworth's noble sonnet. The key that unlocks the secrets of the past is to be found among the relics that surround us. This past was once a present time, and the old relics we now admire were once new. The obvious question that arises out of this truism is,—Which of our existing buildings will be admired a century hence? London is improving every day, new thoroughfares are being opened, and handsome buildings are arising on all sides. The great fault of to-day is a super-abundance of ornament, and a want of repose; but streets are built now in a style of grandeur never dreamed of a few years ago. I am speaking to a roomful of Londoners, who are all doubtless proud of their city, with its wealth of associations, but I am also speaking to those who make it what it is; and I therefore say to you, let each one do all in his power to create a London worthy of its history. Let the work of the new London buildings be sound and good, so that future ages may be able to think well of us and admire, what are now new, but will then be, "Old London Buildings."

THE GLASGOW AUTHORITIES AND THE ARTIZANS' DWELLINGS BILL.

At the ordinary fortnightly meeting of the Glasgow Police Board, Lord Provost Bain called the attention of the Board to the sanitary condition of the houses of the working classes, on which subject he had had an interview last week with the Home Secretary. They had often been told, the Lord Provost said, that the great object to be aimed at was to scatter the population, so as to have a small number on each acre of land. He demurred somewhat to that doctrine, at least in its entirety; for he had seen a high death-rate when the inhabitants were few per acre; but the construction of the houses and their sanitary condition were faulty; and he had observed good health to exist where the construction of the houses was good in a sanitary point of view, though the population was dense on the acre. The Home Secretary called his attention to the matter in connexion with the Artizans' Dwellings Bill, and asked him to go and look at houses which had his (Mr. Cross's) approval, and in which the population was 1,500 to the acre, and yet there was no overcrowding. The ventilation was complete, the sanitary conditions good, and there was a marked absence of disease. He went and looked at these houses, taking Mr. Whitelaw, one of the Members for Glasgow, with him, that gentleman, having as they would know, devoted much of his attention to the erection of improved dwellings, and having a practical knowledge of the subject. He would briefly describe the buildings. They were erected in rows, with the ends to the streets, so that the air swept round each row. There was an asphalted court, about 35 ft. wide, between each row, in which children could play. The houses were six stories high, with four houses on each landing. One important peculiarity of this landing was that it was open throughout, so that there was a full and free rush of air through it. Each house, even single apartments, had a water-closet (which could conveniently be made a dry-closet) on the landing, and a shaft ran down by which each tenant dropped the ashes into the dust-bin in the basement. There were 250 houses in the buildings; and though the number of inhabitants was great, care was taken to prevent over-crowding in the houses. Currents of air passed round and through the buildings, and ventilation was perfect. Mr. Whitelaw and he (the Lord Provost) entered several of the houses, and the tenants expressed themselves satisfied with the comfort, convenience, and healthiness of their abodes. They also called on the vestry clerk, and he confirmed the favourable opinion they had themselves adopted. He passed on to explain that he wished to bring this before the Board in view of the Artizans' Dwellings Bill being extended to Scotland. The Scotch members were in favour of this being done, and Mr. Cross expressed his willingness to do so; but a clause in that Bill, and one he felt sure Mr. Cross would insist on, was, that "the improvement scheme shall provide for the accommodation of as many persons of the working classes as may be displaced in the area with respect to which the scheme was proposed, suitable dwellings within the limits of

the same area, or in the vicinity thereof." This, they would see, pointed to the erection of improved dwelling-houses on the same area, and he thought he might say, without disparaging the Glasgow Improvement Scheme, that in the eyes of some persons its weak point was, that it did not provide accommodation for the displaced tenants on the same area, or in its vicinity. It might be supposed that the inhabitants took up their abodes in these localities as being convenient to their places of employment, and that to scatter them over the town was to create discomfort and toil, and probably increased rent. It was often said, "Get the people out into the open"; and such was a very good thing for clerks and shopkeepers, who need not be at their work early in the day; but to the man who must be at his workshop at six o'clock, it meant getting up at half-past four in the morning, and walking or travelling in some way four or five miles or more to his work, and arriving somewhat exhausted before he began his labour. Having showed that this dwelling at a distance from the employment would destroy home influence, by separating the family at meals, his lordship expressed the opinion that we should keep our working population near to their places of employment, if such could be done consistently with good sanitary arrangements; and in view of that he would suggest that the Health Committee should send some of their number with Dr. Russell (the medical officer) to look at the houses already described, as they seemed to have the approval of those in authority.

In the course of a short discussion which ensued, the Lord Provost stated that the houses referred to were in the Farringdon-road, and belonged to the Improved Industrial Dwellings Society. The Dean of Guild asked how it was proposed to deal with the Bill so as to make it applicable to Scotland. The Lord Provost replied that the proposal was that this should be done by means of a schedule. Some persons thought a separate Act should be introduced, but he stated it as his opinion that legislation should be imperial and not sectional. However, Mr. Marwick (City Clerk) was going to London, and he hoped that the Lord Advocate and he would be able to frame such a schedule as to extend the Bill to Scotland. The subject then dropped.

THE DRAINAGE OF BOMBAY.

The sanitary condition of Bombay is deplorable. Notwithstanding the great natural advantage of the city, its splendid buildings and its immense wealth, its drainage is so very imperfect that it would disgrace a second-rate Turkish town. Bombay being situated upon an island, the sea affords an easy means of disposing of the sewage; or there is sufficient available land for utilising it, if it were determined to render it profitable. The merchant princes of the place have no lack of architectural enterprise; and since the American War poured an increased flood of wealth into their coffers, have erected splendid public and private offices, have constructed admirable quays, have made noble roads, and have built palatial dwellings for themselves,—in a word, have transformed the city altogether. Speculation, it is true, has been reduced within more legitimate bounds, and fortunes are no longer so easily acquired, but the place is still exceedingly prosperous, and could afford to pay even the highest rate for its own cleansing without borrowing a single halfpenny from its neighbours. But, although many of the local magnates would willingly contribute to any really feasible scheme, and the more public-spirited of the merchants have urged remedial measures for years, the majority of the residents are extremely apathetic in the matter, and commissioners have actually been found to declare that in their opinion a few years' further delay in dealing with the question would not be likely to lead to injurious consequences. Whether this be so or not may be easily judged by any unprejudiced reader. At present the (so-called) Health Department of the Bombay Municipality undertakes the collection and removal of garbage, street-sweepings, stable-litter, &c.; the removal of sewage and storm or excess rain-water, and the collection and removal of night-soil. The greater portion of the garbage, amounting annually to about 114,000 tons, is carried away by a railway to a salt-swamp, which is now being reclaimed by its means. The cost of removing this stuff is 37,500*l.* annually. That of removing sullage, liquid sewage, kitchen-slops, and storm-water is upwards of 10,000*l.* a year, and that of the collection and removal of night soil upwards of 25,000*l.* annually. So that the total cost of the three departments is 75,000*l.* a year. About 150 tons a day, or 54,000 tons yearly of night-soil are removed, at a cost of nearly 10*s.* a ton, and this enormous mass of filth is thrown into the harbour! The closets in the houses are each provided with a basket, or iron receptacle, for catching the solid portion of excreta, while the liquid part finds its way by gravitation into the street gutters. These iron filth-pots are roughly emptied by sweepers, but are never thoroughly cleansed, and at all hours of the day and night give off foul exhalations, which poison the air of the houses and are prolific of disease. About twelve hundred men and women are thus daily employed in what has been described as "handling as a baker might handle so much dough the very filthiest matter that can be produced," and in work opposed to the most ordinary feelings of human nature. This primitive method of sewage disposal is termed the "halacore" system, and the Bombay folk have got so used to it that it is even now proposed to perpetuate it. The Government, however, objects to the harbour being converted into a huge cesspool, and has given notice to the Municipality that some other place of deposit must be found for the ordure of the town. The inhabitants themselves do not like the stench which proceeds from the open gutters in the fierce sunshine, and since they are to be compelled to take action with respect to the solid matters, are disposed to deal more sensibly with respect to the liquids at the same time. They have, however, an intense desire to be economical in the work of reform,—a desire which has been strengthened by the expressed determination of the Bombay Government to sanction no scheme which cannot be shown to be "financially reasonable." Hence they are driven to their wits' end to find a project which will be really efficient, yet will not cost much.

In 1872 Major Tullock, R.E., investigated the state of the city, and sent in a project for its amelioration. He recommended that all the rain-water falling on the island should be allowed to escape by gravitation, while the sewage was utilised, and, after utilisation, discharged into a creek seven miles north of Bombay. He advised the enlargement of existing sluices, the conversion of certain flats near the town, and strongly recommended the justices not to adopt any plan which did not provide for the drainage of the whole island. These plans found considerable favour, although they were not carried out, and even after they were amended, were declared to be much too dear,—the total outlay required, even at the lowest estimate, being 642,500*l.* Now that the Municipality finds itself pushed into a corner they have been revived again, and the Municipal Commissioner, Mr. W. G. Pedder, although a civilian, has had the boldness to extract them from the pigeon-hole in which they have rested for the past two years, and doctored them in a manner which is satisfactory to himself, and now propounds a modified project for the drainage of the town at a cost of 400,000*l.* The Commissioner does not pretend that his scheme is the best which could be devised, but it is, he thinks, as good as can be got for the money; and he declares that there is no use speculating what could be done if the city had unlimited resources, and thus "wasting both time and money which might go some way towards carrying out works not so perfect in theory, but still such as would practically leave little to be desired." He is quite prepared to "cut his coat according to his cloth," and warns his fellow-citizens against depending upon Government assistance. What they want, he tells them, they must be content to pay for, although they may reasonably expect that the Government will help them to make the cost as little burdensome as possible. This is undoubtedly a sturdy way of looking at the situation, and Mr. Pedder's manliness is doubtless commendable. But Bombay can itself afford to pay a great deal, and perhaps a homily upon stinginess and cleanliness would have been quite as much to the point as a lecture on sturdiness and independence. However, the Municipal Commissioner ought to know his fellow-townsmen best, and in his calculations everything is sacrificed to economy. The present revenue of the city of Bombay is about 310,000*l.* a year, and under the new Municipal Act it is possible to screw the income up to 367,500*l.* a year. Mr. Pedder proposes, for some years to come, to expend 460,000*l.*, after having paid 115,000*l.* as interest on the existing debt of 600,000*l.*, added to a new loan of 1,000,000*l.*, which he is desirous to raise. He reckons that a million sterling would suffice to carry out the improvements which he advocates, and that the city will see its way to paying off the whole of the debt in fifty years. He proposes to expend 400,000*l.* in improving the drainage, 345,000*l.* in extending the water supply, and reserves 55,000*l.* for contingencies. The remaining 200,000*l.* he would lay out on minor improvements, such as public latrines, burial-grounds, markets, milch cattle sheds, filling in of low-lying land, reclaiming marshes, improving and extending roads and foot-paths, extending the lighting, building, police lines and quarters, and a multitude of other petty reforms.

By the scheme proposed the rain and storm water would be entirely excluded from the new sewers which would have to be constructed, and what of it the old sewers could not carry off would be permitted to find its way into the sea by gravitation through the existing street and road gutters. The "halacore" system would be perpetuated, the greater portion of the night-soil still being removed from the privies by hand, and put into the sewers at a collecting depôt, and the mere fluid sewage matter alone, amounting to 6,000,000 gallons a day, including the water-supply after it had been used for domestic purposes, would be pumped into settling-tanks at a distance from the city, and, with the night-soil, subjected to defecation by chemical agents,—the liquid being permitted to pass off as colourless and inodorous water, and the sludge either employed as manure, or treated by the Scott process, and converted into Roman cement. Mr. Pedder strongly advocates this process, and, notwithstanding the results of the Ealing experiment, thinks that a profit might be realised in Bombay on cement thus manufactured. He wisely would adopt every precaution to prevent the return of sewage gas into the houses from the drains; but he totally ignores the existence of subsoil water, and makes no provision for its removal, forgets that the ground itself breathes forth exhalations from the deposited filth of years, and overlooks the fact that as long as the open gutters are allowed to exist the natives will consider that they have a prescriptive right to use them as receptacles for every sort of abomination. Moreover, the disposal of the rain-water is extremely unsatisfactory. The rainfall of Bombay sometimes amounts in four months to as much as 75 in., and it often rains at the rate of an inch per hour for hours together. The old sewers cannot dispose of a great portion of this water, even the gutters will become over-gorged with it, and the city will remain in continual danger of being flooded during the monsoons. It will necessitate large sewers to do the work adequately, but in such matters it is false economy to sacrifice efficiency to immediate cheapness, for the work must ultimately be done at a still greater cost.

At present Bombay obtains from the Vehar reservoirs a supply of water equal to a supply of seventeen gallons a head for the population. In London the supply is forty-five gallons; but it is considered, notwithstanding the heat of the climate, that twenty-five gallons daily would be amply sufficient for each inhabitant of the commercial capital of India. In order to obtain the extra quantity, as well as to protect the town against the disaster of being suddenly deprived, by the bursting of the Vehar dams, of the supply, it is proposed to have recourse to the Tulsi Lake, whence, in case of emergency, a supply of at least six gallons a head could be drawn during the time necessary to reconstruct the existing *bunds*, the condition of which excites grave anxiety. In these projects, then, Mr. Pedder proposes to expend the greater part of the million sterling which he proposes to raise. He does not pretend that his schemes show much technical skill, although he puts them forward with a considerable amount of assurance. He only comes before his fellow citizens and practically says:—"We are in a nice scrape. The Government will not let us throw our dirt into the harbour any longer. The High Court will prosecute us if we permit or create a great nuisance. If the matter is left to you, you will quarrel and wrangle and delay for years to come. Here is a scheme which is not very good, but it is cheap, and it is likely to be effective; but do not take my word for it. Send to England for a good engineer and a good sanitary authority, and they will tell you the same thing, and then you can begin the work." Let the Bombay folks take the advice. The engineer and sanitary

authority will likely tell them something else, and, if left unimpeded by restrictions, will doubtless be able to devise a scheme of drainage and of water-supply which will be satisfactory at present and capable of expansion in future, and which will be cheaper, if not now, in the long run.

EARTH, WATER, AND FIRE

PROBABLY the first words uttered in a pulpit against intramural interment were those spoken of by Master Doctor Latimer, in a sermon which he preached on the Third Sunday in Advent, in the year 1552. In it he says, quoting the story of the Widow of Nain, as given in the Gospel of St. Luke:—"'When Christ went into a city which is called Nain, and many of his disciples following him and much people, when he was came nigh to the gate of the city, behold there was a dead man carried out, which was the only son of his mother, and she was a widow; and much people of the city went with her.' And here you may note, by the way, that these citizens had their burying-place without the city, which no doubt is a laudable thing; and I do marvel that London, being so rich a city, hath not a burying-place without, for no doubt it is an unwholesome thing to bury within the city, specially at such a time when there be great sicknesses, so that many die together. I think, verily, that many a man taketh his death in Paul's Churchyard, and this I speak of experience; for I myself, when I have been there in some mornings to hear the sermons, have felt such an ill-favoured unwholesome savour, that I was the worse for it a great while after. And I think no less but it be the occasion of much sickness and diseases; therefore the citizens of Nain had a good and laudable custom, to bury the corses without the city, which ensample we may follow." It is now more than three hundred years since these words were spoken, and these hints thrown out, and yet the question of the proper burial of our dead remains unanswered. There never, perhaps, was a subject to which the old proverb, "When doctors differ," &c., could be so aptly applied. Within the last few weeks the controversy has been revived with redoubled vigour, and fresh champions have entered the field. The contending war-cries are "Earth" and "Fire." Mr. Seymour Haden contends that earth or mould is the greatest of antiseptics, and, therefore, of disinfectants, and that the great mistake in our burials is enclosing the body in a coffin whether of wood or other material, and thus preventing its contact with the mould which would neutralise the poison of the gases evolved during the process of putrefaction. He argues that by depositing the body uncoffined in the grave no malarious or poisonous effects would be produced. Here we must quote another "earth" champion. "Let us suppose the soil dried up, the decomposition would cease. Let us suppose it not dried but kept constantly moist and cold, and we have the ground in a state described in a very interesting manner by Bernardini Ramagrini, producing a disease which is not unlike the potato disease with us. But it went much further; all vegetation was blighted, the food bad and health bad, the very animals returned the food they had eaten, it was so nauseous; the waters became corrupt, and fever attacked the inhabitants. It was right therefore to call attention to *the limit which there is to the power of the soil.*" The italics are ours. Here is an instance of the peculiar conditions of the soil under which interments may take place. About thirty years ago a company formed of spirited and enterprising townsmen of North Berwick for supplying the town with gas, unfortunately made choice of an old churchyard as the site for their works. Although no interment had been made in it for a period of some seventy-five to eighty years, still it was astonishing to see how fresh some of the bodies were when raised. This naturally shocked and hurt the feelings of the worthy townspeople, who sent a deputation to the minister of the parish, who waited upon the sheriff, who put a stop to the further progress of the disinterments. One of the stout opponents of cremation tells us that in malarious districts the evil is greatest when the soil is turned up; that the soil does absorb all kinds of impurities arising from putrefaction, and destroys them; but he admits that "there are limits to its power." "We must," he adds, "learn not to give it more than it can accomplish." So that the antiseptic powers of earth depend both on its quantity and condition. In connexion with this part of the subject there are many instances of the preservation of bodies without any apparent cause. Those dead bodies that are seen by the traveller who gazes into the grim mortuary attached to the monastery of the Great St. Bernard are, to an extent, preserved by the extreme cold from putrefaction. How the bodies in the chapel near Bonn, on the Rhine, are kept from corruption is still a subject for conjecture. There are many instances on record in which, on opening the coffins, the bodies appeared unchanged since the time of their sepulture, but shortly after exposure crumbled into dust. Loftus, who travelled through Chaldea and Mesopotamia, discovered a number of earthenware coffins, which, on being opened, the bodies they contained became a deposit of dust. The stories of the Vampires, whose bodies were so perfectly prepared before interment as not to crumble into dust, no matter how many centuries might have elapsed since their coffin-lids were fastened down, may be relegated to the region of fable. It is well known that many of the older places of burial, such as vaults and catacombs, were so deficient in their supply of air that, as an eminent physician supposes, "possibly the atmosphere surrounding the bodies became, after a time, of itself preservative." It is well known that in the catacombs of Paris the scarcity of air has so transformed the elements, that instead of reducing the bodies to gas and ashes, they have been transmuted into a white waxy substance, which has been named adipocere or grave-wax. Few will disagree with a writer on the side of inhumation who says, "when bodies are allowed time and space to mingle quietly with the earth, the products given out are by no means unpleasant;" but, on the other hand, when the graves accumulate, and the space for interment grows less and less, the burial-place becomes a source of pestilence. Dr. Parkes, in his "Disposal of the Dead," writes:—"A community must always dispose of its dead either by burial in land or water, or by burning, or chemical destruction equivalent to burning, or by embalming and preserving. Accustomed as we are to land-burial, there is something almost revolting at first sight at the idea of making the sea the sepulchre, or of burning the dead. Yet the eventual dispersion of our frames is the same in all cases; and it is probably a matter merely of custom, which makes us think that there is a want of affection or of care if the bodies of the dead are not suffered to repose in the earth that bore them." He further argues that, in reality, neither affection nor religion can be outraged by any manner of disposal of the dead which is done with proper solemnity and respect to the earthly dwelling-place of our friends. The question is, in reality, entirely a sanitary one, and resolves itself into this: How shall we best dispose of our dead, so that the living may not suffer in any way? The answer will lie between burial in the land or sea, or burning. Inhumation is the most unsanitary plan of the three methods. The air over cemeteries is in a state of constant contamination, and, as we stated in a former article, the cemetery poisons the water in its neighbourhood. From time to time the disturbance of an ancient and long unused graveyard has given rise to disease. The vicinity of graveyards is notoriously unhealthy, and the time is not far distant when the cemeteries which surround our cities, and which were established to relieve existing greater evils, will in their turn be surrounded by dwelling-places. What remedy is there for this? Some have proposed more or less air-tight vaults, in which decay would be slow, but yet, though the products formed during decay would then escape slowly, they would eventually escape. This would be making bad worse. It seems clear that, in course of time, land burial will have to be modified, and arguments will present themselves to maritime nations in favour of sea-burial rather than of burning. As a matter of expense, the system of cremation would be greater than sea-burial. In the burial at sea some of the body would go at once to support other forms of life, more rapidly than in the case of interment, and without the danger of evolution of hurtful products. Let the process of the disposal of the body be what it may, the dust returns to the dust, and the earth to the earth, whence it came.

Professors Thomson and Brunetti are the leading champions on the side of cremation. The leading objections to this method are, that it is derived from the Pagans; that it is contrary to faith in the Resurrection; that the products evolved in the process would be offensive and injurious to the living; and that it would exceed in expense the common method of burial. These objections are met by the assertions,—that the pagans used burial to a far greater extent than burning when disposing of their dead, and that cremation was employed in the earlier days of the Jewish nation; it cannot be contrary to faith in the Resurrection. Because holy men were burnt to ashes in the martyr fires of Smithfield, are we for a moment to think that the smoke and flame deprived them of their immortality? Did they not preach this doctrine from the stake "Be not afraid of them that kill the body, and after that have no more that they can do." In the burning of a body in the open air no matter what the fuel, most offensive and unwholesome products would be evolved. What reader of the *Builder* in its earliest years has forgotten the bonfires of coffins and bones—hardly bare—which so loaded the air with stench and poison, that disease and death threatened to decimate the neighbourhood all round the burial-ground of Spa Fields, the place of burning; but when the body is consumed in a scientific manner, no noxious gases find their way into the atmosphere. As to the expensiveness of the method, the question is an open one, which cannot as yet be answered, as the revival of the process is as yet in its earliest stage. We cannot refrain from quoting a quaint passage from Sir Thomas Browne on one of the advantages of cremation. "To be knaved out of our graves, to have our skulls made drinking-bowls, and our bones turned into pipes to delight and sport our enemies, are tragical abominations escaped in burning burials. Urnal interments and burnt relics lie not in fear of worms."

The cremation movement is already telling on our present preposterous system of burial. The cry of funeral reform has been raised in Oxford. Circulars have been issued by the incumbents of the rural deanery, showing that more money is frequently spent upon funerals than is needed to conduct them with entire propriety. They suggest that scarves and hat-bands should be discontinued; that in future articles of mourning may not be offered at funerals; and that, except where special reasons render lead advisable, the coffin should be of wood alone; they hope to see the cumbrous hearse and gloomy coaches superseded, and would welcome any change which would impart to the funeral ceremony a less gloomy and more hopeful character.

Reform the funeral ceremony as you may, the question still remains, How shall the body be disposed of? After a long search we are able to discover only one case of cremation in England in modern times. In June, 1769, Mrs. Pratt died in George-street, Hanover-square, and according to the terms of her will was burnt to ashes in her grave in the "new burial-ground at Tyburn Turnpike." In 1792, Henry Laurens, the first President of the American Congress, in consequence of having a daughter prematurely buried, gave orders in his will that his body should be burned. His will was carried out. A recent case abroad is too fresh in the recollection of readers to need allusion. Whether or not it may become the rule and not the exception, we cannot say; but one thing is certain, that its strongest opponents will ever continue to be sentimental feelings and popular prejudice, and a certain romantic association which finds its expression in the war-cry of Marco Bozzaris,—

> "Charge for your homes and altar fires,
> Charge for the green graves of our sires,
> God and our native land."

Again, we nevertheless assert, we cannot continue to go on in our present course.

CABMEN'S SHELTERS.

CABMEN'S shelters, very early mooted in these pages, have been engrossing a large amount of public attention of late, and the agitation has not been one that has been raved about for a brief period to be forgotten, but it has been actually carried out. Already several shelters have been erected in various parts of the metropolis, and they will doubtless prove a success. There is something to be said, however, as to the style of erection that is being supplied for the purpose. It would, of course, be an impossibility to have a permanent building, but we scarcely think the committee have selected a style of structure that is calculated to inspire the public mind with the idea that the streets are in any way ornamented thereby. We all know that it is quite possible to erect a temporary building in a very cheap manner, and yet have some pre-

tension to neatness in design; in fact, there is no reason why a structure of the kind should not be a positive ornament rather than an unsightly obstruction. If the building must be made of wood, why not make a timber hut of rustic design, that would in some measure delight the eye, not only of the "cabbies" but the passer-by? But we doubt if a timber building is the best for the purpose. The Crystal Palace Company are erecting a cabmen's shelter on the cab-stand outside the Palace, which is being constructed of galvanized corrugated iron. It is of a pleasing design, the two ends of the building being formed as bays, and roofed as such, the central portion of the building being an ordinary pitched roof. It is 20 ft. long, 8 ft. wide, and 9 ft. high to eaves, having a partition in the centre, one room being for cooking and the other for reading. Altogether its appearance is very superior to the ugly huts erected elsewhere for the same purpose, and it would be well if the Crystal Palace Company's example is followed by the Cabmen's Rest Committee, or whoever may have the erection of such buildings. The shelter in question was erected by Messrs. Braby & Co., of Deptford, and designed by one of their engineers. But whether the rests are constructed of wood, iron, or zinc is immaterial so long as they do not jar too uncomfortably on our nervous system. We contemplate with horror a number of ugly sentry-boxes being stuck up all over London, in some of our very best thoroughfares.

The idea is a good one, and worthy of everybody's support; it will be a pity if for the sake of a little extra outlay the already not over handsome streets of London are made still worse by the addition of a number of monstrosities yclept Cabmen's Shelters.

C. F. FULLER.

Hull.—The first Cabmen's Rest in Hull has just been opened by the mayor of that borough. The leading promoter of the movement (Mr. Thomas Hewitt, French Consul) was, unfortunately, unable to be present at the inauguration. Another shelter is in course of construction. The special feature in regard to the Hull shelters is the attempt to set them up for a sum of about 50*l.*, whereas those on the model of some other towns vary from 60*l.* to 80*l.* The first shelter has a cooking-stove, &c.

Cardiff.—The first Cabmen's Shelter in the principality of Wales has been inaugurated at Cardiff at the Bute Docks' stand, and is 15 ft. long. Mr. Councillor Joseph Elliott, the promoter of the scheme, addressed the meeting from the shelter, and was followed by the mayor of Cardiff. Other members of the corporation were also present. Assistance in regard to details was rendered from Leeds in the course of the construction of this shelter, which has been built by Messrs. J. Jones, of Cardiff. Subscriptions are being solicited by Mr. Elliott for providing two other rests, viz., at St. Mary's-street and at Crockherbtown. The Cardiff shelters will cost about £80, and will each have convenient fittings, such as a cooking-stove, lavatory, &c.

MANCHESTER MUD AND HORSES.

SIR,—I was somewhat astonished at hearing that the good folks of Manchester prided themselves on the paving of their city. Well, it may be good in comparison with some cities, but, so far as I have seen, it is a dead failure by the side of London, Liverpool, or Birmingham. The footways are rough and uneven to a degree, and fitly run side by side with the roads. There is no shutting your eyes to the fact that Manchester is villainously dirty; there appears to be no thorough system of scavenging. I have seen some few superannuated individuals making feeble and weak efforts to push a brush before them, but the handles seemed as much as they could lift without the certainty of sending one leg into the grave after the other already there. Poor old fellows, they should have been cosily gathered round a fire, with food fit for their toothless jaws to play with, instead of being compelled to perform a farce in weather, and in an employment, which would try the strongest men. Let me be just and omit not to mention that I have also seen a machine dragged by a horse, which cleverly brushes the mud from the centre of the road to the side. I saw no cart following into which this mud should have been baled: perchance, it was left there to harden; perchance, to be wheedled into the sewers by the mud-larks; perchance,—well, perchance, to chance it. I have done all that I could and more than I desired, to remove it; for being somewhat short-sighted and the Manchester light being only sufficient to make darkness visible, I have continually walked through these treacherous places, carrying pints away in my boots and soddened trousers. The "press" here does all it can by keeping up the refrain,—mud, filth, mud: no good seems to result; things remain as they were, and all are contented. But let not Manchester add to the sin of dirt that of cruelty. The old men I have often spoken of—and now, sir, you can strike a good blow—"another blow for life." In a previous letter I have mentioned "bus" accommodation here; it is easy-going, comfortable, and cheap. As a matter of course, therefore, the vehicles are commodious; they are elephantine in dimensions, and can and do carry eighteen passengers outside, and seventeen in, besides the driver, the conductor, and for some part of the journey a sort of "checker," who counts the passengers, and affixes his stamp to the conductor's printed form, wherein are stated the number of passengers inside, number outside, and their fares. How many hundred-weights or tons the "bus" weighs, I know not; but that can be easily ascertained. There are thirty-eight passengers and officers, whose average weight may be safely put at 1¼ cwt. Now, to grind and pound, or I may say plough, all this along at a good round pace with three small horses, is as cruel as to put a dog in a donkey-cart. It may be the size of the load which dwarfs the cattle, but they look wretchedly small and unfit for their work. Jaded, blown, and generally done up they always are when they arrive at the Exchange. I never saw such animals in London 'busses, and this day, to make sure of their size, I stood by a poor, reeking beast, with hanging head and swollen hocks, and found my estimate correct.

If the roads were passably good the work for these poor dumb creatures would not be so killing. During the time of the snow, I heard that one company lost seventeen horses in one week,—that is, the company deliberately killed them. I rode on a 'bus, intending to get down at the Exchange; but, ere reaching the London-road Station (I was on a Longsight 'bus), we thirty-five passengers had to alight,—the horses could get no further. You may ask, why ride, and encourage this cruelty? Well, I, and many more like me, are about as hard-worked as these horses, and the extra tax of walking on our physical powers would prepare *us*, may be, for the knackers.* Manchester prides itself on its horseflesh; and from the specimens I have seen in private carriages, it has reason to be proud, and I feel sure this spavin has only to be pointed out to be removed. The horse has been the great means of civilisation. He has borne men from county to county; he has thus helped to enlarge man's mind, and has provided a means of social intercourse, which has assisted in adding to the stock of knowledge in the world. He is endowed with love, fidelity, and sagacity, to a greater extent, in many instances, than man; and yet ungrateful, ungenerous man repays him for all his services and care by breaking his heart, literally, by sheer hard work. Had I had no admiration of this place, I should not have taken the trouble to connect it with my horse grievance; but when a man comes into a place which he has not seen before, his senses are more on the alert to outside matters than those who have grown accustomed to them from habit,—a habit which, from long wear is part and parcel of the wearer. I may be blamed as an architect for talking about animals when I should talk about art, but I naturally commence with the beginning, and that is the medium which brought me to the city, and I may here add that I should doubt my capacity for appreciating art unless I had great love for all nature, animate and inanimate. I hold it to be one of the first essentials of an artist,—that everything in nature is beautiful, and love is the beginning and end of all beauty. Would the lad fear or abhor the snake had he not read that that beautiful reptile was an embodiment of the devil,—would he slink in horror from the noble stag-beetle had he not been told that the devil was black and wore horns? Show me a man who will kick his dog and over-load and cruelly use his ass, or another who will lash his hound and goad and over-drive his steed, and I will tell you he could not in a drawing tell a ship from a coal-scuttle, or the dome of St. Paul's from a coal-heaver's hat. M. U.

* "A fellow feeling makes us wondrous kind."

YORKSHIRE ARCHITECTURAL SOCIETY.

THE annual meeting of this Society was held on the 18th ult. in the York School of Art. Mr. Alderman Hargrove presided.

The honorary secretary for York (the Rev. G. Rowe) read the report, which stated that the number of members was satisfactory, and that the finances showed a considerable balance. The drawing of glass from the Minster, which was expected to have been published last year, was unavoidably delayed, but came out in the beginning of this year. It is intended to be the commencement of a series; and to be followed by lithographic drawings of stained glass in the vestibule of the Chapter House. This is the earliest glass in the Minster after that in the Five Sisters' Window. The committee have decided upon publishing a reduced drawing from the ancient and curious painting on the walls of Easby Church, Richmond, to be accompanied by a description. The members and friends of the society made a very successful and instructive excursion in the summer to the neighbourhood of Kirbymoorside. In November of last year the renovation of the south transept of York Minster was so nearly completed that the transept, which had long been shut off from the rest of the building, was again opened to view. The first thing to be done was to relieve the walls of the weight of the roof. To this end the whole of the interior was filled with scaffolding, upon which the new roof was built, meanwhile the rebuilding of the clearstory was proceeded with on both sides, and ultimately the roof was lowered to its place. The new work is an exact recasting of the whole: the stone is, as nearly as possible, from the same quarry. The interior has been cleaned, and much of it tooled over; so that the old and new work blend together. The new roof is of oak, with bosses gilt and coloured. The Purbeck marble shafts in the clustered columns have been renewed or replaced. The cost has been about 16,000*l.*, and about 4,000*l.* in addition are required.

The Rev. G. Rowe then read two papers "On the Churches of Lastingham and Kirkdale, in Yorkshire, with some Remarks on ancient Saxon Sundials." The village of Lastingham, he said, is situated on the south edge of the Yorkshire moorland. The church stands on rapidly sloping ground, lower than the roads by which it is usually approached. Here, it is supposed, was very early placed a monastery, of which the church alone remains. Probably the old stones preserved in the crypt belong to some older fabric on the same site. There is now a small church, consisting of apsidal chancel, nave, aisles, and tower. It was originally a Norman fabric; the date of which will be about 1160. In his paper on Kirkdale Church the reader described the building and its associations, its ancient inscriptions, and the connexion which the ancient ruin here bears to others in the north and east Ridings.

GAS EXPLOSIONS.

Northallerton.—A serious explosion of gas took place at the Baptist Chapel on Sunday, the 21st ult. It seems that the Rev. William Stubbings, the minister, before commencing the service, went into the vestry adjoining the chapel, where the gas-meter is placed, turned on the gas, applied a light to the only gas-burner in the vestry, and then proceeded to the chapel, which he lighted up. He then put out the light in the vestry and held the usual services. When the congregation had left, he turned out the lights in the chapel, with the exception of two in the passage, and went into the adjoining vestry to turn off the gas at the meter. He smelt a strong smell of gas in the vestry, and as he was groping his way in the dark to the meter, an explosion took place, blowing the vestry roof completely off. A large portion of the walls and the chimney were thrown down, and the vestry windows and the doors shattered to fragments. All the chapel windows were much damaged, and two at the east end, distant 15 yards from the vestry, were completely smashed, and the woodwork thrown out of place. Mr. Stubbings received a severe shock to his system, and was very much scorched about the face and hands. He recently purchased the chapel of the Wesleyans.

Douglas, Isle of Man.—On the 20th ult., Mr. James Lambert, of Buck's-road, Douglas, was endeavouring to discover the cause of a smell of gas in St. Mary's Roman Catholic Chapel, Douglas. The gas appeared to come from under the pavement of the church. A plumber had

recently been engaged in doing some repairs close by, and Mr. Lambert lifted up a portion of the pavement in order to find out if there was anything defective in the piping. The flags, which are of a large size, are not laid on the earth, but on built cross-walls, so that there is a kind of chamber between the walls. So soon as Mr. Lambert lifted up the stone, it was evident that the chamber underneath was full of gas. The gas rushed out and communicated with the light which Mr. Lambert had placed on the ground close by. In an instant there was a terrific explosion. A large breadth of the pavement was blown up with such force that several of the flags, although of great thickness, were smashed to pieces, some of large size being hurled up into the roof, which is of great height. Mr. Lambert's escape was almost marvellous. The flag on which he stood was only split in two, while several of those close by and around him were broken to pieces, yet he escaped unhurt. On an examination being made afterwards, it was found that the gas had been escaping at a defective joint.

HEALTH AND CHEMISTRY.

At the Malham Reading-room, Kirkby Malham, a lecture was given by Mr. Southwood, sanitary inspector (Settle District), on the subject of chemistry.

The Chairman, in introducing Mr. Southwood, dwelt on the importance of a knowledge of chemistry in order to better understand the laws of health and sanitary science, and congratulated the lecturer on his being the first to lecture on chemistry, with illustrations, in that portion of the parish, and especially so as he was an official under the Local Government Board, appointed specially to compel them to obey certain rules of sanitary science, the grounds of which many of them were unacquainted with. The lecturer showed good sense and tact in coming to meet them as a teacher rather than using the power which he undoubtedly possessed to compel them to remove things prejudicial to health.

Mr. Ingram expressed the hope that sanitary inspectors generally would take a lesson from Mr. Southwood and follow his example.

Mr. Southwood said it was impossible to do full justice to his subject in the short time allotted him. He divided his topic into two parts,—the air we breathe, and the water we drink. After describing the component parts of air and water, he gave some instructive illustrations. In the course of his lecture he spoke of the cruelty practiced by butchers in slaughtering cattle, and advocated the use of carbonic acid gas as a substitute for the present barbarous mode. In concluding he dwelt on the imperative necessity of cleanliness, and obedience to the laws of nature, the neglect of which causes disease and death.

DRAINAGE OF CHESTERFIELD.

Mr. B. S. Brundell, C.E., having received instructions to examine and report upon the best means of preventing the pollution of the rivers Hipper and Rother, and to recommend a scheme for the ultimate disposal of the sewage, has done so.

The first thing to be done, he says, is to construct an intercepting sewer, following the course of the rivers Hipper and Rother, with which the whole of the sewer-outfalls should be connected. This sewer at its commencement should be 2 ft. in diameter, and continue of this size as far as Wheeldon-lane; thence to Lordsmill-street, 2 ft. 6 in. in diamater, and from this point to its termination, 3 ft. in diameter. The length would be 1 m. 5 fur. 3 chs. (2,926 yards), and he estimates the cost at 6,965*l*. The sewer would be provided with storm-water overflows into the river at various points, as in no scheme for the disposal of the sewage would it be contemplated to deal with the storm-waters. By the construction of this intercepting sewer, and by connecting with it all existing sewers, the whole of the sewage would be conveyed to a point near the Canal Wharf.

After having given much attention to the subject, he comes to the conclusion that to land in some way or other it must be applied, either in the form of surface irrigation or intermittent downward filtration; and that as there is no land available, it seems to him that the case is one eminently adapted for the application of the process known as "intermittent downward filtration," combined with surface irrigation *on a small scale*. He, therefore, recommends that about 20 acres of land in the valley of the Rother should be acquired and properly laid out for surface irrigation, coupled with intermittent downward filtration, such area to be divided into three equal parts, two-thirds would be used for surface irrigation, and would have as much sewage applied as would be required to produce the various crops usually grown with sewage, and the remaining one-third would, by intermittent downward filtration, purify the rest of the sewage, at the same time growing upon its surface coarse garden produce, each area being changed once a year, so that the filtering area of this year would become one of the irrigation areas next year, and in like manner the irrigation areas would once in three years become the filtering area.

The rateable value of the borough is 27,810*l*. 10s., and the cost of *sewage disposal*, he considers, would involve a charge upon the ratepayers of less than 1d. in the 1*l*. Adding the cost of the intercepting sewer, viz., 6,965*l*., the total charge upon the ratepayers for the entire scheme, according to the reporter, would be a trifle over 4d. in the 1*l*.

A NATIONAL HISTORY GALLERY.

Sir,—Since issuing the circular containing the general features of my project for a National History Gallery, it has occurred to me, that the ground of the Exhibition Building at South Kensington would prove a most admirable site for it; a site on which an outer and permanent quadrangular edifice might be erected, leaving a central area amply sufficient and still available for any periodical exposition of manufactures which may hereafter be deemed necessary. Judging from the communications I have received upon this subject, it is, however, possible that the project may be carried out by private enterprise. If this should be the case, the doer will indeed raise to himself a most splendid monument.

The Royal Commissioners of the Fine Arts in their excellent Reports, which fully treat on the subject of mural decoration or wall painting, give expression to a conviction that "The decoration of public buildings with a view to moral or religious purposes, has always been necessary for the formation of a school of historical painting."

W. Cave Thomas.

STAINED GLASS.

London.—Another stained glass window has been placed in the Guildhall, illustrating points of the historic interest connected with the Corporation of London. The subject is taken from the reign of Charles II., who failing to obtain money from his Parliament, had recourse to the infliction of heavy fines on the citizens under the most frivolous pretexts. The more readily to secure this end he sought to deprive the citizens of their ancient right of electing their own sheriffs, and further to appoint such men to the office as would pack juries in order to inflict these penalties at his bidding. Failing in this, he next found means to deprive the City of its ancient charters which the Crown had held for six years. James II. succeeding him, and feeling the Throne passing from his grasp, sought to secure the support of the Corporation and citizens by restoring their Charters, and sent his Chancellor, the notorious Judge Jefferys, in great state to deliver them to the Lord Mayor. The window has been executed by Messrs. Gibbs & Moore, of Southampton-row, and bears an inscription:—"Presented to the Corporation of London by Henry Harris, Deputy of Lime-street Ward, and Master of the Saddlers' Company. 1874."

Taunton.—The large window in the new tower of St. James's Church has just been filled with stained glass. The window, which is of the fourteenth century style of architecture, is divided into two tiers of lights, six lights in each tier. The subjects are taken from the lives of the two sisters Martha and Mary (John xi.). On the dexter side of the window are represented the meeting of Martha and Mary with the Saviour; next the raising of Lazarus from the dead and Martha serving (John xii.). Above, in the second tier, Mary is anointing the feet of Christ. In the centre is Christ in the garden after his resurrection—"Noli me tangere"; and, lastly, the three women at the tomb. In the two middle lights in the upper part of the window are two single figures, representing St. James and St. Andrew. The window was designed and executed by Messrs. Heaton, Butler & Co., of London.

Great Berkhampstead.—Mr. William Cooper, of the Chemical Works in this town, has presented a window to the parish church, in memory of the late Mrs. Cooper. The window, which is by Messrs. Clayton & Bell, consists of two lights, with a quatrefoil head, one light representing the "Annunciation," and the other the "Visitation," of the Virgin Mary.

Stowmarket.—The east window of the parish church, which was destroyed by the great gun-cotton explosion, is now being restored, the reason for the long delay having been the proposal to put in a coloured window. The first instalment has been put in within the last few days under the superintendence of Mr. M. T. Gann. The window is by Messrs. Camm, Brothers, of Birmingham, and the cost will be nearly 200*l*.

Tristwistle.—A stained glass window has just been erected at the east end of Christ Church, Tristwistle, in memory of the late Mrs. Sidebottom, of Hadfield. The window has been executed by Messrs. Mayer & Co., of London.

Ringmore (Devon).—A stained glass window, executed by the Messrs. Horwood Brothers, of Frome Selwood, has been erected in Ringmore parish church, by Mr. John White, of Oakenbury, in memory of his father (Mr. John White). This window completes the series in the nave, representing the founders and fathers of our island churches, viz., St. Patrick (for Ireland), St. David (for Wales), with his friend St. Senan; and, in the present window, St. Augustine, the apostle of the Anglo-Saxons, and St. Alban, the proto-martyr of England. In the north transept St. Piran and St. Ia ("St. Ives"), represent the ancient British church in Cornwall, as do St. Nectan of Hartland, St. Morwenna ("Morwenstow"), and St. Endelienta ("Endellion"), in the south-east chancel window. Only two windows of plain glass now remain in this old church, the north transept of which is a venerable relic of the past, carrying us back to an old Saxon Church which was standing when the Domesday Book was compiled. Having been the manor chapel it has been preserved unaltered, save for a new roof in the thirteenth century, and a window inserted in the north gable. All the rest of the church is of the latter part of the same century.

Edinburgh.—The second window of the choir of St. Giles's Cathedral has just been filled in with stained glass in accordance with the general plan of illustrations of the life of Christ prepared by the committee. The window is a memorial of the late Mr. James Richardson, who at different periods was chairman of the Chamber of Commerce and Master of the Merchant Company. The three upper compartments of the window contain the "Baptism of Our Lord." In the upper portion of the central light is the dove descending in radiated light upon Christ, who is draped in white. Figures of Joseph and Mary occupy the left, and of John the Baptist the right-hand lights, while the Jordan, with herbage and flowers on its banks, extends throughout the three compartments. The three under lights are occupied respectively with illustrations of "The Calling of the Apostles," "The First Miracle at Cana," and "Healing the Sick." The tracery contains angels, with the text—"This is my beloved Son, in whom I am well pleased"; and the apex of the window an angel upon rich ruby, with the emblem of Jehovah. This window, like the first of the series, was designed under the direction of Mr. Robert Herdman, R.S.A., and executed by Messrs. Ballantine & Son, who have other two windows for the choir in progress.

Bedford.—The west window of St. Mary's Church has been filled with painted glass, the work of Messrs. Ward & Hughes, of London. The tracery of the window, according to the *Bedfordshire Times*, has not been altered, and did not require restoration, being in a good state of repair. It consists of three lights with several smaller openings above, of the Perpendicular period of architecture. The principal subject of the new window under characteristic canopies, and embracing the three main lights, is "Our Lord blessing little Children." Forming a base to this are subjects of "Jacob's Dream," "The Meeting of Jacob and Joseph," and "Jacob blessing his children." The principal small openings above are occupied by an Angel Choir. At the bottom are the words "In Memoriam, A.D., 1874." The glass is the gift of Mr. W. J. Nash, and has been put up to the memory of his children, who died some years ago.

THE ARTISANS' DWELLINGS BILL AND THE CLERKENWELL VESTRY.

Several of the metropolitan vestries are displaying an unreasoning, if not an unseemly, objection to the Artisans' Dwellings Bill, and amongst others, the Clerkenwell vestry, at their meeting last week, discussed it in a manner the propriety of which may be questioned, and which will probably suggest the notion that there are some members of the Clerkenwell board interested in the continuance of unhealthy dwellings. As will be seen from what follows, one of the vestrymen even gave expression to such a feeling. The Parliamentary committee of the vestry submitted a report on the Bill, objecting to any board being the local authority except the vestries and district boards of the metropolis, on the ground that they were best acquainted with the different classes of property and sanitary conditions of their respective districts. The committee strongly objected to the Metropolitan Board of Works being the local authority. In moving the adoption of this report, Mr. Bright made use of some strong remarks, stating that the whole Bill was a direct insult on the vestries and district boards of the metropolis, who had always proved themselves excellent local authorities. Mr. Ross followed in a similar strain, stating that he looked on the Bill as calculated to do a great deal of harm; he had no hope that it would be improved in the House of Commons, and he considered that when it became law it would do a deal of mischief. On the other hand, Mr. Johnson, another member of the vestry, said that the Bill had been brought into the House of Commons in consequence of vestrymen buttoning up their pockets, and refusing to do what was necessary. That class of property was chiefly owned by vestrymen, and their brethren had a great objection to set up their backs against them. The report was, however, adopted, and a petition against the Bill was ordered to be prepared, and sent to Sir Andrew Lusk to be presented to the House of Commons.

THE NEW STREET FROM OLD-STREET TO SHOREDITCH: SALE OF HOUSES AND BUILDING MATERIALS.

One of the largest sales of building materials that has taken place in connection with the new street about to be formed between Shoreditch and Old-street was held last week, when no fewer than 120 houses, shops, and other business premises were disposed of. The property included eight houses and shops in High-street, Shoreditch, immediately opposite the Great Eastern Railway station, containing a frontage to High-street of nearly 200 ft. in length, and extending in an easterly direction to the Royal Standard Theatre, which forms the boundary-line of the ground to be cleared for the purposes of the intended new thoroughfare. This portion of the property disposed of consisted of premises of a superior character, and included, amongst other places of business and amusement, the extensive premises of Messrs. White & Co., manufacturing tobacconists, and also the Alhambra Music-hall. The first-named premises formed the most important portion of the sale, and consisted, in addition to the building, four stories in height, of the whole of the machinery and plant for tobacco-manufacturing purposes, situated at the rear of the premises, and occupying a considerable ground area. The machinery was divided into 104 lots, and was sold at a fixed hour on Wednesday afternoon.

In addition to the materials of the houses and shops in High-street, Shoreditch, just named, the sale also included ten cottages behind them in Maybush-court. These miserable hovels are approached from Shoreditch, through a tunnel passage not more than 3 ft. in width, and 5 ft. in height. The court itself is not more than from 4 ft. to 5 ft. wide, and light and ventilation appeared alike impossible; yet the occupants seemed unwilling to leave, and remained in the several abodes until after the sale was over. The materials of the other houses sold were those of dwellings in George-street, Three-Cup-alley, Gloucester-street, New-court, Dean's-mews, Hollywell Mount and Willow Walks, and Bath-place, containing in all 38 houses. The demolition of the property mentioned completes all that it is necessary to remove before the construction of the new street can be proceeded with, and this will be commenced very shortly, immediately on the ground being cleared. From its junction with Old-street the new thoroughfare will proceed by a curve in a direction almost due south, passing under the North London Railway, and terminating opposite the Great Eastern Railway station by a junction with High-street, Shoreditch. In addition to forming a direct communication between the east and west ends of the metropolis, by means of the intended new street between Old-street and Oxford-street, the new thoroughfare will also open out a more direct route between Shoreditch and Islington and the north, *viâ* the City-road. The machinery fetched 430*l*. The total proceeds of the sale were upwards of 2,500*l*.

THE FEMALE SCHOOL OF ART.

The Earl of Aberdeen presided last Saturday afternoon at the annual distribution of prizes awarded to students of the Female School of Art, which is under the special patronage of the Queen, the Princess of Wales, and the Princess Louise. The ceremony took place in the theatre of the Museum of Geology in Jermyn-street, St. James's, the use of which had been kindly granted for the purpose by the Duke of Richmond, as Lord President of the Council of the Committee on Education. There was a large attendance of the students.

Mr. Godwin read the committee's annual report, which stated that the students of this school had obtained a satisfactory average of medals and prizes in the annual competition held at the Science and Art Department at South Kensington, and that the annual exhibition of drawings and other works held at the rooms of the school in Queen-square in October last was generally noticed as showing a marked superiority over those of previous years; that the school had been unusually full during the past twelve months, the number of students on the books at the close of the summer session being 203; that during this winter session the numbers had reached 194, being 37 in excess of the numbers at the same period last year; and that there had been a steady increase in the number of students during the last six years. The committee congratulated Miss Louisa Gann, the superintendent, on having obtained one of the highest premiums awarded by the Council on Education to the head masters and mistresses of schools of art.

The Earl of Aberdeen then distributed the prizes, which consisted of medals, money awards, books, and certificates; the principal honours in the list being the Queen's scholarship, value 30*l*., won by Alice Hanslip for studies from the life; the Queen's gold medal, won by Susan Ruth Canton, for a copy of "The Dying Gladiator," modelled in clay; the Gilchrist scholarship of 50*l*., awarded to Florence Benson, for a set of drawings; and some "national" awards, consisting of national bronze medals, to Alice Hanslip and Jessie Corcoran; and Queen's prizes to Emily Austin, Alice Alphea Locke, Susan Ruth Canton, and Ellen Isabella Hanock, for studies of various kinds. These national awards in the Science and Art Department, as the noble earl pointed out, had been won in competition with the 123 schools of art in Great Britain, numbering 23,031 students. It appeared from the report of the committee that her Majesty had graciously signified her approval of the award of the Queen's scholarship and gold medal to Miss Hanslip and Miss Canton, and at the same time expressed the pleasure with which she had inspected a book of original illustrations by Miss Julia Pocock, a former Queen's scholar and gold medallist, which had been sent to her.

After the presentation of the prizes, which occupied some time, and in the course of which the principal winners were warmly cheered on presenting themselves,

The Earl of Aberdeen gave an interesting address. In speaking of the different branches of art, he said, one notices that there is, perhaps, a rather conventional, and, indirectly, an arbitrary distinction sometimes made between different kinds of art-work. For instance, in old houses and other places one sometimes notices wonderfully beautiful designs for the ornamentation of ceilings and other parts of buildings. I suppose it is true that the designs of the periods to which I am alluding are superior in taste and refinement to many we see in the present day, probably owing to the fact that in former times those who excelled in decorative art were content to follow that out without going into other spheres which were perhaps more ambitious. If so, this would be an encouragement to any student of art to follow out whatever department of study he or she may excel in, without necessarily wishing to engage in some other departments which may be considered more fashionable or may have more sounding names.

On the motion of the Rev. Canon Thorold, seconded by Professor Donaldson, a vote of thanks was passed to the Lord President of the Council, the Duke of Richmond, for the use of the lecture-hall; and on the motion of the Rev. Sir Emilius Bayley, seconded by Mr. William Bromley Hume, a similar compliment was paid to the Earl of Aberdeen for presiding.

THE PROPOSED RE-NAMING OF SLOANE-STREET AND THE CHELSEA VESTRY.

A movement has been made by certain inhabitants of Sloane-street to change the name of that thoroughfare, and this gave rise to an animated discussion at the meeting of the Chelsea vestry last week. The Superintending Architect of the Metropolitan Board of Works had informed the vestry that a memorial had been sent to the Metropolitan Board from some of the inhabitants of Sloane-street, asking the Board to name that part of the street opposite Cadogan-gardens, Cadogan-place; that part north of the gardens, Sloan-street, or Sloane-street, Knightsbridge, and that part south of the gardens Sloane-street, Chelsea, or Lower Sloane-street; and that the street now called Lower Sloane-street should be called by some other name. The Superintending Architect wished to know the views of the vestry upon the matter. A counter memorial from other inhabitants of the street, asking that no change should be made, was presented to the vestry. The discussion which took place on the memorials showed that the opinion of the vestry was almost unanimous against any change being made, and Mr. Davidge, in supporting a resolution that the Metropolitan Board be requested to withhold their sanction to the proposed change, stated that to change the name and numbering of the street and the houses would be a serious inconvenience to the tradesmen there, some of whom had been in the street for more than half a century. Mr. Symons added that it would be monstrous to change the name of a street which was one of the finest in London; whilst Mr. Brook remarked that it was cruel to interfere with a street that was unsurpassed in the metropolis. There was only one Sloane-street in London, renowned for its beauty, straightness, and the salubrity of its air in every respect. The clerk having read the memorial of the inhabitants of the street in favour of the change, Mr. Wastemann said he could answer for their signatures, as the memorialists lived opposite Cadogan-gardens; on which Sir Charles Dilke, M.P., in reply, said he had letters from some of these memorialists strongly objecting to the change. Sloane-street and Lower Sloane-street contained nearly 300 houses, which would be affected either by a change of name or number. The resolution asking the Metropolitan Board to withhold their sanction to the change was, we are very glad to say, carried unanimously.

MAT-MAKING IN PRISONS.

Messrs. Wildey & Co., cocoa-nut fibre manufacturers, have published a correspondence between themselves and Capt. Armytage, Governor of the West Riding prison, Wakefield. They complain that Captain Armytage led Mr. G. W. Hastings to say at the meeting of the Social Science Congress at Norwich, in 1873:—"The truth is that this trade of mat-making from cocoa-nut fibre was unknown in this country previous to 1840, when it was introduced into Wakefield prison. Some years afterwards private manufacturers, seeing the success of the trade, resolved to adopt it as their own." It is not quite certain that this is literally correct, but it is quite certain that Messrs. Wildey do not know how to conduct a correspondence, and Capt. Armytage was quite right, as it seems to us, in refusing to continue it. Courtesy is one of the first necessities in the make-up of a gentleman.

J. Birnie Phillip, Sculptor. — We hear with very great regret, which will be largely shared by our readers, that Mr. Birnie Phillip died on Tuesday last: the cause was bronchitis. Mr. Phillip will be best known by his remarkable work on the basement of the Memorial in Hyde Park.

GRINDING MONEY.

At the Westminster Police court, John Hobson, a builder, of Medway-street, Westminster, was summoned by two carpenters for 1s. 6d. each, due in lieu of notice for grinding their tools on discharge.

In the first case the complainant, John Langdon, said he was dismissed at a moment's notice, and claimed the two hours' "grinding money" as the custom of the trade, but it was not allowed; he had worked in several large firms, and always had the money.

Mr. Woolrych said the custom of the trade as proved to him recently was the payment of this money, and it was a pity at the time of the late strike, when rules were drawn up, that some provision had not been made for "grinding money"; it made an unsatisfactory cause of dissension, and the best thing the masters could do would be to let the men know, when they enter the service, that they would receive one hour for grinding, or two, or none; then the men would be bound by the contract, and the masters could protect themselves. In the present instance the custom held good, and the order in each case would be for the 1s. 6d. claimed and 5s. costs.

THE "OXFORD ARMS."

SIR,—Will you allow me to say, with reference to your summary of a letter of mine which the president was good enough to read at the last meeting of the Architectural Association, that the photographs of the "Oxford Arms" will not, strictly speaking, be on sale. At the request of a few gentlemen who combined in order to have views of this interesting old building taken, I, as one of the subscribers, undertook the arrangement of the matter, and shall be happy to receive the names of any gentlemen who would like to join the subscription.

Long Ditton. ALFRED MARKS.

SLATES.

SIR,—A reader of your valuable paper would be much obliged if you could furnish him with information respecting the slate trade, in reply to the following questions, through your columns:—

1. Terms usually given by many owners to slate merchants?
2. Terms usually given by slate merchants to consumers?
3. If any work published giving information as to slates, their uses, quality, colour, value? and if any journal in connexion with the trade?

T. J. W.

"BUILDER, SURVEYOR, AND MONEY PROCURER."

MANSELL *v.* STANWAY.

THIS was an action, at the Westminster County Court, to recover 11*l.* on an I O U.

Mr. E. B. Merton, solicitor, of 50, Buckingham Palace-road, who appeared for plaintiff, said his client was a lodging-house keeper in Graham-street, Eaton-square, and had employed the defendant as her "agent" in sundry small business matters, and there had been some money matters between them, resulting in the I O U for 11*l.* now due to his client.

Mrs. Emma Mansell, the plaintiff, having given evidence,

Thomas Stanway, the defendant, who described himself as a builder, surveyor, and "money procurer," said he did not deny the debt, but he wished to plead a set-off for 2*l.* 14*s.*, particulars of which he handed in.

His Honour, after looking over a very formidable-looking bill, couched in legal phraseology, asked defendant if he was a lawyer.

Defendant replied in the negative.

The Judge, having elicited that defendant had not given the proper notice of his intention to plead the set-off, refused to allow it, and gave judgment for the plaintiff for the full amount claimed, with costs.

RIGHTS IN ROADS.

GARBUTT *v.* THE STOCKTON AND MIDDLESBROUGH WATERWORKS COMPANY.

THE complainant in this case, at the Stockton County Petty Sessions, is a solicitor, of Yarm, and an extensive landowner, and sued the Stockton and Middlesbrough Water Company for entering upon his land without having previously obtained his permission, as owner thereof.

Mr. Garbutt conducted his own case, and Mr. Dunn, the Town Clerk of Darlington, appeared for the Water Company.

The plaintiff stated that he was the owner of a piece of land lying on the south side of the road from Yarm-lane to the Beck Bridge, at the village of East Hartburn, and in virtue of such ownership he claimed the fee simple of that half of the road adjoining his land, from the hedge to the centre of the road.

He contended that under the 89th section of the Land Clauses Consolidation Act, the Water Company, or any one else, had no power to cut up any land and lay down pipes or drains, unless with the consent of the owner; and further, that although the proprietors of the road in question had purchased it from the owners of the adjoining land, yet it was only sold for the use of the public, and they had a right only to the surface; therefore he, as owner of the adjoining land, was owner of the fee simple of the half of the width of the road.

On the 17th of January last he saw a number of the company's men engaged in opening the road and laying down pipes, and he contended that the company had no right to do this, as his leave or consent had never been obtained.

Mr. Dunn, for the defence, on the other hand, contended that the company had the power to lay the pipes down in any highway within the limits of their Act, and that they had invariably done this, without asking leave, on highways, and only did so in cases where they entered on private land.

The magistrates, who had well looked into the law beforehand, were clearly of opinion that the Water Company was not justified in what they had done, and that all this might have been avoided if the defendants had had the courtesy to have asked Mr. Garbutt's consent before putting down the pipes. Many complaints had been made of their conduct in this respect, and it seemed as if railway companies, gas and water companies, considered that they could override superior public Acts of Parliament by their own private Acts.

The Bench then imposed the nominal fine of 20*s.*, with costs, on the Water Company.

From what after transpired, this case is but the prelude to some "Westminster Hall" proceedings.

TENDERS FOR WORKS FOR ISLINGTON.

AT a meeting of the Islington Vestry, on the 26th ult., the undermentioned tenders were received and reported on by the respective committees:—

For the Masons and Paviors' Work, the Highways Committee had received four tenders; namely, from Messrs. Paul Aspinall & Son, 13,123*l.* 0*s.* 5½*d.*; Charles Drake Sewell, 13,530*l.* 10*s.* 10*d.*; H. Griffiths, 13,763*l.* 10*s.* 8½*d.*; and Mrs. Eliza Beavors. The tender of Messrs. Aspinall & Son, being the lowest, was accepted for one year.

The committee had received ten tenders for the supply of granite and other hard stone; namely, from Mrs. Beavors, Messrs. Manvelle, Messrs. Nowell & Robson, Mr. Fitzmaurice, Mr. Dodd, Messrs. John Mowlem & Co., Mr. Thomas Turner, Messrs. Culverhouse, Mr. Griffiths, and Mr. Fenning; and the tender of Mr. Manvelle, being the lowest, was accepted.

The committee had also received four tenders for the supply of ballast, gravel, core, and flints; namely, from Messrs. W. T. Williamson, Edward Jackson, William Irons, and Henry Dodd; and that of Mr. W. T. Williamson, being the lowest, was accepted.

For the jobbing work in connexion with the sewers and drains, the Building Committee had received eight tenders; namely, from Messrs. J. Bloomfield, 23½ above the schedule of prices; Mr. G. Pace, 21 above; Charles Taylor, 15 above; William Irons, 21 above; Edward Jackson, 25 above; P. A. & G. Culverhouse, 25 above; W. & T. Williamson, 19½ above; Charles Killingback, 25 above; and that of Mr. Charles Taylor, being the lowest, was accepted.

MONUMENTAL.

A COSTLY monument has been recently erected in the Dundee Western Cemetery by one of the leading manufacturers, in memory of his late wife. It is of Sicilian marble, the columns and inscription-slab being polished. The upper portion is elaborately carved with conventionalised foliage, and to relieve the uniformity of tone, inlays of coloured marble, serpentine, and granite, occur in the frieze, pediment, and pinnacles. The inscription-slab is backed by grey granite. The cemetery in which it is placed is situated on a rising ground to the west of Dundee, and commands views of the river Tay, which at this point is two miles wide. Conspicuous among the Fife hills on the opposite shore is "Norman Law," a hill similar in outline to "Arthur's Seat," near Edinburgh, and the scene in the olden time of many a beacon fire. Visible at the base of this hill is the once prosperous town of Newburgh, a favourite excursion resort of Dundonians, and eastward lie the ancient town and ruins of the Abbey of Balmerino. The monument is from the designs of Mr. Geo. S. Aitken, architect, Dundee, of the firm of Maclaren & Aitken. Messrs. Fyfe & Robertson, of Dundee, were the sculptors.

Miscellanea.

National Gallery.—In the House of Commons, Mr. Beresford Hope asked the First Commissioner of Works whether the site for the enlargement of the National Gallery in Trafalgar-square had been acquired by the Government; and, if so, how long this site had been at the disposal of the Government, and what had been the total cost of its purchase. Lord H. Lennox said Mr. Barry was appointed architect of the National Gallery in 1868, and in 1869 he proposed plans for its rebuilding in sections. Between 1869 and 1873, a piece of ground containing 33,000 square yards was purchased, and of this 11,500 square yards were to be given up to the improvement of the approaches. The first, which occupied 25,000 square yards, was completed; and the second, which occupied the remaining 17,000 square yards, was ready for commencing the works. With regard to the two remaining sections, they comprised the space now occupied by the barracks, and the front façade of the Gallery in Trafalgar-square. Whether the barrack-square was to be given up for this purpose would not depend so much upon the First Commissioner of Works as upon the Secretary of State for War. The price paid for the area was 140,865*l.*

Return as to Churches and Restoration. In the House of Lords, Lord Hampton asked the Lord Steward how soon the return ordered last session, showing "the number of churches which have been built or restored at a cost exceeding 500*l.* since the year 1840" would be presented to the House. He said, that in the diocese of Worcester, to which he belonged, a return had been prepared, which was of the most satisfactory character, fully bearing out the objects for which he wished to have the information. He was afraid that they were not equally forward in other dioceses, and he therefore asked the question of which he had given notice. Earl Beauchamp could not state at what time the return would be presented to Parliament. The information in question could only be obtained through the archbishops, who had, he believed, requested the rural deans in each diocese, through their bishops, to furnish it. Some returns had been forwarded from the province of Canterbury, but no information had been received from the province of York. The Bishop of London said there were great difficulties in the way of obtaining such returns, especially in large dioceses like this. A period of thirty-five years covered more than a hundred new churches built by voluntary contributions. No doubt the accounts were properly kept and audited at the time; but it was no person's business to preserve those accounts, and in many cases there were only vague traditions as to what a church might have cost.

National Federation of Employers.—The annual meeting of the above Federation was held on Friday, last week, at the Westminster Palace Hotel, and was attended by a large number of influential representatives from all parts of the kingdom. The chair was taken by Mr. John Robinson, of the firm of Messrs. Sharp, Stewart, & Co., Atlas Works, Manchester, who moved the adoption of the report of the executive committee. This document recapitulated the circumstances which gave rise to the Federation in 1873, and stated that the resolutions adopted at its formation declared that "the organisation of labour by means of Trades Unions, acting through an elaborate system of federation, with almost uncontrolled central power, gives to those organisations a dangerous preponderating influence; that an obvious necessity exists for some general and united action, with a view to secure, through the continuance of existing laws and the enactment of new ones, complete freedom of labour, protection to capital, and the true interests of national industry." The rules subsequently adopted for its government limited the scope of its operations to—(1) Parliamentary legislation; (2) the collection and distribution of information upon industrial questions; and (3) the endeavour to secure co-operation and unity of action among employers, by becoming a medium of communication between them.

The Newspaper Press Fund.—The annual general meeting of the members of the above institution was held on Saturday last at the offices, in the Strand, under the presidency of Mr. C. L. Gruneisen. The report adopted by the meeting stated that the new members elected during the year numbered 36; the aggregate number of members on the roll was 320, of whom 226 resided in London, and 94 in the provinces; 57 being the number of life members. The grants during the year amounted to 509*l.* 12*s.*, the number of cases being 39. During the year the ordinary income had been 728*l.* 16*s.* 6*d.*, and there was an available cash balance at the end of the year of 584*l.* 9*s.* 7*d.* Regret was expressed at the death of three vice-presidents—his Excellency M. Van de Weyer, Mr. B. Bond Cabbell, F.R.S., and Mr. John Laird, M.P. The officers for the present year were then elected, and the chairman stated that the Very Rev. the Dean of Westminster had consented to take the chair on the occasion of the anniversary festival on the 5th of June next. It was expected that the Premier would have occupied that post, but owing to the great pressure consequent on his present position, he was unable this year to do so.

The Loan Exhibition of Scientific Apparatus.—Meetings were held last week, at the South Kensington Museum, of the sub-committees for the sections of mechanics, physics, chemistry, geology, and biology, in connexion with the projected exhibition of scientific apparatus. The limits of the exhibition and various details connected with it were discussed, and recommendations prepared for submission to the general committee at its next meeting.

Sanitary Improvement of Bilston.—At a meeting of the Township Commissioners recently, the report of the Streets Committee advised the borrowing of 5,000*l.* for paving and channelling certain portions of the township, and that a tender for 493*l.*, for diverting the sewers at Priestfield, should be accepted. The surveyor estimated that to sewer all the streets in Bilston would cost 9,000*l.* The meeting declined to sanction the loan of 5,000*l.*, but accepted the tender. Mr. Hancox, the medical officer of the Board, reported that in the past nine months active steps had been taken to abate public nuisances in Bilston, and such efforts were being continued with every prospect of success. He had, however, to point out that the majority of the population of the town lived in confined courts and alleys, approached by narrow entries, and having no other outlet. Most of the dwellings in such localities were dirty, damp, and without proper ventilation, and the privies were in a neglected state for want of frequent cleansing; whilst their contents, often escaping into drains, caused most injurious nuisances.

New Manufactories in Northampton.—In St. Giles's parish there are in course of erection, or have only recently been finished, three new manufactories. Mr. Chapman of Bath-street, has some extensive premises in St. Giles's-street. There is a frontage of 130 ft.; the width is 24 ft., and the height from the basement to the ridge, 59 ft. The building, which is of red brick with Bath stone dressings, contains four stories, and every convenience for the carrying on of a large shoe trade has been provided for. Mr. Milne is the architect, and Mr. D. Ireson the builder. In St. Giles's-terrace, Mr. Haynes has had erected large and commodious premises, the material used being red brick with white brick dressings. Mr. Milne also prepared these plans, and Mr. Redshaw was the contractor. Mr. Hull, architect, has prepared the plans, and Mr. Thomas Cosford is now erecting a manufactory for Mr. Greeves, of Abington-square. The premises are of white brick, with Bath stone dressing, and show an extensive frontage.

New Association of Saw-mill Owners.—According to the *Timber Trades Journal*, a meeting of saw-mill owners was held in Sunderland, at the office of Mr. Wm. Pinkney, solicitor, last week, for the formation of the North of England Saw-mill Owners' Mutual Insurance Association. The chair was taken by Mr. Ventress, of the firm of Ventress & Sons, of Middlesbrough. It was stated that that meeting had been held to consider the great difficulties all owners of saw-mills experience in securing proper protection from loss that may arise by fire, by reason of the arbitrary and combined action of most fire insurance companies in dealing with them, and the high and excessive rates of premium demanded. It was well known to the trade that in consequence of this many saw-mills were at the present time totally uninsured, and at the entire risk of the owners themselves. A resolution establishing the Association having been proposed by Mr. Ventress, and seconded by Mr. C. H. Weyergang, of Newcastle, was carried unanimously.

The Exeter Reredos.—The Judicial Committee of the Privy Council have delivered judgment, affirming the legality of the reredos set up in Exeter Cathedral. Lord Hatherley said:—

"People were all quite familiar that it was not erected for the superstitious reverence of any of the figures upon it, and that it is in no way different from similar sculptures or representations in many parish churches throughout the kingdom to which had never been attached any idolatrous or superstitious use whatever. Its position in the cathedral made it no infringement of the ecclesiastical law. Their lordships desired it to be clearly understood that nothing decided in this case affected in any way that superstitious regard or worship of things which are or might be set up in churches, and to which the 22nd Article referred. The law would always be sufficiently strong to control and correct any such abuses as they arose. Their lordships were of opinion that the sculpture in question was not liable to be impugned in that respect, and they would humbly advise her Majesty to reverse the decree of the Dean of Arches as far as it affected the Bishop's jurisdiction, and to affirm his decree in all other respects. They made no order as to costs."

The Drainage of Maidstone.—We sincerely congratulate our Maidstone readers on the fact that the Local Board has determined to adhere to the resolution it came to a few weeks ago, to adopt Mr. Angell's scheme for draining the town, and that it will allow no specious excuse for delay to turn it aside from its sensible resolve.—*South Eastern Gazette.*

An Over-crowded Lodging-house.—At the Rotherham police-court, last week, William Sampson, a lodging-house keeper, living at New York, Brinsworth, was summoned at the instance of the Rural Sanitary authority for overcrowding his dwelling-house. Mr. Taylor appeared in support of the information. Mr. Jennings, inspector of nuisances, stated that he visited the house on the 29th of January, and found no less than twenty-six persons dwelling in it. In one room were seven persons; in another were six persons, composing three families, who occupied two beds between them; in a downstairs room were seven persons, and in the kitchen were three families composed of six persons. The highest average air allowed was 167 cubic feet to each person, instead of 240 feet. A fatal case of scarlet fever occurred in the house only a few days before his visit. The defendant admitted the offence, and was fined 20s. and costs.

Schools in Egypt.—An Englishman, in the person of Mr. E. T. Rogers, late British Consul in Cairo, has been appointed administrative director of schools in Egypt. The nomination of a foreigner to so high an office is a proof in itself of the Khedive's earnestness in the cause of education. The choice of Mr. Rogers is unexceptionable. He is a scholar of no mean order; but it is not his general scholarly attainments which constitute Mr. Rogers's chief fitness for the office for which he has been selected. He is an accomplished Orientalist; he knows the languages of the Levant, and is conversant with the habits and modes of thought of the Egyptian people of all classes.

Laughton Church Spire.—The famous spire of Laughton-en-le-Morthen, a landmark seen alike from the Yorkshire moors and the Lincolnshire fens, has been unfortunately struck by lightning, and a somewhat extensive reparation will be necessary. Messrs. Hadfield & Son have been consulted upon the matter, and on Tuesday, on their recommendation, Mr. J. J. Hurney ascended the steeple, and made a thorough examination of the summit, which is much fractured and shaken. Mr. C. Hadfield met Col. St. Leger and the churchwardens, and having explained to them the position of affairs, received orders to prepare the necessary drawings and estimates.

Windsor and Eton Art Classes.—The Princess Christian of Schleswig-Holstein, who was attended by the Hon. Mrs. Wellesley, presented the prizes, on the 25th ult., at the Town-hall, Windsor, to the successful candidates in the Windsor and Eton Art Classes. The distribution commenced at three o'clock, and the hall was crowded by a large and fashionable company. The report, which was very favourable, stated that the classes were in a very flourishing condition, there being upwards of seventy pupils. The art master, Mr. Hiscox, and Mr. Byrne, the hon. secretary, were complimented on the manner in which the classes had been conducted.

Ryde Borough Surveyor.—The resignation of Mr. G. H. Stayton, the borough surveyor (he having been appointed Surveyor to the Chelsea Vestry, as we mentioned at the time), was read by the Mayor, at the meeting of the Town Council, who proposed that it should be received, at the same time speaking of the gentleman in eulogistic terms. This was carried, and it was also resolved that the best thanks of the Council should be given to him for the gentlemanly and efficient way in which he had discharged his duties, a record of this to be made on vellum (illuminated), and presented to Mr. Stayton.

Liberal Donation for a Workmen's Palace.—It is stated that Mr. W. J. Armitage, of Farnley, whose deep interest in the religious and social elevation of the working classes is well known, has offered to give from 5,000*l.* to 10,000*l.*, as may be needed, for the erection of a British Workmen's Palace or Working Men's Club in Leeds, one of the conditions being that there shall be a large hall suitable for evangelistic services. The question as to how effect can best be given to this munificent offer is under consideration by the gentlemen whom Mr. Armitage has consulted.

Surveyorship of the Willesden Local Board.—At a meeting of the Willesden Board, on Tuesday last, Mr. O. C. Robson, chief assistant of Mr. L. Angell, C.E., was unanimously elected surveyor of this district. There were fifty-nine candidates for the office.

The Clock of the Exhibition, 1862.—Visitors to the Exhibition of 1862 will possibly remember the enormous dial which surmounted Cromwell-road entrance. The hands of the dial were worked by a gigantic clock, which was exhibited in the transept of the Exhibition. It was the work of Mr. J. W. Benson, of Ludgate-hill, and was remarkable for its finish and workmanship, together with its chimes, which were a modification of the celebrated Cambridge Chimes. This clock has just been purchased, and will be forwarded to Toronto, where it is destined to be fitted in St. James's Cathedral in that city.

The Demolition of Dwellings of the Working Classes.—The Court of Common Council, on the 25th ult., passed a resolution to the effect that as the execution of public improvements and other large works in populous places necessarily involves the displacement of a certain number of the working and poorer classes, it was, in the opinion of the Court, desirable that the legislation of Parliament, which authorised any such improvements or works, should also impose the obligation of providing improved dwellings for the industrial poor.

Drunkenness in Liverpool.—The police returns for the year ending at Michaelmas, 1874, show that in Liverpool no less than 20,330 persons were in that year proceeded against for being drunk, or drunk and disorderly, and all but 1,050 of that number were convicted. In the preceding year the number proceeded against for this fault was 18,038, and in the year before that it was 16,927. It is calculated that Liverpool, with not very much more than half a million of souls, has among them about a tenth of all the persons who are proceeded against in England for drunkenness.

The Discoveries at Ephesus.—It is announced that the Queen has, on the recommendation of the Prime Minister, granted a pension of 200*l.* a year to Mr. Wood, in recognition of his labours at Ephesus and the distinguished services rendered by him to science and history by the discovery of the site of the Temple of Diana, and by the acquisition for the British Museum of a most valuable collection of sculptures, architectural marbles, and Greek and Roman inscriptions, in obtaining which results his health has suffered permanent injury.

Tenders for Wrexham New Cemetery.—Five tenders have been received for the erection of chapels and lodge in the new cemetery now being laid out in the Ruabon-road:—

S. A. Clark, Denbigh	£2,390 0 0
William Rogers, Rossett	2,615 12 0
W. H. Ford, Birkenhead	2,665 8 8
Cordingley & Stopford, Manchester	2,641 0 0
Thomas Prigha, Wrexham	2,470 15 0

Mr. Clark's tender has been accepted by the Town Council.

Fall of a Stack of Chimneys at Islington.—On the 26th ult. great excitement prevailed in Camden-passage, Islington, in consequence of a large stack of chimneys falling through the roof of one of the houses in the occupation of a fruiterer. The chimneys fell with such force that the brickwork went through two floors and covered the beds which were in each room. The house has been in a shaky position for some time, and has been shored up under the direction of the local authorities.

Alleged Embezzlement by a Secretary of a Lodge.—At the Town-hall, Leamington, on the 24th ult., before a full bench of magistrates, Alfred Crisp, Secretary to the Leamington Lodge of the Friendly Society of Operative Masons of England and Wales, was charged on remand with embezzling 4*l.* 4*s.* belonging to the society. The prisoner was committed for trial on this charge; and on a second charge of embezzling two guineas belonging to the society on the 22nd of February, 1874.

Constant Water Supply.—The East London Waterworks Company has given notice to the Matropolitan Board of Works of its intention to provide, on and after the 1st of July next, a constant supply of water for a portion of the district supplied by their company. This will be a great boon to a large and populous locality served by the company at the East-end, and it will greatly facilitate the work of the London Fire Brigade in extinguishing fires.

Great Fire in Dublin.—The timber mills of Messrs. Martin & Son, North Wall, Dublin, caught fire on the 24th ult. The damage is estimated at 60,000*l.* The premises were insured. The origin of the fire is unknown.

Market-place Improvements, Reading.—Last week the workmen employed in the erection of the new premises of Mr. G. R. Butler, in the Market-place, Reading, were entertained at dinner at the Elephant Inn. Mr. Butler's new Auction and Estate Agency Offices have been built on the site of the old offices of the *Reading Mercury*, from designs furnished by Messrs. Brown & Albury. The style of architecture is that in vogue during the reign of Queen Anne.

The Sunderland Subscription Library and Literary Society.—A commodious building, comprising library, lecture theatre, clock-tower, and retiring-rooms, is about to be erected on an eligible site, facing the Park. The Committee have met with the greatest encouragement in the way of subscriptions, which amount already to between 5,000*l.* and 6,000*l.* The work will be commenced forthwith. Mr. G. G. Hoskins, of Darlington, is the architect.

Dinner to Workmen.—On February 20th all the men employed in the erection of a house and studios, No. 122, Sloane-street, were invited by Mr. Charles Bacon to partake of a substantial dinner. Mr. J. H. Brass, junior partner of the firm of Lot Brass & Son, of Manor-street, who are the contractors for the works, was in the chair, supported on his right and left by Messrs. Higgett and Palmer, the foremen.

"The Actual Condition of the British Museum."—In a pamphlet under this title, Mr. Stefan Poles makes very serious charges against the chief librarian of the British Museum. They are so circumstantial and so damaging, that Mr. Winter Jones and the trustees will probably feel bound to take some steps in the matter.

International Exhibition in Paris.—An International Exhibition, in which great prominence will be given to all matters connected with marine and river industries, is to be held in Paris, under high patronage, from July to November next. The building selected is the well-known Palais de l'Industrie in the Champs Elysées.

Caution to Archæologists.—Mr. Phené, F.S.A., while examining the curious arrangement of barrows at Priddy, on the Mendip Hills, made a false step on a snowdrift, and fell into some miner's workings, of which there are many on the Moor. He fell on some sharp stones at the bottom, and with much difficulty reached Wells, where he remains for recovery.

Althorpe Church.—In carrying forward the restoration of Althorpe Church, the discovery has just been made of a fine monumental brass, in an excellent state of preservation, consisting of an effigy with legend of William de Lound, who was presented to Althorpe by Joseph Panely, Prior of the Knights of St. John of Jerusalem, in the year 1355.

Settlement of a Strike.—The men on strike at the ten blast-furnaces of Bell Brothers, Port Clarence, near Middlesbro', have, after being off work fourteen days, agreed to resume work at a reduction of 10 per cent. This submission binds the blast-furnace-men employed at more than 100 furnaces in the North of England to agree to a similar reduction of wages.

Rent of Land in the City.—The site of Nos. 19 and 19A, Old Change, has been let by auction, at the Mart, by Messrs. Edwin Fox & Bousfield, at a rental of 330*l.* per annum. The property occupies an area of 1,000 superficial feet, and has lately been the subject of proceedings in Chancery, between the Attorney-General and the Wax Chandlers' Company.

St. Andrew's Church, Hertford.—The demolition of the old tower of this church preparatory to the erection of the new tower and spire, which Lord Cowper has so generously offered to build, has been commenced.

TENDERS

For Upholland Schools, Lancashire, exclusive of excavation, drainage, and boundary-walls. Messrs. T. E. Murray and G. H. Thomas, architects:—

Middlehurst	£1,125 0 0
Mullin	950 0 0
Riding (accepted)	782 0 0

For North Mundham Schools and residence, Chichester. Mr. Binsted Runcton, architect. Quantities by Mr. R. Carpenter:—

Rodgers (accepted).

For alterations to the Blue Posts, Berwick-street, Soho, for Mr. R. W. Willmett. Mr. John C. Dear, architect:—

Roberts, Bros.	£638 0 0
Osborne	471 0 0
Cohen	445 0 0

For the erection of St. Peter's Church, Maidstone. No. 1.—Nave and North Aisle, with lower part of Tower; No. 2.—Fittings in Nave, North Aisle, and lower part of Tower; No. 3.—South Aisle and Porch; No. 4.—Fittings in South Aisle and Porch; No. 5.—Chancel, including Fittings, &c., complete; No. 6.—Upper part of Tower. Mr. A. W. Blomfield, architect. Quantities supplied by Messrs. Gardiner, Son, & Theobald:—

	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.
	£.	£.	£.	£.	£.	£.
Turner & Son	5330	150	850	120	3150	1700
Avard	5203	140	786	135	3151	1845
Vaughan	4995	132	735	136	2937	2047
Gibbons	5139	350	758	160	2950	1830
Dove Brothers	5080	375	735	100	2975	1650
Clement and Wallis	4708	7 373	14 473	99	18 2983	1764
Naylan*	4147	360	619	90	2833	1881

* Accepted for the first four items only at present.

For a small bridge in stone and brick in the Cannonhill Park, Birmingham. Mr. R. Morrison Marnock, architect.

Barnsley & Sons	£357 7 0

For Vestry Mission Hall, &c., Little Russell-street, Bloomsbury. Mr. J. Peacock, architect. Quantities supplied by Mr. James Schofield:—

	Tender.	Fittings.	P. Stone.
Colls & Son	£3,123 0 0	£227 0 0	£159 0 0
Waldram & Co.	1,963 0 0	183 0 0	398 0 0
Lacey, Bros.	£1,860		150 0 0
Gammon & Son	1,869 0 0	180 0 0	438 0 0
Simpson & Baker	1,724 0 0	158 0 0	459 0 0
Manley & Rogers	1,617 0 0	170 0 0	540 0 0
Adamson & Son	1,560 0 0	173 0 0	426 0 0

For road and sewers in Wimbledon Park. Mr. Alfred W. Oborne, surveyor:—

	Lake-road.	Leopold-road.
Neave & Son	£982 0 0	£144 10 0
Crockett	981 0 0	136 0 0
Jackson (accepted)	860 0 0	123 0 0
Hare	765 0 0	103 0 0
Hopkins	756 0 0	93 0 0

For building new warehouse for the Civil Service Supply Association, Queen Victoria-street. Mr. W. Wimble, architect:—

Patman & Fotheringham	£3,590 0 0
Turrell	3,418 0 0
Charlton & Martin	3,404 0 0
Sewell & Son	3,380 0 0
Stevenson	3,141 0 0
Hill, Higgs, & Hill	3,140 0 0
Falkner	3,062 0 0
Ashby	2,925 0 0
Scrivener & White	2,918 0 0
Brass	2,880 0 0
Fish	2,836 0 0

For the erection of a parsonage-house, St. Andrew's, Plaistow, Essex, for the Rev. George Godsell. Mr. James Brooks, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Gregory	£3,090 0 0
Hosking, Bros.	3,075 0 0
Rivett	2,944 0 0
Scrivener & White	2,905 0 0
Killby	2,820 0 0
Charlton & Martin	2,800 0 0
Blake	2,680 0 0

For the erection of two houses and shops in the High-street, Croydon, for Mr. Henry Simmons. Mr. John Berney, architect:—

Peskett & Tayler	£2,800 0 0
Coles	2,552 0 0
Smith	2,361 0 0
Hyde (accepted)	2,160 0 0

For alterations and additions to two houses in Bishop's-road, Duppas-hill, Croydon, for Mr. R. W. Fuller. Mr. John Berney, architect:—

Coles	£825 0 0
Smith	746 0 0
Hollidge & Smallridge (accepted)	695 0 0

For converting the Croydon Butter-market into printing offices for Mr. Baldiston. Mr. John Berney, architect:—

Smith	£873 0 0
Hollidge & Smallridge (accepted)	750 0 0
Loe (withdrawn)	715 0 0

For warehouse, 26, Noble-street, City. Mr. Benjamin Tabberer, architect:—

Crabb (accepted)	£1,250 0 0

For building a refreshment pavilion in Greenwich Park, for Mr. Gatti. Mr. Henry Roberts, architect:—

Williams	£339 15 0
Murrin (accepted)	323 10 0

For Queen's-gardens Schools, Brompton, for the London School Board. Mr. E. R. Robson, architect:—

Hook & Holdrey	£3,410 0 0
Downs & Co.	3,252 0 0
Thompson	3,235 0 0
Chamberlain, Bros.	3,206 0 0
Jerrard	3,183 0 0

For new shop and residence, St. Ives, Hunts, for Mr. William Seward. Mr. Robert Hutchinson, architect:—

Maile & Allen	£767 0 0
Cade	735 0 0
Bunting	727 0 0
Smith	722 0 0
Saint (accepted)	682 0 0

For partial restoration and re-seating Upavon Church, Wilts. Mr. John P. Seddon, architect. Quantities by Mr. R. Carpenter:—

Aldridge	£2,146 0 0
Beale	1,978 0 0
Vallis	1,875 0 0
Mallings	1,740 0 0

For house at Bromley, Kent, for Mr. W. Phillpot. Messrs. Berriman & Son, architects:—

Falkner	£1,850 0 0
G. & S. Fisher	1,370 0 0
Payne & Baldwin	1,330 0 0
Jayes	1,125 0 0

For Stoke Newington Schools, High-street, for the London School Board. Mr. E. R. Robson, architect. Quantities by Mr. W. H. Barber:—

Boyce (accepted)	£6,850 0 0

For alterations and repairs to the Hemingford Arms, Hemingford-road, Barnsbury, for Mr. H. Hollis. Messrs. Bird & Walters, architects:—

Madgin, Bros.	£850 0 0
Ennor	839 0 0
Toms	830 0 0
M'Lachlan	819 0 0
Chapman	795 0 0
Killby	753 0 0
Auley	730 0 0

For enlarging bar, and bar-fittings, at the Green Man Tavern, Euston-road, for Mr. Smith. Messrs. Bird & Walters, architects:—

Auley	£320 0 0

For the erection of schools, fence-walls, and conveniences, at Pilsley, Derbyshire, for the Clay-lane district School Board. Mr. S. Rollinson, architect:—

Hays (accepted)	£3,328 4 0

For the erection of schools, fence-walls, and conveniences, at Tupton, Derbyshire, for the Clay-lane district School Board. Mr. S. Rollinson, architect:—

Marriott (accepted)	£3,158 0 0

For the erection of a house at Wimbledon Park, Wimbledon, Surrey, for Mr. Percy Mortimer. Mr. John Nicholls, architect. Quantities supplied by Mr. W. H. Barber:—

Richards	£5,800 0 0
Todd & Sanders	5,747 0 0
Tyerman	5,632 0 0
Trollope	5,483 0 0
Nightingale	5,089 0 0
Aviss & Co.	4,988 0 0
Adamson	4,929 0 0
Crossley	4,795 0 0
Bull & Son	4,750 0 0

For building gardener's cottage at Garrick's Villa, Hampton, for Mr. Edward Grove. Mr. John Ashdown, architect:—

Rhodes	£396 0 0
Brown	335 0 0
Lathey, Bros. (accepted)	353 0 0
Podmore & Martin	242 0 0

For alterations and enlargement of the London Missionary Home, Bloomfield-street, Finsbury. Mr. E. C. Robins, architect. Quantities supplied by Mr. E. J. Austin:—

Kirk & Randall	£4,440 0 0
Newman & Mann	4,355 0 0
Macey	4,187 0 0
Brass	3,986 0 0

For Presbyterian Church, Bow-road. Mr. A. Peebles, architect. Quantities supplied:—

Dove, Bros.	£4,300 0 0
Bensted & Sons	4 186 0 0
Hill, Higgs, & Hill	4,137 0 0
Woodward	3,997 0 0
Browne & Robinson	3,979 0 0
Carter	3,940 0 0
Killby	3,852 0 0
Merritt & Ashby	3,834 0 0
Scrivener & White	3,824 0 0
King & Sons	3,795 0 0
Nightingale	3,787 0 0
Bangs & Co.	3,781 0 0
Morter	3,723 0 0
Newman & Mann	3,626 0 0
Ennor	3,570 0 0
Niblett, & Son	3,350 0 0

For new schools, Neckinger-road, Bermondsey, Southwark division. Mr. E. R. Robson, architect. Quantities supplied by Mr. T. W. Rickman:—

Shepherd	£8,789 0 0
Cooper	8,750 0 0
Grover	8,581 0 0
Patman & Fotheringham	8,376 0 0
Dowes	8,236 0 0
Brass	8,218 0 0
Newman & Mann	8,176 0 0
Jerrard	8,174 0 0

For additional warehouse for Messrs. Crosse & Blackwell, Crown-street, Soho-square. Mr. R. L. Roumieu, architect. Quantities taken out by Messrs. Welsh & Atkinson:—

Southcott	£6,696 0 0
Dove Brothers	6,475 0 0
Longmire & Burge	6,150 0 0
Smith & Co.	5,780 0 0
Holland & Hannen	5,640 0 0
Macey (accepted)	5,560 0 0

TO CORRESPONDENTS.

The demands for space on our front page, long resisted, have at last forced us to change the position of the Table of Contents.

J. S. P.—Dr. A.—C.—M. L.—R. J. B.—A. B.—G. B. M.—R. M. M.—J. R.—G. & S. F.—C. R.—S. & C.—S. S.—J. B.—W. H. S.—J. G. N.—F.—A. M.—M.—S. F. C.—P. Bros.—J. W. B.—J. C.—M. L. C.—W. & N.—Patient Builder.—G. C.—W. M. T.—H. R.—J. C. D.—J. J.—T. B.—S. T.—C. F.—Feldspar.—J. S.—S. R.—J. A. —C. & M.—H. E.—J. R.—B. L. M (are there any specimens of the material in this country ?).—G. O. (when a building is erected an architect has no power to prevent the photographing of it. So long as the design remains only on paper he can protect the copyright).—S. F. C. (next week).—W. L. C. (next week).—E. R. (next week).—Polo (next week).—J. C. (next week).—We are forced by great pressure on our space to postpone several articles.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

The Builder.

Vol. XXXIII. No 1673. SATURDAY, MARCH 27, 1875.

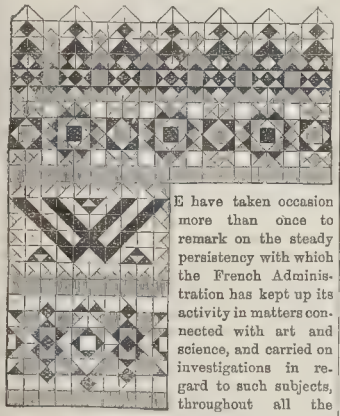
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A French Report on the English Railway System.



WE have taken occasion more than once to remark on the steady persistency with which the French Administration has kept up its activity in matters connected with art and science, and carried on investigations in regard to such subjects, throughout all the recent disturbances of the political atmosphere of the country. We have new illustration of this unwearied activity in the four tolerably bulky volumes containing the report, recently laid before the Minister of Public Works, on the progress and condition of the collateral branch of Government administration in England.* Whilst we have been reading in our daily papers the accounts of the collisions and hostilities of rival parties in the Chamber and in the country, and getting our sympathies excited for or against Orleanists, Communists, Legitimists, Bonapartists, or any other 'ists that there may be, the envoy of the Bureau des Travaux Publics has been quietly occupied in taking notes of our road and rail, canal and shipping administration, and putting the information obtained into a condensed and comprehensive report. This Report makes an interesting sequel to the abundant illustration of the French Public Works administration, which was furnished in their department of the last International Exhibition, and shows our neighbours as desirous to learn what we are doing as to inform us what they have done.

The most important and interesting portion of M. de Franqueville's report is that which occupies the first and part of the second volume, in regard to the development and working here of the great railway system which England has the honour and responsibility of having originated. The report is prefaced by a comprehensive summary of the history of the railway system, which the author divides into five periods, viz., *les essais* (1801–30), *l'enfance* (1830–45), *la manie* (1845–48), *la concurrence* (1848–58), and *les fusions* (1858–74). The history is one which we know well; but the system of division here employed in relating it perhaps gives more significance to the account of the successive changes of public feeling and railway policy, and it is interesting to see how the history looks to a foreign eye. The writer records with little comment, but evidently with amusement, the style and basis of opposition to the movement at its outset; how the Duke of Cleveland strongly opposed the Stockton and Darlington line, because "it would pass near one of his fox-earths," and how surveyors had to carry on operations in the teeth of the opposition of proprietors, or to work on Sunday, "pendant le moment où un *clergyman* enragé contre eux débitait son sermon"; and George Stephenson's celebrated reply to the question about the strayed cow on the line comes out with quite new effect, though the Doric simplicity of George's answer is hardly conveyed in the pure French form, "Ce serait en effet une circonstance très embarrassante pour la vache." If, as M. de Franqueville says, it is curious to read these "*sottises*" of the period, he seems to have found similar exhibitions of a more recent date not less edifying; of which anon. In his short chapter on that extraordinary period of the "railway mania," the author alludes, as an instance of the pace at which things went, to the enormous sums which the advertising of rival schemes brought in to the leading papers; but he omits a circumstance highly creditable to English journalism, that while the *Times*, more than other journals, of course, was drawing a great revenue from this source, the conductors of the paper had the spirit and independence to attack and show up in the strongest manner the madness of the financial schemes that were being entertained, and played an important part in the demolition of a public folly which was making their own fortunes. In November, 1846, projects were laid before Parliament for 1,263 companies for the formation of new lines. After mentioning the number of Acts which were finally passed about this period, the reporter alludes to an extraordinary incident, which showed the want of "foresight of the authorities." This was no other than the first instance (at Gloucester) of the joining of two railways at the same point; and it seems almost incredible, at the present day, that the idea of such a case should absolutely never have been taken into consideration whilst Acts for new lines were being granted at an average rate of 150 a year over four or five years. So it was, however, and this remarkable discovery, that two lines might run into one another, with all the technical considerations involved, led to the Gauge Act of 1846, defining the width of the permanent way: an Act which can never be thought of without regret at the want of consideration with which so important a point was fixed. The Act in fact simply confirmed the gauge already adopted in the few lines laid down, and which had been arrived at by mere accident (it is said to have been the width of the old mail-coach wheels), and thus fixed on the whole country a gauge which might have been widened with the greatest advantage to speed, comfort, and safety, without prejudicing economy. It is possible that Brunel's gauge was too large in regard to the last consideration, and there seems little doubt that the wide-gauge is doomed. But no impartial traveller would hesitate to pronounce the express train service between London and Bristol to be, in regard to combined speed and comfort, and the feeling at least of security, the finest travelling in the kingdom; quite different from the swaying and rocking of the carriages in even the best appointed fast trains on the narrow-gauge lines. The ideal of a railway system has been suggested in our own columns as consisting in central wide-gauge services for main routes, with branch lines on a smaller scale for communication with the adjoining districts on either side of the main road. The present system, or no system, is, however, probably put upon the country now for good, and has to be made the best of.

The want of foresight in regard to the future of the great power that was growing up is brought out likewise in other portions of M. de Franqueville's historic summary, in regard to the relation of the companies to the public and to each other. Neither the Government nor the railway companies themselves were aware all at once of the power of the latter. During the period of "infancy" it was a stipulation that the promoters of a railway were to allow the engines and "wagons" of any other person to circulate on their roads, at a fixed tariff. But as the Act making this provision did not bind them to give anything but the use of the roads, and as it soon became evident that uniformity in the traffic management of a railway and the construction of the rolling stock, &c., was a necessity, this pretended competition between different undertakers on the same line never became a reality. The same kind of inability of Government to modify the action of the railway companies in regard to each other is commented on at some length in our reporter's "fourth period." The Government were long beset with the idea that competition must be kept up, and "fusion" discountenanced, in the interests of the public. But at the very outset of the movement for "fusion" it was obvious that it was far more convenient that the route from London to Liverpool should be in the hands of one than of three companies, as it was at first. In 1853 the Bills presented for authorising fusions between different companies were so numerous, that a special committee was charged to examine the subject, and made the curiously frank confession (though not, perhaps, intended to be so) that the committee disapproved of fusion and of the consequent annihilation of competition, but could do nothing to prevent it: "The companies tended to unite and to extend their ramifications, and that competition habitually ended in an understanding, either legal or illegal, between the companies concerned." Ultimately M. de Franqueville considers the death-blow was given to competition at the meeting of presidents and directors of the railways at Euston, in September, 1858, where resolutions were passed tending to an equalising of the scale of charges, and especially that where the same

* Du Régime des Travaux Publics en Angleterre: Rapport adressé à M. le Ministre des Travaux Publics, Par Ch. de Franqueville, Maître des Requêtes au Conseil d'Etat, Secrétaire de la Commission Centrale des Chemins de Fer. Paris: Hachette et Cie. 1874.

place can be reached by two routes, the charges should be the same. Since this period the reporter considers that competition between companies has virtually ceased; but it would appear that his report was prepared before the recent innovating policy of the Midland Company. Even this, however, has not produced competition in the extreme sense, and there is no absolute proof that the move was made with the desire of outbidding other companies in public favour. We rather regret that the French report is published just too soon for us to have the opinion of a foreigner on the result of the abolition of the second-class, or of the first-class, as it seems practically to be.

The history of the railway system disposed of, M. de Franqueville goes into the forms to be observed in bringing forward a Bill for a new line; describing the nature of private Bills, the constitution of committees, the forms of first, second, and third reading, &c., and the nature of the "*clauses obligatoires*," called in the vernacular "standing orders." In regard to the latter he notices the new proviso that in future companies will be expected to provide that poor inhabitants who may be "expropriated" shall have homes found for them within a limited time. In going through the system of passing Bills through Parliament, our French critic seems to be impressed with the extent and verbosity of the preambles, and with the length to which Parliamentary lawyers' bills may be found to run. He is somewhat merciless in his detailed list of the several stages of disbursement through which it is necessary to proceed in securing due legal protection for a Bill; and "Messieurs les avocats n'ont pas l'habitude de refuser les honoraires, qui viennent s'ajouter à ces droits." The counsel who practise before Parliament, he adds, defend these high charges on the ground that Parliament does not sit all the year, and that it is not customary for a Parliamentary barrister to plead in courts of justice. "But if one remarks that the Parliamentary barristers are not a numerous class, that they are not generally considered as being of more than ordinary ability, while the more eminent men remain at the bar properly so called; that the same counsel is charged with many cases at the same time, and that his real intervention in them is often very limited; that, besides, the sittings of committees do not last more than four hours, one cannot deny the truth of what Lord Chancellor X—— said to me, 'England is the paradise of lawyers!'" Then, observes M. de Franqueville, if the Bill proposed is divided by the committee into several Bills, "*l'étiquette* des messieurs les légistes est d'exiger autant de fois le payment des droits indiqués ci-dessus qu'il y a de Bills, bien que l'instruction ait été unique pour toute l'affaire." The sarcastic italics are the author's.

M. de Franqueville came to the conclusion that the passing of Railway Bills through the two Houses was mainly a matter of form, and the Parliamentary Committee really settled the business. He, at all events, seems to have been led to pay a good deal of attention to the working of the latter; and it may interest those concerned with railway matters to see how the way of doing business in Committee impresses a stranger:—

"Let us penetrate, then, into the Westminster Palace, and having crossed the large and magnificent Hall, traverse the octagon chamber which separates the House of Lords from the House of Commons. Here we come first upon a vestibule, in which several desks (*pupitres*) are covered with printed notices, indicating which committees are sitting to-day, in which rooms they meet, and at what hours. A large buffet is established for the use of the public. Members of Parliament having their own special restaurant.

We will enter the corridor to the right. On each of the doors a notice board indicates which Committee holds its sittings there.

In looking for the room in which our particular business is being discussed, we encounter a crowd of barristers in black gowns, their heads fitted with small *perruques*, talking with animation among themselves and to their clients, or betaking themselves to one of the numerous refreshment-tables. A blind man who should be brought in here would believe himself to be in a very noisy public-house.

However, this is the place where sits the Committee whose doings we wish to follow. At the back, around a horse-shoe table, sit the members of the Committee. The president has his black hat on his head, and seems very jolly. He jests pleasantly with the barristers. Next to him a noble lord devours a quantity of sandwiches, which he extracts from a small silver box, and pours from time to time into a goblet of the same metal a little sherry from an elegant flask. The repast finished, he replaces with care the flask, goblet, and silver box. Near him another member summons the attendant, and desires him to bring him a glass of brandy and soda-water. The explosion of the cork and sudden effusion of the liquid, which irrigates the shoulder of his next neighbour, does not seem to startle any one. To the right a Member of the House of Commons is busy with a cup of tea and buttered toast. A fifth member warms his feet at the fire, and a sixth has his hat tipped over his nose, and seems in a profound slumber.

Opposite the Members are found the barristers in wig and gown; behind them the public; at the right a little tribune in which witnesses are placed to take oath, and answer the questions addressed to them. The walls are tapestried with immense sheets, indicating very clearly, and to a large scale, the proposed lines.

There is in the *ensemble* of the whole scene a mingling of solemnity and of *sans-façon*, of the serious and the comic, which astonishes and strikes the stranger conducted for the first time into this sacred precinct."

Perhaps one moral to be drawn from this is, that foreign commissioners taking notes should not be admitted into the committee-room precisely at lunch-time! However, if M. de Franqueville was edified with this part of the business, he must have been not less so with his further experience of it. Some little time since a sketch of "a fight on standing orders" appeared in our columns; we can certainly adduce M. de Franqueville's literal description of the examination he was present at as corroborating the general truthfulness of our less literal sketch. The Bill in question was that for a railway from Bala to Festiniog. On the fourth day "a magistrate, Mr. Jones," is questioned at great length on the inconvenience which the establishment of the railway would cause on the domain of Mr. P——, of R——, the only proprietor who made serious opposition. We suppress the names, but they have been returned in full in the French report, where this local chieftain has thus been immortalised:—

"Mr. John Jones takes oath.

You were president of that meeting which took place at Bala (on such a date)?—Yes.

Were there many people at that meeting?—Yes; though it was only announced the evening before.

What do you think of the damage that will be caused to the property of Mr. P——?—I think that when the line has been opened a month or so, he will think no more about it.

The counsel for the opponents here interposed with the following questions:—

How many of the inhabitants of the *populous* town of Bala may have been at that meeting?—The town of Bala is very populous; there are 1,500 inhabitants.

How many people do you think there were at this *important* meeting?—Most of the tradesmen, I believe.

Would that make 25 persons in all?—Yes, certainly; more than 50.

That is to say, that these 1,500 inhabitants are reduced to 50?—That is not what I meant to say.

This was quite a philanthropic meeting?—Yes.

Do you not know that several members of the P—— family like to drive four-in-hand?—Yes; and Mrs. P—— does so herself with infinite grace.

Have you personally any experience of that amusement?—No.

I think you would not much like to promenade in a carriage-and-four gracefully driven by a lady, on the banks of a river, and with a railway close to you?—It is 150 ft. off.

The President.—Are we to understand that Mrs. P—— drives in this way every day?—Yes.

Is it the principal amusement of Mrs. P——?—It is the principal amusement of Mrs. P——.

I suppose if that amusement were to become impossible the house would no longer please her?—I believe not.

The President.—Is it really true that Mr. P——'s principal amusement is driving four-in-hand?—Mr. P——, certainly not; it is Mrs. P—— who drives.

Am I to understand you then to tell the learned counsel that if Mrs. P—— could no longer drive four-in-hand she would quit the house?—No; but if the house were deprived of its principal charm Mr. P—— would not inhabit it any longer.

Mrs. P—— is an admirable whip?—Yes.

Eventually, it is proposed that the railway shall not approach nearer the house than a stated distance; that the station-house shall be "picturesque," and the plans to be submitted to the approval of Mr. P—— and his architect; that trees of a certain size shall be planted between the river and the railway; that Mr. P—— and his successors shall have power to stop all trains at the station; that there shall be no siding for shunting wagons; and that the company should pay a considerable sum towards improving the approach to the house. This is agreed to for the time; but the whole conditions are re-contested before the Committee of the House of Lords:—

"The counsel of Mr. P—— make efforts to obtain the insertion *with aggravation* of the clauses previously agreed to in favour of their client, and to obtain new advantages; the opposite side dispute the ground foot by foot, or word by word. What was a picturesque station? The architect of Mr. P—— might be unreasonable; he might demand a monument; who was to settle the question? and then the trees? Mr. P—— might demand a species of tree worth 10*l.* or 12*l.* a piece; how were they to limit his requirements? Then as to the stoppage of trains, the company could not be expected to stop the express at the will of Mr. P——. Long discussion. It is finally ruled in favour of Mr. P——.

The counsel of Mr. P—— demands that no live stock should be landed at the station, and proposes a very restrictive clause to that effect. The President observes that on these terms the station-master could not keep a hen. Mr. P—— is willing to concede the hen to the station-master.

Mr. P—— desires that there should be no refreshment buffet at the station. This is too strong. The committee consents to interdict the sale of wine or beer, but not that of sandwiches!"

It may be interesting also to learn that the *vexata quæstio* as to the "picturesque" station-house was settled by a requirement to "satisfy *reasonably*, as to style, the architect of the said Mr. P—— or other proprietors of R——; all dissension on this point to be ruled by an architect who shall be named, on the demand of the parties, by the President of the Institute of British Architects."

This seems to have been the French commissioner's specimen case for his report, and a very pretty specimen it is to go forth to a foreign Government of our way of doing business in these matters. But what strikes us, and will probably strike those who may read it in France, is the spirit of petty selfishness displayed, of which we know this is no solitary or unusual type. How many Mr. P.s of R—— are there in the country who are ready to dispute by every means—to throw every possible legal difficulty in the way of a new line which may be an advantage to hundreds or thousands of people, but which appears likely to affect their enjoyment of some trivial pet pursuit or pastime? All considerations of the general good,—of social good feeling,—are postponed to the desire to oppose almost for the sake of opposition; and if the line is proved to be for the public good, and must be carried out, then the object seems to be to insure that it shall be made the opportunity of all the convenience and profit that can be got out of it for the one opposer, at the cost of whatever loss of convenience to the general public; not to speak of the waste of time and money in carrying on these petty and ridiculous contests. The objection of the Duke of Cleveland to the Stockton and Darlington Railway, before alluded to, was pardonable in comparison, for no one could know then what a power the railroad was to become. But, in the present day, the style of proceeding which seems to have caused so much edification to our French visitor is simply pitiable.

The advantages and disadvantages of the system on which the concessions for new lines are made in England, are shortly and clearly summed up by M. de Franqueville. Of the disadvantages, he holds it as an important one that the Government has no standing-ground for influencing the line which a railway shall take, so as to induce a company to serve a district much in want of accommodation, but which may not offer a prospect of a good remuneration at the outset. "The public authorities," he observes, "never take the initiative. They wait till a company asks for a concession, they consider it from a special point of view, but they have scarcely any power beyond that of granting or refusing." The standing order which requires that the route shall be definitely marked out and every proprietor affected by it duly advertised, renders it impossible to change this route except by the tardy expedient of adjourning the consideration of the Bill to another session, when it will be accepted "with modifications." But then the new committee, charged to examine the project, may have a different opinion; so that in fact the companies are almost absolute masters in regard to the question of route.

"A second inconvenience, and it is one against which the loudest complaints are raised, is this:—The members of the committees are not really competent to judge soundly on their questions. Surrounded by clever counsel, confused frequently by a crowd of witnesses, not one of whom is disinterested in the matter, wanting the technical knowledge which is indispensable, they can readily be deceived, and, in fact, often deceive themselves.

Thirdly.—Chance plays a great part in these kind of questions, for the committees have no fixed system of jurisprudence; and a project which might be adopted by the committee sitting in one room, would have been rejected by that sitting in the next room. . . . . Even in the same chamber the decisions are contradictory.

Fourthly.—The influence of large proprietors often imposes excessive charges on the companies. We have seen in the case of the Bala and Festiniog Railway, cited above, what regard the Parliamentary Committees pay to private interests.

Fifthly.—The Parliamentary costs are enormous, and occasion to the applicants most exaggerated expenditure. . . . . There are particular examples almost incredible. . . . . When the project for the London and Brighton Railway was brought forward, for instance, four rival companies presented themselves, who expended, in the space of a year, over 101,000*l.* in Parliamentary expenses. They were represented before Parliament by twenty ordinary barristers, six Queen's Counsel, twenty solicitors, a whole brigade of Parliamentary agents, experts, engineers, &c., *all having for sole object to combat and contradict one another.*"

These notable drawbacks are, however, in M. de Franqueville's opinion, counterbalanced by some considerable advantages; and the clauses on which he expresses his conclusions are sufficiently interesting and to the point, as independent evidence, to be quoted nearly entire. He esteems it a great point that the Legislature should alone settle the question of so important a concession as that for a line of railway:—

"If the members of Parliament have not much technical experience, they have a great knowledge of the

country and of its wants. Placed in an elevated sphere, where they are quite above all private interests" (we fear this is a little *couleur de rose*), "the Lords and members of the House of Commons show such impartiality, that their good faith has never been attacked or suspected. During the last session, I came out one day from a Parliamentary committee with a director of a great railway company. A Bill, to which he attached great importance, had just been thrown out; I expected to see him irritated, at a moment when it is permissible to abuse one's judges a little. 'I am dissatified,' he said, 'at the result of this affair, but not with the committee. I believe they deceive themselves, but I am absolutely sure that it is in complete good faith and honesty, and I have nothing to say.'

I have questioned on this point the general directors of the principal companies, and they have all declared that the Parliamentary tribunal was, in spite of its defects, the best and most just that could be found.

But the principal and most striking characteristic, to me, of this system of legislation, is the aggregation of good guarantees which it offers for the rights and interests of all. When I compare this large publicity, the numerous means of opposition which the *standing orders* afford, with our Parliamentary inquiries, I am forced to place the English system far above our own.

And at a later stage, in the examination of the Bill, the jealous and scrupulous respects to all rights, the guarantees assured to every proprietor, the facilities accorded to all those, far or near, who have an interest in the question, may seem exaggerated; but is not this excess, if excess it be, preferable to the rough-and-ready way in which our engineers satisfy occasionally their passion for a direct route, without regard to private interests, often of a nature well worthy of respect?"

In short, the conclusion is the old one in regard to English justice: it is very just, but attains its just ends by very cumbrous and expensive machinery. Let us hope we may before long see an amendment in the drawbacks which our critic from the other side of the Channel has pointed out, without losing any of the high character for impartiality and good intention which have excited his frank admiration.

Giving a passing glance at the chapter on the effects of competition (vol. ii. of the Report), we may note that the author arrives, after much quotation of Parliamentary examinations, at the conclusion that competition is by no means in the main an advantage to the public: that if two companies run rival roads between the same main points, they may, indeed, bid against each other with the effect of lowering the rates for the full journey, but that they will take it out of the pockets of the dwellers in the intermediate districts bordering on each line, by raising the fares for the short journeys: that if two companies begin by under-bidding each other in competition they usually end by joining, openly or secretly, to raise the fares again and recoup the loss; and that when a place is served by two lines where one would do, neither of the two is so well worked and appointed as a single one would be.

The only other point in regard to which we can notice the French Commissioner's conclusions, is the great question of the possible purchase of the railways by the State. On this head he quotes in full the *Times'* article of January 26th, 1872, which, it may be remembered by those interested, was, in the main, unfavourable to the idea. M. de Franqueville is disposed to the same view, on political and economical grounds; and, even apart from these, he is of opinion that it would be a serious difficulty to leave the duty of constructing new lines in the hands of the State. "In such a case, one of two results must happen: either the State will avoid making new lines, in order not to injure the traffic of those which exist, or it will make new ones, and diminish its revenues in so doing." In such a case it is obvious that the cost of any new line would fall upon the general tax-paying community, instead of being borne, as it is now, by those who are directly interested in promoting it. In fine, M. de Franqueville cannot but conclude that public opinion on the subject is still in a very uncertain condition. In view of this state of things, his closing paragraph on the subject is well worth the attention of all our leading companies:—

"What we may be permitted to say is, that the great companies have their lot in their own hands. If they decide, after having completed their work of fusion, and definitely constituted their system of roads, to give to the public the satisfaction which it demands, it is by far the most probable that the idea of purchase by the State will gradually be allowed to drop. But if they continue, on the contrary, to excite just complaints, and demonstrate the danger of a monopoly without curb or control, public opinion will pronounce definitely against them, and they will follow, with very little delay, the fate of the Telegraph Companies."

Royal Architectural Museum.—A lecture will be delivered here on this Saturday, March 13, "On the Use of Gold in Ancient Architectural Enrichment and its Influence on Conventional Forms," by Mr. Skidmore. On Saturday, March 20, "On the Carving of Natural Foliage," by Mr. William Brindley.

AN OLD LESSON-BOOK REVIVED.

THE treatise by the late Mr. Wightwick, which, under the title of "Hints to Young Architects," formed one of the original volumes of Weale's useful series, has been republished, with additional chapters on "Principles of Construction," "Sanitary Construction," and "Design," supplied by Mr. G. Huskisson Guillaume, who has also supplemented the original text of the other portions with comments enclosed in brackets, and intended to bring up the book to the level of present principles and practice.* These additions extend the little treatise to nearly twice its former size, and the work of remodelling appears to have been well done.

The claims of Wightwick as an authority on the subject of architectural education and practice are probably scarcely known or recognised by the rising generation of architects, who have had so many new burning and shining lights placed before them; yet his sagacity as a judge of the course of modern architecture seems likely to receive a new confirmation in the evident progress towards the revival of classicism which he desired and worked for during the early days of the Gothic revival. Those who scout him as old-fashioned may be surprised to find how much of what he argued for, more than a quarter of a century ago, only anticipates, in principle if not in all its detail, the best teaching of the present day. The value of studying a design in perspective as well as in elevation, and the desirability of giving equal consideration to all the faces of a building, and not to the front only, were fully felt by one who was misguided enough, in the estimation of some, to devote a whole year of his student period to sketching Classic detail† in Italy. The blending of the practical with the artistic in his professional character is well illustrated by the useful and sensible hints to the young architect on planning, on the preparation of specifications and of building contracts (of both of which a model form is given, the former very fully and detailed), and in his observations on the dealing of the architect with his client. This latter subject has been less considered than some others in educational writings and addresses. One very sage piece of advice to the young architect is to consider and be prepared with the method of dealing with all possible cases, as far as he can, beforehand. "Let him not postpone reflection till the day of employment arrive. Everybody is always in a hurry to have everything done. His patron will take six months to think of what he desires to have accomplished in as many hours. When the commission arrives, immediate work will be required, not preparatory study; and if there be not a ready foresight to pierce through all contingencies, the progressive and ultimate perplexity will be proportionally bewildering. To anticipate possible objections is greater policy in an architect than to give immediate answer to requirement."

Under the section "Views of Employer," it is suggested that the architect usually errs in giving his client credit for understanding his drawings; while the client generally errs in thinking his architect omniscient, not only in the general laws of design, but also in the particular fancies of individual patronage. "Now, the correction of the employer is out of the question; he must be taken as he is found. What the employer *says* is not invariably what he *means*" (often, indeed, it is something utterly different); "and he does not always think that he is bound to say *much* to a professor, who is supposed to know *everything*. He gives vague ideas of form and size, and arrangement, which the architect often too hastily receives as positive instruction, and the result proving wrong, he is abused for not having acted in correction instead of obedience. Be cautious, then, of receiving as law the dimensions which are given for the required size of rooms. Show your employer an existing room of the form and size he describes, and learn that he means such a room," &c. Another prudent piece of counsel is that in dealing with "Committees," or "Boards" (those sources of incalculable annoyance to the profession), the architect do not hastily make any alteration or addition at the word of a member of the said board, however influential, without obtaining from him such written decree as may fix the responsibility upon the right shoulders: otherwise, in the end, it will probably come on those of the too-complaisant architect.

The model specification given at the close of the book would make the hair of some of our present haphazard practitioners stand on end, and would hardly meet the views of the gentleman who, in a discourse on the subject published not long since, thought that a specification could be adequately done on four sides of notepaper. In the old specifications there was possibly a tendency to over-detailing, and little minutiæ of joinery, for instance, were included, which were mere necessities of ordinary workmanship, and presupposed to be done by any workman who knew his trade at all. But there is no doubt that there has been a tendency of late years to underrate the value of precise specification, and that this want of system has been the cause of some very unfortunate instances of injustice and litigation. An approved plan with some architects seems to be to employ some one contractor who has got to know their way of working, and to put before him some rough sketches and a few memoranda, and ask him for what he can carry out the building so shown and described. A contractor who has acquired a knowledge of this particular architect's work, and a general confidence in him, is not unlikely to prefer this way of doing the thing, as it enables him to elude special restrictions, and of course he puts on a large margin in estimating on such a basis. Thus the client in the end pays for saving the architect the trouble of making a specification. This is not businesslike, and not what the employer has a right to expect from his architect; and the builder is likely to rue the system some day, when he finds himself doomed to a considerable loss, either from his own miscalculation or from arbitrary alterations of the architect or client, which the contractor has no *locus standi* for disputing. "It is well," says the author, "to insert a clause in the contract to the effect that the contractor admits the drawings and specification to be entirely sufficient, but it will be worse than useless unless the architect, in the event of a dispute, is able to show and prove that they really *are* so. A builder may justly conceive that what *he* understands is what *you* mean; and he therefore unhesitatingly signs the admission you require. Be careful, then, that you do not wrong him by such vague clauses as may in truth be little more than concealments of your own practical deficiencies." In regard to the recently vexed question of quantities, however, the author is equally explicit in the view which will have to be accepted as the correct one:—"It is *his* business" (*i.e.*, the builder's) "to see that the quantities are sufficient; *yours*, that the prices are not too high."

We may notice one or two points in which the present editor has thought it necessary to modify the views of the original author, as indicative of changes in the profession since the first publication. In regard to the minor point of clearness of writing on drawings, Mr. Wightwick made some remarks which Mr. Guillaume supplements by complaints of the illegible styles often employed now, giving specimens which in fact are much more legible than many we have seen and protested against. An elaboration of fancy lettering is a waste of time; but, on the other hand, we cannot admire the opposite extreme of complete carelessness in scrawling the writing on the plans; neatness and clearness are valuable qualities in little things, and worth taking reasonable trouble for. The long additional paragraphs on "Education" are very redolent of the teaching of the present day, and tend to exalt principle and philosophy a little more than is necessary or desirable. As a rule, people who are always philosophising on the best and most logical principles of doing everything render themselves so hard to please that they end in doing nothing. Still, there is important truth in the doctrine which substitutes *principles*, by which all cases are to be tried, for a series of rules or receipts for separate special cases: and the recommendation to the student "to study important modern buildings even more sedulously than ancient shrines" is by no means superfluous, if we look at the practical side of architecture at all events; and that is what the majority of clients judge their architects by.

The new chapters contributed will be very useful to a student, especially that on principles of construction, which gives the leading principles and formulæ for determining the statics and dynamics of construction shortly and simply, and with sufficient illustration by diagrams. The writer truly remarks that "a neglect of iron among architects has given engineers a great

* London: Lockwood & Co.

† Mr. Wightwick, it may not be generally known, presented to the library of the Institute the book of pen-sketches made during this tour, entitling it his "Liber Veritatis."

start in the art of construction." The chapter on "Sanitary Construction" ought to be a most suggestive and valuable one to the young architect, putting before him the principal points in regard to which the arrangements hitherto most habitual have failed, and directing his attention to the new remedies that have been suggested and are on trial. The remarks on principles of design are well written and perfectly true, and, we may say, repeat what has been often said in our columns. We find here also, however, the writer a little too much in the region of æsthetics, which, for an art which stands on so practical a basis as ours, is rather cloud-land after all; and quotations from Professor Bain and Herbert Spencer can scarcely be directly connected with architecture, and savour some little of pedantry. Otherwise Mr. Guillaume has well performed his task, and added usefulness to a useful little book, the earlier portion of which is not only interesting and valuable in itself, but may serve also to convince the rising generation that true principles, common sense, and a dislike to shams, are not the sole property of any one particular school.

THE "QUEEN ANNE" AND ITS RELATION TO THE GOTHIC REVIVAL.

ARCHITECTURAL ASSOCIATION.

An ordinary general meeting was held last Friday evening, the 5th instant, under the presidency of Mr. Birch, when Messrs. Riley, Neale, and Butterfield were elected members. A vote of thanks was passed to Mr. Knowles for his kindness in allowing the members of the Association to visit Kensington House (Baron Grant's).

Attention was then called to some very interesting drawings, which were exhibited on the walls, executed by Mr. F. Law, an architect of Northampton, all the sketches being, with one exception, of churches.

Mr. Phené Spiers called the attention of the members to a class about to be established with a view to the forthcoming architectural examination at the Institute, and stated that, should a sufficient number join it, it would be conducted, at a nominal fee, by one of those gentlemen who had successfully passed the examination.

The Secretary (Mr. S. Flint-Clarkson) announced that the next visit would probably be paid to-morrow (Saturday) to the new printing-works of Messrs. Cassell, in Fetter-lane; but as there was doubt about the place fixed on, it would, as usual, be advertised in the *Builder*. With regard to the passes, which the members were obliged to show on the occasion of those visits, it was desirable that they should provide themselves with them, as it would be the invariable rule that they should be exhibited.

The President stated that that day fortnight a paper would be read by Mr. John Sparkes on "The Development of Stoneware and other Fictile Materials for Architectural Purposes." The paper would be a most interesting one, and he understood that the author intended bringing with him a large collection of models and specimens.

Mr. Lacy W. Ridge then read a paper, entitled "Queen Anne, and its relation to the Gothic Revival." He commenced by saying, that in Leadenhall-street there was an extraordinary building, which must have attracted the attention of all of them. It was piquant, clever, and extremely popular with painters, and altogether of a class to make them understand the position of the individual to whom its name referred; and in centuries to come, it would be shown to Lord Macaulay's "New Zealander" as a specimen of the class it had represented. There was another building, not less extraordinary, at Charing-cross, opposite Craig's-court, quiet, refined, and beautiful; and their surprise at the building was not lessened or their curiosity diminished when they found that it emanated from some one connected with Spring-gardens. On the Thames Embankment, too, they had another building, with a very tall roof in front, with wonderful dormers, which was built by a Gothic man, who was well known. All over London, also, they saw numerous school buildings, which were distinguishable by red fixings and curved gables, and he did not know what to call them, for they marked a distinct feature in architecture. All over the country the same thing occurred, and to all inquiries the only answer they got was "Queen Anne." When the Conference met last year, the one artistic subject which was discussed was Queen Anne. These facts being so prominently brought forward, it appeared to him that Queen Anne demanded some attention, and he began to think on the subject, the result being his present paper as to how the matter affected the Gothic revival. He still believed that there was something in principles, and that they formed the foundation of work. He had now, from Mr. Stevenson's paper, exactly learnt what Queen Anne was,—that it was a mere phantom of the thing expressed, and that free Classic was very much the subject they had to discuss. He had learnt, moreover, that this movement was in no way opposed to the Gothic revival, but patronised Gothic principles, commended its pet buildings for freedom, picturesqueness, and Gothic qualities. They therefore felt certain that there was no battle. No one pretended for a moment to dispute the position of those who still held on to the Gothic revival; but though there was no direct opposition of opinion, still there was a very considerable question with regard to style, and they did not know how far this might eventually tend; but, then, if the good was the remains of Gothic, why take this good with the bad Classic mixtures? Surely the Gothic spirit could be got in Gothic. Why rush to mixtures allowed to be debased? The question was of importance whether these buildings were chiefly remarkable because of the Gothic which remained in them? whether it was worth their while to associate in their study of them the Classic elements which they also contained? It was, therefore, the question of the goodness or the badness of the Classic element contained in these mongrel buildings; so that the question they had before them was that of style. Style, he imagined, included the mode of building in vogue within any limited time or limited space; that it included all the buildings of time and space, unless it could be shown that they differed materially from one another in the principles on which they were designed. To furnish premises, therefore, he must define a little. A style of architecture was a manner of building in vogue at any particular place or time, and included all works in which they found the same principles and the same mode of workmanship followed. For purposes of study it was limited by the amount of knowledge which had come down to them. With regard to the Greek, as far as they knew, it was an architecture of temples. The English knew nothing, or little, which was next to nothing, of the architecture of Greek houses: there might be a few monuments, but they did not throw much light upon the subject. They were mainly directed to the Temples,—their colonnades and their exquisite sculpture,—for their style. With regard to the Romans, they might completely distinguish the two styles. There was the Temple style that they had adopted from the Greeks, and also the colonnade architecture; and there were the large baths and buildings which they erected in stone, with arched construction, and into the face of which they applied the colonnade, which they took from their Temples. They might pass over Romanesque developments, which, but that they were now asked to pay devotion to a hybrid, they might safely do, for no one proposed that these should be revived. By Gothic he understood the style of northern Europe in the Middle Ages, from the twelfth to the fifteenth century. It included cathedrals, churches, chapels, castles, châteaux, manor houses, barns, dovecots, farm-buildings, kitchens, hospitals, town gates, walls and ramparts, market-crosses, halls of justice, town-halls, commercial buildings, town houses built around court-yards, and last, but not the least important, houses in streets with narrow frontages, many stories in height, frequently with open shops on the ground-floor. He had seen specimens of these different classes of buildings; they were illustrated in numerous works; and he thought they would all allow that the same style of architecture pervaded, and the same details occurred in, every one of them. Speaking generally, the forms, the details, and the principles of construction were the same; and therefore it was with surprise that he could hardly express, he heard, as a basis of an argument, that at the end of the nineteenth century, Gothic architecture was an Ecclesiastical style. This was something so extraordinary that he felt it absolutely necessary to call attention to what appeared to him a premise so extremely incorrect, because he fancied the deductions from it might be incorrect too. It was quite true that Gothic architecture included the use of pointed arches, and that the materials supplied by the north of Europe were absolutely necessary for an arched construction; and that if they were to have an arched construction, pointed arches were also absolutely necessary, because, without them, there was no variety of proportion with regard to the height of the arched part below it. It was necessary that more variety should be given of the proportion between the height of the arch and the width of the opening. If Gothic work was arched, there were many specimens of lintels, and lintel construction was the most characteristic of timber-work. It was incorrect, therefore, to say that Gothic was an arched style. If vaulting was constantly used abroad, timber roofs were common in England. Cathedrals might be rich and lofty, but country churches were simplicity itself. Small buildings were frequently picturesque, while cathedrals were grand and rich, and castles grand and plain. Country houses extended over a large portion of ground, while street houses were piled story upon story. Let them not be told, he said, that Gothic was picturesque, piquant, and such-like, for, above all, the work accorded with the material and the use of the building. After the Gothic period they found that two distinct principles were at work on the designs—(*a*) the useful tradition, and (*b*) the architectural element. In the case of churches, after the Reformation, there came a desire in England that there should be practically an auditorium, and it was furnished in Classic garb. Abroad the state of things remained precisely the same. When this useful tradition clashed with architecture, it had been invariably the case that the architecture had to give way. They found that the Gothic churches had to be fitted up with galleries, and fitted up precisely the same as any church would have been by Sir Christopher Wren; and in the alternative designs of St. Paul's Cathedral, where both were of a Classic character. Now, what was true of church work was equally true of domestic work. They all knew that the first Gothic revival had been wonderfully successful in churches,—that was to say, it commanded the field, and even the highest ministers did not dispute the ecclesiastical field for their new style. That was not owing so much to the ancient character of the thing, as the Gothic revival seemed to work in with a certain religious revival, and would have altered the character of the churches. The movement which had promoted the congregation into worshippers, and lowered the preacher to something like an ordinary human being, made the fortune of modern Ecclesiastical Gothic. Whenever this movement came into contact with the Classic church, precisely the same thing happened as had happened to the Gothic churches after the Reformation. The tradition always ruled,—old churches galleried, so much the worse for architecture; and, in respect to this, he would instance St. George's, Bloomsbury, and churches of a similar description, in which the galleries were the essential part of the design. There had, of course, been an immense advance in the arrangements and comforts of domestic work since the period of Gothic architecture ceased to be practised; but the transition which had taken place since the sixteenth century had been nothing as compared with that which took place in the Middle Ages. Practically the science of planning appeared to have been developing, and one looked with the greatest possible interest at the plans of houses published from time to time in the professional journals, for they knew that they had much to learn in the science of planning. While this useful tradition was in the ascendant, and plainly influenced the style of architecture, they had a distinct school of building, which they had hitherto called Renaissance, Elizabethan, or the style of Francis I., but which they were invited now to range under Free Classic and Queen Anne. When the tradition was tamed down, it was not allowed to show itself; and when it had been drilled down to architectural rules, then they might consider the style became Classic, Roman and Italian. There were two developments of buildings which went on after the introduction of the Classic element, one of these being the cottage style of Mr. Norman Shaw. There was an immense number of buildings, partly timber, almost invariably possessing timber work of considerable merit in roofs, which were extremely picturesque. These buildings were of such a character that one could seldom fix a date to them. As a rule, they were erected long after the Middle Ages, and there was no Gothic detail to be found connected with them; and, on the other hand, there was Classic detail. They were genuine, beautiful buildings, which

had been used very largely by the gentleman who erected the building in Leadenhall-street, and he was doing a wonderfully fine work. Perhaps it was not for Mr. Ridge to regret that this gentleman should have gone to other fields; but the lecturer did regret that one who was working with such extreme cleverness, and was producing such effects by the development of this style, should not have kept to it. There was another style, with hardly more architectural feature in truth, that was the real Queen Anne, as displayed in the red brick sash window of a high-roofed, perfectly plain house containing a large number of windows, without the slightest effort to produce the simple design; and this he believed for a long time was what they were intended to study under the title of Queen Anne. It caused in his mind no anxiety whatever, and he thought it was a study that would do them all good. The Classic revival having established its sway, it passed to works through the Greek period, and eventually had to contend against the Gothic revival. He thought it extremely important they should understand that the Gothic revival was far less a revival of forms than a revival of principles. From the time when Pugin wrote, it ceased to be a question of archæology. It became a study of a style of architecture, because they saw the way in which men's minds were directed, and because it established true principles. The question they had to solve was, How far should they allow themselves to be influenced by those picturesque buildings of the Renaissance and Free Classic style, in which much of the Gothic element remained, but with which was associated a large proportion of Classic detail? Was the Classic element in these buildings sufficiently good to make them adopted rather than Gothic itself as the basis upon which they were to design, and which they were to take as the date of their departure? In any style of architecture, whenever they saw a feature that they wished to incorporate, it was open to them to translate it into a style in which they were working; and, as an instance of this, he would mention Sir Christopher Wren's towers and spires of London. Sir Christopher Wren successfully translated the Gothic spires into the steeples of St. Mary-le-Bow and St. Bride's, Fleet-street. There was no doubt but that they were Classic, and that their detail was good. The general effect was clever, and Mr. Ridge would be disinclined to change them for any ordinary Gothic spire, and was of opinion that they would greatly lose by the change. Bay windows were Gothic, but had been translated with considerable success into Classic work, so that he maintained that they could translate in future into their own style. The French were trying to introduce a Greek spirit into their architecture, which was a legitimate and proper ambition, and likely to promote very much indeed the welfare of architectural design in France. He wished to enter a protest against the notion that all styles were equal: it was an open question whether they should use one style and choose another, and it constantly happened that those who would be masters of all styles were ultimately masters of none. Now, on their merits why introduce Classic details? When Classic architecture had claimed its position, and held its sway, he thought he was not incorrect in saying that the receipt to design anything was to take a colonnade and apply it to the face of the building. The great idea of the designers,—and they would have themselves confessed this at the period of the Georges,—was to get in an order or column, and finish the whole up by a balustrade. The windows, doors, and all the openings had to fall into their places between the columns; but in the Gothic the openings would be made according to the features of the design. He was not prepared to support the introduction, even in the mild form they saw it, of the London School Board schools, nor their brick pilasters, and their brick dressings, which formed so striking a feature in these buildings. With regard to the question of the interiors of buildings, they were met by a new class of features. There were those who maintained that Gothic was very well for the outside, but that Queen Anne was an immense blessing as regarded the interior. They had heard a great deal about the immense importance of joinery, and this reached a climax when they were told that "the arts of panelling and accurate joinery were unknown in Gothic times." Since words to some effect of this sort reached him, as being uttered at the Conference, he had wondered what they meant. It was the most extraordinary assertion that he had ever heard. He had certainly seen linen panels, and had been taught that they were made of the Gothic period. The architectural books, too, were full of architectural joinery, and he had always heard that early joinery was associated with Gothic. They were quite entitled to assume, as part of their Gothic stock-in-trade, that panelling and joinery generally entered largely. At the same time, he was prepared to allow that their interiors were not perhaps as thoroughly Gothicised as they might be; and he wanted them to be more genuine. The greatest evil, and a considerable one, too, was the lath and plaster. He did not say *lath*, but lath and plaster, for they were invariably out of condition. Ceilings were always being cracked; the lath and plaster decayed, and were always a nuisance, whether used on a ceiling or on a wall. They could not afford to substitute boards for them, and if any one could find a substitute for lath and plaster, he would do a great service to the art of architecture. Next they came to the cornice; but they were pretty much agreed as to the sort of mouldings required for a cornice. With respect to the chimney openings, he thought there was much more to be said for the Gothic treatment than for the Classic one. They wanted small places in which to burn coal: the arch was what one wanted, with splayed sides, so as to reflect the heat; and from the Classic school in this matter he thought that they had nothing to learn. Last of all, they had the great window question. Double hung sashes he was extremely fond of; and he believed that they were very comfortable and useful. When they had once ascertained that it was not necessary that the sash should be a double-square of about 3 ft. high, they had gone a long way towards solving the difficulty. He believed, therefore, that they might gain by the process of translation all that was desirable, both from the style of Queen Anne, from ordinary modern work, and from every other source whatever, without reviving the mongrel architecture to which their attention had been called, and then expect, in the architectural sense, the universally well-received, oft-repeated, historical assertion that "Queen Anne is dead."

Mr. Boyes thought that the paper just read was a very complete reply to a great deal that they had heard on the subject a short time ago by Mr. Stevenson. The great point that should be remembered in the discussion was that Mr. Stevenson had distinctly admitted that the style he advocated was not to supersede Gothic architecture in churches. Mr. Boyes also thought he (Mr. Stevenson) said that the style would not supersede other styles in large public buildings. It would have to develop a great deal first before it could be fitted to large public buildings and churches; and with regard to its application in domestic architecture, there was great room for improvement. He did not think that they had been convinced that the domestic architecture of the Middle Ages was suitable for the domestic architecture of the present day, and the question of its adoption was now greatly discussed. He thought that Mr. Ridge, in his suggestions as to the transition of style, had given them a very good idea regarding how the new style was arrived at. It was an exploded theory, Mr. Boyes thought, that they were to have a new style of architecture. As soon as the Gothic revival commenced to be understood, it was treated as a free style; but there was no freedom about it, he thought, for those who practised it were tied down to rules, and all freedom of treatment was denied. There was, however, hope of the revival,—"Queen Anne" being a most unfortunate name for it,—and it must stand on its own merits, and not on the reproduction of any past style. He quite believed that the principles of Gothic architecture, as defined by Pugin, were the proper articles of criticism; and he looked forward in the future to a free Gothic style; but they must get rid of that sort of criticism which was simply the criticism of styles purely by comparing them with the past.

Mr. Payne believed in the coming of a new style of architecture, and he watched with great satisfaction the birth and death of various styles in the past ages. The architecture of Queen Anne was a revival of a revival, and it was only within the last few years any one knew it by that name, for previously it was generally known as "Debased Classic." The hankering after a new style was a step in the right direction, because it showed that they must have variety in all matters of taste. It was absolutely impossible, really for any length of time to revive every style of architecture of different ages, because they were apt to get tired of it. It had been said at the Royal Institute of British Architects, that "it is absolutely preposterous to have a new style," which statement he questioned, being of opinion that every age must have a new style.

Mr. Stevenson considered that the matter in dispute should not be judged by his advocacy of it, and thought that between himself and Mr. Ridge no great difference of opinion existed. He believed that it would be very much better if buildings were not debased by classic mouldings, but thought that the Gothic character should be kept up. He considered that the styles were not Gothic in principle, but were to be treated as modified Gothic. He maintained that Gothic was essentially, in its origin, in its growth, and in every moulding about it, an ecclesiastical style, a style which grew in the construction of churches and great halls, and which, only secondarily and not satisfactorily, was applied to buildings which were divided into a number of floors. The style of pointed vaulting was the beginning of the old principle of Gothic, and from that every feature arose; so that pointed vaulting was a thing wholly unsuitable in houses. It was the pointed vaulting that brought the pointed window, which was clearly traced out by M. Viollet-le-Duc in his Dictionary of Architecture, in which he treated of the development of architecture. He was perfectly prepared to say that Gothic is and was ecclesiastical. In England the pointed arch got superseded in Gothic houses, and, in fact, from the earliest period it was a mere ornamental feature; and Gothic, when it lost the pointed arch, lost its characteristic feature. He thought that it ceased to be Gothic. It would really take a treatise upon the subject to attempt to trace the rise, development, and fall of Gothic architecture; but he held that, from the pointed arch and vaulting sprung all the essential features of Gothic. With regard to the principle of truth in architecture, Gothic depended upon tradition and upon what had been handed down to them; and it was refreshing to find that there seemed some fervent hope still for a new style; but the difficulty was to be both new and true at the same time. If there was to be a new style, of one thing he was certain, that it would unconsciously be developed.

Mr. Phené Spiers maintained that the style of Queen Anne was Ecclesiastical and domestic, and in fact suitable to the age.

Mr. Hebb thought that the influence of Thackeray's works had a good deal to do with the introduction of Queen Anne, and with regard to this, he instanced the "Newcomes," and other works, which all pointed to that particular style; and undoubtedly this revival, whether for good or for evil, was due to this author; and concerned in this movement were some of the most eminent men, which showed that it was not destined to soon die; and in support of this he quoted the following extract from a paper read before the St. Albans Architectural and Archæological Society, in the autumn of 1867, by the Rev. J. Lewis Petit:—"The Domestic style of architecture, which prevailed in Queen Anne's time, at least such specimens as do not exhibit the classical orders too prominently, has always appeared to me to harmonise extremely well with Gothic buildings, and it is a style which might be used in the present day without giving the idea that we are adopting the manners of an age different from our own; for it is a style which, I may say without any modification whatever, is calculated to meet all the requirements of the day, whether we want size or number of rooms, fine proportions, good ventilation and lighting, convenience of passages and staircases, or a stately and dignified aspect. All these may be obtained in the Queen Anne style, with as little waste of material or unnecessary expense, and with as much attention to durability as any style that can be named."

Mr. Hugh H. Stannus then moved that the further discussion of the subject be adjourned to the last meeting of the session, which was agreed to, and, at the wish of the President, Mr. Stannus promised to prepare a paper on the subject.

Mr. Ridge, in response to a vote of thanks which was accorded him, said that Mr. Stevenson had given in full to the meeting his view with regard to the question of the Queen Anne revival, but he could only say that he materially differed from him on the subject. Mr. Boyes had complained that modern Gothic was not free, but Mr. Ridge thought that it was only too free.

THE VESTRIES AND THE ARTISANS' DWELLINGS BILL.

WE last week alluded to the adverse feeling which some of the metropolitan vestries were manifesting towards the Artisans' Dwellings Bill, pointing out more particularly the opposition threatened to it by the Clerkenwell authorities. At their recent meetings the several Boards have had the subject under discussion, and whilst some of them take exception both to the principles and details of the measure, others are warmly in its favour.

Amongst the latter is the Whitechapel vestry. At their meeting last week the works committee, in a report, expressed approval of the preamble and general principle of the Bill. In a discussion which took place, Mr. Munro thought it would be better described as a Working Class Dwellings Bill. He also observed that the point upon which he felt strongly was the power given to the medical officer, and he thought the local Boards ought to have power to consider the recommendation of their officer before it was forwarded to the Metropolitan Board as the local authority; but the chairman said that it was not in the least likely that any such provision would be introduced, for the measure seemed framed for the purpose of ensuring action independently of the local authorities. He added that the funds for carrying out the measure would be provided out of the metropolitan rates, and Parliament intended that the matter should be under the management of the Metropolitan Board. Mr. Skelton, in moving that the Bill be approved, said he wished to let it be understood that the measure did not mean to provide increased accommodation for the poor at less than the market value. With respect to the Vestry's power over the medical officer, he thought that would not be advisable, as it seemed to him that it was necessary, in order to insure the independent operation of the Act, that the medical officer should be free from any local influence. He was so much impressed with the necessity for the measure, that he should gladly hail the day when it became law, for it would not come a day too soon for Whitechapel. Ultimately the general principle of the Bill was adopted.

At the last meeting of the St. Luke's Vestry, the Sanitary Committee presented a report on the subject, admitting the evils at present existing as recited in the preamble to the Bill, and cordially welcoming any effort to extend the powers already existing for removing those evils; but they viewed with great regret the attempt to make the Metropolitan Board of Works,—who were at present fully occupied with the various duties imposed upon them for the local management of the metropolis,—the local authority to carry out its provisions by the aid of most cumbrous and costly, and at times arbitrary, machinery. The committee were of opinion that if any new powers were to be given they should be conferred on the existing vestries and district Boards, who, in addition to a full and intimate knowledge of the wants of their respective districts, had shown their ability and worthiness by the satisfactory and economical manner in which they had carried out the powers already vested in them. The report was adopted, and the Sanitary Committee were empowered to take what steps they might think necessary to oppose the Bill, and to present a petition to the House of Commons against it in the name of the Vestry.

PROPOSED BATHS AND WASHHOUSES AT NEWINGTON.

LAST week a deputation of inhabitants waited upon the Newington Vestry, and presented a memorial adopted at a public meeting, praying the vestry to take the Baths and Washhouses Act into consideration, with a view to its application in the parish. The memorial stated that the population of the parish of Newington numbered 90,000, of whom two-thirds belonged to the working-classes. The want of proper washing and bathing accommodation was very much felt, and many of the inhabitants were in the habit of resorting to the Bermondsey Baths. The memorial stated that in nearly all cases where baths had been erected in suitable localities, they had been a success, financially speaking; the memorialists, therefore, hoped that the Vestry would decide to erect public baths and washhouses in the parish. The Rev. G. T. Cotham, chairman of the meeting, who presented the memorial, said he could see no reason why baths in Newington should not be successful in a commercial sense. He hoped, however, that the Vestry would not look at the subject solely in a commercial light, for in many of the houses of the parish there were four families residing, and he knew instances where twenty-one persons lived in one small dwelling. How could these wash their clothes properly? and, if washed, where could they be dried? He had often gone into the rooms, the walls of which were plastered with wet clothing, and he did not hesitate to say that many deaths were attributed to this state of things.

The vestry decided to have a special meeting to consider the desirability of adopting the Act, and erecting the baths.

ST. OSWALD'S SCHOOLS, COLLYHURST, MANCHESTER.

THESE schools are on the site adjoining the church, the principal front in Forest-street, and were opened last week.

The schools are two stories in height, and faced externally with white headers, relieved with bands of red stocks, also to the arches and jambs of doors and windows, the whole pointed with putty. All the roofs are open, with framed principals, stained and varnished. The ventilation is simple and effective, and all the rooms have open fireplaces. The ground floor comprises the girls' and infants' schools, each 52 ft. by 22 ft., with one class-room to each, lavatory, also tea-room, fitted with boiler for tea parties, &c. The first floor is approached by a spacious stone staircase, and consists of boys' school, 52 ft. by 44 ft. 6 in., with two class-rooms, library, &c. The schools have accommodation for 775 children, involving an expenditure of about 3,100*l.*, and have been erected by Messrs. Davies & Mawdsley, builders, under the superintendence of the architect, Mr. John Lowe, Manchester.

THE SAND-BLAST AND FINE ART.

So much has an intelligent curiosity of the world of artists found out and recorded of art, and of its mode of production, that it would almost seem impossible to do much more; but the human mind is ever restless, and new, and newer, discoveries and modes of work, are perpetually being made and invented. We are now living in an age when this movement is faster than ever, and when *mechanical* power is being brought to bear on almost everything, nay, even on thought itself. In the antique days in all ways the art-workman was kept well to his *hand*-work, and "machinery" did but little to help him. In the "Stone age" itself there is evidence that even with stone tools he did his work as a decorative artist and workman. Still later in the world's history, the rude savage workman did, and yet does, some not only really artistic work, but real *classic* work, as Owen Jones, some long time since, so well pointed out. And so it went on through many ages, through barbaric ages, till in course of time the great modern idea of the *subdivision* of labour took possession of the trading world; and artistic work with all else came necessarily under its all-powerful influence. This mode of work is now carried to such perfection and state of completeness, that it is hardly possible to see how it could well be carried further. Adam Smith's ideal of perfect pin and needle making, and such-like, is realised, and the object, whatever it may be, is at length completed by the passing through a multitude of hands, all and severally working at their own special detail, hardly knowing, sometimes, what the object they are making is for!

But this is not all; mankind most surely has not yet reached the ultimatum of producing power through the simple process of dividing out the labour among a multitude of hands, even when aided by the most complicated machinery. We can go yet further, for it would seem at last to be possible to put the work absolutely in the power of a machine, and simply leave the machine to do the work wholly and alone, the workman having nought to do but to stand by, and to occasionally look at it, and to take it away when done. Many examples of this might be cited; but there is one, but lately described in these pages—the *sand-blast* process, as it is termed—which remarkably illustrates it; and it may be of some interest to note some few matters concerning it which bear more especially on artistic work, on the mode of producing art-work nowadays, and on the character of the final result. No mechanical process which has as yet been brought to bear on art-production can do this better, or perhaps so well, as this process of the "sand-blast." We would therefore say a few words on it as it affects art-production, and look at it for a few moments artistically.

It will be needless, after what has been already said, to describe the process of the sand-blast, farther than to note that, strange and really wonderful as it seems and really is, it is possible by dint of mere speed to wear away the particles of the hardest substance by the striking it with a soft substance; hard quartz rock, for instance, being readily ground away by soft leaden shot; and the hardest steel file grooved along its whole length by the passing over it a jet of sand driven against it by the force of a powerful steam pressure; and the adamantine hardness of corundum can be bored cleanly through by a blast of sand directed against it. It is obvious that such a process as this is equal to almost any work where the cutting and grinding away of a substance is required to be done. Thus Gothic pierced *tracery* is readily executed by this process, and all that delicate Oriental and Indian pierced marble-work, with its lace-like effect, in marble slabs (as may be seen in the Indian collection in the museum in Downing-street), may be readily, and speedily, and cheaply executed and imitated. At the meeting at the Society of Arts, when the process was described by Mr. W. E. Newton, cleverly executed specimens of this work were exhibited. It is to this phase of the matter, namely, its artistic capability and power, that we would now say a few words, for it illustrates in a striking and remarkable way the *power of mechanism* in art, and how it promises, as it gets to be more and more potent, to take the work out of the hands of the human workman altogether, and to itself do the whole of it. Let us try for a moment to balance the loss and gain—the gain, such as it is—and the loss, no slight one.

In the first place it may be noted, and it is worth some thoughtful consideration, that it would seem to be one of the aims of modern manufacturing art to attain as far as is possible a smooth and even groundwork on which its designs may depict themselves. No *paper* can be made too even and uniform in tint. No wall-surface can be too even in tone, or too monotonous in uniformity of colour. No white-washed ceiling can be too evenly and flatly white. Indeed, so far is this modern proclivity, however acquired, carried, that even when the surface of nature's materials, such as stone, which is never uniform in tint even when fresh quarried, comes to be tinted by age, and weather-markings show themselves; then, does this modern love of uniformity of tinted surface rouse itself, and all is done that can be to bring it to that flatness and evenness of surface, and sameness of colour tint which all manufactured materials everywhere,—for we need not specify further,—are always characterised by. The words cleanness, newness, uniformity of colour, fine surface, and a host of others will readily occur to the reader's mind. It is, as we think of it, somewhat hard to account for this, for it is certain that nature herself *never* shows it. It is in variety and complexity of tinted surfaces that she so rejoices. No single leaf displays on its surface a uniform tint of colour, as though painted with a common brush; the "play" of colour is perpetual. Skies, fields of grass, or brown earth, sand, nay, all that nature does, exemplifies this! And when we come to the work of the artist,—that secondary power by which nature may be said to act and work,—we find, again, that in his (the artist's) work there is always perpetual change and absence of monotonous uniformity. Take any great picture in existence unrestored, and it will be found impossible to find a square inch in it, evenly tinted, and with flat uniformity of colour-surface. We had almost gone further, and said, that to not a few the magnificent "painting" of such men as Michelangelo, Rembrandt, Turner, Reynolds, and others, looks like "smudging." Such is nature's work and the artist's work. Can mechanism do this? Is it a gain, or a loss, to be rid of it; and is the absence of the "tool-mark" on a marble block a gain or a loss? Is the uneven *etching* on a plate of clear glass a defect?

It would be difficult to fix on a substance more essentially the creation of modern times than that of plate-glass. It meets us at every turn, and has perhaps had more influence on the condition of *architecture* than many might be inclined to admit. How different would be the aspect of our leading shop-filled thoroughfares if plate-glass had no existence, and there was nought but the old-fashioned thin "blown-glass,"

in small quarries, to fill the window-frames. Window-frames would then of shere necessity be of no small importance, and would have called for some, and not a little, ingenuity of design and arrangement. Now the window-frame has in plain fact disappeared, and the whole shop-front is one sheet of clear and colourless glass, well-nigh invisible,—the upper house resting apparently on nothing. Is this altogether a gain, we may ask in passing? But more than this. These sheets of flat glass are sometimes the vehicle of not a little design, and drawing; for by means of rendering opaque the surface, and producing what is termed "ground-glass," any pattern, or even *picture*, may be drawn on it. Now here it is that this sand-blast process comes into operation, gradually superseding the older processes. Be it observed here that any forms, as frets and borders, and flower and fruit groups, and even portraits and landscapes, after being etched on the glass, may be intensified and rendered into "pictures" by the scratching with a graver, as in actual etching on a copper-plate, the whole back-ground on which the picture is drawn; and by putting in of local tints where desired, *i.e.*, by rendering portions of the glass plate opaque. By the sand-blast process this is done in a remarkably clear and even way; and the result is a uniform and even ground-glass tint, as smooth and even as the finest and whitest laid paper. Indeed, the fancy for evenness and flatness of tinted surface can go no further, and it must needs satisfy all who see it. But what a heavy price is paid for looking at this matter artistically. There is surely here no evidence of the unsteadiness, and uncertainty, and unevenness of handwork. For, suppose for a moment that the old way of glass etching to be followed, and the background and local tints and shading to be etched or scratched in by hand, something in the same way in which Rembrandt scribbled and scratched in his backgrounds, and air distances, and darknesses; what would come of it, and what would be the difference in the final results? In the one case, smoothness and evenness of tints, and flatness and mechanical accuracy, to say nothing of speed and cheapness. In the other, unevenness and roughness, and, in short, the absence of all the above. The "personal equation," to borrow an expressive phrase from the observatory, would come in. In short, artistic handling, and power of artistic manipulation, so dear to the artist eye! All these "imperfections" would be visible. The hand of man, marvellous as it is in intent and power of use, is but an unsteady tool by the side of the dead mechanism and accuracy of the steam-driven rule and compasses. But the last is but a dead and lifeless tool at the very best, while the first is instinct with life, and with all the "uncertainties" of a living motor. Poor humanity must be on the look out, that is certain; else will the machine,—the all but living machine,—master him yet, and drive him from the artistic pasturage altogether: a somewhat sad prospect for the Academies and Schools of Art.

But now, leaving this glass process—but of which, in many ways, so much more might be said,—let us glance for a moment at the Oriental and Gothic pierced tracery. The sand-blast machinery will do this work of piercing stone at a rate of speed and cheapness which must in time drive out of the market the slow, however pure, *hand*-work, however cunning, or quaint, or even marvellous. It is shillings *versus* pounds, we are confidently assured. But what, again, is the artistic price of this gain? Why the hand-work goes, the artistic *feeling*—to be got at only through the hand—is necessarily absent; it has not hidden itself, for it was never there. The *machine* has taken the sharp tool and mallet from the hands of the artist-workmen, put both aside, and here does without either, and needs not, wonderful to tell, even the workman himself. He has but to indicate the design, and then but to stand by and see the work done; that is, if his eye is quick enough to follow the lightning speed of the engine, or his ear quick enough to count the pulsations of its untiring movements. There can, indeed, be no doubt, as to the gain here; but at what cost, and at what loss. The cunning workmanship of the mind-and-soul-guided and inspired hand is not there. The iron has here indeed entered into the soul of the artist-workman. Truly does it evidence the power of mechanism in these days; but at what a sacrifice! Those who are sufficiently interested in the "progress" of art and mechanism, and in the future of the workman, should examine and study this new power in art.

PROFESSOR E. M. BARRY'S LECTURES AT THE ROYAL ACADEMY.

No. 3.*

In my last lecture I asked you to dwell with me on some of the most prominent passages in the life of the great Florentine, Michelangelo. We left him, if you remember, at the Court of Pope Paul III., an ardent admirer of his genius, if a somewhat severe taskmaster of his energies.

I propose to-night to consider Michelangelo as an architect. We have seen how his fame had grown as a sculptor, and a painter, and we know how decided were his views as to the necessary combination of the three arts. It was reserved for the old age of this splendid veteran, to furnish a practical commentary on his artistic convictions.

It was Michelangelo's lot to have greatness thrust upon him. He delighted in the title of sculptor. Sculpture was his first choice, and by it he gained his earliest laurels. When the painting of the Sistine Chapel was pressed upon him, he resisted. He declared he was not accustomed to painting. Indeed, he seems to have been almost pleased when he found an efflorescence exuding from the walls, which threatened to destroy his work. "See," said he to the Pope, "what is happening: I told you I was not a painter." In like manner, he did not seek architecture. When the office of architect to St. Peter's was offered to him, it was only accepted with reluctance. Although an admirer of architecture, Michelangelo was not willing to accept the heavy responsibilities of an architect, and but for the urgent entreaties of his friend and sovereign, would have declined the task. When, at last, he was prevailed upon to consent, he made the condition that he would receive no salary, and had a clause inserted in the deed of appointment, declaring that he performed his office for "the love of God."

There was, I think, good reason, for the reluctance of the artist. Accustomed to freedom of idea, and execution, he was to learn under what difficult conditions, architects have to work. No form of art is so much fettered. Circumstances of time and place, the amount of funds available, the parsimony, whims, and interference of employers, affect the plans of the architect to an extent unknown to the painter and the sculptor. Arbitrary rules of fashion regulate the public taste, and seek to make the architect their slave; so that it may almost be said,—at least in modern times,—that no important building is ever executed, for which the architect is fully responsible.

Michelangelo was now to experience all these difficulties, and he often wished, we may be sure, for the lost freedom of his earlier life. He had met with an accident from a fall on his scaffolding while painting the Pope's Chapel, and his increasing infirmities had led him to decline farther commissions in sculpture, when he was appointed architect to St. Peter's, in 1546, in the seventy-second year of his age. Notwithstanding the advance of age, the period through which Michelangelo had just been passing was, perhaps, the brightest in the life of the great artist. His last years at Florence had been full of bitterness and gloom. We have seen how he imperilled life and health, by his labours in the Laurentian Sacristy, and how, before his final departure, he seemed well-nigh broken-hearted.

At Rome, on the contrary, he seems to have recovered both health, and strength. His fame was recognised by the Pope, and his reputation gave him a pre-eminence which none could now dispute. Domestic sorrow, indeed, fell upon him, as it does upon all, for at this time he lost his father and brother, to whom, in spite of some past misunderstandings, he was sincerely attached; but, in spite of these and other troubles, Michelangelo was now probably happier than at any previous epoch of his career.

His proud nature sought no friendships. He says, in one of his letters, "I have no friends; I need none, and wish to have none." Almost terrible to us is this picture of the solitary old man, alone in his conceptions of the supernatural and the sublime, as we see them depicted in the figures of the sibyls, or in the woes of the condemned, in the awful representation of the "Last Judgment."

Accustomed to misrepresentation, and to the petty accusations of little men, he treated them with the contempt they deserved. Such was the mode in which he dealt with Pietro Aretino, who assailed the treatment of the "Last Supper" in a spirit of censorious prudery. This man, shameless, venal, and intolerably conceited, did indeed succeed in troubling the mind of the great master, by his criticisms, and insinuations, as an insect may vex a noble lion; but, after a time, Michelangelo treated him with the disdain which he deserved.

In spite of the loneliness of his self-sought solitude, there was, however, one friendship which Michelangelo admitted, and to which he clung.

If you will think for a moment of the characteristics of his works, you will form an idea of the character of the man. You will find little in them of the softer influences. The "Sybils" are mysterious beings, with unknown capacities for good or evil; and in the "Last Judgment" the woe of the wicked is the prevailing theme.

Art had been his sole mistress, and in it he had sought power, grandeur, and sublimity, rather than the refinements of beauty.

He was now to experience, for the first time, something of the charm which can be exercised by female influence, combined in this case, with high rank, refined intellect, and personal attractions. Had he yielded to some such influence in earlier life, his works might possibly have gained in grace, without losing in genius, but it was not until the sixty-fourth year of his age that Michelangelo commenced his friendship for Vittoria Colonna, a widow of forty-eight.

I have said friendship, for such indeed it was; a friendship of heart and soul; a fellowship of kindred minds; any softer feelings, if they existed, were repressed, and it was only when death had robbed the lone old man of his happiness in 1547, that in a parting sonnet he allowed himself to expatiate on the earthly beauty now lost to him for ever.

The lady was an accomplished member of one of the noblest of Italian families, and of a deeply religious cast of mind. Her influence on Michelangelo was great, and he has recorded his obligation in verse, to one who had taught him how "to tread, by fairest paths, the way to heaven."

It was now a time of religious speculation. Luther's preaching had aroused echoes, even under the shadow of the Vatican, and many young and ardent natures were inquiring, like the Roman governor of old, "What is truth?"

Vittoria Colonna seems to have been the hope and leader of one of the reforming coteries of the period, for not long afterwards a young Florentine was burned at the stake, one of his alleged crimes being that he had once belonged to the circle of Vittoria Colonna.

After a period of doubt and free inquiry, the Vatican at last put forth its power, and the Inquisition, with all its horrors, was established in Rome just as Michelangelo had completed the "Last Judgment." This important step was taken about 1542, and Vittoria Colonna, warned of what was impending, fled to Viterbo, leaving a gap, incapable of being filled, in the eventide of Michelangelo's life.

Ruin fell on the Colonnas. Too great for the subjects of a jealous autocracy, they became obnoxious to the Pope, who determined to break their power, and when, six years afterwards, Vittoria was able once more to visit Rome, her refined and elevated spirit was broken down by the ruin of her family. She had made her peace with the authorities; but the old life could be no more.

Sad must have been her meeting with Michelangelo. She had suffered much from illness and anxiety. Her family and friends were scattered, and she was left alone and unprotected. She withdrew into a convent, and gave herself to works of charity and piety, until death came to her, as a liberator, in 1547.

There is a portrait of this remarkable lady. It was once ascribed, as is now believed erroneously, to Michelangelo. Some, however, think that the composition and drawing may have been by the master, and the colouring by a pupil. It is at least probable that the work was suggested, or inspired by Michelangelo, and represented his favourite, and friend as he wished to see her. It represents an aged woman. A widow's veil covers head and figure. A tall and upright form, as may be seen, though she is sitting in a chair, distinguished the noble lady. An open book on her lap indicates her character. I think this portrait of great interest, if only as indicating the nature of Michelangelo's love and admiration, pure from any sensual or commonplace alloy.

Michelangelo lost his beloved friend a year after his appointment to St. Peter's, and had therefore to prosecute that great and anxious work uncheered by her affection and sympathy.

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* Delivered March 8th, 1875. See pp. 183, 204, *ante*.

We know that in spite of his modest reluctance to assume the title of architect, he was, in fact, no novice in the art, and had already given proof of his skill. The Laurentian Library at Florence, carried out at the same time as the statuary in the sacristy, is a good specimen of his style, although from its having been completed by other hands, it does not present the effect he would probably have produced. While at Florence, he is said to have also designed the windows of the Palazzo Riccardi, and he added to the Farnese Palace at Rome, its well-known and beautiful cornice.

The palaces of the Capitol were likewise his work. They form three sides of a square, and are approached by a handsome flight of steps, familiar to all visitors to Rome. They bear the impress of the style of Michelangelo, bold of conception, vigorous of execution, but somewhat wanting in grace, and refinement of detail.

Another of his architectural tasks was the conversion of one of the halls of the Baths of Diocletian, into the Church of Sta. Maria degli Angeli. This he did by adding transepts, in the middle of the length of the hall, which thus assumed the shape of a Greek Cross. Subsequent alterations have unfortunately marred the simplicity of this plan, which was a great favourite with Michelangelo.

Various designs are known to have been proposed by him, such as those for the Porta Pia, and the Porta del Popolo, at Rome, but they were never carried out; and the ascription to him of the design for the front of the Villa Medici is somewhat doubtful.

We have seen that his skill in fortification was early called into play for the protection of his native city, and the reputation which he thus gained induced Paul III. to consult him afterwards on the subject of the fortifications of Rome. These works were projected under the advice of Antonio San Gallo, brother of the Giuliano San Gallo, who was one of the earliest friends of Michelangelo, and who is not to be confounded with the former.

Michelangelo's advice, which was opposed to that of San Gallo, prevailed, and this was one of the circumstances which rankled in the mind of the latter, and embittered his hostility to Michelangelo, of which we shall have to speak again hereafter.

Among the unexecuted designs to which reference has already been made, I ought to mention one for a church which was to have been erected at Florence, and dedicated to St. John the Baptist. Unfortunately, nothing came of this proposal, which we may well regret, as Michelangelo is reported to have said of it that, "if built, nothing would be found to surpass it."

In all his compositions, Michelangelo showed his independent spirit, spurning rules, and introducing innovations, in defiance of classical practice. There is always in them a boldness of grasp, and grandeur of style. These are the attributes of genius, and not to be achieved by lesser men, who, while they do well to shun the faults of Michelangelo, do better to study the secret of his strength.

It is much to be regretted that the architectural works of Michelangelo are not more numerous, and important; but his great work at St. Peter's was sufficient to immortalise him, and to this, we will now turn our attention.

The present Basilica of St. Peter's is a successor to a more ancient building, of the same name, said to have been erected by Constantine, and consecrated A.D. 324. The dimensions were large, 435 ft. by 248 ft., and the architecture was of the well-known Byzantine type. It had four rows of columns, dividing the interior of the church into five parts, of nave, and double aisles on either side. Many of these columns were of the rarest marble, and Michelangelo subsequently made it a subject of bitter complaint against Bramante, that he had not preserved some of them for the adornment of the new structure.

The plan was converted into a cross by transepts at the end of the nave, with a semicircular tribune, as a centre feature, facing the nave. The roof was covered with gilt bronze from the temple of Venus at Rome, and other ancient buildings were laid under contribution, to add to its richness and beauty.

The Basilica was approached by steps 145 ft. wide, and disposed in five flights. In front of the church was an atrium, surrounded by a cloister, and the whole building, with its appurtenances, occupied a space of about 800 ft. by 260 ft.

This church had been the favourite place of worship for the bishops of Rome for upwards of fourteen centuries. It had suffered from fire, from the violence of barbarians, and from decay, but it had been repaired by the Popes, and in the fourteenth century Giotto had contributed to its decoration.

Pope Nicholas V. had plans prepared, as early as 1447, for a complete rebuilding, but nothing was seriously attempted, until Julius II. was led, as we shall see, by personal causes, to give a new impetus to the proposal.

When Michelangelo was called to Rome by the Pope in 1504, the first task laid upon him was the preparation of designs for the mausoleum, of which mention was made in my last lecture.

The personal vanity of the Pope dictated that his monument should be no ordinary structure, and he resolved that a place in the old Basilica should be prepared for its reception. It soon appeared, however, that the ideas of the Pope were on too vast a scale to be consistent with this arrangement, for although the whole size of the church was large, the dimensions of its parts were moderate, while the scale of the mausoleum was to be colossal.

From the discussions which arose from this circumstance, Julius conceived the notion of replacing the ancient Basilica by a new structure, as had indeed been vaguely contemplated by his predecessor, Nicholas.

It may now be interesting to inquire what the mausoleum was to be like, which was the cause of so great a conception, and led to so much trouble and wasted energy of the artist. We may therefore refer for a moment to Vasari's description of the design.

It was, he says, to be isolated, having a passage round it, for greater magnificence of effect. The dimensions were to be 18 braccia (36 ft.) on two sides, and 12 braccia (24 ft.) on the other two sides, the proportions being, therefore, a square and a half on plan. A range of niches occupied the sides, and the cornice was to be supported by statues, partly clothed, after the Grecian manner of Caryatides. To each of these figures a captive was bound, intended to signify the provinces subjugated by Pope Julius, and brought by him into the obedience of the Apostolic Church. There were to be other statues, also bound, representing the liberal arts, and including painting, sculpture, and architecture,—all paralysed and hampered by the death of the Pope.

Above the cornice, there were to be eight colossal statues of prophets, apostles, and virtues, including those of Moses and St. Paul. Forty statues in all, were to have adorned the monument, which was to have been further enriched by bas-reliefs of marble, and bronze.

The substructure was to be 13 ft. in height, and this was to be surmounted by a light marble baldacchino, beneath which, two angels guarded the sarcophagus of Julius, one in an attitude of grief, and the other pointing to heaven.

Such, we are told, was the design of this ambitious work. The description is, I believe, in accordance with a drawing of Michelangelo, which I have not seen; but which is said to be preserved, with others of his sketches, in the Florentine Gallery. Michelangelo set to work on it with zeal, and repaired to Carrara to seek the marble, leaving the Pope to meditate on his plans for the new church.

The Pope first employed Giuliano San Gallo to prepare designs for the latter, but, for some reason, he was almost immediately superseded by Bramante, who deserves to be considered the first architect of St. Peter's. The new church was to cover the site of the ancient Basilica, but was to be greater in extent. The length was to be increased from 435 ft. to 620 ft., and the breadth from 248 ft. 330 ft.

The nave was to be vaulted over, with transverse vaultings across the aisles, to serve as abutments, after the design of the fragment known as the Temple of Peace. Screens of columns formed aisles in the apsidal terminations of the three upper arms of the cross; a novel feature, and one which seems to contain promise of richness, and picturesqueness of effect.

The great order of the nave was Corinthian, and was 101 ft. high. Professor Cockerell suggests that the contrast of an order of such colossal dimensions, with one much smaller, as designed by Bramante for the exterior, was intended to produce that effect of surprise, which was a not uncommon artifice in Mediæval composition.

But the chief glory of Bramante's design was to be the dome, covering and crowning all, with its cross uplifted to heaven. This was, no doubt, suggested by the Pantheon, which had ever excited the admiration of architects. The Pantheon was low in section, being only one diameter high, and it rested on a continuous abutment. To place the dome of the Pantheon in the air, was, therefore, an untried attempt, and on this Bramante resolved.

Bramante's design for the dome was marked by a grand simplicity, with its unbroken peristyle of columns, a feature which Wren afterwards adopted at St. Paul's. Michelangelo was much struck by its originality and had a high admiration for Bramante's architectural skill. Quarrels, indeed, arose between the two men, with bitter jealousies; but, notwithstanding these, Michelangelo bore a willing tribute to his rival's ability, and is even reported to have said, "No doubt can exist that Bramante is the greatest architect who has existed from ancient to modern times, and whoever has departed from his model has departed from the truth."

The construction of a lofty dome was not, however, an original inspiration of Bramante, for as long back as 1298 Arnolfo di Cambio da Colli had commenced a similar design, which he did not live to finish, in Florence.

The dome of the cathedral at Florence is almost identical in diameter with that of St. Peter's, each being about 134 ft. or 135 ft., the diameter of the dome of the Pantheon being 142 ft.

After Arnolfo's commencement of the Florentine cathedral, upwards of a century elapsed before a man was found to carry out his conception, and crown his work with the dome we all know so well. That man was Brunelleschi, who, in 1407, produced his plan in the famous competition for this work. Michelangelo looked on this design with admiration, and, in the days of his greatest influence in Florence, exerted himself to prevent the designs of Brunelleschi for the completion of the building from being departed from.

The novelty of Brunelleschi's proposal was the suggestion that the dome should be double, connected together with ribs, and that both outer and inner domes should be pointed in sections. We shall see hereafter how much Michelangelo was influenced by this design.

Bramante's drawings are but partially preserved, and we do not know how he proposed to deal with the constructional details of his dome. We do know, however, that his character was hasty, and impetuous, even to rashness; and an inspection of his plan is enough to show us, that the strength of his four great piers is altogether insufficient for such a dome, as he intended to erect.

Bramante was in so great a hurry, however, to realise his project, and was so much pressed by his impetuous patron, that the piers were carried up with undue haste, and showed signs of decay, and weakness, before his death, which occurred in 1514.

On the death of Bramante, his mantle, as architect of St. Peter's, fell on no less a man than Raffaelle. This famous painter had come to Rome in 1508, and Bramante had at once secured for him the favour and patronage of the Pope. He was at once employed on his immortal works in the Vatican, and his simple, graceful ways earned the affection of Julius.

Michelangelo was now engaged on the Sistine Chapel, and it was scarcely possible for the two great artists to avoid rivalry. Their followers, at any rate, were not discreet enough to do so, and, as often happens, showed more party spirit than their masters.

It has been noticed that even when Michelangelo had completed one half of the ceiling of the Sistine Chapel, Bramante endeavoured to transfer the remainder to Raffaelle, and there can be no doubt that he was anxious to exalt his favourite, at all hazard.

It was natural, therefore, that Julius, who trusted in Bramante, and also was much attached to Raffaelle, should call the latter to his aid at St. Peter's, when death had carried off his friend and master. Raffaelle must, however, have felt a difficulty, as regarded the more technical duties of his office as architect, for we find associated with him, and presumably at his request, Giuliano San Gallo, and Fra Giocondo di Verona, to act as practical advisers.*

Aquariums for Liverpool.—There are two companies now in the field for providing an aquarium and winter gardens for Liverpool, and both undertakings have been definitely floated.

* Completion in our next.

A SESSION OF THE INSTITUTE—1859-60.

A LITTLE more than fifteen years ago the late Earl de Grey addressed the first meeting of British arthitects held in their new head-quarters at Conduit-street; and in less than a month the vice-president had the melancholy duty to announce the Earl's death to the members. In his address, the noble president described how, in 1835, there were only 13 members; and in 1859 no less than 154 fellows, 139 associates, 13 hon. fellows, 17 hon. members, 80 hon. and corresponding members, and 13 contributing visitors; and how, in 1848, the first royal gold medal was given to the late Mr. Cockerell. This gentleman succeeded the Earl as President of the Institute; and his address, delivered on the 23rd of April, 1860, contained one or two points with which it may be useful to refresh the memories of those members who are disposed to be over-thankful for the advantages derived from connexion with the central guild of British architects. Professor Cockerell congratulated his hearers on the interest with which their labours were viewed by an increasing class of society (it was fifteen years ago); and he told them that the Institute stood amongst the most useful institutions of the country. He quoted the celebrated Frenchman, Rondelet, who had defined architecture to be a science the object of which was to direct the operations of every sort of building, so as to unite convenience, solidity, and beauty of forms; and he expressed his regret that modern architects (those of 1860) were rather decorators than constructors, "aiming, like the painter and the sculptor, chiefly to please." Evidently sincere in his anticipations, he explained how it was the intention of the Institute to found schools,—to offer collegiate grades which would recommend by certificates to the public patronage. Something similar had been said a short time before in a paper treating of the current improvements in building materials, the author of which,—Mr. Burnell,—regretted the disposition amongst members of the architectural profession to dwell almost exclusively upon the æsthetical portions of their pursuit; and Dr. Druitt, discoursing a month afterwards about human habitations and health, told his audience with an amusing naïveté:—"It is evident that when the Legislature confided to your Institute the duty of examining into the professional acquirements of district surveyors it placed in your hands likewise the power of exacting a knowledge of the conditions under which houses are healthy or the reverse."

If the meetings were then well attended, and the discussions learned and lively, the papers provided were as varied and useful as they were interesting. Dr. Barlow delivered a lecture upon "Symbolism in Reference to Art"; the late Mr. Ashpitel described the origin and development of the use of crypts; and Professor Kerr enumerated certain historical references to building in the earlier writings of the Old Testament. Practical papers were read by distinguished specialists upon the use of granite, the weights of building stones, &c. Mr. Edward Barry described the re-building of Covent Garden Theatre; and Mr. Penrose discoursed about monuments in general, and that to the Iron Duke in particular,—a subject under discussion fifteen years ago, and not yet settled, although, let us thankfully admit it, Nelson's lions are. But the best papers, interesting alike to professional men and the public, are those which were prepared with evident tenderness and care by Sir Gilbert Scott, Mr. Wyatt Papworth, and Sir Digby Wyatt. When those papers,—each of which represents years of thought and a comparative expenditure of labour,—were written, professional journalism was young. Now-a-days men, competent to criticise the great works of architecture, hesitate to give to a limited audience what publishers, both of journals and books, will buy for the perusal of a large number of readers. The "Gleanings from Westminster Abbey" form matter interesting and copious enough to make a saleable book for general circulation; the notes upon the "Superintendents of English Buildings in the Middle Ages," followed, as they were, later on by a history of the early masons, ought to have been worked up into a book; while the lecture upon "Illuminated MSS." is one of the most valuable antiquarian contributions yet presented to the Institute Transactions.

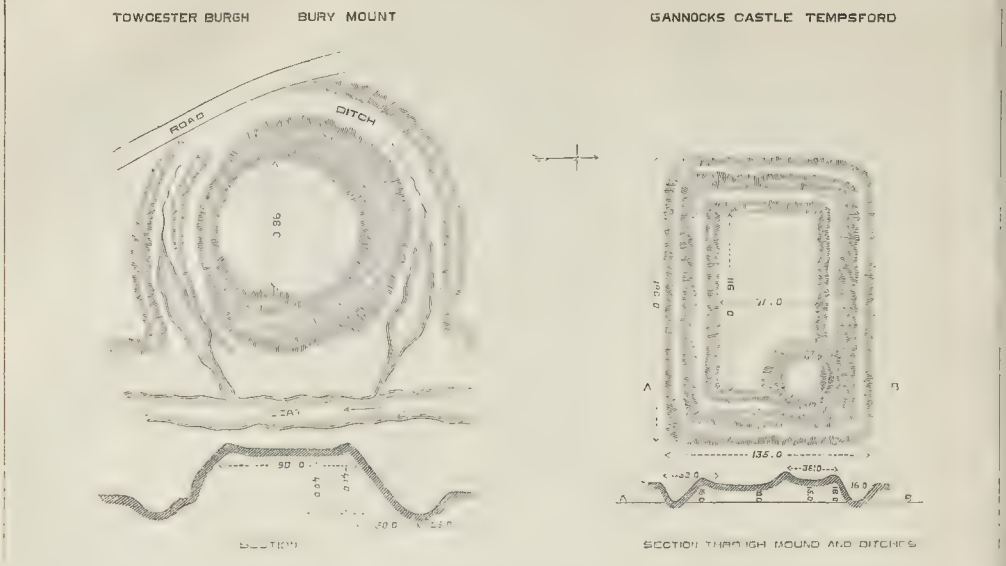
Since the paper on Westminster Abbey was written, the Chapter-house has been restored, and its restoration is generally admitted to be one of the most successful of the many similar works executed under the direction of Sir Gilbert Scott. Probably this gentleman gleaned in the course of the works a great deal of further information than he recorded at the close of the year 1859. His obstinate search after facts, before the part-reconstruction of the Chapter-house was decided upon by the authorities, was crowned with the success it deserved; and his description of the earlier buildings of the Abbey, then, and perhaps even now, little known, is most interesting. Supposed to have been commenced in 1250, the Chapter-house was made over to the uses of the House of Commons about a century after the days of Edward III. It was converted into a Public Record Office in the reign of Edward VII.; and in 1703 Sir Christopher Wren was consulted about the feasibility of putting a gallery in it, which, to his credit, he refused to attempt; but in 1740 the original vaulting was taken down, and at that time it appears to have been fitted up for the storage of the Records, much as the architect found it just before the recent restoration, when he was compelled to climb up a mass of dirt-cemented parchments, take out the back boarding of the cases, and draw by the help of a little bull's-eye lantern. In his description of the main approach to the Chapter-house, which was through a doorway in the centre of the south transept, he made a discovery of a nature romantic even for a Mediæval monastery. It would appear that in those days "when saints were so many and sins so few" there were thieves and sacrilegious ones withal; and in order to awe such offenders it was the custom to line the doors of sacred treasuries with leather made of the skins of persons executed for sacrilege. Amongst the rubbish cleared away from the site of an original staircase to the monks' dormitory fragments of embossed and coloured mouldings were found; and in the chamber underneath on the inner side of the doorway there were found hanging beneath the hinges some pieces of white leather which were pronounced by a surgeon to be human. This door appears to have been entirely covered with excellent leather manufactured from human skins. In a narrow passage close by another interesting discovery was made. Finding the supposed floor somewhat springy, the architect ordered the rubbish to be removed; and a large heap of parchment rolls was discovered which turned out to be packets of ancient writs of justice from the time of Edward III. to Henry VII. In Sir Gilbert Scott's words, "There was also a lot of little wooden boxes, each containing one or more parchment deeds with seals affixed, each relating to private individuals from Henry III. to Edward III. Many of these were almost as fresh as new and the seals good."

Recent literature, and the interest excited by the discussions on the functions of the Mediæval architect, have rendered Mr. Wyatt Papworth's labours more than ever valuable at the present moment; and they show that in England the nomenclature of the building fraternity was peculiarly varied, probably from the simultaneous use of more than one language, particularly Latin, French, and Saxon. The English term used to signify what is now called "architect" was originally supervisor or surveyor; and the earliest record of this title is of a bridge built at Hereford, between 1100 and 1135. It seems that it was frequently the custom to elect men who were practically acquainted with building operations to the responsible positions of prior and abbot. For instance, in 1370, the Prior of Rochester was paid a large sum of money for acting as surveyor or overseer at Rochester Castle. Mention is made of a John Boyfield, who had been supervisor of the works under two abbots of Gloucester, and who ultimately succeeded to the post of abbot himself; while, in 1514, at the same abbey, the same dignity was conferred upon a supervisor named William Mavern. According to Mr. Papworth, William of Wykeham was not an architect; he believes that the master-masons were generally the architects in the Middle Ages; at the same time he proves the existence of such men as the master-of-the-work, and the keeper-of-the-works, since they are mentioned together with the master-mason in a document of the fourteenth century. He adds that in the stained glass of Winchester College three personages are represented, viz., the carpenter, the mason, and "Dns. Simon Membury, who was supervisor and paymaster of the Cathedral works." Again, he tells us that the "*magister operum*" was the first of the six great officers at Croyland Abbey. After explaining that the earliest mention he had found of a clerk of the works was of the date of 1241, at Windsor Castle, he defines the different functionaries as follows:—"The master-of-the-works was one of the talented advisers of the day; the master or keeper of the fabric was probably the keeper of the whole structure; and the keeper of the works was perhaps only the custodian of the particular works then in progress; the edifice under those circumstances being developed by the master-of-the-works, or by the master-mason." There is also an English title extant, of which little is known,—"the devisor of buildings," and it is affirmed by one authority that he acted under a supervising officer, who, leaving the artist's fancy unshackled, controlled the expenditure of money, exactly as the architect is said to have practised in France and Spain in the thirteenth and fourteenth centuries.

The facts concerning illuminated manuscripts which conclude the "Transactions of 1859–60" are eminently valuable and agreeable reading for the million as well as the profession, like all Sir Digby Wyatt's writings. He describes the square Virgil of the Vatican, which is the most important Latin MS. known, although the art of illuminating books is evidently older than the Christian era. Martial alludes to a bookseller's shop opposite the Julian Forum, in which his works were to be obtained, smoothed with pumice-stone, and decorated with purple; Pliny to Varro's portraits of no less than 700 illustrious persons; Seneca to books decorated *cum imaginibus*; and, in his life of the Emperor Maximus the younger, Julius Capitolinus relates that the mother of the Emperor presented to him early in the third century a copy of the works of Homer, written in gold upon purple vellum. It is gratifying to know that the most ancient text extant of the Holy Scriptures is preserved in the British Museum. Sir Digby Wyatt's description, also, of the Irish schools, especially that which in the sixth century was renowned for the art of illuminating, may even now be new to a great many architects. The earliest Irish MSS. date from the sixth century, and exhibit "a series of entirely original features in the extraordinary illuminations by which they are decorated." Columba, or Columbkill, born in the year 521, established a monastery famous for the arts in the Island of Iona, which, under the Irish monk, St. Adrian (635, 651), was transferred to Lindisfarne, whence the arts taught in the Irish schools were communicated to various similar institutions in England, more particularly to that of Glastonbury. This paper, which is well illustrated with four coloured plates, and other papers besides those to which we have particularly alluded, are so full of information, that the Institute authorities might reprint the principal portions, if not the whole, of this rare volume, now impossible to be obtained at head-quarters. It is not to be expected that year after year architects can produce an equal amount of novelty; and probably, if a selection of the old lectures were re-read at intervals to the younger members, some at least of the meetings would be less miserably attended than are the majority at the present hour. Of course we admit, in common with the rest of the world, the weakness to exaggerate past happiness; but we, who pretend to represent public opinion in regard to the Royal Institute of British Architects, and the kindred societies, may safely end our strain with the couplet which Byron led off with in his satire on the Age of Bronze:—

"The good old times,—all times when old are good,—
Are gone; the present might be if they would."

A New Watering-place for Lancashire.—For some time past arrangements have been in progress for the establishment of a new watering-place, to be called "Saint Anne's-on-the-Sea," situated about halfway between Blackpool and Lytham. Up to a recent period, the property was nothing but waste, and a series of sandhills used as a rabbit warren. It belongs to Colonel Clifton, of Lytham-hill, father of the member for North-West Lancashire, who has for some years been engaged in constructing main roads through the district, with a view to develop the neighbourhood as a new watering-place for Lancashire. One large tract of land, upwards of 100 acres in extent, has been leased to a company, who are erecting a first-class hotel. Houses, ranging in rent from 20*l.* to 100*l.* per annum, are being erected.



MOATED MOUNDS.

MOATED MOUNDS.

CAMBRIDGE, TOWCESTER, TEMPSFORD, TOTTERNHOE, AND CAERLEON.

Cambridge.—The *Grantbridge* of the English, and possibly the *Caergrant* of Nennius, is also the *Camboritum* of the Roman period. By what people it was originally founded is uncertain. The root of its Roman name is certainly British, "cam," tortuous or slow, applying to the river, and "ritum," being probably the representative of "Rhyd," a ford. Cam, though here no doubt British, belongs also to other languages, and is preserved technically in English in the term "camber," which in carpentry expresses the curve given to a piece of timber. The earliest visible remains at Cambridge are Roman, and it has been supposed that here, as at Norwich, the actual British settlement was at some little distance, probably at Grantchester, also on the Cam, about two miles higher up. The position taken by the Roman camp is a good one. It occupies the spur of a broad tract of high ground, which, to the south-east, terminates upon the Cam, and along the course of that river is protected by its marshy meadows. The camp is on the left bank, opposite to the present town, and that its site is Roman is evident by its being the meeting-place of the two great lines of Roman way which here cross the country from north-west to south-east, and from north-east to south-west. The remains show the camp to have been rectangular, about 440 yards north-west and south-east by 310 yards in the direction at right angles, the south-eastern end being parallel to and about 250 yards from the river. There seems also some evidence that a loop from the main stream, probably an early mill leat, at one time flowed at the foot of the slope, and formed, on that side, the ditch of the place. This low ground is now occupied by Magdalen College, and by the late Norman building known as Pythagoras's School, or Merton Hall. The camp was, as usual, enclosed within a bank and an exterior ditch. On the north-eastern face these works have been altered, and have in part disappeared, under the successive operations of the English and the Normans, and in later days, of Cromwell's soldiery. Mixed up with the bastions of that time, traces of the bank remain behind the cottages at the northern angle, and a few yards along the north-western front, but the principal remains are along the western angle and quarter of the camp. Here the bank is tolerably perfect, and occasional excavations have shown the ditch to have been about 40 ft. wide and 10 ft. deep. Here also have been discovered the remains of a wall, apparently Roman, built along the scarp of the ditch, and as a retaining wall against the somewhat earlier bank which thus, as at Chichester, was converted into a ramp. The bank has also been preserved near the eastern angle and some way along the adjacent river front, where it forms the terrace of Magdalen Gardens. The two Roman roads traversed the camp at right angles, dividing it into four tolerably equal parts. The Via Devana, from Huntingdon, or rather Durolipons, divides it longitudinally. As it enters the camp, it is covered on the right by a bank, returned and continued from that of the camp. This road crossed the river, it is thought, by a pitched ford, of which the stones have been observed, and which has long been superseded by several bridges, first of timber, and afterwards, either in Roman or Norman times, of stone, and of which traces have, from time to time, been laid open. The cross-road, called the Akeman-street, is still in use from near Ely to within a furlong of the camp, where it has been bent a little westwards, its ancient entrance having been built upon and lost, though, when the prison was being constructed, Roman bricks were found 16 in. long by 12 in. wide, and ½ in. to 1½ in. thick, and some masonry thought to belong to the Decuman gate. On the other side this road branches from the Ermine-street, near Sandy, and is traceable to Barton, and, it is thought, also at its entrance into the camp, though there much built upon and concealed. Cambridge seems to have fully shared in the devastation committed by the earlier northern invaders. In the seventh century, Bede relates that amidst its desolate ruins was found the sarcophagus of white marble in which the nuns of Ely deposited the remains of their abbess the virgin Queen Æthelthryth, and something remained, or had probably been added, to be burned not only by Guthrun, who was here in 875 during his foray into East Anglia, but again, in 921, when the Danes surrendered Cambridge to King Eadweard. Finally, the place was burned by Swend and his Danes in their invasion of East Anglia in 1010, at which time, as afterwards, it was known as an English town, as Grantbridge, and gave name to the shire in which it stood. The English settlement seems to have been placed within the Roman camp. A moated mound, similar to those thrown up at Tamworth and Leicester, early in the tenth century, was formed in the north-eastern quarter of the camp, a little south of the Roman gate, and two churches, St. Peter's and St. Giles's, both of English foundation, were built, where their successors are still seen, within the eastern divisions of the camp. It does not appear to what extent the English earthworks interfered with the defences then existing, probably not materially, and as at Tamworth, Leicester, Wareham, Wallingford, and Cardiff, the rectangular banks were preserved as an additional defence, the mound being provided, in addition, with its proper ditch. The Conqueror visited Cambridge for the first time in his march southward from Lincoln in 1068, and here, as at Lincoln, he found an English fortress within a Roman camp, in a position very suitable for a castle in the Norman manner, which accordingly he ordered to be built. There were at that time 400 houses in the town of Grantbridge, which was divided into twelve wards, with a representative government. Rather above a quarter of the houses had been laid waste, and twenty-seven more were removed to make way for the castle, by which two of the original wards were reduced to one, and it seems to have been this destruction that led to the expansion of the town across the river, where the existing tower of St. Bene't shows that at the least a commencement had been made before the Norman conquest. What sort of a castle rose upon William's order is unknown, but in 1071, only three years later, during the rising of Hereward and the English in the Isle of Ely, William's head-quarter was at Cambridge, in the castle. Considering the shortness of the time, the distance from which materials for masonry had to be transported, and the close occupation which the circumstances of the country must have afforded for the Norman troops, it is probable that the new defences were rather a reinforcement of the earlier ones than works in regular and permanent masonry. Still, though Merton Hall belongs to the next century, part of St. Giles's Church is generally attributed to Picot, the Conqueror's sheriff; so that the works of the castle may, even then, have been of a permanent character. The mound, the great feature of both the English and Norman fortresses, with that durability which belongs to works in earth, has survived all the subsequent changes, and is still prominent. It is conical and flat-topped, measuring at its summit 14 yards east and west, by 11 yards north and south, and, no doubt

was originally circular, and 15 yards diameter. As it stands upon ground which rises steeply from the river level, its base is unequal. Towards the river it is about 80 ft. high; and on the other side, where there still remains a part of the inner platform, it is about 40 ft. The eastern slope is steep, the western gentle. Towards the north-west and north are traces of the elevated interior ward, where the buildings of the castle are superseded by the modern prison. Towards the north-east is a steep slope, which may have been a part of the Roman defence, and jutting out towards the east is a tongue which may well have been a bastion cast up to repel the attacks of Charles's soldiers. The prison stands close to the north-west of the mound, and the county hall upon the margin of the main road, to the south-west, where it is said to occupy the site of the old gatehouse. The mound is of chalk gravel, and wholly artificial. There is no visible masonry connected with it; but some trenches upon its summit may represent the foundations of a shell keep, such as was placed on the similar mound at Oxford, and would probably be erected here. Cambridge Castle continued in the crown, and is mentioned from time to time in various records. William de Longchamp, the chancellor, held it for King Richard in 1101, and King John farmed it out, in 1208, with that of Huntingdon. John visited Cambridge in 1216, and after his death the Dauphin, Lewis, was here with the barons of his party. In 1265 Henry III. caused the city to be fortified by a ditch, and gates to be erected, which were destroyed soon after by Hastings and the insurgents of Montfort's following. In 1294 Edward I. spent two nights in the castle. Richard II. held a Parliament at Cambridge in 1388, but was lodged in Barnwell Priory. Henry IV. gave the materials of the castle hall to be used in building a chapel for King's College, and Queen Mary gave other materials to Sir John Huddleston, to be employed at Sawston. In 1602 the site of the castle was alienated by the crown, and the county obtained possession of it, and there held the quarter sessions, using the gatehouse as a prison. The castle was held for the Parliament in the great civil war, and the exterior, or north-east side of it was covered by two bastions and a curtain, parts of a pentagon. Since then the gatehouse has been taken down, and nothing save earthwork is to seen of the ancient fortress.

Towcester.—All that remains of the burgh of Towcester is the mound, as usual conical, flat-topped, and surrounded by a ditch. It is locally known as Bury Mount, and is placed on the right or west bank of the Tove, there about 400 yards distant, and within 20 yards of a large mill-leat which intervenes between the burgh and the river, commencing at Spittle Bridge, and rejoining the river about 5 furlongs lower down, at the mill, which is placed near the mound. The leat is very old, and is the boundary of Easton-Neston Park, which is traversed by the river. The mound stands on the eastern margin of the town of Towcester, between it and the mill-stream, and about 200 yards north of the parish church. The ground to the west rises gently. The mound is wholly artificial. At the top it is nearly circular, 90 ft. by 98 ft., and has evidently been about 100 ft. in diameter, and has a trace of a slight bank round its crest. Its height above the river is about 40 ft. The slope towards the north and west is easy, but to the south and east it is steep, having been cut away. On the south side two cottages have been benched into it. It was originally surrounded by a broad and deep ditch, communicating at each end with the leat, which completed the circuit. The ditch, though much choked up, remains, and contains water in the north and south parts. On the west the town has encroached upon the work, and a part of the ditch has been filled up for a road. No doubt there was an exterior bank and ditch to the west or exposed side, including a base court, but the extension of the town, and the garden cultivation have led to the levelling and removing of all traces of these. The original work must have been strong, the low lands towards the east and along the river having evidently been in a state of morass, and the watercourses deep and full of water. This earthwork possesses a very marked and peculiar interest. The date and the authors of its construction are on record in the "Anglo-Saxon Chronicle." In A.D. 921, "before Easter" (1st of April) "King Eadweard" (the Elder) "gave orders to proceed to Towcester, and build the Burgh. . . . . In the same summer, between Lammas" (1st of August) "and Midsummer the" (Danish) "army broke the peace from Northampton and from Leicester, and north from thence, and went to Towcester, and fought against the burgh a whole day, and thought that they should take it by storm; but, nevertheless, the people who were within defended it, until a greater force arrived, and they then abandoned the burgh, and went away." In the autumn of that year, it is added, "King Eadweard, with a force of West Saxons, went to Passenham, and sat there while they surrounded the burgh at Towcester with a stone wall." It will be observed from the above account that the burgh was "built" between April and August, and between August and Midsummer was in a condition to resist an assault from the whole Danish army, that is to say at most, probably, from as many men as could find room to make an attack upon a very limited and strong point. Of course the strength of such a burgh as Towcester would be confined to the resisting an assault, or holding the works for a very short time. Wigmore, in the same way, held the Danish forces at bay. The account also shows that this burgh, like Wigmore, was thrown up in a very limited time, and could not therefore have been a work in masonry. It was, no doubt, of earth, as now in part seen, and crowned and palisaded with timber. The wall spoken of was probably of dry rubble. The material must have been brought from some little distance, and there was not time to construct a regular and strong defence in masonry. The mention of a wall is, however, important, nor was there any reason why those who walled Exeter and York should not, under more favourable circumstances, have so surrounded an ordinary burgh. Here, however, is no trace of masonry either upon or around the burgh. Passenham, where King Eadweard rested, is a village on the skirts of Whichwood Forest, about seven miles distant by the Roman road, and where there still remains a light earthwork, the character of which has not, however, been ascertained. Towcester stands upon the Watling-street, and may have been a Roman station. Coins have been found here, and the termination "Chester" or "Cester" usually indicates a Roman origin. No rectangular works have, however, been observed. The manor is mentioned in "Domesday" as held by the king, and it seems from another passage to have had a soke connected to it, which looks as though it was, or had been, a place of importance. The burgh, however, was never used by the Normans for military purposes, and consequently has no special post-Norman history.

Tempsford and Toternhoe.—Among the earthworks in the vale of the Ouse, within the three adjacent counties of Bedford, Cambridge, and Huntingdon, are two which, though in many respects different, have one peculiarity in common, the combination of the circular mound with a rectangular *enceinte*. These are Tempsford and Toternhoe, the one here described from actual examination, the other from a plan and description by Lysons in the *Magna Britannia*.

Tempsford.—Gannock's Castle in Tempsford is an earthwork placed on the right bank of, and about 400 yards from, Tempsford Mill upon the Ivel, just above the junction of that river with the Ouse. This camp is five miles below the earthworks of Risinghoe and four miles above those of Eaton-Socon. The two rivers, above and at their point of meeting, traverse a low and marshy flat, but the ground on the Tempsford bank is rather the higher, and this, no doubt, is the reason why the earthwork is not placed in the far more defensible, but more likely to be flooded, ground between the two waters. The mill-leat, which, if not a natural, is a very ancient artificial branch of the Ivel, adds to the security of the position, supposing it to be attacked from the west. The parish church of Tempsford stands above 200 yards from the earthwork. It is a spacious and rather handsome building, and seems to be of the period when the Decorated style was passing into the Perpendicular. The Roman way between Salenæ and Durolipons, now Sandy and Godmanchester, fourteen miles apart, lies two miles eastward of Tempsford. The earthwork is rectangular, and contained within a bank and ditch, nor are there any traces of outworks or appended inclosures. Measured outside the ditch, the area is 135 ft. north and south by 180 ft. east and west. The ditch is about 10 ft. deep and still wet. Its slopes are steep, and it is about 16 ft. broad, so that the area within it is 103 ft. by 148 ft. The bank, which caps the inner slope of the ditch, is at present about 6 ft. high above the platform within, and 16 ft. above the bottom of the ditch. It is about 16 ft. broad, and thus the final platform or body of the place is about 71 ft. by 116 ft. The ditch at the eastern front is something wider, but not so well defined. The entrance was probably on the east side. The north-eastern corner of this inner area is occupied by an artificial mound, rising about 8 ft. above the platform, or 2 ft. above the bank. It is circular, and about 36 ft. diameter on its top, which is crested by a light bank. The slope of this bank is scarped down so as to be lost in the angle of the ditch of the place. It does not seem to have had a ditch proper to itself, for which, indeed, there was but little room. So far as may be judged from its appearance the whole work is of one date. Though rectangular, it has not a Roman aspect; it is smaller and the ditch is deeper than is usual in such works, especially in one of so small a size. It is to be observed that the level of the inner area is not raised above the exterior field. It is evident that there has never been here any work in masonry. But the special interest of this earthwork is that it has an authentic history, and its probable date is on record. According to the Anglo-Saxon chronicle, in 921, the year in which King Eadweard built the burghs of Towcester and Wigmore, the Danes were in the field, and having collected a force from Huntingdon and East Anglia, they "wrought the work at Tempsford and inhabited it, and built and forsook the other at Huntingdon." Thence they attacked Bedford, but later in the same year. In the summer, King Eadweard's people retaliated. They "beset the burgh," at Tempsford, "and fought against it till they took it by storm, and slew the king, and Toglos Jarl, and Manna Jarl his son, and his brother, and all those who were there and within, and would defend themselves, and took the others, and all that was there." Eighty-nine years later, A.D. 1010, the Danes were strong in East Anglia, and were mounted. After burning Thetford and Cambridge, and harrying the country as far as the Thames, they turned west, and followed the Ouse from Buckingham to Bedford, and as low down as Tempsford, burning as they went. Tempsford is the Tamiseford of Domesday, which looks as though the Tame,—a word of British origin,—had been the earlier name of the Ivel. At the survey the parish belonged to various persons. There is no reason to suppose that the earthwork was ever held as a Norman strong place. So far as is known, the Danish works were not rectangular, and certainly an inclosure of this size could have afforded no protection to such a body of men as were likely to have composed the Danish forces. Was it of earlier date, and used by the Danes as a citadel for their chiefs, or did the Danes encamp in the open field, and is the earthwork the remains of the residence of some English landowner? No other earthworks are laid down in the immediate neighbourhood in the Ordnance map, nor mentioned by any known writer.

Toternhoe is the name borne by a spur of the great escarpment of the lower chalk which forms the southern margin of Bedfordshire, and divides it from the county of Hertford. The parish lies above two miles east of Dunstable, and four east-south-east of Leighton-Buzzard. The earthwork stands on the brow of the hill. It is composed of a mound, upon one side of which are some curved outworks, and upon the other a rectangular inclosure. The mound is 45 ft. high, and its top, now somewhat rounded, 50 ft. across. The base, of 180 ft. diameter, is encircled by a ditch of about 10 ft. deep. Outside the ditch, to the north-west, is a sort of horse-shoe bank, 120 ft. each way, outside of which again is a ditch, and beyond that a second bank. To the north is a curved bank, about 200 ft. long and 80 ft. from the ditch of the mound. To the south-east the mound is covered by a curved bank, 50 ft. from its ditch, and about 300 ft. long, beyond which is a ditch of about 30 ft., and then a second bank. Beyond this again is the rectangular area, 250 ft. across by 500 ft. long, having on its north-east and south-east faces a bank, while the south-west face is the most precipitous slope of the hill. In advance of the south-east end is a ditch, and at the southern end of the north-east side an entrance.

On the same high ground, about a mile east of Toternhoe, is *Maiden-Bower*, a more or less of an oval inclosure, about 2,500 ft. in circumference, and contained within a single bank and ditch. There is said to have been a somewhat similar inclosure on Leighton-Buzzard heath. Toternhoe parish occurs in Domesday, but there is no



THE PORT ADELAIDE INSTITUTE, SOUTH AUSTRALIA.—Mr. R. G. Thomas, Architect.

mention of the earthwork in any historical record.

Caerleon.—The mound here is of the first class in point of size, ranking with those of Cardiff and Wallingford, but it possesses a much greater interest, inasmuch as it occurs mixed up with Roman buildings, and can be shown to have been formed after these were in ruins. It stands on the north or right bank of the Usk, a few yards from the river, between it and the remains of the Roman "Isca Silurum." It is wholly artificial, about 45 ft. high, and 100 ft. diameter above, and 224 ft. at the base, the slope of its sides being about 1½ to 1. The top has been much cut about, and was recently hollowed as a reservoir. At the base, on the south-western edge, are the remains of two half-round towers, 28 ft. diameter, with a space of 9 ft. between them. This was the gatehouse, and the pier upon which the drawbridge dropped, a mass of masonry 16 ft. square and 25 ft. from the gateway, was only removed in the present century. The ditch across which this bridge was laid, it is evident, surrounded the mound, and communicated with the river. The Norman castle of which this mound carried the keep, lay to the south-west, between the mound and the town, and extended to the main street, and possibly to the bridge, where are still two large drum towers, part either of the town defences, or those of the castle. It is pretty clear that the castle was at the eastern corner of the town, and formed a part of the general defences, having, besides, others of its own. A small round tower, part probably of the castle *enceinte*, stood about 200 ft. south-west of the mound, and was removed but a few years ago. Within the lower ward of the castle, a few yards from the mound, there were laid open the foundations of a considerable Roman villa. It was then seen that one of the ruined walls had been covered up by the mound, and that when the ditch was being excavated, the Roman foundations were cut through and removed. As to the post-Roman date of this mound, there cannot be two opinions. About a mile W.N.W. of the town, at Lode Farm, may still be traced one of those encampments of mixed outline which are thought to be the work of the native Britons after the departure of the Romans, from whom they had acquired some knowledge of the Roman rules of castramentation. This camp is oblong, the eastern end being rectangular, the western rounded. Those who have examined upon the ground the various mounds or burghs, the dates of which are given in the Saxon chronicle, will probably find no difficulty in attributing the Caerleon mound to the same period and people. At least as early as the end of the ninth century, the Danes and Saxons were in this part of Wales. The Danes plundered Caerleon in 892-3, and King Edgar was frequently there three quarters of a century later, and seems to have exercised authority there, since one account makes him grant Caerleon to Owen ap Howel Dda, in whose descendants it certainly long remained. The mound may either have been thrown up during the temporary occupation of the plain country by the English, or the native lords may have copied the English plan of securing a residence, which to a people indulging but little in masonry, and familiar with the construction of earthworks, must have proved convenient. Griffith ap Rhydderch is said to have fortified Caerleon in 1031, but the mound is probably above a century earlier. The names of places here and generally along the plain country on the Welsh border show that the English had made considerable settlements there at an early period. The Castle of Caerleon is mentioned in Domesday, and paid a rent of 7*l.* 10*s.* annually. The castle continued to be held by its Welsh lords, though not without frequent interruptions, during some of which the Norman castle may have been built. Henry II. seized and held the place in 1171 on his way to Ireland, but it was retaken by the Welsh the next year, and again retaken by the English, after a siege, in 1174. It, however, was again granted to its lawful owners, of whom Morgan of Caerleon held it during much of the twelfth and thirteenth centuries. His name occurs frequently in the records of the realm in connexion with Caerleon, and he seems to have made it over, under pressure, to William Mareschal, Earl of Pembroke, in 1217. During the sway of the Mareschals the castle was taken and burnt by Llewelyn in 1231. Finally, Morgan's line ended in Angharad, who carried what remained of the lordship to her husband, Llewelyn ap Ivor, whence it has come to their descendants, the Morgans of Tredegar. The castle does not appear to have been rebuilt after its destruction by Llewelyn, and ceased, therefore, to be of importance.

The Roman antiquities of Caerleon have been studied with close and critical care by Mr. Lee, of The Priory there, and have been made the subject of one of the best of many excellent publications by the Monmouthshire Antiquarian Society.

G. T. C.

THE PORT ADELAIDE INSTITUTE, SOUTH AUSTRALIA.

Mr. George W. Smith, the Hon. Secretary of the Port Adelaide Institute, tells us he is sure the people of that place will feel gratified by a notice of their new Institute in our pages.

Another correspondent from that distant spot speaks of the advantage with which they there learn from our pages what is doing in the mother country, and of his desire that the mother country in return should be informed of what is going on at Port Adelaide. We willingly respond by publishing a view of their new Institute now in progress. A fitting building to supersede the old "Institute" had long been desired, and the work was brought about by the promise of 500*l.* towards its cost by Mr. David Bower in 1872, on



CROWN COURT BUILDINGS, OLD BROAD STREET, LONDON

Messrs. Edmeston & Son, Architects. Professor T Hayter Lewis, Architect.

the raising of a similar amount by public contribution. A committee of gentlemen, formed for the purpose took up the matter, and a bazaar was arranged and successfully carried out in the following October, when Sir James Fergusson handed to Mr. Formby, the President of the Institute, the land grant of the site. The proceeds of the bazaar were more than sufficient to enable Mr. Bower's gift to be claimed. In the following year an application was made to Parliament, which resulted in the voting of 2,500*l.*, which, with other amounts, gave the committee a sufficient basis to commence operations. Designs were called for, and the committee chose that of Mr. R. G. Thomas, F.R.I.B.A. The building, which is in the hands of Messrs. Williams & Cleave, is now far advanced.

The elevations are in the Venetian-Italian style, of as inexpensive a character as possible consistently with a due regard to architectural appearance, as the sum allowed is limited in amount. There being no amount available for a tower, a look-out has been provided for by the constructing of a mansard roof over the angle of Commercial-road and Nile-street, so that when entertainments are going on a flag can be hoisted. A niche for a statue is also provided above the doorway into the class-room facing Nile-street. There are freestone fluted columns, bases and carved capitals to the principal entrance doorways situated in Commercial-road and Nile-street. The materials for construction consist of rubble stone from Dry Creek Quarries, bricks from Bowden, and freestone from Teatree Gully. The dressings are of Portland cement and in portions of freestone. The foundations consist of concrete, with colonial redgum timber cross-sleepers and longitudinals well bolted together and bonded. The foundations are laid on the original level of the Port over which the tide regularly ebbed and flowed about twenty years ago. The arrangement comprises an entrance from Commercial-road and two entrances from Nile-street. The one from Commercial-road is in connexion with the reading room, museum, lecture-hall, committee and curator's rooms. The main door from Nile-street communicates with the library, class-rooms, lecture-hall, and curator's residence. The other entrance-door from Nile-street also gives access to class-room, reading-room, and library. The basement consists of two large rooms under the reading-room and library, which are intended for school-rooms, and have entrances from Commercial-road and the yard. The building consists of basement, ground-floor, and first-floor, having a frontage of 70 ft. to Commercial-road, and 88 ft. 6 in. to Nile-street. There is a large class-room on the left of Nile-street entrance, and a convenient and ample apartment for a library to the right. There is also available a communication with the reading-room, and a room adjoining useful for a library of reference or reading-room. Adjoining is a committee-room, and near are the curator's apartments, with a separate staircase and entrance. The entrance from Commercial-road leads to a lobby, with entrance to the reading-room, and a staircase, of a good width, leading to the museum on the first-floor, The museum can be thoroughly lighted and ventilated, and is of ample size. The staircase is so continued as to give access to the rising seats of the lecture-hall and to the proposed gallery, thus affording good means of discharge. The lecture-hall is also approached by the other staircase, from Nile-street, as already mentioned, with wide doorway leading into the body of the hall from the staircase landing. Adjoining, with door leading directly on to the platform, is the lecturer's room, and a lobby off the staircase communicates with the retiring-room for ladies also used as a class-room), with lavatory adjoining, and another class-room, to be used also in connexion with concerts, &c. The lecture-hall is a lofty room (24 ft. 9 in.), well lighted by windows all round in the coving of the cornice under the ceiling, besides windows at the ends. These windows can be used for ventilation, and they are also accessible from the roof for cleaning. There are also means for ventilation by air-trucks in the roof, connected with the chandeliers, and in other ways, and this applies throughout the building. It is proposed that one of the large class-rooms be used by the masters of vessels and agents as an exchange. The foundation-stone, which is of Macclesfield marble, is to be placed in the south-east corner, or corner of Commercial-road and Nile-street, immediately above the freestone moulded plinth, and will serve as a rusticated quoin, having 3 ft. 3§ in. to each street by a height of 11¼ in. The inscription on Nile-street side is:—"Port Adelaide Institute (Incorporated); and on the Commercial-road side is,—"This foundation-stone was laid by David Bower, Esquire, J.P., 31st October, 1874."

The amount of the contract for the Institute is 5,450*l.*, to which may be added 1,000*l.* for furniture. The contract is to be completed by the 31st of December next.

As our readers are aware, the inhabitants of the colony have received from the Hon. Thomas Elder, M.L.C., of the firm of Elder, Smith & Co., merchants, Adelaide, the sum of 20,000*l.* towards the establishment of a university in the city of Adelaide, which follows the gift of 20,000*l.* by Mr. Walter Watson Hughes, J.P., now resident in England, and an endowment from the Colonial Government of 50,000 acres of Crown lands and the gift of a site of five acres, the site being beautifully situated near the river Torrens, and having a frontage to the north terrace of the city, will ensure the establishment of the university.

Australia has our heartiest good wishes for her continuous and augmenting progress in all that is good and ennobling.

CROWN COURT BUILDINGS, OLD BROAD STREET.

THE new building here on the left of our view occupies the site, apparently, of the chancel of the Dutch church in Austin Friars, the mouldings of the chancel and side arches appearing in the wall, which is now the party-wall of the new structure. One part of that site is freehold, and the other leasehold, now purchased by Mr. C. Raper, and the necessity of placing the party-wall at the junction of these two plots has divided the front unequally. Messrs. Edmeston & Son were the architects.

The materials of the front are hard Box-ground stone, with red Dumfries stone over the windows. The main object sought has been to obtain all the light possible. The large area of the several floors renders the premises useful for public companies or merchants, employing a number of clerks, and the property as now rebuilt has greatly increased in value. The interior joinery work throughout is of Spanish mahogany and pitch pine, French polished. The roof is flat, composed of concrete, 3 in. thick, and covered with Seyssel asphalte, by Stoddart & Co., Cannon-street. The masons' work was done by Mr. Seale, Apollo Works, Walworth; the plastering, by Mr. F. Eastlake, Newington-green; the iron work, girders, columns, &c., by Mr. Dence, Mark-lane. The mahogany doors and vestibule were by Mr. H. McCowan, Finsbury-road, Wood-green; the gas-fittings by Mr. Humphreys, Holloway. The plate-glass and lead work were supplied by Nicholson & Co., Upper Thames-street; and the sanitary arrangements by Messrs. J. G. Stidder & Co., Southwark Bridge-road. The whole of the work has been carried out by Mr. W. Parry, the proprietor's manager.

No. 4, Crown-court, the adjoining premises, also shown in the view, has been rebuilt on another part of the site of the old choir of the Austin Friars' Church. Doulting stone is used throughout the front, and the red brick facings were supplied by Eastwood & Co. The whole of the internal joiners' work is in pitch pine, and the joists, girders, &c., are wrought and moulded, and left exposed.

The building is designed to serve as chambers for Mr. E. J. Rickards, and was erected, at a cost of little over 2,000*l.*, by Messrs. Hill, Higgs, & Co. Professor T. Hayter Lewis was the architect.

ORNAMENTAL DESIGN.*

SINCE I last had the honour of addressing you, the name of one who has done more to popularise the art of ornamental design than any of his predecessors, through the multitude and variety of his works, has become historic,—I allude to the great Owen Jones. After a life full of activity and usefulness, he has paid the common debt of humanity. His great work, the "Grammar of Ornament," will ever be a text-book for the art student. In it he gathered together specimens of all the perfected styles of ornament, on which he and other distinguished *collaborateurs* wrote most valuable and exhaustive treatises. On the subject of Egyptian and Moorish ornament, he stands pre-eminent. No one has brought to our view the glories of Thebes and the rich halls of the Alhambra in the same manner as he has done.] His most beautiful Egyptian and Moorish courts in the Crystal Palace, Sydenham, are indeed stupendous undertakings: the remembrance of them will always be to me a source of great pleasure. The brilliant colouring of the former, and the delicate intricacies of the latter, must have greatly impressed his mind: so we cannot wonder that in his own ornamental creations he combined these principles. In the designing of ornament, Mr. Jones was wonderfully gifted, as the very great number of his published works, so beautifully produced in chromolithography by the Messrs. Day, attest. We may enumerate among these works "The Victoria Psalter," "Paradise and the Peri," Gray's "Elegy," &c. These works show the great versatility of his genius in ornamental design.

Of the utility of illuminated books in the present day, I am inclined to form rather an unfavourable estimate. Before the introduction and in the infancy of printing, when MSS. were universal, or nearly so, it was natural that great pains would be spent on their caligraphy and ornamentation, and that in making copies of the Gospels or other works the scribes would delight to revel in glorious initial letters, sometimes, as in the book of Barham, covering a whole page with one, in which would be introduced pictures relative to the chapter following it, and go round the pages with floriated borders, of most exquisite design. The beautiful decorations lavished on copies of the Gospels arose doubtless from the intensely religious feeling of the scribe, in whose imagination it was impossible to expend too much time in the decoration of so precious a gem. In the general literature of those ages books were produced but for the rich, and great length of time was occupied in their production. The beautiful choir-books of Sienna, which I have had the pleasure of seeing, are glorious specimens of the art of illumination. There is a considerable number of them, and the variation and ingenuity of the designs are marvellous. Our own Book of Kells, which, however, I have never had an opportunity of inspecting, and which, I suppose, since its secret trip to London, will be more difficult of access than formerly, shows the great perfection attained in this art by the inhabitants of this country in former days. Miss Stokes has beautifully reproduced some of its initial letters in Dr. Fergusson's poem, "The Cromlech on Howth." The branch most specially suited for the employment of illumination in the present day is that of complimentary addresses, congratulations, and such like. It does not matter if these are sometimes a little illegible. It leaves more to the imagination if they are so; but I do think that "illuminating texts or poems in old English characters, with variously-coloured letters, instead of throwing any light on the subject, has a tendency to obscure the meaning of the writer." Have a fine initial, if you like; but do let the remainder be written in plain, intelligible characters, that will immediately appeal to the senses of the reader, instead of his having in the first instance to translate them to his mind. There is a saying, "Such a thing ought to be written in letters of gold." Would we be inclined to mind it one whit more if it were?

Ornamental designs may very properly be divided into those founded partly or entirely on geometrical design, contrasted with those that in their treatment are not bound by any geometrical rule; some founded entirely on conventional principles, others that exactly reproduce the forms of nature by imitation; some in which only leaf forms are introduced, others in which the human and animal forms play a prominent part; some that in their design have distinct reference to polytheism, others that cannot fail to be identified with the introduction of Christianity. While in ornamental design the greatest liberty of arrangement may be indulged in, yet, such contrasts as conventional and natural forms, or Pagan and Christian symbols in the same ornament or in juxtaposition, are always offensive to the correct taste. In making any ornamental design it is always necessary for us to keep closely in mind the material in which our design is to be executed, and the position it is to occupy relative to the eye. The ornamental designs that might be suitable enough for stone are not those that would be appropriate for iron; as also those

* Read by Mr. Thomas H. Longfield, at the Ordinary General Meeting of the Architectural Association of Ireland on February 25th.

we design for either material when seen at a distance, should vary greatly from those that court a closer inspection: of this we see wonderful examples in some of the great cathedrals. The figures and the foliage that look from below to be of the most delicate handling, when we ascend near them seem coarse and unfinished: in this lie the perfection of sculpture and the suitability to position; but Gothic art is not without tricks in the present day, and the pencil, I think, often plays a prominent part in aiding the depth of the sculpture inside buildings, or when the stone is of a light colour, and which gives the carving a most unnatural sharpness. These are not Pugin's "Principles," no: those on which Solomon built the temple of old. Carve as rudely as you will at a distance from the eye, as long as you can produce your effect without resorting to shams, all shade in carving should arise from direct contrast of colour or depth of carving. We may say with Shakspeare,—

"It is not, nor it cannot come to good;"

and should in no case be permitted.

Ornamental Designs for Hanging.—It is not a good principle to make them too crowded, so that when executed we have to take the material up and look closely at it to see its beauties, or how closely it resembles an engraving. This elaboration of detail, and ignorance of scale, is often labour lost. The pattern should be discernible to the observer without close inspection. Too many colours, often injudiciously blended, will neutralise each other, and have a most insignificant result: this kind of colouring often betrays weakness. The same remark would apply to the method now usually adopted in the colouring of cornices in a dozen different hues. The result is, that the cornice often looks nothing, but you are told it is right on principle. These rules of contrasts and gradations of tone savour greatly of eclecticism, and are often carried a great deal too far, arbitrary rules being enunciated on matters that admit of endless and equally satisfactory combinations of treatment. The principle of decorating hangings in horizontal lines seems to me to be bad, or any pattern founded on this principle, as serving to neutralise the hanging of the drapery, and draw away the eye from its natural folds: the pattern should run from top to bottom, or in diamonds. The *fleur-de-lis* pattern will, I think, always be a favourite; it is so symmetrical and quiet for large surfaces. Some of the old Italian patterns, such as we see in the works of the Venetian school of painting, are very effective and rich. In the Gothic style drapery is often conventionalised to form a decoration for the lower part of walls, where it sometimes looks very well. The folds of the drapery should be made out in hard decided lines, and diaper patterns wrought over it. The plates that you will find in the Society of Antiquaries' publications on the subject of the decorations of Old St. Stephen's Chapel, Westminster, the crypt of which only now remains, restored by Mr. Butterfield*, will show you very well how the old Gothic conventionalised drapery. This chapel was coeval with the Sainte Chapelle, at Paris, the decorations of which were, I suspect, of somewhat similar character.

Chinese and Japanese Ornament.—In these schools of ornament conventionalism is almost universal. The creations of the latter school are generally very pleasing, and the contrasts of colour of a very effective kind. Some of the Japanese enamels are very effective and ingenious. I have seen one with a green ground, over which delicate leaves twined of red, blue, drab, and yellow, each leaf surrounded by a brass wire, soldered on to the branch of brass wire; here and there over the vase was a conventional flower with black and pink introduced. This manufacture must be a very tedious one, and the finish of the specimen I allude to was exquisite, and the contrast of colour very pleasing. This manufacture would have some similarity to the ornaments that used to be made by ladies a good many years ago, with pieces of card curled up and let into wood, had the interstices been filled up with some coloured material. The manner in which the Japanese conventionalised bunches of flowers on their enamels by intersecting circles is very clever, and varieties of foliage are also well shown.

The leaf principle in the Chinese pattern is very well carried out, and the pattern, with the frets in the centre, is very ingeniously executed to divide the graceful curved ornaments. The idea of the centre ornaments would be suggested by flowers growing on a lattice.

Ornamental Designs applied to Ironwork.—These must, of course, vary as the work is to be wrought or cast, though I have seen many wrought-iron patterns executed in cast work, and, if in positions where not liable to get a knock, may stand well. The effect is very nearly the same when at a distance, but if at all near the eye, the falling off is very perceptible. The old wrought ironwork supplies us with a great variety of beautiful forms, and it would be a great pity if we were not to take advantage of them. In an example of the free flowing style from a house at Dijon, the graceful undulations of the lines, and the pleasing manner in which the central feature is introduced, are very satisfactory. In one from Lucerne an ingenious method of filling up an elliptical window is shown. As a piece of light and graceful design, I give you a finial from the shrine of St. Taurin, at Evreux. The way in which the foliage here is introduced is specially admirable, enclosing, as it were, in rich foliage, the culminating fruit.

Moorish Systems of Ornament.—These are generally founded on a geometrical basis, producing many varieties by interlacing these forms with foliage, or by the introduction of their written characters; the effect of these ornaments was generally rich though quiet, and there never was any vulgarity or garishness about them,—there was a delightful all-overishness, if I may be allowed to use such an expression. I mean that the eye does not fasten on one particular part of their ornamental design more than another. The Moorish caps of the baths at Gerona are very good examples of their art; you will find them very beautifully illustrated in the first volume of Laborde's "Voyage Pittoresque en Espagne." Some of the Moorish wall-tiles are of beautiful design, especially the interlaced geometric patterns, which are very characteristic of this style,—one full of repose, and unequalled richness. Its realisation, as in the Alhambra, is almost fairy-like. We are generally apt to associate it with the Arabian Nights' Entertainments, having been generally largely availed of by artists when illustrating that work.

Ornaments founded entirely on Geometrical Designs.—These are to be found in numerous styles; the fret is to be found everywhere. The Chinese understood its properties very well, and used it largely as a relief to other ornaments in the diagonal arrangement; in classical examples it is always found in the square direction. The early Italian mosaic work also evidences the great variety obtainable by geometrical forms, as also the very agreeable manner in which colour can be disposed on them. You will see this exemplified on the tomb of King Henry III., at Westminster, which is as fine a specimen of this kind of work as you can see. Roman basilicas are richly decorated with it.

I now wish to draw your attention to a few examples of ornaments that I have put together, and which are made up of equal amounts of black and white, and the pattern is as well defined by the one as the other. An example from Cairo is a very satisfactory pattern of ingenious construction, the lines forming most agreeable curves.

The Ornamental Design of Ceilings.—I fear that much progress has not been made in this art, for we see nothing done as fine now as there was in Dublin a hundred years ago; for these, I know, we are indebted to the settlement here of a band of Italian workmen, one of whom, Bossi, executed the beautiful chimney-pieces, inlaid with coloured cements, that are often to be met with in the old houses here. The ceiling of the chapel of the Lying-in Hospital, Rutland-square, is a very fine piece of plaster-work, but we must recollect that this and such others were the work of artists trained to a correct knowledge of the human figure, and able to model with great facility. Such work cannot be executed now save at immense cost, for ordinary workmen are not able to do them. I have seen some of the ceilings of this period with delicate surface decoration, ovals, wreaths, and fan-like ornaments of an exceedingly chaste and elegant nature; these, when the relief is gilt, have a most charming effect. The works on ornamental design published about this time by Michelangelo Pergolesi, so called, I have no doubt, from his being the son of an artist, as in the case of another distinguished name that appears on the roll of contemporaneous art. Pergolesi's ornaments were generally of a very refined order: the subjects he introduced into them were the designs of Cipriani, engraved by Bartolozzi, and which in themselves are very beautiful. These ornaments were well suited for the painted furniture then much used, and of which we sometimes see very nice examples here. This Michelangelo's designs were as delicate as the great Buonarotti's were massive and bold, and were, I am sure, largely availed of by the non-inventive art-workmen of the day. There is a great similarity of style running through all Pergolesi's works; his scrolls are very beautiful. The ceilings in the Vatican, designed by Raffaelle, are very elegant, divided into geometrical coffers, filled with paintings, the borders composed of rich arabesques. How very much more satisfactory such ceilings are than that of the Sistine Chapel, by Michelangelo. Here we have architecture and figures painted,—masterpieces of figure-painting,—in the most impossible positions. Michelangelo, however was such a giant in art, that we ought to be most thankful for every stroke of his great pencil; but we may be permitted to take exception to the principle of this ceiling. My feelings, on beholding it, were, I must say, mingled with regret that I was not able to see it as it ought to be seen. Michelangelo always used the figure whenever he could employ it in his ornamental designs. He knew he understood it really well, both in delineation and modelling, and it is in this his greatest power consisted. Let me call your attention to the tomb of the Medici at Florence. How very beautiful those figures are, but how bad in principle is it to have figures reclining on a curved pediment; they give one a most uncomfortable sensation of the possibility of their slipping off. I think something could have been introduced that would have conveyed an idea that this was impossible. The ceiling in the Town Hall of Perugia, by the great Pietro, is of a style very well suited for such decoration, light and elegant, without being, in the slightest degree, overpowering. I have had the advantage of being often able to study a very beautiful copy of this,—a work of the greatest delicacy and beauty. Raffaelle is said to have assisted in painting this ceiling. The decoration of the Temple Church vaulting by Mr. Willement has always struck me as very satisfactory. The Church of St. Jacques, at Liege, is somewhat similarly decorated. The Baths at Pompeii supply some good "motifs" for ceiling decoration.

I would call your attention now to the revival of a late period of Italian ornament of a very heavy description, the culminating extravagance of which we may see in the Venetian books of the seventeenth century, in the borders, titles, and *culs-de-lampe*. These ornaments are formed of an incoherent jumbling of all sorts of "property" into the same design. They were the invention of a school great in the perfection they had attained in the delineation of human form, but this can be carried to too great a length. In their emblematical ornaments the Italians very often mingled *amorini*; they formed a very pleasing decoration. Albano was very clever in designing them. I show you a copy of one of his, the original of which was kindly lent me by its owner, Dr. Frazer. It represents "Music." One acts as a conductor; the others hold music-books, and play different musical instruments; while another dances. These fine chubby little fellows always look well in ornament. Italian painters have always excelled in the composition of such groups as these.

In the ornamental designs furnished by those who make Gothic forms their exclusive study, if they introduce figures, they are generally of a meagre Mediæval aspect, with long hair and angular limbs. The men in tunics and girdles with long sleeves; the women as if they were drawn out of pumps,—in fact, conventional men and women. They even go so far as to introduce such figures as accompaniments to modern buildings. This is all very well in such a work as the "*Dictionnaire Raisonné*," where the figures suit the date of the constructions described; but to insert them as accompaniments to modern works is intolerable, and shows a servility of copyism.

It is doubtless true that this Mediæval costume is very easily designed, and it is not at all necessary that it should be true, and it covers an amount of anatomical difficulties. Any critic of the modern stained glass will see this, the figures of which are often ill-drawn and badly draped; however, brilliancy and proper distribution of colour are the great end to be achieved here. Diapered grounds to figured medallions

* No. By Mr. E. M. Barry.—ED.

have a very good effect. The plan of filling a window almost entirely with a subject, sometimes letting it run through several lights, is not a good one. The object to be obtained by stained glass is a dim religious light, not a transparent picture; and this diapered ground gives this effect, and serves as a surface of repose in the picture. In our own city, at St. Patrick's Cathedral, we have an example of these two methods opposite each other in the transepts, and we can see at a glance which is the more satisfactory; though, to my mind, I would prefer less picture and more diapering in the south transept. Unity of style in stained glass in a building is as essential as unity of architectural details. As an example of this, I would appeal to the church of St. Germain L'Auxerrois, at Paris, in which, if I remember aright, the stained glass is nearly all in the same style; but to allow stained glass to be inserted of the most opposite designs, one rich and brilliant, another cold and sickly, is a wrong principle, and is reviving in the glass as disagreeable an effect as was formerly due to promiscuously scattering over the walls monuments of hideous design in black and white marble, of a description of which Westminster Abbey can boast not a few. I would by no means suggest having the same ornamental designs carried out in each window, but that unity of style and colouring should be observed, and figures in windows should not differ in scale at the same level. The figures in clearstory windows should be much larger than those in aisle windows. It is equally faulty to have the subjects too small as too large.

I must now conclude the few remarks that I was desirous of making to you on the subject of ornamental design, and I fear the routes I have taken you in this and my former address have been very circuitous and rambling, but I do not see how they could fail to be so, considering the great extent of the subject. Now-a-days, when there in such a diversity of taste abroad, it is well for us to try and see the beauties of every style and to avoid their extravagancies; as, for instance, the barbarities that were perpetrated in the Louis Quatorze, which was undoubtedly a meretricious and bad one. It is human nature to hunt up fresh fields of ornament: fashions must change in art as well as everything else, though we may thank Providence they do not change as often as fashions in dress. It is most amusing to turn over the pages of an old *Illustrated London News*, and see, within our memories, what strange ideas have obtained on the subject of dress. There was a time when Pugin's Gothic was all that could be desired; it is now considered somewhat *passée*; in fact, it was wearisome, and much too expensive. Does the river front of the Westminster Palace look enough for what it cost? Is it not wearying in its heraldry, and most monotonous? I prefer the effect of our own old Parliament House, and I dare say, if we could look into the distant future, its columns will be inspected as an antiquity by the New Zealander when the Westminster Palace shall have crumbled to decay.

THE INSTITUTE LIBRARY.

By permission of the Council of the R.I.B.A., the members of the Architectural Association Colour Class have the opportunity of examining works on colour decoration, previously to the monthly meeting of that class. The Pompeian, Byzantine, Saracenic, and later styles form the subjects for study; the perusal of books bearing on those styles is of much advantage to the student. The Institute has lately purchased several important works; among those on decoration we may name the following:—

Adams, "Décorations intérieures des Époques Louis XIII. et XIV."

Daly, "Décorations extérieures et intérieures."

Guilmard, "Histoire de l'Ornement," &c.

Bourgoin, "Les Arts Arabes,—Architecture, Menuiserie, Marbres," &c.

Pfnor, "Ornamentation usuelle de toutes les Époques dans les Arts."

Prisse d'Avennes, "L'Art Arabe."

Queverdo, "Décorations intérieures, Époque Louis XVI."

Racinet, "Polychromatic Ornament."

It should be remembered that the evening hours, during which the Library is open, are from six to nine: this alteration has considerably increased the attendance of members and students in consulting its valuable books, photographs, and drawings.

THE FUTURE OF COLUMBIA MARKET.

Since the Corporation returned Columbia Market to the Baroness Burdett Coutts, under circumstances now well known to the public, it has been practically closed for all market purposes whatever, with the exception of one or two of the shops being open for the sale of vegetables, and the only parties to be seen about the otherwise deserted interior of this handsome structure are one or two telegraph clerks, in an office kept open for general telegraph purposes, together with a medical gentleman, who occupies apartments at the south-western angle as a dispensary for the poor inhabitants of the district, and the keeper of the market, and the Baroness's collector of rents for the tenants of the model houses in Columbia-square.

We learn, however, that these external evidences of present desertion will not long continue, as the Baroness has resolved to make a determined effort to effect what the Corporation confessed their inability to carry out. The building is, in fact, to be utilised for general market purposes, a fish-market, which it has been stated could never be established there, being intended as one of the principal features; and with the view of carrying out this object the preliminary steps are now in progress. The connexion of the market with the Great Eastern Railway by a tramway is the important object to be secured in the first instance, and this, we understand will shortly be carried out. It may be remembered that a few years ago the Baroness Coutts obtained an Act of Parliament, giving her powers for the construction of this tramway, and that when she made a deed of gift of the market to the Corporation, the powers to make the tramway were also transferred to the City authorities. Owing, however, to the delay which took place in utilising the market, and the eventual failure of the Corporation to do so, the Parliamentary powers to construct the tramway lapsed, the consequence being that a Bill reviving these powers is being promoted in the present session, and has already advanced several stages. No opposition is likely to be offered to the measure, and in the course of a short time the probability is that it will receive Parliamentary sanction.

We learn that the necessary powers having been obtained, the construction of the tramway will be actively commenced, and it may be added that the proposed works include the making of a new street, 50 ft. in width, carried in a southerly direction towards the goods station of the Great Eastern Railway. The proposed street commences on the south side of Crabtree-row, opposite the principal entrance to the market, and bounded on the west side by the block of buildings belonging to the Industrial Dwellings Company. This new street will involve the demolition of a large number of dilapidated hovels on the south side of Crabtree-row, which are not fit for habitation, and which are in miserable contrast to the dwellings opposite called Columbia-square, adjoining the market. It is, perhaps, not too much to say that, not even in any portion of East London, is there to be found more desolate or more unhealthy abodes, and if the intended works produced no other good result, the sweeping away of these dwellings will confer an important sanitary advantage. Continuing in its southern course, the proposed new street and tramway intersects Virginia-row, in the neighbourhood of which another lot of inferior property will be cleared away, and, after crossing Bethnal-green-road, the street and tramway terminates near the goods station of the Great Eastern Railway, between Ham-street and Cheshire-street. We further learn that a large number of comfortable residences for the industrial classes will be erected in the intended new street and the immediate neighbourhood. Independently of this new approach to the market additional facilities for access to it are to be given on the north, or Hackney and Kingsland roads, for the accommodation and convenience of the residents in those densely-populated districts.

Memorial of Sir Sterndale Bennett.—A meeting was held at the School of Art, Sheffield, on the 8th inst., to consider the desirability of erecting a monument to Sir W. Sterndale Bennett, who was a native of the town. It was decided to erect a marble bust of the deceased composer in Butler's Hall, the bust to bear a suitable inscription. The cost will be about 200*l.*, the greater portion of which has already been received.

THE CITY OF BARODA AND THE HOME OF THE GUIKWAR.

Although a considerable amount of attention is at present directed to Baroda in consequence of the extraordinary drama which is being played out there, very few people either in India or England know much about the town. It is true that it is passed by the Great Indian Peninsular Railway; but the traffic to and from it has always been extremely small. It has no commerce of a nature to attract enterprising Anglo-Indians, no ancient ruins and remains to delay the archæologist, and the majority of the travellers between Bombay and Madras have been accustomed to look listlessly at its groves, languidly to pity the British Resident and his handful of troops, doomed to drag out their existence in such a dismal spot, and to congratulate themselves that another stage of their journey was accomplished when it was left behind. However, since the now notorious attempt to poison Colonel Phayre was made, and the Guikwar himself was arraigned as *particeps criminis*, scores of visitors have thronged to Baroda, and some of the journalistic race, finding a scarcity of stirring events, have been driven to describe their surroundings for the edification of their readers. From some of these narratives, written solely for Anglo-Indian perusal, we are enabled to form a fair notion of the scene, which helps to lend a little realism to the scanty reports which reach us of the sayings and doings of the leading actors.

Baroda is a walled city, and, doubtless, when it belonged to the Mogul emperors, was a place of some strength, but now its fortifications are worse than useless. The puny turrets from which a few old rusty guns peep out seem as if a little trumpet-blowing would serve to bring them about the ears of their defenders like those of Jericho; and the thin walls which connect them, which may once have afforded a protection against arrows, now only serve as a dividing line between the huts of the poor and the more pretentious abodes of the magnates,—as a barrier to shield the latter from fresh air, and as a pretext for the existence of two or three handsome gateways. The correspondent of the *Times of India* describes one of these entrances to the city as a "highly-coloured structure abounding in frescoes"; and glare and glitter seem to be the leading architectural characteristics of the capital of the Guikwars. The houses, which are said to resemble those "which one may see in some of the minor portions of the native town of Bombay," are plentifully daubed with red and blue, green and gold, laid on with an unsparing hand. In the centre of the city is a quadrangular gate, from which the four principal thoroughfares branch out. It is surmounted by a pagoda clock-tower, in which is a four-faced clock, and is a showy structure, with some claims to real excellence. Like the other buildings, it is highly coloured, and is profusely adorned with representations of elephants, Brahminy bulls, and tiger-fights. The palace of the Guikwar is a rambling edifice, two stories in height, and seems more like a collection of houses knocked into one than the deliberately-planned production even of a native architect. Its very construction is rude, and its tatterdemalion aspect is not improved by the groups of ragamuffin Arab and Hindoo retainers who perpetually squat on the steps and loll in the verandahs. The *chef d'œuvre* is said to be the Guikwar's bed-room, the walls of which are covered with pictures of extraordinary indecency, and lined with models similar to the one which he was pleased to send to one of the public museums of India, and which was instantly and shamefacedly placed in a private room by the directors of that institution. The harem is situated opposite the palace, and outwardly presents the appearance of being composed of fine lattice-work, through which the beauties of the zenana can view the external world without themselves being seen. In strong contrast to all the neighbouring structures is a handsome unfinished building of the purest white, which Mulharao intended for the reception of his favourite Luxmeebaee. It stands in the midst of a nicely laid-out garden, surrounded by a neat iron railing. A reporter remarks:—"As Sir Lewis Pelly's is a reign of retrenchment, it is unlikely now that it will ever be finished." But it may be cheaper to finish it than to allow it to fall into ruin. The greatest unlikelihood is, that it will ever be applied to its original purpose. Among the public works in progress is a showy building which was meant for the housing of the famous gold guns. These pretty play-

things are at present placed in a huge gilt *pandal* in which the royal marriages formerly used to take place; but the gilt is now tarnished, the drapery is tattered and torn, and the whole place wears a very woe-begone look. The gold guns are said to have cost 30,000*l.* a piece, and are mounted on wooden carriages plated with silver. They have their full complement of horses stabled close by, and are in charge of a squad of ruffians clad in red and gold from top to toe, whose chief task is to keep them well polished, although they can be fired, each being lined with a thin steel tube to prevent the destructive effects of a light charge of powder. The silver guns, which have a separate home and artillerymen of their own, are similarly protected. Both the gold and silver pieces have occasionally been fired. The natives look upon them as a kind of gods, make "poojah" to them, and bring them offerings of fruit and flowers, which are very pleasing to the gunners. Mulharao Guikwar, like some other Oriental potentates, has a fondness for wild beasts, and kept a sort of scattered menagerie about his premises. There were a considerable number of tigers, lions, and leopards chained to posts, but kept from wandering rather by affection for their keepers than the strength of their bonds. The aviary is described as "a d rty, close, ill-ventilated hut, containing a most miscellaneous collection of birds and beasts, parrots, gold fishes, cockatoos, rabbits, guinea-pigs, white mice, some splendid game cocks, and many other things. One of the chief constructions outside the walls of Baroda is a huge bazaar, which is a small town in itself. The native shops in the city are very mediocre, and the congregation of hovels surrounding it are ill-built and worse kept. There is no drainage, and little scavenging. The only pleasant feature of the landscape is the profusion of fine trees; but one of the narrators whose materials we have used, seems to be justified in saying: "Baroda is a city that will hardly bear a second visit, as it is about the most uninteresting place imaginable."

ART MATTERS IN DUBLIN.

THE annual distribution of prizes to the students of the Dublin Society's School of Art took place not long ago. The Lord-Lieutenant presided, and distributed the prizes. There was a distinguished attendance of members of the nobility and gentry, and members of the Royal Hibernian Academy and the Royal Dublin Society. Mr. Thomas Jones, the president of the Royal Hibernian Academy, as chairman of the Committee of Fine Arts, brought forward the report of the head master of the schools, Mr. Edwin Lyne. During the course of his remarks, Mr. Jones traced the early rise and progress of the Dublin School, and alluded to some of the eminent artists who received their first instruction within its walls. He particularly alluded to the case of the late Mr. Foley, saying that he would never forget the kindly face, dark, genial, friendly eye of that boy, who took so much interest in showing the newcomer his duty. A letter was read by Mr. Jones, addressed to the head master by Mr. John Lewis, a carpet manufacturer at Halifax, who obtained all the gold medals at Vienna, and received the honour of knighthood from the Emperor. Mr. Lewis particularised the beautiful designs of Miss Ball, prepared for poplin and carpets, as showing great talent, and hoped it would not be considered presumptuous of him to ask that his Grace the Lord Lieutenant might be solicited to offer from him the present to Miss Ball of a real Persian rug, as a token of his (Mr. Lewis's) satisfaction and interest in the welfare of the institution.

His Grace the Lord Lieutenant, while congratulating those connected with the success of the schools, passed on to remark that "The great increasing general wealth of England has enabled thousands to whom art was hitherto a hidden treasure to gratify whatever may be their own views of artistic merit to the utmost extent of their fancy. I do not say that this is altogether an unmixed benefit, for I think indiscriminate wealth has very often encouraged indiscriminate art: the price paid has not always been the test of real merit; but I think the encouragement has this great advantage,—that real artistic merit is certain in the end to assert itself, and if it do not receive at once the advantage of momentary profit, it is sure at least to secure future success and honour. I think, owing to the encouragement given by the over-rich, perhaps not over-scrupulous, public, a tendency has arisen in a popular school of English art to run into realism; that is, an idea has arisen that exact and accurate, and, perhaps, exaggerated copying of nature,—of the fibres of leaves, the hues and texture of bark, the tessellated foliage of plants, and the gaudy colours of flowers, or even the cold or literal transcript of landscape,—an idea has arisen that this is high art, and this realism has been carried into what I may call, in other words, the *tableaux de genre*, and also into sacred subjects; and we find the literal figure of ordinary every-day men and women substituted for the halo of poetic ideality with which such subjects had been formerly treated by the great masters. This may be profitable art, but it is not high art."

The Balfe Memorial Committee have issued an address to the people of Ireland in support of the proposition to erect a statue to the eminent composer. The committee moderately estimate the sum required for the purpose at 1,000*l.* It is thought that this sum will not be long in forthcoming.

Now that the work of restoration of Christchurch Cathedral is approaching towards completion, it is understood a scheme of the subjects for the proposed memorial stained-glass windows has been drawn up, which are designed, it is stated, by Mr. Holloway, and the entire carried out by two manufacturers in England. Those in the eastern part of the cathedral are being intrusted to Messrs. Clayton & Bell, of London; and those in the nave aisles and transepts to Messrs. Hardman, of Birmingham. Several windows in the cathedral have been bespoken, it is stated, by private persons as memorials to deceased members of their families. One has been engaged by the committee of the Robinson Testimonial, and it is thought that it is not unlikely that the windows in the south transept will be taken to form a memorial to the venerable Duke of Leinster, late Grand Master of the Freemasons, members of whose family have been associated for some centuries with this cathedral.

FLUE.

SIR,—Some recent references in Parliament and elsewhere to "The Chimney Sweepers and Chimneys Regulation Acts, 1840 and 1864," call to mind a little piece of lore therein, which the world,—especially the building world,—should for safety and profit share forthwith with us its fortunate possessors. Not seldom has it been my intention to enlighten some, and amaze others of my fellows by its recital;—alas! many such warm resolves form floor tesseræ now in the most torrid area known to furnace engineers.

Section VI., 3 and 4 Victoriæ, cap. 85, reads:—"And whereas it is expedient, for the better Security from Accidents by Fire or otherwise, the improved Construction of Chimneys and Flues provided by the said Act"—[4 and 5 Wm. IV., cap. 35, which the Act of 1840 amends, and now practically supersedes]—"be continued: Be it enacted, That all Withs and Partitions between any Chimney or Flue which at any Time after the passing of this Act shall be built or rebuilt shall be of Brick or Stone, and at least equal to Half a Brick in thickness;"

[This is substantially Metropolitan Buildings Act, 1855, sec. xx., r. 6.]

"And every Breast-back and With or Partition of any Chimney or Flue hereafter to be built or rebuilt shall be built of sound Materials, and the Joints of the Work well filled in with good Mortar or Cement, and rendered or stuccoed within;"

[I strongly suspect "Breast-back," and the fair penmanship of the draughtsman, and the vigilance of the "reader": the least captions of critics would probably suggest the abolition of the hyphen and the (if needs must) importation of another capital letter. But that by the way.—The precision of the clause is what I wanted to note. Advocates of the "struck-joints-inside-flues-and-no-parget" heresy have been perilously near annihilation times and again. Could I not—if merciful thought had not prevailed—have secured easy victory for "parget,"—by quoting the so-definite decision of the legislative wisdom? The apparent hesitation of M. B. Act, 1855, sec. xx., r. iv., cannot convey doubt to a candid mind; but how the order of old times contrasts to advantage—in its freedom from quiddling exceptions, with the fruit of the ingenuity of later students!

Good parget is very useful stuff,—as any one may see, who, with discriminating eyes, watches the pulling down of any dwelling where the parget was first warmed by the fires of two centuries ago.]

"And also that every Chimney or Flue hereafter to be built or rebuilt in any Wall, or of greater Length than Four Feet out of the Wall, not being a Circular Chimney or Flue Twelve Inches in Diameter, shall be in every Section of the same not less than Fourteen Inches by Nine Inches."

[I do not doubt,—(I am sure),—that there is not rarely to be found a "Master Builder or other Master Workman making or causing to be made a Chimney or Flue," not in accordance with this provision, who does not know that he does it under "pain of Forfeiture, of any Sum not less than Ten Pounds, nor exceeding Fifty Pounds." I would hazard a conjecture that there may even be Surveyors whose education does not include this valuable item of knowledge. As I am writing without allowing the world to salute me by name, I have no objection to confessing, that, in the days of youthful innocence, I drew my own conclusions on remarking that plans of Cottages for Labouring Classes had often to be adorned with flues of square section, instead of the more fashionable and more cumbrous 14 × 9. The thin line of smoke,—in harmony with lowly station,—seemed to me all-too-clearly prefigured by the exiguous preparations for its exit. And,—not to dwell longer on the past,—cannot many people remember the violation of letter and spirit of this enactment at times by not inconsiderable designers of buildings?

What, however—one may ask in this place—is the spirit of this provision? Why does 14×9 "secure better from accidents by fire or otherwise"?]

"And no Chimney or Flue shall be constructed with any Angle therein which shall be less obtuse than an Angle of one hundred and twenty Degrees, except as hereinafter excepted:" (provision made as to flues at any angle further on).

[Sec. XX, R. 2, Met. B. Act, made provision for fifteen years of progress, which had probably rendered a larger degree of obtuseness desirable; (130° minimum).]

"And every salient or projecting Angle in any Chimney or Flue shall be rounded off Four Inches at the least."

["Properly rounded," says Sec. xx., R. 2, M.B.A. In the Act of 1840 this provision is deemed so all-important that, by an artful derangement of the punctuation, would-be offenders may be led to believe this the only stipulation,—the infraction of which will be visited with pains and penalties. When I perceived this refined detail, I doubted whether the schemes of Mr. Forsyth for drawing Acts of Parliament might not deprive us of some of those "traditional adaptations to our various needs, that seem much more like natural growths than efforts of the intelligence and the will." . . . . But I quoted this part of the clause especially in order to ask:—Where is the sanction for the flat ledges in flues 14 in. or 18 in. wide, so often introduced and recommended in conjunction with flue-divisions, and for the prevention of down-draught? Can they be contemplated or possible amid roundings so universal?—roundings so precisely defined?]

I might enlarge further, and quote further; but have probably said enough to whet the appetite of your readers. Some perverse person may suggest that "as a subject of antiquarian interest it is curious,"—or not,—as his fancy may lead; and may perhaps hint without investigation at 27 and 28 Vic., cap 37; as if amendment had at any time touched Clause VI. of the Act of 1840. The short Act of 1864 was devised merely to suit still better the "innocent blacknesses" of Charles Lamb's commendation, and to render more stringent the enactments in their interest made a generation previously. It does not touch on questions of building at all; nor give advice to architects and builders as does the previous Act, which is seemingly good law in England, Scotland, and Ireland, so far; for

AN ARCHITECT.

Warming and Ventilation.—We would direct attention to an advertisement on this subject in our current number from Dr. A. Ball, of Spalding. It reads to us as if the matter were worth looking into.

MR. JOHN TIMBS.

WE hear with regret of the death of this painstaking and industrious writer. He was of humble extraction, and was born in London on the 17th of August, 1801. He commenced authorship under the auspices of Sir Richard Phillips, and his first publication, we have heard him say, was a little guide-book to Dorking and its neighbourhood, a locality with which he was familiar as a boy. He subsequently was editor, solely or conjointly, of the *Mirror*, one of the best and most amusing of early cheap publications, at which time our acquaintance with him first commenced; and he published in that periodical the first piece of writing which the conductor of this journal had ventured as a boy to drop into the Editor's letter-box at a stationer's in the Strand. Amongst his numerous productions may be mentioned:—"Why and Because; or, Knowledge for the People," in 1833; "Year Book of Facts in Science and Art," an annual publication commenced in 1839, and continued to the present time; "Popular Errors Explained," in 1841; "Curiosities of London," a compendium of much information connected with this prolific subject, the result of many years' labour, in 1855; "Curiosities of History"; "Curiosities of Science," first and second series; "Things not generally Known," 1859; "Anecdote Biography," in four series, in 1860-4; "Illustrated Book of Wonders," and "Something for Everybody," in 1861; "International Exhibition of 1862," and "School Days of Eminent Men," in 1862; "Knowledge for the Time," and "Things to be remembered in Daily Life," in 1863; "Century of Anecdote, 1760 to 1860," and "Walks and Talks about London," in 1864; "Club Life in London, with Anecdotes," "Strange Stories of the Animal World," and "Romance of London: Strange Stories," in 1865; "English Eccentrics and Eccentricities," and "Nooks and Corners of English Life," in 1866; "Historic Ninepins: a Book of Curiosities, where Old and Young may read Strange Matters"; and "Notable Things of own Time." He was chief working editor of the *Illustrated London News* almost from its commencement till 1858. A few years ago, when about seventy years of age, he was appointed one of the "Poor Brethren," or "Pensioners" of the Charterhouse, on the nomination of Her Majesty the Queen; but he had resigned that position some time before his death.

PRIVATE BILLS IN PARLIAMENT.

IN compliance with an order of the House of Commons, made at the beginning of every session, the Board of Trade presents a report to the House upon all the Railway, Canal, Tramway, Gas, and Water Bills of the Session. This report has just appeared. It always contains much valuable and useful information, but is usually in some respects illusory. The summary of the present report states that for this session seventy-two Railway Bills are promoted by existing companies, to make 198 miles of new line, and to raise 18,924,960*l.* in shares and loans. Forty Bills are promoted by new companies to construct 460 miles of railway, and to raise 12,092,031*l.* of capital. Of the new companies thirty-five are in England, five in Ireland, but none in Scotland. The Bills promoted by existing companies include fifty-six English, seven Scottish, and nine Irish. There are eight Tramway Bills for forty-two miles, capital 183,300*l.*; forty-two Gas Bills, capital 5,268,424*l.*; and thirty-six water bills, capital 5,042,270*l.* General total of capital for Railways, Canals, Tramways, Gas, and Water Bills, 41,510,805*l.*

The largest amounts of new capital proposed to be raised by existing companies are:—By the London and North-Western, 4,533,000*l.*; Midland, 2,400,000*l.*; North-Eastern, 1,665,000*l.*; and by the Metropolitan for an underground railway from Aldgate to Bow, 1,600,000*l.*

In Ireland three new companies have Bills for the construction of an aggregate of above 100 miles of railway.

Of the Bills reported upon by the Board of Trade, nine Railway Bills are already defunct. They represent an aggregate of about 100 miles of new rail.

Of the two London Central Railway Bills, the company will endeavour to obtain first, the one for extension of time, and if they succeed in this will withdraw the other. The London (City) and, Station, and Subways Bill is a rather bold project, and a little curious from being directly in the face of a recommendation of the Select Committee of the House of Lords on Metropolitan Railway communication, that sat in 1863, and reported, *inter alia*, "that it would be objectionable to allow the construction of a great central station in the Metropolis." This Company, it is true, proposes to provide a central station for some or all of the companies using the underground railways. This is a sufficiently comprehensive term, seeing that it embraces the Metropolitan and District Companies, the London and North Western, the Great Western, the Midland, the Great Northern, and the London, Chatham, and Dover Companies.

The other Bills in the Metropolitan group are unimportant.

NOTTINGHAM SCHOOL OF ART.

THE Nottingham school has this year taken five more awards than any other school in the kingdom,—South Kensington alone excepted. The ten schools highest on the list, are the head school, South Kensington Museum, 21 awards; Nottingham, 16; Edinburgh, 11; Dublin, 11; Manchester, 9; Birmingham, 9; Westminster (London), 8; Bursalem, 6; Bloomsbury (London), 6; Belfast, 6. This year, the Nottingham school has gained the greatest number of Medals and Government Prizes since its establishment, viz., a total of 108 awards, against 104 last year.

At the recent distribution of rewards, Mr. J. S. Rawle, the head-master, in the course of his observations, reminded the students how constantly they were urged to criticise their own work, and not to depend too much upon having their errors pointed out to them by others. It would be wise, as a rule, to take it for granted that their work was wrong, that their proportions were out somewhere, that this or that contour was too full or too flat, as the case may be. Now, their experience already told them that when they were pointedly questioned as to where such and such a proportion was out of drawing, they could, in most instances, see where the defect was. This being the case, then, clearly proved how many errors they might discover for themselves, if they would only cultivate more fully the habit of criticising their own work, and he, without hesitation, said that, every time they thus learnt to detect a fault without aid, they would be benefited ten times more than if the fault had been pointed out to them by others. In fact, they would never learn to walk alone if they were ever trusting too much to leading strings. It was only by thinking more for themselves, and trusting more thoroughly to their own exertions, that they could hope ultimately to have their work stamped with that character and individuality which would raise it to a higher standard than that of mediocrity. They were not, however, to think from what he said that he would encourage self-conceit. Far from that was his intention. He said that they could not show too teachable a spirit; but at the same time, they should see how much knowledge and experience they could possibly gather by their own unaided efforts.

NEW TOWN-HALL FOR LIMEHOUSE.

THE Limehouse Vestry have decided upon the erection of a new Town-hall for the transaction of the business of the township. At the meeting of the Vestry last week, Mr. Hopson moved a resolution to the effect that a professional gentleman be engaged to select a site. In doing so, he pointed out that on the 25th inst. the Vestry would have to vacate their present premises, having disposed of them, together with the adjacent children's establishment, and after that date the Board would have no place to meet in, and the clerk no offices. He observed that if small and comparatively insignificant provincial towns, of between 5,000 and 10,000 inhabitants, could boast of spacious town-halls, Limehouse, an important and busy parish in the metropolis, ought not to be without such a building for the conduct of public business. He added that the money for the proposed hall was already available from the sale of the parish property, so that the ratepayers would not be called upon to pay an increase of rates. The possession of a town-hall of proper capacity would dignify the public proceedings of the Board. In answer to a question, the clerk stated that the requisite authority for the expenditure of the money obtained for the old premises in the erection of a new hall had been obtained from the Local Government Board. The feeling of the Vestry was unanimously in favour of the immediate erection of a new hall, but the majority considered that it was unnecessary to engage a professional man to select a site, and it was ultimately decided that the churchwardens and overseers be requested to look out for a site, and report to the Board.

THE PLANS FOR THE NEW LAMBETH INFIRMARY.

AT the suggestion of the Local Government Board, certain alterations are to be made in the plans for the new infirmary about to be erected in Lambeth. The upper Board recommend that the walls be plastered, instead of being bare brick; also that the corridors be fitted with fixed louvres for ventilation, and that the roofs of the corridors be made available for an ambulatory conveyance. Dr. Bridges, one of the Local Government Board inspectors, attended the meeting of the guardians when the subject was discussed.

Dr. Bridges observed with reference to the plastering of the walls, the Local Government Board's reason for that recommendation was that the walls should be lime-washed once in twelve months. That would be impossible unless there was a ward set apart for patients. It was true that some well-finished brick was as smooth as plaster, and if that was had, and then painted, the desired object would be accomplished. The second suggestion referred to the corridors, which, he said, should not be closed up, in order that foul air should not be generated and the blocks infected. The motive for the suggested alteration was that the corridors should not be, as it were, like closed tunnels.

In the course of a discussion which followed Dr. Bridges's remarks, members of the Board wished to know if the architect could tell them what the amount of the plastering would come to?

Mr. Fowler, the architect, replied that it would be from 1,200*l.* to 2,000*l.*, but some of the expense would be saved in the brickwork.

Mr. Stiff supported plaster, which he stated could be more easily repaired, and the roughest bricks could be used.

It was ultimately resolved to use selenitic mortar for plastering the walls; and it was also decided that the corridors should be constructed in accordance with the suggestion of the Local Government Board.

TENDERS FOR DRAIN-PIPES AND IRON-WORK FOR NEWINGTON VESTRY.

UNIFORMITY.

AT a meeting of the Newington vestry last week, Mr. Selway called attention to the tenders for drain-pipes and iron-work, submitted by the Sewers, Buildings, and Nuisance Removal Committee. The tenders were those of Messrs. Stiff & Son, Messrs. Doulton & Co., and Messrs. Smith & Co., all of Lambeth. There were tenders for ten descriptions of pipes, the amounts of the three firms tendering being precisely the same in each case. Mr. Selway, in bringing the matter before the vestry, said it appeared somewhat remarkable, and he thought it could not be attributed to an accident, that the amounts of these tenders were in every case the same. It was quite clear, on the face of these amounts, that it was a farce to invite only the parties named to tender, and he thought the area ought to be widened so as to include other manufacturers. Mr. Stuart Barker, in explanation, said the committee had endeavoured to induce other parties to tender, but unsuccessfully, the consequence being that they were altogether in the hands of the three firms named, who would not compete with each other. The committee would be glad if some parties outside the parish would tender, but no manufacturers seemed disposed to do so.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

AT the meeting on the 24th of February, Mr. H. S. Cuming, V.P., in the chair. The secretary announced the election of Mr. A. W. Franks, director of the Society of Antiquaries, as an Associate, and the following as corresponding members:—Sir John Lubbock, bart.; Mr. S. W. Vaux, F.R.S.; Dr. S. Birch, LL.D.; Mr. E. A. Bond; Mr. Winter Jones; Rev. H. O. Coxe; Mr. W. Aldis Wright; and Mr. Bradshaw. Also as Foreign Corresponding Members:—Hans

Hildebrandt, Stockholm; Dr. Ludwig Lindenschmidt, Mainz; Herr von Hefner von Alteneck, Munich; Prof. Agosto Soromenho, Lisbon; Prof. Stephens, Copenhagen; Prof. Nilssen, Stockholm; Prof. R. Lepsius, Geheimrath, Berlin; and F. Chabas, Chalon-sur-Soane. The principal paper was by Mr. J. T. Irvine, on the Church of Stone-next-Faversham, which has tile-bonding courses in the lower part of the chancel walls. The numerous and excellent illustrations called forth frequent remarks. Opinions differed as to the date of the bonding work, Mr. Irvine having apparently been led to believe them to be of the fourth century, in consequence of some observations of Mr. Parker. The architects present were inclined to put it some six centuries later, an opinion which Sir Gilbert Scott had, it appeared, expressed to Mr. Irvine.

LIABILITY OF A PURCHASER'S AGENT AT AN AUCTION.

IN the case of France *v.* Carver, heard in the Court of Equity, the question how far a person bidding at an auction on behalf of a second person is liable for the property purchased, has just come on for legal decision.

In this case a man named W. Carver, and also two persons named Ingle, wished to buy a house at Bradford, which was to be sold by auction, and, in order not to bid against one another, they agreed that one France, an architect, should bid for them, and that it should then be decided by lot which should have the house. France attended at the auction, and became purchaser for 1,900*l.* Both Carver and the Ingles refused to take the house, and France then filed this bill against both parties, asking that he might be declared trustee for one of them.

The Master of the Rolls had made a decree accordingly, and the defendants appealed to the Court of Equity.

Their Lordships held, on the evidence, that France was not authorised by Carver to bid more than 1,000*l.*, and therefore could not force the purchase on Carver; and though the Ingles had imposed no limit, yet as France had bidden without the authority of Carver, the case of agency for the Ingles failed also, and the bill must be dismissed, with costs.

MAT-MAKING IN PRISONS.

SIR,—As principal of the firm of Wildey & Co., and the writer of the letters on the above subject which you were pleased to notice in your paper of the 6th inst., I venture to submit for your consideration whether you have, in your short review of the correspondence with Captain Armytage, been quite as fair to both parties as you usually are.

Having quoted in full the incorrect statement put forth by Mr. Hastings on Capt. Armytage's authority, I could wish that you had told your readers in reply that my firm appears in "Kelly" for 1837 as manufacturers of cocoa-nut fibre, although Capt. Armytage alleges that his prison first introduced the trade in 1841. They could then have formed their own opinion upon the only question at issue.

Whether my letters were courteous or otherwise is comparatively unimportant. I have no right to complain of any opinion you may hold or express on this point. T. TRELOAR.

HOLLAR AND WESTMINSTER ABBEY.

SIR,—Among the Hollar engravings now exhibiting at the Burlington Arts Club, is a small one (I forget the number, it is on the right on entering the room) giving a view of the Old Parliament House, Westminster Hall, and the north side of the Abbey from the river. This shows the western towers, of course, in their pre-Wrennite condition, only just carried up past the roof-springing of the nave, and with low pointed roofs; but from the north side of the tower, about the centre, projects a very large and deep buttress, which makes a "light" in the engraving. There seems no trace of such a buttress, or of its whereabouts now; but it would be curious either that so accurate and minute a workman as Hollar should have inserted it if it did not exist, or that if it were thought necessary when the towers were only in embryo, it should have been removed when they were carried up the full height, perhaps, which was ever contemplated. Is anything known of the history of this feature, or if it did really exist?

It is worth noticing how far better the Abbey looks with its plain crossing, as shown in this view, than with the abortive commencement of a central tower which now disfigures it. The talked-of *flèche* would be an improvement, probably; but the unbroken roof would be infinitely better than its present state, especially as any continuation of the tower is out of the question, considering the nature of the substructure. H. H. STATHAM, JUN.

SKATING-FLOORS.

SIR,—If your correspondent "Vortex" will call at our yard, 29, Gillingham-street, he can see a floor in actual use devised by the inventor of the roller-skate, Mr. Plimpton, to meet the wants of those requiring an inexpensive portable floor.

It is made of narrow slips of pitch-pine, so braced together underneath, that, when affected by damp, it can expand and contract without warping, and when coated with a special paint it will stand all changes of weather in the open air.

It can be laid on joists like an ordinary floor, and requires no nails or screws to fasten it down; or, in case there is an old uneven floor, it can be laid on the top of it in a few hours, and taken up again to use elsewhere if need be. It wears admirably well, and is very smooth and fast. PETO, BROS.

WANTED, A TOUT!

How are the mighty fallen!
But who will weep at their burial?
When architects become touters for timber merchants,
The day of their cremation draws nigh!
But do not grieve! for they get a good commission while they live;
And their memory is dear for evermore.

Such my thoughts while reading this advertisement in last week's *Christian World* (profanely called the "Worldly Christian"):—

"Surveyors and Architects able to influence the Sale of Timber amongst Builders for cash may hear of a good Commission.—E——, Timber Merchant."

A PATIENT BUILDER
Waiting for the Genial Influences of the Architectural Tout.

THE LABOUR LAWS COMMISSION.

THE Report of the Commissioners appointed to inquire into the working of the Master and Servant Act, 1867, and the Criminal Law Amendment Act, was issued on the 24th ult. Its conclusions are as follow:—

"We recommend that legislative provision should be made to the effect that no person shall be liable to be indicted for conspiracy by reason only of the object of the combination being to force or control the action or will of any master or workman in any matter relating to the mode of carrying on his business or work, unless the means of coercion to be resorted to shall be one of those mentioned in the Criminal Law Amendment Act, or be the wilfully breaking, or procuring others to break, any contract of hiring and service, and unless the object of such coercion shall be one of the purposes set forth in that Act. Whilst proposing thus to limit the cases in which men shall be liable to be indicted on the ground that the object is to interfere with the will of others in the conduct of their business or work, we have thought it right to add to the wrongful means set forth in the Criminal Law Amendment Act, that of wilful breaches of contract. . . . .

The result, then, of the best consideration we have been able to give to the matters submitted to us is as follows:—As regards the Master and Servant Act, we recommend that in all simple breaches of contract the summary jurisdiction provided by the Act should be divested of everything of a penal character, and be entirely of a civil nature. That the distinction between simple breach of contract and breach accompanied by circumstances of aggravation should be maintained, and that if the latter should remain subject to the same penalties as at present, a party complained against should have the option of taking the case to the Quarter Sessions to be tried by a jury; and that, if the latter shall be made the subject of civil remedy only, the maximum of imprisonment shall be increased to six months. That as regards the Criminal Law Amendment Act, the statute should remain unaltered, with the exception of the same provision as we propose with reference to cases arising under the 14th section of the Master and Servant Act, of having the case tried by a jury at the option of the party accused. As regards the Law of Conspiracy, we recommend that the alteration we have suggested should be made, but we are not prepared to recommend any other alteration in the law."

WEST HERTS INFIRMARY COMPETITION.

SIR,—The attention of the committee of the West Herts Infirmary has been called to a letter in the *Builder*, of the 27th ult. In reply, I am desired by the committee to inform you that, though the stipulation in the advertisement is that the drawings shall in all cases remain the property of the governors, they will be returned to any competitor who may think well to make application for them, excepting those to which a premium is adjudged.

J. BALDWYN PUGH, Hon. Sec.

*** The committee ought not to have made any such stipulation.

WHOLESALE LEAD STEALING.

SIR,—I am building a large school in Penrose-street, Walworth, for the London School Board. My foreman having missed, during the last three months, a large quantity of lead, he stopped three men as they were leaving for dinner on the 17th February, and on searching them he found concealed inside their waistcoats, suspended to belts by hooks, 107 lb. of new lead, cut from the sheet. They had a hearing at Lambeth Police Court the same day, and were remanded until the 24th February, when they were convicted, and each sentenced to six months' hard labour.

The extent to which lead-stealing is carried on by plumbers and their labourers is becoming alarming: so if you will kindly give all the publicity you can to these facts, you will greatly oblige JAMES COOPER.

On James Spencer, plumber, 20, Payne-street, Westminster, were found 27 lb. of new sheet-lead.

On Frederick Cooper, *alias* Newberry, *alias* Nubby, plumber's labourer, 38, Peter-street, Hackney-road, were found 41 lb. of new sheet-lead.

On Henry Marsh, plumber's labourer, 6, Southampton-street, Caledonian-road, Islington, were found 38 lb. of new sheet-lead.

I have lost from this building nearly 24 cwt. of new lead in less than three months, 8 cwt. of which has been stolen during the last three weeks.

SEASIDE BALLAST.

SIR,—Is it possible to cleanse ballast from the seashore from the salt? Perhaps some of your readers will inform us as to the best process. Some very clean and sharp ballast is required for a filtering-bed, where none suitable is to be found in the neighbourhood. M. L. C.

*** If thoroughly well washed and allowed to remain exposed to the rain, wind, and sun for some time, it might be made available. Some of our readers will perhaps give us the result of their experience.

Miscellanea.

Destruction of Killean Mansion-House by Fire.—On Saturday the fine mansion-house on the estate of Killean, Kintyre, the property of Mr. J. M. Hall, of Tangy and Killean, was destroyed by fire. Mr. Martin, builder, Campbeltown, happened to be at Killean at the time, and seeing that there was no possibility of saving the main house, he directed a number of tradesmen in their efforts towards saving the back wing, a handsome building recently erected by Mr. Hall as a billiard-room, &c. They set to work and built up the opening communicating with this wing from the main house with a thick brick partition, and by directing the supply of water under their control towards this portion of the building, they were enabled to save it. The outside porch, constructed by Messrs. Denny from designs by Mr. John Burnett, architect, Glasgow, and made of teak-wood, has been saved.

New Municipal Buildings for Kidderminster.—A special meeting of the Kidderminster Town Council was held on the 8th inst., the Mayor presiding, to receive the report of the committee appointed to consider the tenders for the erection of the new municipal buildings in Vicar-street. There were five contractors competing for the work, the lowest tender being that of Messrs. J. Binnian & Son, Kidderminster, whose estimate was 7,547*l.* The committee unanimously recommended that the tender of Messrs. Binnian & Son should be accepted. Alderman Naylor said he was very anxious about one thing, and that was that both the architect and the builder would give the matter their attention in the early part of the year, so as to get the work well on, and trusted that it might not be left to the winter. He should be very sorry to see this public building treated as some other public buildings had been.

Destructive Fire in a Timber-yard, Totton.—A fire of a very destructive character took place last week at the yard of Mr. James Wood, coal and timber merchant, of Totton. It commenced about half-past seven o'clock, and soon made considerable headway. A telegram was despatched to Southampton for the borough fire-engine, on the arrival of which, about nine o'clock, it was found that the fire had obtained considerable hold, a heap of some thirty tons of coal being alight, as well as a quantity of timber, whilst a long wooden shed had been burned and the roof fallen in. Great difficulty was experienced in getting a supply of water, and the nearest point where it was ultimately obtained was a stream some 300 yards off, from which the fire-engine had to be fed with buckets.

A Plasterers' Strike.—The operative plasterers in Birkenhead and the neighbourhood are out on strike, having demanded an increase of wages to the extent of 2*s.* per week, which the employers have refused. The strike commenced on Monday morning.

Mr. and Mrs. German Reed's Entertainment.—Mr. and Mrs. German Reed continue to enjoy an uninterrupted success, well earned by the manner in which their entertainment has been placed before the public, and the very great merit displayed in its representation by the compact little company at St. George's Hall. We hear that the management intends to produce several novelties, the earliest of which will be a piece from the pen of Mr. F. C. Burnand, entitled "Old China." Mr. W. S. Gilbert is also preparing a new entertainment, which will be produced this season. Two performances will be given on Easter Monday next.

The New Town Hall at Todmorden.—Arrangements have been completed for a demonstration at Todmorden to inaugurate the opening of the new Town Hall, and commemorate the unveiling of the statue of the late Mr. John Holden. The Town Hall has been built from designs by Mr. Gibson, of London, and is in the Greek style, the cost computed to be about 9,000*l*. The sculpture on the pediment, which is now nearly completed, consists of allegorical figures representing, on the one side, the cotton industry of Lancashire, and on the other the woollen trade and agricultural interests of Yorkshire.

Dover.—With regard to the notice to builders which has been issued by the Dover Town Council, making it necessary for builders and others to send in notice one month beforehand of intention to build, the town clerk (Mr. W. Hocker) read a letter at the meeting of the managing committee, last week, from Messrs. Whitby & Fry, architects, Dover, in which those gentlemen gave it as their opinion that such a requirement would tend to check building in the borough, and in many cases, if a month's notice were required, the project would most likely fall through altogether.

Improved Agricultural Labourers' Cottages, Gloucestershire.—Some new cottages are about to be built on the Edgeware Manor Estate, in this county. Each dwelling contains entrance porch, staircase, living-room, scullery, pantry, coal and wood house, and three upstairs bed-rooms. Each house is drained and ventilated, and provided with all necessary fittings and conveniences, including ovens, sinks, hard and soft water supply. Mr. John Birch, who gained the Society of Arts' prize and medal, is architect.

Charge of Picketing: Messrs. Jackson & Graham's.—Mr. Knox has committed the defendants for trial, taking their own recognizances in the sum of 20*l*. each that they would appear forthcoming when required. Mr. Knox very earnestly advised the men to take care that the system of picketing Messrs. Jackson & Graham had be stopped in every shape and form, so that they might go down as men asking for a decision upon a perplexed point of law, not as criminals put upon their trial for any offence.

Kensington Gardens.—An influential deputation, composed of the inhabitants of Chester-terrace and the northern end of Kensington-gardens, waited upon the First Commissioner of Works last week respecting the condition of the park and the roadways at that end of the gardens. Lord Henry Lennox promised to write to the park superintendent, and go to the place himself and see what could be done in putting the north end on an equality with the south.

Ancient Records.—Mr. George Smith has made some important discoveries among the Assyrian tablets, and when he has fully deciphered the present treasures of his toil we shall be masters of the actual record as the annals of Nineveh received and inscribed it. His discoveries bear on the creation of the world and the building of the Tower of Babel. As to the latter, he says the fragments form a portion of a continuous history of the creation down to a period after the Fall of Man.

Fire at a City Church.—On Sunday morning fire broke out in Allhallows Church, London-wall. The services of the Metropolitan Fire Brigade were called into requisition, and the fire was speedily extinguished, but not until the roofing, jofsting, and wainscoting in the chrisiening pew had been damaged by fire and cutting away, and the rest of the church by smoke and water. The outbreak appears to have had its origin in a spark having fallen from a fire which was burning in the building.

Liverpool United Trades' Council.—The annual meeting of this Council was held last week, at the Trades' Hall, Duke-street, Mr. J. W. Julian presiding. The auditors, in making their financial statement, expressed themselves strongly in reference to the laxity of duty in several societies, and the accounts were passed with an instruction to the secretary to write to the societies alluded to. The Council discussed the report of the Labour Law Commission, taking a very adverse view of it.

The Late Sir Edward Smirke.—The death of the brother of Mr. Sydney Smirke, R.A., comes properly in our pages: moreover, Sir Edward was a learned antiquary. He died at his residence, 18, Thurloe-square, South Kensington, on the 4th instant, in his 80th year. The deceased was educated at St. John's College, Cambridge, and was called to the bar at Middle Temple in 1824. He was successively Solicitor-General and Attorney-General of the Prince of Wales.

Charge against an Architect's Clerk.—At the Council-house, Bristol, on the 4th inst., before Mr. M. Castle, James Little, a middle-aged man, a clerk, lately in the employ of Messrs. J. P. Sturge & Co., architects and surveyors, Corn-street, Bristol, was brought up on remand, charged with forgery and embezzlement of various amounts. The prisoner was committed to take his trial at the assizes.

Advance of Wages at Greenock.—The master-masons of Greenock, in compliance with a demand of the men, on Monday afternoon agreed to advance their wages ½d. per hour, making a total of 9d. per hour. The builders resolved to form a Limited Liability Company to purchase stone-dressing machinery, so as to supersede manual labour as much as possible.

Strike of Joiners at Dundee.—A Dundee correspondent telegraphs that the operative joiners, to the number of about 400, came out on strike on the 1st inst. for an increase of the rate of wages to 8d. an hour, this being equal in some cases to a rise of 1d., and in others of ½d. Five of the firms have agreed to pay the increase.

TENDERS

For repairs and alterations to the Brighton Market:—

Original Tenders.

Bruton	£1,750	0	0
Howard	1,679	0	0
Lockyer	1,559	0	0
Patching & Webber	1,550	0	0
Spreadborough & Feldwick	1,544	0	0
Cheesman & Co.	1,520	0	0
Wells & Miles*	1,317	0	0

For Alterations only, and omitting certain Work.

Wells & Miles	£523	0	0
Cheesman & Co.	500	0	0
Lockyer	485	0	0

* The tender of Messrs. Wells & Miles to make the alterations for 779*l.* 10*s.* accepted.

For business premises, Carter-lane, City. Mr. Edward Salter, architect. Quantities by Mr. Henry Lovegrove:—

Larter	£2,495	0	0
Simmons	2,220	0	0
Breaky	1,995	0	0
Brad, Jopling, & Co.	1,925	0	0
Mecey	1,924	0	0
Grimwood	1,890	0	0
Robbins	1,840	0	0
Langmead & Way	1,836	0	0
Lewis	1,812	0	0
Stepheuson	1,806	0	0
Nightingale	1,793	0	0
Niblett	1,787	0	0
Scrivener & White	1,762	0	0
Auley	1,753	0	0
Crabb	1,743	0	0
Years	1,697	0	0
Stimpson	1,690	0	0

For alterations and fittings at 40, Lombard-street, for the Russian Bank of Foreign Trade. Messrs. Francis, architects:—

	In Cuba Mahogany.	Extra if in Spanish.
Bangs	£1,193	£95
Johnston, Jeanes, & Co.	1,178	180
King & Son	1,160	140
Fish	1,160	—

For stables, 40, Camden-square, for Mr. W. W. Blackstone. Messrs. Francis, architects:—

Colls & Son	£897	0	0
Fish	895	0	0
King & Son	884	0	0
Bangs	877	0	0
Merritt & Ashby	877	0	0

For two shops and dwelling-houses, 90 and 91, Fonthill-road, Holloway, for Mr. John B. Olive. Mr. Schofield, architect:—

King & Son	£1,289	0	0
Simpson & Baker	1,260	0	0
Roberts, Bros.	1,248	0	0
Baugh	1,161	0	0

For alterations to the Young Prince, Chrisp-street, Poplar, for Mr. T. Mills. Messrs. Hills & Fletcher, architects:—

Loring	£127	10	0
Coleman (accepted)	287	0	0

For the erection of residences, Hornsey-lane. Mr. J. W. Reed, architect:—

Hyde	£10,500	0	0
Laurence	10,087	0	0
Axford	9,895	0	0
Bayes & Ramage	9,866	0	0
Warnes & Co.	8,640	0	0
Sale	8,572	0	0
Downs & Co.	8,570	0	0
Carter	8,430	0	0
Hawkes	7,800	0	0

For warehouses, Union-street, Southwark. Mr. J. T. Hill, architect:—

Bayes & Ramage	£5,065	0	0
Chesham	4,982	0	0
Gerrard	4,983	0	0
Merritt & Ashby	4,596	0	0
Brass	4,495	0	0
Downs & Co. (accepted)	4,439	0	0

For double cottage, Edgewarebury, Edgeware. Mr. Robert Hutchinson, architect:—

Hook	£549	0	0
Kirby	490	0	0
Dover	477	0	0
Cade	462	10	0
Johns	393	0	0
Bunting (accepted)	385	0	0

For stabling, &c., at King's-cross, N., for Mr. Herbert Clarke. Mr. John Groom, architect. Quantities supplied by Mr. B. A. C. Herring:—

Arnold	£1,900	0	0
Staines & Son	1,874	0	0
Langmead & Way	1,865	0	0
Enuor	1,783	0	0
Kelly, Bros.	1,773	0	0
Scrivener & White	1,768	0	0
Chapman	1,740	0	0
Crabb (accepted)	1,689	0	0

For the erection of schools, teachers' residences, fence walls, and conveniences, at Blackwell, for the Blackwell Colliery Company. Mr. S. Rollinson, architect. Quantities supplied:—

Marriott	£2,300	0	0
Wright & Margerrison	2,139	0	0
Forrest (accepted)	2,109	0	0

For the erection of villa residence, stables, &c., at Gladstone-road, Chesterfield, for Mr. H. Robinson. Mr. S. Rollinson, architect:—

Boler	£1,509	0	0
Wright	1,479	0	0
Maw (accepted)	1,430	0	0

For the erection of engine-driver's cottage at the waterworks pumping-station, for the Bishop's Stortford Local Board. Mr. E. Dudley, C.E., architect:—

Dickinson	£273	0	0
Cannon	268	10	0
Harrington	267	10	0
Cornwell (accepted)	265	0	0

For alterations to 38, Haymarket, for Mr. J. Last. Mr. J. Scott, architect:—

Crassweller	£390	18	0
Rubin	370	0	0
Foxley	343	0	0

For new Congregational Church, at West Borough, Maidstone, Kent. Mr. Charles Pertwee, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Naylar	£3,722	0	0
Vaughan	3,550	0	0
Bridge & Cox	3,443	0	0
Clements & Wallis	3,417	0	0
Avard (accepted)	3,351	0	0

TO CORRESPONDENTS.

The demands for space on our front page, long resisted, have at last forced us to change the position of the Table of Contents.

Post office, Bombay.—The pavements here, though described by the authorities as of "Mutton's tiles," were supplied, we are asked to say, by Messrs. Maw & Co.

H. C. B (next week).—Cabmen's Shelters, two or three letters on this subject shall have attention next week).—J. P. (we have not time to comply with such requests).—E. C. (the Institution of Civil Engineers is in Great George street, Westminster. The Institution of Estate Agents should take means to make known their address).—Dr. R.—"Spes Mellora."—J. L.—H. W.—J. L.—H. L.—J. H.—C. H.—C. H. C.—H. & F.—H. L.—F.—C. W.—D. K. & Son.—Clerk of Works.—Westmoreland.—W. C.—C. C. H.—J. S.—S. R.—J. D.—J. G.—O. S.

Errata.—In our notice of Dr. Ross's paper in our last number, first page, third column, eighteenth line, for "29,000," read 200,000*l.*"; second page, first column, twenty-first line, for "Confirming," read "local."

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

NOTICE TO ADVERTISERS.

GOOD FRIDAY.

"THE BUILDER," for the week ending MARCH 27th will be published at ELEVEN a.m. on THURSDAY, 25th instant. Advertisements for insertion in that Number must therefore reach the Office **before THREE p.m.** *on WEDNESDAY, the 24th.*

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The Committee hereby give notice, that the ADJOURNED ANNUAL GENERAL MEETING will be held at the Office of the Institution, 37, Farringdon-street, E.C. on TUESDAY, the 23rd inst. GEO F. TROLLOPE, Esq. President elect, will take the Chair at EIGHT p.m. and the following business will be transacted:—
1. To receive the Report and Balance-sheet for the past year.
2. To Elect the Officers for the ensuing year.
3. To Elect one Widow (without ballot) to a Pension from the Relief Fund
4. To consider the proposed new Rules, and Alterations of existing Rules, for working the Orphan Fund.
Copies of the Report, Balance-sheet, and alterations, &c of the Rules will lie at the Office of the Institution, after the 16th inst. and may be obtained after Five o'clock p.m.; or will be sent on application, with stamped addressed envelope, to
F. T MULLETT, Secretary,
No. 27, Farringdon-street, London, E.C

THE "BUILDER" IN AMERICA.—SUBSCRIPTION, for any Time, at PUBLICATION PRICE, can be made with B. F. STEVENS, 17, Henrietta-street, Covent-garden, London. The Annual Subscription, including Postage, is 1l. 1s. 8d. or $5 50 Gold, and may be remitted direct, by post-office order, or paid to the New York Agents of B. F. Stevens, Messrs. TICE & LYNCH, 344, Fine-street, New York.

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[CONTRACTS—*continued from* p. ii.

TORMOHAM, TORQUAY.—OUTFALL SEWER (17,067 feet), Low-level Sewer (4,957 feet), Roadway and Sea-Wall (1,960 feet).—The undersigned has prepared the QUANTITIES on his own responsibility, same not being supplied by the Engineer for the Works. Much of the work is driving in deep rock.
JOSEPH SIMMONS, 38, Regent-street, London, W.

KITCHEN, HERTS.—TENDERS are invited for a NEW CHAPEL at Hitchin. Quantities supplied. The lowest or any Tender not necessarily accepted
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No. 11, Sutherland-gardens, Harrow-road, W.

TO BUILDERS.—WANTED, BUILDERS, to Undertake on their own account the COMPLETION of a CRESCENT and other Building Works at Hayling Island, a rising watering place on the South Coast, with about four miles of the finest beach in England. There is a good hotel, the Royal, and it is reached by railway in 2½ hours from London. For particulars, apply to OSBORN JENKYN, Esq. 64, Lincoln's-inn-fields, W.C.

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THE Fulham District Board of Works hereby give Notice that they will be prepared, at their meeting, to be held on WEDNESDAY, the 24th day of MARCH, 1875, to receive TENDERS for certain ADDITIONS, ALTERATIONS, and REPAIRS to be done at TRAFALGAR HOUSE, Walham Green, Fulham. Plans and specifications may be seen, and the premises examined, on application to Mr. W. P. JONES, at the Office of the Board, at Walham green, and any further particulars required on application to the Surveyor, Mr. A. C. BEAN, at Broadway House, Hammersmith. Tenders to be sealed and endorsed "Tender for Works, Trafalgar House," addressed to the Chairman, and deposited in a box provided for that purpose at Broadway House, not later than FOUR o'clock p.m. on TUESDAY, the 23rd inst. The Board does not pledge itself to accept the lowest or any Tender.—By order,
THOMAS EDWARD JONES, Clerk.
Broadway House, Hammersmith, W. March 11th, 1875.

DEVON and SOMERSET RAILWAY.—TO CONTRACTORS and OTHERS. The Directors of the above Railway are prepared to receive TENDERS for CONSTRUCTING PASSING-PLACES for trains, and additional Platforms, &c. at Morebath, Anstey, and Molland Stations, and for the Enlargement of Barnstaple Station, and Erection of new Passenger Offices and a Goods-shed there. The plans, drawings, specifications, and conditions may be seen at the Office of Mr. RICHARD HASSARD, the Company's Engineer, No. 1, Westminster Chambers, on and after the 16th MARCH, and all Tenders must be sent in sealed envelopes, marked "Devon and Somerset Railway. Tenders for Station Works," and addressed to R. M. MUGGERIDGE, Esq. the Secretary to the Company, at his Office, No. 13, Little Queen-street, Westminster, on or before WEDNESDAY, 31st MARCH, 1875. The Company do not bind themselves to accept the lowest or any Tender.—By order,
RICHARD M. MUGGERIDGE, Secretary.

ODIHAM ENDOWED SCHOOL, near WINCHFIELD, HANTS.—TO BUILDERS and CONTRACTORS.—The Governors of the above-named School are prepared to receive TENDERS for the ERECTION of SCHOOL BUILDINGS, with a RESIDENCE for the Head Master, at Odiham, in accordance with plans and specifications prepared by their Architect, EDMUND WOODTHORPE, Esq., and which the plans and specifications may be seen at the Office of the Architect, No. 2, Coleman street-buildings, Moorgate street, London, at any time prior to the 24th instant, on and after which date the same may be seen at my Office, at Odiham, between the hours of TEN a.m. and FOUR p.m. Bills of quantities may be obtained upon application to the Architect on or after the 1st day of APRIL next, upon payment of 3l. which will be returned on receipt of a bond fide Tender. Tenders are required to be in the form to be supplied by the Architect, and must state in full the names and address of the person or persons tendering. Every Tender is to be delivered under a sealed cover, endorsed "Odiham Endowed School, Tender for the Erection of School Buildings and Master's Residence," at my Office, at Odiham, on or before MONDAY, the 12th day of APRIL next. Any person whose Tender shall be accepted will be required to enter into a contract in the terms of a draft which may be inspected, and to find such security for the due performance of the contract as the Governors may deem satisfactory. The Governors do not bind themselves to accept the lowest or any Tender. EDWIN ALDRIDGE, Clerk to the Governors.
Odiham, March 10th, 1875.

CONTRACTS.—The LONDON GUARANTEE and ACCIDENT COMPANY are prepared, at a moderate rate, to issue Bonds, under which the Company become security, on behalf of a Contractor or Builder, for the due performance of Government, Municipal, or other Contracts of every description, on application to the Secretary. Leave will be given to send in the Company's name as surety with any Tender, no charge being made unless the bond is ultimately executed. For further application for bond terms, &c. apply to the Company's Head Office, 61, Moorgate-street, London, E.C.; or any branches or agencies. The bonds of this Company are accepted by the several Government Departments.

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The Builder.

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Proposed Reclamation of the Pontine Marshes.

NEW events of the present year have been more unexpected than the reappearance of Garibaldi in the Italian Parliament in the character of a sanitary reformer. The subject is one that interests almost every one. To our readers it is especially worthy of remark. How great was, and we may again say is, the influence of Garibaldi amongst his sympathetic and easily roused countrymen, Englishmen can hardly realise. Even our own more constant, if colder, nature was stirred in an extraordinary manner by the brief residence of the chieftain amongst us for only a few days. But we are apt to get rid of our superfluous sympathy by those hearty cheers which are heard from no throats but those of Englishmen, and, having so done, are not unapt to go to our farm or our merchandise, and forget what we have been shouting about. Not so has it proved with Garibaldi in Italy. We question whether there is any man now living and moving upon earth who has such a power over the masses. For a long time that power has been dormant; or exercised only, we fear, for mischief. But at last the Hermit has left his island, thrown down his crutches, taken his seat, and his oath, in the Chamber of Deputies, paid his respects to the Re Galantuomo, by whom he was received in a manner to do honour both to monarch and to subject, and brought forward schemes, or at least ideas, as to the reclamation of the pestilent waste that surrounds the secular capital of Italy, which seem likely to have practical result.

Personal knowledge of the man, the people amongst whom he moves, the great evils which he now boldly faces, and certain questions which do not altogether lie on the surface of the case, assure us that the subject is well worth attentive discussion. To Italy the project imports much,—to Rome more,—but to every seat of ancient civilisation in the world there is a serious reason for reflection. What is it that is proposed to be done?

The answer is that two distinct objects are now brought before the attention of the Italian Legislature. They are two which, although the result contemplated is to be arrived at from their combination, are every way distinct. One of them is a simple matter of the expenditure of a definite sum of money; which, under the direction of competent skill, will produce, in a short time, admirable and remunerative results. The other involves the solution of questions partly physical, partly chemical, partly physiological, which are involved in extreme obscurity, and which may come home, sooner or later, to every densely crowded centre of human population.

For the first part of the scheme we have little to say but to wish it success. We mean the embankment of the Tiber. This is one of the works in the neglect of which the civilisation of the nineteenth century after the Christian Era is far nearer to absolute barbarism than was the civilisation of the great nations that were the leading powers of the nineteenth century before the Christian Era. Although we may be said to owe the education of the civil engineer, in the first instance, altogether to the Romans, the country once held by those master-builders of Europe is almost as much neglected, with reference to its water-shed and river courses, as is our own. But neglect, in Italy, is more costly than in England. Viewed merely as a source of waste, it is more costly, because under the Italian sun the vegetative power of the soil is far greater than in the most fertile districts of England. But this is not all. The positive damage that may be effected, by a few hours of storm, is far greater, in the Italian Peninsula, than in our own island. A double crest of mountains, running from north-west to south-east, forms the backbone of Italy. The rain comes down, on this range, with semi-tropical violence. Several inches of water may fall in a few hours. The rapid slope, from the foot of the Apennines to the Tuscan and to the Adriatic seas, fills and overfills the river beds in an incredibly short space of time. A stranger at Turin, in the summer season, might think that the term which Virgil applied to the Po, "*Eridanus rex fluviorum*," was a poetic exaggeration. He might wonder, if he extended his walks or his drives to but a short distance from that bright little city, at the broad expanse of bare gravel that in some places border, or at least bordered, the sides of the river. But a three hours' thunderstorm is enough to explain all to him. Well drained as is the city, the chief causeways will, before that time has elapsed, be an inch or two deep in water. It is quite true that within ten or fifteen minutes from the cessation of the downpour the water will all have run off,—leaving the well-paved road, and asphalted paths, bright and well washed; and soon to be dried in the sun. But the better the arrangements for the rapid discharge of the rainfall, the severer is the strain thrown on the main channels of escape. Thus it happens that the Po, the Garigliano, the Arno, the Tiber, and every sister stream, overleap their banks, deluge the low-lying ground, whether in city or in country, spread disaster, and leave behind them, in their retirement, not only a waste of mud, but the seeds of a crop of fever.

It is clear that to provide against this mischief is the duty of the engineer. It is within his power, if the pecuniary means be put within his reach, to assure adequate outfall for the rainfall. Not only so, but the expense thus incurred is, if the matter be properly carried out, a remunerative expenditure.

We have, therefore, only this to say, as to the embankment of the Tiber, that it has our hearty good wishes; and in order that the Italians may worthily and efficiently deal with their own rivers, let us recommend our friends, with all the weight of dear-bought experience, to let them do so for themselves. Let none of us complicate the case by finding a farthing of English capital. We have heard something, and experienced something, of canalising or embanking Italian rivers. The Tiber is not likely to be more propitious to the stranger than the Po. English money does not prosper or fructify in these regions. It is a home concern to the Italians. That fact they are certain to remember one day, although it is very likely that they may forget it, so long as it is a question of filling up a subscription list. All that we can say is, that if, disregarding the experience we have already bought, Englishmen put their money into the Tiber, they will have only themselves to thank if they never see it emerge from that turbid and passionate stream.

The other matter is more difficult to deal with. It is the question of disinfecting the large area of the Pontine marshes, and the wide district of desert or semi-cultivated country that lies around the walls of Rome. The questions here raised are of a very complicated nature. In the first place, it is by no means certain what are the physical conditions to be dealt with. In the second place, it is yet more doubtful how the subtle organic chemistry of life is affected by the mysterious scourge of the malaria—the bad air.

It is certain that in very different parts of the world we see regions that were once densely populated, reduced to a desert condition. The *Campagna di Roma* is by no means a solitary instance, even in Italy. On the Adriatic coast, where leagues of land bordering the sea form one rich and lovely garden, there is a zone of bare ground around the old port of Brindisi; and there is the sign of the malaria fever on the inhabitants of that town. To the east of Naples are some districts, which, though not uncultivated, are now but very sparsely inhabited; and others, as the vicinity of the Lago d' Agnano, which are positively shunned as unhealthy; while from the hill of Posilippo up to the foot of the Apennines there is not an acre of ground that is not cultivated like a nursery garden. Sicily, Africa, Asia Minor, Syria, Assyria, all tell the same tale. In each of these ancient seats of mankind there is evidence that a population many times as numerous as that now to be found there, once lived, and throve. Noble works for water supply and for irrigation spread their ruins over those countries. In some of them, travellers tell us, the cause of the evil is the want of settled Government. The fertile character of the soil depends on the maintenance of great engineering works. If there be no Government to repair and maintain these works, and no guarantee of peace and order to enable the inhabitants themselves to do so, the earth becomes unproductive, and unable to supply food for a population such as it once maintained. This, no doubt, is the truth; but is it the whole truth? If so,—why are certain parts of the same country left to neglect, and others carefully cultivated? There is little doubt that the Papal Government was the worst

Government in Europe; or that a policy such as we call killing the goose that laid the golden egg may well tend to depopulate and destroy a country. But the Neapolitan Government was not so immeasurably superior to that of the Pope; and in the old kingdom of Naples plenty and industry were the rule, and spots given over to *malaria* the exception. None the less they existed. Hence the political reason is not adequate to account for the condition of the *Campagna*.

It is doubted by some Italian engineers whether the ordinary methods of drainage will have any effect in the wet parts of the Pontine marshes. We do not adopt this opinion; but we are not prepared with any evidence to disprove it. Knowing what is to be done with peat bogs, we cannot but regard drainage as a mere question of time and skill. But the fact that this is doubted by men competent to form an opinion on the subject, and familiar with the locality, is in itself one of the difficulties of the case.

But grant that the marshes can be dried, does it follow that they will have been thus rendered healthy? This is, it may be said, matter of opinion. True; but the balance of opinion is adverse to the hope. We have yet, in order to form a sound opinion, to ascertain the history of the localities. We can understand that a great depopulation by war, pestilence, or famine, sweeping off the cultivators of the soil, and thus allowing all great public works to fall to ruin, may have rendered a country unhealthy; but the question is not the possibility, but the fact. What is the history of the case? Has depopulation caused the unhealthiness of the *Campagna*, or has the increasing unhealthiness of the *Campagna* caused depopulation? A first necessity for the wise encountering of the difficulties of the case is to ascertain this historic fact.

It may, indeed, be almost questioned whether the dense population of a country, for a long series of years, may not exert a deleterious influence on the soil,—may not, in fact, poison the ground. We are not prepared to argue that it is often thus; but the point is worth inquiry. In some places it certainly is the case. A notorious instance is that of Jerusalem. It is very rare for an Englishman to spend many months in Jerusalem without suffering from fever. On a limestone mountain, 2,500 ft. above the Mediterranean, it might be thought that a healthy site was obtained. Such, no doubt, it once was. But the repeated overthrows of the place, and the neglect of any proper sanitary measures on rebuilding, have allowed the pile of ruin to become percolated with sewage. All the water is tainted, and it seems highly improbable that Jerusalem can ever again be a healthy spot.

As to the great cities of the Mesopotamian valley, we know less as to their positive unhealthiness, but we have the striking testimony of their utter desolation. Here, again, political causes are alleged. And here, again, comes in the question of the *post* and the *propter*. Conquest and subjugation are intelligible, but hardly so utter desolation without some other cause than the mischances of war.

In some parts of the world, indeed, it seems certain that it is some telluric influence that has driven away the cultivator, rather than the neglect of the cultivator that has induced altered conditions in the climate. Thus we find that under the common name of *malaria* are grouped together very distinct causes of disease. Pestilential vapours may arise from decaying organic matter. In Rome this is, no doubt, the case to a fearful extent. The Italian mode of burying (if it may so be termed) the poorer classes does not admit of description to English ears. Evelyn tells us, in his charming diary, how the soil which was brought from Palestine to fill the *Campo Santo* at Pisa was supposed to have the quality of entirely consuming the bodies interred in it within forty-eight hours. Some virtue of that kind appears to be attributed, practically at least, to every Italian cemetery. It is undeniable that, at all events, one source of the pestilential air of Rome is due to the reckless and poisonous mode of interment, which has been long carried on under the Papal rule; and it is to be noted that this is a cause of pestilence to which pre-Christian Rome was not exposed.

While the cemeteries of Rome, and the sewage of Jerusalem, are in themselves adequate and efficient causes of fever, the vitiating influences of the atmosphere of other places is apparently due to the decay of vegetable organic matter. As to this, experience is ample, and it is unnecessary to go far for examples. But there are other cases in which it is very difficult to ascertain whether such organic decay is the source of mischief, or whether there is any inorganic poison as yet undetected by science at work.

We have been assured, by persons familiar with Spain, that certain high-lying clay districts, in the neighbourhood of Madrid, are pestilential during part of the year. But what demands research is the fact that this unhealthy season is in the summer. In the months when the impervious soil is continuously wet, it is said to be healthy. It is not until the clay becomes parched by the sun that malaria makes its appearance. We cannot assert the truth of this from our own knowledge, but we mention it on the testimony of competent persons. In this instance it may be the case that vegetable decay is indicated. It is very difficult to understand the phenomena on any other hypothesis.

Lastly, there are cases in which we can only suggest that some telluric non-organic poison is actually present in the air. This, of course, is the most hopeless case. It is also that which is most obscure. We are not aware of what the fatal influence is. The subject has long excited great interest in Italy; but science has not yet spoken decisively on the subject. Sulphuretted hydrogen has been suggested as the source of evil. Our own experience hardly confirms the fact. This gas is very readily detected by the smell. We have perceived no such indication in those malarious spots which we have personally investigated. On the other hand, at Harrogate, sulphuretted hydrogen is evolved in considerable quantities from beneath the soil. It imparts their special medicinal virtue to the water. The spa rooms are full of the obnoxious odour; yet these are the very temples of the goddess health!

Phosphoretted hydrogen, again, has been suggested. We are familiar with the existence of this gas in fens and marshes, where it is the cause of the *feu follet*, Will o' the Wisp, or Jack o' Lantern. But this, we apprehend, is an indication of the presence of organic decay. Phosphorus is always obtained, by the chemist, from organic sources,—and it is very doubtful whether it is to be met with in telluric vapours. In the smoke and steam that issue from Vesuvius, Monte Nuovo, and other volcanic vents, it is certain that the presence of sulphur may readily be detected by the senses. But one must go very close to a volcanic spiracle to find the atmosphere as irritating as we have often found to be the case in the open streets of Swansea. Certainly the Underground Metropolitan Railway has an atmosphere, at times, far more intolerable to the lungs than that of the crater of Vesuvius. We thus question very much whether sulphur vapour, in any form, be the source of malaria.

On this subject, then, it is highly important that science should shed light. To attempt any great project of reclamation, in default of fuller and more definite information, would be imprudent, as an investment. We do not mean that it would be imprudent for the Italians to attempt it. On the contrary, it would be worth almost any expenditure to restore the vicinity of Rome to its Imperial or to its consular state of salubrity. But that is a matter for Romans, and for Italians—all that Englishmen can do is to look on—to watch and to learn.

One practical piece of advice, indeed, we may venture to offer. Whether the desolation of the *maremma* be the cause or the consequence of the lack of human labour, there is no doubt that bare and exposed swamps are especially the home of malaria. We are not forgetting that there are special evils attending on over-wooded soils and damp forests. Nevertheless, we are firm believers in the effect of well-tended vegetation in causing salubrity. Very much was said a few months ago as to the special qualities of an Australian tree, the *Eucalyptus globulus*, in purifying the atmosphere. It was wished, by a contributor to our pages, to make experiment as to the virtues of this plant in one of the pestilential places known, namely, Jericho. Our first English authority on the subject, on being consulted, readily furnished seeds for the experiment; but gave the opinion that the Eucalyptus had no especial virtue as a corrective of *malaria*, other than that possessed by any tree of equal rapidity of growth. The effect of vegetation was thus, incidentally, admitted. On the other hand, our contributor was assured, by persons acquainted with the *Eucalyptus globulus* in a state of nature, that there is a peculiar aromatic fragrance perceptible in its leaves. Thus we have the *dictum* of botanical science as to the value of this plant, as a purifier of climate, owing to the rapidity of growth. We have the indication of further special qualities, as yet unproved. The experiment is in course of trial in the Holy Land. We suggest its adoption for the *maremma*. A zone of these trees, well planted and carefully tended, might attain sufficient importance, within a very few years, to give definite results. No loss would be incurred by the attempt, while there is a chance of very admirable gain.

We cannot but regard it as a matter of the best omen for the future progress of mankind, that among men of such different tone, temper, and habit, as are the Italians and ourselves, a little wisdom should appear to be dawning. The difference of the result of a session of the Chamber devoted to the practical improvement of Italy, and of one wasted in political declamation, or organic change, is immense. We trust that it is not in Italy alone that men are beginning to see how much health, and how much wealth, are to be attained by the systematic execution of well-planned engineering works.

THE USE OF GOLD IN ANCIENT ARCHITECTURAL ENRICHMENT, AND ITS INFLUENCE ON CONVENTIONAL FORMS.

ARCHITECTURAL MUSEUM.

On Saturday afternoon, the 13th inst., Mr. F. A. Skidmore, the well-known art metal-worker of Coventry, delivered a lecture at the Royal Architectural Museum, Tufton-street, Dean's-yard, Westminster, on "The Use of Gold in ancient Architectural Enrichment, and its Influence on Conventional Forms," to an audience mainly composed of art-workmen.

Professor T. Hayter Lewis, who occupied the chair, said that it needed no words from him to introduce to the meeting the lecturer, who was so well known to them, and who had previously read a paper at the Architectural Museum on the same subject he had undertaken to refer to that afternoon.

Mr. F. A. Skidmore asked the forbearance of the meeting, because he was very unwell, having been working hard lately; he would, however, endeavour to fulfil the task set before him to the best of his ability. For many years, he went on to say, there had been expended vast sums of money on architecture, and architects took credit for accomplishing great things, when they were simply working on the past in copying what they found in existence. This should not be, he maintained, for architects little knew what was the motive which dictated all the various forms which they worshipped. Architects should be constructors in the true sense of the term, or else go farther back, and reproduce what was done by the workers in gold. Chambers had affirmed that originally a very large quantity of gold was used to adorn houses of the earliest period; and history recorded the use of gold and silver in large quantities in the temples and buildings of Assyria and Greece, and in the Temple of Solomon at Jerusalem. It was not at all uncommon in ancient times to use as much as 10 cwt. of gold in adorning temples, and this was the motive power which gave architecture its impetus, which they had now lost. At that period the goldsmith occupied a very high position,—very much different to the subordinate one which he held now, as simply a manufacturer of jewelry. In the Temple of Solomon accounts were given of the capitals of gold, with chain-work, and also woodwork covered with plates of beaten gold. In the writings, too, of Mr. Fergusson, in Wordsworth's "Greece," and in Homer's "Odyssey," they were told that the temples originally were of wood, on which naturally the precious metals, possessed in such abundance, would be placed as enrichments. The subsequent stone structures gave evidence of that origin. This being the case, it was a fair deduction that the richer portions would also be represented in stone. Mr. Skidmore then placed upon the table a large collection of examples, showing the constructive necessities of metallic treatment, tracing the identity of these with the stone carvings of various ages. He pointed out that the natural forms of the Decorated and Perpendicular periods in metal received their conventional lobes and treatment from the hammer of the goldsmith, and were again repeated in stone carvings, the glorious shrines of interiors being re-expressed on the exterior of edifices: to so great an extent, he said, was this principle

applied, that the original *jewel* in its *metal setting* was profusely used, and styled "Ball-flower." He urged that this eternal copying was a great mistake; architecture at the present day was a failure, and that simply because it revolved itself, with architects, into a question of various old styles. They showed nothing of the constructiveness which science taught was necessary for true progress, and hence was what he regarded as a failure. Distinctly and emphatically, amongst the glorious things with which they were surrounded in the architectural Museum, with a vast variety of forms in stone, there was not one in which they could not trace the influence of the skill of the ancient goldsmith. Forms, which to them conveyed no meaning, spoke in those ages of the wealth offered to the Deity, and was, indeed, a living art; for men gave largely out of their own great wealth for the purpose of enriching the buildings. He contended that it was no slight gain to architecture to be able to unravel the motives which dictated each form, and that, with such knowledge, an architecture of the future became a possibility. He contended that architects ought not to stop at stone representations. If they were determined to rely upon, and worship the past, they should go as far back as the goldsmiths' period, and then they would understand why many of these stone representations took a particular shape. If they would reproduce the past, let them, he continued, do it honestly and fairly; but not for ever worship forms without knowing their motive. There was no legitimate ground for halting where they now stood, as they were simply like imperfect translators, who had no thought of original work, or of going even to the root of the thing they had in hand. It was true that the precious metals were now diverted to other channels; but there was yet, in bronze and other metals, the same power of producing an infinite variety of forms, which might again vie with the best ages of architectural art. There had lately been an interesting discussion at the Royal Institute of British Architects "On the Hope of English Architecture," which was the result of the article published in the *Quarterly Review* on the "Inspired Workman," and it had been affirmed that architecture could only find a resuscitation in the mason and the carver. In this view Mr. Skidmore did not agree; but thought, at the same time, that there was a large amount of truth in what the Reviewer had said.

The chairman, in proposing a vote of thanks to the lecturer, said that he was sure Mr. Skidmore had not at all exaggerated the position he was in with regard to his state of health, and he felt sure that those present would feel deeply indebted to Mr. Skidmore for persevering in his lecture, in spite of his being so unwell. Taking a broad view of what the lecturer had said, they came simply to this, that his idea was, that architecture generally,—architectural forms and decorations,—took its origin in the goldsmith's art, and, more than art, in the mason. Professor Lewis thought that they must agree with him to a certain extent, as far as goldsmiths' work went. Of course, Mr. Skidmore, being a goldsmith, spoke from a goldsmith's point of view; but they could not look at any of the forms of architecture without observing that they might have been elaborated in the way the lecturer referred to, many of which, he said, owed their origin to the goldsmith. The earliest style they had was the Egyptian, and there could not be any doubt but that Egyptian art owed its origin to working in stone. When they came to trace their own architecture, they found that there was a vacancy between the two styles, Egypt and anything later, that they could not get over. There was a letter extant, from a German historian, who stated that there was something in Greek art,—which they all knew was the perfection of art,—which he could not account for; but, he added, "a time will come, when, on the banks of the Tigris and Euphrates, we shall see the origin of Greek art." They could not find the origin of those architectural forms which they knew so well. It was extremely likely, indeed, that, to a large extent, Mr. Skidmore's theory might be correct. In conclusion, Professor Lewis paid a high compliment to the liberality of the Goldsmiths' Company in regard to furthering the objects and desires of art-workmen.

The Goldsmiths' Company's competition drawings were exhibited, and excited much attention.

The next lecture is postponed till April 3rd, when Mr. William Brindley will treat of "The Carving of Natural Foliage."

PICTURES BY JOHN LINNELL.

THE works of this veteran landscape-painter, at present on view in the Pall-mall Gallery, are not represented there in sufficient number really to afford what the preliminary note to the catalogue implies,—an opportunity of observing "the impression they would create *as a whole*." Sixteen works hardly afford an adequate representation of artistic labours which have extended over considerably more than half a century. The most important of those exhibited are, however, typical works, and among the artist's best productions.

Nothing in English art is more essentially English than the genius of Linnell, a criticism which of course implies a certain restriction in the nature of a genius which can thus be identified with the local character of special scenery; and the range of Linnell's art is limited even in this respect. His pictures can be at once recognised in an exhibition, even at a distance, from their well-known tone and characteristics, and even similarity of composition. It is a proof of the real and sterling nature of Linnell's art that in spite of this marked similarity in his subjects and his treatment of them, he cannot be said ever to have declined into mannerism, in any sense in which that word implies a reproach. There are no tricks or receipts in his painting; and mannerism is the repetition of a receipt or trick of effect. His original bent seems to have led him to the depiction of a certain phase of nature and natural effect, which he had (or acquired) a peculiar talent in depicting; but the results are all due to honest and careful study, as far removed as possible from mere sleight of hand.

If we were to make a comparison which would illustrate the genius of Linnell in a sentence, we should say that his works remind us strongly of the word-painting of Thompson's "Seasons,"—the *Summer* in particular. There is in them the same love of heavy rich foliage, of the warm full tints of late summer, and of the effect of successive grades of distance beyond, fading away into a blue haze. The well-known passage in "The Seasons," describing the view from an elevated spot on a sunny day, and concluding with "the Cambrian mountains, like far clouds that skirt the blue horizon," might be a description of the type of picture by which Linnell is best known. And the painter has the same "home" feeling about him too; the same love of the country-folk and their ways, who make such pleasant little episodes in his foregrounds. His materials are simple, and do not vary much; yet there are few landscape-painters who, without touching the highest point of their art, have given more general pleasure to the learned and the unlearned. We like to look at his masses of foreground trees, so broadly and picturesquely yet carefully handled, and to let the eye wander over his distances, with the haze of summer heat hanging over them; and if there are plenty of repetitions of the same character of scene and effect, it is one which every lover of English landscape feels the charm of, and of which he would willingly possess a transcript.

If, however, the works of the painter had been collected in a greater number at the present exhibition, they would have exhibited this sameness of feeling and subject in a rather marked degree, and it may be doubted whether such an exhibition would be so much in his favour as the present more select one; and among the works exhibited in the Pall-mall Gallery are two or three of the last which he has executed, which are specially interesting, not only for their high excellence, but as indicating a certain novelty of tone and treatment as compared with the artist's previous work. In Nos. 1 and 2, "Pointing the Way" and "The Barley Harvest," we find all the old beauty of atmospheric effect and composition, with a tenderer and more delicate scale of tone and colour, as if the artist had come to a kind of "latter spring," and were trying a new scale of effect. And it is curious that the change is the reverse of what usually happens; the tendency of painters in their latest period generally being to intensify the characteristics of their earlier works. Linnell seems to have done the reverse; his rather heated foliage tones are reduced to a fresher and cooler hue, and his blue distances are fainter and more tenderly treated. Less powerful than some of his former works, "Pointing the Way" seems to us scarcely to yield in real excellence to anything the artist has given us; so beautifully true is the sunlit foreground, and so soft and glimmering the stretch of distant landscape. The "Storm in Harvest," which was at the International Exhibition last year, shows more of the older characteristics, and very finely; but we are still of the opinion that it illustrates a prevalent fault in the painter's execution, of an over-massiveness and weight in his clouds. But this is a powerful work, though perhaps a little exaggerated, and the gleams of half light over the fields in the middle distance are perfectly given. Of all the works here perhaps the "Wood-cutters" (No. 6) gives the truest expression of the painter's habitual style and of the nature of his excellence; it is an admirably balanced work. "The last Load" is a picture of finer effect and deeper feeling, especially in the gleam of the evening light on the trees and the loaded wain; but it is not so characteristic a specimen of the artist.

The pictures are really worth a visit, and will probably convey a higher idea of Linnell's genius than is entertained by some of those who may have got into the habit of passing over his works at exhibitions as repetitions of effect which have ceased to interest them much. A more numerous collection would, as we have said, have brought out this repetition more strongly; but a collection of some of his finest works cannot but raise our estimate of an artist who has laboured so truly and so well even within a rather limited range.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A SPECIAL general meeting of members only was held last Monday evening, the 15th inst., under the presidency of Sir Gilbert Scott, R.A., to consider the recommendations of the Council with regard to the award of the Royal Gold Medal, the Soane Medallion, and other medals and prizes of the Institute for the year 1874-5.

According to one of the rules of the Institute, reporters on this occasion were excluded from the meeting, but, after a protracted discussion, which lasted nearly two hours, we understand it was resolved that the Royal Gold Medal be awarded, subject to her Majesty's gracious sanction, to Mr. Edmund Sharpe, M.A., Fellow, in recognition of "the works which he has produced tending to promote and facilitate the knowledge of architecture."

"That the Soane Medallion (with the sum of 50*l.*, under the usual conditions) be awarded to the author of the drawings distinguished by the motto 'Soane': subject of design, 'A London Residence'" (W. Hilton Nash, of 5, Adelaide-place, London Bridge).

"That in the same competition the Institute Medal be awarded to the author of the drawings distinguished by the motto '*Crux mea Lux*'" (William Scott, of 43, Myddleton-square).

"That in the same competition a medal of merit be awarded to the author of the drawings distinguished by the device of a triangle within a circle" (A. T. Taylor, of 16, Oakley-road, Southgate-road).

"That in the same competition a certificate of honourable mention be awarded to the author of the drawings submitted under the motto 'Urbanus'" (Mr. R. Haines, of 6, Beaumont-street, Oxford).

"That the Institute silver medal, with 5*l.* 5s., be awarded to the author of the measured drawings, distinguished by the motto '*Semper Fidelis*': building illustrated,—Exeter Guildhall" (James Crocker, of Richmond Terrace, St. David's, Exeter).

"That in the same competition the Institute silver medal be awarded to the author of the drawings distinguished by the motto 'Student': building illustrated,—Adel Church, Yorkshire" (J. T. Hennessey, of 84, Briggate, Leeds).

"That in the same competition a medal of merit be awarded to the author of the drawings bearing the motto 'Weore': building illustrated,—St. Mary's, Madley, Yorkshire" (James Neale, 56, Wigmore-street, Cavendish-square).

"That in the same competition a certificate of honourable mention be awarded to each of the authors of the drawings submitted illustrating St. Mary's, Belton, Gloucester, under the motto '*Labor omnia vincet*' (H. R. Perry, of 9, Seymour-street, Green Park, Bath); and those illustrating Dunblane Cathedral, submitted under the device of a cross within a circle" (J. M. MacLaven, of 12, Sloane-terrace, S.W.).

No essays were submitted in competition for the essay prize, 1874-5.

SIR,—It might possibly be imagined that gentlemen who profess to undertake the management of other people's business, on the assumption that they can do it with advantage to their clients, would at least be able to

manage their own; but certainly the management of a meeting, or the efficient disposal of the merest routine business, is not amongst the "fortes" of the Institute of British Architects.

I was one of the unfortunate visitors who attended their meeting last Monday. With a heavy amount of trivial business to get through, and an important paper to read, the chair was not taken until eighteen minutes after the appointed time of eight o'clock: a desultory discussion was carried on, almost every point in the council's report was questioned,—one gentleman speaking eleven times, whilst others diverted their attention from the monotonous dulness by wandering about, looking at pictures. By half-past nine the talking,—discussion I cannot call it,—seemed to have run itself dry, and the reading of a paper that a number of visitors had come to hear was proposed. After the waste of time, the unreasonable trenching upon our patience, we did expect the exercise of courtesy on the part of the governing body of the Institute; but it would seem that this virtue is alike wanting. One by one every member of the council slipped away, and it was felt by the meeting that under such treatment of their visitors, such want of deference to the gentleman who had taken the trouble to prepare the paper, it was impossible to proceed that evening.

The meeting broke up by spontaneous disintegration, and we left, Indignant.

ARTISANS' DWELLINGS BILL.

The House was to go into Committee on Mr. Cross's Bill on Thursday, but at the time of going to press we are not aware that it did so. The notices given of amendments and insertions proposed to be introduced in committee fill eleven printed foolscap pages. The title of the measure "Artisans' Dwellings Bill" (printed, by the way, "Artizans' Dwellings) is incorrect. Sir Charles Dilke proposes to substitute "Towns Improvement Bill," which would be decidedly better, but is still open to objection. We would suggest as the title, "Dwellings Improvement Bill."

THE ARTISANS' DWELLINGS BILL IN LIVERPOOL.

At the last meeting of the Liverpool Architectural and Archæological Society, Mr. Joseph Boult in the chair,—

Mr. Forrest, a member of the town council, said that the Artisans' Dwellings Bill, now before Parliament, would, no doubt, become law in a shape which would result in action being taken to ventilate densely-populated parts of such towns as Liverpool; but, in connexion with the opening up of these places, there was the provision of providing, as near as possible to the houses demolished, compensating accommodation. It had, however, occurred to him that, instead of corporations being compelled to provide buildings of an improved character upon the exact sites of buildings which it might be found necessary to demolish, dwellings might be constructed at a little distance,—so far as Liverpool was concerned,—upon the borders of the railway systems by which it was surrounded. He thought that, in this way, people might be located so as to be brought cheaply and rapidly into the very heart of the town. With regard to the question of adopting in Liverpool the appointment of district surveyors as in the metropolis, it was a fact that, in Liverpool, an examination was only made as to the structural character of the buildings, sanitary provisions being overlooked, which was not the case in London. The health committee could not interfere until a nuisance was actually proved to exist, and then the great difficulty came in the way that, the sanitary arrangements being underground, the source of the nuisance could only be ascertained by digging into the foundations. He gave an instance of a street in Everton which he examined, together with Mr. Peet, with the result of finding that, from end to end, there was no stoppage whatever between the sewer and the houses. He did not know that the servants of the corporation could do a better service for the health of the town than to make an investigation in the direction which he indicated. He believed that a condition of things in a sanitary point of view would be shown such as they had no conception of.

Mr. Edward A. Heffer said he thought the time had come when Liverpool should be divided into districts, each with a surveyor to thoroughly supervise the erection of buildings, and, further, to look at the drains and substructure before the buildings were finished. He believed that so far as these duties were now concerned the limited staff of officials had done their best, but in number the staff was quite inadequate to the duties. He quite agreed with Mr. Forrest that some steps should be taken to get the present condition of matters altered, so that there might be proper surveyors in apportioned districts, and that buildings and building operations might be looked after carefully.

Dr. J. W. Hayward said, he thought it was a great advantage to have a man's dwelling near to his work. He approved of the suggestion that the Corporation should appoint surveyors to look after sanitary arrangements before the erection of buildings.

Mr. J. Montgomery, parish surveyor, considered that labourers' dwellings outside the town, with the convenience of cheap trains, would be better than having people crowded in buildings such as were proposed in a system of reconstruction. Were it possible to provide a place near to the sphere of men's work it would be all right, but he could not see how that could be done. He approved of the appointment of district surveyors, and considered that there should be at least half a dozen of them. It was frightful how buildings were constructed now, almost on the sod. That sort of thing was done even in connexion with a "good class of houses."

Mr. Duncanson (deputy water engineer) said that if the densely-built portions of the town were to be cleared away and rebuilt with workmen's dwellings, the overcrowding would continue as a matter of course. He, therefore, saw nothing for it but to get the people away from the town in the manner which had been suggested by Mr. Forrest.

The Chairman called attention to the fact that although the Sanitary Act was obtained in 1847, or twenty-seven years ago, the rate of mortality at the present day was greater than it was then.

GREAT INCREASE IN THE VALUE OF LAND IN LONDON.

In his circular on railways for March, Mr. William Abbott makes some statements as to the rapidly increasing value of land in the different parts of London. Speaking of the relative value of railways he states that the enormous daily growth of London, and with it the enhanced value of every inch of ground, renders those lines exceptionally valuable which were fortunate enough in the early period of their career to secure positions which now from their augmented values would be absolutely unattainable for railway property. As an example he asserts that the Holborn Viaduct Station of the London, Chatham, and Dover Company could not now be obtained for five times the money which it originally cost the company.

MR. JOHN WALTER, M.P., ON ENGINEERING.

Mr. Walter, at the recent dinner of the London Association of Foremen Engineers and Draughtsmen, in returning thanks for the House of Commons, said:—I could not fail to be struck by the observation which fell from the hon. gentleman who proposed this toast, that the present was the first occasion on which it had been submitted to your notice, and I think that remark has a double significance, because I fear that it too truly represents the appreciation you entertain of our labours in comparison with your own. When I enter one of those magnificent establishments, which I am sometimes privileged to visit, in which some of the rudest and apparently most impracticable substances in nature are fashioned and wrought by your skill to the services of man; when, still more, I enter one of those wonderful workshops in which that machinery is turned out which ministers to the wants of mankind in almost every conceivable department of manufacture, and when I contrast with the marvellous success and precision of those operations the great uncertainty, many failures, and frequent want of success which attend our labours in Parliament; when, as my noble friend said just now, I compare the labours of your draughtsmen with those we employ, of your foremen engineers with those of ours, and when I consider after all how frequently it happens that legislative Bills which have been brought apparently to the highest state of perfection by genius and industry, are,—as we have seen on a late occasion,—shipwrecked and brought to nought by some unseen catastrophe, I cannot help comparing our labours with your own, and thinking that you have no occasion to be envious of us or to wish to change your occupation for our sphere of labour. I can only claim from you as fellow labourers, when we ourselves succeed and when we fail, some of the sympathy with which we regard your success and your failures; and I trust you will continually recruit your ranks by men qualified as you are to instruct and inform us on questions which relate to the moral, material, domestic, and social interests of the country. I must be permitted to say one word with regard to my personal claims upon your attention. I feel, indeed, that I have what the lawyers call some small "spark of right" to be present on this occasion. My hon. friend, however, misinformed you on one particular. I am myself no mechanician at all, but I have the advantage of employing many mechanicians and many engineers of ability and skill, and it is to their skill, perseverance, and indomitable courage I am greatly indebted for much of the success I have attained in life. I may also say that although I am myself, unfortunately, no mechanician, I have so high an appreciation of that branch of industry that I have apprenticed one of my sons to it, and I wish no better than, if my life is spared for a short time longer, to see him enjoy the honour of being a member of this association.

PAVING IMPROVEMENTS IN SOUTHWARK.

The Vestry of Rotherhithe are about to expend the sum of 10,000*l.* on paving in Southwark. The carriage-ways in Plough-road and Rotherhithe-street are to be paved with granite cubes, 4 in. by 9 in., and the foot-ways on both sides of Rotherhithe New-road, Manor-road, Jamaica-level, Deptford Old-road, and Bush-road, are also to be paved with 2½ in. York stone. The total area of the paving to be laid down is, for new carriage-ways, about 6,500 yards, at a cost of 6,912*l.*, and for new footways, 80,000 ft., at a cost of 3,333*l.* A portion of the footways to be laid include the south and west portions of Southwark Park, so as to improve the approaches to that place of public recreation. In consequence of the Lords of the Treasury having been advised that paving works were not of such a permanent character as to come under the provisions of the Act of Parliament, they could not sanction the Metropolitan Board advancing the required sum, for the purposes of the undertaking. The vestry has, therefore, been empowered by the Metropolitan Board to borrow the amount from another source, on the understanding that the portion to be expended for the repair of the carriage-ways is to be repaid by instalments during twenty years, and that for the footpaths during ten years.

THREATENED DESTRUCTION OF PEMBROKE COLLEGE, CAMBRIDGE.

The following memorial has been sent to us for publication. We give prominence to it in the hope that others who are interested may be led to move with the view of preventing the threatened destruction of ancient and interesting buildings:—

"To the Reverend the Master and Fellows of Pembroke College, Cambridge.

We, the undersigned graduate members of Pembroke College, desire to express the alarm with which we have received the intelligence, on authority the accuracy of which we cannot doubt, that the governing body of the college has come to the decision to pull down the greater part of the existing ancient buildings, including the hall and the whole eastern side of the first court.

We would desire to offer our respectful but firm remonstrance against the destruction of a group of buildings of so picturesque a character, of such high architectural value, of such great antiquity, and endeared not to us only (though to us peculiarly), but to all who prize the ancient forms and features of the University in which we spent so important a period of our lives.

We would venture to remind you that the buildings of our college were selected by Professor Willis, on the occasion of the lecture delivered in the Senate House before the late Prince Consort, as a typical example of the form and arrangement of a Mediæval college. To destroy these would be to rob us of an invaluable historical document, and wilfully to tear a page out of the architectural history of our University.

We would also venture respectfully to call your attention to the fact that the hall, erected about 1360, is probably the earliest existing collegiate building in the University, the loss of which as an example of its age would be irreparable.

We feel that we need not allude to the

istoric memories of which the hall is so full, which would be all wiped out by its demolition, nd the substitution of a modern fabric, which ven if more beautiful would entirely want the nterest of the ancient building. We had heard ith satisfaction that in all the various plans for he re-construction of the college, the hall was egarded as sacred, and was only to be subjected o lengthening. The intelligence that it has een decided to destroy this time-honoured and eautiful relic, so dear to us all, has taken us ompletely by surprise and filled us with dismay. Ve therefore approach you with the respectful ut most earnest request that you will reconsider our determination, and, at any sacrifice, preserve he pristine character of our '*domus antiqua et eligiosa*.'

(Signed)

HENRY SUMNER MAINE.
W. HAIG BROWN, Head Master of Charterhouse.
H. J. EVANS, M.A.
EDWARD VENABLES, Canon and Precentor of Lincoln, and Chaplain to the Bishop of London.
J. A. AIREY, M.A., Mathematical Master of Merchant Taylors' School.
GERALD BLUNT, M.A., Rector of Chelsea.
J. R. ELY.
HENRY BLUNT, M.A., Rector of St. Andrew's, Holborn.
W. H. BLUNT, B.A., Curate of St. Andrew's, Holborn."

THE NEW ALEXANDRA PALACE AND THE LONDON FINANCIAL ASSOCIATION.

SOME interesting statements respecting the New Alexandra Palace,—now definitely fixed to be opened on the 1st of May,—were made at the recent half-yearly meeting of the London Financial Association. It appears that the Association are interested in the Palace to the extent of 300,000*l*., and that during the last half-year they advanced 30,000*l*. towards the erection of the building now nearly completed. From the remarks made at the meeting the Association appears to have unbounded confidence in the success of the undertaking now about to be opened to the public. The chairman stated that despite the heavy outlay that had been made upon the Palace, they had in that building and land a promising asset.

CABMEN'S SHELTER.

THE Marylebone Vestry have given their consent for Sir Frederick Leon to erect a cabmen's rest, at his own expense, at the cab-stand by St. Mark's Church, Marylebone-road, or at the stand in Park-road, St. John's Wood.

A shelter is to be erected at the top of Haverstock-hill, near the George Inn, not far from the spot where the Asylums Board contemplate erecting their small-pox hospital. The donor of the intended shelter is Mr. B. Lyon, of Montague-grove, Hampstead.

The new cab-shelter erected at Langham-place was opened on Monday last, and has already been largely patronised by the cabmen. This is a neat and appropriate structure made from the design of Mr. Thos. Harris, architect. It is supplied with gas, water, and a stove for cooking purposes, and is placed under the charge of a competent attendant, whose duties are to take charge of the shelter, to see that no one, under any pretext whatever, is admitted except those cabmen who have paid the small subscription it is intended to levy, which will not exceed sixpence a week or a penny a day each man, and generally to see that the rules of the Committee are attended to.

SIR,—My attention has been drawn to a paragraph in your issue of the 6th inst. on the above subject.

I hardly think Mr. Fuller, the writer of it can have seen the "shelter" that has been placed in Acacia-road, St. John's Wood, by the Committee of the "Cabmen's Shelter Fund," as it is by no means a "monstrosity"; indeed, it has been pronounced by everybody I have spoken to as quite an ornament to the neighbourhood. I am also of opinion that Mr. Fuller can have had very little acquaintance with the subject, as, with the exception of the one just named, there are no more "ugly huts" erected anywhere in London at present.

Our endeavour will be to make them as neat as we can, but, at the same time, we cannot afford to lavish too much money on each.

It seems to have escaped Mr. Fuller's attention that we are tied down to a certain length and breadth, and it therefore stands to reason we cannot have the same advantages as the Crystal Palace Company, who have been allowed much more space.

Should you feel inclined to inspect some "shelters" now in course of being erected, I am sure our builders—Mr. Stanley Bird, of Upper George-street, Bryanston-square, and Mr. Small, of South Lambeth-road,—will be happy to show them to you, and you can judge if Mr. Fuller's remarks are justified or not.

My only excuse for troubling you with this letter is that unless the statement contained in your issue of the 6th inst. is corrected, I fear the movement may suffer in the eyes of the public.

JOHN DENNISTOUN,
Hon. Sec. "Cabmen's Shelter Fund."

SOCIETY OF LADY ARTISTS.

SIX hundred and five pictures exhibited in the Gallery, 48, Great Marlborough-street, and about an equal number returned to the artists for various reasons, show that the ladies have been industrious, and many of those on the walls give evidence of other and higher qualities. Miss Warren, the Misses Rayner, Miss Marian Croft, Madame Bodichon, Mrs. Backhouse, Miss Claxton, Miss Julia Pocock, the Misses Swift, Mrs. Jopling, Mrs. E. M. Ward, and other known supporters of the Society, give good aid on the present occasion. Mrs. Marrable has been to Venice, and has sent many agreeable evidences of the visit. We confess, however, to liking her best on her old ground, amongst the mountains. The painter of the "Roll Call," Miss Elizabeth Thompson, who gained her earlier honours as a member of this Society, is loyal to her old associates, and sends, under the quaint title, "Young Man in a Red Dress," a picture of considerable power and excellence.

THE COURT THEATRE.

MR. JOHN HARE, late of Miss Wilton's company, and who has become the manager of the little theatre near Sloane-square, has shown his taste and artistic connexion by enlisting the services of Mr. Val. Prinsep in the designing of a new drop-scene, and which has been partly executed, too, by that artist in conjunction with Mr. John O'Connor. It represents a fine Roman portal, the whole height of the stage, with Corinthian columns, one on each side, of variicoloured marble with gilt metal capitals. A dark-red curtain fills the opening, against which stands the figure of a halberdier, dressed also in red, but of a different tint, the whole very bold and effective. The drawing of the lower part of the columns and bases, as seen from the boxes, is scarcely so satisfactory as the rest of the work, but the effect may be better from the lower part of the house. It is, however, a very effective and striking scene, and will of itself justify a visit to the theatre. The play with which Mr. Hare has opened the campaign, "Lady Flora," if not very involved in plot, is exceedingly well written and agreeable, and we should gladly, but for absolute want of room, speak at some length of the good acting and charming scenery displayed in it.

NOISE AS A NUISANCE.

IN one of the Vice-Chancellors' courts recently a case, Beaumont *v.* Emery, was heard, of some importance to persons residing in the neighbourhood of noisy manufactories. Plaintiff is a wholesale grocer in a large way of business in Blackwall, turning over, it was stated, about 12,000*l*. a year. The defendant is a cooper, carrying on business in premises immediately in the rear of the plaintiff's house, and had been in the habit of using for his works a high-pressure steam-engine, which was kept at work day and night throughout the week. The plaintiff complained that the vibration and noise caused by this engine were such as to create an intolerable nuisance, and after some vain endeavours to induce the defendant to abate the nuisance he filed this bill, praying that the defendant might be restrained by injunction from working the steam-engine and carrying on his business in such a manner as to occasion nuisance or annoyance to the plaintiff. The Vice-Chancellor said he was of opinion that the plaintiff had established his case, and there must, therefore, be an injunction in the terms of the undertaking given by the defendant in July, 1873—that is, an injunction to restrain the defendant from working the steam-engine between the hours of seven p.m. and six a.m. without the plaintiff's consent, and also from conducting his business so as to cause nuisance and annoyance to the plaintiff or his tenants.

THE ARCHITECTURAL ASSOCIATION PRIZES.

FOR the Session 1874–75, the Committee have published a long list of prizes offered. It is hoped that a large number of students will compete earnestly for them; gaining skill by their exertions and honour for the Association of which they are members. The list offers strong inducement for useful work.

ARCHITECTS' BENEVOLENT SOCIETY.

ON Wednesday, the 10th instant, at the rooms of the Royal Institute of British Architects, a special general meeting of the subscribers to this Society was held to consider certain amendments in the bye-laws, chiefly relating to the disposal of a portion of the Society's accumulated stock, which may hereafter stand in railway debentures under the direction of the Council, instead of as heretofore, only in the Funds. Several changes, too, were effected in those bye-laws, regulating the distribution of relief to applicants, whereby it is hoped some little trouble will be saved to them, while, at the same time, ample security will be afforded, that the money entrusted to the disposal of the Council will go to proper persons.

After the business of the special general meeting was concluded, the annual meeting of the subscribers took place, when the President's report was read by the chairman, Mr. Geo. Mair, F.S.A., and adopted unanimously. It stated the Society was making advancement in income and numerical strength, almost, in fact, progressing *pari passu* with its calls. The audited accounts for the past twelve months were laid before the meeting, showing that a sum of 277*l*. had been distributed amongst needy members of the profession, their widows and orphans; in 1873 235*l*. were given away in a similar manner; and in 1872, 190*l*. At the close of the proceedings, the hon. secretary, Mr. Turner, announced a list of recent donations, amounting to 36*l*. 8*s*.

SCHOOL BOARD SCHOOLS.

Shipley (Bradford).—The Shipley School Board propose to erect in Saltaire-road a central school for 800 children. The new schools will be situated a little beyond the Primitive Methodist Chapel in Saltaire-road, and will stand in the centre of a plot of land over 6,000 yards in extent. The style of the building is to be Italian, the principal feature being an elevated ventilating shaft of ornamental design over the main front. The rooms will all be lofty and well ventilated. The principal departments will consist of infants' room in the centre of the building, but extending somewhat beyond the wings which flank it on each side. In these wings will be placed the boys' and girls' schools. In the arrangements of the principal rooms space is provided for double sets of desks. The rooms are respectively 55 ft. by 36 ft., and 50 ft. by 36 ft. Three class-rooms, about 20 ft. by 18 ft., are provided in the boys' and girls' departments, and rooms of similar dimensions open into the infants' school. In connexion with each department there is a teachers' stock-room. The playgrounds are ample. In the central front of the building provision has also been made for offices for the clerk to the Board, with an entrance from the Saltaire-road. Messrs. Jackson & Longley are the architects.

ROYAL ITALIAN OPERA.

THE season will commence on Tuesday, the 30th ult., when "Guglielmo Tell" will be performed. Mr. Gye has little occasion to do more in his programme than remind the public of the names of the artists attached to the establishment, and the long list of operas from which the performances of the new season will be selected, to ensure the support of all lovers of music of the high class. In addition to a selection from the existing *répertoire*, it is intended that three, at least, of the following works shall be given:—Gounod's "Romeo e Giulietta" (for the first time these seven years), with Madame Patti, Fanre, and Nicolini; "Semiramide," with new decorations

and costumes, and supported by Madame Vilda, Mdlle. Scalchi, and Faure; "Le Pré aux Clercs," for the first time in England, in an Italian form; and Wagner's "Lohengrin," which has been a considerable time in preparation, and will be produced, with new scenery, costumes, and decorations, early in the season, supported by Mdlle. Albani, Mdlle. d'Angeri, Maurel, and Nicolini. Mr. Mapleson claims to have the absolute right to represent this opera; but we have perfect faith in Mr. Gye's promise.

METROPOLITAN GAS SUPPLY.

AN interesting pamphlet, entitled "The Great Central Gas Company, its Origin and History," by Colonel Croll, J.P., has just been published by Mr. T. Harris, Bishopsgate Without. Its issue is very timely at a period like the present, when Londoners are justly complaining of exorbitant gas-rates, and when legislation is impending, which, unless vigilantly guarded, may permanently impose unreasonable burdens upon all gas-consumers in the metropolitan district. This pamphlet traces, in a lively manner, the progress of efforts commenced some years ago to break down the then existing monopoly of the City supply of gas, which was, at that time, charged 7*s.* per 1,000 ft., and, in addition, was fraught with sulphurous and other impurities. The author has issued this pamphlet with the hope that it may tend to inform the public on various points in which their interests are now concerned, and may also serve, in some degree, to influence the Legislature to give the necessary powers either to the Corporation or to the Metropolitan Board to erect gas-works for the better supply of the citizens, or to purchase the existing works, on terms not exceeding the cost at which similar undertakings can be, and have been, completed.

A PROPOSED PUBLIC GARDEN FOR ST. GEORGE'S IN THE EAST.

THE proposal to form a public garden within the district of St. George's in the East was favourably received by the Vestry at their meeting last week. A memorial signed by 650 inhabitants, including many of the most influencial ratepayers, was presented in favour of forming a public garden at the east end of the parish church-yard, and making a thoroughfare through the church-yard from St. George-street to Cable-street.

ACCIDENTS.

AT Kirkintilloch, last week, John Macmillan was engaged putting a coat of tar on a chimney stack, 170 ft. high. He was suspended on the scaffold, supported by a rope passed right round the top of the chimney, and, in trying violently to swing the scaffold round, the rope slipped off the top, and Macmillan fell to the bottom, a distance of 80 ft., and died instantly.

William Wilkinson, foreman joiner, was working on the fifth story of a mill in course of erection in Gaskell-street, Bolton, on the 10th inst., when he stepped on to a loose plank and was thrown to the ground, a distance of 55 ft. When taken up his body was found to be in a dreadful state through catching on the joists of the different stories as he fell. Death ensued before he could be got to the Infirmary.

On the 9th inst. two men were killed and four injured by the falling of the gable end of a shed which was in course of removal from the Caledonian goods yard at Carlisle.

On the same day two men were killed at the Talsarn slate quarry by the breaking of some scaffolding on which they were standing.

BLOWN DOWN.

DURING the heavy wind which blew on the 9th inst., a fatal accident occurred at Cowthorpe, near Wetherby. German, a labourer on the farm of Mr. Tomlinson, was assisting one of his master's sons to prop up one of the pillars of a large new barn, 50 yards in length, when 40 yards of the building gave way, and German was buried in the ruins. When extricated it was found that he was much bruised about the body and face. He was taken to his home, a short distance off, but died about an hour and a half after the accident.

About nine o'clock on the 9th inst., during a heavy gale, a large portion of the new Wesleyan Chapel in course of erection at Royton, near Oldham, was blown down. The building was estimated to seat about 600 or 700 persons, and to cost about 2,000*l.* A large portion of the back and gable walls fell with a loud crash, carrying with them several inner walls. The men were not at work at the time of the mishap.

On the same day a strong wind and heavy rain prevailed for some hours at Falkirk, and resulted in the overthrow of a large brick erection, newly roofed, situated in the Corn Exchange Park, and about to be used by Mr. Binnie, auctioneer, as an auction mart. The building was about 100 ft. long by about 48 ft. broad, and the side walls were between 15 ft. and 18 ft. high. The roof was completely blown off, and the greater portion of the side walls laid flat.

VICTORIA HALL, LIVERPOOL.

WITH reference to this building, the Chairman of the Committee, who arranged for the recent visit of Messrs. Moody and Sankey to Liverpool, writes:—

"First, our thanks are due to Messrs. Parslow & Clarke, architects, who originally designed the form of the building with galleries, by which arrangement the largest number could be accommodated on the same area of land. Secondly, to Mr. T. D. Barry and Mr. W. Parslow, who, as members of the committee, gave their time and thoughtful care to superintend, as surveyors, the erection of the hall. All these services so generously rendered, were a most valuable contribution to the work. Thirdly, to Messrs. Haigh & Co., the builders, who showed so much promptitude in preparing their plans and specifications, and tendering for the work; and subsequently pressing it forward with so much diligence that scarcely a day was lost, and all was ready when the place was required."

ACTION AGAINST THE LONDON SCHOOL BOARD.

IN the Sheriffs' Court, Red Lion-square, last week, before Mr. Under-Sheriff Burchell, and a special jury, the case of Boutcher *v.* The London School Board came on for hearing. The claim, which was for compensation in reference to property at Notting-hill, required by the School Board of London, occupied the whole day. Evidence was given that to a nurseryman it was worth about 120*l.* a year, and a large sum was asked for it, making, in the opinion of the surveyors for Mr. Boutcher, about 3,600*l.* for the property.

On the part of the School Board, the valuation put on the property was from 1,900*l.* to 2,000*l.*, and the sum as asked was said to be monstrous.

The jury found a verdict for 2,470*l.*—2,600*l.* for the purchase of the house and the land, and 400*l.*, they said, "for the deprivation of access and the nuisance of the school."

RED BRICKWORK.

SIR,—I have just finished repointing an old front. As soon as finished a white film appeared, principally upon the stopping, but also upon the brick. On wet days it does not show, but every dry day brings it out plainer than before. The stopping used was, -Lime, sand, coal-ashes coloured red, colour-wash, composed of Venetian red P. B. and umber, beer-grounds, and copperas. Can any one tell me the cause of the white films, and how I can remedy the defective colouring?

JAMES BUNCE.

PAYMENT FOR WORK SUSPENDED BY FROST.

THOMAS CARTER, a builder, was summoned to the Westminster Police-court, for a journeyman's wages.

Mr. Smyth, solicitor, appeared for John C. Smith, the complainant. From his statement, and the evidence adduced, it appeared that the complainant had worked for defendant as a bricklayer from the 10th of January until nearly the end of last week. The amount claimed was for nineteen hours' time; nine hours of this was for work absolutely performed, and the question at issue was whether the complainant was entitled to charge for ten hours in which he had really not laboured. He claimed to be entitled on the ground that he had proceeded day after day from his abode at Camberwell to the buildings on which he had been employed at Balham, ready and willing to work, but on account of the prevalence of frost, and the labour being otherwise suspended, his services were not required.

The builder's foreman, in answer to this, urged that work was necessarily suspended on account of frost, the men themselves leaving off owing to a fall of snow. He further denied that the complainant had been waiting for employment on the works all the time he alleged; but on this point he was strongly contradicted by other workmen.

Mr. Woolrych said he could only consider the complainant entitled to 6*s.* 9*d.* for the nine hours' labour absolutely performed, with costs.

Value of Forethought.—Last week while a workman was engaged on the circular staircase at the residence of the Captain-Superintendent of the Sheerness Dockyard, the plank upon which he was standing suddenly snapped in two. Fortunately the Captain had caused a rope net to be stretched from the staircase to the wall, and into this the young man fell, otherwise he must have been dashed to pieces. A severe shaking was the result.

EXPENDITURE ON PAVING, STREET IMPROVEMENTS, AND SANITARY WORKS BY THE METROPOLITAN VESTRIES.

AN interesting statistical return has just been laid before the Metropolitan Board of Works, showing the total amount of new works executed by the thirty-eight Vestries and District Boards of the metropolis, from the 1st of January, 1856 (the date of the Metropolis Local Management Act coming into operation), to [the 25th of March last year, and also the total expenditure on such works, together with the length of streets and roadways under the jurisdiction of each body. From this return it appears that during the period named 635 miles of new sewers have been constructed at a cost of 1,731,474*l.* Within the same period 8,198,607 superficial yards of new paving have been laid down at a cost of 3,038,406*l.*, whilst upwards of 900,000*l.* has been expended on other sanitary works, and 709,395*l.* on street improvements, the total expenditure on these several works being 6,067,228*l.* The length of streets and roadways under the control of the several Vestries and District Boards was 925½ miles in 1856, and in 1874 it had increased to 1,410½ miles. Within the same period the number of street-lamps added was 17,480. One-third of the sewerage named during the period stated was within the City of London. The relative expenditure in the different parishes or districts on the respective works varies considerably, the expenditure on new sewers constructed largely preponderating in some parishes, whilst paving and street improvements formed the principal items of expenditure in others. The largest expenditure in sewers was in Wandsworth, where 155 miles were constructed at an outlay of 259,383*l.* Lambeth is next in mileage and amount expended, the length of new sewers constructed being 61 miles, and the cost 206,830*l.*, which is much more in proportion to that of the Wandsworth sewers. Camberwell stands next, 60 miles having been constructed at a cost of 120,000*l.*, whilst in Greenwich 40 miles have been constructed at a cost of 118,332*l.* In Kensington 27 miles of sewers were constructed; in St. Marylebone, 25 miles; in Plumstead, 23 miles; in Newington, 22 miles; and in Hackney, 21 miles. In the rest of the parishes the mileage is from 18 miles down to between 1 and 2 miles, Clerkenwell being the lowest, where no more than 1 mile and 1,438 yards were constructed, at an expenditure of 2,899*l.* The heaviest outlay on general sanitary works was in St. Pancras, where 211,662*l.* were expended, the next in amount under this head being St. Giles's, where 99,798*l.* were expended; whilst in Westminster the amount expended was 76,900*l.* The largest amount spent in paving was in St. Marylebone, where 412,312*l.* were expended; in St. George's, Hanover-square, 253,785*l.*; in St. Pancras, 127,069*l.*; in Westminster, 127,050*l.*; in Lambeth, 119,260*l.*; in St. Leonard's, Shoreditch, 119,094*l.*; in St. James's, Westminster, 118,510*l.*; in Kensington, 113,963*l.*; in Islington, 105,278*l.*; and in Bethnal-green, 104,300*l.* St. Marylebone is also at the head of the expenditure on street improvements, the sum spent on this head being 152,345*l.*; Camberwell stands next, with an expenditure of 87,611*l.*; Whitechapel, 71,440*l.*; Limehouse, 63,848*l.*; Paddington, 50,856*l.*; and Islington, 40,000*l.*

Dwellings of the Poor.—Earl Fortescue was present at the opening in Exeter of a block of dwellings that have been erected at a cost of about 40,000*l.* by the Improved Industrial Dwellings Company, and spoke at length as to the necessity of providing better houses for the poorer classes of the population, especially in cities and large towns. In the course of his remarks, he said,—"There are tens of thousands of families in towns which have only one room, and I know, from personal inspection, that a great number of them sleep, eat, work, and sit in the same place. And then we wonder that the head of the family should sometimes take refuge in the public-house! Even in these model lodging-houses there are only two to four rooms, and the bulk of modern dwelling-houses in towns have but one or two bedrooms. As I have said, overcrowding is dangerous and expensive. No large population can lodge like pigs and live like Christians. It is expensive, because preventible disease means preventible widowhood and orphanage; preventible pauperism, preventible indecency."

THE OPENING OF THE MAUSOLEUM OF THE MEDICI IN THE CHURCH OF ST. LORENZO, FLORENCE.

THE chapel in which are the two mausoleums of the Medici, adorned by the wonderful sculptures of Michelangelo, is known to all who have visited Florence, and the copies of the great sculptor's works in the Crystal Palace make them familiar to those who have not had the opportunity of seeing the originals.

The mausoleum, over which is placed the remarkable life-size figure called the "Pensieroso," represented by a warrior clad in armour, seated in a meditative attitude, the head leaning on the hand, was opened last week under peculiarly interesting circumstances. The mausoleum in question is that on the left-hand side of the chapel on entering, and has on each side of the tomb figures representing "Dawn" and "Twilight" ("*L'Aurora*" *ed il* "*Crepuscolo*"). The latter, on the right-hand side of the room, was observed some days previously by the custode of the chapel to have moved slightly from its position, and on examination a large cleft was found behind, which threatened to increase and enable the statue at any moment to slide from its place and be destroyed. The attention of the President of the Commission of Fine Arts was directly called to the state of the statue. It was found that when the statues were originally fixed in their present place, a wedge of wood had been inserted to raise the statue "Twilight" to the level of the already-placed statue of "Dawn." Time had destroyed in part the wedge of wood, and hence the reason of the displacement of the statue. The President deemed it necessary for the future security of the statue that it should be raised from its present position and re-adjusted. This being agreed upon, Professor Gotti, of the Ministry of Public Instruction, suggested that the opposite statue, the "Aurora," should likewise be raised, both to examine into the security of its placing, and to afford an opportunity for the opening of the tomb, thus deciding also a contested point as to whose remains the tomb enclosed. Grimm and other German writers alleged that the tomb under the figure styled "Il Pensieroso" contained the remains of Giugliano (Julian) de' Medici, the Italians maintaining it to be that of Lorenzo II. and his son Alessandro. The verification of this contested point rested on the fact of the tomb containing the remains of one or two bodies. The two recumbent statues bound round by ropes were raised by machinery, the marble slab was removed with necessarily great care, for it was found to have been previously moved, and had been broken and badly mended, and the tomb was found to be covered with planks of wood.

The workmen engaged began muffling their faces to the eyes, fearing a similar disaster to that which occurred when opening another tomb, on which occasion the men suffered severely from the fumes of arsenic that escaped from the remains of inefficient embalming. The precaution proved useless, as on lifting up the planks no odour was perceived. Then were exposed to view the remains of *two* bodies, the one clad in a long woollen tapestry-like robe, with a girdle of the same round the waist; the body placed close to the side of the sarcophagus farthest from the chapel; the head had been turned to the side and fastened there by means of a huge iron nail driven into the bottom of the tomb beside the throat. This had become corroded, and had fallen on the neck, thus dividing in time by its weight the head from the body. The legs had been covered with coarse stockings, rolled at the knees. The head was bare.

By the side lay the remains of Alessandro, the head placed at the feet of Lorenzo. His head had lain on a cushion of velvet. The small cap of embroidered velvet was still traceable. The fine shirt and cape of linen, beautifully embroidered, remained, no doubt the identical one worn on the night of his assassination, and in which he lay for three days before his body was placed in the tomb of his father. The thick curly reddish hair fell off on exposure to the outer air. The woollen garments of Lorenzo were soon in powder, and the next person who shall peer into this tomb of the Medici, will find no difficulty in discovering even one lock of hair as a memento. The cape of the shirt was taken to be deposited in the museum of the Bargello.

On examining the skulls of the two men, there was a marked resemblance in form. Each examined phrenologically had the same tendencies, the same passions, the same vices. Each died at the age of twenty-six.

A disputed historical point is decided; the work of a great man has been saved from destruction; the disturbed remains laid in the tomb 339 years ago have been replaced; their dishonoured memories, honoured to us now by the marvellous works of art that adorn their tombs. The figure of the "Pensieroso" resembles Lorenzo II., only in the physiognomy. The meditation was not in his character; it is more the expression of the feeling of the artist himself meditating on the buried liberty of his country. The 7th of this month was the fourth centenary of the birth of Michelangelo, and which it had been the intention of the Florentines to commemorate with a splendid *fête*; but funds were wanting, and the *fête* has been deferred until September next; when, if all be accomplished that has been designed by the Syndic Peruzzi, Florence will be a point of deeply attractive interest.

The Buonarotti family have given up all the long-stored correspondence of Michelangelo,—not until now brought to light. A more correct and authenticated biography of the great artist is preparing, with his correspondence intact, and if possible copies of many studies not yet known. Everything promises a *fête* of unusual literary, historical, and artistic brilliancy.

DANTE AND MICHELANGELO.

No account of the Florentine Michelangelo Buonarotti, whether regarded as an artist or as a man, can be complete without a reference to his illustrious predecessor of some two hundred years,—the Florentine Dante Allighieri. Their souls were cast in the same divine mould, and throughout life we find them exhibiting the same characters, the same temperament, the same taste, the same sentiments, the same energy, the same love of country, the same devotion to the great objects which they had set before them, and, though these were in a given sense very different, yet both looking to the same end, and, undaunted by the taunts of envy and the malicious persecution of enemies, both following out their purposes with unflagging perseverance, and even gathering fresh strength from the opposition they encountered. Without a Dante there would have been no Michelangelo; the spiritual food which nourished the mind of the latter, and on which it grew and gathered strength, and formed its distinguishing character in art, was furnished by the former. Intellectually it may almost be said that Michelangelo lived on the "Divina Commedia." Dante was his great model; he had the entire poem by heart, and it was wrought up into his very nature. Michelangelo has been called the Dante of sculpture, he was essentially the Dante of painting, and without the "Divina Commedia" there would have been no "Last Judgment." As examples of that conscious self-reliance which trusts to its own unaided efforts to effect the purpose it has at heart, we scarcely know which to admire most; whether Dante, the exile, cut off from personal influence in the councils of his country, and under the most discouraging circumstances still working out the great object of his life,—the renovation of Italy; or Michelangelo resolutely resolving to execute alone the frescoes in the Sistine Chapel, and himself performing all the preparatory processes of mixing the mortar, laying on the coats, working up the surface, and grinding his own colours,—mason, plasterer, chemist, and painter, all under one. Between the ceiling of the Sistine Chapel and the great poem of Dante there is a remarkable analogy; both may be regarded as the poem of humanity sanctified in God, as a certain French writer has remarked, in which the human and the divine meet together, and man ascends to the ineffable region of his Maker. Dante and Michelangelo were both proud men, but their pride was not of that silly sort which makes its victim ridiculous, and by which little men are puffed up with a false notion of their own importance; it was that innate conviction of genius and nobility of soul which is conscious of its own worth, knows its own place, and is resolved to uphold it. The space of 200 years, which separated Dante from Michelangelo, is nothing compared with that endless series of ages throughout which, along the stream of time, their immortal names, their works, their reputation, and their fame will be together carried. Michelangelo's noble offer to execute alone, with his own hand, the sepulture of Dante, also deserves notice; and the memorable words which he added to the petition presented by the Florentine Academy to Pope Leo X., for the purpose of procuring from Ravenna the poet's remains for his native city, should not be forgotten:—"Io Michelangelo scultore, a Vostra Santita supplico, offerendomi al divin Poeta fare la sepoltura, Sua Santita concedente, in loco onorevole in questa città."

This petition was presented to Leo, October 20, 1519, but like previous endeavours of the Florentines to procure the ashes of their persecuted poet, the purpose failed. Had Michelangelo executed a statue of Dante, we may form some idea of what it would have been like from the energetic head of the poet represented in the fresco of "La Disputa del Sacramento," in which the gentle Raffaelle is seen to have imbibed the lofty spirit of the mighty master, unless, indeed, the design itself may have been by Michelangelo. But a head of Dante very similar to this exists among the drawings at Dresden, and is attributed, I think correctly, to the hand of Masaccio. It is a lamentable thing for posterity, that a copy of Landino's magnificent edition of "The Divina Commedia," 1481, the first ever published in Florence, with a broad margin, on which Michelangelo had poured out the riches of his inspirations derived from the pages of Dante, was lost at sea between Leghorn and Civita Vecchia, so that we have little now left to show what these might have been.

England is very poor in the works of Michelangelo; with the exception of the series of drawings at Oxford, we have scarcely anything by his hand; but we have, what I believe no other country can boast of, almost a complete series of casts from his noblest works at Rome and Florence; and it should be a source of no little satisfaction both to those who have contemplated the originals and those who have not, that within the space of a few yards in the Italian Court of the Crystal Palace at Sydenham, the visitor may gaze in admiration and awe at sublime "Moses," may behold the exquisite "Pietà," the "Christ in the Church of S. Maria sopra Minerva," the writhing "Slave" in the Louvre, and the wonderful figures in the chapel of the Medici at Florence. H. C. BARLOW.

PROFESSOR E. M. BARRY'S LECTURES AT THE ROYAL ACADEMY.

No. 3* (*concluded*).

RAFFAELLE had only held office for six years when his premature death, in 1520, left the works at St. Peter's again without a master. From his affection for Bramante, he seems to have been anxious to carry out the design of the latter in its integrity, and to have spent the time of his official engagement in endeavouring to strengthen the piers which Bramante had left, and otherwise prepare for the construction of the great dome, which he was not to live to see. He collected, as far as he could, all evidence of Bramante's intentions, and prepared to carry them into execution.

Pope Leo, who occupied the Papal chair at the time of Raffaelle's death, had now to make a new appointment, and he seems to have acted on the same principle which had given Raffaelle practical coadjutors in his work. Baldassare Peruzzi was nominated architect, and Antonio San Gallo, a man of more practical mind, was to assist in structural matters.

Leo X. only survived Raffaelle one year, but before he died, there had arisen considerable difficulties in the prosecution of the building. His profuse expenditure, public and private, had embarrassed the resources of the State. He had sought, as we know, to raise money by the sale of indulgences, with a result which he could scarcely have foreseen. Economy had thus become a necessity, and it was decided that Bramante's plans must be curtailed.

Giuliano San Gallo had already retired from the direction of affairs by reason of age and ill-health, and Fra Giocondo died in the same year as Raffaelle.

The first duty laid upon Baldassare Peruzzi was, therefore, to revise the design. He was in many ways well fitted for the task, being an accomplished antiquary, and well versed in the study of ancient Classical art, which it was now sought to restore.

Antonio San Gallo, who was associated with Peruzzi, was well known as an engineer and architect. Michelangelo had criticised unfavourably his plans for the fortifications of the Vatican

* Delivered March 8th, 1875. See p. 229, *ante*.

quarter of Rome, much to the indignation of San Gallo, who declared that a sculptor and painter could know nothing of such things. He had succeeded Michelangelo as director of fortifications in Florence, when the latter abruptly left the city, and the two men had come otherwise into collision. The Farnese Palace at Rome, a design of San Gallo's, was taken out of his hands by the Pope, and entrusted for completion to Michelangelo, whose design for the great cornice has already been referred to. San Gallo, moreover, had worked under Bramante, and was no stranger to his master's jealousy of his great rival.

Peruzzi and San Gallo at once set about the realisation of the Pope's decision.

Adhering to the idea of a grand and lofty dome, it must have been evident to the practised constructional skill of San Gallo, that the supports for this feature provided by Bramante were altogether inadequate. Peruzzi did not approve of the plan, devised on the Mediæval principles of a Latin Cross, with long nave and aisles. His classical tastes led him to prefer the simpler form of the Greek Cross. He, therefore, cut off Bramante's nave, and reduced his plan to that of the central dome, with four equal arms or naves. He adhered generally to the design of the interior, especially as regarded the apsidal terminations of the four arms of the cross, in which he placed doors, so as to show that he thought the composition of the whole building should be so arranged, as to appear to equal advantage, from whatever side it might be approached. You will, doubtless, remember that this was the idea which Sir Christopher Wren wished to embody in our own St. Paul's, and that the long nave was an addition, forced upon him.

Peruzzi considered that the dome ought to be the principal feature, both externally and internally, and that a long nave was inconsistent with this principle. He urged that Bramante's plan made the dome a mere appendage, and degraded it to a secondary place in the design.

We shall find hereafter that Michelangelo concurred in these views. They were worthy of an artist of Peruzzi's refined taste, and his design well merits your attentive study. You will notice in his plan, that, probably at the instance of San Gallo, the four great piers of Bramante are much strengthened, and a compactness and obvious increase of solidity imparted to the whole composition.

Advantage is taken of the increase of the great piers, to give to the angle chapels the form of a Greek cross, the central portions of which were to be surrounded by domes. These four smaller domes, grouped around the great central cupola, would have added to the dignity and effect of that important feature, under which the high altar was to be placed.

In the exterior, the contrast between the curved and rectangular forms promised to be much more definite and satisfactory than it is at present, and Peruzzi proposed to finish the square sacristies at the four corners, with campaniles.

It has been said that this plan of Peruzzi's was the result of economical considerations, but I do not think he allowed himself to be unduly embarrassed by such difficulties; the design appears to be in every way worthy of his talents, and if it had been realised with appropriate detail, and with the addition of external colonnades, it could not have failed to have produced a magnificent architectural effect.

Circumstances, however, were against him, the extravagances of the preceding Popes had to be expiated, under the chill blasts of one of those biting winds of economy, of which we are not ourselves wholly without experience, in respect of public works.

Leo's successor, Adrian VI., a simple and exemplary man, was indifferent to art, and Clement VII. although different in this respect found himself too impoverished to do much for St. Peter's; so that it was not until Paul III. succeeded him, in 1534, just as Michelangelo was finally leaving Florence, that serious proposals for resuming the work could be entertained.

Baldassare Peruzzi did not live to realise his conceptions. He died in 1536, in poverty and distress, not without suspicion of poison; supposed to have been administered by some envious rival.

Again therefore was the work suspended, and the Pope had once more to choose an architect. This time Antonio San Gallo was selected. He had assisted Peruzzi, and to him, as being the man likely to know most of the matter, the Pope now applied. He at once prepared a large model of his proposals.

Starting from Peruzzi's plan, San Gallo made many alterations and additions, notably a restoration of the form of the Latin Cross. He abolished the semicircular columnar screens in the apsidal terminations of the tribunes and transepts, which Raffaelle and Peruzzi had maintained from Bramante's original proposals; and he still further increased the four great piers under the dome. He diminished the importance and size of the four angle sacristies, at a considerable loss of external effect. The addition of nave or atrium, which he proposed, was to have served as a vestibule connecting two bell towers, and between the latter a balcony was provided, from whence the Pope could give his solemn Easter benediction "*urbi et orbi.*"

In the exterior design, San Gallo introduced a multiplicity of parts, in opposition to the colossal manner of design favoured by Bramante, and subsequently followed by Michelangelo. His elevation shows columns upon columns, instead of a single order, as previously intended. The dome was so encumbered with details, that all grand simplicity of outline was lost, and the lantern became a principal feature, instead of an accessory. The bell towers were designed in a corresponding manner, in fourteen stages, with small spires, which recall a type common in Northern Italy.

San Gallo, indeed, was imbued with Gothic, rather than with classical sympathies, and his design seems to have been based on his recollections of Siena and Pisa, rather than on any bold resolution for an original treatment of the problem before him.

I think, however, we should pause before we join too hastily in the chorus of disapprobation which has been lavished on San Gallo. We have seen that he was more of an engineer, than an architect, and the details of his design will not bear the criticism of a pure taste. The plan, moreover, is so deficient in simplicity, that its effect, if executed, must, I think, have been greatly confused, while it would have detracted from the dignity of the great dome. But it is difficult to condemn altogether the principle which San Gallo sought to apply, that of a variety of parts of moderate size, as such a principle, when carried out on a great scale, and with good judgment, will give dignity and grandeur to the mass.

We all know how common a complaint it is that St. Peter's, as now existing, does not impress the spectator with an adequate idea of its size, and this must be considered a severe criticism on a work of architecture. It is quite true that proportion is the first necessity in our art, and that, speaking generally, we are charmed by the proportions of Michelangelo's masterpiece; but a scale, and an enhanced effect would have given to these proportions, if the details of the composition had been less colossal, and the parts more numerous, and more interesting.

Michelangelo had, as we know, passed through no architectural training. He delighted in the majestic and sublime, and sought his inspiration in a system of grand simplicity, with a carelessness of details, which has proved a snare to lesser minds. He condemned San Gallo's design *in toto*, and his influence with Pope Paul III. was sufficient to induce the latter to pause, before giving his consent to its execution.

San Gallo died in 1546. Michelangelo was at once appointed his successor; and was called upon to advise the Pope, as to what should be done. He frankly explained his objections to San Gallo's plan, and censured its complexity. He predicted that the interior would be dark and gloomy; he objected to the variety of columns, pyramids, and points, exhibited by the elevation; and declared that the whole design was a tasteless mixture, giving neither the simplicity of ancient classical taste, nor the picturesque variety of more modern examples.

This criticism sealed the fate of San Gallo's plan, and Michelangelo undertook to produce a model in opposition to it, to illustrate the principles which he enunciated.

San Gallo's model was an elaborate structure, 28 ft. long, by 18 ft. wide, and had cost 4,000 scudi. It was characteristic of the energy of Michelangelo, then in his seventy-third year, that in fifteen days, he was ready with his model, executed at a cost of only 25 scudi.

Before examining the plan of Michelangelo, it should be remarked that it was influenced by two causes,—economy, and the impatience of the Pope. In deference to these considerations, Michelangelo declared that the adoption of his design, instead of that of San Gallo, would save 300,000 scudi, and fifty years of time.

We may further see in Michelangelo's proceedings a new illustration of that noble fearlessness, and independence so characteristic of his nature. He looked upon Bramante as his enemy, but he never wavered in his homage to him as an architect. A pettier mind might have sought consolation, if not revenge, by deviations from the proposals of his rival; Michelangelo, however, had but one idea,—the perfection of the work on which he had entered "for the love of God." He, therefore, adhered to the general principle of Bramante, as regarded the central feature of the building, and applied himself to give due effect to its design.

Michelangelo's plan has been to so great an extent superseded by the architects who completed his work, that you will probably not be sorry to have an opportunity of examining it, and of comparing it with those of his predecessors, and more particularly, with that of Baldassare Peruzzi.

He adhered, as may be seen, to the adoption by the latter of the Greek Cross, though, for local reasons, he thought it advisable to give external importance to the western end, by the addition of a portico, and to make all the entrances at this end of the church. Actuated doubtless by financial considerations, he suppressed the apsidal terminations proposed by Bramante, and he diminished the width of the arched nave, tribune, and transepts.

It must, I think, be concluded that these changes were not improvements.

Magnificent as is the dome of the present church, the three upper arms of the cross are wanting in interest, and variety of light, and shadow. If the arches of the chevet of one of the best Mediæval cathedrals were to be walled up, some idea might be formed of the loss which St. Peter's has sustained by the withdrawal of any corresponding features.

The alteration of the general proportion of the arches was also, as it seems to me, injurious to the general effect. It arose, no doubt, from the necessity for increasing the size of the four great piers, without adding to the dimensions of the dome. Professor Cockerell has called attention to this departure from Bramante's design, and I have taken from him, the explanatory diagram before you.

The consideration of this question brings out the opposing principles of Classical, and Mediæval design. The former aimed at width, and spaciousness of effect; the latter at height, and variety of features. At St. Peter's, the dimensions are so vast, that the alteration of the broader proportion of Bramante to the narrower section executed, was not of serious consequence, although it must be regretted; but at our own St. Paul's a similar narrowing of the proportions of nave, and transepts has been disastrous.

In Bramante's section, the height of the arch as compared with its width, was as 16 to 10, or a little more than one diameter and a half. In the reduced section of Michelangelo, the height became as 19 to 10, or all but two diameters high; and at St. Paul's Sir Christopher Wren has given us arches of 2½ diameters in height, being a proportion of 21½ to 10.

All must, I think, admit the inferiority of St. Paul's to St. Peter's as regards internal effect; and although, in discussing the causes of this inferiority, there is something to be said about architectural details, I venture to think that the chief defect of the interior of our own cathedral lies in its proportions, and that this circumstance will prove the most formidable difficulty, in any scheme for its decoration.

But to return to St. Peter's. It was necessary to diminish Bramante's plans, and so to lessen the burden on the public exchequer; and in carrying out these instructions, Michelangelo must not be held answerable for all the consequences. Adhering steadfastly to the idea of the dome, he produced a design which, while realising the original boast of raising the Pantheon in the air, nevertheless departed from its avowed model, in some important particulars.

Bramante had apparently proposed to adhere more exactly to the precedent he relied on. His design shows the Pantheon dome almost literally, displaying only a small portion of its hemispherical form above its abutments. In actual execution, far less of the latter would, of course, have been visible than can be indicated by a geometrical elevation, and it would have been certainly very inferior to the present dome, especially when seen from the west end, with a long intervening nave. San Gallo followed Bramante in his preference for the flatter section, and this is one reason why his dome fails in dignity.

It was reserved for Michelangelo to show the vast difference between following the principles of preceding masters, and a slavish adherence to particular designs. He boldly determined to depart from the section of the Pantheon, and he not unnaturally turned his eyes towards his native city, and dwelt on his recollections of Brunelleschi.

He had always been an admirer of the genius of the latter, and the constructional expedient adopted by him, of two domes, connected with ribs, seemed to give him the opportunity he sought of increasing the external altitude, without injury to the proportions of the interior.

Here again, however, Michelangelo was no ordinary copyist. The Florentine dome is octagonal in plan, but this figure Michelangelo discarded, and founded his dome on a circular base, surrounded with columnar piers, or buttresses. He abandoned the circular section of Bramante and San Gallo, for one of a slightly pointed character, making the external dome sharper than the inner one. He admitted a single order only into the external composition, in broad contradistinction to the design of San Gallo.

The piers surrounding the tambour, sixteen in number, give strength of construction, with a charming effect of light and shade, though it may perhaps be doubted, whether in this last particular, the continuous peristyle, proposed by Bramante, and carried out at St. Paul's, is not superior in beauty.

It is difficult to surmise, however, how Bramante could have carried his lantern, and we all know the expedient to which Wren felt obliged to resort for this purpose. Michelangelo entirely conquered the difficulty, by following the cellular principle of construction, taught us in the first instance by Nature, and now so familiar to modern engineers.

He intended to surmount the piers with statues. They have not as yet been carried out, but I was glad to notice, in some recent news from Rome, that the present Pope was taking steps to realise the original design, by the addition of these important features.

In the dormer windows of the dome we have an instance of an exception to the usual grandiose character of Michelangelo's designs. It is an exception, however, which I venture to think, illustrates the justice of what has been already said upon this point. The dormers are forty-eight in number, and are carefully graduated in size, diminishing in accordance with their height. There can be little doubt that they give a scale to the dome, which would perhaps otherwise be wanting; and that they contrast pleasingly with the piers and details of the story below.

Michelangelo seems to have given an amount of study to the design of the dome which he was not ordinarily wont to bestow, and the result has been the production of a work which has been more generally admired than almost any other architectural masterpiece. It is, I think, a testimony to the appropriateness of its details, that they bring out the full beauty of its proportions, so that we do not hear the same complaints of want of apparent magnitude, as regards the dome, which have been so often urged against the interior of the building.

Grouped around this noble cupola, Michelangelo has given us four smaller domes, at the angles of the cross; but he dispensed altogether with the great bell-towers, provided by San Gallo, for the west end. He did not, however, contemplate such an elevation, as now exists. Had he done so, he might probably have felt the necessity for something to mark the corners vertically, and to give dignity to the front, as has been done so successfully by Sir C. Wren, when dealing with a similar problem.

The entrance front, as now existing, was executed by Carlo Maderno, after the death of Michelangelo. It is not only poor and ineffective in design, but it also interferes seriously with the view of the dome. Peruzzi's and Michelangelo's objections to a Latin cross, for this reason, have consequently been abundantly justified, as you will see from the diagram before you of St. Peter's, as it is. I will remove the elevation of the existing front, and you will then be able to perceive how much more fully the dome would have been appreciated, if Michelangelo's proposals had been carried out.

Considered as a whole, the plan of Michelangelo, while more simple, appears to me less architecturally effective, than that of Peruzzi, and it may be especially suggested, that the interior details, suppressed from the latter, might here gone far to confer on the interior of St. Peter's, that gradation of scale, and variety of effect, which we feel to be desiderated.

In the exterior, the want is felt of the projections, and of the pleasing balance of rectangular, and circular lines, which distinguished Peruzzi's plan. The connexion, indeed, between the curved projections, and the angles of the design, in the existing building, must be considered faulty; the combination of circular, rectangular, and canted lines is also inharmonious, and disturbing; so that, all things considered, the exterior of St. Peter's must yield the palm to its lesser rival, and offspring, St. Paul's.

The cupola, however, was especially Michelangelo's own. Often more or less copied, it has never been surpassed; and those who have once seen it, will ever connect Rome with Michelangelo,—and Michelangelo with Rome.

When the great artist accepted the office of architect of St. Peter's, his increasing infirmities led him to resign the practice of painting and sculpture, and to devote himself to the crowning achievement of his career. His loss of Vittoria Colonna, so soon after his appointment, deepened the solemnity with which he regarded life, and drove him, so to speak, more and more within himself.

He had made powerful enemies, for it was not to be supposed that the rejection of San Gallo's model would not grievously offend the many influential friends of that artist.

Michelangelo was now more than ever alone, for Paul III. died in 1549, and under his successor, Julius III., he had to meet intrigues, detractions, and accusations, of the most paltry kind. He was, however, supported by Julius, who died in 1555, and was succeeded by Marcellus, who only survived him one month.

The new Pope, Paul IV., admired and trusted Michelangelo, but deprived him of a paid office which he had long held at the Papal Court, and by reason of which, he had been enabled to declare his resolution to accept no salary at St. Peter's. No petty slight, however, moved the noble old man. "If I should leave St. Peter's," he wrote, "I should occasion the ruin of this great monument, and this would be to me an eternal shame, and an unpardonable fault."

Sad and solitary, he toiled at his work. The reigning Duke Cosmo of Florence left nothing undone, to induce him to return to his native city, to position, affluence, and honour; but he stood firm, and prayed that "for the love of God, and of St. Peter, his highness would not insist on the request for his return to Florence." When at last Cosmo visited Rome, during the last year of Michelangelo's life, he did homage to the genius so soon to be lost to the world, and made the artist sit down beside him, on equal terms.

Michelangelo had, however, not lost all of his old vigour, and, though aged and feeble, was even now capable of showing that he was not to be trifled with, for in 1560 he wrote to Cardinal de Carpi, who had interfered with his work, that he would in consequence resign his post. This the Pope would not allow, and Michelangelo replied to those who accused him of dotage, by the production of the model of the cupola.

He was now in his eighty-seventh year, and, less happy than Wren, he did not live to see the completion of his work. It was not until 1591 that the top stone of the cupola was placed in its position, after receiving the benediction of yet another Pope—Sixtus V.—to the sound of trumpets; amid music, and rejoicings, in which the great artist had no part.

Michelangelo died in 1563, holding, to the last, his office as architect of St. Peter's. His mighty spirit yielded only to extreme old age. He was in his ninetieth year, when he passed away, expressing his simple will, "My soul I resign to God, my body to the earth, and my worldly possessions to my relations." He had previously intimated a wish that his body should be taken to Florence, his dearly-loved and native city.

The funeral ceremonies were, however, carried out at the Church of the Apostles in Rome, and opposition was feared to the removal of the remains. All the Florentines in Rome had attended the funeral, and the Florentine Ambassador had received especial instructions from his Government, as to his conduct. To prevent difficulty, the coffin was taken out of the gates of Rome as merchandise, and after thirty years of voluntary exile, all that was mortal of the "divine" Michelangelo, was again in Florence. The coffin was placed in the Church of San Piero Maggiore, and in the following day, as the shades of evening deepened, a great concourse of artists, young and old, might be seen approaching the church. In solemn silence, and with torches lighted, they bore the corpse to Santa Croce, the Westminster Abbey of Florence.

But though the preparations had been secret, the people had found them out; and with the true popular instinct of veneration for noble qualities, had gathered in their thousands; and followed quietly, and mournfully the procession of the artist. Such indeed was the pressure at Santa Croce, that it was impossible to close the tomb, till all had taken a last look at the departed master, when they gradually dispersed. This was on the 11th of March, 1563; and it was not until the following 14th of July, that more elaborate funeral obsequies were celebrated, with great pomp, and magnificence, by the Academy of Painters, Sculptors, and Architects, under the auspices of the reigning Duke.

We have now briefly traced the career of this wonderful man, patriot, artist, and poet. His works live after him, and by them he must be judged. Amidst all his artistic work, he ever expressed an ardent admiration for Italian poetry, and it had been one of his most cherished wishes, to have erected a monument to Dante.

Simple and frugal in his personal habits, he lived only for art. A severe critic of the works of others, he was equally fastidious as regarded his own. In times of the grossest corruption of morals, he was a model of uprightness. Fearless,—and at times overbearing,—in the enunciation of his principles, he never stooped to deceit or meanness. Supreme in every department of art, he has enriched the world, and left an undying obligation on posterity.

Need I say more? Time would fail me for half that might be suggested to you, by way of conclusions from the story I have endeavoured to tell. I shall have performed my task ill, however, if from a consideration of the life of Michelangelo, you, as artists, can derive no advantage, and can find no encouragement.

RESIDENCE NEAR CINCINNATI, OHIO, UNITED STATES.

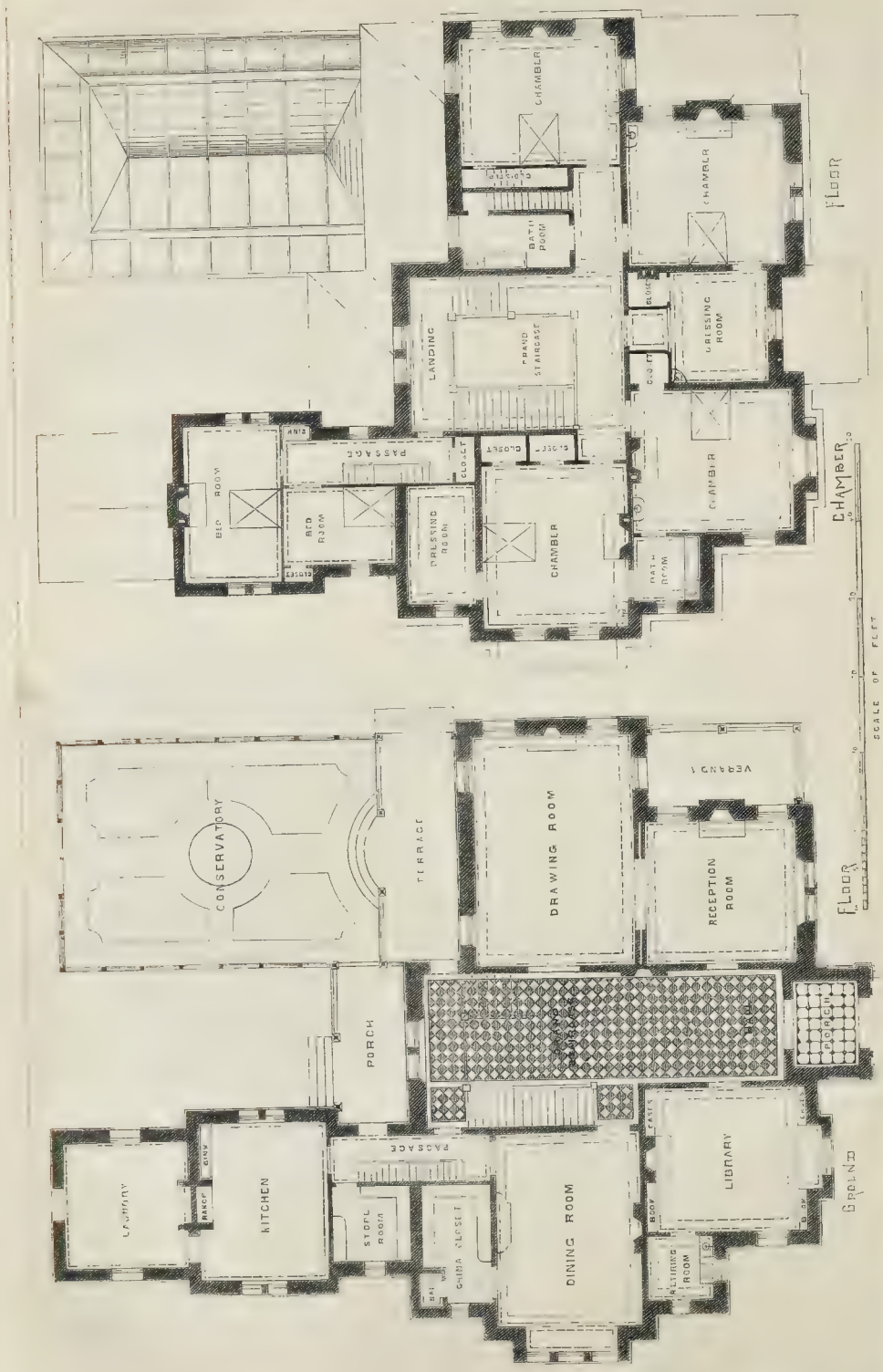
The mansion shown in the engraving has been erected for Mr. John Shillito from the designs of Mr. James W. McLaughlin, architect. The site is in Mount Auburn, a suburb, finely situated about 400 ft. above the level of the business portion of the city of Cincinnati. The house is built of a blue limestone found in the vicinity, with angles, windows, and doorways trimmed with grey freestone from quarries on the Ohio river about 120 miles distant. The cornice is solidly built of the latter material, and the interior walls of the entrance porch are also lined with it in panels.

The hall is 20 ft. wide at its greatest breadth; the floor being paved with white marble, and the walls finished in walnut wainscoting, which surrounds frescoed panels. In the hall is an open fireplace for burning wood, with a walnut mantelpiece surmounted by three statues, Peace, Plenty, and Harmony, supporting the carved wooden cornice. The Elizabethan staircase has carved panels of maple. In the reception-room the mantel is of red Lisbon and black Irish marbles, and the one in the drawing-room is of white Italian statuary marble, with full-length figures supporting the shelf.

The library is wainscoted to the ceiling in black walnut, inlaid with ebony, the ornamental character of the style being carried out in the decorated pilasters and panels. Over the bookcases are heads of eminent authors carved in relief, and between the beams of the ceiling are frescoed panels; while above the mantel is a large relievo in bronze set in a panel of the wainscoting. The dining-room is also wainscoted in the richest style in oak, with polished mahogany panels. The mantel-piece and sideboard in this room form part of the finish of the apartment and extend to the ceiling. The floors are of marquetry of different woods and patterns. The chamber story is finished in oak and walnut, with mahogany in the panels. The entire interior finish of the house is of hard wood, varnished and rubbed in cabinet style.

A deviation from a strict adherence to the style, in favour of modern ideas, has been made by placing large sheets of French plate-glass in all the windows.

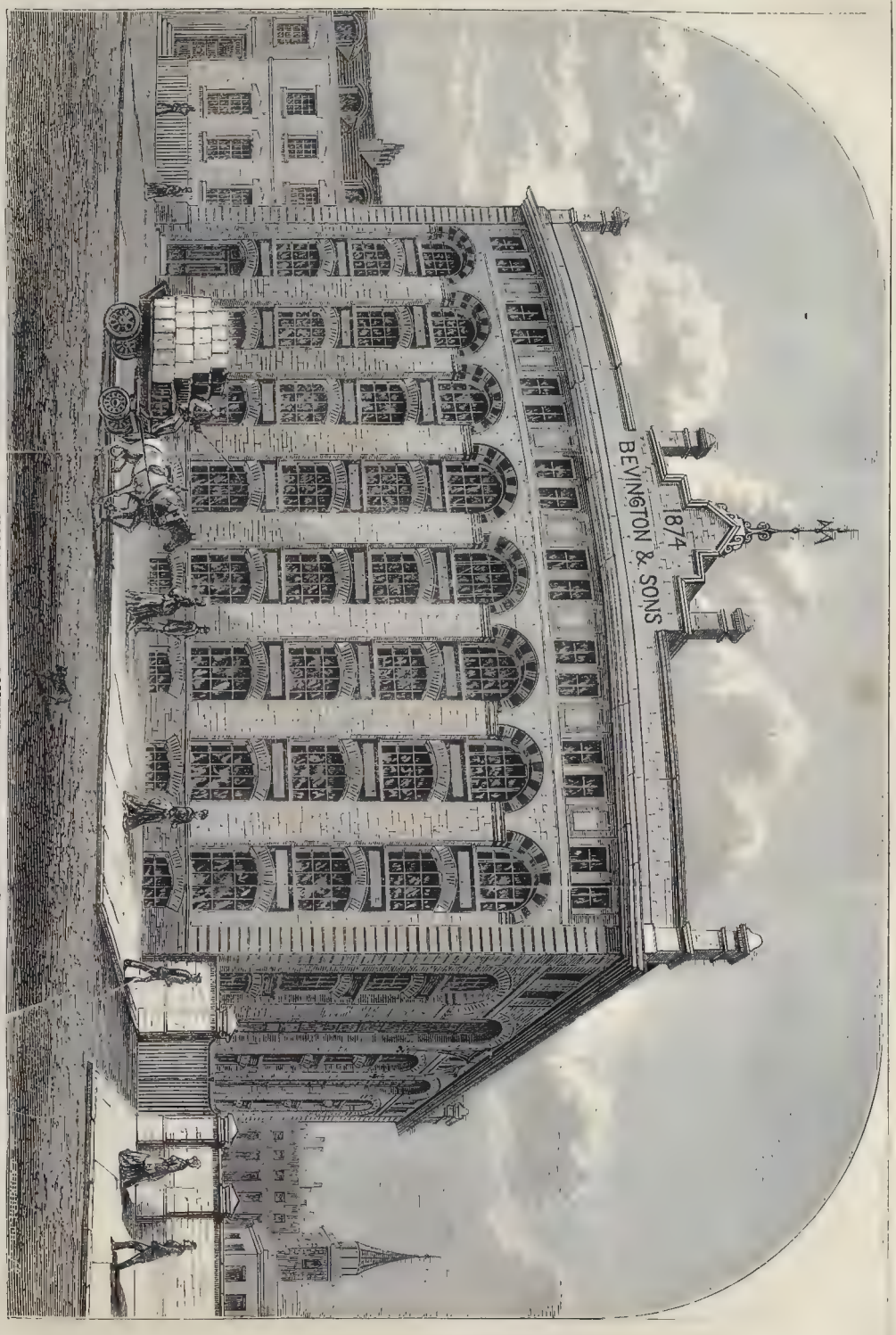
The stables are built of stone, with gables, slate roof, &c., in the same style as the house. The amount expended has been about 160,000 dollars.



RESIDENCE NEAR CINCINNATI, OHIO, U.S.—*Plans.*



AN AMERICAN RESIDENCE: NEAR CINCINNATI, OHIO.—MR. J. W. M'LAUGHLIN, ARCHITECT



NEW WAREHOUSES, ST. THOMAS'S STREET, SOUTHWARK.—Mr. Henry Correy, Architect.

WAREHOUSES, ST. THOMAS'S STREET, SOUTHWARK.

THESE warehouses have been erected for Messrs. Bevington & Sons, the well-known leather merchants and manufacturers, of Cannon-street and Neckinger Mills, Bermondsey, who were desirous of bringing their counting-house and warehouses into closer proximity to the leather market and to their manufactory at Bermondsey.

The building comprises an area of 7,000 ft. superficial, and is six stories in height. The entrance is placed in St. Thomas's-street, immediately opposite the steps leading to the Railway Station, and the loop-hole doors are arranged in the western front in a private yard, which gives great facility for the removal and delivery of goods.

The materials used are the Fareham red bricks for the quoins and arches, and yellow malms for facings; the plinth is in blue Staffordshire bricks; the strings and architraves of the upper windows and the cornice are in Portland stone.

The ironwork has been supplied by Messrs. Matthew T. Shaw & Co., the wrought-iron doors in the party walls by Messrs. Hobbs & Hart; the asphalte has been executed by Mr. Pilkington; and the general contract has been carried out very satisfactorily by Messrs. Hill, Higgs, & Hill, at a cost of about 14,000*l.*

The architect was Mr. Henry Currey, of Norfolk-street, Strand.

AN IMPORTANT WORK IN THE CITY.

OF the many dangerous street-crossings in London there are few, if any, that cause the timid pedestrian so much trepidation and distress, or that require greater skill and imperturbability, not to say stolidity, on the part of drivers, than at the intersections of Gracechurch-street by Lombard-street and Cornhill. In no other locality is there more urgent need for the adoption of any means that may be practicable, at almost any cost, for relieving the gorged traffic, and abating the "perils of the streets." The officers of the Metropolitan Board of Works, and of the Corporation of the City of London, and the important bodies they represent, have long been impressed by a sense of this need, and no opportunity has been lost for several years past for widening Fenchurch-street, and other streets in the neighbourhood; and in this important work the Board and the Corporation have jointly expended large sums. These piecemeal improvements, however, valuable though they be as far as they go, fall far short of the necessities of the case, which are so urgent as to demand that an opportunity for giving effectively the desired relief, in so far as may be practicable, should be made and not waited for. There is now happily a reasonable ground for hope that a street improvement of much public importance is about to be carried out in this locality.

In the last session of Parliament, an Act was passed for the completion of the Metropolitan "inner circle," as it is called for convenience, irrespective of form, of railway communication, that has been so long desired by the principal local authorities and by the public. The Bill, as brought into Parliament, included an extension to Bow, but for some reason the House of Commons' committee struck out that part of the preamble, and restricted the powers of the company to the completion of the Inner Circle. The original design for the joining up of the Metropolitan and the District Railways, so that they might form a continuous communication, more or less direct, between east and west, north and south, was that they should respectively meet each other at Kensington westward, and at Tower-hill Station in the east. In 1864, powers were given to the two companies to construct lines to the points named, and so complete the circuit. As successive sections of each line were made and opened for traffic, the hope was kept alive that the scheme would be ultimately completed; but when the District Company failed in the attempt to get an Act to deviate from the original line, and to carry their railway under Queen Victoria-street to a point near the Mansion House as their terminal station, and when they reached the present so-called Mansion House Station, and declared their intention to stop there, hope that the circuit would be completed may be said to have died out. That the District Company at one time really intended to proceed eastwards to Tower-hill, is sufficiently evident from the fact that a part of the line under the forecourt of Cannon-street Hotel is already actually constructed. Meantime their powers to construct the line have lapsed, and they are under no obligation to make it; whereas the Metropolitan are still under penalties, from which they are again seeking relief from Parliament, in powers to abandon the line from Aldgate to Tower-hill. It would manifestly be disastrous to the Metropolitan Company to construct at a great cost a line to such an unpromising locality for a terminus as Tower-hill, and to find there a hiatus between it and the Mansion House Station.

This being the state of affairs, the new company came in last session, and obtained their Act. The Metropolitan Company also brought in a Bill almost identical in its character with that which was passed, for the completion of the circuit. The Bill was withdrawn, however, on the promoters of the other Bill conceding clauses to the satisfaction of the representatives of the Metropolitan and the District Companies.

The line as passed deviates widely from the Tower-hill route. It would be considerably shorter, being about a mile in length, and differs from the original in this, that it will involve slight interference with house property, excepting as relates to the street improvements proposed in connexion with the undertaking, and that constitute one of its essential features; whereas the Tower-hill route would have involved a wholesale demolition of valuable property. The two routes are further in strong contrast in this, that the one that has been sanctioned by Parliament gives promise of a much richer gathering ground for traffic than the other could have done, inasmuch as it is to pass under principal thoroughfares; while the other could only have been approached, for the greater part of its length, by inferior and narrow streets. From the Mansion House Station the new line will pass along under Cannon-street to King William IV.'s monument, and from that point the important street improvements to be effected will commence in the opening up of a new street, of 60 ft. wide, that will proceed in a diagonal direction, intersecting on its way Philpot-lane and Rood-lane, close to which it will form a junction with Fenchurch-street, which will be made of uniform width to Aldgate, the principal removals of property for this purpose being opposite Mincing-lane and at the end of Fenchurch-buildings, near the entrance to the railway-station.

The travelling public desire the completion of the circuit, the Metropolitan Board of Works and the Corporation of the City of London have long desired it, and in evidence of their *bonâ fides* in supporting the Act that has been passed, have voted the material support, the one of 370,000*l.*, and the other of 130,000*l.*, in consideration of the proposed street improvements. In support of the Bill, the Corporation voted last year for a resolution in its favour, which was carried by 52 to 19 votes. In evidence of their desire that the circuit should be completed, the Corporation in 1870 opposed the petition of the Metropolitan Company for powers to abandon their Tower-hill Extension. In support of the Bill that has passed, both of the public bodies named voted strong resolutions. The Bill had the cordial support, in committee, of Colonel Hogg, M.P., chairman of the Metropolitan Board of Works; Mr. Currie, City Remembrancer; and many other official and influential witnesses. The whole project was thoroughly sifted,—engineering and estimates. The evidence of Messrs. Brunlees and McKerrow, engineers for the line, was supported by Sir J. Bazalgette, Mr. Vulliamy, and Mr. Haywood. The evidence and reports of Mr. R. Vigers, surveyor, were scrutinised by Mr. Goddard for the Metropolitan Board of Works, Mr. Haywood for the City of London, and other eminent surveyors, and fully sustained. Sir E. Watkin, M.P., chairman of the Metropolitan Company, although he had brought in a Bill to accomplish the same object by the same means, expressed his desire that the scheme should be carried out by somebody, and that he was not an opponent. Mr. J. S. Forbes, chairman of the District Company, gave the Bill his unqualified and hearty support, as in all respects greatly superior to the old scheme, which would have been "enormously expensive," and a much inferior route, as respects close connexion between stations and great public thoroughfares, and consequent readiness of access to the station.

Whether the Metropolitan Company obtain the release they are asking for this session from their obligation to complete the Tower-hill extension or not, their constructing that line will not complete the circuit. The District Company will not move further; the new company has obtained the necessary Parliamentary powers, and, as appears at present, is the only party to whom the Metropolitan Board, the Corporation of London, and the public, can confidently look for this much-to-be-desired consummation.

As touching the advantages that the completion of the circuit would secure to the Metropolitan and the District Companies there cannot be two opinions. By the execution of the works authorised, and the completion of the circuit, the Metropolitan will be released from the obligation to complete the costly and hopeless Tower-hill Extension; they, as well as the District Company, will obtain a large accession to their traffic from the three first-class stations that will be situated on what is now the chasm in the communication; these stations will be at Cannon-street Station of the South-Eastern; at East-cheap, close to the London Bridge thoroughfare; and near Aldgate pump; upon which the streams of traffic from the docks, *viâ* Commercial-road, and from the East, generally, by the Mile End-road converge. To both companies the supply of the missing link, and a continuous service, will bring greatly-increased traffic, and very much increased carrying capacity. They will save steam and time, diminish the discomfort caused by blown-off steam, and the detention, irregularity, and unpunctuality, now inevitable. There is no reason, with the block system strictly enforced, as it is now, why they should not have a two minutes' service of trains, each of them possibly well filled as they come up to the present termini, but with room to take up in addition probably, the present traffic. It is palpable that the completion of the circuit would enable the two companies to work their own traffic very much more economically than they are able to do at present, and no party can possibly have a deeper or more direct interest than they in the execution of this project.

The estimated capital required for the mile of railway is something over two millions of money, it is said. The Company have as good as a guarantee already for above one million of the amount; 500,000*l.* from the Metropolitan Board of Works and the Corporation, and Sir Ed. Beckett's remark to the contrary, notwithstanding, in his opposition to the Bill, 550,000*l.* for surplus land, which it is known in the City certain well-known capitalists are ready to give for the surplus property that in the new and improved streets will possess such valuable frontages. The fabulous prices that property in the City now commands make belief in the report indicated comparatively easy.

In fine, if the inner circle completion scheme is really sound in character, hopeful as to probable results, and fitted to prove of much public utility, we hope that it may be speedily and successfully carried into execution, as we are told is likely to be the case.

A DEFENCE OF LOCAL SELF-GOVERNMENT.

SIR,—"Local self-government is on its trial," is an oft-repeated saying of the present day, but it is simply a stale repetition of what I have heard ever since I was a boy, and, as may be imagined, after nearly twenty years' service under that organism, I am no chicken. Representative Governments are ever on their trial, and that is the reason of their stability, but I cannot help thinking that the harsh judgment now attempted to be propagated in certain quarters of such an essentially British institution as local self-government, is the result of a want of sufficient practical acquaintance with the machinery at work, as well as an absence of reflection on history. In attributing causes, I will endeavour to abstain from personal imputations, and strong adjectives, as I desire only to offer a few arguments of defence of the present system, based on practical experience, and therefore free from any political bias. Firstly, I ask against what is it sought to raise clamour and popular prejudice? It is against the result of a principle, I can confidently assert, no statesman dare attempt to reverse, that of household suffrage. Let would-be reformers reflect on this, while they are attempting to lop off the long cherished local rights of the people, and to build up with the fragments a machine for taxation of crushing weight and power, clothed with a few gaudy continental trappings to dazzle the deluded ratepayer. An empire rose out of universal suffrage, but it is hardly

fit that a Legislature elected on the fairest principles applicable to local taxation, should be expected to destroy the fabrics now based on those principles; and if the vestries who are the representatives of the people taxed, desire to retain the powers with which they are invested, it is their right to do so according to the principle of taxation and representation going hand in hand; and when the vestries cease to represent the will of the people taxed, they can be deprived of their power much sooner than a House of Commons which may fail to represent an altered state of public opinion, for each successive May election offers that facility; and, in practice, there is a continual infusion of new blood into the local bodies; and this circumstance leads me to a comparison with the former constitution of many of those bodies, when plurality of voting self-election and large property qualifications failed to enlist the services of administrators who could secure the continued confidence of the public. It was observed that the popularly-elected bodies did their work the best, and therefore Sir B. Hall provided for the present system of election in his scheme for the better Local Management of the Metropolis; and it is the result of that principle, which is now attacked with all the furiousness of prejudice, fomented by place hunters, and in many cases by those who have been displaced from power by the votes of the ratepayers. I do not find in their ranks any of the experienced members of the local bodies who grapple in committees with the profuse and difficult details inseparably associated with local government, simply because the work of mastering those details convinces them that no centralised body, however gifted, could accomplish the work of executing the trust now confided to them. It would necessarily fall more to a paid staff, and that is at once associated with increased expense, and decreased control, added to the other evils of beaurocracy. Whenever the municipal agitators seek to raise excitement they take advantage of a strong wind, or a fall of rain or snow, and argue as if the ingenuity of man, especially an alderman, could immediately neutralise the work of Providence, for I make bold to say the enemies of local government have never succeeded in persuading the public mind that there is any lack of integrity among the representatives of the ratepayers; and they have never been charged with the like jobbery and corruption that have prevailed in other councils than that of New York. No! somebody's boots have been dirtied, or the dust has affected the vision of those who have not troubled themselves with attempting to deal with the causes of such occasional discomfort, and then comes a bill of indictment of "incapacity" against men whom the ratepayers think are the fittest to be entrusted with their interests. Objections do not realise the fact that, however great the difficulties are in dealing with these matters when heavy pressure comes, they are not so insurmountable as the task of raising sufficient funds to accomplish the work, with due regard for the feelings and wants of those who have to pay. I will just show how oppressively the cost of removing the natural refuse of this large town is affecting the ratepayers, and then touch upon the first point, by way of explanation. But a few years ago the value of dust was such as to produce about the same income as from a rate of 1d. in the pound. Now the cost of removal amounts to a 1d. rate. Cartage of road sweepings used to cost 2s. and 2s. 6d. per load, and now as much as 4s. 6d. and 5s. is required, according to the district, and these prices make a difference of another 1d. rate. The cost of all other work with which we have to deal has advanced in similar proportions; and while looking these figures in the face, the vestries have had to provide more efficient means of executing the work than was demanded of their predecessors; and I will show that the very means employed to meet the wants of the public have contributed largely to these effects which have been the subject of complaint. The composite paving of London is a proof of the tentative spirit which has been manifested, and thereby has encouraged inventiveness and ingenuity being directed on the best means for providing for a traffic unequalled in any part of the world. Road-rolling, as an adjunctive to macadamising, increases the cost; and in consequence of the necessary use of gravel therewith, also makes the roads more muddy in wet weather and more dusty in dry weather; and then the same effect is produced by the humane operation of gravelling and sanding frost-bound roads; and to meet this the vestries have again to face the question of cost, and not only that, but the growing difficulty of dealing with these things at any cost. Theoretic cavillers should reflect that fine gravel cannot be rained upon roads as quickly as hoar frost, nor can the slush be gathered together as rapidly as a thaw takes place in this changeable climate, and then carted miles away to shoots, which are growing fewer and more distant every year; and this is precisely the feature which makes the removal of a heavy fall of snow in London almost an impossibility; there are not a sufficient number of places to deposit it upon, and there is not plant enough available for the work. It is not the sort of work that general contractors care to put their horses and carts on, and it is noticeable that the surplus labour released by frost and snow is never entirely available for the purpose of dealing with it, as most labourers regard scavenging with great dislike, and that of snow-cleansing is the most objectionable of all. It is difficult to supply our ordinary gangs with the best description of labour, and slop and dust carmen belong to a limited class of the most hard-worked men in London. Employment of this character is not sufficiently attractive to cause a large supply. The necessity for working early and late often results in those engaged not being able to put on dry, and certainly not clean, clothing until the welcome Sunday arrives; and yet there are some who would not allow the sacred day to intervene between them and their exacting desires in these respects. When the weather is dry, let it be remembered that profuse watering produces similar results to wet weather, and yet, however frequent the watering takes place, it cannot effect what a shower of rain does; the forecourts, areas, balconies, and even the roofs charged with dust, will still unavoidably continue their quota of annoyance. Now, with respect to the vexed question of frequent openings of the roads for various purposes, I assert that, however annoying the practice is (and it is not nearly so annoying and troublesome to any one as to the custodians of the roads), it is unavoidable for the most part, if people desire that gas and water shall be conveyed into their houses through pipes. I know that the first thought in opposition to this view is that "sub-ways" ought to be constructed. Well, we must immediately face the question of a ruinous cost in reconstructing our system of supply, but it would be well also to consider what would be the result; there is no power to compel the companies to use these sub-ways, and well advised as they are by their engineers, the companies refuse to use them, and prefer to avail themselves of the power that Parliament confers on them by the same Acts under which the Vestries are constituted, to open the ground as may be required. Possibly the companies and Parliament foresee what mere theorists shut their eyes to, viz., the fouling of water by escapes of gas, and also the dangerous explosions that might occur. Notwithstanding the welcome pressure of the soil, and the paving and concrete on pipes, I have seen hundreds of yards of ground blown up through defective joints or metal in water-pipes, and I have also had experience of the terrific effects of small leakages of gas into sewers and gullies. I use the plural advisedly; and assuredly, in most points of risk, what is possible, will at some time become actual, and in these matters but a little neglect on the part of any one, down to the meanest workman on a job, may suffice, with the aid of a subway, to accomplish such dire mischief as would not be compensated for by the indulgence of the expensive fancies of those who will not try their hand in using the machinery they now abuse. In referring to the avoidable annoyances to which metropolitan pedestrians are subjected, I must point out that some blame is attributable to a body over which the vestries have no control. To the police duties are entrusted by law that are almost ignored, and however unwilling I am to say one word against a body entitled to the confidence of the public, yet it is a necessary part of the defence I have attempted. Much of the dirty and incommodious state of some of the streets is caused by open violation of the Police Acts: obstructions are placed on the foot and carriage ways, thousands of cabmen are allowed to ply for hire, adding their cattle droppings to shop refuse and other litter swept out; carpets and mats are shaken in the streets; snow lies on the footways; fish offal and garbage are cast on the roads; offensive matters are spilt from carts; and even pigs are allowed to run about the streets in some localities,—all as if no prohibiting sections existed in the Police Acts on these points; and, doubtless, in the minds of uninformed persons the blame is cast on the vestries, who for such matters have only to produce large sums half-yearly for the receiver of the metropolitan police, and to defray the cost of cleansing and cartage; but yet there is no proposal to transfer the control of the force to a municipality, possibly because that august assembly might be suspected of higher ends than the occasional removal of snow barricades, if the demagogue element happened to obtain the sway.

I might well leave the Metropolitan Board of Works to take care of itself, but as its existence is bound up with the vestries, and is part of their power and responsibility, I must before concluding touch slightly on its constitution, which has also been attacked. The mode of election to the Board is an important element in local self-government, as its operatives are chiefly limited to the produce of local taxation, and it is right that the actions of the Board should harmonise with the representatives of the persons taxed. What has been termed the in-and-in system (also applied to the Asylums Board) ensures the election of the cream of business men, selected by the ratepayers to manage their funds; and notwithstanding the stupendous works the Board have carried out, or have been accessory to, it has never been charged with extravagance except in a little burst of loyalty which the Legislature freely endorsed; while owing to the sifting nature of the elections, the characters of the members of the Board have added lustre to an institution of the country, and Parliament has expressed its opinion thereon, from time to time by entrusting fresh powers to the Board, which is now exhibiting its enterprise by seeking further authority to improve, without oppressing this great metropolis.

The practical conclusion I wish to be drawn from my arguments is not merely "to let well alone," but that the ends desired by true reformers may be attained by strengthening the powers that be, rather than by obliterating the traces of Anglo-Saxon liberty; for every unprejudiced observer who knows what the condition of the metropolis was twenty years ago, must admit that the local governing bodies have used their powers to the advantage of their constituents, and for the benefit of the public at large.

A PAROCHIAL OFFICER.

IMPORTANT TO BUILDERS AND ARCHITECTS IN REGARD TO ORDERS FOR "EXTRAS."

PATTINSON *v.* LUCKLEY.

IN this case, tried at the Newcastle Spring Assizes before Mr. Justice Field, the plaintiff was Mr. John Pattinson, builder, and the defendant, Mr. George Luckley, a shipowner; but the party most interested was Mr. Gibson Kyle, the defendant's architect.

The action was brought to recover payment for extra work done in the erection of a house called Jesmond Lodge.

Mr. Herschell, Q.C., M.P., was for the plaintiff, and stated that the defendant had employed his client to build a house, of which Mr. Gibson Kyle was the architect, and made the designs. Plaintiff had also been concerned in a prior building, and down to about three days back, he was still unpaid for a remaining portion of this, but for which 32*l.* 17*s.* 10*d.* had been paid into court. The question now remained as to what amount the plaintiff was now entitled in respect to the building of Jesmond Lodge.

The original claim in this action was for 521*l.* 16*s.* 11*d.*, and there were some supplemental particulars. The first payment into court was 118*l.* 18*s.* 6*d.*, and the recent payment was 32*l.* 17*s.* 10*d.*; making a total of 151*l.* 16*s.* 4*d.*, which left a total of 370*l.* 0*s.* 7*d.*, the sum now sued for.

The plaintiff commenced to work some time before the contract was signed between the parties, and soon after he commenced to work the architect began to require all sorts of things different to the plan he had originally prepared, on which the tender of the plaintiff had been based, and which, therefore, the plaintiff said was to be regarded as extra work, and before the contract was signed a great deal of extra work was done. At last a contract was made out and signed by the plaintiff, but not, he believed, by the defendant.

The contract contained printed forms and conditions with certain printed alterations, and amongst those printed provisions was one to the effect that no extra work should be allowed for unless an order for it was given in writing and signed by the architect.

The plaintiff objected to sign the contract in the form presented to him, because he said he had done an extra lot of work already.

He was then told by the architect that the extra work he had done he should be paid for according to a schedule of prices attached to the contract, and the plaintiff's belief was, that at that time words to that effect were written at the end of the particular condition which had been referred to. Beyond all doubt, some words had been written there in ink, which had been scratched out, and so scratched out that it was really impossible now to ascertain what they were. One of the words seemed to be "contractor," another "paid," and one word that could be seen very plainly was "extra." At all events, it

was the plaintiff's belief that the words were inserted on account of his objection, and that they were intended to guarantee payment for extra work.

It was alleged on the other side, that the words, as they originally stood, were to the effect that orders for extra work must be countersigned by Mr. Luckley, but they were scratched out before any of the contractors saw them. But it was afterwards said, for the defendant, that the words were erased before plaintiff signed the contract, and at his request.

The plaintiff said he never requested anything of the kind. After signing the contract, the plaintiff began to do a great amount of extra work, and from beginning to end he did not receive any written orders.

It being admitted that the plaintiff had done a great deal of extra work, and that for none of it did he get a written order, he (the counsel) would ask the jury to come to the conclusion that the reason why orders were not given was, that an arrangement had been made that they should be dispensed with. It was a significant fact, in reference to that, that while the architect said that no extra work had been done, when this action was brought the sum of 118*l.* for extra work, for which no orders were given, was paid into court.

After some evidence had been given in proof of the "extras" having been carried out, it was agreed that the issue to be left to the jury should be whether the contract which the plaintiff signed had been altered in a material point after he had signed it.

The plaintiff then swore that he saw Mr. Gibson Kyle, the architect, take up his pen and write on the contract words which he understood to be to the effect that a written order was not to be required for extra work, and which words were now erased.

Mr. Gibson Kyle said he never wrote any such words, and that the words which were erased from the contract were erased at the wish of the plaintiff himself. The words were that orders for extra work were to be countersigned by the proprietor. These words the plaintiff wished erased, and they were erased.

Mr. Anderson, in the employ of Mr. Kyle, the architect, said the addition to the eighth condition, which was to the effect that extras must be signed by the architect, and countersigned by the proprietor, was on the conditions before the contract was signed by the plaintiff. He remembered the plaintiff making a complaint about it. He said the clause would stop the progress of the work, inasmuch as Mr. Luckley, being often from home, they would have to wait until his return before they could get any extras that might be required.

Mr. Edmond said the words attached to the eighth condition were written in by him before the 13th of May, when plaintiff signed the contract, and were, "All orders for extras shall be signed by the architect, and countersigned by the proprietor."

Mr. Williams, Q.C., for the defendant, observed that the verdict of the jury would not affect the character of the defendant; but upon it depended the character and reputation of the architect he employed, Mr. Kyle. The charge brought by the plaintiff against the architect was of a most serious kind. It was that, having inserted in a document a clause for the benefit of the plaintiff, he afterwards, deliberately, for his own purposes, in order to deprive the plaintiff of the benefit of that clause, erased it. And not only, if what the plaintiff had said was true, had he done that,—not only had he been guilty of what the learned judge would tell them was a fraud, but he goes into the witness-box and declares that he did nothing of the sort.

Mr. Bruce, junior counsel for the plaintiff, in reply, said his client had done the work for the defendant, and had a right to be paid for it; and all that the plaintiff wanted was that the matter should be referred to some one who would fix the amount due according to the schedule of prices. It was evident that Mr. Kyle had made some mistake, for since the assizes commenced, money, now admitted to be due for that work, had been paid into court. The question was a question of time. Admitted that an alteration of the conditions was made, the question was, was it made before or after the agreement was signed by the plaintiff? His learned friend had said that Mr. Kyle's reputation was at stake. The plaintiff's reputation was just as dear to him; and the question was whether they could rely upon Mr. Kyle's recollection as to time. Another question was, What were the words? Was his client correct in his recollection of the words, which he said were written before he signed the contract? He thought the jury would agree that the words which were said for the defendant to be "countersigned by the proprietor," were "acknowledged by the proprietor."

The learned judge commented on the conflicting evidence of the plaintiff and the architect, and his two clerks, upon what the words added to the 8th condition were, and as to when they were erased, and directed the jury to decide whether the words were what the plaintiff said they were, or what Mr. Kyle and the other witnesses declared them to be, and when the erasure of the words was made.

The jury having given a verdict for the plaintiff, the judge submitted to the jury the following questions in writing:—First, whether the words which were written upon the conditions, and have been erased, were to the effect that no written order should be required for extras, or to the effect that written orders should be signed by the architect, and countersigned by the proprietor?

Secondly.—Whether the words, whatever they were, were erased by Mr. Kyle before or after the contract was signed by the plaintiff on the 15th May.

Thirdly.—Were they so erased before or after the conditions were signed by the plaintiff on the 31st May?

The jury found by striking out the words "or to the effect that written orders should be signed by the architect, and countersigned by the proprietor," meaning that the effect of the words was what was stated in the first clause of the question. To the second question, the answer was, that the words were erased after the 15th May, and as to the third question, they were erased after the 31st of May.

The learned judge then entered "verdict for the plaintiff for an amount of damages, subject to the award of a gentleman to be hereafter named, with leave for the defendant to move upon any point of law that may be raised.

The case has excited considerable interest amongst architects and builders in the North of England.

The Crawley Estate, Hampshire.—Mr. Kennard is about to erect a mansion on this estate (near Stockbridge), at a cost of 50,000*l.*

THE BUILDING ACT AND THE METROPOLITAN BOARD OF WORKS.

At the Lambeth Police-court Mr. Arthur Timewell, of Brixton, was summoned before Mr. Ellison by Mr. Parsons, District Surveyor of Lambeth, for an infringement of the Building Act.

Mr. Parsons stated that having discovered a large chimney commenced by the defendant at the Brixton Baths, he wrote to inform him that he must not proceed without the approval of the Metropolitan Board of Works, as required by the 55th section of the Act. In consequence of this intimation, he shortly after received a drawing, signed by the chairman and Superintending Architect of the Board, with a letter of approval. This drawing he returned to the Superintending Architect as being insufficient in detail to enable him to exactly ascertain what was intended to be done, and requesting more explicit instructions. In reply, the drawing was returned with a letter stating that the approval was given on condition that the foundations be made in accordance with the provisions of the Building Act, and to the satisfaction of the district surveyor, and that the superstructure be also erected to the satisfaction of the district surveyor; and that if the concrete and solid ground were not sufficient, he had power to require more, in accordance with the first schedule preliminary, and that if he required a cap to the shaft, the builder must make it. On examination, he found that the shaft had been carried up perpendicularly from the base for a height of some 12 ft., instead of tapering, as shown on the drawing, and he accordingly served a notice on the defendant to take it down; and, in consequence of a failure to comply with this notice, he applied to the magistrate for an order. He further stated that he had not been able as yet to examine the foundations to see whether they were in accordance with the drawing sent to him; but after the statement in the letter above mentioned, which put the responsibility on him of requiring anything to be done which in his opinion was requisite, he should be glad to know whether the magistrate would make an order if he, the district surveyor, was of opinion that the concrete foundations ought to be entirely below the level of the great body of water in the adjoining bath, in view of a possible leak at some future time.

The magistrate, after examining the Act of Parliament, said that the building was a special building to which the rules of the Act were inapplicable, and that the builder under the 56th section had to obtain the approval of the Board to a plan and particulars; and that it was the duty of the district surveyor, under section 61, to see such plan carried out. If he found any deviations, he must proceed to give notice of amendment, under section 45. Had he done so? The district surveyor handed him a copy of the notice, and said that in consequence of a default in compliance with such notice he made his complaint under section 46.

The magistrate said that the wording of the notice was "to amend so much of the shaft as is built in a manner not in accordance with the plan and particulars approved by the Metropolitan Board of Works." But when he came to read the letter of consent signed by the architect, he found it was no approval of the Board at all; it was simply a letter saying that the chimney shaft might be built, if built to the satisfaction of the district surveyor. He was of opinion that it was the business of the Board to distinctly approve or disapprove of such plan and particulars, and not to give such a conditional approval as was conveyed in the letter. It would then be the duty of the surveyor to see that the plan was carried out, and he clearly had no right to require or permit any deviation. The letter of consent said that it was "upon condition that the foundation of the shaft be made in accordance with the provisions of the Building Act," but the approval of the Board was requisite distinctly, because it was a building to which the rules of the Act were inapplicable. The district surveyor had summoned the defendant for doing something contrary to the plan and particulars approved by the Board, and he should dismiss the summons on the ground that no legal approval had been given.

The district surveyor said that he supposed his course would be to proceed against the defendant, unless he obtained the clear approval of the Board, unincumbered with any conditions such as then referred to by the learned magistrate.

The magistrate said that time should be given to the defendant to make his application, and then, if he could not produce the unconditional approval of the Board, he should order the building to be taken down.

Summons dismissed accordingly.

CAPTAINS OF INDUSTRY.

At a period when the relations of capital and labour are not in such a satisfactory condition as we could wish, and the strike and lock-out in South Wales are productive of misery and privation to large numbers of the community who subsist by manual labour, it is interesting to note what commercial enterprise, combined with enlightened practical benevolence, can effect in promoting the best interests of the employer and the employed by cementing good feeling, and the hearty co-operation of both for the common weal.

In Brayley and Britton's "Beauties of England and Wales," published in 1803, we find the following description of a part of the county of Durham:—"On the banks of the Derwent, about one mile from its junction with the Tyne, is Swalwell, a place famous for its iron works, which were originally established here about the year 1691, by Mr. Ambrose Crowley, who, from the humble condition of a common blacksmith, raised himself to affluence and nobility by his industry, invention, and vigorous perseverance in promoting the trade and manufactures of his country. All this part of Durham, comprehending Swalwell, Winlaton, Winlaton Mill, High and Law Team, &c., may be said to have been colonised by him, for the situation being favourable for the purpose, he removed hither his manufactures from Sunderland, and by the multitudes of workmen employed was the district peopled. The variety of articles manufactured here is immense, and, speaking in general terms, almost every form of which iron and steel are capable, is here produced. Anchors of the largest size, mooring chains, saws, nails, mattocks, hoes, spades, cast-iron pots, kettles, &c., are among the goods manufactured, and conveyed to the various dockyards, the East and West Indies, and many other parts of the world. . . . .

The name of Ambrose Crowley is remembered with veneration and respect. The regulations which he formed for the government of the workmen and the establishments he arranged for their benefit have been attended with the most salutary effects. The code of laws which he drew up, with certain amendments and additions that have since been deemed expedient, have, to a certain extent, superseded the general law of the land, and become locally established. To put these laws in execution, a court of arbitration (chosen from the superior classes of those employed) was constituted at Winlaton, to be holden every three weeks, for hearing and determining cases among the workmen, to which all had an appeal. The fees are fixed beyond innovation, at a moderate rate. This institution has the most happy and extensive use. It quiets the differences of the people, settles their claims to justice in an easy and expeditious manner, preserves them from the expense and distress of common law, and the noisome miseries of a prison. As a further protection to civilisation, schools are established at Winlaton, Winlaton Mill, and Swalwell, for the sole benefit of the workmen's children, where they are instructed in reading, writing, and accounts. The poor and distressed were also objects of the founder's solicitude, and he appointed a surgeon for the relief of all the persons employed, by whose timely assistance many lives and limbs have been preserved to the public. When a workman is ill, he has money advanced by the agent. When superannuated or disabled, he has a weekly maintenance; and when he dies his family is provided for. Each of the workmen is allowed a convenient house, with plenty of coal, and a small piece of land for a garden."

Such examples as the foregoing were not altogether rare in the eighteenth century among large employers of labour, as the annals of some of those captains of industry will show. Of one of them, the founder of the Soho Works at Birmingham, it was said that "he reigned in the hearts of those that were in his employment"; and the editor of the "Lives of the Engineers" gives this tribute to his worth:—"In fine, Matthew Boulton was a noble, manly man, and a true leader of men, lofty-minded, intelligent, energetic, and liberal; he was one of those who constitute the life-blood of a nation, and give force and dignity to the national character."

These men well understood and applied the maxim that "Property has its duties as well as its rights," and they had their reward in the cheerful and devoted services of the people whom they employed. J. H.

THE SEWERAGE AND HOUSE DRAINAGE OF LAMBETH.

The Bye-laws Committee of the Lambeth Vestry have issued a Report showing the extent of sewers and house drainage which have been carried out in the parish since the passing of the Metropolis Local Management Act in 1856. From this document it appears that about twenty-six miles and 650 yards of brick sewers of various sizes, and about thirty miles of pipe sewers of various sizes, have been constructed by the Vestry, and that upwards of 206,000*l.* have been expended in works appertaining to sewerage and drainage. The Report adds that the sewerage of the parish may be regarded as practically completed, as but little more than reconstructions remains to be done, and these may be accomplished by degrees as necessity or opportunity occurs. Exclusive of main drainage, the sewerage has been effected at a cost of 4*d.* in the pound, proving, the Report states, that the expenditure has not fallen oppressively upon the ratepayers. The report further properly observes that while the construction of proper sewers is a requisite foundation for sanitary improvement, it is necessary that it shall be

followed by complete house-drainage, so as to secure the benefit; and it adds that this branch of work has not been neglected. All property built since 1856 may be considered well drained, the only exceptions being where unprincipled men have failed to carry out the work in accordance with the rules of the Vestry, and these cases are not numerous. The Report adds that cess-pools may be said to be abolished in the parish, and the statistics of health and death rate show that satisfactory results have attended upon the drainage works.

THE EXHIBITION BUILDINGS IN LEEDS.

THESE buildings are being pushed forward with great rapidity, and the machinery annexe will be completed before the date of the contract.

The grand hall is 186 ft. long by 98 ft. wide, the span of the nave is 60 ft., the ribs are constructed in three thicknesses, and bolted together on Captain Fowke's principle, being well trussed at the heads and haunches; the height from the floor to the ridge is 65 ft.

The machinery annexe is 194 ft. long, and 39 ft. wide, all built of timber, with two floors, the ground floor being designed for machinery and the floor over for models and medals, &c.

The roof of the building is constructed on the same principle as the grand hall. The buildings have been designed and are being carried out under the superintendence of Mr. William Bakewell, architect, of Leeds. Messrs. Whiteley & Co. are the contractors for the grand hall, and Messrs. Boothman & Broomhead for the machinery annexe. The total area of the buildings, including portion of the old Cloth Hall, which will be utilised, will exceed 9,000 superficial yards.

PENRITH WORKHOUSE COMPETITION.

THE Board of the West Ward Union have received designs for the new workhouse to be built at Shap from nine architects, namely, from Mr. J. P. Jackman, Hounslow; Mr. Mawson, Penrith; Mr. D. Birkett, Carlisle; Mr. J. J. Bradshaw, Bolton, Lancashire; Mr. W. H. Spaull, Oswestry; Mr. Stephen Shaw, Kendal; Mr. J. Starkie, Kendal; Messrs. W. Perkins & Sons, Leeds; and Messrs. C. S. & A. J. Nelson, Leeds. The lowest estimate was 3,000*l.*, and the highest 5,100*l.* Mr. Jameson, after reading the specifications sent with one set of plans, said the thickness of the walls was not stated; further, it appeared that everything was to be left in the hands of the architect. A Member: You must have an architect. Mr. Jameson: Yes; but I say make use of the architect, and don't let the architect make use of you. It was decided that Mr. Hasell, Capt. Markham, Rev. S. Whiteside, Mr. Parkin, Mr. Irving, and Mr. Longrigg should examine the plans, and that Mr. Slee, builder, should be called in to assist the committee in their examination.

RAILWAY STATISTICS.

IN a paper "On Railway Statistics, 1873–4," recently read at the Institution of Civil Engineers, by Mr. John Thornhill Harrison, C.E., the statistics of railway income and expenditure in 1873 were compared with those of 1868–9, with a view to ascertain more especially the effects of the altered policy towards third-class passengers, the lessons taught by past experience, and the policy those lessons suggested for future adoption. The total expenditure on the railways of the United Kingdom amounted, in December, 1873, to 588,320,308*l.*, having increased by 86,000,000*l.* since 1867, or more than 17 per cent. in six years. The net receipts had risen from 19,631,047*l.* in 1867 to 26,989,152*l.* in 1873, or 37½ per cent. in six years. In the same time the receipts from passenger traffic rose steadily from 17,936,000*l.* to 23,854,000*l.*, or nearly 33 per cent.; and the receipts from goods traffic from 21,544,000*l.* to 31,822,000*l.*, or nearly 47 per cent.

Between 1855 and 1873 the length of lines opened was nearly doubled; so were the passenger receipts. The actual number of trains running with passengers per mile open was probably about the same in 1873 as in 1855, whilst the goods trains were one and a half time as many in 1873 as in 1855. This question of the growing preponderance of goods traffic on some railways had apparently an important bearing on the number of accidents from collisions. The accumulation of traffic towards the centres of commercial and industrial activity multiplied the number of both passenger and goods trains, and greatly increased the liability to collision. Accidents from this cause clustered round such places as Birmingham, Manchester, and Glasgow. The occurrence of collisions in these positions suggested the importance of having lines of rail for passenger traffic alone whenever the number of trains daily exceeded a certain number. This precautionary measure had been adopted on some lines, and should be enforced in every case.

Passing to the subject of passenger traffic, and taking the same twenty railways selected previously as fairly representing the entire system, it would be observed, that the total passenger receipts increased 19 per cent. in four years and a half from 1868-9 to 1873, and the number of passengers increased 47 per cent. during the same period; the increase in receipts being 3,617,900*l.*, and of passengers, 107,246,900. This increase, both in numbers and receipts, was due almost entirely to the great facilities for travelling given to third-class passengers. Thus the number of third-class passengers increased nearly 17 per cent.; that of second-class passengers decreased upwards of 15 per cent., and of first-class passengers increased nearly 77 per cent. The receipts from first-class passengers had increased nearly 8 per cent., from second-class passengers had decreased nearly 25 per cent., and from third-class passengers increased upwards of 75 per cent. The net results were, therefore, decidedly in favour of the liberal policy towards third-class passengers initiated in April, 1872, by the Midland Railway Company.

A HINT TO CEMENT MANUFACTURERS.

THE Government of India uses annually about 20,000 barrels of Portland cement, which is imported from England at a cost of 1*l.* 4*s.* 8*d.* per barrel. For some time past the officers of the Public Works Department have been of opinion that they were paying too much for the commodity; and experiments lately undertaken by Mr. Dejoux, of Calcutta, and Colonel Gulliver, officiating chief engineer, Bengal Irrigation Branch, are said to prove that cement of equal quality can be manufactured in Calcutta for less than half the cost, thus holding out a prospect of an annual saving of about 12,000*l.* a year. A report to this effect was forwarded to the Government of Bengal, and the authorities appealed to the Supreme Government to sanction the establishment of a cement manufactory. The Government of India declined to adopt this course, on the ground that it would be premature, "as the value of Mr. Dejoux's process is largely dependent on the continued importation of chalk in present quantities and at present prices. It seems advisable, therefore, before establishing a factory for the article in India, to make the matter publicly known in the hope that either the manufacture may be undertaken by private enterprise, or that it may lead to a reduction in price." At the same time, the Secretary of State for India has been asked to cause inquiries to be made of some of the large building firms as to whether cement cannot be supplied on contract from England on more advantageous terms than those now prevailing.

LIVERPOOL YOUNG MEN'S CHRISTIAN ASSOCIATION.

THE present premises in Renshaw-street having been found insufficient for the requirements of the members of the Young Men's Christian Association, and there being, moreover, a desire to enlarge the area of the operations of the Society, steps were recently taken to procure more commodious premises, and the result has been the initiatory movement for the erection of a new block of buildings in Mountpleasant, in all respects suited to the requirements of this flourishing and increasing body of young men. The estimated cost of the proposed new premises, all things included, is about 16,500*l.* Towards that amount 9,000*l.* have been already promised, leaving about 7,500*l.* to be provided to exonerate the building from debt. Mr. Henry Vale, of that town, has been chosen the architect for the new erection, which will be in the domestic Gothic of the thirteenth century, adapted to modern requirements. Messrs. Holme & Nicol are the contractors, and Mr. Webster is the clerk of the works.

The materials used for the exterior are picked grey bricks, with red Runcorn stone dressings. The cornices will be of patent red moulded terra cotta. The pillars to the main entrance doorways will be of polished red Aberdeen granite, having carved capitals with panelled tympanæ above in red Runcorn stone, with inscriptions running around the pointed arches, and carved foliage in the hollows of the arch-moulds.

THE NEW STREET FROM OXFORD STREET TO OLD STREET.

PREPARATIONS for the construction of the new street from Oxford-street to Old-street eastward, opening out the communication between the last-named street and Shoreditch, have been going forward during the present week. As is already understood, the new street eastward from Oxford-street will be along Hart-street, passing along the south side of Bloomsbury-square. The intended new thoroughfare will intersect several houses and shops at the east end of Hart-street, and include a block of seven houses at the south-east angle of Southampton-row, six houses and shops on the north side of Orange-street, and six houses and places of business on the west side of Kingsgate-street, Holborn, together with a number of houses in St. John-street, Clerkenwell. The materials of these several houses have been sold by Messrs. Stuart Barker & Son, in nearly 100 lots, and will be immediately demolished for the formation of the new thoroughfare. Other blocks of property in the neighbourhoods of Theobald's-road, King's-road, Leather-lane, Gray's-inn-road, and Clerkenwell-green, through which the new street will pass, will shortly be sold and cleared away.

ERECTION OF SCHOOLS IN SCOTLAND.

IN the House of Commons, on the 25th ult., in reply to Mr. Dalrymple, Lord Sandon said that loans to the amount of 883,000*l.* had been sanctioned for the erection of Board schools in Scotland, and applications for loans to the amount of 95,000*l.* were now under consideration. A total sum of about 2,000,000*l.* would be required for the erection of schools in Scotland.

As we recorded in our number for the 13th ult., considerable activity is shown in the progress of school building in Scotland. In the most remote villages and townships schools are springing up, or the old school-houses are being remodelled, and a general preparation for the education of the rising generation that had scarcely ever been thought of is now going on, which must prove beneficial to the community at large. These school buildings, too, are mostly of an ornamental character, built under the superintendence of architects who take a pride in making them landmarks, almost as prominent as the churches, and commanding due respect.

BRICKMAKING.

SIR,—Your readers, who are manufacturers, will no doubt be interested in the remarks of Mr. Del Campo, to which you gave prominence in your issue of Feb. 27, relating to Brickmaking in Holland, but will probably take exception to some of his conclusions; notably that referring to an excess of water in the clay. The metal-like ring of the fired brick is due more to the nature of the clay than the quantity of water it contains when moulded. The Stourbridge and Cornish firebricks are moulded very *soft*, *i.e.*, with a large addition of water to the clay; also the Leicestershire white bricks; but these have not nearly so metallic a ring as the vitreous bricks made from stiff white clays of Dorset or Devon, nor as the dry moulded bricks made by the late Beacon Hill Company, at Poole, in Dorset.

Thus, if persons were to be guided in their selection of the best and most durable building brick by a knowledge of the fact that they were moulded either by machinery or hand, of very moist clay, they would be led into error.

The machinery described by Mr. Del Campo is well known in England, being identical, so far as I gather, with that patented by Mr. P. Bawden, of London, which is certainly the simplest of any I have seen, but, like all other machines, not best suited to every variety of clay.

A thoroughly good facing brick, impervious to moisture, which needs not to be stuccoed over, but can show an honest front of its own, is a great desideratum, and any information which tends in the direction of such being produced at a cheap rate is useful. FELDSPAR.

THE HOUR SYSTEM.

Sir,—If a man in my employ give me one hour's notice to leave my employment any time during the week, am I bound to pay him at the expiration of that hour? or, if I make him wait till the usual pay-time, can he make me pay him for the full week the same as if he worked the full week?

A Young Builder.

*** The question is said to be unsettled. What has become the custom?

WHO WANTS A CEILING?

Sir,—Our parish church is about to be rebuilt, and we are shortly to commence the work of taking down. In my chancel there is a flat ceiling 35 ft. long by 18 ft. 6 in. wide, ornamented by bold scroll-work of the acanthus leaf, having an alto-relief ellipse in the centre, well treated with classical foliage, and a cornice filled in with enrichments, &c. This ceiling was put up by Bishop Turner, when he restored the chancel in memory of his wife, in the year 1678.*

As the roof of the chancel is to be restored to its original pitch, I should be glad to hear of any one who might like to remove this curious work of art, and who would find a home for it in some building more fitted for it than the chancel of a church.

The church is situated about four miles from Royston Railway Station, and about thirty-six miles from London.

Therfield Rectory. John G. Hale.

VARIORUM.

The second edition of "Spon's Architect's and Builder's Pocket-Book of Useful Memoranda and Prices" (Charing-cross) will be found a very useful pocket companion. It is edited by Mr. William Young, of Exeter Hall.——"The Practical Carver and Gilder's Guide, and Picture-frame Maker's Companion" (Kent & Co.) contains useful instruction in gilding picture-frames, re-gilding old work, gilding on glass, silvering plate-glass, hanging pictures, cleaning pictures, restoration of oil paintings, mitreing picture-frames, fitting up and mounting, mount cutting, and French polishing, varnishing, and staining.——We learn from a notice of Ardross Castle, Ross-shire, the residence of Mr. Alexander Matheson, M.P., which appears in the *Gardeners' Chronicle*, that since 1846, when the property passed into Mr. Matheson's possession by purchase, 5,000 acres of plantations have been laid down, over 4,000 acres of land reclaimed, and upwards of 60 miles of private roads made. In the course of nine years, 2,600 acres of land have been reclaimed by means of trenching, draining, liming, &c., 67 miles of dykes and 11 miles of wire fencing erected, 28 miles of road made, and 3,000 acres of land enclosed and planted, such works going on simultaneously with draining and the erection of new farm buildings. In 1846 the population on the estate was only 109, while the number now is nearly 500. In 1846 there were 11 bachelors out of 19 tenants; now there are only three out of 37, which fact speaks cheeringly of the happy connexion between agricultural improvements, and the increase of a happy and contented peasantry.——The *Sanitary Record* says,—"In France the problem of furnishing the artisan with a dwelling and workshop combined has been successfully carried out by a joint-stock company, and in the Faubourg St. Antoine, the Rue de l'Industrie, consisting of nineteen dwellings, has just been completed. Each of these houses has been designed especially for the accommodation of the men who carry on their work at home, and the appliances for their business have also been attended to, in addition to the comforts of the private part of the house, the two departments being kept totally distinct. The use of steam power is disseminated throughout the whole street by means of shafting for those whose business may require mechanical power, with arrangements for carrying off the waste fumes of industry. Of course this class of dwelling is only within the means of the higher class of workmen and artisans, and is more suitable to such towns as Sheffield and Birmingham than London; but there seems to be no earthly reason why some such reform as that we have indicated should not be carried out for the benefit of the poorer class of working men and women. This would be a considerable step towards decreasing the spread of contagious diseases among all classes of the community, and improving materially the moral condition of the working classes."——The *Pictorial World* offers the following suggestion:—"While the overcrowding and noise in the streets of our large towns are attracting the attention of every man who has an idea for an underground railway or a silent pavement, why does no one think of the relief which might be given by carrying aërial wire railways along our principal thoroughfares? More than half the traffic of a big town is of a perfectly regular kind, and consists in the transfer of goods from one station or dock to another, along a regular route. Nothing would be easier than to have along these well-ascertained routes just such wire railways as are in use in many mountainous places to convey the produce of soil or mines to the nearest roadway. The cost of them is small, the risk in using them slight, and they certainly, by relieving traffic, would make more room than they would take."——*Cassell's Technical Educator* speaks as to the utility of screw-bolts:—"The strength with which they hold the parts together is very remarkable. Not only does a bolt bring the parts into intimate contact, but it keeps them there. In fact, if the screw be properly made, and the size of the nut properly proportioned, the bolt may be considered as formed of solid iron when once the nut is screwed home. But wrought iron, when good, requires a force of twenty tons per square inch of section to tear it asunder; consequently a nut whose diameter is an inch will not be overcome by a force less than about fifteen tons. Though the two means just mentioned are the most important, yet there are several subsidiary reasons why bolts are so extensively used. A bolt consists only of two parts, for the nut requires no catch to prevent it from slipping back along the screw after it has been brought home. This is due to friction. Without friction every nut would require to be provided with some complicated arrangement to prevent its motion. Bolts connecting parts subject to extreme vibration can generally have their nuts kept tight by the simple process of screwing a second nut down home on the top of the first. Another great practical convenience of bolts is the very different sizes of the work they can grasp. A bolt 12 in. long, and with 2 in. of screw on the end, can bind together any two pieces whose united thickness is a little greater than 10 in. and a little less than 12 in. But with the simple addition of washers—which are little iron plates with holes large enough to allow the bolt free passage—a 12-in. bolt can be made to grasp any two pieces whose united thickness is less than 1 ft. Bolts require very little to be done to the work to which they are applied. All that is necessary is that a hole be bored large enough to admit the bolt. It is not necessary that this hole fit closely; a loose fit acts as well as a tight one."——In the course of the summer Mr. S. C. Hall will publish another temperance tale in verse; stimulated, no doubt, by the success of "The Trial of Sir Jasper." The new poem is entitled "An Old Story." The author in his announcement states that he has tried to make the book broader and more comprehensive in details than its predecessor, treating, indeed, every phase of the horrible vice; adding prose notes from the authorities by whom he has been principally guided. Every page will be illustrated, and there will be twenty-six full-page engravings by twenty-six leading artists of the age, drawn expressly for the book.

* The ceiling is apparently much later in date than 1678.—Ed.

Miscellanea.

Death of Sir Gouldsworthy Gurney.—We regret to record the death of Sir Gouldsworthy Gurney, knight, at the age of 80. In 1823 he invented the oxyhydrogen blow-pipe, for which he received the gold medal of the Society of Arts. He was the inventor of the lime-light and the magnesium-light, and he first produced the startings of the magnetic needle by electrical cross-currents from the voltaic battery, which formed the basis of the electric telegraph. He also invented the Bude-light, the oil-vapour-light, the high-pressure steam-jet, the tubular boiler, and many other improvements in the use of steam. In 1839 he ran a steam-carriage of his invention on the common high road from London to Bath at the rate of fourteen miles an hour; and the use shortly after of his high-pressure steam-jet suddenly increased the rate of railway locomotives from twelve to thirty miles an hour. In 1852 he arranged the ventilation of the new Houses of Parliament; and in 1863 Mr. Gurney received the honour of knighthood.

Girders from Belgium. — Letters from Belgium state that a contract for 800 tons of girders is now in course of execution in Belgium on Manchester account. The Cookerill Company has also obtained an English order for 10,000 steel tires.

Remarkable Printing.—The "Victory" Printing Machine Company have invented a machine which can turn out of hand, ready for the readers' use, no less than 6,000 copies of a work, containing in all twenty-four pages of printed matter, pasted and bound together, without the aid of the manipulative art of folding, stitching, and binding. The machine in question has been made to the order of Messrs. J. B. Foord & Co., New York, printers of the *Christian Union*, and has cost between 3,000*l.* and 4,000*l.* The machine measures 27 ft. in length, two-thirds of which are taken up by the printing proper, and the remainder by the production of the cover, which can be worked, if desired, in different colours. There are but four cylinders, two of which bear the type, the other two being necessary for giving the impression. The operation of "feeding" is entirely dispensed with; the machine regulates its own supply, and in very little more than a second a sheet of clean paper passes in at one end, and comes out at the other in the form of a well-cut and solidly-bound book. At one end is placed a continuous roll of paper, measuring about four miles in length, and this having been attached to the machine, is first of all pasted right along the back which has to fit into the cover, by means of two small boxes at the top. The sheet then passes down between one pair of cylinders and receives the first impression; then it moves in a backward direction, is pasted on the reverse side, cut at the exact length, and, after making in all some thirteen movements, travels towards the extreme end of the machine, where it meets the cover, which has been printed simultaneously with the book, and is thrown off, as before stated, as a complete bound volume at the rate of 6,000 an hour!

Gas and Water Works.—In reply to Mr. J. Colman, Mr. Sclater-Booth stated in the House of Commons on Tuesday that it was not the intention to introduce a Bill for the better enabling municipal corporations and sanitary authorities to acquire water and gas works. It might be convenient, however, that he should shortly state what were the existing facilities for these objects, and what alterations would be made by the Public Health Bill. Under the present law local authorities could purchase existing water works by agreement, and could provide water works where no companies already supplied water, or where the supply was not sufficient for the requirements of the public health. The Public Health Bill would extend these powers by enabling the local authorities to extend the mains outside the district and to supply water to the authority of an adjoining place. With regard to gas works, local authorities had no power to construct or purchase gas works. They could only contract for the supply of public lights; but the Bill now before the House would enable them to purchase gasworks by agreement.

Dining-halls for Working Men.—It is proposed to establish in Liverpool a limited liability company, with a capital of 20,000*l.*, in shares of 10*l.* each, for the purpose of erecting dining-halls for working men. The halls will be first established in the neighbourhood of the north and south docks, for the accommodation of the thousands of men employed there; and one great aim of the scheme is to encourage temperance. Each of the halls will contain four rooms. The first will be a refreshment-room, where tea, coffee, cold meat, and other wholesome food can be had at the lowest possible cost. There will also be a dining-room, into which the wives of the men can take their husbands' dinners, and fires will be provided for warming the food, free of charge. Then there will be a smoking-room, where the men can enjoy a pipe without having to pay for the accommodation; and lastly there will be a reading-room, well supplied with newspapers.

Improvements in Sheffield.—The town is approaching a vital point in the preparation of its scheme of street improvements. The plan, for which a provisional order has been obtained, is now to be submitted to Parliament for confirmation. Several owners have petitioned against it, on the ground that they object to part with more of their property than is really wanted for the widening of the streets. We sincerely hope that conflict will be avoided, for we have reason to believe that the petitioners desire neither to obstruct improvement nor to be the occasion of litigation and strife; and as the Corporation can have none but legitimate public objects to promote, there is surely the chance of a reasonable and friendly arrangement.—*Sheffield Independent.*

Terrible Accident in a Church.—A terrible accident occurred in St. Andrew's Church, New York, on the 25th ult. It appears that, adjoining the church, was a tall narrow store, six stories in height, whose interior was consumed by fire on the 12th of January, leaving its iron front and brick side-walls standing. St. Andrew's Church, a Roman Catholic place of worship, was a low, large structure, capable of seating on its floor and in its galleries about fifteen hundred people. There was a crowded congregation in the church, and in the middle of the services a part of the roof of the edifice was crushed in by the falling of the lofty wall of the burned building. In the panic which ensued, numerous accidents occurred from trampling and from the heaping-up of masses of thronging, terror-stricken men and women. Five lives were lost, twenty-nine persons were so severely injured as to require hospital treatment, and many others received less serious wounds and hurts.

Manchester Improvements.—The demolition of the Victoria Fruit Market, Manchester, is progressing rapidly. It is already known, says the *Manchester Examiner*, to many that the alterations consequent on the purchase of this site will not affect Victoria-street alone; and others may have anticipated, from the extensive excavations being made behind the old market, that the works in progress will extend the Deansgate improvements, and vastly reform the frontages of both Victoria-street and St. Mary's Gate. This is in reality the object of the busy preparations now being made upon the site, and during the next two years our townsmen cannot fail to watch with interest and pride the rise of a gigantic and elegant structure, which, not only as one of the chief architectural ornaments of the city, but as probably our best example of the combination of public spirit and private enterprise, merits present attention and encouragement.

The Metropolis Gas Companies Bill.—This Bill, introduced by Sir James Hogg, has been printed. Its object is stated to be "to amend the Metropolis Gas Act, 1860, and to make further provisions for regulating the supply of gas within the limits of the said Act; and for other purposes relating thereto." It is set forth in the preamble, that whereas the London gas companies are now supplying gas within the limits of the Metropolis Gas Act, 1860, "subject to different conditions, obligations, and liabilities," it is expedient, for the purpose of securing a proper supply of gas, subject as nearly as may be to uniform conditions, that the Act in question, and the City of London Gas Act, 1868, should be amended, and that all the gas companies should be made subject to the same obligations and liabilities. The Bill contains provisions respecting the price of gas, its illuminating powers, the pressure to be supplied, modes of testing its purity, and various other matters.

Arbitration in the Birmingham Building Trades.—The arbitration in the Birmingham building trades was taken before Mr. Rupert Kettle, in the committee-room of the Town-hall, on the 6th inst. The first case entered upon was that of the bricklayers who claimed certain alterations in their trade rules, and also a rise of ½d. per hour in wages. The employers and workmen were each represented by six delegates, all of whom were heard upon the subject; accounts and documents of various kinds were put in evidence, including the correspondence between the contending parties, and those engaged in the same trade in other towns; and important details were presented which were the result of figures taken from the employers' pay-books. The arbitrator stated that he would read the whole of the correspondence, and examine the figures so put before him, and give his award at the earliest period his numerous engagements would allow.

The Schliemann Excavations are about, we understand, to be resumed, the German explorer having come to an amicable arrangement with the Porte in regard to the objects discovered by him at Hissarlik. The *Levant Herald* says, according to this arrangement, the antiquities conveyed by the doctor to Athens will remain in his possession, in return for a pecuniary indemnity which he engages to pay to the Turkish Government, and he will be allowed to continue his excavations at Hissarlik, on condition that everything he may discover henceforth shall become the property of the Turkish Imperial Museum.

One Accident brings Another.—On the occasion of the funeral of the late Sir James Hope Grant, in Edinburgh, as the cavalry were passing a mason's shed at the corner, where some new buildings are being erected, the roof, upon which a number of people were seated, gave way. The men were not much hurt, but the crash frightened the horses, and they reared and plunged towards the other side of the street. The crowd on the footpath were consequently pressed backward against an area railing in front of a baker's shop. About 30 ft. of railing became detached from the coping in which it was set and fell into the area, and nearly fifty persons fell along with it. A terrible scramble ensued, and about twenty people were more or less severely crushed and injured in their endeavours to protect themselves.

The Public Health Bill.—Mr. Sclater-Booth's Bill "for consolidating and amending the Acts relating to Public Health in England" consists of 333 sections, and with the schedules fills 156 pages. The Act is divided into the following eleven parts:—1. Preliminary; 2. Authorities for execution of Act; 3. Sanitary provisions; 4. Local Government provisions; 5. General provisions; 6. Rating and borrowing powers, &c.; 7. Legal proceedings; 8. Alteration of areas and union of districts; 9. Local Government Board; 10. Miscellaneous and temporary provisions; 11. Saving clause and repeal of Acts. The number of Acts enumerated in a schedule as partially or wholly repealed is twenty-two. It is being reprinted, so that we cannot yet deal with it.

Free Library, Warwick.—At the meeting of the Warwick Town Council, on the 9th inst., the Library Committee reported that Mr. F. H. Moore, architect, had submitted plans for utilising the Public Rooms in Church-street for the purposes of the Free Library; but they did not feel justified in recommending the adoption of one for building a new reading-room until it was found that the amount of voluntary contributions warranted the outlay. The Mayor said the proprietors of the Public Rooms had acted in a most liberal manner by giving to the town shares of the value of above 400*l*. The sum required was 600*l*. He would start the list with the sum of 25*l*. The Council signed the contract for the purchase of the property, and left the question of alterations for future consideration.

The Liverpool Corporation and the New Art Gallery.—It having been decided by the Liverpool Town Council that a statue of Mr. Walker should be erected in recognition of his gift of an art gallery to the town, a recommendation was brought forward at a meeting of the Council to devote 1,000*l*. for this purpose. A letter was read from the proprietor of the *Liberal Review*, Mr. Willmer, stating that if this were done he would institute legal proceedings against the Council, as he considered a payment for such a purpose out of the borough funds was an illegal one. In the discussion which followed great regret was expressed that the grace and unanimity of the compliment to Mr. Walker should have been marred by the act of only one ratepayer, and in the end the resolution was carried amidst loud applause.

A Dorchester Builder.—The death of Mr. John Wellspring, sen., builder, of Dorchester, has caused regret in the locality. The deceased, who had reached the age of seventy-five, was the senior partner in the building firm of Messrs. Wellspring & Son. He succeeded to the business of Mr. Hooper, builder, of Dorchester, and was a large employer of labour. The deceased was from time to time extensively engaged in the construction and restoration of parish churches, in which work he took great delight. About eight years ago Mr. Wellspring was complimented by the presentation of a testimonial of plate from 159 of his *employés*, and on that occasion warm testimony was borne to his excellence and worth as a master. He was a man of great energy, industry, and perseverance.

A New Fire Extinguisher.—On the 13th inst., the newly-patented automatic fire-extinguisher and alarm, invented by Messrs. Sanderson & Proctor, of Huddersfield, engineers, was publicly tried in an old wooden mill. Thermometers are fixed at intervals in a room, and, when the heat of a place rises to 100°, a piece of wire connected with the thermometer communicates with a galvanic battery, which causes a stopper in a pipe which is attached to a steam-boiler to be withdrawn. The steam then rushes into the room, and extinguishes the fire.

A Memorial Pulpit has been erected in the Church of St. George, Campden-hill, Kensington, in remembrance of the late vicar, the Rev. G. Bennett. The base is of Bath stone, and the superstructure of marbles of different colours from the quarries near Torquay, Devon, highly polished. The work has been carried out by Mr. A. W. Blackler, of the Royal Marble Works, St. Mary Church, Torquay, at the cost of the congregation, and gives a good idea of the beauty and variety of these marbles, which, although frequently to be seen in the churches of Devonshire, are seldom to be met with in London.

Payment for Machinery by Instalments.—An advertisement in our columns shows that the extension of the purchase hire system to trade machinery is about to be effected by the General Machinery Purchase Hire Company. Many manufacturers will doubtless be glad to avail themselves of a scheme by which they can obtain machinery greatly wanted for the extension of their business, by payment of a series of instalments, extending over one, two, or three years. According to the prospectus before us, the customer will be at liberty to select the machinery to be purchased from any maker he pleases, and the company will supply it at the maker's advertised price.

The Gough Memorial, Dublin.—At a meeting held lately of the committee for having erected in Dublin the equestrian memorial to the late Field Marshal Viscount Gough, it was resolved that, in conjunction with the executors of the late Mr. John H. Foley, the three artists, Mr. Brock, Mr. Birch, and Mr. Dewich, named in Mr. Foley's will to complete his unfinished works, be authorised to perfect and erect, as soon as possible, the Gough equestrian memorial; Mr. G. F. Teniswood, the acting executor of the said John H. Foley, having undertaken to have the same finished and erected within two years from this date, upon the terms agreed to with the late Mr. Foley.

"Jerry Building."—At the last meeting of the Skelton-in-Cleveland Board of Health, a discussion arose as to the desirability of passing a bye-law compelling builders to erect more substantial dwellings. One member said that "the walls in many instances were so thin, that two or three drunken men falling against them would knock them in," and it is a well-known fact that many houses would tumble if they did not prop each other up. The proposed bye-law was opposed, and the matter allowed to drop. But it is time "jerry building" was checked, not only in Skelton, but everywhere.

The Royal Society.—A Committee of the Royal Society has been appointed to consider the conditions under which elections to the Fellowship take place, and are ascertaining the age of each Fellow, in order to form an estimate of the future average number of the Society. Objections have been taken by some Fellows to the mode at present pursued. The annual *conversazione* will take place on Wednesday, April 7th, and the President and Council will hold receptions with less ceremony, on May 26th and June 23rd.

The late Charles Kingsley.—Mr. R. Belt, a young sculptor from the studio of the late Mr. Foley, has executed a bust of the late Canon Kingsley, which recalls forcibly the appearance and expression of this lamented writer and good man. Doubtless many of his friends will be glad to be able to obtain such a memorial of him. Mr. Belt has had the advantage of a cast taken by him of the Canon's features after death. A statuette of Dean Stanley, and a marble bust of Mrs. Cradock Nichols, in the same studio, give promise for the good future of the sculptor.

Uniting Glass to Iron.—The invention of Mr. J. Hartley, of Ormskirk, consists in the uniting glass to iron and other materials by means of a preparation named glazune, in order to render glass available for various general useful purposes in which it has not hitherto been employed, by a process of supplying it with uniform attachment to and support by the iron and other materials to which it may be united, and thereby reducing its liability to fracture when subject to pressure and concussion, and entirely removing its liability to conchoidal fracture.

London Municipal Bill.—It is understood that Lord Elcho will shortly withdraw the Bill for this session, and proceed by resolution to affirm the necessity of dealing with the question of London government.

Evil Water.—Several wells in connexion with pumps at Stanwix are attracting the attention of the Medical Officer of Health, and the Sanitary Inspector, and have been visited by them. One of these wells behind Prospect-place has been opened; and it displays some most obnoxious features. Through the wall of the well may be seen oozing small streams of a dark coloured fluid (evidently sewage matter from the usual surrounding sources of pollution) which flow down into the water. That water has been in constant use for domestic purposes.

Peppard Church, Henley. — During the process of restoration at this church, on the insertion of a new window at the east end, which was necessary, owing to the fractures in the existing fourteenth-century window,—two arches with jambs, and a portion of the soffits, were found of some Early Norman windows with rude Early English decoration upon them, deeply embedded in the fourteenth-century walling. The remains discovered are said to have a strong similarity to the windows of the same date at Hurley, Berks, and Ruscombe, in the same county.

Artists' General Benevolent Institution. The Duke of Edinburgh will preside at a dinner to be held at Freemasons' Tavern on the 8th of May, when the subscriptions received will be devoted to the Orphan Fund of the Artists' General Benevolent Institution for the support and education of the orphan children of painters, sculptors, architects, and engravers. Mr. Millais, R.A., Hon. Secretary, 7, Cromwell-place, will receive the names of any gentlemen who may be willing to assist.

Typhoid Fever at Wakefield Prison.—Typhoid fever continues to prevail at the House of Correction in Wakefield. A Government inspector has made a visit to the establishment. It was suspected that some of the water supplied to the prison was the cause of the outbreak, and the source of supply was at once changed. For some time this seemed to have the effect of abating the epidemic, but there have been several deaths for the past three or four weeks from the fever, and two inquests were held last week.

Society for the Encouragement of the Fine Arts.—The second *conversazione* of this Society, of which the Duke of Manchester is president, took place at the Bethnal-green Museum, on Thursday, the 11th inst. The members and their friends were received by Major Britten, Dr. Leitner, Mr. Augustus Babington (hon. sec.), and other members of the council. The pictures and art collections of Sir Richard Wallace, and the ethnological collection of Colonel Lane Fox, afforded delight to all.

Leicester Builders' Society Dinner.—The annual dinner of the Leicester and County General Building Trades' Society took place on Tuesday evening last week, at the Fox Hotel, Humberstone Gate. The chair was occupied by Mr. J. R. Ratcliffe, and the vice-chair by Mr. T. Duxbury; and amongst the company present were Messrs. Osborne, Barnett, Shaw, Pipes, Barratt, Allen, Bass, Moore, Hallam, Millis, Shardlow, Smith, Tyers, Gilbert, Mason, Lead, W. Chambers, Lewin, King (Lutterworth), &c.

Manufacture of Salt.—A work of some magnitude has been recently entered upon in North Staffordshire by a London company. A shaft has been sunk at Lawton, in Cheshire, for the purpose of pumping up brine, to be conveyed by means of pipes to the coke-ovens in connexion with the Harecastle and Woodshutts Colliery in North Staffordshire, a distance of two or three miles, there to be converted into salt by means of the waste heat from the ovens. The cost of the undertaking will, it is said, exceed 40,000*l.*

Lecture on Christian Architecture.—Mr. A. Drew, of Margate, delivered a lecture upon "Christian Architecture," at the Church Institution, Ramsgate, on Tuesday evening. The lecturer gave a description of the various orders of architecture in which the buildings devoted to public worship have been erected from the early ages down to the present time, and traced the origin of the peculiarities of construction to be found in many of the older ecclesiastical buildings in this neighbourhood.

Burghclere.—The alterations and improvements at Burghclere Church, which are being carried out in a satisfactory manner by Mr. Adey, of Newbury, are sufficiently advanced to admit of the re-opening of the church probably on Ascension-day.

Burials in Westminster Abbey.—In the House of Commons, replying to Mr. Neville Grenville, Mr. Cross stated that for the last twenty-two years the burials in Westminster Abbey had never exceeded one a year, and every precaution was taken to prevent injury to the fabric or to the health of worshippers. The question of adding a cloister for future interments had been under consideration, but a formidable obstacle to carrying out such a proposition was the enormous cost that would be involved.

Pollution of the Trent.—Vice-Chancellor Hall has granted an injunction to restrain the Local Board at Tunstall from allowing their sewage to run into the Trent to injuriously affect Trentham Hall and the property of the Duke of Sutherland. It appeared from the evidence that the stream had been rendered foul by the sewage of the district, and that Trentham Hall was made unhealthy as a habitation. The authorities at Tunstall are allowed until November to comply with the order.

The New Municipal Buildings at Forfar. About two years ago the Forfar Town Council purchased for 2,000*l.* the old Sheriff Court Houses, vacated by the Court when the new buildings were erected; and at a meeting on Monday night they resolved by a majority of twelve against two, one declining to vote, to convert them into municipal buildings for the accommodation of the public officials, including the Provost. Plans have been prepared, and a committee was empowered to get estimates.

A Monument to Aimee Desclee.—The monument to this celebrated actress was inaugurated on the 9th inst. at Père la Chaise. The monument is a small pyramid of Burgundy stone, bearing on one side the words, "Frou-Frou," "Marcéline," "La Visite des Noces," "La Princesse Georges," "La Gueule de Loup," "La Femme de Claude," and on the other the inscription, "Aimée Desclée, 18 Novembre, 1836, 9 Mars, 1874," being the dates of her birth and death.

Great Fire in Essex.—Early on Saturday morning the Beeleigh Water and Steam Mills, supposed to be the finest in Essex, were totally destroyed. The mills were well stocked with corn, which was also burnt, together with two lighters under the mill, and a large adjoining house used as offices. The damage and cause of the fire are unknown. The mill was the property of Mr. C. H. Ward, and was fully insured.

New Masonic Hall at Rutherglen, Glasgow.—The foundation-stone of a Masonic hall was laid at Rutherglen on the 13th inst. The promoters of the undertaking are the brethren of St. John's Operative Lodge, 347, who have formed themselves into a limited liability company, entitled the Rutherglen Masonic Hall Company. The cost of the building is to be about 1,500*l.*, and it is expected to be ready for occupancy in May.

Appointment of Leeds Gas Engineer.—Originally the applicants numbered thirty-three, and they were last week reduced to thirteen. The committee deemed it advisable to see the selected candidates. After some deliberation, the choice of the committee fell upon Mr. W. Woodall, manager and engineer of the Burslem and Tunstall Gas Company, Staffordshire. The salary is 500*l.* a year.

From Florence.—An exciting law trial is coming on soon here respecting what are styled "Art Frauds" among the American sculptors here and in Rome. The attacked have taken the initiative, and are bringing an action against the writer in an American paper. The trial, it is expected, will be prolonged and sent from court to court. That there are reasons for the attack it is generally believed.

The Drainage of Sheerness.—On the 11th inst. the Local Board adopted the scheme for thoroughly draining the town as planned by the surveyor, by five against two, and it was subsequently resolved that the plans and specifications should be forwarded to the Local Government Board, asking their permission to borrow the sum of 4,500*l.* to carry out the scheme.

Letting of the Contract for the Fulford Drainage Works.—The York Rural Sanitary Committee have accepted the tender of Mr. Geo. Lawson, of Cemetery-road, for the execution of the drainage works of the Fulford district. The amount of the tender was 620*l.*

City Property.—The undermentioned freeholds were offered for sale at the Mart last week by Messrs. Norton, Trist, Watney, & Co., and, after brisk competition, were sold at the following prices:—Nos. 21 and 24, inclusive, Mincing-lane, occupying an area of 4,400 superficial feet, with extensive vaults adjoining, 40,500*l.*; building site in Type-street, Chiswell-street, with an area of 1,240 ft., 1,950*l.*

Impending Destruction of a Town.—The picturesque city of Caub, in Nassau, near Barharach, will very shortly, it is said, be crushed and destroyed by the disintegration of the mountain on which Guterfeld Castle was built in Mediæval times. The rocks which threaten Caub are not less than 600 ft. in height. Two rows of houses have been deserted, as no human power can prevent the catastrophe.

Memorial of the late Countess of Loudoun. The committee appointed at the general meeting to establish a memorial of the late Countess of Loudoun have resolved,—"That the memorial be a monument, to be erected in Ashby-de-la-Zouch, to the memory of the late Countess; and that Sir Gilbert Scott, R.A., be requested to furnish a design amd estimate."

Colchester Barracks.—Mr. James Hill, of Upper Thames-street, has just completed a large order for his improved locks and furniture for the new Cavalry Barracks and Married Soldiers' Quarters at Colchester,—upwards of 700 locks and 300 latches being used, and all the former with keys to differ. Mr. Hill has orders in hand for several other barracks.

Scarbro' and Whitby Railway.—Since the meeting of the shareholders of this railway a week ago, active preparations have been made by the contractors, Messrs. Kirk & Parry, to carry out the works with rapidity. Men, horses, and material have been transported to the Peak, where the men have commenced to make the tunnel.

Cottage Hospital, Lewes. — The three separate sanitary authorities of Lewes, viz., the Borough, the Rural, and the Cliffe, have resolved to unite and build forthwith a cottage hospital or sanitarium for the use of sick persons within the Union of Lewes. A site has been secured at the upper end of the Wallands Park Estate, nearly opposite Floods Barn.

Another Edinburgh Theatre Burnt Down.—The Southminster Theatre, Nicolson-street, Edinburgh, took fire about ten o'clock on Saturday night, the 13th inst., and within an hour was totally destroyed, as was also a good deal of other property; and Assistant-Firemaster Braidwood seriously injured.

A New Club in Birmingham.—The prospectus of a new club in this town, under the title of "The Central Club," has been issued. The premises of the institution will be at the corner of New-street and High-street, extending from Nos. 1 to 5, New-street, and from 86 to 88, High-street.

British Orphan Asylum.—The erection of the additional buildings in connexion with this asylum at Slough are rapidly approaching completion. The plans were prepared by Messrs. Edgington & Summerbell, of Windsor; and the work is being carried out by Messrs. Fassnidge & Son, of Uxbridge.

Masonic Temple in Rome.—The first Masonic Temple erected within the walls of Rome has been opened in the presence of about 200 brethren of the craft. In his address on the occasion, Colonel Ramsay advised the members of the lodge to abstain from all politics.

The Memorial Church to the late Lord George Manners.—The money collected and promised towards the memorial church to the late Lord George Manners at Newmarket amounts to 3,250*l.*, but a further sum of 500*l.* is required before active measures can be taken.

Roof of Doncaster Railway Station demolished.—A portion of the glass roof of the railway station at Doncaster was demolished by the violence of the gale of the 8th inst. A number of chimneys were blown down and other damage caused.

Tenders for Restoration of Upavon Church, Wiltshire. — The following are the tenders for restoring and repewing this church: Aldridge, 2,146*l.*; Beale, 1,978*l.*; Vallis, 1,875*l.*; Mallings, 1,740*l.* Mr. John P. Seddon is the architect.

British Museum.—We are glad to hear that the authorities of the British Museum have acquired by purchase, for the Botanical Department, the collection of drawings of Fungi (many hundreds in number), made by one of the engravers for this journal,—Mr. W. G. Smith.

High Tide caused by the Gale in the North.—The gale at Hull was followed by a high tide in the Humber. Miles of streets on the banks were flooded, and much damage done to houses, mills, and wharfs.

Wimborne Highway Board.—Mr. Polden, the district road surveyor, has had his salary raised from 150*l.* to 200*l.* per annum, in consequence of several new roads being added to the district, thereby considerably increasing his work.

Wakefield.—Mr. William Watson, of Wakefield, has been appointed architect to the Loftshouse-with-Carlton School Board. Schools for 250 children and teacher's residence will be erected in each place.

Seafield, Oxfordshire.—A new peal of bells and clock has been placed in the church at this place. Mr. Smith, Midland Clock Works, Derby, erected the clock; and Messrs. Taylor & Co. were the bell-founders.

Beaconsfield.—A new Congregational Chapel has been built in this town, and will be opened on Easter Monday. The building is capable of seating about 400 persons, and will have cost 1,550*l.*, of which 1,252*l.* have been subscribed.

Diocesan Surveyor of Gloucester.—Mr. Waller, sen., architect, of this city, has been appointed diocesan surveyor for the diocese of Gloucester, *vice* Mr. Maberly, resigned.

A Dust Contractor Fined.—For having neglected to remove dust from dwelling-houses, the contracting scavenger for Shoreditch has been fined 10*l.* and 5*l.* 5*s.* costs.

Restoration of Exeter Cathedral.—The Dean and Chapter have given orders for the immediate recommencement of the work of restoring Exeter Cathedral.

Sloane-street.—We are glad to hear that the Metropolitan Board of Works will allow no alteration to be made in the name of this street.

British Archæological Association.—On Wednesday, the 24th of March, a paper by the Rev. W. H. Jones, on "The Finding of the Saxon Church at Bradford-on-Avon" will be read.

TENDERS

For erecting and completing Nos. 5 and 6, St. Agnes Villas, Bayswater-road, for Mr. Harry Emanuel. Quantities by Mr. S. B. Wilson. Messrs. N. S. Joseph & Pearson, architects:—

Fish	£7,320 0 0
Kilby	7,271 0 0
Manley & Rogers	7,267 0 0
Patrick & Son	7,235 0 0
Hill, Higgs, & Hill	7,123 0 0
Newman & Maun	7,116 0 0
Hearn	7,066 0 0
Browne & Robinson	6,941 0 0
J. & F. Coleman	6,615 0 0
Adamson & Son	6,432 0 0
Elkington	6,364 0 0
Scrivener & White	6,329 0 0

For the erection of house in the high-road between Barnet and Elstree, Herts, for Mrs. Barnes. Messrs. Davis & Emanuel, architects. Quantities by Mr. Fredk. Downing:—

Williams & Son	£2,463 0 0
Shurmer	2,444 0 0
Boyce	2,434 0 0
Robins	2,390 0 0
Niblet & Son	2,350 0 0

For villa-residence, Kew Gardens, for Mr. G. Ring. Mr. E. F. Roberts, architect:—

Aitchison & Walker	£1,430 0 0
Chamberlain, Brothers (accptd.)	1,328 0 0

For proposed alterations at Nos. 221, 222, and 223, Upper-street, Islington, for Mr. J. R. Roberts. Mr. Henry Ough, architect:—

Sawyer	£738 0 0
Bush & Drake	635 0 0
Shapley	599 0 0

For Board school, teachers' residence, offices, boundary walls, &c., at Slapton, South Devon. Mr. Jno. Wills, architect:—

Winser	£1,465 11 4
Selwood	1,419 5 9
Chapman	1,276 11 9
Warren (accepted)	1,097 0 0

For six cottages on the Woodberry Lodge Estate, for Messrs. Howard & Co. Mr. Hammer, architect:—

Ward	£2,869 7 6
Holding & Son	1,620 0 0
Harbert	1,530 0 0
Roberts	1,377 3 0

For rebuilding of the Old Red Lion, Wilson-street, Finsbury, for Mr. James Ward. Mr. John Groom, architect. Quantities by Mr. B. A. C. Herring:—

Day	£2,125 0 0
Oliver	1,990 0 0
Bangs	1,899 0 0
Bishop	1,848 0 0
Staines & Son	1,816 0 0
Ramsey	1,789 0 0
Sharp & Everard	1,780 0 0
Enoor	1,766 0 0
Crabb	1,750 0 0
Langmead & Way	1,750 0 0
Kelly, Brothers	1,734 0 0
Scrivener & White	1,693 0 0
Chapman (accepted)	1,690 0 0

For new schools, Willenhall-road, for the Wolverhampton School Board. Messrs. Budlake & Fleeming, architects:—

Lovatt	£4,580 0 0
Horsman	4,530 0 0
Gough	4,238 2 10
Higham	4,230 10 9
Jones	4,134 0 0
Clark (accepted)	4,062 0 0

For warehouses for Messrs. Scammell and Debenham, Redcross-square, Great Tower-street. Mr. Sextus Dyball, architect. Quantities supplied by Mr. J. E. Ormes:—

	Mr. Scammell's Warehouse.	Mr. Debenham's Warehouse.
Faulkner	£1,325 0 0	£2,785 0 0
Merritt & Ashby	1,270 0 0	2,797 0 0
Mortar	1,248 0 0	2,803 0 0
Taylor	1,227 0 0	2,810 0 0
Newman & Mann	1,221 0 0	2,799 0 0
Lister	1,187 0 0	2,827 0 0
Crosker	1,183 0 0	2,771 0 0
Brass	1,225 0 0	2,698 0 0
Kelly, Brothers	1,218 0 0	2,698 0 0
Scrivener & White	1,176 0 0	2,840 0 0
King & Son	1,149 0 0	2,580 0 0
Rudkin	1,150 0 0	2,500 0 0

For the Alexandra Palace Hotel, Wood-green, for Mr. T. Clarke. Messrs. E. Habershon & Brock, architects:—

Ward	£3,129 0 0
Prout	1,977 0 0

For new roads on the Wallington Estate. Messrs. E. Habershon & Brock, architects:—

Bloomfield	£914 0 0
Owen	831 5 6
Howe & White (accepted)	598 0 0

TO CORRESPONDENTS.

The demands for space on our front page, long resisted, have at last forced us to change the position of the Table of Contents.

S. B. (11·8 inches superficial).—W. H. (It would depend on circumstances, but no master ought to refuse).—W. J. P. (should get advice as to his "wall in" cellar on the spot. It may require protection from the sun outside, or the admission of air).—H. N.—W. B.—H. M.—E. F. R.—D.—J. R.—A. H.—B. & F.—W. H. P.—J. W.—J. R. R.—S. H.—K. & Son.—H. G. R.—T. B.—A. G.—E. R.—J. G.—C. F.—J. E.—J.—C. G. (next week).—J. B. B. (next week).—E. F. W. (shall appear).

We are compelled to decline pointing out books and giving address s

All statements of facts, list of tenders, &c must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course, with the authors.

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NOTICE TO ADVERTISERS.

GOOD FRIDAY.

"THE BUILDER," for the week ending MARCH 27th will be published at ELEVEN a.m. on THURSDAY, 25th instant. Advertisements for insertion in that Number must therefore reach the Office **before THREE p.m.** *on WEDNESDAY, the 24th.*

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The Builder.

VOL. XXXIII. No. 1677. SATURDAY, MARCH 27, 1875.

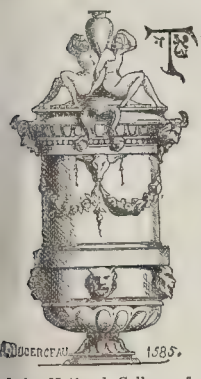
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The National Gallery.



THE estimates now before the House of Commons for the present year include the sum necessary for the completion of the brick buildings which, as our readers are aware, have been added to the present National Gallery in Trafalgar-square. The time is, therefore, now come when the public will expect to hear something of the future, which has so long been promised.

Nearly seven years have elapsed since Lord John Manners, who was then First Commissioner of Works, informed the House of Commons that the Government were acquiring the necessary enlarged site on which to build a new National Gallery, from the designs of Mr. E. M. Barry, R.A., who had been appointed the architect.

We find by reference to the Parliamentary estimates that the site has been bought at a cost of upwards of 140,000*l.*, and has been for some years in possession of the Government, so that the loss of interest on the purchase-money must amount by this time to a considerable sum.

The new buildings at the back contain several large, handsome, and well-lighted galleries. They are almost completed, and will be ready to receive the pictures during the present summer, so that there need be no difficulties on that account as to proceeding with a more comprehensive plan. Some of the national pictures are now at Kensington, and by screens, and temporary arrangements in the new galleries, room might no doubt be found for all or most of the pictures now in Trafalgar-square, during the process of rebuilding. At the present moment, the only effect of the new galleries, with their skylights and chimneys appearing above the roof of the existing building, has been to add a new deformity to the latter, and to render its lowness so apparent that it has become more than ever impossible to leave things as they are.

Readers of the *Builder* will not need to be reminded of our views with regard to the erection of a National Gallery worthy of the nation, and we are glad to notice that Mr. Beresford Hope has announced that he will call attention to the subject in the House of Commons immediately after the Easter recess.

According to papers laid before Parliament in the Sessions of 1869 and 1870, it appears that as long ago as 1868, the architect had been directed to prepare his designs and estimates; and had been informed that the new building would be at once commenced. No explanation has ever been given, as far as we know, of the long delay that has since occurred, and it appears to us high time to ask, on behalf of the public, how many more years are to elapse before they are in possession of a National Gallery fit to hold its own with those of Paris, Munich, Dresden, and Berlin.

The necessity of the work has been repeatedly affirmed by Parliament, which has passed the Act for compulsory purchase of the site, and has voted funds to carry that out. The architect has been appointed; the site is ready for the building. Why is the latter delayed? Surely a trifle might be spared from the millions devoted to ironclads, if the Chancellor of the Exchequer be the cause. The country is not so poor, nor so dead to artistic sympathies, that it will grudge the moderate sum required for properly housing our national pictures, of priceless value, constantly increasing in number, and adorning with a noble building the heart of the metropolis. The present seems a golden opportunity for an energetic and art-loving Minister, and we sincerely trust that Lord H. Lennox will be able to give, ere long, a satisfactory answer to the question, which has so often been asked on behalf of the public, "When are we to have the long-promised National Gallery?"

THE REGISTRAR'S THIRTY-FIFTH LIFE AND DEATH ROLL.

THE old, old question, "Doth not wisdom cry, and understanding put forth her voice," is as applicable in the present day as it was in the time of Solomon. But that cry, in one important matter, is not only far louder than was the case of yore, but, year after year, it is more distinctly articulate. Since we have begun, slowly and imperfectly, indeed, but yet with some sense of duty, to listen to the voice, what was once but a hoarse and hollow sound has assumed all the distinctness of a scientific lecture.

The last utterance of this Public Instructress takes the name of the thirty-fifth Report of the Registrar-General. Those hard facts, deaths, are so marshalled by the magic of statistics as to have precious uses for the survivors. So often have we, and those who share our views, referred to this important subject, that it is hard to find anything new to say. And yet it is but too true that it is needful again and again to repeat the warning which comes home,—or the neglect of which may suddenly and fatally come home,—to each hearthside in the country. Especially is it the urban resident who has occasion to ponder the lesson read him by the returns of mortality.

One point respecting the returns of deaths is worthy of very attentive thought. There is, probably, no country in the world in which so much heed is paid to the protection of life from violence, or even from accident, as is the case in England. In our laws murder assumes a shape of flagrant enormity, at which Eastern nations stare aghast. The coroner can open every door. In the eye of the law the infant of the poorest outcast, even before its birth, has a right to the protection of justice. Nor is this theory only. No year passes without sharp proofs that the theory is put in practice. Great inequalities exist, and must exist, in an old and complicated civilisation. The law, too often, must in the very nature of our institutions be more easy of access to the rich than to the poor. But in this one case of the protection of life, there is the most absolute impartiality. Justice requires but the shadow of an indication to be put upon the scent of murder, however feeble and unobserved the victim; and, once put on the scent, the officers of the law have here the untiring perseverance of the sleuth hound.

A people so honourably distinguished for their respect for human life as are the inhabitants of the United Kingdom in general, evince this respect not only by the nature of their laws and of the administration of justice, but by the means of private association. The Royal Humane Society is a case in point. Here we find a very meritorious association of persons, funds collected, a service organised, rewards of an honourable and highly-prized character publicly given, for the protection of human life from accident. This accident may arise from the irresistible operation of the great forces of nature—the winds, storms, and floods; or from the inexcusable folly of the sufferers, as in the case of those who venture in crowds on unsafe ice. Neither does the magnitude of the peril deter, nor the criminal folly of the sufferer disgust, those who seek to rescue life from the water. A noble and generous impulse must underlie such an organisation as this.

One great aim, then, of the friends of sanitary reform should be, to bring clearly home to the knowledge of Englishmen, as a nation and as individuals, that we live in the daily sufferance and neglect of causes of preventible death far more efficient in their activity than are either those evil passions that lead to murder, or that wrath of nature, or heedlessness of man, that leads to drowning. Only 125 intentional homicides appear noted in the returns for the year 1872. How many preventible homicides have fever, phthisis, and other destructive scourges of neglect, occasioned in that twelvemonth?

We find in healthy districts the death-rate of that year to fall as low as 17 per 1,000; indeed, in Surrey it has been, excluding the metropolis, as low as 16·3 per 1,000. In Durham, on the other hand, it rises to 25·4 per 1,000. In Lancashire it is as much. In the West Riding and in Staffordshire,—great furnace-feeding districts,—but little lower. If we leave details for general results, we find a difference between a minimum of 16·3, and, not a maximum, but an average, of 21·3 per 1,000; that is, a difference of exactly five per *mille*. Five thousand per million! One hundred and twenty thousand for twenty-four millions! Our great and costly machinery of criminal justice is set in motion to meet danger which is represented by an annual toll of 125 lives by homicide, together with all those minor crimes of violence of which these homicides form the most aggravated class. What is our machinery, and what our thought, for obviating the danger represented by one hundred and twenty thousand preventible deaths; attended, as they are, by an amount of sickness and suffering not disproportioned to that of the minor crimes of violence attendant on the intentional homicides?

This is an eminently practical view. As such it befits an eminently practical people. It may be urged that we could not expect to attain, in every case, the production of such salubrity as is evinced by the lowest death-rate. True. On the other hand, it is not possible to state how far this lowest rate might be reduced by sanitary care.

But we need not place the matter on that footing. The margin is a terribly wide one. If we look at the difference, not of five per thousand, but of only one per thousand, it represents no less than twenty-four thousand preventible deaths. These, too, as we know, are taken for the most

part either from the flower of the population, or from its very hope, the young. Twenty-four thousand against a hundred and twenty-five is disproportion enough for our argument; and in stating deaths preventible by the sanitary care at one *per mille*, we are very, very far below the lowest possible *minimum*.

We can see something of this even in the returns under notice. It will be within the recollection of our readers that we have not unfrequently called their attention to the subject of health-maps; or the graphic delineation of the degree to which different types of disease prevailed in different parts of the country, and this might be intelligibly traced to distant causes. One of the most important results of this kind of study was the light it threw upon the character of phthisis, or pulmonary consumption. It became clear, from unmistakeable indications, that the phthisis death-rate depends directly on the damp character of the soil. Before good subdrainage phthisis disappears. With the neglect of that drainage, and the return of dampness to the soil, phthisis returns. That is a fact quite clear from individual cases. We can now see something of the same operation on a larger scale. While we are doing but little of what we ought to do, we are yet doing something. Drainage is going on. Every year, by one means or another, soil formerly unfit for human abode is becoming better fitted for the purpose. We may, therefore expect that, over the total area of Great Britain, phthisis should appear to be on the decrease. Such, accordingly, is the case. From 1850 to 1859 the mortality from phthisis was 27 per 10,000. From 1860 to 1869 it was only 25 per 10,000. This represents a reduction in the fatal force of this terrible evil, over the average area of the country, of no less than eight per cent. That is a very appreciable and a very consolatory fact. It would be difficult to cite any fact more directly in support of the sanitary argument. It would be difficult to ask for a more crucial test of the truth of the promises made by the sanitary reformer. The deaths from all causes in 1872 are returned at 492,465. Those from phthisis are 52,589. That is to say, rather more than one death out of nine, or more than eleven per cent. of the whole death-rate of the year, was due to phthisis. A reduction of eight per cent. on the ravages of this formidable malady is thus nearly equivalent to the reduction of one per cent. on the total annual mortality. That is what has been already effected, according to the statistical returns. And as we are dealing with the whole area of the country, and with decennial averages, we think there is little room to dispute the accuracy of this calculation.

On the other hand, we have to deplore the increase of another branch of respiratory disease. The fact is so remarkable, that at first we may almost be inclined to put the question, is it a physical or only a statistical phenomenon? If we were dealing with distant periods of time, it would be almost more natural to suppose that the latter was the case. We might think that, in the advance of medical knowledge, or in the fluctuations of that fashion which affects medicine as well as less noble occupations, deaths were now attributed to bronchitis which were formerly set down to phthisis. Our medical friends will correct us if we err in thinking that this is not likely to have been the case within so short a period as the last quarter of a century. If this be so, we find that while deaths from phthisis have declined from 27 *per mille* to 25 *per mille*, deaths from all respiratory diseases, including phthisis, have risen from 30 to 34 *per mille*. This shows a serious increase in the death-rate from *bronchitis*, and from all respiratory diseases other than that of the lungs. Subtracting the 2 *per mille* of gain, we have a gross loss of 2 *per mille*, or a net loss—by the bronchial affections—of 6 *per mille*. If we can account for the lowered death-rate from phthisis by the drying of the soil, are there any reasons to be assigned for the augmented death-rate attributed to *bronchitis?* As to the certitude of the latter fact, there is no room left for doubt; as, even if any change had occurred in the mode of classification, we still have a greater number of deaths from non-pulmonary respiratory diseases.

We think it is not difficult to point to such a cause. No one who is familiar with London can doubt the fact that residence in the metropolis during the winter season is annually becoming more trying to the constitution. The same, no doubt, is the case with all our large centres of population. The rate of increase of the metropolis, we have before had occasion to point out, is such as to double the population in forty years. There is a tendency to a slow but appreciable increase on that tremendous rate. What does this imply? It involves, among other things, speaking in round numbers, the pollution of the atmosphere of London at a rate which increases the difficulty of respiration every year by 2½ per cent. Turn and twist it as we may, we can not get away from this. Now a theoretic vitiation of the atmosphere is one thing—a sensible and oppressive vitiation of it is another. That this oppressive state is often prevalent in London, we suppose no one will be so hardy as to deny. What household passes the winter without colds and coughs? Happy are those who have no more severe trial of the respiratory organs. In coming into London from a pure country air, the irritation caused by the loaded atmosphere of the metropolis is at once perceptible. There is a depressing influence exerted by the want of bright sunlight and open vision; but, beyond this, there is an incipient tendency to cough. The same may be said as to Leeds, Manchester, Swansea, and many other of our great towns. But in London, besides the enormous size of what is rather a province than a town, the fact of being in a river valley gives an unusual coherence and tenacity to the fog. From hundreds of thousands of chimneys a constant smoke-offering is poured forth. With every decrease of temperature, occurs a certain deposit of damp from the atmosphere. A sudden fall is like the squeezing of a sponge. Thus occur some of those dense November fogs in which a face is not to be recognised at a couple of yards' distance. These extreme cases are rare; but the same causes are always at work, with more or less activity. For thirty miles,—we think that we are within measure in speaking, from personal observation of double that distance,—a haze is perceptible, when the wind sets in from the direction of London, which shows that the highly-charged atmosphere that canopies the great city has not become purified altogether, even in a journey of that length. We are not wishing to say anything undutiful to that great metropolis, to which so many of us are bound by so many ties. But no one can say that the atmosphere of London, in the winter, is conducive to the health of persons of delicate respiration.

So far as the observation may be permissible, without infringing the special province of medicine, we suppose that the immediate cause of bronchial attack is, in nine cases out of ten, a sudden and severe fall of temperature. That, of course, is much the same everywhere. It is worse, however, in a damp climate, whether it be a river valley or an upland glen, of impervious soil, especially on the upper chalk. Those portions of the metropolis which stand on hills of gravel are sensibly more healthy, in this respect, than the lower and river-side districts,—more so, indeed, than many a country village. But the power, either local or general, of the throat, lungs, and constitution to resist and throw off the effect of such a sudden shock, is sadly lowered by a previous and long-continued irritation. Thus we see good reasons, not only for understanding the cause of an increase in certain respiratory complaints which, at first sight, may appear to be inconsistent with the arguments of sanitary reformers, but for fearing that, unless remedial measures be specially adopted to meet this evil, the mischief may be steadily on the increase.

It is not now for the first time that we have to express the opinion that what is called the smoke nuisance—for in plain terms it comes to that,—is a subject that will task the energies of practical science to reduce within reasonable limits. But we confess that the statistics we have above cited seem to point to the conclusion that the subject is not one that can be long postponed without mischief. There are limits to all things. Many people have inquired—what can limit that great movement of the day, the rapid growth of cities? The answer has been suggested in our pages. A certain degree of vitiation of the atmosphere will cause such a limit. If the matter were left to itself, we suppose that a gradual check would be put to building by a steady depreciation of the value of property. We have witnessed an immense change in the manner in which the City of London is occupied, as compared with former times. The great merchants, the Greshams, and Whittingtons, and Walworths, who were proud of their city and of their urban homes, who might go forth to take the air, and witness the practice at the butts, at merry Islington; or who might even (if they belonged to the Alpine Club of those days) ascend the steep and lofty hills of Highgate for a rural excursion—what would they think of the City now? What would they think of that steady, constant, rapid tide, flowing in two directions without mingling its streams, that rushes during so many hours over London Bridge? What of the pulsating discharges of human crowds from the termini of the railways? That spot which was once the centre of all that was most solid, mature, and comfortable in English civil and domestic life, is now converted into a great office; into which men rush, as late as they can, and whence they fly, as early as they can. It is true that rents have not fallen by the change—land that was bought for silver is sold for gold. Houses that once were proud of their three stories are replaced by those which boast their six or seven. We are not predicting that a like change can ever affect the entire metropolis. But that some great change may be expected to result from the constant deterioration of the climate we think is certain, unless that change can be arrested. A great city might become as uninhabitable from the vitiation of its atmosphere by the products of combustion, as from *malaria* itself. That great cities have been turned into ruinous heaps is a well-attested fact. Here, under our very eyes, may be traced the increasing activity of a cause tending in that direction.

We gather, then, from these minute but pregnant facts,—these annual and decennial changes of 1 or 2, or 6 per cent.,—not that the labours of the Sanitary administrator are uncertain in their result, but the contrary. We see that sure test of scientific knowledge, the verification of prediction. We see in one instance, that of a disease which we may say has only been incidentally affected by sanitary works (as it is not to the direct, but to the incidental effects of the introduction of good systems of sewerage and drainage that the diminution of phthisis is due), an improvement effected in the public health that is appreciable. Not only is it directly appreciable, as matter of cause and effect, but it is of a very sensible magnitude. Seven hundred fewer deaths occurred from phthisis in 1872 than in 1847. But, in that same period, the deaths from bronchitis have nearly trebled. The actual numbers are as follow,—and the increase in the population of the United Kingdom during the time covered must be borne in mind. Deaths from phthisis were, in 1847, 53,317; in 1872, 52,589. Deaths from bronchitis were, in 1847, 16,499; in 1872, 42,752.

With this one exception, which is ground not for discouragement but for fresh activity, the returns for 1872 are, on the whole, encouraging. The general death-rate for the year is, within eight per ten thousand, the lowest yet recorded. It is 1 per cent. lower than the average since 1837. Those diseases which it is within the power of man to stamp out, so that he will take the proper steps, have been materially checked. Scarlet fever and diphtheria have killed only 6·15 per 10,000, while for an average of twenty years they killed 10·46 per 10,000. Other fevers have been reduced from the death-rate of 9·18 per 10,000, to that of 6·12 per 10,000. On the other hand, cholera and diarrhœa have been unaltered in their virulence, and whooping cough, probably rendered more fatal by the same causes as bronchitis, has shown an increase.

There is one point as to which we have to speak, not, indeed, with hesitation, but with care, lest we should be thought to blame where we are desirous to praise. We mean as to the date of the Report. We refer, not only to a delay of six months, as to which some apology is made, but to the broad fact that the Report for the year 1872 should not appear until the year 1875 is nearly one quarter gone. We wish, once and for all, to express the highest sense of the devotion shown by the medical profession as a whole, and by its distinguished official members in particular, in the discharge of their sacred duties. We have no doubt that every one who could glance at the journals, or trace the life, of the officers concerned in bringing this Report before the public, would find only one cause for censure, namely, that there had been a devotion to public duty at the risk of the private duty of attention to proper periods of rest and relaxation. But that premised, and never to be lost sight of, the fact remains. It is a mischievous fact. And, regarding its source, it is, we think, an inexcusable fact. It results from that costly parsimony, that utterly foolish wisdom, which has rendered recent legislation on sanitary matters so nugatory. An establishment must be terribly

underhanded that thus lags behind the course of time. Reports, issued so late, have a value so depreciated, in comparison with that of a timely report, as to be comparatively worthless. What is the use, in the debates now impending, of citing the statistics of 1872,—while those of 1873 and of 1874 are unknown? We can tell nothing of what we are now doing,—we only know what was done,—say in 1870 and 1871,—from such details. An organisation that will bring down the knowledge of facts to the time actually present is imperatively demanded.

With this needful promptitude of publication should be associated the no less important requisite of graphic delineation of facts. One great evil of the last Public Health Act was the opinion apparently entertained by the framers, that any bricklayer might make a drain, and that all that was needful was for the doctor to complain if the drains were absent or stopped up. The position which the scientific graphic professions must infallibly occupy, in any practical measures, was studiously ignored. Here we see one result. To say nothing of the fact that all kinds of statistical reports could be more especially framed, as a rule, by men educated to that mode of work, we look at the mode of the presentation of facts to the public mind. It would be easy to issue such an annual series of health charts as would not only tell the conservators of health exactly what we are doing year by year, but as would inform and interest the public, and associate them, as intelligent fellow-workers, in the cause of sanitary reform. We sincerely trust that a Government which appears to have the health of the country seriously at heart, which dismisses those political causes of disturbance which have lately resisted the wise consideration of truly reformatory measures, will give due attention to this great blot in the latest legislation. To bring fully, rapidly, and clearly before the country the main facts of the sanitary movement, will do more to aid that movement than can be done by any other means that can be devised. A graphic mode of illustration is that which is most striking, certain, and effective. We earnestly desire that this proper and natural aid to the study of sanitary science should be granted to the country.

FOREIGN CRITICISM ON OUR PUBLIC WORKS ADMINISTRATION.

HAVING gone at some length into the report to the French Government on our railway system, we may glance at one or two of the French Commissioners' notes *du Régime des Travaux Publics en Angleterre*,* in regard to some other less complicated but still important branches of his subject; a word or two conveying the impression of a well-informed stranger being often useful and suggestive in setting things in a new light. Roads and bridges naturally follow railways; and the reporter notes the simplifying system by which, in our legislation, all classes of road, way, or path come under the general denomination of "highways," and are dealt with on the some footing; but there is nothing for special comment in his brief statement of our road administration, except indeed as to the absence of any legal requirement in regard to vehicles carrying lights,—an omission which, as he says, the greater part of London cabowners avail themselves of. The turnpike system is clearly regarded as a decaying one, and in the last twenty years the number of roads subject to this impost has diminished from 1,112 to 635, of which 110 will become free in 1882, or not much later. The *rationale* of the turnpike charge seems to be rather puzzling to our author, since he draws special attention to the fact that its existence does not the least relieve the parish in which the toll is levied from its legal liability to keep the road in repair. Perhaps the system is not less puzzling to ourselves; it is, at all events, one of the small nuisances which should be abolished, at least where the law of parochial responsibility is in force. This, however, does not extend to Scotland, which, in the matter of roads, is very exceptionally legislated for, perhaps because, till rather recent times, the only road of any importance to a Scotchman was the main road into England. Schedules of the mileage expenses on a number of the leading routes in the kingdom are given in very full form.

The tramways present to a foreign critic a curious chapter of persistent attempts on the part of speculators to procure Governmental sanction, met by repeated refusals; and even now that several companies are definitely established, the reports of police superintendents of the districts, quoted in the Report at some length, are strong and almost bitter in complaint against them as a public inconvenience. There may be some misapprehension here. Any attempt to introduce such a system into the centre of London would of course be an absurd error; but as a means of serving some of the suburbs the tramway offers advantages; and the French Commissioner seems to have drawn his information from prejudiced sources. A system which is largely used by the public must be, *pro tanto*, a public convenience; and we have always taken the opposition to the tramways to be chiefly on the part of carriage-owners, afraid for their own vehicles, and not sufficiently considerate of the majority who are not similarly provided. Complaints about damage to the roadways, registered in this report, seem exaggerated; the Westminster Bridge and Greenwich line, for instance, is specially charged in this respect. The remarks upon the inconvenience of having all the routes under different companies are to be noted; it is curious to see this mimic railway system going through the same course as the greater one; commencing with competition, to end (if the traffic is continued) in unification of interests.

The subject of road locomotives seems to have interested the French Commissioner considerably, and his pretty long report on their history, present facts, and future possibilities, ought to have attention here. It seems difficult to understand why our Government should have so pointedly hampered and thrown cold water upon this idea; the only valid objection to it, really, is the frightening of horses, which was considered just as forcible an objection to railways at the outset. It would surely not be impossible to make habituation to road-engines a part of the training of riding and carriage horses. It is perhaps scarcely known to many how largely road locomotives, in a certain sense, are in use in England already; for many of the steam-machines for reaping and thrashing, &c., are constructed to move themselves from place to place also. One large maker has furnished 1,000 of such machines, another more than 500, for England only. But the use of anything of the kind is very much hampered by the restrictive and sometimes inconsistent legislation in regard to them: the requirement that they are to be preceded, by about sixty yards, by a person with a red flag, who is also to give assistance to riders or drivers who may be incommoded by the machine; and a proprietor has been fined by the magistrates because the "person" in question (generally a boy), when engaged in helping to hold a restive horse, was not, at the same time, at the specified distance in front of his machine. The indifference of Government to the interests of road-engine proprietors is so marked that there is only one instance, we are told, of an appeal in this quarter from a locomotive proprietor for redress; this was on the 21st of April, 1872, and the answer arrived on the 13th of June following, indicating that the Secretary of State was ready to send an inspector to the place named, but the applicant must pay all expenses of the inquiry: a stipulation which had the calming effect probably intended. As to road engines for transporting passengers, the French Commissioner reprints Mr. Scott Russell's account, before a Committee of Inquiry of the Board of Trade, of his own attempt at working a line of carriages from Glasgow to Paisley, as a first experiment; of the beautiful carriages made for them by Mr. Learmouth, of Edinburgh, and the determined efforts of their kind friends in Glasgow to stop the traffic, which they eventually did by loading the road with heavy granite macadam to break the wheels of the carriages, which were run for some time at a daily loss from the breakages, till eventually an overturn and explosion, caused by this unprincipled form of opposition, did put an end to the service, which has not been resumed since. Mr. Russell's evidence was, however, that the conveyances were liked, and largely used by the public while they were run. The idea has certainly never had fair play in England; and in many localities road locomotive traffic might surely act well as a supplement to the railways, where the latter have not been or cannot remuneratively be constructed.

In regard to the "Régime des Eaux," under which head are included drainage works and river and canal traffic, the report is mostly confined to statistics; the canals are evidently regarded as a system in considerable danger of being entirely superseded, though the fact is recognised that for distances under sixty or seventy miles, the canals may, and in some cases do, compete successfully with the railways in goods traffic of certain kinds. In the chapter further on in the report, on Lighthouses and Beacons, the French report is not merely unfavourable, but almost contemptuous. The lighthouse administration is inconsistent and wanting in method, and this is no matter for surprise, when it is entrusted entirely "à des corps de *gentlemen* de diverses conditions," not one of whom has necessarily any scientific knowledge in regard to the lighting of lighthouses; so is the august *Trinity House* here characterised. The report of the English Commissioners on the subject is quoted to the effect that the management of the lighthouses is often practically out of the hands of any central authority, as the local agents cannot be got to send reports (though the keeper of the Peterhead Lighthouse showed so much zeal in the cause as to ask the president of the Commission for a lesson in cleaning reflectors); that the lights of Dover, Folkestone, and Newhaven present almost all the errors that can be possible in lighthouses, and that the contrast between these and the excellently found and lighted houses in the French ports, of even a secondary order, is not flattering to England. And when, in addition, the French Commissioner notices that in one place a red light signifies "danger," in another "security," that at Hull it means "left hand," and at Liverpool "right," it is not easy to quarrel with his conclusion that centralisation, with many inconveniences, may present serious advantages in some cases.

The closing chapter of the Report, in which the French and English *régime* are broadly compared and contrasted, is interesting. It is one of the subjects in which the institutions of Britain "differ most profoundly from those of France." In Great Britain, it is observed, there is no Minister of Public Works, nor any regular and separate budget in regard to that class of administration; wants which have been frequently signalised in our columns. And the essential distinction, in the opinion of our critic, between the English and French method is that in France the Legislature generally takes the initiative in any public work of this kind; in England, almost any one in the world except the Legislature. But when the project is admitted, the authority to carry it out is derived only from Parliament with us, while in France it may be derived from local administration. Parliament, in short, is all-powerful in England; and the decentralisation in this country, which has often been contrasted with the opposite tendency in France, is to a great extent more nominal than real (except in the case of the lighthouses, as aforesaid). The question in estimating the relative merits of the two systems is, whether the English system (or, we might say, want of system), by which great schemes, such as new railways, are left to individual initiative, "simply tolerated, but never assisted," would have sufficed to produce the same results in France. And the decision is "*que non*," the English public having both more enterprise and more capital than the French. The great lines of rail might have been produced in France by the spontaneous efforts of leading capitalists, but the smaller ones never would have been. The small capitalist in France has not the same spirit of enterprise. The publicity of preliminary proceedings in England before any great undertaking can be put in hand, is favourably contrasted with the more arbitrary French system, where Government engineers may often have it all their own way. In England, our critic observes, every one whose interests are concerned is heard, "and, what is better, is listened to." On the other hand, the gratuitous action of the French Government is favourably compared with our heavy Parliamentary expenses. The inspection system is, as might be expected, far more complicated in France. Our railway system is looked after by four Government inspectors, while our neighbours employ six general inspectors, seven engineers in chief, and seventy-eight ordinary engineers, &c.; in all more than 600 functionaries. The cause of the difference is again explained by reference to the character of the English public. The inspectors in England, though but four nominally, in reality "are counted by millions," for the public themselves fulfil these functions—and many others besides—with which in France the Government would charge themselves. "Let there be a delay or some small accident, and the *Times* re-

* See page 223, *ante*.

sounds with complaints, and under the head of 'Railway unpunctuality' the victims continue, during a week or so, to make known *urbi et orbi* that they were delayed an hour beyond the proper time, or that a booking-office had been opened too late," &c. This sensitiveness of the English public, and disposition to complain openly of the smallest thing in which it has been wronged, is no doubt a very important element in the way of keeping things going here; one which we may forget or underrate until thus reminded of it by the impression produced on a stranger. This difference in national character is, to the French Commissioner's eye, curiously illustrated also in the freedom of our railway stations, as compared with the French system of shutting up the passengers like so many cattle behind barriers and in *salles d'attente*. "You may shut up *Jacques Bonhomme* in this way," says the reporter, "but "you will hardly get *John Bull* to submit to it"; and he adds a lively and graphic sketch of the freedom and bustle of an English railway terminus. But the fact is, it is John Bull's great respect for constituted authority which renders it unnecessary to hedge him up in this way. We were witness to an amusing instance of this the other day, at a suburban station, where a crowd of passengers, mostly of the lower order, waited two or three minutes before a closed door leading out of the station, until an official came up and asked what they were waiting for; the door only required a push to open it, but no one had ventured to lay a hand on the sacred portal. The order, method, and absence of noise and confusion with which the most important trains are started in English stations, without shoutings or gesticulations, seems to have much struck the French visitor. Only one thing in our system is a difficulty for a stranger: the names of the stations are often by no means legibly or prominently written up, and sometimes half lost among a crowd of advertisements. This is a just complaint, and a defect which should be remedied. Of the Metropolitan Railway the report speaks with enthusiasm, and with reason; too much could hardly be said for the convenience and attention to public wants in this service; let us hope it may yet prove remunerative in the end.

In fine, we recommend this exhaustive and excellently-written report on our Public Works administration to all who are concerned with the subject; not only is it full of suggestive matter, but it presents a great amount of statistics in a very compact and comprehensive form, and in a manner as little dry as can well be in dealing with subjects of such a nature and in such a method.

THE PUBLIC HEALTH BILL.

THE Public Health Bill brought into the House of Commons by Mr. Sclater-Booth and Mr. Clare Read may be said to be the substitution of a book for a library. It will require the most careful watching as to detail, from the fact that this Act, once passed, will define the law. Twenty-two Acts of Parliament are wholly or partly repealed by it; and every clause of the present Act will be taken as a substantially new enactment, even where it may be actually copied from previous Acts. It is not, therefore, a duty so much to discuss the principle, or to describe the details, of the new measure, as it is to watch the careful editing of clause by clause.

The Act is clearly divided into eleven parts. The first gives the short title, "Public Health Act, 1875"; limits the operation of the measure by the exclusion of Scotland, Ireland, and the metropolis; and gives definition of the terms used.

Part II. deals with the constitution of districts and authorities; the various Acts from which the now-consolidated provisions are taken, being indicated in the margin of each clause.

Part III. contains sanitary provisions and regulations as to sewers and drains. We note the insertion here, paragraph 20, of a provision from the Public Health Act of 1848, as follows:—"An Urban Authority may, if they think fit, provide a map exhibiting a system of sewerage for effectually draining their district, and any such map shall be kept at their office, and shall at all reasonable times be open to the inspection of the ratepayers of their district." This clause, in its actual form, appears to be purely obstructive. It leaves it to the discretion of the authorities whether they should take a step indispensable to the efficient discharge of their duty; and then locks up the map, if they like to make it. We should propose to strike out the words "if they think fit," to substitute "shall" for "may," and to insert the words "a copy of" before "any such map."

Provisions as to water supply and regulation of cellar-dwellings and lodging-houses; definitions of nuisances; powers and duties of authorities with respect to them; offensive trades; unsound meat; infectious diseases and hospitals; prevention of epidemic diseases; and mortuaries; form the subjects of separate divisions of this part of the Act.

Part IV. contains Local Government provisions. The sections regard highways and streets; public pleasure-grounds; markets and slaughter-houses; public halls; and police regulations; the latter being only stated to be certain provisions of 10 and 11 Victoria, c. 89.

Part V. contains general provisions. These regard contracts; purchase of land; arbitration; bye-laws; and officers and conduct of business of local authorities. It is provided by clause 184 that the medical officer of health shall be a legally qualified medical practitioner, and the power of the Local Government Board to satisfy itself on this point is confirmed. No similar provisions are made as to the surveyor. In this part of the existing legislation lies the canker of the whole system,—namely, in the fact that the officers of health are absolutely subjected to the local authorities who appoint them, and, as such, are deprived of any power of combined or independent action.

Part VI. deals with rating and borrowing powers, and audit of accounts. Part VII. prescribes the order of legal proceedings. Part VIII. is headed "Alteration of Areas and Union of Districts." Certain powers are here attributed to the Local Government Board. There are two very serious blots in this part of the Act. One is,—that no reference to the physical conformation of the country, and the actual existence, in point of fact, of natural water-shed districts, is made. On the contrary, there is a vague power of executing works, with consent, in other districts; which shows that the parochial, not the physical, demarcation of districts is alone contemplated by the Act. The other defect springs from the same cause, the absolute ignoring of physical science. Districts may be united for appointing a medical officer of health; nothing is said as to the union of districts for appointing a surveyor.

Part IX. defines the powers and duties of the Local Government Board. It is to be regretted that the duty of giving full and prompt information to the public at large, and to any consulting authorities in especial, as to the general principles of the sanitary works demanded by each district, and the outcome of experience, is not here prominently enforced. A large and constant outlay is entailed on every district, by the want of a small central outlay in collecting, tabulating, and publishing the valuable *data* collected, or which ought to be collected, by the inspecting engineers of the Local Government Board.

Part X. contains miscellaneous and temporary provisions.

Part XI. saving clauses and repeal of Acts.

Five schedules are annexed to the Bill. Schedule 1 contains rules as to meetings and proceedings. Schedule 2, rules for election of local Boards. Schedule 3, rules as to resolutions of owners and ratepayers. Schedule 4, various forms. Schedule 5, enactments repealed or affected by the measure. The Bill contains 156 pages, and its weight is between 21 and 22 oz.

GOLDWORK AND ARCHITECTURE: A NOTE OF INTERROGATION.

WE can scarcely allow the views on the origin of architecture which were delivered by Mr. Skidmore the other day at the Architectural Museum, in a lecture reported in our columns (p. 246, *ante*) to pass without a word of question. The theories of the past of architecture, and of the possible basis for its future, are so numerous just at present, as to become rather bewildering. The theory which builds the development of architectural ornament on the forms of goldsmith's work, whatever effect these may have had in certain instances, can however scarcely be accepted by any unprejudiced student, though the influence of the one art on the other may be more than is generally supposed. But no one who has compared Greek gold work with the decorative features of the Parthenon (apart from the sculpture) would be prepared, we fancy, to connect the two so closely, or to regard the triglyphs and guttæ as imitations of gold work; nor would the case be better for Mr. Skidmore in regard to the early and best Gothic. In spite of his claim, we can see no affinity between the early transitional capital and its broadly sculptured leaves and bosses, and the productions of beaten gold. A certain resemblance there is between the foliage of the late Decorated period and the effect of *repoussé* metal-work, but not to the extent of proving any necessary connexion between them. As to the early Transitional carving, both in France and England, we know of no class of ornament which shows more evident traces of having been elaborated in accordance with the true perception of the nature and capability of stone as a material for carved ornament; and any resemblance between that and earlier gold-work, if existing, must be mainly imaginary. While doing justice to the apparent interest and ability of the lecture in question, we cannot help being somewhat amused at the very partial views of the lecturer, Mr. Skidmore has made fame and (we hope) fortune in connexion with art-work in metal, and by consequence (apparently) he is disposed to lay down that everything arose out of metal. This is stretching the principle of "nothing like leather" a little further than it will bear.

COMBINED BACK DRAINAGE.

THE SHAFTESBURY PARK ESTATE.

THE dispute between the Artisans and Labourers' Dwellings Company and the Wandsworth District Board of Works as to the drainage of the houses on the Shaftesbury Park Estate at Battersea, and which led to the Company giving notice of their intention to apply to Parliament for an Act sanctioning their system of drainage, has just been settled. It may be stated that the company are adopting throughout the whole of their estates the mode of drainage known as the system of combined back drainage, which they state they are carrying out in accordance with the opinion and advice of eminent sanitary authorities. The advantages claimed for the system are, first, that no effluvium from the drains can arise into the houses, as they state is the case when the ordinary mode is adopted and the drains are carried under each house. Secondly, that the back drains are easily repaired without any disturbance of the floors of the dwelling-houses; and, thirdly, that ventilating shafts are fixed from the drains to the tops of houses, whereby the gas is carried off. The Wandsworth Board of Works would not sanction this system of drainage, on the ground that it was contrary to the provisions of the Metropolis Management Act, and hence the application of the company for Parliamentary sanction to their system.

At the meeting of the Wandsworth Board last week, the chairman stated that at a consultation with the solicitor of the Artisans and Labourers' Dwellings Company, which lasted two hours, it was finally agreed that the company's Bill should be withdrawn; and that unrestricted access over the front and back drains should be given to the officers of the Board. The company are to be permitted to continue their system of combined back drainage, and in carrying out the matter the Board have undertaken to assist the company as far as they can. The dispute involved the re-draining of 800 houses which the company had erected on the estate, and which the Board required to be drained in strict compliance with the Metropolis Management Act. The settlement which has been arrived at between the parties has prevented this outlay.

Some years ago combined back drainage was insisted on by the Metropolitan Commissioners of Sewers, at the time when Mr. E. Chadwick was in authority. The chief objection to it is the extent to which each occupier may be inconvenienced by the act of a neighbour.

The Indian Museum.—In the House of Commons last week, in reply to Mr. Fawcett, Lord G. Hamilton said it was in 1874 determined to remove the museum for three years to South Kensington, rather than incur the expense of erecting a new building. This, however, was only a temporary arrangement for three years. As soon as any permanent decision was arrived at, he should be very glad to give any papers or minutes written by Members of Council, but he did not think at present it would be advisable, pending such decision, to lay papers upon the table of the House necessarily inadequate and incomplete.

ANCIENT AND MODERN RESIDENCES OF THE RUSSIAN CZARS.

There is not a single Russian historian who as left us a complete record of the ancient abitations of the Russian people, a description hich could be taken as a full digest of all the formation on that subject. The old chroniclers id not in view our curiosity, and did not take e least interest in the contemporary domestic e, for the sole reason probably that the subject as familiar to them, so well known to everybody at they did not deem it worth while recording. he materials for the history of the Russian ar- itecture of ancient times consist of scattered d incidental references; but meagre as they e, we are able to supplement these piecemeal counts by trustworthy information of a later te. This is all the more easy, since the ancient ode of life of the Russian people, especially th regard to their domestic economy, was not easily influenced by the foreign element, it perienced very little change. It must be iversally admitted, we think, that the pea- nt's home of the present day of Great Russia constructed just as it was perhaps 300, 400, even 1,000 years ago. Besides, anterior to e reign of Peter the Great, among the entire pulation of the country of Muscovy, there was tle difference in the mode of life or the stoms, so that the architecture of all classes s distinguished for its similarity all over the ntry, and which has lasted down to the esent day in every village of Great Russia. e original, most ancient Russian dwelling was doubtedly the *kleit*, a very simple wooden ucture which has lasted even down to our rs. At the beginning it was built, very ely, simply with a hearth in the middle, ound which the inmates warmed themselves; t as soon as the *kleit* began to be heated by ans of a *paitch*, or Russian stove, it assumed name of *istopka*, from the words *topit istopit*, heat, to light a fire, from which, in course of e, was formed the word *izba*, which is at the esent time almost the only dwelling of the ssian peasant. The *izba* and *kleit* formed, so say, the foundation of his dwelling. The mer was generally constructed with windows openings just under the ceiling, which were d for the passage of the smoke. They were re like great chinks than windows, and were ned and closed by means of a sliding shutter hin. Some of the *izbas* had wooden chim- s, which are met with sometimes even now. h well-to-do people, or inmates with large ilies, there used to be constructed opposite he *izba*, a kind of summer-room, also called *leit*, without a stove, likewise with sliding tters. This was connected by a covered sage, and reached by a few steps at the end it. The *kleit* was therefore built higher n the *izba* proper, the space underneath ng reserved for small cattle, &c., or it was d as a storeroom. This is the dwelling the common man in Russia. We need not into the details of the peasant's *izba* and *kleit*, the various appurtenances of the peasant's se, because all this has remained unchanged n time immemorial. Persons belonging to higher classes, rich foreign merchants, boyars, lived in *kharomas*,—great wooden edifices, construction and arrangement of which were nged according to the requirements of the prietors, although in their main features they ined the primitive type of the *izba* and *kleit* ne common people, the only difference being, the smoke issued through a chimney, while he other it escaped through the door or the nings near the ceiling. They were generally t two stories high, the top floor having ular windows in front with jambs, and at the s and back the openings with sliding shutters. ides, the top room differed from the *izba* in stove, which was built up of glazed tiles, of d or square shape, like a Dutch stove, quite inct from the *izba* stove, which is like a er's oven, the top of which the peasant uses sleeping-place in winter. The rooms were unfrequently divided by partitions into sepa- chambers. The ground-floor, if it may be alled, was used for various purposes,—ser- s' rooms, store-rooms, &c. In the first case were made with sliding shutters; in the nd, they were closed all round, without or door or window, as the entrance to them inside from the top floor. A roomy covered age joined the top-room floor, with the nd story of another part of the building larly constructed to the one just described, a ground-floor which was used for the same purposes. This top floor was built with a log ceiling. Besides these rooms, there were in the ancient *kharomas* the *svetlitsa* (the light chamber) and the *sennik*. The former was a room with real windows with large size, of which there were a greater number than in the other rooms; sometimes they were made in all the four sides. The *svetlitsa* was without a stove; the *sennik* was constructed in the same manner, and served as a bedroom in the summer time. These two rooms were distinguished from the others in this, that no earth was placed over the log or boarded ceiling, as was the case with the warm rooms. For this reason the *sennik* was deemed of great importance during the ancient wedding ceremonies. In it was usually arranged the nuptial bed; and the ancient customs did not admit of earth being over the heads of newly-married couples, as being such a thing which, amid the rejoicings on the auspicious occasion, might remind them of the grave; at least, this is the way Collins, who visited Moscow in the reign of Alexay Mikhailovich, explains this ancient custom. The top story had sometimes a kind of open attic window under the roof of the main building; they were open on all sides so as to command an extensive view all round. To these were added sometimes small towers, which frequently had large windows on the four sides, which were used for viewing the surrounding scenery. Thus some of the ancient *kharomas* of Russia were sometimes built three or more stories high. It should be remarked that in the large *kharomas* the disposition of the several parts was not subject to any general plan. They used to be placed indiscriminately, according to the convenience, various requirements, and fancy of the proprietor. These were the general characteristics of ancient Russian structures in old Muscovy. The same peculiarities of construction, only on a much larger scale, characterised also the *kharomas* of the reigning Grand Dukes of ancient Russia. They contained besides the rooms mentioned, two other apartments, the *gridnitsa* and *bozhnitsa*. It was in the *gridnitsa* that the great Vladimir gave on Sundays feasts to her ministers: consequently it served as a kind of reception or drawing room, and was the largest apartment in the Grand Duke's court. The *bozhnitsa* was the ancient private chapel of the Grand Dukes, and was usually built on one of the upper floors. The Grand Duke's court did not consist of one single building, but was formed of numerous separate *kharomas* which were joined together by open and covered passages, and were approached from verandahs outside. The lower stories were reserved for the servants, and generally speaking the retinue of the Grand Dukes, which was very numerous. Among the offices incidentally mentioned by the old historians is the ice cellar and the mead-cellar. Some of the ancient palaces, owing to their splendid appearance, or perhaps on account of the surrounding scenery, were called "the beautiful *kharomas*," and the court of Duke Youry Dalgorouky, beyond the Dnieper, went even by the name of "Paradise." As to the outward appearance of these ancient structures, mention is made in one of the ancient poems of the golden-roofed attics of Sviatoslav, the Duke of Kief. This short account is all that we can glean from the old Russian chronicles of the tenth, eleventh, and twelfth centuries concerning the most ancient residences of the reigning Grand Dukes of Russia. If we do not know for certain, although we may hazard a guess as to the manner in which the apartments of the first sovereigns of the house of Ruric were decorated and furnished anterior to the sixteenth century, we at least know for certain that in the reign of the house of Romanof the walls of the Czar's apartments were usually hung with silk material, which was put on smooth, with valences in the proper places in the Eastern fashion. The custom of covering the floors of dwellings with rich carpets is a very ancient one which has tended since pre-historic times to develop the art of weaving carpets, which in the remotest antiquity were used for covering the floors of tents. From the floor the figured material was transferred to the walls; earlier still was adopted in the shape of figured borders to the entrance curtains which used to be pinned up in a slanting direction at the sides. The Eastern custom of a luxurious arrangement of tents was transmitted during the crusades even to the North-West of Europe. But as regards Russia, into which country civilisation and the requirements of comfort in the arrangement of the apartments of dwellings were introduced, owing to her commercial relations with luxurious and more civilised nations,—the Byzantine Empire and the Caliphate, so their customs and their notions of beauty, and, consequently, the art of luxurious decoration, were transmitted to Russia much earlier than the West of Europe. It should be remarked, however, that both the Byzantines and Arabs in decorating the interior of their stone buildings used not only carpets but mosaic work, gilding, carving, and painting, while in Russia, during the first age of civilisation, the wooden structures—the *kharomas*—were decorated only with carvings rudely painted in glaring colours, and with coloured stuffs. The material generally used for covering the walls of the palace rooms in the sixteenth and seventeenth centuries was red cloth and other suitable colours. Sometimes a chequered pattern was effected, consisting of two colours in squares (18 in. by 18 in.), red alternating with blue; sometimes the pattern was of a triangular shape, also in two bright colours, red and green. Even the ceilings of the rooms were upholstered with silk, as was the case in 1691 in the apartments of the Tsaritsa Natalia Kirilovna, which of course presents a direct contrast to the custom of the West, where the silk material on the walls demanded a painted ceiling. In the time of the ancestors of Peter the Great the imitation of the West in decoration and general arrangement of the apartments of the rich, particularly in the sixteenth century, was limited only to the doors, which were covered with Venetian leather, embossed in gold, which for some purpose or other used to be varnished, which increased the brightness of the raised design. The art of the upholsterer, however, was not limited alone to the walls and ceilings, but was applied to the making of quilted cushions for covering the benches or seats, and mattresses stuffed with cotton wool, and quilted in a chequered pattern, and which were sometimes made of morocco leather. The doors and windows required quilted or damask curtains, draperies which extended over the whole width of the wall, and which were drawn not only over one window, but the whole of the windows at once. For the winter, the curtains were also sometimes wadded and quilted to keep out the cold and wind. The curtains were trimmed at the top with furbelows of another material gathered in puffings, and forming graceful folds. The walls of the palace apartments were also draped in the same manner with costly silks, especially on festive occasions, such as coronations, weddings, the reception of ambassadors, &c. The material for this purpose was mostly velvet cloth, thickly embroidered with gold. The seats on these occasions were also covered with Persian carpets of rich design, and the top of the backs of the seats with carpets of cloth of gold.

But now an event occurs which changes everything in connexion with the domestic life of the Russians of the upper classes. Peter I., the great reformer and regenerator of Russia, is on the scene. In 1703 he lays with his own hands upon a little island the first stone of the foundation of the citadel, and when the defences are completed, commences building the city which he had already called St. Petersburg. His own house, a small wooden building containing two chambers and a kitchen, one or two houses of the same size, and the miserable hovels of many thousand labourers, constitute the new capital at the end of 1703. In a short time appeared the Ukazes, in which are manifested the exertions and intentions of the Czar. By one of these 350 noble families were ordered to establish themselves in the new capital, and to build houses in the places indicated by the sovereign. By another the merchants and mechanics were obliged to build three hundred houses. By another every ship arriving in the harbour was to bring a certain quantity of stone, according to her size and tonnage. Architects, artisans, and engineers were invited from every country in Europe, and the same measures and activity employed as marked the progress of Constantinople under Constantine the Great. The first humble residence of Peter the Great and Catharine his wife still stands upon the spot on which it was erected, and from its threshold may now be seen the immense palaces and stately structures of the city which occupies the site of the former morass. The transfer of the capital from Moscow to St. Petersburg caused a great revolution in the architecture of Russia, which called forth corresponding changes in the interior arrangement of the new dwellings. Peter the Great introduced the tastes of the West into his new capital, and a most minute imitation of

Western originals in everything pertaining to social life. The new order of things gave a great impetus to the trades connected with the interior decoration of the dwellings of the rich: it demanded the introduction of rich draperies, curtains, soft chairs, easy-chairs, sofas, &c., things which were quite unknown in ancient Muscovy; from that time the ancient capital also assumed in all these matters the fashion established at St. Petersburg. In the reign of Peter the Great direct commercial relations were established with China, and the consequence was the introduction of rich Chinese figured silks with which Menshikof, the Czar's favourite, loved to decorate the apartments of his sumptuous Petersburg palaces, which, until the building of the second Winter Palace, which was not quite completed until Catharine I. mounted the throne, served as audience chambers for the reception of ambassadors, and for other solemn occasions.

Together with silk materials, articles of Chinese ingenuity, such as ornaments, articles of *vertu*, &c., the luxury of Peter the Great's time necessitated also the introduction of Gobelin tapestry, the cunning handiwork of French artisans, who came to Russia with their *haute* Lisse and *basse* Lisse looms from the banks of the Seine to the dreary islands of the Neva, where Western civilisation had only just begun to dawn. The establishment of a tapestry factory at St. Petersburg, in 1716, is a very important event for the decorative art in Russia, for just at that time a number of Russians had been sent by Peter the Great to France and Holland to learn everything appertaining to interior decoration of the upholstery art and cabinet-work. These young men were called *pensionnaires* of the Emperor, and on their return were personally examined by the Czar as to their proficiency; having acquitted themselves in the best manner, they were appointed to the Admiralty as decorators and upholsterers of ships' cabins, and in the same capacity to the Imperial apartments of the Court. These artisans received a fixed salary: besides the pay for the work, the former emolument was paid on condition of teaching the art to the Government apprentices; and as a further encouragement, a reward was appointed when the apprentice became proficient. At the same time it depended entirely on the arstian to refuse an apprentice when he found him unsuited to the business. Owing to such measures were formed the Russian artisans in every branch of the decorative art.

As we stated above, the manufacture of Gobelins was undertaken by French artisans, who were engaged by the Architect-General, Le Blond. In November, 1716, the factory was opened in the houses of the French quarter of the Vasilyefsky island, and shortly afterwards some tapestries were produced representing flowers and fruit and a portrait of Peter the Great at the battle of Poltava, from the original of Tannauer (1718), as it appears from a petition of that artist to the Czar. The tapestries manufactured at this factory were employed, at the suggestion of Le Blond, in decorating the apartments of the Peterhof palaces, in the vicinity of St. Petersburg. The Gobelins constituted in reality the most luxurious decoration for rich saloons, combining in themselves all the elements of exquisite taste, an exact reproduction of painting, with light and shade in the proper places, for which the materials, wool and silk, were eminently suitable, the form completely subject to the conceptions and plans of the architect and durability, which left the most delicate shades of colouring intact in their pristine freshness for a long time. The Russian architects of the period knew how to estimate these qualities, and knew how to apply these tapestries to the best advantage, exhibiting in the best light their most brilliant parts on every convenient occasion, during the whole of the eighteenth century, thanks to a whole school of Russian artisans formed by the French immigrants, and who have lived to our own days.

The work of Russian upholsterers and decorators manifested itself in a most brilliant way in the reign of Peter I. in triumphal arches, erections which necessitated much carving, gilding, and required curtains and drapery, with valences, trimmings, &c. The Empress Catharine I., wife of Peter the Great, who succeeded him to the throne, with Menshikof at the head of affairs, supported the splendour of the empire. Her reign, and that of her successor, Peter II., are conspicuous for the magnificence of coronation fêtes.

Anne, the niece of Peter the Great, in her domestic policy, followed out the plans of her uncle. Owing to her long residence in Courland, when duchess, the tastes of the Empress were comparatively refined, and under her auspices the upholstery and decorative art continued to flourish, splendid specimens of which were to be seen inside the Ouspensky Cathedral and the Gránovitaya Palata at Moscow. She delighted in magnificence, and perhaps exceeded any other contemporary in the splendour of her spectacles. The memoirs of the time make special mention of a ball in the depth of a Russian winter (January, 1734), when the apartments were decorated with rows of blooming myrtles and orange-trees in blossom, the seats were covered with fresh turf, and were placed under green and flowery arbours, so that it appeared as if the summer scenery of a southern clime had been suddenly transplanted by the wand of the enchanter and set down among the snows of a northern winter. Here may be mentioned a curious fancy of the Empress,—a strange piece of architecture,—an ice palace. To punish one of the Galitzins who had incurred her displeasure, she caused him to be married to a woman of low birth. This occurred in the severe winter of 1740. She had a house built wholly of ice for the accommodation of the couple, and all the furniture, even to the nuptial bedstead, was of the same cold material. Cannon constructed of it were placed in front of the building and fired several times.

Elizabeth, the next empress, was particularly noted for her love of sumptuous decoration and luxuriousness. Under the guidance of the talented Count Rastrelli, the noted architect, the Russian upholsterers and decorators performed wonders, according to the testimony of Frenchmen themselves. They compared the decorations of the Tsarskoye Selo Palace with Versailles, making deductions disparaging even to the residence of the *grand monarque* himself. This was the period in Russia of the highest school of decorative art, especially as applied to furniture and upholstery. In the new Academy of Arts a special department had been formed for learning the art of decorating palaces. The reign of Catharine II., the next sovereign, was one of the most brilliant and successful that Russia has witnessed. Her own ordinary expenditure, with the outlay on triumphal arches and imperial entertainments, was enormous. She built palaces wholesale, presenting not a few of them to her favourites. She added the Hermitage to the splendid Winter Palace, a series of apartments with its famous winter garden, in which she forgot the cares of State in conversation with her wits and beaux. The Imperial residence of Tsarskoye Selo was extended and with additional magnificence, so that it exceeded in beauty and splendour all the contemporary royal residences of Europe. It is quite impossible to convey a proper idea of the immense sums that have been lavished upon this Imperial habitation. The exterior walls were actually gilded, and cost thousands upon thousands of pounds. There were rooms completely covered with gold, walls and ceilings of glass and amber, floors of ebony and mother of pearl. The vast saloons still retain the evidence of the boundless wealth and extravagance of the second Catharine. It was in these saloons that Catharine, attended by a host of brilliant retainers, loved to receive ambassadors and foreign potentates and astonish the princes of the East with untold splendour. In the reign of Catharine II., with the further development of various trades, especially of the branches of cabinet-making, carving, ornamental moulding, the decorative art flourished; the Moscow factories were likewise able to produce splendid specimens of stuffs used for decorating apartments and covering furniture; and the manufacture of bronzes received likewise an impetus. By means of these elements, and the architect's knowledge of the manner of employing them to the best advantage and the concurrence of favourable circumstances, generally speaking, when the court and the nobles vied with each other in the taste displayed in the decoration of the interior of their dwellings, the age of Catharine II. may be said to exhibit the highest manifestation of taste in this regard. The winter palace, with its series of saloons and halls, where masquerades were constantly given, served as a school for the artisan in almost every branch of decorative art; besides the wealthy nobles residing at St. Petersburg displayed the extravagance and splendour of petty sovereigns. Their palaces were filled with the most costly ornaments and the most luxurious furniture. Jasper and porphyry adorned the walls, columns an pilasters of malachite supported the sculpture ceilings. Cabinet-makers, upholsterers, an decorators were in constant requisition fo refitting, with additional magnificence, thes sumptuous abodes. Apartments with frette roofs, tesselated pavements, hung with cloths gold, and adorned with furniture in ormolu, an every kind of ornament, opened one into a other. Ball-room, card-room, picture-galler library, museum, conservatory of exotic plant alcoves with fountains and statuary, the qui parlour with a carpet and a cozy fire blazin upon the hearth, all this must have indee afforded a contrast to the "beautiful kharomas of ancient Russia, to the golden-roofed towers Sviatoslaf, the Duke of Kief, or even to th "paradise" of Youri Dolgorouky beyond th Dnieper. During the reign of Catharine II., the head of the administration of all the factori for manufacturing the materials used for decor tion were the pupils of the Academy of Arts, th best designers in Russia. With the beginning the present century things changed for the wors the designers had become old, and there were competent Russian artists to follow them. The came the war with Napoleon, which destroy the manufacturing establishments of Mosco and gave a final blow to the development native artisan-artists.

The greater part of the establishments forme by the Government with the view of promoti the decorative art had ceased to exist, t absence of demand inseparable from the co vulsed state of the country engaged in repelli the enemy put a stop to production, and, amo other trades, that of upholstery and decorati suffered perhaps the most. Paul I., wh building the Mikhailofsky Palace, engaged number of foreign artisans, but owing to death of the czar they were unable to comple what they had undertaken, and were forced remain in Russia. The court in which t French taste and the sumptuousness of the fi empire found secure refuge supported the artis invited by Paul during the first years of the re of Alexander I. These new-comers in the me time took part in the general enthusiasm o new order of things, where rude decorativen presented the most salient features to the det ment of artistic execution. This, by the way, already perceptible in the palaces and other mon mental structures of the second half of the re of Alexander II. The unartistic taste of the fi empire continued to prevail which had held t first place and undisputed possession for half century. It was in the reign of Nicholas I. th there appeared at St. Petersburg numerous fore firms with Russian workmen, over whom we managers who frequently knew their busin only very superficially. The natural result all this was a slavish imitation of the read made foreign designs in conceptions of fashi and not at all in the production of anythi original as regards taste and style: this continued to the present day. Technical p fection under these circumstances may still retained, but the suitableness of form to lo requirements will naturally still be wantin Exertions, however, are now being made Russia to obviate this state of things. Strogonoff School of Design has been form where young men are educated in every bran of decorative art, and where national forms artistic decoration are mainly studied.

It may be interesting to enumerate the palac which have been constructed in the capital and vicinity since Peter the Great first built his lit two-roomed house on the banks of the Neva:—

The Winter Palace,

officially called the head-quarters of his Imper Majesty the Emperor.

On the site of the present Winter Palace, the banks of the Neva, was, in the reign of Pet the Great, the house of the High Admiral, Cou Apraxin. At the death of the latter it passed Peter II. After her coronation, the Empr Anne took up her abode in the Apraxin mansi but finding it too small for her numerous retin caused it to be pulled down in 1724, and trusted the new building to the Italian architec Rastrelli. The Winter Palace, however, was finished until 1762, in the reign of Catharine In December, 1837, it was destroyed by fire, reconstructed two years afterwards by the E peror Nicholas. The Winter Palace, as is w known, contains some of the most magnifice saloons in Europe. We need not enter into p ticulars, as they have been minutely descrit by special correspondents, and illustrated

rtists on the occasion of the marriage of the uke of Edinburgh with her Imperial Highness he Grand Duchess Marie of Russia.

esidences of the Members of the Imperial Family.

The Anitchkof Palace, the residence of the esarevich in the Nefsky Perspective; the Mikailofsky Palace, the residence of the Grand uchess Helen, aunt of the Emperor; the Marble alace, on the Neva, the residence of the Grand uke Constantine, brother of the Emperor; the alace of the Grand Duke Nicholas, another rother of the Emperor, on the Neva; the Palace f the Grand Duke Michael, youngest brother of he Emperor, on the Neva; the Palace of the rand Duchess Marie, sister of the Emperor, near he St. Isaac's Cathedral; the Palace of the rince of Oldenburg, cousin of the Emperor.

Suburban Residences.

The Yelagin Palace, on the Yelagin Island, esidence of the Emperor and Empress; Palace the Grand Duchess Helen, on the Kamennoy sland; Palace of the Prince of Oldenburg; the aurida Palace, a kind of Hampton Court; Peter he Great's old Palaces, on the Petroffsky sland, and at Ekateringoff, about four in numer.

Country Residences.

Tsarskoye Selo, the favourite residence of the mperor and Empress, about 17 miles from the apital, and Pavlovsky, close to the latter, conisting several palaces for the accommodation of e various members of the Imperial family; eterhoff, the residence of the Emperor and mpress, situated on the Gulf of Finland, about miles from St. Petersburg, contains a number separate palaces, old and new, extending with eir parks and gardens for several miles, some them dating from the time of Peter the Great. Then come the palaces of the various members the Imperial family, enumerated above in eterhoff, and the vicinity of it, numbering some n different establishments. Then there is the alace at Gatchino, the Emperor's hunting-seat, d the old Palace of Ropsha, in the vicinity of e capital. The Emperor has, besides a palace Livadia, on the south coast of the Crimea, o splendid ones in the Kremlin, at Moscow, d one at Warsaw. The Grand Duke Michael, ho is Viceroy of the Caucasus, has a palace at fflis and a country seat.

ROUND PRIMROSE HILL.

When the Roman settlers planted their colony the banks of the Thames, and founded London, ost part of the district to the north consisted a large forest filled with wolves and other wild imals. In the year 1218 the Forest of Middlesex was disafforested, but although portions ere cleared, St. John's Wood continued as late Queen Elizabeth's reign to be sufficiently dense r Babington and two of his fellow conspirators succeed in concealing themselves from the ogberrys of Lord Burleigh. At the same time, owever, Primrose-hill and its neighbourhood ere used as meadow land, and Nash the author dresses Kemp the actor in these terms:—Brother Kemp, as many albailes to thy person there be haicockes in July at Pancredge." he history of this district dates back to very rly times, if we may accept the name of arrow-hill as evidence that it was once the ene of a battle and place of sepulture for the in. There was formerly a Barrow Farm, and arrow-hill is occupied by the reservoir of the est Middlesex Waterworks, but the name survives in Barrow-hill place and road. The definite story of the place dates from the time when Sundry devout men of London" gave to the pper Hospital of St. James (afterwards St. mes's Palace) four hides of land in the field of estminster, and eighty acres of land and wood Hendon, *Chalcot*, and Hampstead. Edward I. nfirmed these gifts, but in course of time disensions arose between the convent and the bbey of Westminster, which Henry VI. put an d to by giving the custody of the hospital into e hands of the Provost and Fellows of his wly-founded college of Eton, and with it the fore-mentioned acres. In the twenty-third ar of Henry VIII.'s reign, the hospital was rrendered to the king, who turned it into a anor-house. The property of Chalcot and its ighbourhood was probably of little value, and doubt the Eton authorities had not much fficulty in getting it into their own hands again. ere they far-seeing enough to look forward to the day when its nearness to the capital would make the land valuable?

More than two centuries pass away, farmhouses are built, and the manor of Chalcot is divided into Upper and Lower, which are described as the Chalcots, but history takes no note of the place. However, in October, 1678, the eyes of all England are directed towards Primrose-hill, for there has been discovered the dead body of Sir Edmund Berry Godfrey, and the nation is wild with fear of the Popish Plot. The hill was famous for the primroses that grew upon it, and Barrow-hill, close by, was also called Greenberry-hill. Although the fields around were used for grazing, this place, covered as it was with brambles, was very inaccessible, and wonder was excited as to the means by which the body came there. Explanation was required, and false witnesses arose to supply it. Before we come, however, to the trial of the supposed murderers, it will be well to say somewhat about Sir Edmund Berry Godfrey himself; and, as Macaulay, in common with many others, calls him Edmundsbury, we will commence with his name. The first authority for the form we have used is to be found on the monument in the cloister of Westminster Abbey to the memory of a brother of Sir Edmund, where the knight is designated as Edmundus Berry Godfrey, but the late Mr. J. G. Nichols brought forward a still higher authority, viz., Sir Edmund's father. The following is an extract from the diary of Thomas Godfrey, of Lidd, Kent,—"My wif was delivered of another son the 23rd December, 1621, who was christened the 13th January, being Sunday. His godfathers were my cousin, John Berrie, his other godfather my faithful loving friend and my neighbour sometime in Grub-street, Mr. Edmund Harrison, the king's embroiderer. . . . . They named my son Edmund Berrie, the one's name, and the other's Christian name." The confusion has arisen partly from the likeness of the name to that of the celebrated town in Suffolk, and partly from the infrequent use at that time of two Christian names. Sir Edmund was a wealthy timber merchant, and lived at the river end of Northumberland-street, in the Strand. He was Justice of the Peace for the Court quarter of town, and was so active in the performance of his duties, that during the time of the Great Plague, in 1664–5, upon the refusal of his men to enter a pest-house in order to bring out a culprit who had furnished a large number of shops with at least 1,000 winding-sheets stolen from the dead, he ventured in alone and brought the wretch to justice. He was knighted for his conduct during the Plague, and Bishop Burnet says that he was esteemed the best Justice of the Peace in England. At the time of his death he was entering upon the great design of taking up all beggars, and putting them to work. He was a zealous Protestant and Church of England man, but was not forward to execute the laws against Nonconformists, nor to search for priests or "mass-houses," still he got mixed up in the Popish plot. He grew apprehensive and reserved, and told Burnet that he believed he should be knocked on the head, yet he took no care of himself and went about alone. One day he was seen, about one o'clock, near St. Clement's Church, and then never heard of again until his body was found in a ditch on the south side of Primrose-hill. The body was taken to the White House, or Lower Chalcot farm-house, where it lay for two days, and was seen by large multitudes. Burnet was one of those who went to the White House, and he describes what he saw as follows:—"His sword was thrust through him; but no blood was on his clothes or about him. His shoes were clean. His money was in his pocket, but nothing was about his neck, and a mark was round it an inch broad, which showed how he was strangled. His breast was likewise all over marked with bruises, and his neck was broken. There were many drops of white waxlights on his breeches, which he never used himself; and since only persons of quality or priests use those lights, this made all people conclude in whose hands he must have been." Four medals were struck to commemorate his death, on one of which he was represented as walking with a broken neck and a sword in his body. On the reverse of this medal St. Denis is shown bearing his head in his hand. Underneath is the following inscription:—

"Godfrey walks up hill after he was dead;
Denis walks down hill carrying his head."

A great procession, consisting of eight knights, all the aldermen of the City of London, and seventy-two clergymen, accompanied the body to the grave in St. Martin's Church, and a portrait of Sir Edmund was placed in the vestry-room. The press now teemed with pamphlets, reports, trials, &c.; in one the murder was charged to the Earl of Danby; in another, Garnet's ghost addressing the Jesuits is made to show the greatest delight in the horrors of the plot. Wishes are expressed,—

"That the whole nation with one neck might grow,
To be slic'd off, and you to give the blow."

The nation, driven mad by such vile trash, thirsted for revenge, and Miles Prance fixed upon Somerset House, the residence of Charles II.'s queen, as the scene of the murder. Three persons, viz., Robert Green, cushion-man to the Queen's Chapel; Lawrence Hill, servant to Dr. Godden, treasurer of the chapel; and Henry Berry, porter at Somerset House, were tried for the crime on the 10th of February, 1679, when the infamous witnesses Oates, Prance, and Bedloe declared "that he (Godfrey) was waylaid, and inveigled into the Palace, under the pretence of keeping the peace between two servants who were fighting in the yard; that he was there strangled, his neck broke, and his own sword run through his body; that he was kept four days before they ventured to remove him; at length his corpse was carried in a Sedan-chair to Soho, and then on a horse to Primrose-hill." In spite of the abandoned character of the witnesses and the irreconcilable testimony they gave, the jury found all the prisoners guilty, and Lord Chief Justice Scroggs said he should have found the same verdict had he been one of jury. The three men, all declaring their innocence to the last, were executed, and the law had its victims; but from that day to this the murder of Godfrey has remained an unsolved mystery. It was pointed out in a printed letter to Prance, 1681, that his story of Hill carrying the body before him on horseback could not be true on account of the condition of the district. "As to the place, it was a ditch on the south side of Primrose-hill, surrounded by divers closes, fenced with high mounds and ditches; no road near, only some deep, dirty lanes not coming near 500 yards of the place, and impossible for any man on horseback, with a dead corpse before him, at midnight to approach, unless gaps were made in the mounds, as the constable and his assistants found from experience when they came on horseback thither." It has been a popular belief that the name of Greenberry-hill took its origin from the names of the three supposed murderers, but this was not so; and Narcissus Luttrell, in his contemporary *Diary*, remarks on the singular coincidence of the names of Green, Berry, and Hill with the old designation of the hill.

Burnet describes the place as "about a mile out of town, near St. Pancras Church." A more accurate description would have been,—"The fields between Tottenham Court and Belsize," but although now that a wilderness of houses has grown up between St. Pancras and Primrose-hill, we do not look upon them as near together, yet in Burnet's time and long after, the church was the only landmark of importance in the neighbourhood. As late as the year 1777, St. Pancras old church was so rural that it was only inclosed by a low and very old hand railing, which in some parts was entirely covered with docks and nettles. Whitfield's Chapel in Tottenham-court-road; Montague House, Great Russell-street; Bedford House, Bloomsbury-square; and Baltimore House situated where Russell-square is now built, could all be seen from the churchyard.

By this time the White House had become a tavern and tea-gardens for the benefit of ruralisers, and was known as Chalk Farm. This name is a corruption from Chalcot, and we see its transitional form in Rocque's map of London (1746), where England's-lane, Haverstock-hill, is marked as Upper Chalk House-lane. What the etymology of Chalcot may be we cannot tell, but there is not a trace of chalk in the neighbourhood, and the whole district rests on London clay.

The next point in the history of Chalk Farm is the commencement of its notoriety as the scene of frequent duels. It was particularly suitable for this purpose, as it was near town, and at the same time quite secluded. Before the Regent's Park was planned, Marylebone-fields were looked upon as country, and few persons strolled as far as Primrose-hill. A notice of the various districts chosen by the duellists would form an interesting chapter in the history of London. When the town was

ill-lighted and worse-guarded, the duellists did not care to go far away. It is true they got into trouble if they crossed swords within the precincts of a Royal palace, but elsewhere they were pretty safe. Henry Jermyn fought a duel in St. James's Fields, and Covent Garden-square was frequently the scene of "affairs of honour." The irascible Dr. Woodward, one of the earliest of geologists, fought a duel with Dr. Mead under the gate of Gresham College. His foot slipped and he fell. "Take your life," exclaimed Mead. "Anything but your physic," replied Woodward. The necessity for leaving the heart of the town was acknowledged when Hyde Park came into favour. The "Field of Forty Footsteps," in the rear of Montague House, called also Long Fields and Southampton Fields, was a frequent resort of duellists. Chalk Farm for some years rivalled in popularity Wimbledon Common, where the Duke of York fought Colonel Lennox in 1789; Battersea Fields, where the Duke of Wellington fought the Earl of Winchelsea, in 1829; and Putney-heath, where Pitt met Tierney, in 1798, and Castlereagh and Canning fought in 1809. One of the earliest duels on record, as having taken place at Chalk Farm, was that between Captain Harvey Aston and Lieutenant Fitzgerald, on June 25th, 1790. Fitzgerald had the first fire, and shot Aston through the neck, who recovered, but was killed in another duel in 1793. On April 6th, 1803, Lieutenant-Colonel Montgomery and Captain Macnamara met near Primrose-hill on account of a quarrel in Hyde Park. Both were wounded, and Colonel Montgomery so seriously that five minutes after he was taken into the Chalk Farm tavern he expired. Captain Macnamara was brought to trial at the Old Bailey, but although the Judge summed up for manslaughter, the jury returned a verdict of "Not Guilty." The next encounter of importance was that between Tom Moore and Francis Jeffrey, which took place in 1806. Fortunately, although the principals were in earnest, the seconds seem to have managed so that the police officers arrived before the signal for firing was given. It was said also that the pistols were only loaded with blank cartridge, and an epigram was written at the time which ended:—

"They only fire ball cartridge at Reviews."

Byron alluded to this report in his "English Bards and Scotch Reviewers":—

"Health to great Jeffrey! Heaven preserve his life,
To flourish on the fertile shores of Fife,
And guard it sacred in its future wars,
Since authors sometimes seek the field of Mars!
Can none remember that eventful day,
That ever glorious, almost fatal, fray,
When Little's leadless pistol met his eye,
And Bow-street myrmidons stood laughing by?"

Moore has written a long account of the affair and describes the spot where the duel took place as "screened on one side by large trees." He also got Byron to add a note to his lines, to the effect that the pistol was actually loaded. A fatal duel was fought near Chalk Farm, on January 13th, 1818, by Theodore O'Callaghan and Lieutenant Bailey; and on February 16th, 1821, occurred the unhappy encounter between John Scott, the avowed editor of the *London Magazine*, and Mr. Christie, a friend of Lockhart, the supposed conductor of *Blackwood's Magazine*, which grew out of some articles in the *London* on the management of *Blackwood*. Mr. Scott was severely wounded, and assistance being obtained, he was conveyed on a shutter to the Chalk Farm Tavern, where he lingered for a little more than a fortnight. As late as the year 1847 Lieutenant Monro surrendered to take his trial for killing Colonel Fawcett in a duel fought at Chalk Farm on the 1st of July, 1843. He was tried for the offence at the Old Bailey, and found guilty of wilful murder, but was strongly recommended to mercy. Sentence of death was recorded against the prisoner, but this was afterwards commuted to twelve months imprisonment. By this time, however, the town was encroaching very much upon the solitude of Primrose-hill, and if duelling had not been put a stop to, the duellists would have been forced to seek a new place of meeting.

In 1827 the Provost and Fellows of Eton began to see that their property would soon become valuable, and they obtained an Act of Parliament (7 Geo. IV., c. 25, Private) enabling them to grant leases of lands in the parishes of Hampstead and Marylebone. Soon after the accession of Queen Victoria, endeavours were made to obtain Primrose-hill for the Crown, and a public Act was passed (5 & 6 Vict., c. 78) for effecting an exchange between Her Majesty and the Provost and College of Eton. By this Act Eton College received certain property at Eton, and gave up all their rights in the hill. In the schedules setting forth the particulars of the transfer we read of Shepherd's-hill, Square-field, Blue-house-field, and Rugmore-close, all in the immediate vicinity of Primrose-hill. The Eton property is now largely built upon, and the appropriate names of Eton, King's College, King Henry's, Provost, Fellows, Oppidans, and Merton roads mark its position.

There is little more to be said in the way of history. On May 29th, 1856, fireworks were exhibited on Primrose-hill in celebration of the Peace, as well as in Hyde, Green, and Victoria Parks. In 1864, under the auspices of a committee, an oak was planted by Mr. Phelps, the tragedian, on the south side of the hill, to commemorate the tercentenary of Shakspeare's birth. Improvements have been made at various times. Thus, 50 acres, at the foot of the hill, were enclosed and laid out as a park; appliances for gymnastics were erected near the Albert-road; and later in time lamps were placed in the park and over the brow of the hill. These have a particularly pretty effect when lighted up at night. Few places are more appreciated by the popular pleasure-seeker on Easter and Whit Mondays than Primrose-hill, which is often so crowded that at a distance it seems as if one could walk upon the heads of the people congregated there. The summit is 206 ft. above Trinity high-water mark of the Thames, and an exceedingly fine view can be obtained from it on a clear day. It is said that on the morning of the frightful gunpowder explosion on the Regent's Canal last year, an artist was waiting there to watch the rising of the sun, and to see London gradually awake. He saw and heard more than he expected.

The old manor-house of Upper Chalcot still remains in England's-lane, but probably will soon be improved out of existence, and the site of Lower Chalcot is marked by Chalk Farm and Chalcot-terrace. In conclusion, therefore, we would suggest that, as the district bounded on the north by Belsize and Hampstead, on the south by Regent's Park, on the east by Haverstock-hill and Kentish-town, and on the west by St. John's-wood, is at present without a name, the old one of Chalcot should be revived. This would be far better than that of South Hampstead, and so good and ancient a name as Chalcot should not be allowed to die out.

NEW BOARD SCHOOLS IN GLASGOW.

WHILST one of the public bodies, viz., the Improvement Trust, is busy in the endeavour to remove from Glasgow the stigma which has fallen upon it, in having such an exceptionally high death-rate, by demolishing whole districts of unhealthy dilapidated dwellings, and thus indirectly causing the erection of numbers of new houses in the outer parts of the city, another body,—the School Board,—is making laudable efforts to provide suitable accommodation for the education of the rising population. Without taking into account the additions to existing premises, which are in themselves very numerous, it may be mentioned, on the authority of a recent statement made by the chairman (Mr. Alexander Whitelaw, M.P.), "that the Board had entered into contracts for building schools, to accommodate 9,675 scholars." Reports from the various architects submitted to the Board, at their meeting, show that satisfactory progress is being made with all these new buildings, and in some cases the schools will shortly be ready for opening. It may be stated generally, with regard to all the new schools, that they will be large and lofty, with spacious class-rooms, ample ante-room, and lavatory accommodation, with efficient heating and ventilating apparatus. Whilst the one building will, in each case, be common to both sexes, there will be separate entrances and playgrounds, and even separate staircases to enter the class-rooms, so that the boys and girls may never associate except when under actual instruction in the eye of the teacher. Each of the five firms of architects to whom the designs of the building have been entrusted, has adopted its own peculiar method of carrying out this arrangement.

Briefly describing two of the new schools situate in the same district,—in Kennedy-street and Gourlay-street, Springburn,—we find that each will accommodate 840 pupils, and their estimated cost is 7,700*l.* and 7,500*l.* respectively. The designs have been prepared by Mr. David Thomson, of St. Vincent-street. Externally, the will be plain, substantial structures, of two stories There is, however, a belfry on the principal gabl of the Kennedy-street School. A large infants school will occupy the ground-floor, with tw large class-rooms opening from it by folding doors. Over the infants' school there will b a senior class-room of similar dimensions; an on the same flat a large industrial school-roo for girls only, and a large drawing class-roo in which the two sexes will receive instructio together. Mr. Thomson has also prepared th designs for a third school in Centre-street, some what differing from the others merely i external appearance, and the estimated cost which is 6,500*l.*

Messrs. James Salmon & Co. have in han three new schools, one of which the Oatland Public School, Caledonia-road, is to be the mos commodious, for which the Board has up to th present time contracted. It will have accommo dation for 1,300 pupils, and its estimated cost i about 12,000*l.* It has a most eligible site, an will be a neat structure in the Queen Anne style with a central tower. The dimensions are,— length, 124 ft., and breadth, 80 ft. Suitabl accommodation has been provided for the mixed education of boys and girls, as well as infants For the boys and girls there are separate en trances from the various playgrounds, the stair case rising from the centre of the building. Th Crookston-street School, Tradeston, from design by the same architects, and which, in commo with that of Oatlands, is nearing completion, wil accommodate 1,135 pupils, and its estimate cost is 11,200*l.* Externally it is a fine-looking building, in the Elizabethan style, with pointed gablets and Mansard roofs, the ridges of the roof being ornamented with red-tile cresting. It i two stories in height, and measures 144 ft. by 50 ft. over the walls. The internal arrangemen is somewhat similar on the ground and upper floor, the large mixed school-rooms communicating by folding doors with class-rooms. The infant-school, however, occupies the south side o the ground-flat, whilst the girls' industrial schoo is on the south side of the upper story. The Green side School, also designed by Messrs. Salmon and the building of which has just commenced on ground purchased from the Improvement Trustees off Main-street, Gorbals, is intended t accommodate 750 scholars. The dimensions o the structure will be 80 ft. by 50 ft., and the arrangements will be similar to those carried out in the other two schools built according t plans by the same architects. The cost, it estimated, will be about 8,000*l.*

The plans for the Rockvilla School, Possil road, Henderson-street, and Tureen-street Schools, have been prepared by Mr. John Honeyman. The first of these will accommodate 900 pupils, and will cost about 6,000*l.* It will be in an effective style of architecture. On the ground floor are two large schoolrooms 43 ft. by 26 ft. connected with each of which are two class rooms about 20 ft. by 20 ft. A similar arrange ment is observed on the upper floor, the girls industrial school, the school for senior pupils and the drawing-class room being on the flat Perhaps the most noticeable feature in connexion with this building, however, is the novel plan o ventilation. The heating is by means of hot water pipes, which are carried round the various rooms inside the cornice, into which a supply of fresh air is also introduced by means of small gratings in the walls. Provision is thus made for a fresh current of hot air circulating constantly from the roofs of the various departments, while the foul air is drawn through gratings in the skirting, into flues placed under the respective floors, these flues again communicating with a central shaft reaching from basement to roof of the building. Henderson-street Schools, Great Western-road, will be in the Gothic style, having a corbelled out, or bay window in the centre of the façade, and a belfry surmounting the principal entrance. It will accommodate 900 scholars, and is estimated to cost 6,500*l.* The building in Tureen-street, which is to be in the Italian style will cost, according to the estimate 5,800*l.* and will furnish accommodation for the education of 750 pupils. The heating and ventilating apparatus in the last-named structure is arranged on a different principle to that carried out at Rockvilla, the hot-water pipes run round the floor, and the vitiated atmosphere is drawn off at the ceiling, fresh air being introduced through gratings situated about 8 ft. from the floor of the various apartments.

Thomson-street School, Dennistoun, which is from plans designed by Mr. James Thomson, of the firm of Baird & Thomson, will accommodate 886 scholars. It will be in the Italian style of architecture, and will consist of two wings, the centre portion terminating in a tower. Mr. Thomson has also furnished plans for extensive additions and alterations at the school in Hozier-street, Bridgeton, so as to make it available for the instruction of 276 pupils. Mr. Hugh H. Maclure, in addition to superintending alterations at several existing establishments acquired by the School Board, has designed three new schools in course of erection in Sister-street, Bridgeton, Barrowfield-street, and Rumford-street, to accommodate respectively 775, 742, and 711 pupils. They will be neat structures of two stories, in the simple Classic style, containing such necessary internal arrangements as have been stipulated for by the Board, and sanctioned by the Education Department.

PERMEABLE AND IMPERMEABLE WALLS.

IN the course of a lecture on "Air and Ventilation," at the Society of Arts, recently delivered by Mr. W. N. Hartley, F.C.S., some observations were made which involve the consideration of the relative advantage and disadvantage of porous and non-porous materials for the walls of buildings,—a question which we have for some time contemplated.

Mr. Hartley said,—the ventilation of a house by means of the passage of air through the walls can be shown in an exaggerated form by the passage of hydrogen through a porous material. This is not to be considered by any means what takes place in a house; that is to say, we have not the passage of hydrogen, but we have a passage of cold air through the walls of a room into the house; and this experiment is made with hydrogen simply because it is more easily known to you than by any other means. Here is a porous vessel which may be taken roughly to represent the wall of a house, and if I bring this jar of hydrogen gas over the porous vessel, you will notice the passage of the gas through the porous vessel causes a pressure into this vessel, which ejects a stream of liquid. It has been proved, by experiment, by Pettenkofer, of Munich, that the passage of air through the wall of a house is very considerable. He examined the walls of an ordinary room in his own house, and found the change of air through the brick walls in a room, the cubic contents of which were 2,650 feet, when the difference between outside and inside amounted to 34° F., amounted to this:—

	Cubic feet.
	2,650
With a fire.....	3,320
All crevices stopped	1,060
With a difference of 7° Fah. ...	780
Window open 8 ft. square	1,060

This illustrates what takes place in winter, when one's repugnance to cold air causes one to shut the door and windows and have a roaring fire. The air which cannot get in by crevices or by doors makes its way through the walls, that is to say, the doors and windows being shut, a certain increased amount of air passes through the walls into the room. What is the advantage of this? It is this, that we are supplied then with fresh air free from draft. Ventilation is not supplying fresh air, but supplying it free from draft, and this natural source of ventilation gives us really true ventilation. The amount of carbonic acid in the air may be taken on an average as about four parts in 10,000, and in order to keep the air fresh we should not allow the pollution of the air to extend to a greater quantity than two parts in 10,000 over this. Therefore the extreme of carbonic acid in the air is six parts in 10,000. When the amount is more than this, the air begins to be close, that is to say, we begin to feel by the nose that there is a certain pollution in the air which you cannot exactly account for. Six volumes in 10,000 is the amount of carbonic acid which is allowable, and all above this must be considered unwholesome vitiation of the atmosphere. Then in close places, that is to say in places which contain more than six volumes in 10,000, of which there are many—workshops, offices, public buildings, theatres, all contain, generally speaking, much more than this—we have an atmosphere which can be known as unwholesome simply by the nose. The nose tells us there is something in the air which ought not to be there. What is the reason of this? It is not carbonic acid, because we cannot detect carbonic acid by the nose. It is a certain amount of organic matter thrown off from the lungs, and, generally speaking, from the body in some form or other, and this organic matter rises in proportion directly with the carbonic acid. Therefore, if we measure the amount of carbonic acid in the air, we measure the amount of pollution by organic matter, and by determining the carbonic acid in the air, which we can do very accurately by chemical analysis, we also determine the amount of organic matter which vitiates the air. We do not know the organic matter, but we know there is more than there should be. In buildings in which the natural ventilation is not allowed free play, and in which no extensive mechanical appliances are used to contribute fresh air, this vitiation of the atmosphere goes on to a very great extent. For a few examples of this we have the analyses made by Dr. Angus Smith, and we find by this table that, in workshops, he has found the air so bad that it rose as high as 30 parts in 10,000; that is to say, the carbonic acid was very nearly ten times as much as it should have been. In theatres he found it rose to 32 volumes in 10,000 of air; in mines, 78·5, an enormous quantity; and the largest amount he ever found was 250 in 10,000. Here is a table giving an analysis of air in different places, made by Dr. Angus Smith. In a Chancery court, 7 ft. from the ground, with the doors closed, he found the proportion was 19·35 carbonic acid to 10,000; in the same court, 3 ft. from the floor, 20·3; in the same building, with the doors open, that is to say when the fresh air had entered, it was 5·07 and 4·5. Then in the Strand Theatre, in the gallery it was 10·1, in the boxes 11·1; in the Surrey Theatre, at 12 p.m., 21·8; in the Olympic, 8·17; in the Olympic, in the boxes, 10·14; in the Haymarket, 7·5; and so on. In hospitals, where great care is taken to have large free space in the room for each patient, and a supply of fresh air regularly admitted, the amount does not rise above that of the outside air. In the Queen's Ward of St. Thomas's Hospital, no more than in the outside air; in the Edward's Ward of the same hospital it was 5·2. These tables show the large vitiation of air taken in crowded buildings, and in the case of the law courts it was almost as bad as any.

The Chairman, Dr. Odling, said there was a question he should like to ask Mr. Hartley with regard to the nature of the walls through which the diffusion was noted, whether there was any great variations observed, according to the nature of the wall itself, or its covering; whether, for instance, there was any difference in painted or papered walls, or those varnished over with turpentine and linseed oil.

Mr. Hartley said, with regard to the ventilation of the walls, there was no doubt that if the wall was papered and varnished it would prevent the amount of air coming through. Pettenkofer described his experiments as having been made in an ordinary room in his house, which he stated was built of brick, plastered and papered. But there was this matter in connexion with the passage of gases through walls. If the stone used in building was not porous it was a hard stone, and the consequence was, irregular pieces were used for building, and more mortar was required; and thus a more porous material than stone was used, so that in that way a curious compensation for the non-porosity of the stone was obtained. Pettenkofer had given a curious instance of this in the case of a house built of iron slag, a substance of the nature of glass, and not in the slightest degree porous. This was cut into regular blocks, so that very little mortar was required, and when the house was built it rapidly got dry; the walls were not absorbent, and consequently the building material was not saturated with water. Very shortly afterwards the house was inhabited, however, it was pronounced to be very damp, and this dampness continued and increased until it became almost uninhabitable; in fact it was the worst house on the estate. The reason was this, that the walls not being porous, the amount of vapour given off within the house, from cooking, washing, and so on, was larger than that outside, and not being carried away through porous walls, or up the chimney by means of air passing into the house through the porous walls, condensed on the walls, which were cold. He might add that Pettenkofer found that in an ordinary wall of his house the amount of air which passed through a square yard in an hour was something like forty-three gallons, the difference of temperature between the inside and outside being he believed 16°.

The Chairman said no further evidence of the importance of the subject could be needed than the illustrations he had himself given with regard to the condition of things in hospitals and various other public buildings. He remembered, some years ago, having occasion to investigate the mortality at the Lying-in Hospital, for certain periods during which systematic ventilation was carried out, and during other periods in which it was abandoned, and difference in the mortality was most surprising, though he would not trust his memory to give the exact figures. There could be no doubt that very many lives were lost in that way for want of sufficient attention to this matter, which affected all in a great degree, but the sick in a pre-eminent degree. Mr. Hartley had raised very many practical points, particularly that of ventilation through the walls of rooms; and with regard to the nature of wall-surfaces, he had no doubt that what he had stated, basing his observations on Pettenkofer's results, was perfectly true, and that, as a general rule, one wall was much the same as another. At the same time, with regard to plastered, distempered walls, judging from a knowledge of the character of diffusion, he should think in those cases there would be really very little obstacle to the passage of gases; and probably the same thing would apply to the majority of papers. But subject to any accurate experiments upon the subject, he should be inclined to think that varnished papers or painted walls, on which there was a thick layer of either paint or varnish, would in all probability tend to interfere with this result. At any rate, it was well that attention should be given to this subject, for after all there was no doubt that the amount of air capable of entering in this way through the walls was of considerable importance. It might not be of such magnitude in the case of crowded assemblages, such as theatres, but in ordinary dwelling-rooms there was no doubt that insensible ventilation through the walls was a thing very much to be regarded.

The use of enamelled tiles, glazed bricks, or impenetrable solutions on the walls of buildings, resorted to for the purpose of keeping out wet, also keeps out the air, and may do as much harm one way as good another. Damp walls are an evil, but impermeable walls are little less so. We shall be glad to hear what some of our readers have to say on the subject.* The interior walls of some of our hospitals are coated with non-absorbent materials. What effects have been noticed there? We have before now pointed out the evils likely to arise from lining the interior walls of a house with glazed tiles.

THE MOATED MOUNDS, CAERLEON.

SIR,—In the interesting article upon "Moated Mounds," which your publication contains, there are one or two slight inaccuracies which, with all deference to such a high archæological authority as "G. T. C.," I will ask your permission to rectify.

In his notice of the Mound in the castle-grounds, Caerleon, he states that the "top has been much cut about, and was recently hollowed as a reservoir." This is not so, but whilst it was in the possession of the late Mr. John Jenkins, jun., that gentleman had the circumference of the top raised several feet, which thus caused the hollow in the centre.

In the enclosure thus formed there used to be an excavation which was generally filled with water, and this circumstance, I have no doubt, has unconsciously led "G. T. C." into error.

This excavation was simply a tank which formerly existed in connexion with a summer-house, but both these have disappeared for some time.

It is also stated that this property has come to the descendants of the Morgans of Tredegar. For many years, at all events, it has ceased to belong to that very old and noble family; for, since 1866, I happen to be the fortunate owner of this archæological bijou, and previously to that it belonged to the late Mr. John Jenkins, jun., who laid out the grounds at a great expense, planted the Mound, and enclosed the whole with a very strong castellated wall.

* The question is mooted in a useful little book published by Smith, Elder, & Co., "Sanitary Arrangements for Dwellings," by William Eassie, C.E. The author maintains that it is "better to build with very porous bricks, than with bricks which cannot absorb water at all, nor transmit air."

The grounds surrounding the Mound and covering the site of a Roman villa, are rich in remains of that period, as the little Museum of Caerleon testifies, containing, as it does, many articles of great archæological interest, which were found there and presented to that institution by the late Mr. John Jenkins. A court-yard of some cottages belonging to this property is paved with Roman bricks found in these grounds, and many still bear a good impression of LEG II AVG, and even during the few years since it has been in my possession several Roman coins have been disinterred. Amongst them, Nero, Antoninus Pius, Gallienus, Carausius, Constantine (Urbs Romæ: Soli invicto Comiti) (London Mint), and Helena (Securitas Reipublicæ).

There is a tradition in the place that formerly from the top of the mound might be seen the Bristol Channel, the view of which is intercepted by the Christchurch-hill, and, if so, the height must have been considerably greater than it is at present, and upon it may have stood the "Giant's Tower," of King Arthur's time, or the gigantic tower Giraldus speaks of.

Caerleon, formerly the seat of an archbishopric, is rich in old associations. It formerly enjoyed the primacy of Britain, and with it the names of Saints Julius, Dubritius, and David are intimately woven. So great, indeed, was its worldly splendour and gaiety, that St. David, pining for greater solitude, begged the Pope to have his see removed to a more retired spot, and for this reason it was transferred to St. David's. The grounds surrounding the Mound, now inclosed by very massive walls, is indeed a hallowed spot, for there King Arthur, as his legends tell us, formerly held his court, and there he always kept the Feast of Whitsuntide, and there the old Welsh and Norman lords revelled long after the Romans had left, and the former occupancy of them by the second Augustan legion had become a matter of history.

Pray pardon this digression, but to readers of Tennyson and lovers of archæology these notes may be interesting. ROBERT F. WOOLLETT.

THE USE OF THE HAND AS AN OPTICAL INSTRUMENT.

IN an interesting paper on this subject in the *Illustrirte Industrie Zeitung* (No. 6, 1875), Dr. F. Thomas, of Uhrdorf, observes, that although artists are well aware of the advantages of monocular vision and the use of the hand as an impromptu stereoscope for the inspection of pictures, the public generally knows nothing of them. Any one who carefully watched the crowds that daily thronged the avenues of the late Vienna Exhibition might have seen how very, very few persons amongst them ever availed themselves of this ready resource.

And yet, how different is the appearance of a really good picture thus seen and the same viewed in the ordinary way by binocular vision! Regarding it with a single eye through the hollow of the hand as through a stereoscope, we get a relief, a substance, which otherwise is more or less wanting; in a word, we get the third dimension, *depth*, which is indispensable to realistic effect. Nor is the method applicable to the contents of picture-galleries alone: every photograph, every engraving and print of correct design, may be beneficially treated in the same way. As with the stereoscope, so with its impromptu substitute, we get increased focal length, and with it the several artistic advantages thence accruing. On the other hand, defects in drawing are ruthlessly exposed by the same means. Trifling errors in perspective, which might have passed unnoticed under ordinary circumstances, stand revealed in their full deformity.

Less familiarly known, perhaps, is the aid that may be derived from this use of the hand in correcting our notions of the *size of artistic objects*. Take, for example, a portrait,—say, that of Prince Bismarck in the *Illust. Zeitung* for 1863; regard it attentively with one eye through the hollow of the hand, the other eye being shut. The figure stands out boldly in relief. Open the other eye and remove the hand, and the illusion vanishes at once. The appearance of relief has gone, but the figure looks *larger than before*. Photographs are particularly well suited to an experiment of this kind, as with them there is no destruction of the stereoscopic effect, as sometimes happens with prints and engravings.

Here the causes of the illusion are evidently mental. Just as previous conceptions of the size and colour of a distant mountain may be changed by placing the observer's head in some unaccustomed position, so in the case in question we have to deal with psychological, not physiological causes. By regarding the object with one eye only through the hollow of the hand, we unconsciously place ourselves at the artist's standpoint; and as he saw it at the moment of execution, so must we see it to realise the effect aimed at. By removing the hand, this effect is destroyed, and the figure comes before us with that *apparent* increase of size which even the most familiar objects acquire by closer approach, irrespective of their real magnitude. A well-known illustration in point is, that the moon's disc, when close to the horizon, may be reduced to its ordinary dimensions by thus viewing it steadily through the hollow hand.

With juster perceptions of the magnitude and relative dimensions of objects, monocular vision combined with the stereoscopic use of the hand gives us, also, a correcter appreciation of the effects of reflected light. And this applies not only to the confused appearance occasioned by the interposition of highly reflective media between the object and the observer, but also to artificial reproductions of the same effect. Look at the "Imperial Service of Bohemian Glass," in the *Illust. Zeitung*, No. 1,577, with one eye, through the hollow of the hand, and note how boldly the several objects stand out, and how well the glitter of the glass is reproduced. Observe the same in the ordinary way, by unassisted vision, with both eyes, and how crude and unreal appear the patches of white light on the several objects!

Another point ignored in every treatise to which Dr. Thomas has had access, is the effect of the hand when thus used, in modifying and correcting our perceptions of colour. The rays of the setting sun are flooding the landscape with golden light. Prominent in the distance stands forth a church-tower lighted up with a rich orange glow. By regarding it attentively through the hollow of the hand, and opening and closing the latter suitably, the tower can be made to assume any intermediate tint between the white it really is and the orange it has assumed in the rays of the western sun. The woods, too, dark, sombre, and night-like to the unaided vision, in like manner can be made to resume the hues they wore in the broad light of noonday. A bright patch on the far distance shows a soft subdued white, and we notice then for the first time that to the unassisted eye it presents a bright golden colour.

Indeed, our conceptions of colour are mainly dependent on comparison—contrast. But these are quite inadequate to enable us, under all circumstances, to detect and discriminate between minor differences of shade by ordinary unaided binocular vision. For that purpose, we must have recourse to the hollow of the hand, looking through it at the object with one eye, and comparing the effect observed with that produced on the other and unshaded eye. Both eyes may here be open.

In such cases, the chief point is not monocular vision, but the shading of the eye by the hand thus applied. As with a Nicol's prism, we thus restore the equilibrium of the blue light diffused through the atmospheric regions—which in the landscape above referred to was overpowered by its complimentary colour, the orange emanating from the sinking sun—and are so enabled to see objects under the hues they would present when viewed by the white light of a noontide sun.

OUR IMPORTS OF TIMBER.

THE recently issued returns of the Board of Trade, showing the imports and exports of the United Kingdom for the past year, give some interesting information concerning the quantity and value of timber brought into this country from abroad.

During 1874 we find that Russia, Sweden, and Norway, Germany, British North America, and various other countries were laid under contribution to supply our wants in this respect. Of hewn timber, Sweden and Norway yielded the largest supply, viz.: 622,810 loads, valued at 1,405,701*l.*; Russia comes next with 496,732 loads, worth 1,202,240*l.*; our North American colonies supplied 476,375 loads, the value of which is given as 2,157,718*l.*; from Germany we received 299,434 loads, valued at 1,080,218*l.*; and from various other sources 552,043 loads were received, worth 2,019,788*l.* These figures give a total of 2,447,394 loads, and 7,865,665*l.* Besides this, the following quantities of wood, sawn, split, planed, or otherwise dressed, were received:—

From	Loads.	Value.
Swedes and Norway	1,520,528	..... £4,927,027
British N. America.....	1,076,188	 3,339,386
Russia	937,643	 3,032,138
Other Countries	270,890	 1,081,740
	3,805,247	£12,400,291

And "staves" of all dimensions, were imported to the extent of 124,341 loads or 924,914*l.*

Mahogany is honoured with special and separate notice, and figures from 65,011 loads valued at 639,558*l.* These figures thus show that a total sum of 21,830,428*l.* was spent by this country on foreign timber.

CHRIST CHURCH, WESTMINSTER BRIDGE ROAD.

THIS building, of which we give an interior view, is now in course of erection at the junction of the Westminster Bridge road with the Kennington-road. It is being built with the object of continuing the work hitherto carried on in connexion with the building known as "Surrey Chapel," situated in the Blackfriars-road, which was founded by the Rev. Rowland Hill in 1783. The foundation-stone of the new building was laid in the summer of 1873, by Mr. Samuel Morley, M.P.

The church will accommodate about 2,000 worshippers, and the aim has been to secure a thoroughly ecclesiastical and architectural building, and, at the same time, to bring each individual, as far as practicable, within hearing and sight of the pulpit. This led to the arrangement seen in the view, namely, a cruciform church consisting of short nave and transepts, with aisles in the usual manner, meeting in a large central octagon about 55 ft. in diameter. The leading idea is similar to the arrangement found in Ely Cathedral. The eastern arm contains the choir, and has an apsidal termination. The floor of this portion is raised 4 ft. 6 in. above the level of the church, and is approached by a flight of nine steps. Round the apse are canopied seats for the elders of the church, with a central stall for the "Presbyter." The two windows in the apse will contain painted glass by Messrs. Clayton & Bell, representing subjects from the passion and triumph of Our Lord. The eastern compartment will not be pierced. The large window of the north transept will also be filled with painted glass by Mr. Drake, of Exeter, representing the miracles of Our Lord. There will also be painted glass in other parts of the church.

The main piers of the central octagon are of Portland stone; the bases are of Tenby black marble. The vaulting shafts throughout are of various coloured marbles polished. The central octagon and the choir will be groined in wood-work, with moulded wood ribs. The height to the central boss of the octagon will be about 70 ft.

In connexion with the church are a tower and spire standing almost detached. The height to the top of the spire is about 200 ft. The lower stage of the tower will be groined in stone, and will form one of the principal entrances to the church. The tower is being erected as a monument in commemoration of the abolition of slavery, and has been called the "Lincoln Tower." The cost was in great part raised by the Rev. Newman Hall, in America; and the memorial stone was laid by General Schenk, the American ambassador to this country.

In addition to the church there are a school-room, a lecture-hall, facing the Kennington-road, capable of accommodating 800 persons, with class-room and other accommodation; also an infants' school with class-room, &c.; vestries for the minister, elders, and choir respectively, a house for a resident verger, committee-rooms, and other accommodation. The external designs throughout are of Portland stone; the walling is of Kentish rag, and is a good specimen of masonry. The foundations were executed by Mr. W. Higgs, contractor; the superstructure by Messrs. Perry & Co., of Bow. The entire cost of the various buildings, including heating, lighting, &c., will be about 45,000*l.* The architects are Messrs. Paull & Bickerdike, of Adam-street, Strand.

Christie's Patent Life Rafts.—The description given of these agrees pretty fully with a suggestion made in these pages some time ago.



CHRIST CHURCH, WESTMINSTER BRIDGE ROAD.—INTERIOR VIEW (LOOKING EAST).

Messrs. Paull & Bickerdike, Architects.



STAINED GLASS WINDOW RECENTLY ERECTED IN THE CHAPEL OF THE LICENSED VICTUALLERS' ASYLUM, OLD KENT ROAD, LONDON.

THE LICENSED VICTUALLERS' ASYLUM.

NEW STAINED GLASS WINDOW.

THE Licensed Victuallers' Asylum, which is situated in the Old Kent-road, was established in 1827 for the purpose of providing habitation and other necessaries for the distressed members of the trade and their wives or widows.

On the 28th May, 1828, the foundation-stone was laid by his late R.H. the Duke of Sussex, who had a short time previously consented to become the patron of the institution, and the centre portion of the building, consisting of forty-three houses, was erected; in 1831 the south wing was built, and in 1833 the north wing, each containing twenty-nine dwellings, which completed the original design of the asylum.

In 1842 her Majesty granted a charter of incorporation, and in the following year his R.H. the late Prince Consort consented to become the patron of the society upon the demise of the Duke of Sussex.

The candidates for the benefits of the asylum being numerous, and steady progress having been made for some years, it was deemed advisable to extend the accommodation. Consequently, in 1849 it was determined to erect twenty-three additional houses, the foundation-stone of which was laid by the Prince Consort, and the block was designated the Ladies' Wing. In 1858 further houses were commenced to be built, which were named the Albert Wing, the Prince Consort again attending to lay the first stone. This wing consists of thirty-four houses, and in 1866, the Smalley Wing, comprising ten habitations, was erected, the foundation-stone being laid by H.R.H. the Duke of Edinburgh. This addition completed the asylum as a building, and it now consists of one hundred and seventy separate and distinct houses.

The expense of the Institution exceeds 7,000*l.* per annum, nearly the whole of which has to be raised by voluntary contributions.

Upon the grounds is erected a marble statue to the memory of the Prince Consort, and on the 9th August, 1864, his Royal Highness the Prince of Wales honoured the institution with his presence to unveil the same, having also a short time previously consented to become the patron of the asylum.

Some few years since, the chaplain to the asylum suggested that the chapel should be adorned with stained-glass windows, since which time twelve works of art have been presented to the Institution, nearly the whole being erected under the superintendence of the Society's past chairman, Mr. Thomas Whaley. The expense of the first window was raised by subscriptions in memory of the late Mr. William George Drew; another to perpetuate the memory of the late Mr. Thomas Jones, who for thirty-four years was secretary to the Institution; the remaining windows being the gifts of the following gentlemen:—Sir Thomas White, alderman; Mr. John H. Foster, president of the Society's festival in 1866; Mr. Dodshon Foster; Mr. Henry Doo Rawlings, president of the festival in 1868; Mr. Leer J. Drew; Mr. William Yardley, chairman in 1874; Mr. Henry Phillips; Mr. George Richard Speedy; Mr. James William Thurston; and Mr. Frederick Strange.

In addition to the stained-glass windows, several handsome marble tablets are erected in the chapel to the memory of the following deceased benefactors, viz.:—H.R.H. the Duke of Sussex; H.R.H. the Prince Consort (patrons of the Institution); Mr. Joseph Proud Hodgson, projector of the asylum; Mr. William Adams Larby, the first chairman of the Institution, 1827-8 and 1829; Mr. Edward Huggins; Mr. Samuel Beeton, chairman 1830; Mr. John Vousley, chairman 1831; Mr. Charles Wilson, chairman 1834; Mr. William Wallis, chairman 1845, who also bequeathed nearly 500*l.* to the Institution; Mr. Charles Kemp, chairman 1846; and Mr. Thomas Jones, late secretary.

The present chairman of the Institution is Mr. C. J. Coles, of the White Conduit House Tavern, 14, Barnsbury-road; and its secretary, Mr. Alfred L. Annett, whose office is 67, Fleet-street.

Mr. James Hallett, the chairman of the past year, feeling that the chapel would not be complete, in respect of stained-glass windows, unless one adorned the chancel, intimated his willingness to contribute 100*l.* towards the expense of obtaining it; and his colleagues on the board of management, in accepting his generous contribution, expressed their intention of personally defraying the balance of the expenses attending the production of the window, and the necessary alterations for the reception of it. These alterations were carried out by Mr. F. Blott, of Stamford-street, under the superintendence of the Society's architect, Mr. W. F. Potter, of Guildford-street, Russell-square, the window being executed by Mr. Alex. Gibbs, of Bloomsbury-street, who is at the present time engaged in the preparation of the decorations of Keeble College, Oxford, the outlay upon which will amount to some thousands of pounds.

The new window was unveiled on the 24th of January last. The subject of it, as our engraving shows, is "The Descent from the Cross," and it has given much satisfaction to those for whom it was executed. The following inscription, cut in marble, appears at the foot of it:—"This east Window is the gift of the Chairman and Board of Management of the Asylum for the year 1874.—James Hallett, chairman." The names of the trustees and governors of the Institution, and also those of the Rev. W. G. Martin, M.A., chaplain, and Alfred L. Annett, secretary, appearing at either side of the shield, also cut in marble.

A MASTER'S VIEW OF TRADE-UNIONISM.

MR. PETER GRAHAM has published the lecture "On the Tendency of Trade Unionism," delivered by him at the Quebec Institution.* Mr. Graham explains that he had promised to deliver this lecture at the latter end of September or early in October last, to show that the choice of a subject could have no reference whatever to the events that occurred in November at one of the factories of his firm, and he disclaims any intention whatever of taking a one-sided view of this important subject. Mr. Graham, we believe, has always manifested interest in the welfare of the working classes, and his statements may doubtless be accepted as the result of honest convictions, whether their correctness be acknowledged or not. We print some portions of the lecture:—My opinion is, that a history of strikes, with a debtor and creditor account appended, would show that when they have been successful, the result gained has never been worth the sacrifice of wages and the suffering endured while they lasted. If this be the result of successful strikes, how great must be the loss, severe the hardships, and sad the misery and disappointment when they fail? If my opinion is well founded, it follows that strikes are an unmixed evil; and as the tendency of trade-unionism is to encourage and support them, the operations of the unions are, so far, injurious to the interests of both labour and capital, which, when rightly understood and directed, are identical. It may be urged that the large increase of wages which has taken place in some trades, and the shortened hours of labour, have been brought about by the organisation and action of trade-unions. I think the unions have had but little real influence in the achievement of these results, and that they are mainly due to the gradual removal of commercial restrictions, dating from the repeal of the Navigation Laws, the final triumph of free trade in the repeal of the Corn-laws, and the gold discoveries in California and Australia. I am confirmed in this view by the fact that a general increase of wages has taken place, and in some cases to a greater amount, among classes which have had no unions.

The tendency of unionism is to reduce, or keep down, all workmen to the same dead level, no matter how much more capable and industrious some may be than others, and any member of a union who does a fair day's work, if working for daily wages, is looked upon with suspicion, and if he does more he is warned that he must restrict his work to the limit of what slow, or ordinary, workmen can do, failing which he may be expelled from the union. I will take the case of joiners in London, whose wages have been advanced from 5*s.* per day, or 6*d.* per hour, to 9*d.* per hour, within twenty years, or 50 per cent., and the working hours reduced; the latter operating as an increase of establishment charges in proportion to the diminished production. Sir Edward Watkin very recently stated that the reduction of working hours from ten to nine at Ashford, cost the shareholders of the South-Eastern Railway 4,900*l.* a year. But this is not the only change. One would naturally think that, as the working hours were reduced, the work per hour would be at least equal to what was done before, instead of which it is 20 per cent. less. I have frequently, on walking through a joiners' shop, observed with anxiety and regret how the men were playing with their work, or carefully trying how not to do it, and thus acquiring a slow habit of working or partially wasting their time. There is no branch of mechanical industry in which machinery has been more extensively introduced than in joiners' work; in fact, all the hardest or most laborious operations are now done by machinery, such as sawing, planing, mortising, and tenoning, and running mouldings, leaving nothing but light and easy work to be done by manual labour. The use of machinery has thus been of enormous advantage to the working joiner, and has also, in some degree, moderated the great increase of cost in joiners' work in building and other operations.

There is a slight drawback, however, to these advantages, as, thanks to the vexatious restrictions and regulations of the unions in other branches of the building trade, the men employed have to pay an increased rent for their houses, or lodgings, in common with the rest of the community, and the cost of building having, through the action of trade-unions, increased at least 25 per cent., rents have advanced accordingly. One effect of the increased cost of labour in building, through the partial idleness of our carpenters and joiners, is that much work is now being done abroad, leading to the importation of finished work, such as doors, windows, and prepared flooring-boards. This importation will doubtless increase until trade-unionism permits the joiner to give a fair day's work for the high wages he receives. They cannot hope that protective laws will be re-enacted against importation, in order to keep up the wages of a class, and thus tax the whole community for their benefit. Trade-unionism may, indeed, be described as protection in its most aggravated form,—every union seeking to tax all users and consumers for its own advantage.

The action of trade-unionism among the London cabinet-makers, who are a respectable and intelligent body of men, has been to render them, as workmen, in some respects less skilful and industrious. Machinery has been largely introduced by the most important chair and cabinet makers, and does all the hard work, so that manual labour has been much lightened. Members of the West-end Cabinet-makers' Union work either by the hour or the piece, according to a book of prices agreed upon by employers and workmen in 1811, in which very little alteration had been made until 1866, when it was agreed to advance the prices for piecework 10 per cent., and daywork in the same proportion. In 1872 another advance of 10 per cent. was agreed to on the book prices and daily wages. When the first advance was made, the employers fully expected the men would earn increased wages to the amount of it, and were disappointed to find that less work was done, and the earnings remained about the same. The effect of this was to increase the establishment charges on the cost of all work done, in addition to the increased cost of labour; thus further raising the price to the purchaser. This was pointed out to the cabinet-makers when they asked for a further advance in 1872, and, on the advance being conceded, they promised to earn the full amount of it. This they have not done: their earnings, as I am informed, have only increased 8 per cent.; so that advances of 20 per cent. on piecework (all the hard work being done by machinery) have only added 5 per cent. to the earnings of the cabinet-makers; while the increased cost of production has added, on an average, 25 per cent. to the selling prices. The Cabinet-makers' Union book of prices to which I have referred is so framed that the meaning is open to different interpretations, although it would appear plain enough if self-interest did not try to twist it another way. Ever since the introduction of machinery, the committee of the West-end Cabinet-makers' Society have been raising discussions upon the interpretation of the meaning of the book, and settling them in favour of the workman, and, when once admitted, have stood upon them as precedents; the result being, in some classes of work, a considerable advance upon the prices previously paid.

Notwithstanding this, and that all the heavy work is now done by machinery, the young cabinet-makers earn less wages than the former generation did, and I think this result must be traced to the influence of the union. Very few among them can make out an account for making a piece of furniture by the book, and they generally pay some one who has carefully studied the book to do it for them.

* London: Edward Stanford, Charing-cross.

The work is now so much lighter and easier than formerly, that the cabinet-maker of the present day does not find it necessary to study very closely the method of setting out his work so as to save time and labour, and thus increase his earnings; and it is partly from this cause that the younger generation of cabinet-makers have become less practically skilful than that which is passing away, and earn less, when they ought to earn much more, without working so hard for it. The quality of the work is as good as it ever was.

The question of advance of wages is too frequently treated as if it were merely one between the employers and employed, the latter endeavouring to obtain a portion of the profits of the former in the shape of increased wages. This is a mistaken view of the subject. It is true the employer stands between the consumer and the workman, and has to bear the first brunt of any increase of wages, but he adds it to the cost of his productions, and increases the price to purchasers in proportion to the increased cost. The public, therefore, pay the increased wages, not directly to the workman, but in the price paid to the manufacturers; and the question is thus, in almost all cases, really between the artisan and the public, as the profits of the manufacturer are so kept down by competition that they will seldom admit of any reduction.

It may be asked, if the manufacturer generally obtains an increase of price to cover the increase of wages he may have had to pay, why he should almost always be opposed to an advance of wages?

There may be various reasons. In some cases competition may be so severe that it is hopeless to obtain any corresponding advance, and he knows that every increase of price tends to diminish the demand, whilst every reduction tends to increase it, and the wages upon which an advance is sought may at the time be high, relatively, to those paid in other similar manufactures.

The general tendency of trade-unionism has been more or less mischievous in every branch of industry with which the unions have interfered, not because there is anything wrong in associations, but because the views of their leaders, however well meant, have been so frequently at variance with sound principles of political economy, and even when right, as in some recent cases, the sound advice tendered by them to their members has not been followed.

The true policy for trade-unions to adopt, is not to attempt to fix any hard-and-fast line for either wages or working hours, but to leave their members free to earn as much as they can, and to work as long as they like; so that a man whose labour, when not restricted, is worth 9s. or 10s. per day, may receive it; while another, who can only earn 5s. or 6s. at the same occupation, may be paid fairly, instead of at a fixed rate of wages higher than his labour is worth. The present system operates to the injury of the slow or inefficient workman, who is the first to be thrown out of employment in slack times, from the relative dearness of his work; and equally so to the quick and clever workman, by limiting his earnings.

An attempt at coercion, by one of the unions in the metropolis, which has now been continued for three months, and is still actively going on, shows the spirit in which unionism operates.

A West-end cabinet-maker, whose factory had been recently erected and fitted with the newest and most improved machinery, to do all the most laborious work, as in the case of joiners, leaving the cabinet-makers little more than the fitting, finishing, and putting together the various parts to complete a piece of furniture, gave notice that in future the system of pay would be changed to payment by piece-work instead of payment by the hour, and that all the men who were willing to agree to the change might continue their employment. The men consulted the committee of their union, and the decision was, that they should strike against the change (although many members of the union were working by the piece in other shops); and accordingly, in obedience to the union, but contrary to the wishes of many of themselves, they all left but two, and removed their tools. No fault could be found with their decision; they were free to accept or refuse employment on the terms offered, and it would have been very wrong on the part of their late employers to have made any attempt to prevent their obtaining work in other shops. The union immediately set to work with great energy to prevent, by all means, legal or illegal, any cabinet-makers from applying for work to the firm in question. They wrote, or telegraphed, to their emissaries or correspondents in all the principal towns in the kingdom, as well as to Paris and Brussels, urging them to take means to prevent men coming to occupy the places of those who had been withdrawn, and they carefully picketed the workshops, in order to intercept all who came. Three men have been daily employed as pickets, and, by threats, promises, and pay, they have succeeded in preventing many men from applying for work; and they have spirited away some men who had come from the country and agreed to take employment, by paying their expenses and keeping them idle at the rate of 9d. an hour. The threat they generally use is that the firm must yield and take the union men back, when all those who have taken employment in the meantime will be discharged, as the union men will not work in the same shop with them. The union has spent a large amount of its funds in this tyrannical attempt: the men acting as pickets receive each 1s. per hour; much money must have been paid for men's expenses and for bribing them not to apply (in one case 5l. were paid), and the number of men kept in idleness at 9d. per hour must have cost a considerable sum.

Notwithstanding all its unscrupulous efforts, the union will fail in its object, after causing much inconvenience and annoyance to both sides, and a large illegal and wasteful expenditure of its funds.

In this country, for some years past, the relations between that portion of labour represented by trade-unions, and capital, as represented by employers, have been those of hollow truce, or open warfare, and both parties have regarded each other with a feeling of watchful distrust, or hostility, instead of that peace and goodwill which should exist between them. Trade-unionism should abandon this erroneous and aggressive policy, cease its vexatious interference with capital, and leave freedom of action to its members. All disputes should be referred to arbitration when they cannot be settled by conferences between the employers and the employed, and strikes and lock-outs should never be resorted to, except in very extreme cases of injustice or oppression, on one side or the other, and then only after an appeal to the judgment of impartial and disinterested men, who, upon consideration, should express an opinion that a strike or lock-out would be justifiable by the facts laid before them. The adoption of this course would put an end to strikes altogether, and leave the funds of the union free for other and better uses; and my suggestion is, that the unionists should become capitalists upon co-operative principles. I see but little difficulty in this. Already the unions have, in the aggregate, large funds in hand, which, under the change of policy, would not be required to be drawn upon for expenditure in support of strikes and other measures necessary to maintain a war against employers; and a part of the subscriptions of members of the unions might be appropriated to the formation of Trade-unions Investment Companies, upon the principle of limited liability, with power to invest in interest-bearing securities, or in manufacturing and commercial undertakings. It will be said that one great difficulty in the organisation of industrial undertakings of workmen, will be that of finding competent and trustworthy managers, but this difficulty exists with every undertaking, and would be no greater with them than with others. There are men among themselves who have practical knowledge and experience in every branch of manufacture, and the commercial ability, or scientific knowledge, that might be required, would, no doubt, be obtained at a fair rate of remuneration.

Let us consider for a moment how soon companies might be formed, and an enormous amount of capital raised, by the exercise of a little self-denial by a million of men. In the financial year ending April, 1873, the increase of the revenue from excise duties was about two millions sterling. This was the year during which the great advance of wages took place, and the increased excise revenue of two millions represents an expenditure of about eight millions sterling, chiefly in alcoholic drinks, by the working classes. If this sum of eight millions had been saved and applied to the formation of investment companies, they would have had an aggregate capital about equal to the paid-up capital of all the joint-stock banks in London, exclusive of their reserved funds. Assuming, notwithstanding the great reductions that have recently been made in the wages of the large number of men employed in the coal and iron trades, that the average earnings of all the members of trade-unions (making allowance for those who may sometimes be out of work) amount to 30s. per week, the estimated number of members will receive in wages a million and a half sterling per week, or 78 millions sterling per annum, out of which, by a little self-denial, from four to eight millions might be saved and invested, without interfering with their contributions to the unions as friendly or benefit societies. The existing management of the trade-unions might greatly facilitate the formation of such companies.

I have always considered the idea of industrial partnerships based on a false principle, one-sided, and therefore unjust, and that there should be no participation in profits by those who did not participate in risk of loss. For this reason: Profits vary according to circumstances; sometimes they are large, and then a reserve should be made; sometimes they are so small as not to afford a fair remuneration for the capital employed; and sometimes there may be a loss from bad debts, or other causes, on the year's trading, which must necessarily be borne by the capitalist; the industrial partners being paid for their labour, and having no capital employed in the undertaking, are not subject to loss. If skilled artisans and working men would read the published reports of the present condition of their class in every country in Europe, which have been furnished by our consuls to the Foreign Office, they would find, on comparison, that their own is, in every respect, far superior, and that they are fortunate in having been born in Great Britain. Whence arises this superiority? Chiefly from the greater abundance and cheapness of capital in this country employed in mining, manufacturers, and commerce, which creates employment for an increasing population, and maintains wages at a higher rate than in other countries.

The great impediment to the improvement of the working classes has been caused by the want of a system of national education. Thanks to the beneficial legislation of late years, so long retarded, as regards the education of the people, by the mutual jealousies of church and chapel, this has now been provided; and we may expect to see the evils which have resulted from ignorance gradually disappear; and, as progress is made in this direction, the true relations of labour and capital will become better understood by the toiling millions of this kingdom, and it may be hoped the guides and leaders, together with the members of trade-unions, will see the errors I have endeavoured to point out.

ANCIENT INDIAN MONUMENTS.

GENERAL CUNNINGHAM, director-general of the Archæological Survey, has lately submitted some remarks and suggestions to the Government of India with reference to the proposed preservation of the ancient monuments of that country to which we recently called attention. He says that according to his experience some of the finest buildings in India have suffered at least as much from the carelessness or rapacity of individual spoilers as from the hands of time; and in order to protect such of them as remain from the ravages of these ignorant and greedy plunderers, he advises that those which are not actually in use as places of worship should be placed under the sole charge of the chief civil authority of the district in which they are situated, and that he should be held responsible for their preservation. General Cunningham advocates the simplest measures of conservation. In old stone buildings, he says, the chief causes of ruin have been the fracture of beams and the splitting of pillars under enormous pressure; and instances the great Jain Temple in the Fort of Gwalior, of which all the main beams were cracked across, while many of the pillars had given away altogether and disappeared. In 1844 he himself repaired this temple by putting upright stones in place of the missing pillars, and building walls under the broken beams. By these means the edifice was saved from ruin, and as the work then done has proved quite sufficient up to the present time he thinks that similar precautions might be used with good effect in the case of other Hindoo temples, and strongly recommends that wherever pillars have actually gone and left a portion of the roof unsupported either upright stones or square masonry pillars should be set up in their place. With respect to brick buildings, the usual cause of decay is the

gradual mouldering away of the bricks near the bottom of the walls from the action of saltpetre, and the pertinacious neglect of the natives, whether Hindoos or Mahommedans, in renewing the decayed bricks. From this cause alone all the finest brick buildings have suffered more or less. The only real remedy which General Cunningham can suggest for such decay is to replace the lower portions of the outer faces of the walls with sound bricks set in mud plaster.

NEW PUBLIC BUILDINGS IN CARDIFF.

A LARGE number of both public and private buildings are in course of erection in the improving town of Cardiff, which is rapidly becoming the leading seaport in Wales. These new buildings are gradually adding to the architectural appearance of the several thoroughfares. Amongst other new structures which have recently been built, the new Cardiff and County Club, now fast approaching completion, is one of the most ornamental and prominent buildings in the town. It is situated in St. Mary-street, one of the main thoroughfares, and is three stories in height, exclusive of the basement and the ground floor. It is built of Ashlar, with Bath-stone dressings. The central portion of the elevation, from the basement to the upper floor, has projecting windows, surmounted by a balcony. Over the entrance to the building is a tympanum, with the inscription in the centre, "Cardiff and County Club." The entrance is by a flight of three steps, leading into a vestibule. The ground-floor contains a large dining-room, also a reading-room, together with a bar and offices. The first floor contains a billiard-room and card-room, with rooms for visitors, and offices for servants.

The Glamorgan Club House, another new building, has just been finished and opened. It is situated at the corner of Dumfries-place, another of the principal thoroughfares. This building has been erected of limestone obtained in the district, with Bath-stone dressings. It is in the Elizabethan style of architecture, the upper story being surmounted by gables. The principal entrance, which is opposite the station of the Taff Vale Railway Company, leads into a vestibule, and thence into a spacious dining and coffee room. A pair of folding glass doors afford communication with a conservatory, beyond which is a large billiard-room.

A new public hall in Canton, which is about to be incorporated with Cardiff, is also projected. Lately, the mayor of Cardiff presided at a public meeting which was held in support of the undertaking. The proposed building is to contain a reading-room, library, lecture-room, and room for meetings and entertainments, and other apartments, and is to be built by a limited liability company. The ground floor will consist of shops, the reading-room and the other apartments belonging to the hall being in the upper part of the building.

Here and there, even in the principal streets, a few specimens of old Cardiff still remain; but these are constantly disappearing to make way for more modern and palatial buildings, and the structural relics of Cardiff, as it originally appeared, are rapidly in course of demolition.

BUILDING AND CIVIL ENGINEERING IN JAPAN.

THE Japanese, who seem possessed by a perfect mania for introducing the civilisation, the inventions, and the manners of the West, have not neglected to imitate our railways, our styles of architecture, and our modes of laying out our towns and villages. The latest volume of consular reports shows that under European supervision the imitations can scarcely be distinguished from the original models, but the Japanese, when left to their own devices, contrive to obtain an outward resemblance, while they perversely overlook the most essential parts of the work, and set all fundamental laws at defiance. Thus, the consul at Osaka reports that the Government have lately erected there a large building intended as a City Hall, which is to contain all the different departments of the local Government, with the exception of the Custom-house. It is an imposing-looking edifice, built on a foreign model, has long rows of columns in front, and is surmounted by a high dome. The Government asked Major Kinder, the Director of the Imperial Mint, to furnish the original designs; but, instead of allowing him to superintend the construction of the edifice, they handed his plans over to native officials, with instructions to put them into execution. The result has been an extraordinary building. Wood has been used where stone should have been employed, in columns, windows, arches, &c. The principles of modern architecture have been utterly ignored, and in a very few years the structure will decay, if it does not previously fall to pieces. They are thoroughly in earnest, however, as to quantity, if not as to quality, and from almost every consular station there is a record of constructive progress. The port of Niigata in particular has been almost transformed within the last five years. The streets have been levelled and paved with gravel, rain-water and *débris* are removed by a fair drainage system, and a scavenger corps performs its work every morning. The canals traversing the town in all directions have been deepened and lined with planks, and a branch of the river has been conducted through the main canals, in order to prevent the water becoming stagnant, and prejudicial to health. Lamp-posts have also been erected at a distance of 100 ft. from each other throughout the entire town, and the streets are now lighted every evening with coal-oil. One of the river-islands situated immediately opposite to the town, and formerly covered with pear-trees, has been connected with it by six wooden bridges, the ground has been raised 3 ft., and it is now laid out in wide streets, and almost covered with handsome buildings. Judging from the number of houses recently erected, the British consul supposes that the population has increased about one-fifth. The wages of stonemasons and bricklayers, which were formerly very poor, have now become very high throughout the country, and a good native hand can earn five or six shillings a day at piecework, while he can live comfortably for as many shillings a week. Unless married, however, the ordinary Japanese artisan is not of a saving disposition, and his easily-earned money is quickly spent.

RHYMES FOR IMPROVERS.

THE *Bailie*, having offered a prize of a copy of the title-page of his forthcoming volume for the best poem on the operations of the Glasgow Improvement Trust, has found the following in his letter-box:—

"RESPECTFULLY DEDICATED TO THE MEMBERS OF THE TRUST.

Into every dirty corner
Argus-eyed peep;
With the besom of destruction
Make a clean sweep.
Pull down the rookeries,
The rooks will flee away;
To dismal dirty dungeons
Let in the light of day.
Plan free and open spaces;
Build houses fit for men,
That longer lives—and better—
May bless the 'lower ten.'

AMICUS (¶), HIS MARK."

"PRO BONO PUBLICO.

Plan and build better. The Future's your debtor,
If we live longer, and purer, and stronger.
*** House comforts enhanced, with rents not advanced,
Is a part of the plan of

A CLYDE WORKING MAN."

A NEW ARCADE FOR BIRMINGHAM.

A COMPANY called the Great Western Arcade Company has been formed for the purpose of establishing an arcade between Monmouth-street and Temple-row, Birmingham, and it is calculated that it will be finished by the 1st of March next year. The proposed arcade will run parallel with Bull-street, the one entrance to face the Great Western Hotel, Monmouth-street, and the other the Royal Hotel, Temple-row. From end to end its distance will be about 400 ft., and the extent of the site will allow not only of a causeway 18 ft. wide, but of extensive shop premises on each side, in some cases spacious accommodation for saloons or showrooms being provided. An upper story will contain about forty-four shops, which, with fifty upon the ground-floor, will bring the total number very near a hundred. Along the row of steps on the upper story will go a railed passage about 8 ft. in width. Each of the shops in the building will be fitted with three ebony columns, ornamented in gilt, one to be placed at the limit of the shop, another at its angle, and the third at the doorway. In the centre of the arcade a dome will be erected, its diameter to be nearly 30 ft., and its altitude to be about 70 ft. The illumination of the structure will be by clusters of lamps. Each cluster will comprise four lamps, and over each shop on the upper story these will be placed so as to diffuse the light as much as possible, while the cluster below will droop over the shop front. The arcade will be entered at each end, through arches of about 30 ft. in height, these to be furnished with massive gates. The structure at each extremity will be built in stone in the French-Italian style of architecture. It will be constructed in four stories, and will be surmounted by two towers. The cost of the undertaking is estimated at 60,000*l*. Numerous applications for premises have already been made to the company. Mr. Henry Lovett, of Wolverhampton, has the contract, and Mr. W. H. Ward, of Birmingham, is the architect.

THE NEW RAILWAY STATION, GREAT BERKHAMSTEAD.

THIS station, having a spacious booking-hall, wide subways, and broad platforms, has been opened. There is an entrance corridor of ornamental brickwork, with a projecting verandah. Following the example at Euston, the company's architect, Mr. F. Stansby, has adopted the design of a central hall, which will contain a circular-ended booking department, such as stations of larger size possess. On either side of the hall are waiting-rooms, replete with modern appointments. Emerging from the hall, the passengers pass along the subways lined with white glazed bricks, and thence by flights of York stone steps ascend to the up, down, or intermediate platforms, the last of which is in course of construction. The platforms are one of the chief improvements, inasmuch as in the spaces between them are laid an up and down passenger line, and an up and down goods line, separate and distinct from each other, and intended by the chief engineer, Mr. W. Baker, to obviate the results of mixed goods and passenger traffic. On each of these platforms are retiring-rooms and appurtenances of an improved kind. The engineering portion of the new works has been of a difficult character. A long-spanned riveted girder bridge, of additional width to take the two goods lines (1 ft. 6 in. higher from the ground line than the old cast-iron bridge), has been erected, and gives increased headway for the passage of loaded vehicles. The bridge is of wrought iron, and was erected by Mr. Samuel C. Ridley, of the Bury, Hemel Hempstead, contractor for the fourth line and station works from King's Langley to Bletchley. Among the difficulties encountered was the boggy nature of the soil, which in places involved special treatment with concrete and brick foundations 20 ft. deep. Beneath the heavy retaining wall at the back of the old station embankment a quantity of beech timber,—evidently a portion of the old Castle drawbridge,—was found in a good state of preservation. The old road to Berkhamstead Place, the seat of the Marquis of Hamilton, has been diverted and widened; and a branch into it from the Ashridge New-road has been staked out. A mound, planted with ornamental trees, at the foot of the park serves as a screen from the goods' yard. A permanent suite of waiting-rooms, with octagonal hall and external verandah, has been erected for the special convenience of Earl Brownlow. Of considerable importance are the new goods' shed, yard, and office, in the rear of the up-lines. Goods will be unloaded with ease and safety; accidents, which were of frequent occurrence in crossing trucks over the main passenger lines, will be avoided; and complaints of delay from local wharfingers, coal merchants, and carriers, will, it is hoped, be rare.

IMPROVEMENTS AT KING'S COLLEGE HOSPITAL.

THE following paragraphs, which appeared in the annual report of the Committee of Management of King's College Hospital, adopted at the meeting held in the Board-room under the presidency of the Right Hon. Lord Hatherley, show the nature and extent of the recent improvements carried out at that institution.

"In the month of July last the committee found it absolutely necessary to order a survey of the sanitary arrangements and general state of the hospital buildings, and for that purpose employed Mr. Stephen Salter as their surveyor. In consequence of his report they felt it their duty at once to order the execution of many important repairs and improvements, which have been carried out by Messrs. Holland & Hannen, by contract after tender. The chief of these works were, besides the thorough cleansing of the whole of the hospital (except the principal

staircase), repairing all defective plumbers' work, improving the arrangements of the water-closets and ventilating them, and putting new slop-closets and other conveniences therein; thoroughly examining and repairing the drains, and removing various deposits which had taken place from defective soil-pipes; improving the water supplies towards the kitchen so as to give them a supply independent of all water-closet cisterns; ventilating the post-mortem theatre and mortuary by means of upward shafts to the highest points of the building, and providing [galvanised iron fittings in the mortuary; warming the out-patients' waiting-rooms; providing proper basins and supplies to surgeons', physicians', and other rooms, improving the heating of the operating theatre, the chapel of the nurse's dormitories, by altering the system of hot-water piping; providing a disinfecting-room and apparatus; fitting up a room to be used as a delirous patients' ward with all proper appliances; providing speaking-tubes and call-bells from each floor to the hall; providing portable fire-engines and apparatus for the use of the hospital, as recommended by Captain Shaw; besides many other minor works too numerous to mention, but which were found to be necessary.

"The extent of these works will be best understood by the fact that, notwithstanding that they have been carried out in the most economical manner consistent with efficiency, the cost has nearly reached the large sum of 2,500*l*. Towards this sum the committee beg to acknowledge the following munificent donations: viz., Messrs. Childs & Co., 100*l*.; Coutts & Co., 100*l*.; Drummonds, 50*l*.; Gosling & Sharpe, 100*l*.; Hoare & Co., 100*l*.; W. H. Smith & Sons, 100*l*.; Twining & Co., 100*l*.

In order at once to meet the above extraordinary expenditure, to pay off all out-standing liabilities, so as to begin the new year free from debt, and to commence a system of prompt payment of tradesmen, the committee have been reluctantly compelled to entrench upon their slender endowment fund to the extent of 3,500*l*. They believe that the results have fully justified so large an outlay, and they would point with confidence to the present sanitary condition of the hospital, as unsurpassed by any similar institution in the metropolis."

THE WORKS AT ST. MICHAEL'S, OXFORD.

At a meeting of the Oxford Architectural and Historical Society, recently,—

Mr. Bruton described the work which had been done to the tower of St. Michael's Church. He said that on receiving instructions from the feoffees of the parish to report upon the state of the tower, he ascended the chamber where the walls were most cracked at the time the bells were ringing. It was a well-known fact that the ringing of bells caused considerable vibration in a tower, and that of itself was no cause of alarm; but in this case he found the south-east angle of the tower, or the wall between the south-east angle and the centre of the south face, at which points there were large fractures, vibrating at a different rate from the rest of the tower. In this there was great danger, and upon his advice the necessary orders were given to prevent the ringing of the bells. He then designed a plan of tying together the fractured parts of the tower; not by putting bolts through from wall to wall, because in the expansion and contraction of the metal there would be considerable danger, but by a novel arrangement of oak timbers, which he called a cradle, just within the walls, these timbers being festened at their points of junction by cast-iron shoes. The timbers were then bolted to the walls, and thus the amount of expansion and contraction is considerably reduced; particularly as these bolts, being embedded in the walls, would not be so subject to the changes of temperature. He also exhibited a drawing of one of the three ancient windows which had been opened during the progress of the work, which are interesting as being about the earliest work in the county. He showed that they had probably been blocked up through the failure of the capitals of the "baluster" columns, which had broken short through in the middle. The way in which he had secured those capitals he explained, and showed diagrams of the way in which the work was done. He had the arches shored up, and then a small portion of the masonry between them removed, and two pieces of L iron placed back to back, and bolted together. From the bottom flanges he passed bolts through the broken stone capitals, which were thus made rigid and secure; after which the masonry which had been removed was re-set, and the arches restored. When the windows were blocked up, the projecting portions of the capitals in two of the windows had been chopped off. These he had found it necessary to restore, but he had done this by piecing out the old capitals, as he was most anxious to keep the old stones, and there had not been a single stone removed that could in any way be made to perform its office.

Mr. James Parker thought that this was one of the most important finds that had been made in Oxford for some time. The great point about it was that it showed the Roman element as opposed to the Norman.

CHURCHES, DIOCESE OF NORWICH.

In compliance with an address from the House of Lords, Her Majesty the Queen has desired a return to be made of the number of churches, including cathedrals, built or restored at a cost exceeding 500*l*., since the year 1840, and showing, as far as possible in each case, the expenditure and the sources from which the required sums were derived. The following, according to the *Ipswich Journal*, is a summary of the return from the Diocese of Norwich:—

	No. of Parishes.	Total cost.	From rate estate, or parochial funds, &c.	Voluntary sources.
		£	£	£
Parishes whose return is *nil*	30			
Ditto, ditto, unknown..	46			
Ditto, ditto, imperfect	10			
Ditto, ditto, not sent in	142			
Parishes in which the Church has been built or restored at a cost exceeding 50*l*.	396	649,338	81,793	567,545
Parishes in which the Church has been restored at a cost over 10*l*. and under 500*l*.	216	61,375	12,169	49,206
	1,050	710,713	93,962	616,751
Cathedral	...	*17,000	10,000	7,000
Totals	...	727,713	103,962	623,751

* Approximately divided under the heads given in the return. This sum was almost entirely contributed from the annual income of the Dean and Chapter.

THE METROPOLITAN DISTRICT RAILWAY AND THE DEVELOPMENT OF BUILDING IN THE WEST.

It was stated at the half-yearly meeting of the Metropolitan District Railway Company, the other day, that the opening of the Hammersmith extension line has already given a spur to building enterprise in that district, and that a very large and populous neighbourhood is rapidly springing up between Gloucester-road and Hammersmith. The chairman said the construction of buildings on a large scale was going forward near the west end of their line, and as they became occupied would be a considerable source of traffic.

With regard to the sale of the company's surplus lands, it was stated that they had been enabled, during the half-year, to conclude several sales upon terms highly advantageous to the company. The amount realised in the half-year had been 72,081*l*. 18s. 3d., and, in addition to these actual realisations, contracts had either been concluded or were pending, under which at least a further 50,000*l*. would be receivable. In all these sales the full estimated value of the lands had been obtained from the purchasers. In answer to a question, the chairman stated that the surplus land on the embankment had been disposed of at a ground-rent of 2,100*l*. per annum, with a right to purchase for 47,000*l*. The St. Stephen's Club was let on the same basis.

A Wedge of Iron in the Great Pyramid.—The *Iron Age* says that a wedge or a plate of iron has been discovered imbedded in the masonry of the Great Pyramid. It shows that this metal was produced and wrought in the age of King Cheops, which is placed by some authorities as far back as 5,400 years ago.

WROXTON ABBEY.

In Skelton's "Oxfordshire," there is an engraving of the hall of this ancient edifice, four miles from Banbury. The view includes the screen, and on the title-page of this work is an engraving of the west front of the mansion. The porch and hall are engraved in Nash's "Mansions of England in the olden Time." The mansion was erected on the site of the ancient priory, A.D. 1618. Beesley, "History of Banbury," pp. 84, 263, A.D. 1841, states that the west front of the edifice extends 118 ft. in length, the porch being a very elegant specimen of the Italian Decorated entrances. The dining-room is stated to be 39ft. 6 in. by 21 ft., decorated with a beautifully enriched ceiling, and the chapel 27 ft. 2 in. by 16 ft. 10 in. This apartment has or had, A.D. 1841, an early Decorated window, of four lights, with foliated circles in the head, and mullions. Mr. Beesley stated, "Over it, on the exterior is an ogee canopy. This end of the chapel has a battlemented parapet, with Decorated cornice mouldings. This portion of the building is of the fourteenth century. In a passage leading to the cellars of the mansion, a doorway of the original edifice has been preserved, of the Early English style which prevailed during the thirteenth century." The window of the chapel was ornamented with stained glass by Van Ling, A.D. 1623, when the owner of the mansion, Sir Thomas Pope, bart., was living. The edifice was erected by this person. The hall, according to Mr. Beesley, measures 45 ft. 3 in. north to south, and 24 ft. 6 in. from east to west, having at the south end a highly-decorated screen of the music-gallery, supported on columns. The Lord Keeper Guilford, who in the reign of Charles II., possessed Wroxton by his union with Lady Frances Pope, daughter and heiress of the third Earl of Downe, added to the mansion. The fourth Earl of Guilford erected the library from a plan by Smirke. This fine old building contains valuable paintings, including one of Sir Thomas Pope by Holbein; one of the first Earl of Downe, by Vansomer; two of the Lord Keeper, by Lely and Riley; also a portrait of Lord North, the Premier, by Dance.

Chr. Cooke.

"SAMARITAN" HOSPITAL, LISBURN-ROAD, BELFAST.

This hospital, now approaching completion, is one of three erected in Belfast, through the liberality of the late Mr. Edward Benn, Glenravel, county Antrim. It is a red brick building, with quoins, strings, and cornice of sandstone of a yellowish tint from Dungannon, county Tyrone. Over the entrance-door there is a niche, in which it is intended to place a statue of the donor. The principal apartments will be heated by Captain Galton's patent ventilating stoves. The total cost of the building, exclusive of fittings, will be 3,300*l*. The work is being carried out by Messrs. Dixon & Co., builders, from the designs and under the superintendence of Mr. Wm. Hastings, architect, Belfast.

IMPREGNATION OF SANDSTONE.

M. Lewin impregnates the sandstone from his large quarries "Saxonia," at Neundorf, near Pirna (Saxony), with a solution of sulphate of alumina, and then with a solution of glass. The impregnated stone may be polished, and a marble-like appearance given to it. It resists fire and atmospheric influences, and is especially suitable for hydraulic works. For stairs it would replace marble on account of its durableness, and it would be preferred to sandstone for the sake of its appearance. If exposed to high temperatures its surface becomes vitrified, and in this process any shade of colour may be given to it.—*Polyt. Notizblatt.*

A Liberal Donor to Church and School. The *Western Morning News* states that, though originally a Dissenter, Mr. S. Marliug, the new M.P. for Stroud, has built a new church in his own parish, and endowed it with an income of 200*l*. a year; the hon. gentleman has also built a national schoolroom, a schoolmaster's house, and a parsonage at a cost of 10,000*l*.; he has subscribed 500*l*. towards the schools of another parish, though he has no sympathy with its High Church Vicar's views; he has given 250*l*. to another national school; 2,000*l*. towards the restoration of a church; and 500*l*. towards the restoration of Gloucester Cathedral.

THE QUEEN ANNE STYLE.

SIR,—To whatever extent this style may be destined to be practised (and it is evident some movement of taste in that direction is impending), it is to be hoped that students of architecture will not be persuaded to make an inconsistent and half-formed style a principal object of study. The study of architectural style involves what may be called the logic of design, the distinct relation of one part to another in regard to proportion, expression, and function. It is only where this relation is completely observed and carried out that a complete style is formed, and it is only in the production of such a style that design can be studied with the best advantage in promoting the feeling for grace and refinement, and educating the eye. Now, the Queen Anne style is admitted, even by its upholders, to be an unformed and corrupt style; it has not this kind of logical design which distinguishes a complete style, and therefore its study is no training for the young architect. If he likes to practise it afterwards, let him; but he will not find it wise to try to set up any special proof that this of all others is the style to be sought after, and the natural and right result of that has gone before. The whole thing reminds me of the story of the person who ordered a glass of brandy at an inn, with many explanations and justifications as to its being very cold, not being well, really requiring something of the kind, and so on, when his neighbour, in a defiant tone, ordered a similar glass for himself, "because he liked it." Now, if the truth were told, that is about all which this talk about the necessity and fitness of Queen Anne architecture really comes to. Certain gentlemen have revived that style "because they like it," and no bad reason either; and we have even heard of one enthusiast who had built or rented a Queen Anne house for himself, and persuaded his family to dress in the fashion of that day to be in keeping with the mansion. All this is a very agreeable and perfectly harmless kind of artistic recreation; but an attempt to set it up as the modern philosophy of architecture is apt to become ludicrous. H. S.

EAST LONDON RAILWAY COMPANY'S SURPLUS PROPERTY.

SALE OF HOUSES AND LAND.

LAST week, a large sale of the surplus property of the East London Railway Company took place at the Mart, Tokenhouse-yard, where seventy-five lots were offered, the greatest number of which were sold. The property consisted of dwelling-houses and building land, situated in Rotherhithe and Deptford, intersected by the railway, and under which it passes, together with numerous plots of other building land in Deptford, which has been specially laid out by the company for building purposes. There was a very large attendance of builders and others interested, who kept up an active competition for the several lots submitted. The houses sold were twenty-two in number, with an annual value of from 13*l.* to 19*l.* per annum, and they realised prices varying from 150*l.* to 300*l.* each. A plot of land on the south side of the railway, immediately adjoining the Rotherhithe Station, and containing an area of about 3,000 ft., was sold for 110*l.*, whilst two other lots, immediately over the railway underneath, and containing an area of 3,940 ft. and 5,860 ft. respectively, were sold, the one for 250*l.*, and the other for 310*l.* The first-named lot has a double frontage to Berkeley-street and Albion-street, and the second to Berkeley-street only. A triangular piece of land, with a frontage of 129 ft. to the Lower Deptford-road, and 43 ft. in depth at its widest part, was sold for 210*l.* The entire proceeds of this portion of the sale, consisting of twenty-nine lots in all, amounted to 6,150*l.* It may be stated that the conditions of sale provided for reserving to the company special advantages and stringent protection. They reserve to themselves the surface and subsoil of such of the lots as may be occupied by the railway and works, together with the free and uninterrupted right of entering upon the lots at any time for maintaining and repairing the railway works and tunnels.

The most interesting feature in the sale was the large area of building land, bounded on the north-east side by the company's own railway and on the south-west by the London and Greenwich branch of the South Eastern line. The north-western boundary of this spacious plot of land, all of which is in Kent, divides it from the county of Surrey. It is upwards of 20 acres in extent, and the railway company were compelled to purchase it along with the charcoal manufactory of Messrs. Torr & Co., which has been demolished, and the site of which is now occupied by the railway. The whole of this estate, which was formerly meadow-land, has been drained, and laid out by the railway company for building purposes. Five roads, named respectively Oldfield-road, Alpine-road, Fawcett-road, Cornbury-road, and Reculver-road, have been formed. These roads are each 40 ft. wide, with an average length of about 900 ft. At the extreme east end of the estate three other similar roads are in course of formation. The plots of building land on the estate submitted on Tuesday were thirty-five in number, having an average frontage of 96 ft. in length, with a depth of 65 ft., and it is understood that about six houses will be erected on each plot. At the north-west angle of the estate, running parallel with the railway, and fronting Oldfield-road, there is a plot 415 ft. in length, with an average depth of about 70 ft., and for this plot there was an active competition, the lot being put up at 300*l.* and sold for 1,270*l.* Six of the other lots were knocked down at prices ranging from 220*l.* to 300*l.* The rest of the lots were withdrawn, but it is confidently expected that they will readily be sold by private treaty, and that the whole of the estate will shortly be built upon, the estimated number of houses being upwards of 400.

The entire proceeds of the day's sale amounted to 9,200*l.*

BRECHIN'S HOUSEHOLD HEAT ECONOMISER.

THE arrangement patented consists in what the inventor calls an "econ" (a disc of metal), which is fastened to the wall of the apartment above the fireplace or stove, and in a line with the flue. It projects about 7 in., and has 3 in. of space between it and the wall. The fastening is accomplished internally by simple means, and when once in position the apparatus may remain for an indefinite number of years. Two openings or passages are formed in the wall through which two tubes pass and connect the econ with the flue, while a valve, or damper, working through a flange on the lower tube closes and opens the flue at pleasure.

On the fire being lighted the heat and fire gases ascending the flue pass through the lower tube and are projected against the thin steel or copper front of the econ, heating it at a ratio proportionate to the heat generated by the fire; this may be from 70° or 80° to 130° or more. That portion of the heat which does not at first permeate the steel circulates within the econ and warms the back and sides before passing by the higher tube into the flue again. The econ is circular, 29 in. diameter and 4 in. deep, so that the front, sides, and back represent a surface of about 10 square feet which radiates heat, and as it is air-tight, says the inventor, under no circumstances can other than unalloyed caloric be diffused by it. Of course, this warming power does not cost anything beyond the price of the econ. It is proposed, by attaching econs to the flue, to warm a sitting-room on the first floor, a library or nursery on the second, and a bed-room on the third. The bed-room of course in a less degree than the library, and the library than the sitting-room. In dwellings having dividing walls in which the flues are built the fire-places are situated back to back; this allows of the fire being in one room and the econ in that adjoining, the latter being the better warmed of the two.

Memorial of the late Rev. J. S. Gibney. A meeting was held in the Guildhall, Lincoln, on the 11th inst., for the purpose of raising funds to found a studentship in connexion with the School of Art, in memory of the late Rev. J. S. Gibney, who lost his life a short time ago under melancholy circumstances. The Dean was called to the chair, and the following resolutions were adopted:—"That it is desirable to establish an exhibition or studentship to be called the Gibney Studentship, in connexion with the Lincoln School of Art, as a memorial of the late Rev. J. S. Gibney, the founder and one of the chief supporters of the School"; and "That the main object of the Gibney Studentship shall be to enable youths who may exhibit a special talent for art to devote one or two years exclusively to its cultivation." At the close of the meeting the Dean announced that subscriptions had been promised to the amount of 200*l.*

SCHOOL BUILDING NEWS.

Penzance.—We briefly noticed recently the laying of the foundation of the new schools in connexion with St. Paul's Church, and now give details. The ground, situated in the Taroveor-road, is the gift of the late Miss Elizabeth Carne, after whom the schools are named the "Elizabeth National Schools." The plans have been prepared by Messrs. Trounson & Son, and contemplate a cost of about 1,000*l.* The building, and the open space between it and Taroveor-road, will occupy 135 ft. from north to south, and 80 ft. east and west. From the road it will be reached by a gradual ascent, which will bring the scholars to the girls' school-room on the left-hand side, 40 ft. by 20 ft. and 14½ ft to the collar-beam, with an adjacent class-room 18 ft. by 20 ft. This constitutes the left wing of the building, and is reached by a porch which projects 8 ft. from the front of the wing. A similar porch is seen on the right-hand side of the edifice, and this opens directly into the infants' school-room, 56 ft. by 20 ft. and 14½ ft. This will be lighted by two front, one large east, and three back windows. Attached to this apartment will be a class-room, 18 ft. by 15 ft. Each class-room is lighted by a window. There are separate lavatories for teachers and for the elder and the young pupils. The walls are of rough nobbing, with granite dressings, and a small bell-turret will break the uniformity of the ridge of the main roof. Ventilation is provided, and each regulation of the Education Committee in London is complied with. 150 infants and 100 girls can be taught in the Elizabeth Schools.

Taunton.—The new schools, built at Rowbarton, near Taunton, through the liberality of the Rev. F. J. Smith, have been opened. They have been erected from the designs by Mr. J. Houghton Spencer, architect, Taunton; the contract being undertaken by Mr. John Macey, builder, Bishop's Hull. It was originally intended to constitute a class-room of the west end of the building, convertible on Sundays into a chancel, but this plan was abandoned, and the interior now consists of one room, measuring 70 ft. by 20 ft.; the elevation being 12 ft. 6 in. from the floor to the wall-plate, and 27 ft. to the point of the roof, which latter is of open timber-work, varnished, with ventilators under the eaves. The greatest length is from west to east, with gable ends, in each of which is an elliptic-arched window; the point in the ellipse being of masonry. The front to the south is relieved by a porch, measuring 7 ft. by 7 ft. 3 in. at the lower or eastern corner; a gabled elevation dividing the remainder of the frontage into three equal proportions, each bearing two double-light windows. At the rear of the block are the necessary sanitary conveniences of the scholars. The material employed is the Monkton stone with dressing of grey brick; Ham stone being utilised in the masonry of the windows, and the whole building is roofed with tiles of two patterns. Accommodation is provided for 175 children.

Silsby.—The new infant school in connexion with the parish church has been opened. The schools, the memorial stone of which was laid on the 5th of August last, are in close proximity to the existing boys' and girls' schools, and the style of architecture is in unison with that building. Mr. Henry Black, of Barrow-on-Soar, is the builder. The cost is about 430*l.* The outer walls are constructed of Mountsorrel granite, with Portland stone dressings to the windows and doorway. The building is 35 ft. long by 22 ft. 3 in. wide, and is calculated to accommodate about 110 children.

Armley.—The old school premises having had to be vacated at Christmas last, rooms at Strawberry House and the Temperance Hall have since been rented for day and Sunday schools respectively. This arrangement, however, being unsatisfactory, in view of the fact that over 300 scholars are upon the books, a plot of land, situated a little to the south-east of the new church now in course of erection, was secured, and the first stone of the new schools has been laid, the ceremony being performed by Mrs. William Whiteley, of Butt's Cottage. The building will comprise a room, 76 ft. by 30 ft., and two class-rooms, each 22 ft. by 16 ft. The cost will be upwards of 1,000*l.* It will be erected of brick, with stone dressings, and will front the new church. The assembly-room will seat about 500 people; and will be also used for lectures and general purposes. The architects are Messrs. Walker & Athron, of Leeds.

Kettering.—The foundation-stone of the new Wesleyan schools have been laid by Mr. Tordoff. There being some difficulty in obtaining a site, Mr. Tordoff, who contributed 1,000*l.* towards the erection of the new chapel in 1866, offered not only to give a site, but to defray the whole cost of the erection of the schools. The schools stand in a field in School-lane; the area covered is 80 ft. by 44 ft. The building will be of red brick, with Bath stone dressings, and the style of the frontage will be Gothic. The class-rooms will be 13 ft. by 12 ft., and the library, also on the floor, 10 ft. by 12 ft. The infants' room will be 30 ft. by 18 ft., adjoining which is to be a class-room, 18 ft. by 10 ft. Two staircases will lead from the lobby to the large school-room (60 ft. by 30 ft.) over, and adjoining this room is to be another class-room similar to the one for the infants. The rooms on the ground-floor are to be 13 ft. in height, and from the floor of the large school-room to the pitch in the roof, 26 ft. The roof will be an open timber one, with pitch-pine moulded and carved ribs. The building will be heated with hot-water pipes. Mr. Sharman, of Wellingborough, is the architect; and the erection has been entrusted to Mr. Coltman (mason); Mr. Samuel Manby (carpenter); Mr. John Payne (plumber, &c.); Mr. T. Heighton doing the gas-fitting, hot-water apparatus, and also acting as clerk of the works. The cost of the building is estimated at 1,500*l.* The furnishing of the schools, together with the enfranchisement and alteration of the old school premises, will amount to about 300*l.*

CHURCH BUILDING NEWS.

Bathwick (Bath).—For some years past the rector and churchwardens of St. Mary's, Bathwick, Bath, have felt the need of the addition of a chancel to the parish church. On the 7th of October, 1873, the foundation was laid by the Rev. Prebendary Scarth, formerly rector of the parish. The work was placed in the hands of Mr. G. Mann, contractor, and has been so far completed that the new chancel has been consecrated by the bishop of the diocese. The chancel is about 30 ft. in length, of corresponding width, and of imposing height and design. The roof is of open woodwork, and the floor a tesselated pavement. An east window, designed and executed by Messrs. Clayton & Bell, has also been added to the church, through the munificence of Mrs. Roscoe, of Cleveland-walk, Bath. It has seven lights, of which the upper contains emblems of the Virgin, and the lower six present scenes in the life of the Saviour. The cost of the completed additions has amounted to about 2,300*l.*, and 800*l.* more are needed for the organ-chamber, vestry, and reredos, which it is hoped to include in the list of improvements before the works are completed.

Wath (near Ripon). — This ancient parish church has been re-opened by the Bishop of Ripon. The church is dedicated to St. Mary the Virgin, but in pre-Norman times there appears to have been an earlier structure dedicated to St. Oswald. The reparation of the fabric was commenced in 1873, and has been conducted in accordance with the strictest conservative principles, every feature and detail of the old times having been most carefully retained. The ancient walls have been left untouched, and a few new windows only have rep'aced those which were too dilapidated to be repaired. The work has been executed under the superintendence of Mr. Edward Birchall, of Leeds, architect, and Messrs. James Trees & Son, of Ripon, were the builders.

Corscome.—The parish church is about to undergo restoration at a cost of about 2,000*l.*, the greater part of which has been already subscribed. The present building, which is now in a bad state of repair, dates from the early part of the fifteenth century, but the tower and porch are much earlier. An unsightly gallery, stretching across the west end of the church, completely marring the original design, is to be removed, and the edifice lengthened sufficiently to make up for the accommodation it affords and about thirty additional seats. Mr. Allen, of Crewkerne, is the architect.

Wimborne.—A commodious church is about to be erected on a site near the railway station, for the accommodation of the inhabitants of the New Borough and Leigh. We hear the site has been given by the trustees of the Dean's Court estate.

Strubby (Alford).—St. Oswald's Church, consisting of nave and south aisle, was rebuilt about the year 1856, at the cost of about 800*l.* The south porch was added some years after. The structure is built of sandstone and brick. The interior of the nave consists of four bays. The pillars are original, of the Early English style. The seats are of stained deal. The floor is laid with plain chocolate and red tiles. The font is octagonal, with the original tracery on the panels in good preservation. The chancel being dilapidated, the Ecclesiastical Commissioners for England and Wales resolved to rebuild it, the restoration of which was completed in December last. Mr. E. Christian was the architect; the contractors were Messrs. Huddleston & Son, Lincoln. The exterior walls are of Lincoln stone and brick in courses, roofed with Staffordshire tiles, the east end surmounted by a Greek cross; the interior of the roof is open and of stained deal; the floor is laid with chocolate and red tiles, bordered and studded with coloured glazed ditto. The oak seats are open, with carved backs and heads, the latter being the original design of the Tudor rose, one of which still remains; the altar-rail is of oak, supported by light iron standards, coloured and gilt; and the new altar is also of oak, raised upon a footpace; the east window is in three compartments, with head tracery; the south window is in two compartments, fitted with Pepper's improved patent ventilator. The whole cost of the new chancel is about 430*l.* At the north side has been erected a small vestry in character with the other parts of the church.

Plymouth.—A church is about to be erected at Tothill, in the new district of St. Jude, from the designs of Mr. James Hine, architect.

Hadnal.—The parish church of this village has been re-opened, after restoration and enlargement. The church is of ancient date, and its nave was opened, after restoration and reseating, in January, 1873. The sacred edifice has been further improved by the addition of a chancel, with vestry and organ chambers, built of the yellow Grinshill stone, relieved with red stone in arches; the interior being ashlared, also in Grinshill stone. A wide arch has been put in at the east end of the nave, and the old east window is now refixed in the new chancel gable. The west gallery has been taken down, and the tower, underneath which is the vault of the late Lord Hill, provided with a new arch, is now thrown into the church, and used as a baptistery. The warming apparatus was provided by Mr. W. Dodwell, and Mr. G. Landucci executed the carving. The chancel stalls and other fittings are of pitch pine. The restoration and enlargement have been carried out by Messrs. Powell & Co., Prees, under the direction of Mr. Haycock, of Shrewsbury, architect.

Cotham (Bristol).—St. Nathanael's Church, the foundation-stone of which was laid some three years ago, has been consecrated by the Bishop of Gloucester and Bristol. St. Nathanael's will be a district church attached to St. Matthew's, Kingsdown. The latter parish has grown so rapidly that a second edifice was rendered necessary. This church occupies a site at the corner of Lower Redland and Elmgrove roads, Cotham. The style of architecture is Early Pointed, the exterior walls being of Pennant stone, with Bath stone dressings, freely used. The sides of the wall are broken with buttresses; the roof is of slate, and each of the gables is surmounted by a cross. The front is principally of Bath stone, the columns of the arch being of rubbed Mansfield and Pennant stone, with foliated capitals and label terminations. The interior consists of nave, north and south aisles, apsidal chancel, with organ chamber on the north side, and vestries for the clergy and the choir on the south. From wall to wall the width of the nave and aisle is 57 ft., and the length from the chancel to the western extremity is 80 ft., while from the floor to the apex of the roof the height is 51 ft. The chancel is 34 ft. long, by 21 ft. wide, and 37 ft. high. The chancel arch is supported by Mansfield shafts, with carved capitals and enriched corbels. The chancel itself has a bordered dome-like roof, and is lighted by five two-light windows, the heads of which are filled with antique glass, the gift of the architect, while the lower part is filled with rolled cathedral glass. The roof is of plain deal, slightly stained. The nave is divided from the aisles on either side by six arches, supported on stone columns, with carved caps. The roof of the nave and aisles is open timbered, slightly stained. The principals are supported on the columns which divide the clearstory into bays. The nave is lighted by two-light windows on either side, facing the six bays, and by the clearstory windows. These are all filled with cathedral glass. The west window is 20 ft. high and 12 ft. wide, and is divided into mullions of five lights, in geometric pattern. The church is paved throughout with tile, that in the chancel being rather more ornamental than the rest. The church is to be warmed by one of the heating apparatuses of Messrs. Haden & Sons, of Trowbridge. The carving has been executed by Mr. Sheppard, of Bristol. The builders are Messrs. Wilkins & Sons, Bristol. The architect is Mr. J. Bevan. The cost has been about 6,000*l.*, including the purchase of the land.

Armley.—The friends of the Church resident in the rapidly-growing parish of St. Bartholomew's, Armley, Yorkshire, have for some time past felt the need of a church of larger proportions than the one in which divine service is now held. This has been well nigh overcome, for, on an elevated plot of ground to the south-east of the old church, an edifice is being erected which will accommodate double the number of the present church. This structure, which, it is anticipated, will be completed next autumn, is of stone, freely ornamented, is in the cathedral shape, and will, it is said, architecturally considered, be an ornament to the neighbourhood. A tower is to be added at some future time, and the whole undertaking will involve an outlay of over 20,000*l.* Subscriptions amounting to 13,000*l.* have been promised. The architects are Messrs. Walker & Athron, of Leeds.

Dorchester. — The Building Committee of Holy Trinity Church met last week, the rector (the Rev. H. Everett) in the chair. The meeting was attended by the architect, Mr. Ferrey, of London, who explained several details; and these having been discussed, the plans were ultimately approved and settled. It was decided to hand over the present building to the contractors on the 1st of March. The works in connexion with the new church will occupy at least twelve months.

Overtown (Scotland).—The new church for the Overtown congregation, which has been in progress for the last twelve months, has been opened for public worship. In the belfry is a fine bronze bell, the gift of Mr. John M. Mackenzie, of Morinish, from the foundry of Messrs. Mears, Whitechapel, London. The height of the tower, including the roof, is 80 ft. The roof of the church is of open timber work. Mr. William Hay, of Edinburgh, is the architect. The building, which can hold 600 persons, has cost above 2,000*l.*

Owlpen (Gloucestershire).—This church has been reconstructed by the Bishop of the diocese, after having been restored. About three years ago, Owlpen became disunited from Newington Bagpath, and was annexed to the rectory of Uley, so it now stands "Uley cum Owlpen." The church was built about fifty years since, and replaced an older building. The nave, 37 ft. by 27 ft., is wide and in bad proportion, with a flat ceiling, and lighted by so-called two-light lancet windows, and there was no chancel; but a vestry, 11 ft. by 9 ft., projected from the east wall of the nave, the tablets on which the commandments were written formed the door from it to the nave, so that the priest could only enter the church by "breaking the whole of the commandments." The prayer-desk and pulpit were placed about the centre of the church against the north wall, to which all the sittings faced; and there was a small west gallery. A meagre tower, 36 ft. high, and 8 ft. by 7 ft., is placed at the west end, but from this into the church there is no opening. To this building has now been added a buttressed apsidal chancel, 27 ft. 6 in. long by 17 ft. wide, and 16 ft. high to the plate; with an open timber-roof, covered with the local stone tiles. The east wall of the nave has been pierced with a chancel-arch of two orders, 18 ft. high and 15 ft. wide. On the north side of the chancel there is a vestry, 13 ft. 6 in. by 10 ft., a portion of which is screened off for the organ. The chancel is lighted by single-light windows, one in each side of the apse, and two in the south wall. The vestry has a three-light window under the north gable, and a small door in the east wall. The fittings of the chancel are of oak, and the floor is paved with glazed encaustic tiles by Godwin. The nave has been reseated with open benches of pitch-pine, and the passages tiled. The church is warmed by an apparatus supplied by Rimington & Son, of Skipton, Yorkshire. Mr. J. P. St. Aubyn, of London, was the architect; and Mr. Clutterbuck, of Gloucester, the builder.

THE NEW FOUNTAIN IN PARK LANE.

THE munificence of the late Mrs. Browne, in providing funds for a fountain to be erected at the junction of Hamilton-place and Park-lane, will soon bear its fruit. The commission to execute this work was awarded to Mr. Thomas Thornycroft, who, seizing at once the requirements of the locality, conceived the idea of a triple-fronted design, rising pyramidally from a basin of polished granite, and determined at the same time to take the initative in commemorating our noble poets by statues in the metropolis. The pedestal immediately above the polished granite basin will be ornamented with seated bronze figures of Tragedy, Comedy, and History, so arranged that those of Tragedy and Comedy will flank Shakspeare; those of Comedy and History, Chaucer; and those of Tragedy and History, Milton. The central and most important story in the design will be embellished with white marble statues, of heroic size, of Shakspeare, Chaucer, and Milton. From their midst, and slightly rising above them springs a column, over which flutters a gilt bronze figure of Fame. This fountain promises to be a great ornament of the metropolis, not only by the agreeable novelty in its design, but on account of the artistic quality of the sculpture which adorns it.

THE INSTITUTE MEETINGS.

COMPLAINTS of want of punctuality and system in the conduct of the ordinary meetings of the Institute of Architects have reached us so often and from so many quarters during some little time past, that it becomes almost a duty to say a word in regard to a deficiency which seems to increase rather than diminish, but which it certainly appears quite possible, and indeed easy to remedy.

In regard to the question of punctuality in commencing the meetings there is a defect in the provisions of the bye-laws, which do not absolutely require that the chair shall be taken at eight o'clock, but "as soon after eight as there shall be five Fellows present." This is a mistake in the letter of the law, for to keep a large institution of this kind in regular working order it is really necessary that a fixed time should be stated and kept to. Whether it is under this rule that the frequent delays in taking the chair, of which we hear complaints, are condoned, we know not; but if so, the executive of the Institute must not be surprised if these delays are made a subject of comment, inasmuch as we are pretty certain that the majority of members and all the visitors are under the impression that eight o'clock is the time fixed according to the law of the Medes and Persians, and that, therefore, they have a just right to complain when twenty minutes or half an hour is let slip. And in the case when as many as five Fellows are present at eight, of course this rule is binding as to time. There should be a distinct understanding at what minute the chair will be taken, as there is at all other such meetings that we know of. To ensure this, it is only necessary that the secretary, as the working manager of the meeting, should be empowered to keep the time, and that his time should be adhered to. Of course, at a council meeting, where it is no one's business to remember the time, it is likely to be forgotten. A little more method is all that is required to amend a grievance which seems to be becoming "chronic" in more than one sense.

The non-attendance of leading members is a matter which we fear can only be dealt with by avoiding meetings at which it is worth while for them to attend; at least, this would throw the onus upon the shoulders of the absentees, which in every case it is not at present. But the formal attendance at the Council business of members who subsequently are seen to glide covertly from the room as the paper of the evening is commenced, is a kind of proceeding which, if systematic, betrays a great want of *esprit de corps*, and of due consideration for the welfare of the Institute, as well as of courtesy towards the lecturer of the evening. Such a slur back is not to be met in any way but by an appeal to the spirit and good feeling of those whose presence would add to the *prestige* and interest of the meetings, and serve again to draw others to them. The lesser lights of the profession, and especially country members who may come up, are glad to have an opportunity of hearing the opinions of its leading and most successful members upon questions of practical or artistic importance. It is certainly disheartening if such visitors attend to find no one present whose opinion they could regard as of any more weight than their own.

Another defect in the bye laws is that no time is fixed for the cutting short of preliminary discussion and proceeding to the main business of the evening. The bye-laws contain a stipulation that "no new matter shall be brought forward after half-past nine o'clock," but this in no way protects the reader of a perhaps elaborate and carefully prepared paper from being delayed in commencing till so late an hour that he has to hurry through his remarks and omit passages in deference to the feeling of an audience who are occupied in an intermittent examination of their watches. Of course meetings solely for discussion, when there is plenty to discuss, may be very interesting and useful, and are found so not infrequently; but where a paper of any extent forms the advertised business of the evening, there ought to be a definite understanding that desultory talk and discussion are not to be prolonged beyond a certain minute—say a quarter before nine *at the latest*. We said "desultory talk," but that phrase touches upon another frequent subject of complaint. There ought to be no "desultory" talk, and we suspect there is a great deal. People may say, why have meetings formal and solemn in character? Why cannot architects just meet in a friendly way to discuss professional subjects, &c.? To which we can only say, what all experience shows, that meetings of this kind can do no good and serve no definite end unless they are carried on in a systematic and well-ordered manner. Architects in conclave are, we have observed, a race of beings peculiarly apt to wander from the point in speaking, and presidents seem to be equally apt to let them do so. What we have heard on one or two occasions prepares us to credit any complaints on this score. There ought to be a courteous but firm hold on the reins in all such cases by the occupant of the presidential chair, especially in regard to persons who labour under a predisposition to listen to the sound of their own voices. Every society of the kind has, it is true, its one or two or more speaking members; persons who generally have something to say more or less to the point, and who possess the fortunate power of saying it fluently and well. They are invaluable at meetings in keeping the ball going; the only drawback to their usefulness is, that they get to be depended upon a little too much by others. At all meetings of the kind there are also those who combine the same ingenuous love of the sound of their own voices with an inability either to speak fluently or to keep to the point. It rests with the proper authority to see that the meetings are not rendered dull and distasteful to others by too lenient a sway in controlling the discussions.

It is not in any fault-finding spirit, as may be supposed, that we make these few remarks on a subject which has been forced upon our notice. But we think that a certain dissatisfaction with the conduct of the meetings, which evidently does prevail, might to a great extent be disarmed or obviated by a little more system and method in regard to some points which may seem small in themselves, but which are found by experience considerably to affect the practical working of an institution of this kind.

THE ELECTRIC ROOM AT THE NEW OPERA, PARIS.

THIS room is described and illustrated in *Nature* for March 11th. The arrangement has been organised by M. Dubosecq. The electric light may be thrown upon the magnificent stage by means of a Bunsen battery of 360 elements, which is established in a room on the ground-floor, the length of which is not less than 7 mètres. M. Dubosecq has here arranged six tables, of 2·75 mètres long by ·75 mètre broad, which each support a Bunsen battery of sixty elements. This battery is placed upon the table, which is made of very thick unpolished glass, that cannot be injured by the acids. The elements are arranged in four rows of fifteen each. The table is provided underneath with a board, which supports a large rectangular basin, in which the plates are placed after they have been used. The jars of the battery, filled with nitric acid, are, after being used, placed in a tub, containing the acid, and closed with a wooden lid.

In order to work a battery of such power under favourable conditions, M. Dubosecq has had to make special arrangements for the preparation of the sulphuric acid liquid, as well as for the zinc amalgams necessary to put the system of batteries in action.

Each table, as we have said, forms a battery of sixty elements. The electric wires are conducted along the wall, at the bottom of the room, where they traverse six galvanometers. Each of these galvanometers indicates, by means of the needle with which it is provided, the condition of the battery to which it corresponds. The six isolating-wires, after leaving the six galvanometers, pass along the walls to the stage, where the currents which they carry may be utilised, either singly or by twos or threes, according to the degree of intensity which it is wished to give to the light. The distance which the current runs from the electric room to the most distant point of the stage is about 122 mètres; the total length of all the wires is about 1,200 mètres.

M. Dubosecq, imitating the systems of telegraphic wires, makes use of the earth as a return current; one of the poles of each battery is in communication with the iron of the building. Without this arrangement it would have been necessary to double the length of the wires.

In most instances M. Dubosecq places his electric lamp on one of the wooden galleries which run along the higher regions of the scenery above the stage. It is from this artificial sky that he, a new Phœbus, darts upon the nymphs of the ballet the rays of his electric sun. It is from here, decomposing the light by means of the vapour of water, he throws upon the stage a veritable rainbow, as in "Moses"; again, it is thus that he causes the light from the painted windows to fall upon the flags of the church where Margaret is in the clutches of remorse. Sometimes the electric apparatus is placed on a level with the stage, when it is sought to produce certain special effects, such as that of the fountain of wine in Gounod's opera. The lime-light is also used to produce certain brilliant effects in the new opera.

A TALL CHIMNEY.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

THE following is a brief abstract of a paper communicated by Mr. R. M. Bancroft, of the Engineers' Staff, Great Northern Railway, to this society, on the "Tallest Chimney in the World."

The tallest chimney in the world is the well-known Townsend's chimney, Port Dundas, Glasgow. It was built by Mr. Robert Corbett, Duke-street, Glasgow, for Mr. Joseph Townsend, Crawford-street Chemical Works. The total height from the foundation to the top of coping is 468 ft., and from ground-line to summit 454 ft.; the outside diameter at foundation being 50 ft., at ground surface 32 ft., and at top of coping 12 ft. 8 in.

The number of bricks used in the erection was as follows:—Common bricks in chimney, 1,142,532; composition and fire-bricks for inside cone, 157,468; common bricks for flues, &c., 100,000; total number of bricks used, 1,400,000. The weight of bricks used, at five tons per 1,000, is equal to 7,000 tons.

For many days after the chimney was finished, Mr. Townsend invited the public to go to the top. Thousands availed themselves of the opportunity, two persons going at a time, on a small platform, with cross bar in centre, to hold on with the hands. There were always four persons at the top, and two going up; when they arrived, two came down to make room for the next pair.

The writer described the shaft as a masterpiece of chimney-building.

CLEVELAND SLAG WORKING COMPANY.

ACCORDING to the report read at the first annual meeting of this company (formed for the purpose of utilising blast furnace slag),—

"A factory has been built in accordance with the plans of your engineer, which, while providing ample accommodation for the additional machinery which will ultimately be repaired, furnishes conclusive evidence that the materials supplied by the company are both durable and economical.

The machinery (engine, mortar-mills, &c.) is of the most approved description, and well suited to the different purposes to which it is applied. The brick press of Messrs. Bodmer & Company, though not yet in proper working

order, has produced about 70,000 bricks, which, as far as it has been possible to test them, appear to give satisfaction. The press is defective in pumping power, and in other respects, which the patentees have agreed to remedy, and when it has been worked for some time by them, with the guaranteed results, it will be taken over by the company. A second press, from plans by your engineer, is in course of construction; and it is expected, when both presses are in operation, that at least 120,000 bricks per week will be produced.

At an earlier period than was contemplated, your directors saw it to be desirable to commence manufacturing mortar, cement, and concrete, and they have supplied the contractors for the new railway station at Middlesbrough, and others, all of whom have expressed themselves as satisfied with the materials. The prices obtained show a substantial profit on the necessarily limited turn-over, which has been carried forward."

LANDLORD AND TENANT.

THE first of the batch of cases arising out of the gunpowder explosion in Regent's Park in October last came before Mr. Serjeant Wheeler in the Marylebone County Court. Mr. Wood, solicitor, was for the plaintiff, and Mr. Hume Williams for the defendants.

The plaintiff, Mr. Clarke, owns the house 9, Tichfield-terrace, Regent's Park, of which the defendant, Mr. Surison, was the tenant. The house had been held under a lease at a rental of 65*l.* a year. The lease expired at Christmas, 1873, since which time the defendant had continued in occupation as a yearly tenant. On the morning of the 2nd of October last, owing to the fearful explosion on the Regent's Canal, the house in question was blown nearly to pieces and rendered uninhabitable. The defendant left the house and sent the key to the agent for the property, stating the circumstances under which he left the premises, promising to forward the quarter's rent due. On the 17th of October the plaintiff told the defendant he should hold him responsible for the rent during the time the house was being repaired. The defendant denied his responsibility, and hence the present action.

For the defence it was argued that the house after the explosion was uninhabitable, and that possession had been surrendered by the plaintiff's accepting the key of the house.

The Judge held that the fact of the plaintiff's accepting the key, although it was the symbol of possession, did not prejudice his claim upon the defendant, because the possession of the key was necessary for the carrying out of the repairs. His judgment would be for the plaintiff, with costs.

ARTIFICIAL SKATING-GROUND.

SIR,—In reply to "Vortex" inquiring for the best material to form the floor of a skating-rink, allow me to say that, after every inquiry and consideration, the proprietors of the rink at Worthing decided to adopt asphalte, which has been laid by the Société Française des Asphaltes. Should "Vortex" think it worth while to inspect this work, I think it would satisfy him that pure natural rock asphalte is the most suitable material for the purpose he requires.

WORTHING.

The inventors and producers of the new cement floors, such as that at Prince's Ground, claim that these are rapidly superseding all others, and "thoroughly fulfil the necessary requirements."

MASTERS AND MEN.

AT the Middlesex County Court, Whitehead's-grove, Chelsea, before Mr. Serjeant Wheeler, the case of Halse and Aggett *v.* Thorn, builder, Cremorne Wharf, Chelsea, was heard. The amount claimed was for one hour and a half's pay, at 9*d.* per hour, in lieu of notice, they being discharged at half-past eleven on January 16th.

Mr. Newman appeared for Thorn. The plaintiffs called several witnesses to prove that it was the custom of the trade to be paid for the two hours in lieu of notice.

The attorney for the defendant desired to be non-suited, as it was no use to contend against the weight of evidence before the Court.

The Judge remarked that he should have required some good arguments indeed why the men should not either have the two hours' notice or the two hours' pay, as it was clearly shown to him that it was essential they should have it.

Verdict for the plaintiffs, 1*s.* 1*d.*, the amount claimed, and 16*s.* 0*d.* costs each case.—*Beehive.*

COST OF HOUSE CARPENTRY 400 YEARS AGO.

AMONGST the ancient manuscripts belonging to Mr. H. T. Wake, bookseller, of Cockermouth, is one, the contents of which afford a striking contrast with the present prices of labour and materials. The document is beautifully written on vellum, and is in fine preservation. We print it *verbatim*, with the orthography modernised, and a few words, within brackets, added in explanation of some terms that, during the lapse of time, have become obsolete. The date of the MS. is 1472, and it is as follows:—

"This indenture made between Alice Chester of Bristol, widow, some time the wife of Harry Chester of Bristol, draper on the one party and Stephen Morgan of Bristol, carpenter, on the other party, witnesseth that the said Stephens hath convenanted with the same Alice and him bindeth by these presents to make well, workmanly, and surely of good timber and boards a new House, in the High Street of Bristol with floors, windows, doors and partitions and all other things of timber work belonging to the same house except lathe and lattices, which said new house shall be set between the tenement called the Bull on the one party and the tenement in which one John a* Cork, Corviser [cordwainer or shoemaker] now dwelleth in on the other party, containing in length 19 feet and 5 inches of size and in wideness 10 feet and 4 inches; and the said Stephen shall make in the said a shop, a hall above the same with an oriel [bay window], a chamber above the hall with an oriel and another chamber above that by the feast of the Annunciation of our lady next coming for which house so to be made by the same Stephen the said Alice Granteth and her bindeth by this present [writing] to pay unto the said Stephen £6. 13*s.* 4*d.* sterling, that is to say, at feast of the Nativity of our Lord next coming £3, at flooring of the said house 33*s.* 4*d.*, and at end of the same work 47*s.* Also it is accorded that it shall be lawful to the same Stephen to have and take as his own all the old timber of the said old house without any gainsaying of the same Alice or any other for her or in her name. In witness thereof the parties aforesaid to these indentures interchangeably have set their seals. Given the 17th day of the month of November, in the 12th year of the reign of King Edward the fourth.—Hardyng."

Hardyng would probably be the name of the attorney who drew up the agreement. The seal bears the impression of a sword and a large Gothic capital I.—*Hereford Times.*

* The "a" in this case signifies "of," and means John of Cork.

"GRINDING MONEY."

A COMMITTEE of the Central Association of Master Builders of London have had under consideration a letter from the Carpenters and Joiners' Society, in respect of what is called grinding money. They say,—

"As one of the primary objects of this Association is unity of action in the settlement of all questions arising between employers and their workmen, your committee have deemed it desirable to make inquiries as to this matter, and find that there is a *general custom* in the trade. Some employers allow two hours' time or pay for grinding tools, some one hour, and some no time at all. Your committee have therefore taken the matter into consideration, with a view of suggesting a rational and fair arrangement for the guidance of the trade. It seems that the two hours frequently allowed is more than necessary. A joiner should always have his tools in fair condition; and, in practice, it is found that the two hours, when allowed, is not needed, or used, for the purpose named. Your committee are therefore of opinion that if a carpenter or joiner be allowed one hour for the purpose of sharpening, cleaning, and packing up his tools, on being discharged, it would be perfectly just; but such allowance should not be made to a man discharging himself, or bing discharged for misconduct."

STAINED GLASS.

Lincoln.—A stained glass window has recently been placed in the south wall of the church of St. Peter in Eastgate to the memory of Mary Moor (widow of a former incumbent of the parish), and also of her father and mother, John and Eleanor Penelope Fardell. The series of pictorial illustrations of the chief events in the earthly life of our Lord is now completed. The window lately erected contains six medallions, representing "The Annunciation," "The Birth," "The Adoration of the Magi," "The Flight into Egypt," "Our Lord in the Temple with the Doctors," and "His Subjection to His Parents." The next window, placed to the memory of Harriott Stapylton Smith, daughter of the late Mr. Burton, has the following subjects, viz., "The Temptation," "The Call of Simon and Andrew," "The Cleansing of the Temple," and "The Sermon on the Mount." The history is continued on the third window. This was placed to the memory of Charles Ward and his daughter Mary Agnes, and represents "Our Lord's Commission to His Apostles," "His Praying in the Wilderness," "His Teaching in a Synagogue," "The Transfiguration," "The Woman anointing His Feet," and "His weeping over Jerusalem." The east window, erected in memory of the last Incumbent by his brother, carries on the life from the "Entry into Jerusalem," through the "Last Supper," and "The Betrayal," until we are brought to the closing scene of the "Crucifixion," and two more medallions set before us, "The Resurrection" and "The Ascension." The windows already erected are the work of Messrs. Ward & Hughes, and thirteen still remain to be filled, their subjects having already been selected.

Thurgarton.—The two windows at the east end of the chancel of Thurgarton Church have been filled with stained glass. The subjects illustrate the life of St. Peter. The architecture being Early English, the glass has been designed and executed in accordance with that style. Each window consists of two bays or lights with a quatrefoil under the arch. The first subject represents the call of St. Peter by Our Lord. The Saviour is standing on the sea shore, beckoning to St. Peter and St. Andrew, the former of whom is in the act of stepping out of the boat. The second is Our Lord walking on the sea and encouraging St. Peter to come unto him. The third illustrates the commission of Our Lord, "Feed my sheep"; and the fourth, the Saint delivered from prison by the angel. In the tracery are circular medallions with angels bearing Scriptural texts. The work has been executed by Messrs. Wailes, of Newcastle-on-Tyne.

Southwell.—New coloured glass has been placed in two of the windows of the Collegiate Church. The two lights are long plain lancets of the Early English period, at the east end of the north choir aisles, and being separated by only a few feet of masonry have been treated as one window. The subject, treated as a mystery, is the Annunciation by the Angel Gabriel to the Virgin Mary. In the light to the left is the Angel Gabriel, clad in loose and flowing robe of silvery whiteness, slashed at the elbow with a sleeve of carmine, and embroidered all over with the emblematic rose of Sharon. In the other light, on the same level, but not as yet looking up to the angel, kneels the Virgin on both knees, clad in close-fitting dress of scarlet, but this is much concealed by the loose over-mantle which falls from the shoulders to the feet, of satiny whiteness. In each light, both above the Angel and above the Virgin, appear three seraphim, who join in singing from the scroll they hold before them. The picture of the Mystery of Annunciation occupies about two-thirds of the window. The space above the Annunciation is filled in with light figured glass, and in the window to the left is placed the monogram I.H.S. on a shield. Beneath the window is this inscription:—"In memory of Thomas Henry Shepherd, last Canon of the Collegiate Church of the Blessed Mary the Virgin of Southwell, who died xi February, mdcccixxiii., aged xciv."

Eaton (Norwich).—Mr. C. H. Capon, the executor of the late Mr. John Hewitt, has recently carried into effect the intentions of the deceased, by placing, at the cost of 100*l.*, a stained glass window in the chancel of Christ Church. The subject represented is the Resurrection of our Lord, and at the foot of the window is the following inscription:—"In memory of Mary, the wife of John Hewitt, who died March 15th, 1870, aged 56 years." The window, which is of three lights, is by Mr. J. R. Thompson, of Southwark, London.

DISSENTING CHURCH-BUILDING NEWS

Idle. — A new chapel having become a necessity, the congregation applied to architects for plans, and out of a number submitted in a limited competition those of Mr. John P. Kay, architect, of Leeds and Idle, were selected. The contractors for the masons' work are Messrs. J. & S. Hobson, of Idle; for the carpenter and joiners' work, Messrs. Deacon & Whitaker, of Shipley; and the other branches to local trades-men, amounting in the aggregate to 3,554*l.* 10*s.* The works will be carried out under the supervision of the architect. The building will be erected on the site of the present chapel in Bradford-road, in the Italian style of architecture, boldly treated. The front is divided into three bays, with cleansed and moulded ashlar pilasters and carved caps; the two outer bays are surmounted with domes, and are terminated with ornamental iron cresting. The height from the ground-line to the top of these is about 60 ft. In the centre bay will be formed the principal entrance doorway, with cleansed ashlar front, and having granite columns and carved caps and spandrels, and over this is a two-lig-

window with granite shafts and carved capitals, the whole surmounted with carved medallion and inscription in the centre. The dimensions of the main building are 72 ft. 6 in. by 51 ft., and the height from floor to ceiling 43 ft. Vestries and class-rooms are provided at the rear of the building, with organ-chamber over. The seats are circular on plan, all of which will be open, bench-ends being substituted in place of doors. Sitting accommodation is provided for over 600 persons. The roof will be a wagon-roof, with dressed and moulded timbers; the materials used in the exterior walls are pitch-faced delfstone wallstones, with cleansed ashlar dressings from the Idle quarries; and the interior woodwork is of pitch-pine.

Doncaster.—For some time past the minister and congregation of the Hall-gate Chapel have seen the desirability of improving and restoring their place of worship. The committee called in the advice of Mr. Athron, and the alterations which have since been carried out include the top of the front of the chapel being taken down, the whole made square, and through an alteration in the style of the windows, giving a more ornamental appearance to the building. The four-square pews on the ground-floor have been subdivided and made into six. A new organ, by Messrs. Meacock & Son, has been placed in the recess behind where the pulpit used to stand, and a platform has been constructed which combines a pulpit, table-pew, and Communion. Behind this, and in front of the organ, a gallery has been erected for the choir. The cost of these alterations has been about 1,000*l.* The edifice was reopened on the 3rd inst.

Strensall.—The foundation-stone of a new chapel for the Primitive Methodists of Strensall, near York, has been laid at that village. For nearly forty years past the local members of this body have had only an old cottage wherein to worship. Accordingly steps were taken to obtain a more commodious and suitable chapel, and the foundation-stone of the new building has been laid. The site of the chapel is the ground hitherto occupied by the cottage and garden referred to. It is centrally situate, and, though small in proportions, will accommodate the Primitive Methodists of Strensall. The building will be a plain brick and stone structure, and consist of but one room, the chapel, which will be nearly eight yards square. A gallery will occupy one end of the building. The cost is about 250*l.* The contractors are Mr. Harrison, builder, and Mr. Mansfeld, joiner, both of York.

Rhos. — On the 8th inst., Mrs. Dennis, of Trafodybwch, laid the memorial stone of a new Welsh Wesleyan Chapel, to be built at Rhos, at a cost of over 1,000*l.* The edifice is to accommodate 300 persons, and beneath the chapel there will be a school-room for 350 children. Mr. Edward Owen, of Rhos, is the builder, and Mr. Richard Davies, of Bangor, the architect.

Books Received.

Cremation of the Dead: its History and Bearings upon Public Health. By WM. EASSIE, C.E. London: Smith, Elder, & Co., Waterloo-place. 1875.

Mr. EASSIE has brought together a considerable amount of useful information, on the subject of which he treats, and it may be expected that his volume will tend to increase the number of the friends of cremation. The volume includes illustrations and descriptive particulars of the Siemens apparatus for burning the dead, and is appropriately dedicated to Sir Henry Thompson, "in recognition of his enlightened advocacy of a practice prevalent in ancient times, but long abandoned to the great detriment of mankind."

Miscellanea.

An Architect's Savings Paying off the National Debt.—A curious will has just been proved, by which the National Debt is to receive a sum of money annually towards its reduction. It appears that Mrs. Foulston, the widow of the late architect, of Plymouth, has just died, at the age of eighty-seven years. She had possessed of a considerable fortune, her personalty being sworn under 78,000*l.*, a great portion of which is left in annuities revertible to the Commissioners of the National Debt. The capital which is thus revertible to the National Debt represents an income of 2,300*l.* per annum.

Electricity as a Moving Power.—A San Francisco newspaper gives the following account of an invention on which a mechanic of that city has applied for a patent:—The principle is the construction, for driving wheels, of enormous electro magnets, which diverge from the centre in the same form as the spokes of an ordinarp wheel, the poles of each maguet terminating with the outer circumference. The electric circuit is complete as the magnet impinges upon the steel rail of the track. As the poles of each magnet forming the driving-wheel approach the track, an enormous magnetic attraction is exerted, and as they pass the centre, or perpendicular point of the magnet upon the track, the current is cut off from each particular magnet and the attraction abated. By the multiplication of driving-wheels of this description, the inventor expects to acquire any degree of power requisite, and accomplish any rate of speed at which a railroad car is capable of travelling, with no possible danger of the locomotives leaving tae track. In place of the cumbersome steam-boiler and tender loaded with coal, the locomotive will carry a magnetic bottery of immense power.

Wall Painting, Slapton Church, Towcester.—Another curious painting has lately been uncovered in this church. Just above the eastern pillar of the nave is the painting of "The Weighing of Souls," and above this, and extending to the point of the arch on either side, and bounded above by a square black border, is the last-found painting, about 12 ft. in length. The principal figure in it is a warrior in armour, mounted, and holding a tilting-spear in his left gauntlet, the plume on his helmet and on his horse's head being plainly conspicuous. On the right is represented a spacious castle, with closed gate and a portcullis, and on the top of the front parapet are two figures, seeming like those of a king and queen, with clasped hands. In front of the warrior is another female figure, and from her hands seems to hang a red cord, as if she were leading the horse. In three different places in the painting,—viz., on the top of the castle, in front of the warrior, and before the horse,—appears a singular plant, with broad leaves.

The Frescoes in the Royal Gallery.—In the House of Commons, on the 18th inst., Mr. Errington asked the First Commissioner of Works whether, considering how successful the treatment of Mr. Richmond, R.A., had been in preserving the frescoes by Maclise in the Royal Gallery from the destruction which threatened them, he would avail himself of the advice and services of the same distinguished artist and of his colleagues on the late committees of inquiry, to arrest the decay of such of the other frescoes as were not already too far gone. Lord H. Lennox said that the frescoes which had not been touched were those in the upper gallery of the House of Commons and four large ones in the House of Lords. He had already entered into communications with respect to them with the proper persons, and when the estimates of his department were before the House, he should probably be able to give a satisfactory answer to the question.

New Chapel and Schools, West Derby Workhouse.—At the meeting of the West Derby Board of Guardians, on the 17th inst., at the workhouse, plans drawn by Mr. Chambers, architect, were submitted, for the enlargement of the hospital and imbecile ward of the workhouse, for the erection of a chapel, and for the erection of schools, being something like the Mettray system, or which would be more properly described as having been drawn up on the pavilion system. Mr. Chambers said the cost of the enlargement of the hospital and imbecile ward would be 12,500*l.*; the church, 5,000*l.*; and the schools, 13,780*l.*, being a total of 32,280*l.* If, however, the building of that portion of the schools which at present would not be required were postponed, the cost would be 2,000*l.* less. After some discussion, the motion for the approval of the plans, and their reference to the Local Government Board, was carried.

The Severn Bridge Scheme.—It is stated that this undertaking will very speedily be commenced, the contracts both for the viaduct and railway having been practically let,—the former to the Hamilton Windsor Ironworks Company (Limited), of Liverpool and London, and the latter to Messrs. Vickers & Cooke, of London. The bridge contract is 190,000*l.*, and the railway work, 90,000*l.*, the period for completion being fixed at three years.

The Reredos in Denbigh Church.—The Bishop of St. Asaph refused some time since to consecrate the new church in Denbigh, and demanded the removal of the reredos, the central compartment of which contains sculptured figures. After the decision of the Judicial Committee in the Exeter case, the committee under whose direction the new church was erected, wrote to the bishop, asking him to receive a deputation on the subject. The bishop, however, replied that he still adhered to his opinion that the reredos as sculptured was illegal, and that he could not conscientiously consecrate the church. The right rev. prelate's letter concluded with the expression of a hope that the committee would substitute some other subject for that now occupying the central compartment of the reredos, and he would then cheerfully accede to their wishes and consecrate the building.

Sale of the Elephant and Castle Theatre. On the 18th inst., the Elephant and Castle Theatre, which was erected only some two or three years ago, was sold by auction, at the Mart, Tokenhouse-yard, by Messrs. Bray, Webb, & Hart, by order of the mortgagee. The theatre was stated to be held on lease for fourteen years, at a ground-rent of 380*l.* a year, with the option of renewing for a term of ninety-nine years, and also with power to purchase the freehold at a fixed price. (This was stated to be 7,500*l.*) It was further stated that the ground upon which the theatre stands covers an area of 10,200 feet, in addition to which there were six railway arches and a covered way included in the purchase. These are held on lease from the London, Chatham, and Dover Railway Company for a thousand years, at a peppercorn rent of 6*l.* a year. The property was knocked down for 2,750*l.*

New Railway Tunnel, Clifton. — The tunnel which has been bored under Durdham Down, and which, as forming one section of the works of the Clifton Extension Railway, will put the Great Western, Midland, and Bristol and Exeter systems into direct communication with the Channel Docks at Avonmouth, is now completed. The length of the tunnel is 1,737 yards, and the gradient is 1 in 64. It has been bored through rock of the hardest description, every foot of which had to be blown away. Mr. W. J. Lawrence, who is constructing the Channel Docks, was the contractor for the work, but the boring of the tunnel was sub-let to the Machine Tunnelling Company.

Fleet-street and Temple Bar.—The Commissioners of Sewers had before them, at their last meeting, a scheme brought forward by their engineer for widening Fleet-street in the vicinity of Temple Bar by throwing back the houses on the southern side of the street. It was also suggested by the engineer as a part of the scheme that a new Bar should be erected in uniformity with the new Law Courts, or that the present Bar should be placed in the centre of the widened roadway, with room on each side for vehicles to pass. The Finance and Improvement Committee were authorised to confer with the City Lands Committee and the Metropolitan Board of Works upon the whole question of the improvement.

Art Prizes Won by a Bricklayer.—At the Warrington School of Art, Mr. Benjamin Jameson, a student, has obtained a national scholarship from the Department of Art, South Kensington, value 52*l.* per annum. Mr. Jameson will be the third national scholar appointed from this school at present studying at South Kensington. Mr. Jameson entered the School of Art in the occupation of a bricklayer, and has been awarded by the Department of Art the gold medal, one Queen's prize in national competition, four third-grade prizes for four years, with a free studentship in the school, and he held the appointment of art pupil teacher for the year 1874. We shall look forward with pleasure to Mr. Jameson's progress.

A District Surveyor Dismissed.—At the meeting of the Metropolitan Board of Works, on the 19th inst., a report was presented from the Works Committee, reporting on the various references made to them as to the conduct of Mr. C. A. Long in the discharge of his duties as district surveyor of St. Mary, Newington, and part of Lambeth, and recommending that Mr. Long's services be dispensed with, on the ground of grave irregularities in the discharge of his duties. On the motion of Mr. Richardson, the report was adopted.

A Building Material.—We are asked by more than one correspondent to mention that Herr Arntz, of Plagwitz, near Leipzig, has succeeded in the formation of composition blocks of novel character for building purposes, and that patents have been granted him for this country as well as for other European States. The surface of the blocks is said to be quite smooth and impervious to moisture and air, if that be any advantage. Further, they are grooved and fit into each other, mortar and plaster being dispensed with, and the building is habitable as soon as completed. It is impossible to determine from this description whether there be any advantageous novelty in this invention or not. We shall see.

Death in a Flue.—At the Cambridgeshire Assizes, on the 22nd, William Wyer, a master sweep, residing in Cambridge, was charged with the manslaughter of George Brewster, a boy about twelve years of age. At the Cambridge and Isle of Ely Lunatic Asylum, Pulbourne, in February, the prisoner was employed to clean out the flues connected with some large boilers in the asylum, and had ordered the boy to take his clothes off and get into the flue, which measured only 12 in. by 6 in. at the orifice and 12 in. by 7½ in. inside, and clean it out. The boy obeyed, and was suffocated. A verdict of guilty was returned, and the prisoner was sentenced to six months' hard labour.

The Cole Testimonial.—On the 19th inst., at a meeting of the executive committee of the Cole Testimonial, held at Grosvenor House, the committee authorised the preparation of a decorative memorial tablet, with a portrait of Mr. Henry Cole, in mosaic; also a marble bust; and it is intended to offer these to public institutions. The balance of the amount subscribed will be placed at the disposal of Mr. H. Cole. On the same day Mr. Cole received intimation from the Prime Minister that her Majesty had been pleased to make him K.C.B. He must now, therefore, be spoken of as Sir Henry.

Carriage-road through St. James's-park. A meeting has been held to consider the best means to be adopted for the construction of a carriage-road through St. James's Park. The chairman said the want of a carriage-road through St. James's Park from Queen Anne's-gate to Pall-mall, by way of St. James's Palace and Marlborough House, had long been felt. For the benefit of foot-passengers, a bridge across the ornamental water had been constructed, and it was now desired that this bridge should be widened, which could be done at a moderate expense, and made available for carriage-traffic.

The "Quarry Wall."—On the 18th inst. the right to what was described as one of the most valuable marble quarries in the county of Devon was tried at Exeter by the Lord Chief Baron. It appeared that a lease was granted for fourteen years of a marble quarry at Ipplepen for 75*l.* a year. The right was defined as "all within the quarry wall," and the question was whether these words applied to an inner or outer wall. The jury found in favour of the latter, and the result is that the plaintiff, instead of having about one acre, will now be possessed of five acres, and marble lies underneath the whole.

Accident.—On Tuesday afternoon Alfred Wall and William Hawkins, labourers, were at work on the sixth story of a mill in course of demolition at Staleybridge. Wall was endeavouring to force out a beam from the ceiling with a crowbar, when the beam suddenly gave way, carrying with it a large portion of the wall. Hawkins, seeing the wall totter, jumped off the top and broke his ankle. Wall was carried to the bottom with the mass of falling brickwork, and he died shortly afterwards.

Bad Dwellings.—The evil state of West Cheshire cottages is again being exposed, and very properly. At one cottage in the little hamlet of Buerton an inspector found that there was only one miserable bed-room, about 13 ft. by 8 ft., which served to accommodate no fewer than nine persons. The rain came through the roof, there was no back door, the drainage outside was a great nuisance, and, to add to the dismal picture, it is stated that the corpse of a child was laid out at the foot of the bed underneath the window.

Church Extension at Dudley.—The contract for the proposed new church of St. Luke, at Dudley, is taken, and the builder (Mr. Nelson) has commenced the work.

St. Peter's Church, North Shields.—On Sunday last, St. Peter's Church, North Shields, was re-opened for divine worship, after having undergone certain improvements. During the past fortnight workmen have been engaged fixing a reredos at the east end of the church. The reredos (designed by Mr. A. Salvin, to whom the restoration of Alnwick Castle was entrusted by Duke Algernon) is executed in Caen stone, coloured marbles, and alabaster.

Sale of Manley Hall.—We are informed that the Manley Hall estate, including the mansion, the conservatories, ferneries, and shrubs, and the 80 acres of freehold land on which they stand, has been purchased from Mr. Sam Mendel by Mr. Ellis Lever, of Spring Bank, Bowdon, who is well known in Manchester as the principal of the Midland Coal Company. The estate realised, we understand, nearly 150,000*l.*

Raising the "Dunphaile Castle."—This vessel, having caught fire in the West India Docks last week, was scuttled. The task of raising her again was successfully accomplished on Tuesday, by the simple process of slinging over her forecastle two of Hayward Tyler's self-containing steam pumps, which work in any position without fixing, and require only to be supplied with steam by a flexible pipe from the boiler of a steamboat moored alongside.

The Paving of Oxford-street.—The question of the future paving of the great western thoroughfare of the metropolis, Oxford-street, has at last been determined by the Marylebone vestry, under whose control it is placed. The committee had ten separate descriptions of wood paving under consideration, and after mature deliberation have resolved to recommend to the vestry for adoption that which is known as "Henson's patent paving blocks."

Organised Charity.—Mr. Francis Peek has agreed to give the Charity Organisation Society the sum of 1,000*l. per annum*, on condition that it will co-operate with the members of the School Board so far as to investigate the causes of the distress brought to light by their visitors, and to assist a certain class of cases which may be described as those of deserving persons whose cases can be permanently benefited by temporary aid, and this the society has agreed to do.

Widening of Chancery-lane.—The Works Committee of the Metropolitan Board of Works recommended on the 19th inst., with reference to the proposed widening of the north-west corner of Chancery-lane, that the Board should agree to the sum of 5,000*l.* as the amount required for the purchase of the ground shown upon a plan forwarded by Mr. l'Anson. The recommendation was adopted.

Exhibition of Photographs at Reading. Mr. J. O. Griffits, the Recorder of Reading, has offered to exhibit his valuable collection of photographs of ancient buildings and works of art, on condition that the exhibition is to be quite free to all classes, the Recorder generously insisting on paying all expenses. The exhibition is to take place at the Town Hall from the 12th to the 15th of April.

Foul Cisterns in the City.—Dr. Sedgwick Saunders, the medical officer for the City, has reported to the Commissioners of Sewers on the foul condition of the water-butts and cisterns in some of the City courts, where diarrhœa and fever are rarely absent. He recommends the immediate erection of a number of stand-pipes, which were intended to be supplied some time ago.

House Property in the City.—An estate, leasehold for a term expiring in 1897, comprising six houses in Warwick-lane, Paternoster-row, and ten houses in Oxford Arms-passage, with the old inn known as the Oxford Arms, let on tenancies expiring in 1878, and producing 890*l.* per annum, which was to have been submitted to auction by Mr. James Beal, has been sold by private contract for the sum of 15,950*l.*

Filtration of London Water.—In his monthly report upon the Metropolitan water supply Major Frank Bolton points out that the rate of filtration should not exceed 2½ gallons per square foot of filter-bed in an hour; this will give 540 gallons per square yard each twenty-four hours, and at this rate filtration should be effectual.

Parisian Archæology.—A church has been discovered recently upon the site of the Church of St. Sulpice, Paris, in the style of the thirteenth and fourteenth centuries.

Therfield Church Ceiling.—The Rev. Mr. Hale, in reply to our observation as to the age of this ceiling, says that the fact of the restoration of the chancel by Bishop Turner is recorded on a cedar tablet on the wall, and that the date is also fixed by the letters F. T. and the figures 78, which are on the end of the ceiling itself where it crosses the chancel arch.

The Underground Fire at South Shields. The underground fire at South Shields again presents an alarming appearance, and is extending. Workmen are employed by the agent of the University of Durham constructing a trench to prevent the fire from extending to houses belonging to them in Commercial-road.

Destruction of Beaufort House.—An extensive fire took place on the 20th inst. on the premises occupied by M. Eugène Rimmel as a manufactory for scents and fancy articles, and formerly known as Beaufort House, in the Strand. The opportunity should be taken to get access to the Embankment.

Memorial of Thanksgiving for the Recovery of the Prince of Wales.—The completion of the restoration of St. Margaret's Church, King's Lynn, which has been effected as the Norfolk memorial of thanksgiving for the recovery of the Prince of Wales, is to be celebrated on Wednesday, the 31st inst.

Marnhull, Dorsetshire.—The new schools in this parish are just completed on the site of ground given by the Dowager Marchioness of Westminster, in a commanding position close to the church and rectory. The edifice was erected by Mr. Miles, of Shaftesbury, under the direction of Mr. J. Soppitt.

Social Science Congress.—The Council of the Social Science Association has fixed October 6th to the 13th as the period for holding the Congress at Brighton this year. It has also authorised an Exhibition of Sanitary and Educational Appliances and Apparatus, to be held at the same time in connexion with it.

Opening of a Baptist Chapel in Rome.—The new chapel is situated in the Piazza San Lorenzo. The premises were bought by the Baptists for 12,000*l.*, and were then converted into a place of worship. There are 300 seats. The chapel is called the Apostolic Church of Christ.

Institution of Civil Engineers.—On Saturday evening last, according to the daily papers, the annual dinner of the Institution of Civil Engineers took place at Willis's Rooms. H.R.H. the Prince of Wales honoured the company with his presence.

Wood Paving.—Following the example of the metropolis, Birmingham has gone in for wood paving, the Town Council having entered into a contract for laying down 20,000 square yards of wood paving in the most crowded thoroughfares.

The Fall of a Stand at Lincoln.—At Retford Assizes, on Monday, a special jury awarded Mr. Howett 250*l.* for damage sustained by the fall of a stand at the last Lincoln Spring Meeting. The defendants were the race committee.

Proposed New District.—The Metropolitan Board of Works have under consideration a proposal for adding the district of South Hornsey to the Metropolitan district, for the purposes of the Metropolitan Management Act.

Winter Garden, Bournemouth.—The Bournemouth Winter Garden Company have arranged with contractors for the commencement of their winter garden, which is to be completed within twelve months.

A Fever Hospital for Taunton.—At a meeting of the Taunton Board of Guardians on the 17th inst., it was resolved to purchase ground outside the town for the erection of a fever hospital.

Mr. J. B. Waring, Architect.—We hear with regret that Mr. Waring died at Hastings on the 23rd inst. We have before us, at present unnoticed, his last work, "Ceramic Art in Remote Ages."

Monumental.—The sum of 1,200*l.* has been subscribed towards the erection of a monument in Glasgow to the poet Campbell. About 300*l.* are still required.

TENDERS

For the erection of two cottages, Packers-lane, Ramsgate, for Mr. W. Spain. Mr. John R. Collett, architect:—
Boughton & White (accepted).

For the erection of a shop, Hawley-street, Margate, for Mr. A. Borton. Mr. Collett, architect:—
Starks (accepted).

For the erection of a shop, King-street, Ramsgate, for Mr. W. Spain. Mr. Collett, architect:—
Boughton & White (accepted).

Alterations and additions to Belle Vue, Stoke Newington. Mr. Thomas Archer, architect:—
M. Allen & Sons (accepted) £1,045 0 0

Alterations and additions to Cintra, Shanklin, Isle of Wight. Mr. Thomas Archer, architect:—
Cooper (accepted) £408 0 0

Alterations and additions to 14, Hemingford-road, Barnsbury Park. Mr. Archer, architect:—
R. Vince (accepted) £275 0 0

For alterations, &c., to the Victory, Newnham-street, Edgeware-road, for Messrs. Watney & Co.:—

Ebbs & Son	£330 0 0
Brown	315 0 0
Thompson & Smith	311 0 0
Taylor	291 0 0
Hockley	270 0 0
Shurmur (accepted)	262 0 0

For alterations to the Talbot, Little Chester-street, Grosvenor Place, for Messrs. Watney & Co.:—
Shurmur (accepted) £441 0 0

For alterations to the Three Tuns, Portman Mews, for Messrs. Watney & Co.:—

Godden	£467 0 0
Taylor	444 0 0
Shurmur	423 0 0
Hockley	376 0 0

For alterations to the Cape of Good Hope, Marylebone, for Messrs. Reid & Co.:—

Foxley	£829 0 0
Sparkes	798 0 0
Shurmur	738 0 0
Longmead & Way	735 0 0
Foster	720 0 0

For erection of Temperance Hall, Guildford. Mr. T. Wonnacott, architect. Quantities by Mr. R. Carpenter.

Beach	£2,089 0 0
Stevenson	1,854 0 0
Holt	1,740 0 0
Hallett	1,733 0 0
Duke	1,625 0 0
Roberts (too late)	1,700 0 0
Giles	1,600 0 0
Warr	1,575 0 0
Berry	1,556 10 0
Bishop	1,500 0 0
Swayne, Sen.	1,494 0 0
Woodbridge	1,490 0 0
Bristow & Burdett	1,453 0 0
Pimm*	1,447 0 0
Morris	1,440 0 0
Lose	1,420 0 0
Garnett	1,390 0 0
Swayne, Jun. (accepted)	1,345 0 0
Patrick & Son (withdrawn)	1,062 10 6

* Took out his own quantities.

For new school buildings, Stepney. Messrs. Charles H. Searle & Sons, architects. Quantities supplied by Mr. C. H. Searle:—

Brass	£4,242 0 0
Perry & Co.	4,098 0 0
Roberts	4,069 0 0
Sewell & Son	4,032 0 0
Simpson & Baker	3,978 0 0
Newman & Mann	3,965 0 0
Dove Brothers	3,965 0 0

For new schools, Lower Park-road, Peckham. Mr. E. R. Robson, architect. Quantities supplied by Mr. Barber:—

Wall Brothers	£7,674 0 0
Oliver	7,490 0 0
Downs	7,279 0 0
Tongue	7,216 0 0
Jerrad	6,943 0 0
Cooper	6,845 0 0
Kirk & Randall	6,800 0 0
Shepperd	6,769 0 0

For new schools Portobello-road, Notting Hill. Mr. E. R. Robson, architect. Quantities supplied by Mr. Rickman:—

Nixon & Son	£12,347 0 0
Williamson	11,279 0 0
Cowland	10,992 0 0
Wall Brothers	10,932 0 0
Rankin	10,673 0 0
Cooper	10,590 0 0
Kirk & Randall	9,790 0 0

For rebuilding No. 21, Market-street, Brighton, for Mr. W. Hughes. Mr. G. L. Abbott, architect. Quantities supplied:—

Parsons	£1,867 0 0
Lockyer	1,844 0 0
Lynn & Sons	1,831 0 0
Cheesman & Co. (accepted)	1,818 0 0

For Brighton Union Club, new card-room, &c. Messrs. Scott & Hyde, architects. Quantities not supplied:—

Cheesman & Co.	£1,039 0 0
Lynn & Sons	1,010 0 0
Lockyer (accepted)	1,000 0 0

For the erection and completion of residence, billiard-room, and offices at Winchmore Hill, Middlesex, for Mr. E. H. Sewell. Mr. F. W. Searle, architect:—

Patman Brothers	£2,098 0 0
Ebbage (accepted)	1,879 0 0

For new schools, Nightingale-lane, Marylebone division. Mr. E. R. Robson, architect. Quantities supplied by Messrs. Gardiner, Son, & Theobald:—

Crockett	£11,021 0 0
Nixon & Son	10,962 0 0
Williamson	10,430 0 0
Manley & Rogers	10,372 0 0
Hill, Higgs, & Hill	10,346 0 0
Wall Brothers	9,999 0 0
Cooper	9,980 0 0
Kirk & Randall	9,943 0 0

For residence, &c., at Slade Hill, for Mr. Charles Crane. Mr. J. R. Veall, architect:—

	House.	Stabling.
Highall	£4,625 0 ...	£660 0
Cockerill	4,380 0 ...	650 0
Lovatt (accepted)	4,045 0 ...	554 0
Clark (withdrawn)	3,622 0 ...	550 0
Horsman (for the whole)	£4,600	

For residence on the Tettenhall-road, for the Rev. G. Witherby. Mr. J. R. Veall, architect:—
Cockerill (accepted) £1,420 0 0

For alterations, &c., to church and alterations and additions to schools of Trinity Chapel, Brixton. Mr. H. Gundry, architect:—

	Church.	Schools.
Ebbs & Son	£900 0 0 ...	£930 0 0
Scrivener & White	829 0 0 ...	754 0 0
Carter	820 0 0 ...	750 0 0
Colls & Sons	817 0 0 ...	737 0 0
Williams	767 0 0 ...	688 0 0
Hill & Higgs	697 0 0 ...	690 0 0
G. & S. Fisher	642 0 0 ...	638 0 0

For erection and completion of the upper portion of the Tower of St. Saviour's Church, Warwick-road, Paddington. Mr. E. C. Robins, architect. Quantities by Mr. F. Lee:—

Kirk & Randall	£2,470 0 0 ... £188 0 0
Colls & Son	2,438 0 0 ... 180 0 0
Sharpington & Cole	2,414 0 0 ... 155 0 0
Hobson	2,374 0 0 ... 160 0 0
Hill, Higgs, & Hill	2,340 0 0 ... 180 0 0
Bangs & Co.	2,197 0 0 ... 125 0 0
Newman & Mann	2,187 0 0 ... 105 0 0
Dove Brothers	2,075 0 0 ... 125 0 0
Macey	1,998 0 0 ... 99 0 0

TO CORRESPONDENTS.

The demands for space on our front page, long resisted, have at last forced us to change the position of the Table of Contents.

The Institute Medals.—We have received a letter signed "F. P. Johnson" complaining of the award of the Soane Medallion this year. The grounds of his objection, as stated by himself, do not seem to us to justify his complaint.

S & A. (next week).—G. J. A. (drawing has been returned).—J. R. C. (should send amounts).—J. D. (arrangements have been altered since our paragraph. We are not aware of the present position of affairs). T. M. (omission must have been quite accidental).—C. G. R.—F. G.—Rev. H. P.—H. T. M.—B. M. B.—T. F. W.—C. & Son.—V. S.—Messrs. H.—J. M.—R. S. L.—A much worse chimney.—An old F. I. B. A.—E. R.—O. S.—F. G.—G. & S. F—W, S.—F.—G. T. R.—J. R. V.—J. C.—W. D.—J. D. H.—C. H. S.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests of course, with the authors.

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The new Policies in the last Year were 610, assuring	332,931
The New Annual Premiums were	10,781
The Bonus added to Policies in January, 1874, was	323,873
The Total Claims by Death paid amount to	3,321,127
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VOL. XXXIII. No. 1673. SATURDAY, APRIL 3, 1875.

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The Future of the India Museum.

IT was at a comparatively late date in the history of this country that private hands laid the foundation of those collections of the relics of ancient art, and the varieties of animal and vegetable species, which have gradually grown into the treasures stored in the British Museum. It is extraordinary how marked a contrast exists with regard to the respect paid to objects of monumental interest, or physical rarity, between the inhabitants of the British islands, and those of the Italian peninsula. The instinct of the uncultivated Englishman, man or boy, generally induces him to express his feelings towards any object of the kind which chance throws in his way, by a blow from a stick or a stone. In the uncultivated Italian, we may feel disposed to smile at the reverence with which he regards some dubious morsel of *antichita*. But as to which form of ignorance is the least ignoble, and which the most obnoxious, there is no ground for hesitation.

The invaluable boon which is offered by the British Museum to the students of mineralogy, palæontology, natural history, monumental history, and classic art has been worthily supplemented, within the last quarter of a century, by the establishment and maintenance of the museum of South Kensington, and its succursal institutions. In these valuable collections, art-schools, and art-libraries, is perceptible the influence of a central principle different from that which regulates the elder museum. The lofty lessons of literature, of history, and of high art, are these for which we find the illustrations aptly collected in Bloomsbury; industrial art, and all that may tend to elevate the taste and ennoble the motives of the artisan, form the *ratio entis* of South Kensington. There is ample room and space for both. The old adage as to two shops making a market was never more worthily illustrated. Fine art, pursued for its own lofty and pure fascination, lends a sisterly hand to industrial and decorative art; of which the first object, indeed, may be humble, but which, as an educational element, is now filtering into many a home that would have been sealed against any mere abstract influence.

A third order of museum, exhibition, or institution for teaching by the eye is now calling for attention. Its claims, if simply and lucidly brought forward, are not weaker than are those of either fine art or industrial art. As a general classification, we may use the term "colonial art" for that to which we now refer. It is true that what we have chiefly to regard, at this moment, concerns the art and industry of one of those ancient seats of a race akin to our own, which, by revolutions that would have seemed miraculous if they could have been foretold, has passed under the dominion of the British Crown. The subjection of the vast empire of India to the monarch of this little country is, if regarded in the abstract, one of the wonders of ethnological story. Princes whose independent, although not supreme, sovereignty, is traced, according to their own claims, through a male descent of ten thousand years, acknowledge the suzerainty of a line which, to count months of existence against the Indian years, has fallen repeatedly to the spindle. A population counted by hundreds of millions is subject to the magistrates of a people counted by tens of millions. It is difficult to show any parallel in history to the magic story of the growth and spread of the British power in India.

It has long been matter of regret with all those who bestow any anxious thought on the future of the United Kingdom, that India, to the majority of Englishmen, is little more than a splendid and indistinct name. The very magnitude of our Indian empire makes the study of Indian affairs oppressive. How many of us, on glancing at the subjects of the leading articles of the morning papers, find the eye instinctively averted from any one in which we catch sight of the name of India. Very recently, indeed, there has been an Indian subject of sufficient attraction to demand telegraphic transmission of details in some extent. But it is as an incident of rare dramatic interest, from the dignity and splendour of the actors, rather than as a matter of real domestic concern, that we have turned to the latest reports of that unexampled act of sovereign judicature, the trial of the Guicowar of Baroda.

It cannot, however, be denied that the prosperity of our Indian Empire is a matter which comes home to our own future interest with a reality as actual as in the case of an Irish county. The position of Great Britain, as one of the first powers in the world, is due, in no small degree, to the fact that the Sovereign of these islands is Mistress of a sixth part of the human race. All our possessions and dependencies might be crammed into a corner of that vast tropical peninsula. Our sons, brothers, friends, sailing, in early youth, from the shores of this country, are no longer as removed from all immediate communication with us at home as if they had been carried to the moon. Through the ancient channel of Indian wealth and commerce, up the channel of that Red and steaming sea which wafted ivory, apes, and peacocks to King Solomon; through that marvellous canal cut by the untiring energy of De Lesseps; our splendid steamers now pass with a swiftness and a regularity that were not attained by our communications with France or with Holland before the accession of the House of Hanover. To this is added the somewhat costly, but marvellously swift, service of the electric telegraph. In no respect have the labours of Watt, Stephenson, Brunel, Wheatstone, and their fellow-labourers, wrought a more marvellous revolution in our condition, than in the manner in which distance to India is reduced, for actual travellers, and annihilated, for the transmission of important intelligence.

Influences of this nature, however, are slow in percolating the general mass of English society. If we may take an analogy from mechanical science, we should say that the transmission of information about India through the English nation follows a law very similar to that which regulates the transmission of heat through water. This, as our mechanical readers will not need to be reminded, is altogether different from its transmission through vacuum, air, or solid substances. Conduction is absent, or at least very feeble. The contagious warmth does not freely pass from particle to neighbouring particle. Establish a current, indeed, as when fire is applied to the bottom of a kettle, and each heated and expanded bubble rapidly and noisily makes its way to the surface, and by the individual selfish hurry and rush of each of these independent bubbles the whole mass is soon raised to boiling point. But it is by the actual contact of particle with particle, due to change of place, as distributing the dose of heat, that the work is effected. Even so is it with regard, not to India alone, but to the Cape, to Australia, to Canada, to each of our numerous colonies and dependencies. Mails and newspapers from these stations affect the majority of us little more than the rays of a burning glass, concentrated on the surface of a vessel of water, affect the particles half-way down. But when a relative or friend comes back from these distant regions to the chimney-corner, or when some great writer or speaker comes before us full of the incidents and the experiences of his own travel, we are apt suddenly to awaken to the vast interests of which we ordinarily think so little. It would be unwarrantable to say that the future welfare of England is entirely dependent on that of her colonies. But it is certain that the form which the power, wealth, and civilisation of this country will have assumed half a century hence, will be to no ordinary degree moulded by the results of our colonial policy.

It is, therefore, the case that any well-considered attempt to bring before the very eyes of the public of Great Britain the actual condition of India, deserves the most earnest support. And an attempt, not only projected, but carried out, year after year, to place in the hands of the manufacturers of this country the products of Indian industry, and in the hands of the artists of this country the masterpieces of Oriental art, is one that demands the support of the statesman, no less than of the philanthropist.

From time to time we have given to our readers some account of what was in course of execution, with the view of familiarising the English student and the English manufacturer with the art and products of India. What has

been most successful in this respect, we take to have been the Indian Court at the International Exhibition. Amongst the names of men who have patiently, perseveringly, silently, and efficiently laboured in a work of sterling patriotism, that of Dr. Forbes Watson will long deserve very honourable mention in this country as well as in India. The lucid arrangement, and admirable descriptions of the objects of Indian origin that from time to time have been brought together at South Kensington, have, no doubt, done more to give the thousands of middle-class Englishmen some definite notions of India than have the noblest efforts of the historian, the statesman, or the orator. Indeed, we have seen in the later Exhibitions in these courts,—and seen with dismay and perplexity,—clearer proofs of the influence of England on India than can be readily elsewhere cited. We say with dismay, because the influence to which we refer is undesirable. It is not the elevation, but the degradation, tending to the extinction, of Indian art, that is heralded by the substitution of cheap English effects for the quaint and ancient blendings of form and colour natural to those children of the sun. One of the points which particularly struck us, in this respect, was the introduction of some of the more glaring aniline dyes into Indian fabrics. It is true that some of these colours are extremely rich. But any one who regards them attentively must be aware of the strong family likeness that subsists among them. In all shades of red,—violet, blue, and the cognate hues,—the same metalline sheen or under-glow is apparent. The substitution of this group of colours for the "mat" colours, whether subdued or splendid, that we are accustomed to see in Indian fabrics, is a retrogression towards barbarism; at least, so far as it has yet been carried out.

Our readers have been often told, without having derived much practical benefit from the information, that those charming and glittering courts at South Kensington have only been the succursal and the subsidiary of the Indian Museum, which, after various chances, found itself perched in the attic of one of the new Government buildings between Parliament-street and St. James's Park. A climb up those numerous stairs was richly repaid; but who climbed? The door of entrance was anything but inviting. It seemed to require the attendance of one or two of those carefully-dressed loungers who lean against the doorposts of the great establishments in Manchester, to hail their wonted customers, to snap up chance visitors, and to overwhelm with the shame of detection any friend of their own who might have been so bold as to "look in" on a rival. In a word, the position of the Indian Museum has been so much the reverse of advantageous or tempting, that the permanent interest of that great colonial empire, and therefore the permanent interest of England at large, have suffered materially from the miserable and extravagant cheeseparing that refused to find a proper site for the museum.

The subject now comes before us with the greater interest, that the contents of these respectable but inaccessible garrets are in course of removal to South Kensington. They are to be displayed, for a time, in the Eastern Galleries built for the proposed Perpetual International Exhibition. Hereafter it will not be thought one of the least good services for which we shall have to feel thankful to Sir Henry Cole, that he has provided so convenient a temporary home for this precious collection. While the lighting of these galleries is especially favourable to sculpture, we do not doubt that it will be found appropriate for the purpose of the better display of the treasures of the Indian Museum. Nor is it a small matter that the locality thus suggested is already familiar to sightseers, and to country visitors to London,—a remark which does not apply to the former situation, at least as a place of display.

The temporary migration of the collection, however, though in itself a good thing, is only a part of that good service which Dr. Forbes Watson is anxious to render to our Imperial Province. As at South Kensington the value of the Museum has been enhanced manyfold by the addition of an Art Library, while the Library has living illustration added to its silent wisdom by the neighbourhood of the Museum, so it is now proposed to establish side by side an Indian Library and an Indian Museum. Collections of various kinds have been accumulating for many years. Great part of them has been as inaccessible to the public as if they had been at Calcutta or at Bombay. Among the various collections, the elements of a great Public Indian Library are far from being the least important.

The printed books which may be said to form the rank and file of this library are already 25,000 in number. To these have to be added as many as 5,000 volumes of what may properly be called State Papers, consisting of records, surveys, reports of all kinds, and gazettes. More than 8,000 Oriental manuscripts, some of them richly illuminated; and numerous works in the various dialects and languages of Hindostan, have also to be considered. The collection of coins furnishes an independent chapter in the history of this great centre of the earliest development of the Aryan race. Maps, plans, charts, and all the geographical and topographical information which has been collected and reduced to graphic form by official surveyors and the officers of the Royal Engineers, form yet another branch of this most valuable educational library. Educational, we mean, in the statesmanlike sense of the word.

The chief departments of art and manufacture, illustrated by the collection of specimens, will suggest themselves to our readers more naturally than the chief branches of the Library. We have seen but little of what is waiting to be displayed, but that little is enough to convince us of the paramount importance of bringing the whole collection fully before the public. The infinite patience of the Hindoo has made him master of a metallurgic art unrivalled unless it be in Japan. Exquisite filigree work, in brass, iron, silver; inlay of metal in metal, of ivory, tortoiseshell, and metal, in wood; pierced work in the fine and durable "blackwood," in the production of which two or three human lives have been devoted to the completion of a single table or couch; jade, a silicious mineral as hard as the flints of our chalk beds, tortured into every fantastic form, gleaming with its peculiar subdued lustre in cups and vases, or wrought into foliage as minute as that of the *lycopodium*; inlay and carvings in agate, marbles, and the once fabulously prized amber; pottery of quaint and varied forms and textures; carvings in ivory, ebony, horn, shell, and sandal wood; lacquer work, in which the juices of vegetables unknown to the Western world are compacted into a solid and durable coating of cane or light wooden objects of daily use; all these are abundant. Textile manufactures range from the thick silks, firm and solid as boards, and dense with twined gold and rich with colour; strong serviceable cotton fabrics, which a band or edge of some quaint pattern lifts at once above the level of squalor; and that woven gossamer, so delicate that when a princess came into her father's court clothed in seventeen thicknesses of it, one over another, the emperor sent her away to put on some more clothes. Such are some of the treasures we have before described. With regard to this last fabric, we can say that a piece of it, of above a yard in width, not only will draw through a very small ring for the little finger, but will allow the top of the finger itself to be inserted in the ring, together with the fabric.

It is the wish of Dr. Forbes Watson not only to appeal to the eye, by a rich and well-ordered museum, not only to store the mind by the contents of the library, but to give voice to the collection by means of well-delivered lectures. As to this we shall hope to have further opportunities of receiving and of communicating information.

It is not to be forgotten that a very serious builder's question will arise as to the future home of these important collections. The subject of their location is not a simple one. It may be too late to suggest the idea that some day we may have a sort of *Pays Latin* in London, a quarter allotted to educational structures of various kinds. The present division of these institutions is very unfortunate. The position of the British Museum is not one that would have been originally selected, if any idea of the growth of London could have been arrived at by anticipation. South Kensington, again, has disadvantages as well as advantages as a site. The chief disadvantage, however, arises from the want of centralisation. A student may have occasion to search for some literary or artistic treasure, as to which he is not aware in which of our great museums he may find it. He would naturally first seek the art library at South Kensington, as more accessible from its compass, as well as from the aid given him by its courteous librarian, than is the case with the larger and more comprehensive library at Bloomsbury. At South Kensington, it may be, he would discover for what volume he has to ask at Bloomsbury. Again, he might seek in the galleries of the latter establishment for illustrations of Mediæval art, in search of which he would thence be attracted to the larger collection at the Industrial Museum. These are but instances of what is continually occurring. For the public, there can be no doubt, the value of our educational institutions would be much enhanced by their proximity. As it is, when we see one great centre of intellectual light at Bloomsbury, another at South Kensington,—a seat built, in the hope that learning would occupy it, in Gower-street; another crammed under the wing of Somerset House; pictures in Trafalgar-square and at Kensington; sculpture nowhere, so far as a properly lighted and constructed glyptothec is concerned; anatomical and antiquarian collections in Lincoln's-inn-fields; Indian treasures, till now, in a garret in Westminster, it is impossible not to feel regret at such a distribution of very precious stores as deprives them of great portion of their value.

All things considered, we think it probable that it is towards South Kensington that the future educational buildings will gravitate. It may or may not be the best course; but we think it is the most probable one. The Thames Embankment, indeed, possesses great advantages as a site; still, it is questionable whether they are enough to over-balance the disadvantage of the creation of a new point of pilgrimage for the student. As regards local claims, we have an example of a proper attention to that important requisite at Bethnal-green. We have a more questionable instance in the ill-attended-to collection of armoury at the Tower. We are rather indicating some of the chief considerations that bear on the subject of site, than offering any positive opinion. We do hold, however, that it is important to have the subject fully and ably discussed, with the aim not only of deciding on the best site for the India Museum, Library, and Institute, but of ascertaining the principle on which the centralisation or decentralisation of the educational institutions of the metropolis should for the future, as far as practicable, be carried out. Our own impression, notwithstanding the opinion expressed by Dr. Forbes Watson,* is strongly in favour of South Kensington as the site for the permanent building to accommodate the India Museum, Library, and Institute.

ISLINGTON UNION CHAPEL COMPETITION.

THE Committee for rebuilding the above-mentioned place of worship requested designs in competition from seven architects, which were sent in on the 21st of January. The proposed new building is to take the place of a respectable and melancholy Classic "compo" structure which at present forms the central object in the row of houses called Compton-terrace, in Upper-street. The requirements were a chapel to contain sittings for not less than 1,650 persons, together with schoolrooms, a lecture-room, a ladies' meeting-room, &c. Special attention was requested to ventilation and acoustics. The entire cost was not to exceed 15,000*l.*; and in order to ensure proper consideration of the plan, Mr. Waterhouse had been engaged as professional assessor, "to advise upon the details of the instructions, and to determine which of the designs conform to those instructions; and to advise the committee as to the relative merits of the designs submitted." The successful competitor to carry out the work, and the authors of the remaining plans to receive 50*l.* each; this sum, however, to be withheld in the case of any design which, in the opinion of the assessor, could not be properly carried out for within 10 per cent. of the amount named.

This should appear to have been intended as a model competition, from the provisions; but competitors cannot be satisfied to keep to the sums named in conditions. There are two contrivances for dealing with these vexatious restrictions: one is, to boldly go in for a larger sum than has been stipulated, and give specious reasons why the committee are really in duty bound to spend the architect's amount rather than their own; the other is to dignify a design with towers and other accessories, which carry the cost far beyond the limited amount, and then to point out in the report that these can be

* On the Establishment, in Connexion with the Indian Museum and Library, of an Indian Institute. By J. Forbes Watson, M.D. London: W. H. Allen & Co. 1875.

omitted if it is thought necessary to keep the building within the cost named by the committee. Two out of the seven competitors have adopted the first course, and three the second; which is the commonest and, as it seems to us, the most reprehensible of the two, as it is really a system of attracting notice by features which are not intended to form, and by the terms of the competition have no right to form, a part of the design to be considered. A professional assessor, of course, is not taken in by this; but he is left in the difficult position of having to set the conditions on one side, or to pronounce the majority of the drawings inadmissible.

"Torcello," it is understood, is the design which has found most favour with the committee and their adviser, and will probably be selected if its author can so far modify it, in regard to costliness, as to reduce it from the 19,000*l.* (nearly) at which he estimates it, to something near the sum named in the conditions, without materially injuring the plan and design. This is, of course, a most irregular proceeding, and has the misfortune of giving to the authors of designs, inferior in merit, a legitimate ground of complaint. Otherwise, we cannot find fault with the choice. The plans, based on that of Sta. Fosca, Torcello, will work admirably as a combination of architectural effectiveness with suitability for congregational worship, which, as we have often observed, is best served by an *area* rather than an *avenue*. The ground-floor seats are arranged in concentric curves; the gallery front forms an octagon (with straight-lined seats), and the roof over takes the octagon form, with a small lantern at the apex. The galleries and centre part of the roof are carried on stone piers, of sufficient dimensions for satisfactory architectural effect, and the seats are so arranged that the piers scarcely obstruct any of them. It is gratifying to see this accomplished without having recourse to the unsatisfactory iron columns which nearly all the other competitors have fallen back upon. The galleries are made to appear as an integral portion of the interior design, and acoustic conditions are expected to be fulfilled by the comparatively low roof. A peculiarity of the plan is that the class-rooms are half below ground, space being found for them under the chapel floor round the external portion of the building. A great saving of space is the result, but the arrangement seems open to objection, and takes the class-rooms very far from the main school-room, at the back on the upper floor. The style is Lancet Gothic of a French type, with a tower, with lantern and short spire over the entrance; the general effect is solid, but somewhat bald and heavy; it presents opportunity, however, for working out better in detail. The author infers in his report that he was hurried in his preparation of the drawings, which indeed show evident marks of haste. The lecture-room will certainly have to be reconsidered on acoustic grounds; it is merely a square room with four flat walls. In other respects the plan, exceedingly simple as it is, shows a very just sense of the practical requirements of the case, combined with good and suitable architectural treatment in regard to the interior especially. We should wish to see the external design considerably refined in detail before it is carried out, but in general composition it is very satisfactory. Every attention has been given to warming and ventilation; the latter being assisted by exhaust ventilators in the tower (for the chapel), and in the lantern over octagon (for the class-rooms).

"Off the Beaten Track" may claim its title as a competition design intended to be executed within the stipulated sum, and which "three respectable builders" have estimated as within that amount. As a general rule, "respectable builders," in such cases, know pretty well what is expected of them; but the design does appear capable of being carried out for 15,000*l.* In other respects, it is not off the beaten track in any marked degree. The style may be called Romanesque, half modernised, half classicised; the centre portion of the front, of which a large drawing is given, is well treated. The plan shows a continuous corridor all round the chapel, a favourite arrangement with the competitors apparently, and a very good one in regard to readiness and ease of access. The galleries of the chapel are over these corridors, not projecting into the main apartment except by a slight bracketing over; they are carried on iron columns from the basement, so that the corridor walls can be removed, and the space thrown into the chapel in case future extension of area is desired. The plan of the chapel does not show any attempt at special arrangement of the seating, so as to combine effect with convenience. The best part of the plan, and one which has attracted a good deal, we believe, of the attention of the committee, is that of the schools in the rear of the chapel; this portion is very well arranged and compact. The idea which seems to be coming up a good deal at present of making the class-rooms above part of the schoolroom, with an open gallery or balcony of communication round, is here carried out. The lecture-room, with its two flat and unbroken end-walls opposite each other, could hardly be found acoustically satisfactory. The interior treatment of the chapel, with its plastered roof broken into two or three planes, looks better in regard to this point, but hardly has anything else to recommend it.

"*Au Fait*" is a design of Italian Romanesque type, with "many stripes," somewhat weakly though heavily treated; the terminations, or lanterns, of the campaniles are very questionable. The seating is arranged in concentric curves struck from a radius some distance behind the preacher. The interior of the chapel is well treated, with coupled iron columns carrying substantial arches, and with a moulded tie-beam roof. The entrance is by a kind of narthex, but on entering the central outer doorway we find ourselves behind a screen following the line of the seats, and presenting a convex curve. This is a very undignified way of arranging an entrance, leaving an awkward shape on the plan of the porch, and entirely destroying architectural effect. The arrangement of the back portion, school and lecture rooms, appears satisfactory. The lecture-room is on the ground-floor, and reached by a corridor from the front street, to the right of the chapel. The seats here are also arranged in concentric curves, with a rapid rise from front to back. The lecture-room in this design gives better promise acoustically than in the last-named plan, and the chapel not so good. In the latter some special consideration has been given to the arrangement of the pulpit, which is less cribbed and confined than usual, and is entered by a passage on a level with it, instead of a staircase to be climbed in face of the congregation. The figures sketched on the seats of the lecture-room and chapel sections afford a rather sorry specimen of the kind of thing which draughtsmen take for wit.

"Hearing, Seeing, Breathing," is a good competition motto, but might be as fairly claimed by other competitors in the set. The design might be described as Italian treated Gothic-wise, in a manner we have seen elsewhere; it is well carried out, though not to our thinking an interesting or captivating design; nevertheless, quiet, and very suitable for the purpose. Curved seats, with a very large radius, are here again the principle of arrangement in the chapel. The mode of entrance presents the same rather mean effect which we noted in the last; a dignified-looking exterior doorway leading only to the back of a screen. Without ignoring the importance of keeping out direct communication with the outer air, it is surely possible to do this so as to give complete architectural character to a vestibule. One campanile alone is shown on one side of the elevation, the other side being cut short, though commencing from the ground symmetrically. The campanile is an "extra," and if not built, the building on this side is to be finished as on the opposite side. At the same time the author refers to the campanile in his report as being the extracting shaft for ventilating the chapel; a specimen of the inconsistencies into which architects fall when they try ostensibly to comply with, and really to evade the conditions of a competition. The chapel is satisfactorily roofed for acoustic purposes, but the galleries are very deep, especially opposite the pulpit, where the hearing, both in the gallery and below it, would be likely to be unsatisfactory. The school and class-rooms are on the ground-floor at the back, and the lecture-room on the upper floor.

The last-named plan seems to want distinct aim rather; the next, "One Focus," perhaps emphasises a theory a little too much. In this the pulpit, near one end of the interior, is the centre from which all the lines of seats are struck, the nearest forming a complete circle round the pulpit, and the same curve carried back the whole extent of the area. The interior perspective sketch shows the circular line carried out everywhere, in the roof, the plan, the apse, and the large organ towering behind the pulpit and tribune; there is a certain degree of genius about the conception, which would give a fine unity of architectural effect, without, as far as we can see, any sacrifice of practical advantages. The lecture-room is central, and immediately behind the chapel, also with the concentric idea carried out, and the class-rooms open from a gallery of communication running round it. A large schoolroom occupies nearly the whole of the back space upstairs, over class-rooms and lecture-room. How far the direct connexion of the class-rooms with the lecture-room suits the wishes of the committee we are not aware. The ground-floor plan of this portion is very compact, and additional air space is secured by leaving the entrance-passages to the schools "open to the sky" for some little distance into the area of the building. In regard to the chapel plan, the author professes to have aimed at a combination of the Greek theatre with the basilica. The "light and sound shadows" of the columns are shown as almost entirely thrown upon passages and avoiding the seats. The staircase accommodation is ample. For the interior decoration a stencilled roof, wall tiles in the clearstory, and an inexpensive and unostentatious treatment of the window-glazing are proposed. Externally the design assumes what seems to be the prevalent style in the competition, a variety of Romanesque, well treated, richly but not heavily, with a small truncated tower at one flank, and the same design carried up on the other side with an octagon stage and a short circular spire. The break from the square to the octagon is harshly managed, but otherwise the feature is architecturally very effective. This it is adroitly proposed should be a private gift, so as to take it out of the limited amount to be expended. The drawings are admirably got up, and show the hand of a true architect in the union of practical considerations and good planning with architectural unity of effect. The statement as to ventilation is very full and satisfactory.

"Faith" shows a design of Romanesque type, which he considers "peculiarly suited to Nonconformist places of worship," as escaping the charge of copying the structures of "the church." The main feature externally is a campanile with a short four-sided spire and a very heavy oversailing cornice. The plan shows a continuous corridor round the chapel and a vestibule right across the front, giving access at each side to the gallery stairs, and in the centre to the main floor. The planning of the accessory buildings is not very satisfactory. The chapel is roofed with a panelled plaster ceiling, a barrel vault with circular lights in some of the panels; this would be susceptible of good decorative effect, though the appearance is a little heavy. The author has hardly studied ventilation philosophically; his "seven openings" in the roof would be as likely to cause down-draughts as up-draughts.

"Progress" deserves all recognition for the industry and enterprise displayed in the elaborate and beautifully-executed set of drawings furnished, including line perspectives in pencil from nearly every point of view, coloured drawings of details, and a large-scale drawing of the whole front. The effect of the front, as shown on one of the perspectives, is very picturesque as a general composition, with a rather pretty flèche of open-work as the crowning feature. But here, we fear, praise must stop. The details are quite below the mark, and the style, avowedly Gothic, seems made up of bits from various Gothic periods put together with little congruity. The author has evidently gone in to win through the magnitude and multiplicity of his drawings; and the fact that in spite of this the selection seems likely to fall on the roughest and least finished set of drawings sent in should be a lesson to him, and an example to other competition committees and assessors. The more it becomes recognised that a competition ought to be settled according to *what* the drawings show, and not according to *how* they show it, the better for all competitors, who will gradually have to find, we hope, that they will gain nothing by this kind of abnormal expenditure of time and trouble on costly drawings, which are totally unnecessary for the avowed object of a competition. At the same time we cannot conclude our remarks without expressing again our regret that another should be added to the list of competitions in which the conditions are thrown over,—conditions which it is perhaps wiser not to lay down so precisely in the first instance; but which, once laid down, the promoters are under a distinct obligation to observe.

The author of the favoured design is Mr. James Cubitt. The other designs stand as

follows:—"Faith," Messrs. Lander & Bedells; "One Focus," Mr. T. Roger Smith; "Seeing, Breathing, and Hearing," Messrs. T. & J. Steane; "Au Fait," Messrs. Paull & Bickerdike; "Off the Beaten Track," Mr. Thomas Lewis Banks; "Progress," Mr. Finch Hill.

THE TOWER OF LONDON AND THE ROMANCE OF ART.

THE world is a very long time in getting rid of its old remembrances. If it be difficult to found and build up a new state, and to build on it, and to thus make a material impression on its surface, whether "unsculptured" quite or not: it would seem to be more difficult still to get entirely rid of these remains and old remembrances. This is a truth all the world over, and in no part of it more true than in these islands, sea surrounded as they are. Such evidences and remembrances of the past are, as all know, all round us in one form or another, and of divers degrees of historical interest and homely association. Indeed, do not they all put together make the country what it is. Now, among these memorials there is not one more world-famous and full to the brim of recollections than the Tower of London. More of the history of the country has been acted in and about it, and connected with it, than in any other building, or on any other spot within its wide extent. As the Tower is to be now somewhat more accessible to the general public, a few notes on some but little observed features in it may be of interest.

It might be a matter of no small interest, and might conduce to clearness, to say somewhat on the general disposition and build of these Middle Age towers, or castles, at one time to be found all over Europe. They were among the necessities of the times, and told of the conflict of hostile races, and of the divisions in society. Saxon and Norman fought round and about them, and in them,—indeed, romance itself has never been able to find subjects more suitable for its purpose than those castles and the doings festive and warlike in them. The Tower of London is one of these castles, or strongholds, of the feudal ages; and that it should have lasted till to-day is a very surprising thing indeed, when we come to think closely of it. It is well worth a few moments pausing over. Gundulph, Bishop of Rochester, was a military architect, as well as a churchman, and it was he who built the Tower of London, for William the Norman, in the year of grace 1079–80. We refer here to the Inner White Tower, or keep. It measures, to give rough dimensions, 116 ft. from north to south, and 95 ft. from east to west, and is 92 ft. in height. To describe the outside of it is needless, for all know it well; but the interior of it is not by any means so well known, or so familiar, and to it we would call a moment's attention.

It is to be noticed, in the first place, that there are three stories in the white tower, and that a wall 7 ft. thick divides the three stories from the base to the summit of the building, which, by the way, is covered with a flat lead-covered roof. Another wall extending east and west divides it again into unequal parts, thus forming in each story one large apartment and two smaller ones. These quaint rooms, so unlike to anything now-a-days designed or built, are in use as armories and arm store-rooms. The very form of the rooms is unfortunately thus lost by the way in which the open spaces are filled up with rackets for the vast multitude of arms of all sorts that are "stored" up in them. To our minds, this seems not a little unhappy, for the quaint and special interest to be found in these apartments is so great that the mere bare time-marked rooms would be a show in themselves; and these arms in them would doubtless show to much greater advantage in some more open apartment, where their very number might be at once visible, and patent to the gaze. These rooms go by various names, such as "Queen Elizabeth's Armory," and so on. In this last, which has a vaulted roof, there is a curious doorway leading to a cell, 10 ft. long and 8 ft. wide, formed in the thickness of the wall, and getting no light but from this doorway. Of course there is a tradition about this narrow prison-cell, as there most surely ought to be, and this Tower is crammed full of all sorts of traditions, dark and gloomy enough some of them. Herein we may read how much and how long human nature may be made to suffer; and how in some cases it triumphs over all ills, however fearful. Sir Walter Raleigh, one of those men who make their mark in the world, is said to have written his "History of the World" in this narrow room. We can hardly think it, looking at matters in a practical, and pen-and-ink light, but will not disturb the tradition. This room, narrow and dark as it is, also contains, partly on its walls, the records of the memories of Rudston, Fane, and Culpeper, men implicated in the Rebellion in 1553, of Sir Thomas Wyatt, and which, as all know, proved so fatal to Lady Jane Grey. No further account has time rendered of these prisoners, but they picture themselves to the mind's eye as you look into their cell. Sir Thomas Wyatt himself perished on the scaffold, on Tower Hill, in the year 1553.

Over this apartment,—for we must note a few details to show how much there is in the famous Tower, and about which so much has been and might be written,—and occupying the whole space from the first-floor to the roof of the building is the chapel of St. John, a right notable place in itself, and worth a more than passing glance and thought. It is a Romanesque or Norman,—we are unwilling to drop this last expressive word from the architectural nomenclature,—specimen of church architecture. The place may well be proud of it. It is, indeed, a miniature cathedral, with a regular apse, semicircular on plan. It has a central nave and aisles, with round columns and arches, and clearstory, and semicircular rough stone roof. A really remarkable building in very many ways. We spent some time in this silent, bare, and deserted chapel when last there, and could but people it with its ancient and mail-clad congregation, for they must here have needs been all "fighting men." A chaplain here, in its prime, constantly performed mass, and for this, as the record of it states, he received yearly the sum of 50s. at the Exchequer. We could but picture this in our mind's eye, and fill the chapel with those who worshipped in that past and almost forgotten time; for the entire emptiness of the place, and this chapel is totally bare of every vestige of furniture, but helps the mind to refill it. It has been miserably treated in many ways. The genuine Norman windows are all gone, and wider openings substituted, and the antique, foot-worn floor has disappeared, and new tiles substituted. Much here might be said, for we could but *restore* mentally the original narrow lights, and could but then picture the strange gloom of the place, and bring back in idea the Norman chapel as it was. There can be no manner of doubt that the grandest form which architecture has ever assumed in this England was the Romanesque or Norman; and here, even as things are, it may be seen and become evident enough to those who can and are willing to look for it. At what time, says the guide-book, it was stripped of its ornaments and furniture, and when it ceased to be used for religious purposes, is unknown. Most surely so. It may be mentioned, in passing, that this chapel is strikingly *resonant*. The "chanting" in those ancient days here, by either rough or smooth voices, must have had a singular effect. Do the thick stone walls help this, and how far, and why? A creation of the past, but to be *explained* by the present.

This Tower is indeed full of romance, and we know not how to say enough in a short space about it, for at every turn there is a something, and the wondering gazer can but wish that the spirit of "improvement" would but now and then pause, and let things alone; here especially, for you cannot but wish, though so vainly, for the power to restore this White Tower, and thus to see it as its priestly architect Gundulph, of Rochester, left it, for it is right full of pitiable and cruel mutilations. The largest room in it is in the upper floor, and was, in the time of its pride the great Council Chamber of England's kings when they held their "Court" at the Tower. The guide-book says that this is an almost "unrivalled apartment," and with its massive timber roof, well harmonises with the grand features of other parts of this building. It does so, and more: it takes you, if willing, fairly into the dead past, and you soon people it. Here in this room did the Council assemble when the Lord Protector, Richard of Gloucester, condemned Lord Hastings to instant execution in front of St. Peter's Chapel. A scene only to be pictured. It was certainly at one time acted. This room, so full of memories, together with the Banqueting-room, is now, as we have said, well nigh choked up with "stores" of arms, weapons, and warlike implements arranged in groups and devices, so as to resemble flowers, and so on. It shows how far it is possible to misuse, and put out of sight, a room of the past, and to blot out its historical memories. War stores, let us add, are most injudiciously and needlessly deposited in every part of the White Tower, the "Armory" only excepted. It is but fair to add that so incongruous is all here in this Tower of London, that the very warders of the Tower, in their ancient costumes, and all so full of odd Tower stories, both right and wrong, regret this not a little, and seem to feel how much is lost by it. We would hope that the authorities will take it to heart, and find more appropriate arms "stores."

Thus far the keep, or White Tower, as part of the whole mass of buildings called the Tower of London, surrounded by its moat, filled at one time with water from the silent river that flows by the side of it. We would fain here go on and map out the rest of this Tower idea, but must leave it for another opportunity. It is well worth study. We cannot, however, even now leave this interesting theme without a note on the disappearance of the quaint "street" which once on a time ran completely round the fortress, the south side only excepted. Here there must most certainly have been not a few curious things to look at. Indeed, one can hardly imagine a stranger or more picturesque sight than this long narrow way of quaint houses, with towers on the one side, and with the outer ward and ramparts on the other. A true and real, however inconvenient, Mediæval street this was. It has, *the whole of it*, totally disappeared! but the course it took, and the *plan* of it can be readily traced, and a strong imagination can, in part at least, mentally restore it. Next to London Bridge itself, before the Great Fire of London in 1666, a date to be remembered, it must needs have been the most picturesque thing in all Gothic London, and the one most unlike anything built or imagined nowadays. A little glimpse of it can even now be seen and realised, for entering the Tower at the south-west angle over the bridge crossing the moat—where so much, by the way, has totally vanished by its being empty of water—we pass through the Byward Tower, immediately into the Outer Ward, and in the turn to the left we get a glimpse into the street, and at the little that remains of the quaintly-grouped buildings, with the Bell Tower and the Beauchamp Tower in the distance—you must not go *too* far. A glimpse, we say, and but a glimpse, may yet be got of this place as in the days of its actual existence and utility. It is worth a visit, is this Tower of London, for very many reasons!

STUDYING THE ECONOMIES.

THE lovers of rigorous economy must feel very much gratified to see, now and then, how the "authorities," here and there, endeavour to look after the pennies, leaving the pounds to take care of themselves. To be sure it happens, sometimes, that, during this intense watchfulness, the pounds take flight, and run wildly away in all directions; that is not to the purpose, for, will not "accidents" happen in the best regulated parishes as well as families?—and the ratepayers must make allowance accordingly.

Some one has said that "an ounce of fact is worth a ton of argument"; and, accepting that very old "saw," we happen to have the valuable ounce, if not more, should more be requisite at present. There is a place near Bristol called Long Ashton, and Long Ashton rejoices in a District Highway Board, and this Board revels in the luxury of a surveyor. In the course of events, however, surveyors, like other mundane beings, disappear, and fresh ones must be found to take their places. So it was with the "Long Ashton District Highway Board," and the consequent "Notice is hereby given," made its appearance in due season under the signature of a gentleman whose name is too "multitudinous" to insert here. This highly picturesque district comprises twenty-two parishes, and possesses one hundred and ninety-eight miles of roads. The new surveyor is to be elected on the 22nd inst., and the following are some of his qualifications and duties. He will have to act as the Board's agent, and carry out all orders given to him, conforming himself, also, to the direction of those above him. Of course none but experienced persons need apply, and, as if to double-lock the door, any who are incapable are warned off; the incapacity being measured by an inability to,—"First, of giving an annual estimate of the expenses likely to be incurred during the ensuing year, for maintaining and keeping the highways in each parish, within the district of the Board,

in repair; second, of keeping accurate accounts; third, of letting and measuring work; fourth, or whose age is above fifty." But, we have not got to the end yet. "The person appointed will be required to keep a horse, and reside near to the centre of the district." We suppose that we may take the horse and the "centre of the district" to be the "fifth" and "sixth." Well, for all the qualifications, responsibility, and skilled work of the said surveyor (not omitting the horse and his "keep"), he is to receive the magnificent salary of,—Two hundred pounds sterling per annum! Surely, the most severe economist would never dream of charging the Long Ashton District Highway Board with squandering the money entrusted to them after that declaration. Let us summarise this "warm" bargain. Twenty-two parishes, 198 miles of road, experienced surveyor, horse, and residence in centre of district, and all for the very moderate sum of 200*l.* a year, 50*l.* a quarter; or about the wages of a third-rate collier working in the pit! Now, the keep of a horse involves the keep of a man to look after him, unless, indeed, the Long Ashton District Highway Board intends to add stableman's work to the surveyor's other duties. Well, man and horse, even at Long Ashton, could hardly be "kept" for less than 30*s.* a week, which is 78*l.* a year,—barring bissextile; then the horse would want something to "put on his back" in the shape of harness when at work, and horse-cloth when at home. Harness indicates a "trap" of some sort, a respectable affair would be necessary to reflect dignity on the Board, and that again rolls one into coachmakers' bills, stabling, stable utensils, &c. Shall we say 22*l.* more for all these things, so as to bring the horsey part of the business down to "even money," as the London bakers have it in their windows? There would then be left 100*l.* a year as the remuneration to the surveyor for looking after the 198 miles of roads scattered over the two-and-twenty parishes! Truly, in the language of the advertisement, "None but experienced persons need apply, *or*," we will not quarrel with the grammar of the Long Ashton District Highway Board, seeing that the commodity is scarce and expensive,—"*or*, any who are incapable" of doing the work of a professionally-educated gentleman on the wages of a house-carpenter. We see that the Board, speaking of the institutional members plurally, are careful,—careful to a degree; they will not even show any extravagance in syntax, but do without it as much as possible whenever they can.

It may, no doubt, interest those gentlemen to hear what one Thomas Telford, a name probably not unknown to them, had to say about roads and road-surveying. In his first annual report on the Holyhead-road, dated May 4th, 1824, he thus speaks:—"Perfect management must be guided by rules and regulations, and these must be carried into effect by the unceasing attention of a judicious and faithful surveyor, who has by actual experience and attention acquired a thorough knowledge of all that is required and applicable to the general and local state of particular districts, as regards soil, materials, and climate, likewise the sort of wear to which the surface is liable. A person possessed of all these requisites, and otherwise properly qualified to level and set out new lines, &c., where necessary, must receive the remuneration such a character merits, and may always obtain, in this active and industrious country." There, magnates of the various district Highway Boards, Long Ashton included, what do you think of that? Surely you will not reply that 200*l.* a year, horse, man, &c., to be kept out of it, is fair pay, according to the above standard; and here we will leave you.

Another phase of studying the economies is afforded by Tipton, of "slasher" renown in muscular annals. Tipton is in Staffordshire, has a population of 30,000 inhabitants, and enjoys the inestimable blessing of a Local Board of Health. This favoured town wants a suite of Public Offices, and the Local Board has, or have advertised for designs for buildings at a cost of 4,500*l.* Well, Tipton is liberal,—at least the Local Board is to Tipton,—as the following ought to show. There are to be three premiated designs, thus:—for the first, or best set of plans, elevation, and specification the sum of *fifteen pounds*; for the second best 10*l.*, and for the third set 5*l.*! But Tipton has not done yet. The Board does not bind itself to accept any of the plans that may be sent in; but should it do so, such premiated plan is to become the property of the Local Board of Tipton. The scale is one-eighth to a foot, and in the event of any of the winners being appointed to carry out the work, the premium he may have received is to be deducted from his commission. Here is a chance for a rising architect, or perhaps for one who is already risen!

Again: the Local Board of Mexborough wants a Market Hall, of the dimensions of 130 ft. by 50 ft. The premium here is 25*l.*, but the whole of the premiated drawings are to become the property of the Board.

Coming a little nearer home, and a step or two downwards, we have every reason to shake hands with ourselves so far as the study of the economies (parish this time) are concerned. The vestry of the parish of Chelsea require the services of a very important officer, that is, if they properly understood his importance, which, from what we see before us, we fear that they do not. They require an inspector of registered lodging-houses, and a dust inspector. His hours of work are to be from eight o'clock in the morning until six o'clock in the afternoon. His "salary, including travelling expenses, will be 78*l.* a year, to be raised 5*l.* a year for three years, and he will be provided annually,"—and here comes our long-cherished, dear, old obstructive Bumbledom to the front,—"he will be provided annually with a livery coat and hat." Then comes a most wise condition, it is as follows:—"The person appointed will be required to square and cube dimensions, to reside in a central part of the parish, and to devote the whole of his time to the duties of his offices." The cubing and squaring ought not to be forgotten. Bonnycastle in livery coat, measuring-tape in hand, is again a sight to behold in the study of the economies.

The neighbouring Board of Works of the Fulham district wants an inspector of nuisances, coupled with the office of inspector under the Adulteration of Food Act. The fortunate individual who may be chosen is to have thirty-five shillings a week, but nothing is said about a livery coat and hat. On account of what is stated about the duties, the person appointed, it is presumed, will have to be acquainted with the "Nuisances Removal Act, the Metropolis Local Management Act of 1855, the various Acts amending or altering the same; such other Acts as may from time to time come into operation within the metropolis," &c. And all this for thirty-five shillings a week—wages!

Seriously speaking, is it any matter of surprise that such studies of the economies should produce in turn a study of how to sham economies? When we see surveyorships offered at prices that would not pay a skilled mechanic, and inspectorships at wages fit only for superannuated policemen, where the intelligence of well-educated gentlemen is required, we need not wonder at what we see,—namely, sham and deceit spreading in every direction.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

The eighth annual general meeting of this Institution was held on Tuesday evening, March 23rd, at the offices of the Society, 27, Farringdon-street,—Mr. George F. Trollope, president, in the chair. There were also present Mr. Charles Fish, Mr. Thomas Stirling, and other friends of the Institution.

From the report it appeared that one new pensioner (Mr. Spencer) had been added to the list during the past year, to which should be added Mr. Eaton, elected on this occasion, making a total of nine pensioners now on the fund.

It was also announced that the sum of 200*l.* had been added to the invested funds during the year, making a total 1,325*l.* so dealt with since the foundation of the Institution in 1866, of which sum 700*l.* stand to the account of the Relief Fund, and 625*l.* to the credit of the Orphan Fund.

Referring to the latter, it may be remembered that proposals were introduced at the meeting last year by Mr. H. T. Bayes for bringing the same into use by purchasing life presentations in some of the excellent orphan homes that now surround London, and which could always be maintained by the insurance of the presenter's life, and the majority of [that meeting having voted in favour of the proposal, the details were submitted to the present meeting for approval.

A discussion ensued as to whether the rules as at present framed would admit of the money being utilised until it reached 1,000*l.*, and eventually it was arranged that the matter should stand over for three months to allow of time being given for properly advertising the special rules proposed, and making such amendments in the existing rules as might be deemed essential for the proper working of the fund.

Votes of thanks were presented to the retiring president, Mr. Charles Fish, and to Mr. Patterson, the hon. solicitor, for services rendered by them to the Institution.

The proceedings were brought to a close by a unanimous vote of thanks to the chairman.

NEW VESTRY HALL AND OFFICES AT HAMPSTEAD.

The Hampstead Vestry have resolved to erect a new vestry-hall and public offices. At their meeting last week the Works Committee reported on the subject. The report stated that various sites had been submitted to them, and they recommended the adoption of that at the south-east corner of Belsize-avenue, which was freehold, and the cost 2,800*l.* The adoption of the Committee's report having been moved by Mr. Le Breton, Mr. Harvey moved as an amendment that the vestry clerk be instructed to offer 1,700*l.* for a large site at Hampstead-hill-gardens. This amendment was lost, after which it was moved that the consideration of the sites be left to a committee of the whole Board, but this also was lost, and the Committee's recommendation in favour of the Belsize-avenue was adopted. It was also resolved that the vestry clerk be instructed to negotiate for its purchase.

THE LATE MR. F. PECK, ARCHITECT.

An advertisement in our journal, last week, announced the death of Mr. Frederick Peck, architect, who has been taken away at the early age of forty-seven. He was a native of Cambridge, and designed the Albert Asylum and the enlargement of the Guildhall, for the designs for which the first premium was awarded him after a public competition. Mr. Peck was known as a rising architect, and his successful completion, on a novel plan, of the Agricultural Hall, at Islington, brought him prominently into public notice.

Amongst other works of his, mostly gained in competition, may be named, the Albert Middle-class Colleges at Framlingham, Bedford, and Trent; the Maldon Workhouse; the Whittlesea Workhouse; the Lincoln Gaol; The Works Hall, Leiston; the Bedington Orphanage; besides several churches and other public works. He had also built numerous private houses, &c., amongst which Sir Robert Harvey's house, at Crown Point, Norwich, may be mentioned.

It would be well if all could give as good an account of the employment of forty-seven years as the late Mr. F. Peck. It seems that epilepsy, consequent upon over-work and a most anxious, excitable temperament, was the cause of decease. He had been a great invalid for three years, for the last twelve months being quite incapacitated from exertion, and his various works have been carried out by his friend and partner, Mr. H. E. Coe. Mr. Peck was an associate of the Institution of Civil Engineers.

THE IMPROVEMENTS IN ROYAL MINT STREET AND THE ERECTION OF ARTISANS' DWELLINGS.

At the meeting of the Whitechapel Board of Works last week, a deputation of ratepayers resident in Royal Mint-street waited upon the Board with reference to the disposition of vacant surplus land in Royal Mint-street, and presented a memorial requesting the Board to dispose of the land only for the purpose of erecting artisans' dwellings. Mr. Straw spoke on behalf of the deputation, and said the inhabitants of the neighbourhood had heard with alarm that the Board was about to let the land in question without any restriction as to the nature of the buildings to be placed thereon. If that were carried out, the result would be injurious to the district; for in making the improvements a large number of dwellings were removed, and a loss followed to the tradesmen of the district. The site was eminently suitable for the erection of artisans' dwellings, and the deputation hoped the Board, in disposing of the land, would secure

their being built. The deputation having retired, the clerk presented a report from the special committee recommending the acceptance of an offer for the land, and at the same time the clerk explained that a railway company wished to purchase the land, and whether any other course was adopted in relation to the property they would endeavour to acquire it by statutory power, in a Bill which they were about to introduce into Parliament. After a long discussion on the subject, it was resolved to hold a special meeting with the view of rescinding a resolution respecting the land passed at a previous meeting, and disposing of it for the purpose of having artisans' dwellings built upon it.

THE PROPOSED DESTRUCTION OF PEMBROKE COLLEGE.

THE memorial we printed has had no effect. The Master of Pembroke says there is no alternative but entire demolition, and adds,—"Orders accordingly have been given for the immediate removal of the old buildings with the view of erecting a new hall on the same site."

Mr. Waterhouse backs up the Master, and seeks to comfort the objectors by saying,—"it is intended, in rebuilding the hall on its old site (but on a somewhat extended area, to meet the wants of the college), to adhere strictly to the style of the fourteenth century, the date of the original structure"; in other words, "We can't leave you the original, but you shall have a very good copy."

The memorialists are far from satisfied, and call upon the authorities to take the opinion of Sir Gilbert Scott, or some other architect accustomed to the restoration of old buildings, as to whether the destruction of the oldest collegiate building in Cambridge is absolutely forced upon them, or if with judicious repair it cannot be preserved in its pristine form.

Mr. John A. Cory, architect, who restored the hall in 1864, cannot agree with Mr. Waterhouse, and cannot but think that means might be found to make the building secure.

But discussion seems of no avail, for the work of demolition is in progress!

THE SUPPLY OF WATER TO THE KINGDOM.

THE Council of the Social Sanitary Association have resolved on the presentation of the following memorial to the Local Government Board:—

"That your memorialists urge upon the serious attention of the Government, the expediency of appointing a Royal Commission to inquire into the subject of the scarcity of pure water in England and Wales, and to make a complete investigation into all the circumstances affecting the present sources and distribution, the localities that possess superabundance and those that suffer from scarcity, and the means by which a more perfect distribution may be effected.

That at the present moment certain communities exist which possess the advantage of having a large supply of water, while there are other communities which are obliged to undergo the inconvenience and hardship of a small supply; and there are numberless villages, also, where no public water supply exists, and where the inhabitants in times of drought are obliged to use polluted water for domestic purposes, much to their detriment.

That for sanitary and other purposes in many towns and villages, an increased supply of pure water is urgently necessary for the preservation of health and prevention of disease; and that to the want of a sufficient quantity of good water, together with the increased pollution of existing sources of supply, are due many of the ailments and no small proportion of the present mortality of the people.

That the object of the Commission should be to ascertain the extent and character of districts suffering from an absence of supply or an insufficient quantity of water; to investigate the capability of raising water from subterranean sources, or of collecting rain-water on the surface before it is absorbed; the capability of storing water in rivers, and to maintain a more equal flow; the supply of water to villages and small towns where no public supply, nor sufficient private supply, exists; the encroachment of one watershed upon another; the mode of constructing reservoirs and tanks, and the purification of water generally.

That in furtherance of this object the Council recommend the appointment of a Royal Commission, as suggested, to inquire into the whole subject of water supply in England and Wales."

We warmly concur in this recommendation.

Opening of Hawkshead Church.—Hawkshead Church, which lies between Windermere and Coniston, was opened last week, when the Bishop of Carlisle preached. The restoration has been conducted under the superintendence of Messrs. Cory & Ferguson, architects. The fittings throughout the church are of oak.

ACCIDENTS THAT CONCERN US.

LAST week the extensive furniture manufactory in Turner-street, Shieldfield, Newcastle, belonging to Mr. Vittorio Mastaglio, was totally destroyed by fire. The workshops being stored with inflammable material, the flames quickly obtained such a hold over the whole manufactory as to utterly preclude the possibility of any portion of it being saved.

The Rev. Dr. Monsell, Rector of St. Nicholas, Guildford, and one of her Majesty's chaplains, met with a serious accident on the 25th ult. The rev. gentleman was standing on a large stone, inspecting the progress of a new church which is being built for him. The stone, a large boulder, moved, and he fell, dislocating his shoulder, and fracturing his left arm.

At Sheffield, on the 24th ult., an alarming accident occurred on the premises of Messrs. Marsden & Stoker, iron and steel merchants, Sheffield Park. The front part of a warehouse, used for storing large quantities of iron, fell with a terrific crash into the road, and blocked it. Several persons who were passing escaped almost miraculously from injury. One side of the storehouse lies parallel with the park, cutting off the Midland Railway.

Mr. Skinner's cabinet-maker's shop and warehouse, at Middlesbrough, has been damaged by fire to the extent of 10,000*l.*

THE YORKSHIRE EXHIBITION AT LEEDS.

THE alterations necessary to be effected at the Coloured Cloth Hall, in order to prepare it for the exhibition of arts and manufactures, to be opened in Leeds early in May, are being rapidly pushed forward. The great central hall, covering two-thirds of the spacious quadrangle, has already been unreared and roofed in, and the various streets, as they are called, of the Cloth Hall, which have been placed at the disposal of the Executive Committee by the trustees and standholders, are in an advanced state of preparation. One-third of the yard has been retained for market purposes, and through this the sightseers will have to pass before reaching the exhibition, grimy brick walls and unsightly offices meeting the eye instead of a blaze of light and colour. After passing through the turnstiles, however, the visitor will be ushered into the grand central hall, covering two-thirds of the yard, and subdivided into nave and aisles. This structure, which is composed entirely of wood and glass, is well designed; and the interior, besides being lofty and capacious, promises when decorated to be charmingly bright and elegant. The nave is one span of 60 ft., and the arched ribs, constructed on Captain Fowkes's principles, and surmounted by a lantern roof, combined with the great height, nearly 100 ft., lend an airiness and grace to the whole. The nave and aisles are 187 ft. long, and the height from the floor to the ridge is 70 ft. It is computed that this hall will seat six thousand people. The works are being carried out from the designs and under the superintendence of Mr. Bakewell, architect, Leeds. Messrs. Whiteley & Co. are the contractors for the grand hall; and Messrs. Boothman & Broomhead for the machinery annexe. Mr. J. L. Brown is clerk of the works.

SCHOOL BOARD SCHOOLS.

London.—Sir Charles Reed, chairman of the London School Board, opened the new buildings just off the Borough-road, Southwark, on Tuesday, the 23rd ult. In the division of Southwark, he said, there were 9,879 children who needed to be in efficient schools. Towards that number there were 3,918 in existing schools, which left the Board to provide for 5,900 children. The Board had agreed at first to provide for about 3,000 children in this division, and this building would accommodate 1,073 children, but still it left a deficiency to be provided for to the extent of 2,200 school places. The site covered 7,500 square feet. There was a playground, which was an important element in the education of children. The site cost 4,800*l.*, and the school 7,000*l.* Mr. Robson was the architect, and the builders were Messrs. Kirk & Randall. The School Board had at the present moment opened about 77 schools. In the Industrial School Department of the Board, 3,395 children had been dealt with by their visitors, and out of that number they had taken 1,757 into industrial homes on board ship, or put them under good influences.

Norton (*Derbyshire*).—A Board School, which will accommodate about 700 children, has been opened in this village. The site of the new building adjoins Derbyshire-lane, and has been erected at a cost of about 2,700*l.* The premises consist of two large rooms and two classrooms. The largest room, which will hold about 400 scholars, is to be used for boys, and the other large room, which is adapted for 300, will be devoted to the girls. The class-rooms can be made to hold about 50 children each.

Wiltshire. — New schools are about to be erected at Donhead St. Mary, at a cost of 1,884*l.* 5s. It is expected they will be ready for opening early in October next.

FEVER DENS IN BERMONDSEY.

AT last week's meeting of the Bermondsey Vestry, the medical officer reported that three children had died of diphtheria in a house, the sanitary condition of which was such that disease was unavoidable. The basement was damp, and the walls dirty and dilapidated. The house, and five others adjoining, were falling to decay, and were become totally unfit for human habitation. They required to be dealt with under the provisions of the Artisans' and Labourers' Dwellings Act, and he certified accordingly. Mr. Porter, a member of the Board, said that the owner of these houses had been to him, and stated that their condition was owing to the filthy habits of the people; but the medical officer said they were not only dirty, but damp, dilapidated, and not fit to live in. Disease to the occupants was inevitable. The surveyor was ordered to report upon the matter, with the view of the owner being summoned before the vestry.

WARWICK CASTLE.

THE restorations here rendered necessary by the fire which occurred there about three years ago, are approaching completion. The *Standard*, after giving some particulars of the works done, says:—

"The inner court is yet encumbered by the temporary office of Mr. Bromwich, of Rugby, the contractor. It is kept pending a decision as to the future home of the valuable Shakspearian library preserved in the castle. Between the machicolated gateway and Cæsar's tower are several offices which have been used for domestic purposes since their erection. A suggestion has been made that this building, erected, it is believed, by Fulke Greville in Shakspeare's lifetime, would be an appropriate resting-place for his works. Whether this idea will be carried out is not yet known, but if the temporary structure was removed the last outside vestige of the fire would disappear, and the spot which has been interwoven with English history from Alfred the Great to Victoria would be again the baronial mansion and Mediæval castle which our fathers knew, and be prized as of yore as the diadem of the Midland shires. The outer walls yet bear the hooks from which the woolsacks were hung by Lord Brooke to guard his gateway against the cannon of Lord Northampton and his cavaliers. The flagstaff is yet on Guy's tower as of yore, when Peto, the governor, displayed his Bible and winding-sheet as a sign of faith and defiance. The stables from which the Gunpowder Plot conspirators stole their horses are destroyed, but at the present stables the old armourer may be seen at his task, a fitting link between the past and the present."

The Water Supply of London.—A Bill bearing the names of Colonel Beresford, Sir Charles Russell, Mr. Forsyth, and Mr. Ritchie, which has just been issued, has for its object the "making more effectual provision for a constant supply of water and for the protection of life and property against fire in the metropolis." It proposes to transfer the several undertakings of the eight companies now supplying water to the metropolis to a public commission to be constituted by an Order in Council, and entitled the Metropolitan Water Commission, and which shall have power to combine, as far as physical conditions admit, the sources of supply and works of the several companies. The shareholders of the existing companies are to receive perpetual annuities in consideration for the transfer of their shares.

THE DEVELOPMENT OF STONEWARE AND OTHER FICTILE MATERIAL FOR ARCHITECTURAL PURPOSES.

ARCHITECTURAL ASSOCIATION.

An ordinary general meeting of the members was held on Friday evening, the 19th ult., under the presidency of Mr. Birch, when Messrs. Francis E. Cameron and H. W. Peek were elected members.

A vote of thanks was passed to Messrs. Cassell, Petter, & Galpin, for allowing the members to inspect their new premises in Fetter-lane, on the occasion of the last Saturday afternoon visit.

Mr. John Sparkes then read a paper on "The Development of Stoneware and other Fictile Materials for Architectural Purposes." He commenced by saying that the use of terra cotta, in its various forms of moulded brick, and that of glazed earthenware in Classical and mediæval times, had been so often alluded to that he could not feel it a part of his duty to enter at length on that subject, especially as the material he had to introduce to their notice was one of these, but an absolutely new application of a very old ware. He had but to recall the use of such materials in Greece, and the colonies of Greece on the mainland in Classic times, known by the superabundence of remains found whenever an excavation was made. The architects of the Classic period loved to decorate their skylines with points of interest, which the plastic nature of their material enabled them to do whenever an antefix came under their hands. In the Middle Ages this tradition came to them, and received a new development, when in the thirteenth century, different methods of decoration were revived—probably much earlier; but the soft nature of the material, the imperfect burning, or the decay of the wood, or the exposure to the influence of the weather, all these would acted to abolish traces of such remains. However, in the drawings of buildings in the west of the town, no doubt they perceived such objects in their ordinary combination, with tile roofs or shingle roofs all serving as backgrounds to their subjects. Many such existed to this day in mid-France, notably at Troyes, Bourges, &c. In these examples ordinary brick earth was built up in architectural form for the finials, cursely put together, apparently modelled, each as it was wanted, *not moulded*. Consequently, a great variety of design, and with an expression and originality not common in modern terra cotta. The earth when burnt was glazed with lead glaze, with any simple colour in it or under it, such as red, brown, yellow, and green. In the fourteenth century, these simple terminations gave way to a finer system of modelling, and various coloured enamels were used to replace the rougher forms and tints of previous designers. These they were and are still called Palissy ware, and had consequently been collected, and in most cases, removed from their original situations. These pieces were enamelled, and a large range of colour was obtainable. Not only in France, but also in Germany such traditional decoration has never lost, and in many a South German village of the present day such things might still be observed. The more general and nobler uses of these materials was manifest in those countries on the level plain of Central and Northern Germany, and in the architectural treasures of this district the architect and the archæologist had a vast series of interesting lessons in the use of burnt clay, in its full variety of forms, as tracery, and as a system of moulding and decoration for openings, he knew nothing in Lombardy more instructive than the gates of Lübeck, the gates of the church of New Brandenburg, and some examples of similar uses in Dantzig. In Holland, Amsterdam, Utrecht, and in other towns, they give less instructive though not less clear evidence of the powers of this material in the hands of the designer, who should grasp its peculiarities, and conform his work to its technical limitations. While speaking of the general subject, he might allude to the material as perhaps the only one that would adapt itself to the endless designs that thousands of artists had given to the world for chimneys and chimney-pots. The variety in Germany and North Italy alone was bewildering; and, in their own country, all, whether artists or not, must be struck with the many characters that the Elizabethan designers gave to the roofs and the skylines by the splendid decoration of the chimneys of their houses, these often being brick, even when the building was of stone. The durability of these pattern decorations must be estimated from the fact that they actually existed at this day. For instance, there were Elizabethan chimneys in Sussex at this hour as sharp as when they were erected. A hot climate did not affect the material; and the gates at Lübeck, and the roofs and pinnacles at Breslau, showed that glazed ware was quite capable of withstanding the severe trials of the hardest frosts for hundreds of years. And the existence of Roman and Greek terra-cotta,—some of a peculiarly frail kind of clay, such as the Etruscan vases,—all pointed to the practical indestructibility of this substance. The remarkable Etrurian monument, recently added to the British Museum collection, by Signor Castellani, proved the indifference of these baked earths to the effects of time. Two thousand years had had no deteriorating effect on this strange work of an almost unknown people. The protection that was afforded by a drip mould was sufficient to secure the bright lead glaze of the ordinary glazed bricks used in Pomerania from deterioration. Climate of the most changeful and rigorous kind, equally with the no less destructive sea winds of their western coast, had the least possible effect on well-burnt pottery, whether glazed or not. The enduring quality of terra-cotta was due to the nature of the clay used in its manufacture, and the amount of heat to which it had been exposed; and this was the difference between honestly-made terra cotta and the material that had often been used, which was too imperfectly fired to resist the ordinary exposures to atmospheric effects. In general, all the cases of durable terra cotta and glazed earthenware mentioned were soft in body, and, in every case, when glazed, were either simply dipped in a lead glaze, or, where enamelled, in a tin opaque glaze, which was afterwards coloured. This protected the soft and more or less porous body from direct action of external agencies; but was in itself not proof against them, and they might conclude that the atmospheric action on all these metallic coatings was sooner or later destructive; so that, finally, the body of the fictile material was the substance on which all reliance must be placed. Thus, the condition of the body was the ultimate consideration in dealing with any of these things. He would seriously ask the attention of all architects to this question, for it was one which had by its neglect served to bring terra cotta and similar pattern materials into disrepute. The point, therefore, to be insisted on was, that the clay was of a proper kind, and the firing was sufficiently long continued and intense to cause the chemical change which converted the friable earth into an everlasting piece of pottery to be perfectly achieved. Both of these points were of importance, for, on the one hand, if an ordinary stock brick were burned in a pottery kiln it turned to a bubble of cinders; other clays, which were perfectly capable of resisting the intense heat, were not close enough in texture to make a tough resisting building-material: thence the proper knowledge of pottery came in here, and, in such a question, it virtually became a matter of honesty and capability in the potter who was employed to produce these things. Again, on the other hand, the amount of firing each piece required was a matter necessarily left to the potter; but the purchaser had his tests, which could be easily applied, such as "ringing" the ware, and the further test of scratching the ware sharply with a steel point or knife, which, if resisted successfully, would prove the burning to have been honestly done. Nevertheless, in spite of many instances of soft terra cotta, the fact remained that burnt clay, in many of its forms, was by far the most durable of all building materials commonly available. The new adaptations in glazed terra cotta he had to introduce were those which had for the most part an effect dependent on the beauty of the ware itself. Not anything was added to the body to develop those golden tones, and those tones that resembled old gilding, and that, judiciously used, would serve as the most gorgeous background of an imperishable material ever brought into practical use. The specimens then before them had passed through the large kilns, and had attained a partial vitrification of body, and were covered with a purely vitreous glaze, so hard as to cause them to rank with porcelain as to their durability. He indicated these few specimens to architects when they had to deal with the finishing and decorating of large wall-surfaces. He now came to a material which had separate claims to the attention of the architects of this country, on the ground of its absolute indestructibility, and its absolute novelty, as well as on the score of its great beauty. Stoneware had been known as a pottery material for many centuries, but only came to its full artistic development in Germany in the fifteenth to the seventeenth centuries. It was a dense and highly-vitrified material, impervious to the action of acid, and of peculiar strength, and differed from all other kinds of glazed earthenware in this important respect, that the glazing was the actual material itself fused together. The whole process of pottery in this ware was peculiar, and its peculiarity was the essential characteristic of stoneware. The difference between it and other ware was this,—that the firing and glazing were one operation. This subtile aërial glazing was thin, transparent, and intensely hard, and almost indestructible. It did not coat the finest scratch so thickly as to obliterate it. It was on this account the perfection of glaze. It was a great security against imperfect burning, as the salt used in connexion with it would not volatilise at a lower temperature than sufficed to make the ware white-hot. Such was salt-glaze stoneware, a material so indestructible, that it was the only ware that effectually resisted the attacks of the strongest acids, and that consequently was used under the general name of chemical ware for the manufacture and storage of these substances. The demand for these chemical vessels was enormous; they were exported to Russia, Germany, and wherever a chemical manufactory was established. The methods of decorating this material were strictly limited by the conditions of its manufacture. Naturally, stoneware, as burnt with coal in Lambeth, had a rich light or dark ochreous brown tint. This might be prepared for colouring by various methods of scratching or cutting out of patterns when the clay was wet, or where "green hard," and various additions might be made to its plain surface by various ornamental forms, or by partially carving, or by piercing, and even by modelling. These various results of treating the surface were then coloured, and the whole fired. It was necessary to call their attention to the range of colour that could be attempted, as upon this question the whole decision respecting its employment must sometimes hang. In the *Old Gris de Flandres* the range of colour was very beautiful, being blue or grey, and purple or purple-brown. The harmony that these two colours made with the body of the grey ware was the source of the pleasure they had in the old pots that were so eagerly collected. With the modern Doulton ware this range of colour had been considerably increased, as by the application of a white slip the old *gris* might be imitated in parts of the ware; this added white or grey to the ochreous body of the stoneware. The old grey and the modern grey, it must be remembered, were burnt with wood, and thus the necessary employment of coal brought them face to face with many difficulties that were never met by the old potters, and the more intense heat produced by coal over wood caused other troubles connected with the body of the ware. The use of larger kilns, and the consequent production of a larger mass of heated ware, which had to be cooled very gradually, brought its own trouble, on the ground that certain colours would stand the intense heat, but not the long-enduring jasper ware colour. Nevertheless, these disadvantages have, in some cases, a corresponding compensation in the partial destruction of the pigments by heat, which produced a most beautiful variety of ware colour. Again, the chemical conditions brought about by the firing of large masses of ware in the open kiln, in close contact with all the vapours of coal in combustion, were very adverse to success in the efforts to introduce certain colours, and the sulphur and other products interfered obviously with the intended results. It was interesting to observe that the efforts made at Lambeth during the last four years had stirred up the German potteries to make a reproduction of their old national ware, and they saw now, even here, abundant proof of this revived activity; but the spirit of the thing was wanting, and at present they had not attempted anything further than the beer-jugs and heraldic fiat bottles that were so fashionable at the time of the Reformation. So that neither now, nor at any other time, had this material been used for architectural purposes. It came, therefore, as an absolutely new application, which it was for the architects of to-day to develop. This, he felt sure, might be done with great gain to the beauty of small parts of their buildings, for the Doulton ware had a property and a quality that no other ware possessed. He

would call their attention to the soft rich brilliancy of the tones. Such a material, if used to touch up a building, must be a valuable addition to an architect's resources. With such colours, applicable as they were to every variety of plastic forms,—sober, quiet, harmonious, and deep, full of quality, and without any possibility of their ever becoming, even in the hands of inexperienced designers, garish or common,—almost any conceivable effect might be produced. And he had to point out that this decoration might and generally was found to still further enrich a building as the fabric obtained age. The disadvantage that attached to the use of bright glazed pottery-ware decorations often was, that they were brilliant and fine, and in harmony with a perfectly new building undimmed by the weather stains and smoke of towns, which, in a few years, would certainly reduce the whitest and brightest moulding to a more or less dingy tone. This objection was met by the employment of this low-toned yet perfectly jewel-like system of decoration. The very virtues of this stoneware, which were the result of its greater trials, made it of different application to terra cotta, as by the greater closeness of texture, and the greater heat that must be employed to vitrify it, a greater risk of warping and cracking was inevitable. This at once indicated its use in small pieces, and in such places where absolute flatness of surface was indispensable; but, under these conditions, he conceived it might be applied, with most admirable effect, to heighten mouldings in red terra cotta, or to panel terra-cotta pilasters that might be either dry or glazed; to introduce it as surface decoration in the manner of tiles, but with a perfectly different quality of effect, as bases and capitals, particularly as shafts to ornamental columns, as bosses to vaults, or as smaller bosses or roses for the heightening of mouldings of all work that was ornamental and visible from a near point of view; for larger work at a greater distance also, but then, of course, the scale and system of the decoration must be adapted to its position. It was clear that the disadvantage that attached to the use of polished marble for shafts or decorative bosses was completely overcome by the unalterable nature of the new material, and the certainty that it would retain its brilliant surface for centuries without any exfoliation or weathering, which too often left the most delicate compositions without a point of interest, except a regret at its premature decay. The ordinary earthenware and majolica bosses were different from those that he now spoke of, in the fact that their glaze was always liable to "craze," and, in the majority of cases, was already crazed, as many specimens he had seen showed. The effect of "craze" was to admit atmosphere and weather influence to the body of the ware *under the glaze*; that meant to disintegrate it in time, if the body was not sufficiently vitreous to resist the attack, which, in the case of stoneware, was assured. The question of strength of this material was not likely to be a vital one, as it was not probable that it would be used in a constructive form, except under certain limitations, but rather as a method of applying surface decoration. Nevertheless, on this score, it was satisfactory to know that water-pipes were made of a clay not so strong in its nature as that used for these vessels, and burned and glazed in exactly the same manner that were subjected to working pressure of 30 lb. to the inch, while the crushing force was from 50 tons to 100 tons per foot of surface dependent on the form and construction of the piece operated upon. Generally speaking, the tables of strength, based on the behaviour of terra cotta, might be regarded as showing the minimum of the resisting power of this new ware. With regard to cost, terra cotta, generally, was a third less than stone for ordinary mouldings, and the usual application of decorative features, but this ratio was materially altered when a design, with much under-cutting, was necessary. Then the facility with which this was done in soft clay caused the relative cost of the two substances to alter in the ratio of half to one-third the cost of stone. With regard to the cost of stoneware decoration, experience in its use was wanting on a sufficiently large scale to have brought it into the market as a material which could be supplied at so much per foot; but the cost, whether of simple patterns or enrichments, would at no time, nor in any combination of colours, be so great as to be any bar to its exclusive use. Thus he had endeavoured to give them an idea of what had been done at Lambeth to develop the new material. It remained for the profession to determine the place it should take in future designs. His impression was, that this art, so entirely in its infancy, would take a prominent place in the designs of the future.

Mr. Birch thought that Mr. Sparkes had treated the subject in a more practical manner than was expected. Mr. Sparkes had spoken of the art he referred to as being in its infancy; but Mr. Birch considered that there were traces of tiles found in Nineveh, and also on one of the old temples of Thebes. References to the art were also to be found in the works of Herodotus and Homer, which proved its antiquity. The subject, however, was one which was especially interesting to them, for there were several present who had used these tiles in architecture, and he trusted they would give the meeting information on the subject.

Mr. Crace thought Mr. Sparkes had brought a material there which, to his mind, was the future "hope" of the London architects. From its sober colour and its extraordinary durability, it was a material unquestionably the most permanent of all decoration. He believed young architects ought to bear it in mind as one of their leading decorative materials. He would like to ask Mr. Sparkes whether the form referred to would retain its exactitude after being baked, as those who had used terra cotta had usually found that one of the disadvantages of that material for friezes, cornices, &c., was the broken line which resulted from the baking. Instead of there being a continued series of parallel lines, there was a series of slight hollows observable in any continuous length. With regard to balustrades, he contended that it would be very inconvenient if they were irregular. These difficulties he considered very prejudicial to the use of a material by the builder. With regard to the question of colour, he thought that the material offered magnificent advantages. He was sure that there were a great many ways in which this ware might be used for exterior decoration with great advantage. There was another important point which militated against its further encouragement, viz., its costliness. On inquiring the price of this kind of pottery in the retail shops, they were surprised at the high price charged for small jugs, and when they contrasted this ware in point of price with the Flemish wares, the difference was very great. This might be owing to the fact that Mr. Doulton had confined his attention to more minute or more elaborate designs than might be thought desirable in the future; but for architectural purpose Mr. Crace considered that designs which involved a great deal of repetition were essential and necessary, and he thought that in that case a great difference in price would take place. He would like to know whether, when a design was executed on a large scale, the cost would be less. In a building there were so many costs that the expense of adding any ornamental frieze or cornice would be first struck off by the owner; but an architect would very often adopt them if the cost were less.

Mr. Spiers said that he was responsible for the question of history having been left out of the paper, for Mr. Sparkes's object was to bring a material before them which was new, in order that they might consider its advantages and ascertain how far it could be used in architecture. Mr. Crace had mentioned the fact that in Germany and Flanders it was possible to obtain pots similar to the ware referred to by Mr. Sparkes at less cost; but he (Mr. Spiers) thought those pots were very different; they were executed by a different class of people from those in England. He hoped, however, this would be altered when schools of art were largely established. He had seen people in Flanders with a common reed working out the most beautiful forms; they were more artistic than the English. He believed it was only a question of time for this ware to be used, when he was sure some means would be found of making the cost cheaper. What they had to consider was, how far this ware could be applied to external and internal decoration? One of the disadvantages was, that it retained its glazed surface for a longer time than the rest of the building. Mr. Spiers referred to the fountain which was erected by the late Mr. Buxton, in order to prove the contrast of colour and stone work, and thought that the Albert Memorial would have to be toned down in order to bring it more in accordance with its surroundings. As a collector of pots, he took great interest in the number of specimens of pottery that had been exhibited, and he believed that in the last four years there had been a greater number of designs produced by this ware than had been produced since the beginning of the world.

Mr. Doulton said there was no idea of applying this ware for architectural purposes until recently; but it struck him that as such beautiful effects were produced, they might introduce the ware into architecture. With regard to its durability, there was no question whatever, for strong muriatic acid had been applied to it, by which they got the same effect as they would have had by several centuries of exposure to the weather, and its appearance was scarcely altered. With regard to the variety of specimens of this material, when this ware was first introduced it was supposed that the variety would soon cease; they did not expect such an exuberant production; but week after week these designs had been produced, and no two of them had been exactly alike, for each would receive different external decoration. Referring to the cost, Mr. Doulton stated that when they were encouraged by some practical use of the ware, they would then see what the cost would be. He was sure that if architects were to use it they would not have much to complain of on that score.

Mr. Payne said that it seemed to him that there would soon be very great development in fictile materials; but thought it would have to be in repetition of the same design in order to decrease the expense, and if that were done, he considered that it would be adopted very quickly.

Mr. Sparkes, in replying, said that when he came amongst practical men, he expected some practical remarks, but this had not been the case. Mr. Crace had mentioned two difficulties: the first was the difficulty of obtaining true lines, and the other difficulty was the cost. With reference to the warping of terra cotta and stoneware, there were two kinds of inaccuracies: the first was, when the ware was being dried before it was fired. In this case it was subjected to the greatest eccentricities, and the other was in the kiln. The first of these difficulties could be obviated by care, and the other by being dried. Pieces of terra cotta had been produced at Lambeth, and which were in actual use, more than 4 ft. long.; and slabs had also been produced to form the top of a mantelpiece more than 3 ft. long, which had quite true lines. This proved that it was simply a question of careful drying. With regard to the cost, Mr. Doulton had partly answered that question; but Mr. Sparkes thought that the cost of an article for building purposes could not be obtained at a West-end shop, as that simply represented the accumulative profits. The ware was, in his opinion, very much cheaper than polished granite or polished stone; but he was glad the work was rather costly, because they were able to get more intelligent people in the Lambeth school to work willingly. This ware was beautiful at any time; it could withstand the attack of time. With regard to its costliness, its use, he believed, would make it cheaper. Of course, in architecture, mechanical appliances could be used; but his argument was that it was interesting for the human mind to dwell upon these designs; and he did not believe that the mechanical productions of this ware could do art any service. In conclusion he hoped that the rising architects would make use of this ware.

HINTS AS TO SEWERS AND DRAINS.

ARCHITECTURAL ASSOCIATION OF IRELAND.

At a meeting, on March 25th, a paper, on the subject of "Sewerage and Sewers," was read by Mr. G. C. Henderson:—Sewerage and sewers are, he said, the subject I find myself nominated to treat upon this evening. Circumstances beyond control have prevented my going into the matter in the manner I had intended, therefore please excuse shortcomings; and as the material part of our subject is an unpleasant thing even to think of, and one that only chemical science can treat in a proper manner, and as I do not pretend to a knowledge of chemistry, I shall confine myself to the means by which we can bring our sewage through our sewers in the least unpleasant manner to the inhabitants of our houses; and if any of my hearers have read the lecture delivered by me some time ago at the Royal Dublin Society, I can only warn them that I am about to go over a good deal of the same ground.

We will first deal with the internal plumbers' sewers, or house soil-pipe, which should always stand in a vertical position. The bore or diameter of these pipes should not, in my

opinion, be too large, as our first endeavour, especially in cities, should be to avoid all deposits, and have the pipes thoroughly cleansed with a minimum quantity of water. A 4-in. pipe therefore seems to me sufficient for any ordinary position. The utmost flush that I have ever seen in a water-closet was supplied by a 1½-in. pipe, and therefore, supposing that two apparatus on the same level were used at the same time, certainly the charges in the pans would momentarily fill the waste-pipe, but would be succeeded by the discharge from, say, two 1½-in. pipes; so much of the soil-pipe being unoccupied as would equal a crust or deposit of better than ¼-in. thick round the same before ever such a rush could operate with full power; however, as neither flush nor deposit will act with mathematical precision, it is no harm to give them both a little play. I cannot pass on without hoping that some improvement in the material used in such pipes will be introduced. I look upon lead as soft,—liable to injury in every way; still, it is almost the only substance we can use in a continuous form. In glazed fireclay the joints are bad and much too numerous, and the cost of copper is excessive; let us therefore hope that the bituminous tube will, after a due trial, be found to supply the want.

In the matter of traps and W.C. apparatus there are persons who will assure you that certain patent valve-closets, by containing the charge in the pan, will need no further trapping. To this I entirely dissent: so long as you hold up the handle you must have a direct escape of gas, which will ever be present in the best soil-pipe; in all cases a second trap should be used, and I look upon the S or syphon form as best. The outer, or metal pan, of the apparatus should be so be as small as possible, and it would be a great improvement if these were enamelled inside, as, doubtless, bad air is generated even in this space, and must inevitably escape through the ordinary putty bedding of the delph pan. Another weak point I have to notice is the connexion of the apparatus with the trap, as it is usually a putty joint, with the apparatus screwed to the floor; and here I see no reason why a screw coupling could not be used and fitted complete before the work leaves the plumber's shop.

We must now follow our soil-pipe, seeing that the joints at the hends, &c., will be soldered, and not merely slipped into one another and caulked with white lead, which is sure to crack with the heat of summer; and having thus far examined the work and seen that the lead pipe is brought to the outside of the walls, we will at once connect with a stoneware syphon trap.

Flush No. 1 pan W.C., air escapes from the outer end of the syphon, and the soil becomes lodged in the bottom of the same; this soil gives off a gas that ascends through the soil-pipe into the house. Flush No. 2 forces the soil, and the air entering forces the foul air into the house. This can be avoided by using the ventilation pipes, now so well known, which should be taken from the top of the traps to the highest point of the house. Some say a ¾-in. pipe will suffice, but I think a good rule is to make your ventilator equal to the largest flush; for instance, where two W.C.s are used over one another, it is only necessary to ventilate the upper one. So much for W.C.s: I hold that all other conveniences require the same care in trapping where they discharge into the soil-pipe, and I will only ask a moderate supply of water and ordinary intelligence to keep away all smell.

Outside the house we come to the builders' pipes, and for these I need hardly say that glazed pipes are the best known material; but here, again, is there any reason why half the ordinary number of joints would not suffice? However, we had better use Jennings's patent, or the half-faucetted pipes, cement the lower half circle and puddle the upper portion, while we lay the sewer with a fall of at least 1½ in. to the ft.

The use of large-sized sewer-pipes is a great mistake. People say because a building is large it requires large sewers. You will at once see the fallacy of this argument when you consider that the sewage does not lodge in the pipes, but only passes through them, and the smaller the pipe the better the flush. So, therefore, it is the size of the cesspool that should be made proportionate to the number of the inmates, and not the bore of the drains, and for ordinary establishments a 9-in. main drain with 6-in. branches will be found sufficient.

The President, in offering a vote of thanks, said experiments were being conducted for the purpose of testing the efficacy of bituminous pipes. The material was as hard as fire-clay without being brittle, and would defy the attacks of vermin. One of the objects of the experiment was to ascertain whether this pipe would be affected by the Vartry water, as it is known that the Vartry water is eating through the present iron pipes in an alarming manner.

MR. ROGERS, THE WOOD-CARVER.

This was more literally his description at an earlier time than the present, for when he began his work, now many years ago, he almost stood alone and really was *the* wood-carver. Born August 10th, 1792 (at Dover), he was in his eighty-third year when he died on the 21st of last month. His first works of any importance were for Carlton House, in 1817. In 1831 he executed the decorations of the library and drawing-room in Kensington Palace, for the Duke of Sussex,—carvings so good of their kind that they have been mistaken before now for works by Grinling Gibbons. When his son, Mr. G. A. Rogers, was called in not very long ago to remove them for the lady who inherited them the name of the actual carver was not remembered. From the date mentioned until a few years ago he continued at work, and produced a large amount of carving which is scattered over the country. In June, 1872, he was placed on the Civil List, and received a pension. He retained his faculties and enthusiasm for art to the last. He had been out in the evening of Saturday, went quietly to bed, and was found sleeping his last sleep on Sunday morning, in his usual position. His eldest surviving son, Mr. Edward Thomas Rogers, late her Majesty's Consul at Cairo, was lately appointed Director of Public Instruction in the Khedive's dominions, as we took occasion to mention at the time. Mr. Rogers was fortunate in the abiding love of an excellent daughter, Miss Mary Eliza Rogers, who has herself, by her attainments and literary works, achieved reputation.

ROMAN HOUSES.

FOREMEN BUILDERS AND CLERKS OF WORKS' PROVIDENT INSTITUTION.

Mr. Roger Smith lectured before the members at the Institution, on Wednesday, March 17th, taking for his subject, "Roman Houses." There was a very large attendance, and the chair was occupied by Mr. S. J. Nicholl.

Mr. Smith said:—When we inquire into anything the Romans did, we ought to do so with the same kind of respectful interest which a man might feel in examining papers or works of one of his ancestors, supposing him to have been a person of great wisdom, and to have acquired fame or riches, or both, of which his descendants were the heirs. We are the heirs of the Romans in many things; in more, indeed, than it would be easy to enumerate. Almost all our civilisation, our knowledge of philosophy and literature, our knowledge of history, some of our laws and much of our language, came to us from the Romans. It is quite true that the Romans themselves received much of what they transmitted to us from the Greeks and from other peoples, such as the Egyptians and the Etruscans; but that does not alter the fact that the inheritance which has reached us has come down to us from Rome. If we want to go to the very original fountain-head, we often have to go further back; but in Roman law, language, learning, and building, we have the germ and root of what we now enjoy, and call modern civilisation.

We can trace many marks of Roman influence in the design of our buildings, and some marks of Roman construction, although both the one and the other were very much altered during the Middle Ages. Construction, especially, underwent such a modification in Europe generally, during the time between the Norman Conquest and the Reformation, that pieces of Roman workmanship look strange to us when we happen to fall in with them. Many changes, of course, arose also in the design of buildings; but still, although the churches and cathedrals of the Middle Ages have an appearance extremely dissimilar to the buildings of the Romans, it would be quite possible to show you, step by step, how the latter grew and altered till they gave place to the others. It would be even more easy to do this with regard to many more modern buildings, because, in the sixteenth century, architects and men of learning alike took a fresh start and went back, as you all know, to the Roman originals once more, so that, to a certain extent, what we call "Classical" European buildings are only separated from the Roman ones by such changes as three centuries may have brought about.

To some extent the rule about modern buildings being descended from Roman holds good as to dwelling-houses, and to some extent it does not hold good, and you may to-night, I dare say, like to inquire with me into the resemblances and the differences which we might expect to find between ancient Roman and modern English houses, owing to the different circumstances of the two peoples who built them and lived in them, and then we may find it interesting to see how far our expectation is borne out.

The circumstance which most of all makes a difference between the real nature of two buildings intended to serve the same purpose, is the place where they are built. It is obvious that in one locality you may easily get material which you cannot at all find in another. In Norway or Switzerland you get wood easily; in more rocky countries,—such, for example, as Yorkshire or Derbyshire,—you get stone easily; in alluvial plains, like Belgium and the basin of the Thames, you get brick easily; and a wooden building we know differs from a stone one, and that from a brick one in its very nature. But I mean something even more radical than the differences which varied materials bring with them. I refer to the effect of *climate*. In a wet climate people have to build to keep out the rain; in a snowy climate, to keep out the snow. In the North they have to protect themselves from the cold; in the South they require shelter from the heat; and it is the different conditions of climate to which are chiefly due differences in the structure of buildings. To climate, also, are due, the most important differences in the character given to architecture. Where the sun is overhead most of the day horizontal cornices produce powerful shadows, and are accordingly among the most important means of producing effect which the architect possesses. On the other hand, with a low sun, sending slanting rays, vertical projections throw great shadows; while horizontal cornices lose their effectiveness. Accordingly, in the architecture which grew up in the North, I mean Gothic architecture, buttresses of great projection are striking features, and the cornice is a mere nothing. While in Classic architecture, which was developed in very sunshiny countries, the cornice becomes the important and distinctive feature, and the buttress is almost unknown. This sort of comparison may be pushed further; but I have said enough to show you that climate has a sensible influence on architectural design.

Now the Romans were a people in the centre, or rather south of the centre, of the great Italian peninsula; they fixed their capital at Rome, and spread north and south from this, and the climate of Italy was the thing which formed their habits. The climate of Italy, without being burningly hot, is a great deal warmer than ours. At this time of the year, for instance, in Rome you would have bright sunshiny days and warm nights, and no such thing as a fire would be thought of. In such a climate you can fancy that people would not want to spend all their time in-doors, that out-door life would be a pleasure to them, and that they would dress very differently to ourselves. As to their dress I shall not say anything to-night, except that, as you will understand from representations, such as statues, coins, and bas-reliefs, it was far looser and lighter than ours, and left the arms and part of the legs bare. A house is but a more solid kind of dress, made to fit a whole family, and accordingly you would expect shelter from heat and glare; fresh air and cool water to be provided in the construction of a house for such a climate.

The Romans were a slave-holding people. A certain part of a Roman's house was set apart for the family, to whom only the most intimate friends were admitted; while another part was used for public receptions and business, they not having offices or separate places of business, as is now the case in most large cities. We now get some idea of what might be supposed to be the requirements of a citizen of ancient Rome, but still we want some basis or plan of what the houses consisted to be able to give a correct idea of what they really were, and fortunately this has been supplied in the discoveries made in the excavations of Pompeii, and the adjoining country town of Herculaneum. Here we find ourselves among ruins which transport us at once to the very homes of the Romans, and enable us to

understand,—in fact, to see with our own eyes,—what the arrangement of a Roman dwelling-house was, and how it was carried out to its minutest details. The buildings of Pompeii seem to have been filled up with fine ashes, which gradually consolidated. When the existence of ruins underground had been discovered, this was very easy to dig out, and large portions of the town have accordingly been laid bare. The upper parts of the walls, &c., have perished, but the lower parts, to a height of 7 ft. to 10 ft., have been preserved, comparatively speaking, fresh and uninjured.

A Roman house was in one respect the very reverse of an English one: it had no windows looking *out*, all looked *in*. We occasionally find in a very large house in England a court-yard, with some unimportant windows looking into it. In the Roman houses this was the universal rule. With us it was once, to some extent, the same, but at the present time every window which we wish to make cheerful and pleasant must look out. With the Romans it was just the reverse. Hardly any window looked out. This arrangement of house is followed by Oriental dwellings, as no doubt you are aware, and this partly springs from the climate, but is also partly occasioned by a difference in mode of life. The streets were dusty, hot, and noisy, and it was not from them that fresh air, cool shade, and tempered daylight could be drawn; accordingly an open space being reserved in the heart of the house the room looked into it. The Roman houses were very few of them lofty.

When any one was admitted into this inside space he was in the heart of everything. How, then, could the family seclusion and privacy be kept up? By having *two* open spaces one beyond the other, and admitting the ordinary visitors only to the outer one next the road, reserving the inner one for the family and friends; here we have the principle on which the Roman house was constructed. It consisted of an outer quadrangle or court, called the *atrium*, surrounded by buildings which looked into it; an inner quadrangle or court, called the *peristyle*, placed further back, also surrounded, or partly surrounded, by buildings which looked into it. Between the two quadrangles was a kind of parlour that opened both front and back, and was known as the *tablinum*. These three features just as much formed the standard skeleton of a house as a drawing-room, dining-room, and entrance-hall make up the outline of an English house; and as far as we know the succession of atrium, tablinum, and peristyle was on the whole very uniformly preserved.

Mr. Smith here gave a long and interesting description of the Pompeiian house at the Crystal Palace, which was illustrated by various large diagrams, many of which were lent by Professor Donaldson and Professor Hayter Lewis, of University College; and he then went on to say: —

The Romans did not hang up pictures, as we do, in frames, but when they wanted a picture in a room, they sent for the artist, who painted it on the wall of the room itself, and left it there. Of movable ornaments, statues are what have come down to us chiefly, though possibly, indeed probably, movable pictures were among the precious possessions of a wealthy Roman. It seems likely they were not hung against the walls, but were placed on stands; at any rate, it is quite certain that a Roman did not depend upon the movable pictures to furnish the walls of his house as an Englishman does.

The house presented, when you were inside, a number of beautiful points of view. Its colouring was contrived so as to make it a harmonious and pleasing whole; and as, when the tablinum was open, you saw all across from back to front, there must have been a pleasing mingling of intricacy and beauty in the view on first entering the atrium, such as few other interiors could give. Even the representation at Sydenham gives you but a feeble idea of the actual beauty of one of these interiors, unless you see it under sunshine so bright as very rarely indeed visits London.

We have not at all the same means of forming even an opinion upon the nature of the Roman villas in Great Britain as we have of arriving at certainty about Pompeii. They have been, as a rule, plundered and destroyed, and it is only such ruins as were not worth attacking which are now discovered. When we discover a Roman villa in England, we only find the stumps of walls and portions of the mosaic pavement, and very little else. This is very different from Pompeii, where you find the walls standing to a height of 6 ft., and 8 ft., and 10 ft., no demolition whatever having taken place, except of the upper stories. The lecturer here described the leading peculiarities of Roman masonry and mosaic work, and of such features as are most readily recognised in Roman remains when discovered in this country.

In one class of buildings the Roman arrangement has come down to England, and remains at the present day. True, it has undergone modifications, and is hardly, perhaps, at first sight to be recognised, but still it has reached us by an unbroken tradition. I refer to the cloisters attached to our cathedrals and the quadrangles of our collegiate buildings. These are the direct successors of the monastic buildings of the middle and early Christian ages, which, without doubt, were arranged on the same plan of a quadrangle, with rooms round it, which we have found was the Roman manner of building.

The early Christian churches of importance were built in the time of Constantine; and when it became necessary to add to them buildings in which the clergy might reside, there can be no doubt that the Roman manner of building was still in force; and at Rome or Ravenna, or elsewhere in Italy, if a house for the clergy was built, its rooms would, as a matter of course, be disposed round a quadrangle covered at the sides and open in the centre,—in fact, a peristyle or atrium, with rooms round it, was the natural thing to build in Italy in those days, just as much as a tall block of buildings with a staircase in the heart of it, and windows back and front, is the natural thing to build nowadays in London. But mark what happened: the atrium, originally added in front of a church, and generally known as a forecourt, soon was abandoned; but this leading principle of building once adopted was, after all, retained, just as, if it were fitting. I could show you that the leading principle upon which Constantine's churches were built has also been retained to the present day. The religious houses increased in size, the peristyle grew into a cloister, and as a cloister it remains, and, as a cloister, was introduced into every country of Europe, our own not excepted. When one visits a cathedral cloister, or sees a college quadrangle at Oxford or Cambridge, one recollects the Roman house with its atrium and peristyle; for what we have before our eye is nothing else than this identical feature, modified, it is true, but not done away with. The sight of such a feature should remind us all of the strong and lasting influence which the Romans exercised over the ways of thinking and building in this country, and, indeed, in all the countries of Europe.

Mr. Bedford proposed a vote of thanks to Mr. Roger Smith for his lecture, which was seconded by Mr. Mark H. Judge, as was also one to Professors Donaldson and Lewis, for the loan of the many valuable diagrams by which the lecture was illustrated. The thanks of the meeting were given also to the Chairman for the loan of several specimens of Roman tiles and other remains. The Chairman, in acknowledging the vote of thanks, spoke at some length in reference to these old remains of Roman work in Britain; and Mr. Smith suggested to the members that when they were engaged in country work, with little of interest to call for their attention, they might think of "Roman Houses," and be on the look out for discoveries. These have been sometimes made by noticing the dew early in the morning, when the line of the walls may be traced in the different density of the dew.

TODMORDEN NEW TOWN HALL.

This building, the gift of the Brothers Messrs. Samuel, John, and Joshua Fielden, M.P., to their native town, and of which we give a view, and shall hereafter add plans of the principal floors, is to be opened to-day, when a large gathering of the district is expected, as at the same time the bronze statue of the late John Fielden, M.P., father of the gentlemen named above, is to be unveiled, probably by the Right Hon. Lord John Manners, M.P. The statue was executed by the late J. H. Foley, R.A., at a cost of 1,000*l.*, and with its polished and moulded granite pedestal has been "raised by public subscription in gratitude to him whose persevering efforts succeeded in obtaining the Ten Hours Act," to which the Royal assent was given 8th June, 1847, and by which the time of labour was limited in the case of the then overworked women and children employed in the cotton and other mills. The walls of this building are faced externally with Ringby stone, the main story being divided into bays by three-quarter engaged columns of a composite order on three sides, and wholly detached and cabled columns to the semicircular end with richly carved capitals. The architraves of the windows and niches are also richly carved. A bold cornice with carved interlacing frieze runs continuously round the building, the Tudor rose being introduced emblematical of the two counties of York and Lancaster in which the building stands. The cornice is surmounted at the west entrance end by a pediment, which stops the roof, and which is filled with grouped figures, sculptured in high relief, representing the chief manufactures and agriculture of these two important counties, the ten figures each averaging 8 ft. in height. The roof is wholly covered with lead.

The semicircular principal entrance-hall is also faced internally with Ringby stone, and polished Hopton Wood stone columns and pilasters support the structure over. A stone staircase forms the communication with the large hall, which latter is 97 ft. by 45½ ft. with a proportionate height—finished with an elaborate enriched cove and ceiling, in which latter are three large sunlights, having ornamental pendants. The side windows and circular lights over are filled with embossed plate glass. The walls are inlaid to a height of 5 ft. with Minton's tiles, and the mouldings and ornaments picked out in gold, colours, and diaper work above. In this room are eight circular bas-reliefs, having life-size figures representing Peace, Navigation, Engineering, Commerce, Justice, Lancashire, Science, and Agriculture; and over the platform at the east end are three other larger groups in high relief representing Art, Music, and Literature, the backgrounds being gilt mosaic.

Under the platform are cloak and retiring rooms, reached from the hall and staircase. At the west end of the hall is a spacious gallery accessible from the public or west entrance stairs, which also communicate with the large hall, cloak-rooms, &c. The hall is seated with oak chairs, and the gallery with fixed oak seats. From the west entrance are approached the board of health, reading, and school board meeting rooms, solicitor's room, and petty sessions court, the latter, from its being situated in the two counties, will obviate many of the inconveniences in the business of the court, which have hitherto existed. The magistrates' bench is enclosed with panelled and moulded oak framing, and is accessible both from the body of the court and the magistrates' room. In front of the bench, and at a lower level, is provided accommodation for the clerk, solicitors, reporters, witnesses, police, &c., with raised seats for the public. Beyond the court are the police and hallkeeper's rooms, with strong and other closets. The entrances are closed by massive oak doors, which are arranged to open outwards.

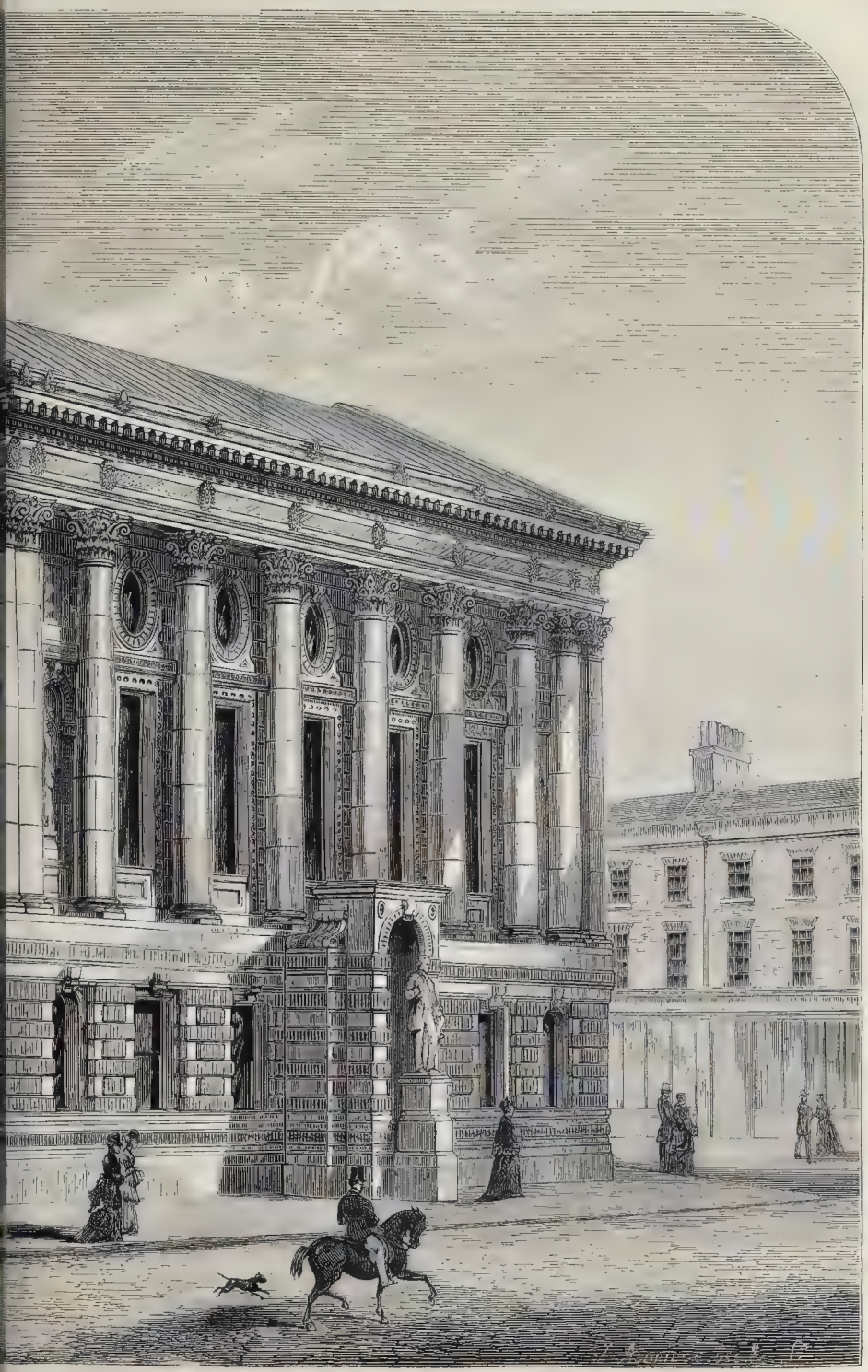
One peculiar arrangement of a portion of the building is its being constructed over arched watercourses, which divide the two counties, the superstructure being carried by the arches assisted by massive cast-iron girders and York stone landings. The portion of the basement which is excavated comprises public conveniences, heating apparatus, and store-rooms for seats from the hall with which a walled shaft communicates. The hallkeeper's rooms are situated over the semicircular entrance-hall, and are reached by a turret-stair communicating with each floor and the roof of the building. The warming arrangements were contracted for by Mr. Phipson, and consist of hot-water pipes with coils, and a chamber almost surrounding the large hall. The walls being built hollow, are made to serve for warming and ventilation. The gas lighting was contracted for by Messrs. Strode; the decoration and furniture were undertaken by Messrs. Trollope; and the sculpture bas-reliefs, and plaster-modelling by Messrs. Mabey.

The building contract has been carried out by Messrs. Neill & Sons, from the designs and under the superintendence of Mr. John Gibson of Westminster; Mr. J. F. Horsfall acting as clerk of the works. Messrs. Neill have also executed the stone background to the statue outside the building, and which was not originally contemplated in the position shown in our view. The carving to this and the remainder of the building has been executed by Mr. Thomas Colley.

It may be interesting to mention that Todmorden is a manufacturing town of about 15,000 inhabitants, and it is the intention of the Messrs.



TODMORDEN TOWN



Mr. John Gibson, Architect.

Fielden, on the day of opening the Hall, to convey the building and its site (the entire cost of which will fall little short of 40,000*l.*) to trustees for the benefit of the town, and to provide the necessary accommodation for the transaction of the public business. It is proposed to allow the hall of the building to be used for meetings, concerts, lectures, and other purposes tending to afford instruction or amusement to the public; and should the proceeds from so doing exceed the amount required for the repair and maintenance of the building, the residue to be devoted towards objects for the benefit of Todmorden or the vicinity.

THE LATE MR. W. C. AITKEN, OF BIRMINGHAM.

Birmingham has lost a valuable and worthy citizen by the death of Mr. W. C. Aitken, which has just now occurred there. For years he has been mixed up with every movement in the town connected with the art and science training of his fellow-townsmen, and every one there acknowledged his ability, perseverance, and integrity. He was born at Dumfries on the 3rd of March, 1817; the son and the grandson of men who had skill in the brass foundry trades. He was educated at the Dumfries Academy, where one of his fellow-students was Robert Thorburn, afterwards well known as a painter. Dumfries was too limited a field for Mr. Aitken's peculiar powers. For some time he assisted in his father's works, and then, while still a youth, he came to Birmingham as an "improver." He then went back to Dumfries; but in 1844 returned to Birmingham. His first engagement was at the works of Messrs. R. W. Winfield & Co., in Cambridge-street, where, we believe, he was intimately connected with the invention of nature-printing. On leaving Messrs. Winfield's he held a short engagement with Messrs. Hardman & Co., and then, removing for a time to Coventry, he became manager at Messrs. Skidmore's Art Manufacturing Company. He was later, however, to return to Birmingham, and subsequently accepted an engagement as manager at Messrs. Hardman's new works in Newhall-hill, a position which he held until about three years ago, since which period he has remained at of active business employment, though still busily occupied with his labours for the promotion of the teaching of science and art.

He was appointed to conduct parties of workmen to the Paris and the Vienna Exhibitions, and the Reports, which were written under his guidance and suggestions, edited by him, and issued by the local Chamber of Commerce, are admirable contributions to the history of industrial art. His own contribution on this occasion was warmly referred to in our pages, as indeed most of his good doings have been, for he rarely failed during many years to communicate with us on such topics and views as occupied his mind. He was a worthy and valuable man, and we are unaffectedly distressed by the news of his death.

THE NEW PIER AT EGREMONT, LIVERPOOL.

This pier is approaching completion, and was opened on Thursday last. A wide, open space has been formed upon the site of the former offices, engine-house, and the open netting in which the old stage was worked. The netting has been arched over and the surface levelled, raised, and flagged to a height of 4 ft. 6 in. above the level of the former pier. Upon this space the ferry station has been constructed. It consists of a hall built of brick, with an open timber roof. Within it are the waiting-rooms and other conveniences, and also the turnstiles and contractors' gates. A projecting roof to Robin-street enables cabs to set down passengers under shelter. There is a similar roof riverwards, with seats underneath. On passing through the station there is the pier, a roadway 20 ft. wide, which projects 95 yards into the river. The roadway is of pitch pine, 3 in. thick, caulked, and laid longitudinally upon rolled wrought-iron transverse joists, the joists being secured to two lines of continuous wrought-iron latticed girders, 4 ft. deep. The whole is supported at intervals of 7 ft. by cast-iron columns in pairs braced with wrought-iron ties. The columns are 12 in. in diameter and 1 in. thick, having at the ends a broad flange 3 ft. in diameter, sunk 5 ft. into the clay of the foreshore. The outer end of the pier is formed of two groups of traced cast-iron columns, arranged as tripods, and meeting at their heads within a heavy casting, upon which a wrought-iron box-beam is secured to the line of the roadway. This arrangement provides a finish to the pier, and a support for a bowstring lattice girder-bridge. The bridge, which is 80 ft. long and 9 ft. wide, works upon steel joints within forged blocks, secured to the box-beam at its inner end, its outer end being supported by a similar girder, under which are placed two hydraulic coupled rams, having masonry foundations on the foreshore. The outer pierhead or dolphin is formed, like the inner pierhead, of two groups of columns, also arranged as tripods, connected on the top by a heavy wrought-iron worked box-girder, 4 ft. 6 in. in depth. Within it the heads of the columns project, and are riveted so as to form one structure. The columns are of wrought-iron tubes, 20 in. diameter, and ½ in. thick, stiffened with heavy angle-iron, and braced at intervals of 10 ft. by rolled wrought-iron joists, 12 in. deep, having a base in the mooring line of 66 ft. The whole of this wrought-iron work is riveted up, no bolts being used in any part. The bottom end of each of these columns is received in the socket of a cast-iron foot pile, 2 ft. diameter and 2 in. thick. The foot piles are screwed into the foreshore to varying depths, according to the nature of the foundation. The diameter of the screw is 4 ft. 6 in. To the river face of the dolphin a timbered fender of American elm, 2 ft. thick, in whole baulks, is secured, served with heavy iron rubbing-plates outside. The distance to low water at spring tides being 240 yards, it has been necessary to resort to a travelling platform as a means of communication with the ferry boats when they cannot approach the pierhead. The contractors for the pier and stage are the Darlaston Bridge and Roofing Company (Limited), by whose foreman of works (Mr. James Keen) the erections have been concluded. The contractor for the masonry was Mr. James Redikalgb, of Liscard; the buildings were entrusted to Messrs. J. & T. Mason, of Egremont; and the hydraulic machinery has been constructed by Messrs. Emmerson, Murgatroyd, & Co. (Limited), of Stockport, Liverpool, and Seacombe. The works were designed by Mr. Carson, the engineer and manager of the board's ferries, and have been carried out under his supervision and that of Mr. T. H. Lee, surveyor to the board.

THE MUSEUM OF DECORATIVE ART.

In these days when special exhibitions do abound, and when each varied form into which art concretes itself, finds some independent home for itself we had hardly thought that room for any fresh collection existed without trenching on the domain of some prior one, but a visit to that established by Messrs. George Trollope & Son, in Halkin-street West, Belgrave-square, amply demonstrates that a hitherto unthought of void has been filled. In it they have massed together a large number of examples of those decorative processes with which every architect ought to be to some extent acquainted, and here they have brought into one view much that is known and practised relative to decorative art in various parts of Europe. Nor have they confined their galleries to the exposition of applied decoration, but have also collected therein a number of those decorative or useful accessories which add to the elegance and increase the comfort of our homes. Two large and lofty galleries are devoted to these purposes, and the first portion of one of these is set apart for the display of such fixed decoration as pertains more directly to architectural enrichment. Its floor is devoted to specimens of pavements, and chiefly to that revival of the art of mosaic which in these latter days has been so extensively used on the Continent, and which we believe was mainly introduced into this country by the director of this museum, Mr. G. T. Robinson, who has abandoned the more general pursuit of architecture, to devote himself to the development of its decorative accessories. Here are laid down various illustrations of mosaic treatment applied to floors, and executed in accordance with the practice of the ancients, some of them being absolute reproductions of such Roman works as yet remain in this country, whilst others show its adaptation to more modern styles of architecture. No flooring process, indeed, lends itself more readily to the treatment of design than does this of mosaic. There is in it no need to repeat the same pattern, nor is any saving of cost effected by doing this.

The cost of cutting marble into various forms so as to reproduce or revise the *opus sectile* so largely employed in the days of the Renaissance, and in that form of Mediæval art which in Italy preceded it, has prevented its adoption in more modern times, but here is laid down an illustration of the means by which a similar effect can be obtained at a very moderate outlay. This consists in staining slabs of marble in various tones to divers patterns, which bids fair, when further developed and its durability has been tested, to be a process of much decorative value, and spaces are reserved for illustration of the geometric mosaics, or *opus alexandrinum*, so common in the Romanesque epochs, and which when completed will demonstrate still further processes of marble work as applied to pavements.

The wall facing the entrance is devoted to the exposition of the applicability of the old Italian process of *sgraffito* to internal decoration, and certainly for the walls of our lofty staircases, or our entrance-halls, this mode of decoration seems to present great adaptability. On a ground of coloured plaster a thin skinning of white is spread, which, when partly dry, is etched through with a stylus exposing the coloured ground, by which simple means a durable and decorative result may be obtained. When, as in this illustration, subjects in relievo are inserted as cameï very great variety is produced at a moderate cost; and here again the freedom from the need to reproduce the same ornamentation gives a great artistic value to it and renders it particularly serviceable to those who prefer to think for themselves and impress their own originality on their work. Specimens of it in various styles, some derived from the richly-wrought margins of those Parisian books of Hours which formed the glory of the first years of the sixteenth century in typographic history, others inspired by Holbein's facile fancy, with some of more recent character, show how readily this process adapts itself to decorative expression. There must be a competent artist at the bottom of such work, to make it satisfactory.

The doorway which forms the centre of this wall comprises some novelties, some of them as yet being merely tentative efforts at new processes, which will probably bear greater fruit hereafter. Thus the architrave is decorated with plaques of vitreous enamels, and the frieze consists of a leather panel inlaid with gilt glass work, whilst the doors themselves are illustrative of a wood-staining process recently explained by Mr. Robinson in his paper read before the Institute of British Architects on March 1, and reported in our columns. The opposite side of the vestibule is devoted to what may be considered "hospital practice" of decoration, and exhibits many means by which old, damaged, or damp walls may be treated; such as riveting them with thin wood veneer, mounted on canvas, or lining them with prepared tinfoil, the which latter, by the way, when its reflective surface is preserved by a lacquer as shown in one example here, presents considerable advantages for our darker passages and well-hole staircases, forming a surface which throws off almost every ray of light that falls upon it.

Various experiments are also being carried on in quest of some means of applying colour directly to new plaster, and certain staining processes thus essayed bid fair to give good results; and an illustration of stained marbles for dados and wall treatments shows how effectively a common monotoned limestone, of no great intrinsic value, may be converted into an artistic medium by a combination of science and art. A want has also been supplied by the collecting and bringing together specimens of many of the principal marbles whereby the character and cost of each can be compared, and some varieties new to the English market are thus introduced.

The ceramic collection contains a variety of tiles and plaques, from the more costly products of the best French potters to the crude but interesting works of those smaller and eminently conservative potteries of Southern Italy, in which pattern and process have been reproduced from father to son for many generations past, and thus the archaic qualities of an older time are brought into juxtaposition with the most scientific researches of the present day,—not always, so far as artistic merit is concerned, to the exaltation of the latter. If the market thus opened is not spoiled by the demand which is already being made upon it, a great and valuable adjunct will thus be given to the architect by the exploitation Messrs. Trollope have thus

made; for, though cheap, these tiles are very good. The glazed stoves of Germany and France here shown bid fair to be of great use in our entrance-halls, offices, and other places where room is restricted, and a steady heat, combined with slow combustion, is required, and the artistic modelling and the beauty of the glaze exhibited by some of these render them works of considerable artistic and architectonic merit.

Parquetry and wood inlays for floors from France and Germany are exhibited from the thinnest veneer, which can be applied to an old floor without disturbing it, or the ceiling beneath it, to the thickest solid planking, forming a floor of itself. Door-furniture from Belgium, and some cleverly-wrought metal-work from France, which is produced at prices much below anything of the kind we have in England, are also interesting exhibits. All these things pertain to constructive decoration; but there is also to be found a large variety of wall-hangings of silk, of embossed leather, woven fabrics, and the recently revived painted cloths for wall-coverings, pounced and gilt leather for curtains, and some fine old tapestries from the ancient looms of Flanders, Spain, and France.

In furniture we noticed some fine old carved and gilt Italian *cassoni*, tables and mirrors, a collection of French furniture, embracing the styles which prevailed during the reigns of François I., Henri II., Louis XIV., Louis XV., Louis XVI., and of the period of the First Empire; together with specimens of English furniture by the best makers during the reigns of Queen Anne and the three Georges. In short, to the architect and the amateur the museum thus established presents many attractive and instructive features, and we commend it to their attention.

PROGRESS OF RAILWAY CONSTRUCTION.

NEW WORKS AND BUILDINGS.

The expansion of the railway system in the erection of new works and buildings on the several great lines in various parts of the country continues with unabated activity, as is shown by the proceedings of the different companies at their half-yearly meetings which have been held within the last few weeks.

The statement made by the chairman of the North-Eastern Company proves that the expenditure of that company now going forward in new and extended works of various descriptions is on a scale of almost unequalled magnitude. He said they had just finished an extension of the dock at Middlesbrough at a cost of 120,000*l.*, and they were at that moment forming in Middlesbrough a new station at a cost of 80,000*l.* They were also making a railway from the Hartlepools by a tunnel under the Tees, which was a very expensive undertaking, as it was to cost the company 400,000*l.* They were likewise making a railway from Stockton, in the immediate neighbourhood of Middlesbrough, to Castle Eden, at a cost of 290,000*l.* The works for that line had just been let. At Hartlepool itself the company was also busy. At West Hartlepool they were providing a railway and dock at a cost of 150,000*l.*, and at Stockton they were erecting a new goods station at a cost of 40,000*l.* This showed that in the Tees district alone they were about to incur an expenditure amounting to 1,045,000*l.*, and this was exclusive of the large outlay which would have to be incurred in making sidings and providing means for working those lines of railways. They were likewise making a new line at Sunderland at a cost of 260,000*l.*, and a new station at South Shields to cost 30,000*l.*, together with a new station at Ferry Hill at a cost of 70,000*l.* Also a railway in the coal district at a cost of 41,000*l.*, and a line north of Newcastle to Warkworth at a cost of 114,000*l.* They were further making another railway alongside the Tyne, from the Bicar line, and in the heart of the North Tyne trading districts, which would cost 250,000*l.*; and for all these lines, apart from the cost of rolling stock, it would be seen that in that particular district of Durham and Newcastle alone the expenditure of the company would not fall far short of two millions sterling. The company are also erecting a large new station at York, and constructing branch lines at Tweedmouth in connexion with a dock which they are making there; and the contract for the construction of a line between Swinton and Knottingly is shortly to be let. The estimated sum to be expended on works in progress, during the current half-year, is 987,000*l.*, or nearly a million sterling.

The Midland Company expended 1,313,000*l.* during the past half-year in new works, 439,000*l.* of which was on the Settle and Carlisle line, which is expected to be ready for opening next year, when the Midland will have direct and independent communication between London and Edinburgh and Glasgow. The estimated expenditure during the current half-year in new works is 1,650,000*l.* The first building contracts for the Manchester Central Station are expected to be entered into in a few weeks, and the construction of the new line at the north end of Liverpool is to be at once commenced. In answer to a question, the chairman stated that the St. Pancras Hotel was expected to be completed in March next year. He added that the experience they had already had in carrying on the hotel was satisfactory.

The estimated expenditure of the Great Northern Company during the ensuing half-year in new works is 150,000*l.*, and 165,000*l.* in new stock, which will be required for the new lines in progress. The expenditure on works during the past half-year was 886,091*l.*, of which 53,652*l.* was on the Highbury and North London line. The works at the new goods depôt at Farringdon-street, and also the new buildings and sidings at King's-cross, to accommodate the local passenger traffic, are actively proceeding.

At the meeting of the East London Company it was stated that half the tunnel under the London Docks was completed, and the second cofferdam was now in course of erection. The chairman said that the contractors were proceeding with vigour on all parts of the line. They had then about 800 men employed on the works, and in a few days would have several hundred more. The part beyond the London Docks would be completed by the time the trains could pass under the docks. They had reason to believe that in completing the second portion of the tunnel there would be a great saving of time and expense, as it was being carried out entirely under the direction of their engineer, Sir John Hawkshaw.

At the meeting of the London and North-Western Company, 480,000*l.* were voted for the construction of new works, in addition to others in progress in various parts of the country; also 100,000*l.* for new steamboats, and 240,000*l.* for additional engines, carriages, and wagons. The chairman stated that they were spending a great deal of money both in Liverpool and Manchester, and they had spent a large sum on the Euston terminus, and he hoped they would have to spend more in providing the facilities which the increased traffic and the accommodation of the public demanded.

The Great Western Company were authorised by the shareholders at the half-yearly meeting to expend 200,000*l.* during the half-year in new works, 25,000*l.* of which was on account of a new goods station at Bristol, and 11,000*l.* on the enlargement of the Swindon Station. Referring to the progress made in the construction of the tunnel under the Severn, the engineer reported that the heading was now being driven, and that they had got some 220 ft. under the Severn, and so far as the heading had gone the stratifications were all they could desire. It was perfectly dry, and they had every reason to believe that they should not meet with any difficulty to impede their progress.

At the meeting of the London, Chatham, and Dover Company, it was stated that the contract for the Chatham Dockyard line had been let upon terms approved by the Admiralty, and the works would be vigorously prosecuted with the view of opening the line in the present year. The Chairman stated that the Government would pay interest upon the cost of construction whatever the interest might be. He had no doubt the company would derive enormous benefits from the construction of the line. With reference to the Holborn Hotel, he stated, as we have already said, that the tender of Mr. Webster for its construction for 70,000*l.*, had been accepted, and on its completion it would be occupied at a rent which would pay 6 per cent. on the outlay, in addition to which the company would receive 10 per cent. on the profits of the business of the hotel and refreshment departments of that station.

It was announced at the meeting of the South Eastern Company that plans had been approved for the extension of the accommodation at the Bricklayers' Arms good station, and that the works would at once be carried out as part of a general scheme for gradually increasing the accommodation there. The working plans for the Blackfriars branch were also completed, and the directors were only waiting for more favourable conditions of the labour market to commence the construction of the line and sidings. The works on the Greenwich line were in course of very rapid progress, and it was the desire of the directors to complete the communication, and secure a duplicate line for local through traffic, with as little delay as possible.

The report and proceedings at the meeting of the South-Western Company showed that several new works were in progress, including the doubling of the Portsmouth line, and also that between Farnham and Aldershott, whilst other considerable works and improvements were going forward at Waterloo, Clapham, Woking, Basingstoke, and other stations. The contractor had likewise commenced operations on the Joint Portsmouth Extension line.

At the meeting of the North London Company it was stated that the works in connexion with the widening of the City branch between Shoreditch and Broad-street, were approaching completion, whilst the new line and works at Poplar, preliminary to the construction of the new dock, were in a forward state. The chairman said that they intended to expend 70,000*l.* on the new dock at Poplar.

With regard to the extension of the Metropolitan line to Aldgate, the chairman stated that they had already spent 200,000*l.* or 300,000*l.* in the purchase of land for the extension, and that the expenditure of 150,000*l.* more would enable them to construct and open that valuable piece of line. The feeling of the Board was, that it would be desirable to purchase the remainder of the property as soon as the price of labour and materials showed something like a further reduction, and then invite open competition for the construction of the works.

The report of the Manchester, Sheffield, and Lincolnshire Company stated that the works on the Manchester and Stockport extension was in progress, and it was expected that the line would be opened during the present half-year. The new graving-dock at Grimsby, and the works in connexion with it, were also proceeding with all reasonable speed.

The Lancashire and Yorkshire Company are about to expend 300,000*l.* on the execution of new works during the current half-year. The works on several of the Company's branch railways in Lancashire and Yorkshire are in progress, and also the works of the new dock at Fleetwood, and the rebuilding of the Preston station. The company are likewise erecting extensive new carriage and wagon works at Newton-heath, near Manchester, and they will shortly manufacture all their rolling stock, the chairman having stated at the meeting that they believed the work they required could be done much better in their own establishment than by outside contractors.

The North Staffordshire Company, at their meeting, sanctioned the expenditure during the current half-year of 155,000*l.* in extensions, sidings, warehouses, and new and enlarged stations at different points on the line, including new stations at Newcastle-under-Lyne, and Etruria.

DARLINGTON GRAMMAR SCHOOL COMPETITION.

A meeting of the governors was held on Thursday in last week, under the presidency of Mr. David Dale, to receive the report of Mr. John Giles, their advising architect, upon the designs submitted in competition for the new schools by local architects.

After a very careful examination of the competing designs, the referee advised the selection of the design marked "Simplicity and Economy." This suggestion was adopted by the governors, and the successful architect, Mr. Hoskins, of Darlington, apprised of their decision.

The school is for the education of 200 boys, under an endowment dating from the reign of Elizabeth.

The design selected is Gothic in style, and the estimated cost is 8,000*l.*

The competition was limited. The conditions (which were framed by Mr. Giles) provided that each of the architects not selected should receive a fee of fifteen guineas, and that the author of the design adjudged the best will be employed to carry out the work, at a commission of 5 per cent. upon the outlay (which commission is to include all charges, except that of 1½ per cent. for bills of quantities to be charged to the

builder, and prepared at the sole risk of the architect or his surveyor).

It is, however, to be understood, that unless tenders can be obtained from responsible builders, within 10 per cent. of the estimate, the plans may be returned to the competitor without liability on the part of the governors.

WOOD CARVING IN ENGLISH HOMES.

In the course of some observations made by Mr. Jenner as to the wood-carving of the Berneso Oberland, in reply to inquiries by Lord Derby, Mr. Jenner says the occupation of wood-carving is of considerable value as affording training for other trades. The Oberland child, brought up in the midst of an unceasing school of modelling and design, acquires special qualifications for making a first-rate carpenter, locksmith, engraver, stone-cutter, decorative painter, architect, &c. For this reason Mr. Jenner suggests that the introduction of wood-carving into the Board schools of London might not be unattended with beneficial effects, and that none the less because the extra expense incurred for the instruction of the children ought to be repaid by their earnings after the system has been a few years in existence. The intuitive love of every Anglo-Saxon boy for cutting up wood with a knife, which usually takes the form of boat-making in England, he thinks might be easily turned to account in imparting the elements of the art. As wood-carving on a large scale is greatly facilitated by the use of various kinds of machinery, it might be possible, when the system had reached a riper development, to add a certain amount of mechanical knowledge to the other requirements of the frequenters of public schools. As a branch of foreign labour, wood-carving would appear to be quite unexceptionable, economically speaking, in England. It need encroach upon no existing industry, and would have little to fear from competition for some years to come, thus being secure of two of the first essentials for the labour of criminals, non-interference with honest labour, and a free field for a sufficient time to make the system work in regular routine. The country might thus by degrees be endowed with a new branch of industry, for which, owing to our great mechanical skill, and the especial facilities we possess for procuring the most beautiful and the rarest woods at comparatively low rates, Great Britain would appear to be peculiarly fitted. It is hardly too much to say that what the zeal of one man, Christian Fischer, of Brianz, was able to achieve for the benefit of his fellow-citizens of the Oberland in 1816, is not beyond the powers of the thousands of highly-qualified gentlemen who are striving to advance the cause of education in England. At all events, as Mr. Jenner observes, there would be but little harm in trying the experiment in one of the reformatories or prisons.

NATIONAL PROVINCIAL BANK OF ENGLAND, PORTSEA.

The directors of this important and long-established banking corporation (numbering as they do more than 130 branches throughout England and Wales) finding the present premises at Portsea too small for their rapidly increasing business under the superintendence of their local manager, Mr. Payne, resolved to erect others on "The Hard" on a more suitable and imposing scale, from the designs and under the superintendence of Mr. Gibson, of Westminster.

The building style is Italian, faced with Portland stone, and has a frontage of about 40 ft., divided into four bays by boldly projecting rusticated piers, with arch-headed windows to the ground story.

The fourth bay forms the lobby through which are entered the private residence and the banking-room by separate doors. The latter room provides ultimate accommodation for a staff of twenty-two officials, the fitting up for which is executed in Honduras and Spanish mahogany French polished. In front of the counter is the public space, which latter is paved with ornamental tiling,—a space being reserved as a waiting recess.

An ornamental lantern glazed with embossed plate-glass lights the rear of the office. The front windows are of teak, and glazed with clear plate-glass. These will be protected externally from the south sun by sunblinds, Bunnett's revolving iron shutters being provided for security. The entrance doors and lobby framing are also of teak.

The manager's room is approached from the public space, and the strong-room for cash and securities adjoins that for books, customers' plate, and other valuables; and every modern appliance has been adopted to render them fire and thief proof. The lavatory and other conveniences have been suitably arranged. In the basement are the warm-water apparatus, spaces for fresh air and ventilation to the office, &c., an additional strong room, and the requisite vaults.

The two stories of the building above the Bank are surmounted by a bold cornice. The rooms here and over the strong-rooms will be occupied by the residents in charge of the premises.

The contracts for the works and fittings were taken by Mr. George Burbidge, who appears to have executed them in a satisfactory manner.

We believe the new buildings will be opened for business in a few days.

THE LOCAL GOVERNMENT SANITARY POET.

A couple of weeks since, on the vote for the expenses of the Local Government Board, an Irish member rose in the House and said it appeared there was a "Local Government Sanitary Poet" in Ireland, and he should like to know what his salary was, as the following was a specimen of his mode of composition :—

> "There's a skin without and a skin within,
> A covering skin and a lining skin;
> But the skin within, as the skin without,
> Doubles inwards, and goes completely throughout."

Sir Michael Hicks Beach, the Irish Chief Secretary, merely stated, by way of reply, that no doubt if there was such an office as that of Government Sanitary Poet in Ireland, there would be plenty of applicants for it; but there was no such person, and he could afford no explanation regarding the lines. There may be no officially appointed sanitary poet in Dublin in the sense of a laureate, but there are certainly strong reasons for believing that some rhyming official at the Board in Dublin, not oppressed by the labours of his office, has taken upon himself the duties supposed to appertain. Dozens of copies, bearing the heading of "Sanitary Rhymes," have been forwarded to several corporate and local boards in the sister kingdom, treating, in a kind of nursery rhyme, of "the skin, the blood, the nervous system, air, water, and fire." The success of the poet is not marked, though his verses are somewhat remarkable. The reception of one of these pamphlets by the Drogheda Corporation, some weeks ago, led to a very serio-comic discussion, some of the members taking it for granted that the pamphlet sent to them was genuine as a sealed order, while others doubted that it came from the Local Government Board at all. The only instructions sent with the packet of pamphlets forwarded to the different boards, were the words "For distribution." Two or three further specimens in addition to the one quoted above of the sanitary poet's power of versification will probably amuse, as the House of Commons was only favoured with a single verse. The poet, whoever he be, would seem to have a reverence for the doctor, knowing, perhaps, what an important personage that officer is under the Act of 1872, and in the Acts now under the consideration of the House. Of the medical man the poet thus speaks :—

> "The doctor, you know, examines your tongue
> To see if your stomach or bowels are wrong;
> If he feels that your hand is hot and dry,
> He is able to tell you the reason why."

This verse does not soar very high, but it is quite possible the doctor knows the reason why, if he be a friend of the poet. The poem purports, said a member of the Drogheda Corporation, to speak of sanitary matters, "but what has nervousness to do with the subject unless it be applicable to this council, seeing that they suffer from the pressure of a "sealed order?" This was certainly a very shrewd remark for the unsanitary condition of the town of Drogheda at the present time, according to its Medical Officer's report, is very bad indeed. The filth to be met with in the town being little short of repulsive. Where the public sewers are worse than useless sanitary rhymes will hardly mend matters, though a sealed order may expedite their improvement. The sanitary poet of the Local Government Board is great upon bogs and quagmires, and he would seem to have some experience of peat or turf cutting in the sister island, or he could never picture them with such an amount of pathos :—

> "'Mid our bogs and our mountains whoever has stood
> On the dangerous brink of a quagmire of mud,
> Has observed how his step caused the quagmire to shake
> Throughout its whole mass, with a tremulous quake."

This is what Burke would not call sublime. If these verses were printed at the public expense, as some urban and rural sanitary authorities believed, they had a clear right to see them set to music. Indeed, this omission on the part of the Local Government Board in Ireland was pointed out by an acute town councillor. Another specimen, and we will end our quotations. The sanitary poet in Dublin seems to read a little of Darwin and Professor Huxley, for he tells us :—

> "Man eats grain, roots, and herbs like an ox or a hog;
> Feeds on fruits like a bird, devours flesh like a dog;
> And so takes from the soil what nutrition he wants
> Indirectly through brutes or directly from plants."

After this the "survival of the fittest" is certain, but we doubt if the reputed Local Government Sanitary poet has taken the amount of nutrition he wanted,—a mother's breast, or indirectly through the mouth-piece of a feeding-bottle.

Apart from our present rhymester, there is room for the mission of a sanitary poet, though not in the character of a public functionary, but a cultivated mind, who, in addition to his poetic motives, can bring to the task high artistic knowledge and sound scientific attainments.

DOCK CONSTRUCTION.

THE INSTITUTION OF CIVIL ENGINEERS.

At the ordinary meeting of the session held on the 23rd of March, Mr. Thos. E. Harrison, president, in the chair, a paper on "The Construction of the Albert Dock at Kingston-upon-Hull," by Mr. John Clarke Hawkshaw, C.E., was read. In the year 1861 the Hull Dock Company obtained an Act to construct a dock on the foreshore and lands adjoining and to the westward of the Humber Dock Basin. Further Acts were obtained in the years 1866 and 1867, after the works for the new dock had been begun, for increasing its size, and for the purchase of more land along the foreshore to the westward. The author described the site now occupied by the dock as it existed before the works were commenced, and also the strata underlying it, as disclosed by borings and by the excavations for the dock. The strata consisted of a bed of peat, beneath which were two layers of boulder clay, separated by a bed of fine sand. The lower stratum of boulder clay rested on sand, beneath which was the chalk at a depth of about 120 ft. below quay level. The dock was upwards of 23 acres in extent, 3,350 feet long, and from 200 ft. to 430 ft. wide; the height of the quay above the bottom of the dock was 35 ft. 3 in. The lock was 320 ft. long between the sills, and 80 ft. wide, with a depth of water of 27 ft. 3 in. on the sill at H.W.O.S.T. The total area occupied by the dock, lock, basin, and quays was 76 acres, and there remained 120 acres of foreshore, the property of the Dock Company, for future extensions. The author described the method of carrying out the works, and the various cofferdams and embankments constructed during their progress. The dock walls were of Bramley Fall stone throughout. An account was given of a "blow" which occurred in one of the foundations, and which caused the river-bank to give way, and flooded part of the works. The greater portion of the paper was devoted to a description of the method of forming the foundations for the lock, and of the difficulties which arose owing to springs. The author showed that these springs had their source in the lower bed of sand, and that the water from them found its way through old bore-holes in the bed of clay below the foundation. After contending with these springs for some months, it was found necessary to move the sills to the westward of the site first selected. The springs occurred under the east sill. During the whole of the time they were flowing, the ground continued to subside, owing to the large quantity of sand brought up from beneath the lower bed of clay. As the lockpit was separated from the Humber on two sides by banks, and on the third by a cofferdam, there was a continual risk, while the subsidence lasted, that one or other of these might fail. A very slight settlement had taken

place in the invert built on the abandoned site for the east sill, after the walls were finished and backed up, but no further settlement had since occurred, nor had the levels appreciably altered up to the present time. The gates were of wrought iron, constructed by Messrs. Sir W. G. Armstrong & Co.

EFFECT OF COLD.

A REPORT in your contemporary, the *Illustrated London News*, current number, deserves a passing notice in the columns of the *Builder*. The large elephant in the Zoological Gardens at Hamburg has recently died. It appears that some year and a half ago the wooden floor of the house in which the animal was kept was removed, and a stone floor substituted, since which time the elephant has refused to lie down, and its rest has therefore been taken standing. Its health some time ago began to fail, and its food was refused, and the animal fell down to the floor from exhaustion, and was unable to rise. Help was obtained, and the animal was raised by main force, and a strap left around its neck, which during the night mercifully put an end to its sufferings by strangulation. I hope the long-continued misery of this poor beast will be a lesson to everybody who has to do with animals kept in confinement, and that no one will ever construct floors of materials which have not a direct vegetable origin. This poor thing died of cold feet. Some years ago metal mousetraps were very popular with housekeepers. I had one, and I invariably found that if a mouse was caught in the evening or early in the night, it was dead in the morning. Such a thing never happened in a wooden trap, and the inference is that the animals died from loss of heat by the conduction of the metal trap. The same thing occurs in dwelling-houses in which the floors of the living-rooms are paved with stone or brick, and left uncovered with carpet or matting. Oil-cloth also produces similar results. Asphalte, too, is believed to have a good deal to answer for in bad health and even deaths, which have taken place within my own knowledge amongst those who have been compelled to stand upon it for long together. E. GRIMES.

PERVIOUS OR IMPERVIOUS.

SIR,—In the *Builder* of the 20th ult. you were good enough to allow me to say, *inter alia*, that any information which tended in the direction of a brick being produced which should be impervious to moisture, would be useful. I see by last week's *Builder* that it need not be so, some inquirers even preferring a porous to a non-absorbing brick.

I know numerous architects, both in London and the country, who have been always demanding a non-porous brick for face-work, and should be somewhat confounded to find that hereafter porous bricks only would be appreciated.

If you would kindly allow space, much useful information might be collected by some of your numerous readers saying what is their experience of the different classes of bricks used for front-work.

White bricks from the northern coal-field, Stourbridge, Leicester, Staffordshire, Bridgewater, Dorset, Devon, Cornwall.

Red bricks, from the various districts where they are made, too numerous to mention.

Glazed bricks, blue Staffordshire, Cleveland slag, and the cement or concrete bricks of Pilgwenlly, Newport.

Not to architects and builders alone would the information which might thus be collected be instructive, but also to persons who, like myself, being manufacturers, are desirous of producing not only what will meet the market, but what will also best accomplish its designed purpose. FELDSPAR.

Opening of the New Operetta House, Kilmarnock. — The new Operetta House, erected in John Finnie-street, Kilmarnock, by a Limited Liability Company of local gentlemen, was opened on the 22nd ult., under the management of Messrs. Glover & Francis, of the Glasgow Theatre Royal. The Operetta-house is in the Italian style of architecture, and has a frontage of 100 ft. in John-Finnie-street, where are the principal entrances. The theatre is seated for 1,050 persons, the opening of the proscenium is 22 ft. across, the stage is 40 ft. deep, and the breadth between its walls is 55 ft. The height from the floor to the ceiling is 63 ft.

LIVERPOOL ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.

AT a meeting of the Liverpool Architectural and Archæological Society, held last week, at the Royal Institution, the president (Mr. Joseph Boult) in the chair,

Mr. Edward A. Heffer exhibited and explained his design for a cathedral suitable for Liverpool, and in doing so observed that the design had not been prepared by him in consequence of the recent agitation with respect to a bishopric, but had been commenced two years ago, his idea at that time being to substitute a suitable structure for the present St. Peter's Church, which he had long regarded as a disgrace to and a blot upon the town.

Mr. J. A. Forrest, in offering some criticisms, as an associate, upon the design of Mr. Heffer, suggested that St. Peter's was not the proper site for a cathedral. Why not place it, he asked, alongside the Art Gallery at the foot of Islington, and thereby make Lime-street one of the finest squares in the kingdom?

Several other gentlemen offered some remarks, and one gentleman spoke warmly in favour of the Classical style of architecture adopted by Mr. Heffer. The Gothic style, he said, had been ridden to death, and a change would be a positive relief. The President also disapproved of the site, but said Mr. Heffer was not, he believed, wedded to it if he could procure a better. As regarded the style, the President remarked that it was one of his aversions, and he should prefer some other. It was not what he considered a pure style, and it was one which gave opportunities for dealing in shams and unsound architecture.

Mr. J. A. Forrest read a paper on "Roundel Glass, with some account of the direction that stained glass is taking with reference to decoration."

WAGES AND OUT-GO IN CALIFORNIA.

IN reply to a request by Mr. D. Chadwick, M.P., the *Resources of California* for March gives particulars of the remuneration obtainable by various professions and trades. We extract such of the headings as may more particularly interest some of our readers:—

Architects work as usual, either by special rate or by commission. The supply so fully equals the demand that their commissions or compensations but little exceed the ruling rates in the larger eastern cities. The unprecedented activity in building, in which San Francisco has fast surpassed herself, even during the last six months, has correspondingly increased the fees and wages of all artisans concerned in the erection, completion, and furnishing of public or private buildings.

Artists are finding increased appreciation, and obtaining proportionally better prices. Diversities of talent, genius, or reputation cause such an almost endless variety of reward that one can hardly venture on even an approximate statement of average compensation. Painters of landscape, marine views, theatrical scenery, panel work, &c., are in full force, and possess an unusual aggregate of talent. Re-touchers and colourers of photographs obtain from $3 to $15 a day. Skilled workers in water-colours command fully as much.

Blacksmiths readily command from $3 to $4 a day, and generally work ten hours a day. In the mines they receive an average of $60 a month, without board. Foremen get from one-fifth to one-fourth more.

Cabinet Makers average $4 a day. More than half of those employed in the city work by the piece, in which, of course, their earnings depend directly upon their own skill and despatch.

Carpenters. — House-carpenters command $3 50c.; foremen, from $4 50c. to $6. Ship-carpenters or joiners, $4 50c.; foremen, from $5 to $7 50c.

Carvers in wood easily command $3 50c. a day; when they work by the piece and upon fine work, some make as high as $7 50c. or even $8.

Foundrymen.—Workers in iron command from $3 75c. to $4. Some extra skilful moulders get $5; core-makers, $3 50c. to $4; stove-mounters, $3 to $3 50c. Workers in brass, cupola, or furnace tenders, $3 for eleven hours; moulders, $3 to $3 50c. for ten hours; and finishers, $3 for ten hours.

Gasfitters.—From $30 to $50 a month and found. Generally work nine hours a day in the shop.

Gilders.—$3 50c. to $5, rising, in rare cases, to $7 50c.

Glaziers.—$2 to $3 50c. a day; occasionally $4. Usually rank with painters.

Painters. — Carriage-painters, $4; house-painters, $3 50c.; ship-painters, $3; and sign or ornamental painters from $5 to $15. Plain lettering brings 12½ cents. a foot; gold lettering on glass, $1 a foot.

Paperhangers.—Commonly work by the job; when paid by the day, they rank with house-painters, and get the same wages, $3 50c.

Plasterers.—Generally rank with masons, and command $4 50c. a day.

Plumbers.—$4 to $4 50c. for nine hours, though ten hours is fast becoming the standard, as it is, generally, in most mechanical or industrial pursuits.

Board for common labouring men costs from $3 50c. to $5 a week. For cleaner occupations and average genteel quarters, the usual charge is from $5 to $7 50c. a week. Those who wish more room, more "style," &c., can gratify themselves at from $10 to $16 a week. Good board and lodging, at first-class hotels can be regularly had for $15 a week, and from that to $20 or $25. Two occupying the same room, about 20 per cent. less.

Rent.—Small tenement houses, containing four rooms, of the lower kind, situated in blocks bring from $3 50c. to $5 a week. Of the better class, or under separate roofs, a house of four main rooms—kitchen, sitting-room, and two bed-rooms—with usual closets, pantry, and sink-room, may be had for from $5 to $7 50c. a week; in the suburbs of the cities, or in the country, generally, larger and better accommodations may be had for the same money, or equally good ones for less.

WORKING MEN'S COLLEGE, GREAT ORMOND STREET.

THE summer session of this College will commence on April 5th. It will be remembered that this college was founded by the Rev. F. D. Maurice, in order to place a liberal education within the reach of working men, and to provide a centre for social intercourse between them and men of University training.

The subjects in which classes will be formed during the session are drawing (nude and draped model, antique and still life, casts, and natural objects), vocal music, English grammar, literature, French, German, Latin, Greek, arithmetic and algebra, physiology and botany, with classes in elementary subjects.

The general meeting of the council, teachers, and students, to which intending students and the public are invited, will be held on the opening evening, Monday, April 5th, when Dr. George Macdonald will address the meeting, and the principal, Mr. Thomas Hughes, Q.C., will preside

PROPOSED NEW BOARD SCHOOLS IN THE ROCHDALE ROAD DISTRICT.

THE Manchester School Board having decided on erecting schools to accommodate 900 children in Abbott-street, Rochdale-road, invited the three Manchester firms who are at present erecting school buildings for the Board in Ardwick, Ancoats, and Hulme, to submit designs for the proposed new edifice. According to the Manchester *News*, the drawings were sent in on the 18th of February, and, at the general Board meeting, the designs submitted by Mr. William Dawes, of 100, King-street, obtained the first premium, and the works will be carried out under his directions. Messrs. Medland & Henry Taylor received the second premium, and Messrs. Royle & Bennett the third. These schools will cost nearly 5,000*l.*, the limit being 5*l.* 10*s.* per child.

Rumsey Testimonial Fund.—A meeting of medical men and others was held at the General Registry Office, Somerset House, under the presidency of Dr. W. Farr, for the purpose of furthering a proposal to present Dr. Henry W. Rumsey with a substantial token of the estimation in which he is held by the profession generally. Dr. Rumsey, who was recently stricken with paralysis, has worked hard in the cause of sanitary progress, and deserves well of his country. Resolutions were passed and preliminaries arranged for an immediate appeal for funds.

ACTION BY A SURVEYOR.

HOWELL *v.* HUNT.

This was a claim at the Westminster County Court for 5*l.*, balance of account for work done by a surveyor.

Plaintiff said he was a surveyor, having offices at 45, Albert-terrace, and had been employed by the defendant, who had had a disagreement with the builder of Stanstead House, Hampshire, about some work which he had done there, in June last, to go there and measure the work done. Went over the work with the foreman, and prepared an account, by defendant's direction, which took him a couple of days extra. Was afterwards witness in an action brought by defendant against the builder, and received 1*l.* on his subpœna. There was an objection made to the quality of the work done by the builder. Witness had only charged defendant 1½ per cent., instead of the usual 2½.

Defendant said he did not look upon plaintiff as a surveyor, and did not employ him as such. Had known him for some years as a sort of clerk to Messrs. King & Sons, the builders, and as such he had asked him, as he was going with his family on an excursion to Southampton, to look over the work, and give his opinion of it. He also took exception to some of the items in the bill, and amongst others to 6*s.* for cab hire.

Plaintiff (in reply to the Judge, Mr. F. Bayley) said he had been in business as a surveyor for about eight years.

The Judge said plaintiff was clearly entitled to be paid for his labour, but he should give judgment for 4*l.* only.

SUB-CONTRACTORS' LIABILITY.

PATTERSON *v.* RIDSDALE.

In this case at the Manchester Spring Assizes, before Mr. Baron Pollock, and a special jury, the plaintiff, an artist of Pendleton, Lancashire, sought to recover 100*l.* damages, as compensation for the demolition of a studio, caused by the carelessness of the builders, Messrs. Neill & Sons in taking down an adjacent building belonging to the defendant.

It was not denied that the damage arose through the builders engaged on the demolition, but the defendant's Counsel contended that his client was not liable, nor were Messrs. McNeill, with whom the defendant contracted, for the contractors had sub-let the work to a man named Williams, and that person was the party who should have been sued.

In support of this, the defendant and other witnesses were examined, and a written sub-contract with Williams was put in, by which Williams bound himself to make good, amongst other conditions, any loss or injury to adjoining property arising from accident or negligence.

Counsel for the plaintiff impugned the validity of this sub-contract, and contended that it had been concocted for the purpose of depriving the plaintiff of compensation. If his client had sued Williams, the latter would have fallen back on some other sub-contractors under him, Messrs. Kelly, Flannigan, and Mike, the men who pulled the premises down, and they, if worth powder and shot, would have referred the plaintiff to parties carting the *débris* away.

The Judge left it to the jury to say whether the sub-contract was *bonâ fide* or got up to save liability, and the jury found for the defendant.

DAMAGES FOR NEGLECT.

CORNELIUS *v.* EGLINTON.

This was an action in Westminster County Court (before Mr. Francis Bayley, judge) brought by the proprietor of restaurant and wine stores in New Oxford-street against a plumber in Brown-street, Soho, to recover 5*l.* 5*s.* as compensation for damages caused through defendant's neglect in not completing work which he had undertaken.

Plaintiff said, on the 21st of January there was a leakage from a water-pipe, which supplied a sink used for washing the glasses in the bar, and as defendant was at work at a house opposite, he sent for him to come and repair the damage. In the meantime the porter had bent up the pipe above the leak, and stopped it. Defendant came and inspected it, and said he would call the next day. He did not, when he said, as the cistern was full witness must let the water run off through the waste-pipe after business hours, and he would call in the morning. He then took the tap away. Defendant did not keep his promise, and the water worked its way through the pipe, flooding the floor, and penetrating through the kitchen ceiling, in such a way that the cooks could not work.

The Judge said there appeared to be a clear case of wilful neglect on the part of the defendant, but as no proof had been given of the precise amount of damage done, he would assess it at 3*l.*, with costs.

MODELLERS *v.* POTTERS.

At the last sittings of the County Court of Wandsworth, an artist and modeller, of the name of Ross, sued Messrs. Sharpe, the well-known tile and fancy potters, of Nine Elms-lane, Battersea, 3*l.* 6*s.* 8*d.*, balance of account for four models had made for the firm.

Mr. Davis, manager to the defendants, explained to the Court that he appeared for Messrs. Sharpe, and that they had no desire whatever to repudiate the claim if it were reconcileable with justice. Mr. Ross had been employed by the firm to carry out certain modelling work at the rate of 2*l.* per week. After working about nine weeks Mr. Ross left them, when he asked if they would purchase from him the models now in dispute, leaving the value to the generosity of Messrs. Sharpe, and witness gave him 1*l.* first, and afterwards another 1*l.*, making 4*l.* in all. The models, in fact, were not worth the money paid for them. He was employed eight days at the factory, to complete the models but the plaintiff was paid for that in his wages. Witness was quite willing to return Mr. Ross the models, for all the use they were to his firm.

Mr. Ross said he would accept the return offered, on condition that Mr. Davis would promise that no advantage should be taken of the copyright by the firm.

Mr. Davis assured the plaintiff that Messrs. Sharpe had no intention of doing anything of the sort. They did not want the models or their copyright.

The judge (Stonor) said it was an honourable understanding on both sides, and in order that the plaintiff might receive back his hearing-fee, 8*s.*, he should order the case to be struck out of the list of causes.

Judgment for both sides accordingly.

PURCHASE OF THE CRYSTAL PALACE.

Sir,—It is very important that the 7,000 shareholders of the Crystal Palace, whose interests we represent, should be informed of the success which has attended our exertions to promote their interests.

I therefore communicate at once to you the fact that we have concluded the terms of an agreement, by which their property is to be purchased, for a new association, at a considerable increase on its present market value,—that the financial contractors are prepared to deposit a security of 100,000*l.* for the execution of the contract, and that this has been done in the very terms demanded by the Court of Inquiry; who will doubtless immediately issue their report and submit it to the shareholders for their acceptance.

Francis Wakefield,
Chairman of the Restoration Committee.

THE NEW ACT-DROP AT THE COURT THEATRE.

Sir,—The act-drop in question is very well painted, but I think it is a mistake.

A drop-scene may be either treated as a picture, a "scene," in the usual sense of the word, or as a decorative curtain. The one at the "Court" is neither; it is a realistic representation of a smaller proscenium-opening with its curtain within the real proscenium-opening, and flanked by two remarkably real-looking polished granite pilasters, quite a triumph of ocular deception. The illusion is so well carried out, helped by the sentinel figure in front, that you almost wait to see the mimic curtain draw up. But when, instead of that, the massive architectural framework curls itself up and disappears, curtain, sentinel, and all, the eye receives a disagreeable shock, and resents the deception.

If a drop is not made a regular scene, it should be treated frankly as a curtain, which, I think is much to be preferred; only it is susceptible of something much better than the vulgar festoon and tassel business which is the usual thing in such cases. It might be a good idea, too, to have drop-curtains in sets to mark the conclusions of Acts I., II., III., &c., respectively. There is something more to be done with this theatrical appendage, but I do not think the effort made at the "Court" is at all in the right direction, clever as it is in execution.

H. H. S.

*** Our correspondent is well entitled to have his opinion, though we may not wholly agree with it. The act-drop in question, to which we have already referred, is to all intents and purposes a picture, and a very effective picture too; and when it curls itself up and disappears, we see no more reason to resent the deception than when an assemblage of Venetian palaces in like manner bend themselves to circumstances, or the cloud-capped Alps, majestic and serene, are suddenly twirled into a higher empyrean.

CHURCH BUILDING NEWS.

Rodmersham.—At a vestry meeting held in the parish church of St. Nicholas, Rodmersham, recently, it was decided to restore the church. The Rev. W. J. Mellor, the vicar, drew the attention of the meeting to the plans and specifications drawn up by Mr. Slingsby Stallwood, architect, of Folkestone. The restoration would comprise amongst other things, new roofs to the chancel and two side aisles, the building of a vestry and organ-chamber, repaving and re-seating the church with open benches, a new hot-water heating apparatus, the renewal of the tracery of most of the windows, and the rebuilding of certain portions of the arches and walls, which were crumbling away, &c. The total cost would amount to about 2,300*l.* It was also agreed that as soon as sufficient funds were collected the chancel should be restored, the body of the church drained and repaved, the present pews removed, and the church reseated temporarily with chairs, until the committee can afford to put in open benches.

Meopham (Kent).—During the last three years Mrs. Barnett, of Meopham Court, has been carrying out a series of improvements in the chancel of Meopham Church, as a memorial to to her late husband. The first work has been the rebuilding with new stone of the east window, and filling it with stained glass, Messrs. Lavers & Barraud being the artists. The next work was a new reredos, consisting of a centre of three canopied arches of white carved and diapered stone. In the centre panel is a Greek cross of red marble and alabaster, the centre and extreme ends being formed of circular pieces of spar of various colours. In the side panels are groups of corn and grapes, respectively carved in stone. The three panels are separated and flanked by red marble pillars. Right and left of these are four arched panels, separated by green marble pillars, and containing, on a ground of alabaster, the "Lord's Prayer," the "Apostles' Creed," and the "Decalogue," in readable letters. Below these panels the stonework is diapered, as is also that of the north and south walls. The work of the reredos was executed by Messrs. Farmer & Brindley, of London. The space also within the Communion-rails has been repaved with encaustic tiles, by Messrs. Minton, Hollins, & Co. In the centre, leading from the railing to the Communion-table, has been placed a tombstone of Mediæval date. All the other tombstones taken from the chancel have been placed at the west end of the church, around the font, where, together with others which had been placed there when the church was restored, they are now to be seen classified according to family relationship. At the east end of the south aisle of the church has also been placed a stained glass window, to the memory of Edith, wife of Lieut. Edwards, R.E., Messrs. Hardman & Co. being the artists.

Scole.—This church, having become dilapidated, has lately been restored and partly rebuilt. The nave roof, which was decayed, has been made good, and the chancel, which had a flat plaster ceiling cutting across the middle of the chancel arch, has been covered with a new roof. The eastern window, of three lights, with the eastern gable, cross, &c., are all new, as well as the chancel door and the tracery of the side windows of the chancel. A new vestry has also been added on the north side of the chancel. The windows of the nave and aisle, as well as all the other stonework, have been restored, the old stonework being retained where possible. The south porch has been removed, and a new one substituted. The font has been restored, fresh lined with lead, and set upon a stone step near the south door. The old seating and west gallery have been cleared away, and the tower arch and west window opened to view. The new seating consists of open benches of pine, with sloping backs. The pulpit is of oak, with open tracery panels; and the reading-desk is composed out of a fifteenth-century lectern. The floor of the chancel is paved with Godwin's tiles, and the windows are glazed with cathedral glass in two tints. The church is heated by one of Porritt's underground stoves. The work has been carried out under the superintendence of Mr. James K. Colling, of London, architect, by Messrs. Vine & Day, of Eye, builders.

Old Swan.—The new church dedicated to All Saints, and situated in the Broad-green-road, Old Swan, has been consecrated by the Bishop of Chester. The church is intended to accommodate about 800 worshippers, and half the seats will be free. The total cost has been about 3,700*l.*, the builder being Mr. Thomas Bridge, Burscough, and the architects Messrs. C. D. Barry & Son, of Church-street. The style is Early Decorated, and the interior consists of a nave, side aisles, and transepts. The seats are all open, and the whole of the fittings are of pitch pine, varnished. The foundation-stone of the church was laid in the early part of 1871.

Litchfield.—The parish church, which had been closed for eight months for the purpose of undergoing repairs and improvements, has been re-opened. Parts of the church are nearly 800 years old. The building had been allowed to fall into such a state of decay, that a thorough restoration was required. This has now been carried out under the superintendence of Mr. H. Woodyer, architect, of Grafham, near Guildford, at the cost of about 1,000*l.* The flint walls have been stripped and pointed, a new porch built of flints with Bath stone dressings, has been added, and a shingled spire. Internally, the unsightly ceilings have been removed, and the timbers of the roof, most of which were in good condition, have been opened out to view. The church has been reseated throughout, and paved with Minton's encaustic tiles. The chancel has been separated from the nave by an oak screen, the fittings of the chancel, which are all new, being

of the same material. The reredos is composed of Bath stone and red Devon marble, the centre panel being ornamented with a white marble cross. The old font bowl has been cleaned and restored, and a new base added to it. A new stone pulpit has also been provided. The church will now accommodate about eighty persons.

Liverpool.—The Chairman of the Works Committee of the Mersey and Docks Board has laid the foundation-stone of St. Aidan's Church, in Latham-street, Stanley-road, Kirkdale. The original church of St. Aidan, in Victoria-road, being in the way of the north dock extension, is to be removed and rebuilt on the Latham-street site. The new building will be nearly an exact counterpart of the old one.

Leicester.—St. Saviour's Church, the gift of the Rev. F. G. Barnaby, is beginning to assume a tangible form. The plans were prepared some time ago by Sir George Gilbert Scott, R.A., and Messrs. Osborne, Brothers, High-cross-street, Leicester, the contractors and builders, have commenced operations, but these have been much impeded by the state of the weather. The foundations have been dug, and the building has been commenced, and will be proceeded with as rapidly as possible. It is expected that the memorial stone will be laid in the course of a few months. The style of the edifice will be Early English, and will be composed almost entirely of brick, stone being used as sparingly as possible. The contract is about 11,000*l.*, and the building will be capable of accommodating 900 persons. Mr. G. W. Wood is clerk of the works.

York.—The foundation-stone of the new Church of St. Maurice, on the site of the old edifice, is about to be laid. The nave will be 72 ft. in length from the west end to the chancel arch, and 24 ft. in width. The north side aisle will be 12 ft. by 72 ft. in length; and the other aisle, whilst of the same width as the latter, will be 58 ft. long; the basement of the tower being 14 ft. by 12 ft. The chancel will be 38 ft. by 22 ft., and there will be a transept 14 ft. square. In a nearly corresponding space on the opposite side will stand the organ, behind it being a vestry 20 ft. by 15 ft. The sittings will be, for adults, 459; and for children, 144. The seating will be of pitch pine, and the fittings of the same wood, varnished. The height of the nave will be 35 ft. from the floor to the wall-plate, and 52 ft. to the ridge; the chancel 28 ft. and 44 feet; and the transept 23 ft. and 34 ft. respectively. The roofs will be open-timbered with curved braces, and hammer-beams resting on carved stone corbels. The window arches and jambs will be of stone; and the pillars of the nave will be of red Mansfield stone. All the caps of the pillars will be of stone, from the Huddlestone quarries, and carved. The floors of the aisle will be of ornamental tiles, that of the chancel of encaustic tiles. The east and west ends will contain five-light windows; the clearstory, three-light windows; the transept, windows with a like number of lights to the latter; and the aisles, two-light windows. The height of the tower will be 90 ft. to the top of the pinnacles. The church will be faced with Bradford stone, and have Whitby stone dressings. The tenders have been let as follow:—Mr. Joseph Clark, excavator, bricklayer, and mason; Mr. William Rockledge, carpenter and joiner; Mr. Francis Rawling, plasterer; Mr. James Knowles, plumber and glazier; Messrs. W. & J. Dodgson, slaters; and Mr. Robert Pearson, painter and stainer. The amount of the tenders is 5,425*l.* 19s. The architects are Messrs. Gould & Fisher, of York.

Sutton Valence.—The parish church of Sutton Valence has been re-opened, after restoration. The interior of the church, which formerly consisted of a chancel and a large open body, with old-fashioned pews, has been re-modelled. The gallery at the side has been removed, and its place taken by a convenient structure at the west end. Nave and aisles have been formed, with modern pillars and arches; a new floor has been laid down, and open, stained seats substituted for the high-backed ones. The west end of the church has been taken out, the window and belfry thrown up; the roof has been fresh timbered and made secure, the ceiling white-washed, and the walls coloured throughout. There are a new window in the south side, and two new chancel windows. The chancel roof has been raised, a new ceiling put in, the walls fresh plastered, a tesselated floor laid down, and seats erected for the choir. The restoration has cost about 2,000*l.* Mr. Gordon Hills, of London, was the architect, whose plans have been carried out by Mr. J. G. Naylar, contractor, of Rochester.

Books Received.

Economic Geology; or, Geology in its Relations to the Arts and Manufactures. By DAVID PAGE, LL.D. W. Blackwood & Sons, Edinburgh and London.

THERE is much in this book which deserves, indeed demands, the attention of many of our readers: the headings of some of the chapters will almost serve to prove it,—"Geology and Land Valuation," "Geology and Architecture," "Geology and Civil Engineering," "Refractory or Fire-Resisting Substances," and so on. A few sentences from it on the subject of Materials for Piers and Sea-Walls will serve to show the style of the book:—

"As to choice of material for piers, breakwaters, sea-walls, and lighthouses, much will depend on the geology of the district; that is, whether limestones, sandstones, greenstones, granites, or other sufficiently hard rocks, lie conveniently adjacent. While Aberdeen can avail herself of her granites, Dundee has recourse to the tough grey sandstones of the Old Red, Leith and Glasgow to the quartzose grits of the neighbourhood, the Clyde to greenstones, Plymouth to limestones, Liverpool to granites brought from a distance, and the Tyne and other ports to artificial blocks of concrete. In all cases, hardness, toughness, weight, and durability are the main requisites, considering the bumping and friction in docks and harbours, and the impact of waves and breakers on exposed sea-walls and breakwaters, where the blocks lose so much of their weight from being submerged in water. We have witnessed the effect of storms on sea-works at Wick, Lossiemouth, Anstruther, Granton, and Tynemouth, and their power of displacement and transport would seem incredible, were it not remembered that stones of ordinary specific gravity lose about a third of their weight in water, while the effective impact of waves occasionally amounts to 6,000 lb. per square foot. Whatever may form the main mass of masonry, there is no rock so suitable for facings, copings, and gateways as a good medium-grained granite, which possesses at once hardness, toughness, and weight. Next in order are the silicious grits and sandstones, which, though not so hard nor heavy as the granites, still stand well, and can be raised in blocks of almost any size, like those used at the Dundee Docks, the Albert Dock at Leith, and on the storm-walls of the Tynemouth piers. The limestone (compact dolomites and marbles) come next; but the greenstones and basalts are generally too brittle, and from their columnar or sub-columnar structure can rarely be raised in blocks of sufficient magnitude."

It is obvious that in all the works adverted to under the present section,—piers, breakwaters, sea-walls, and lighthouses,—security of foundation, great strength, and durability of material, are the main essentials; and the architect or engineer well acquainted with the geology of the district and with the characters of the various rocks will be in a much better position to do justice to the undertaking than one who, however mechanically ingenious, is incapable of forming an estimate of these particulars. Nor is it rocks alone upon which he will be called to decide, but mortars, hydraulic cements, concretes, puddlings, and the like, all of which require some knowledge of rocks and minerals, and the methods of rendering them economically advantageous.

VARIORUM.

A LETTER to the Rev. T. E. Bridgett on the "Character and Sphere of Ecclesiastical Antiquities," by Alexander Wood, M.A. (London: Burns & Oates), is an elaborate reply to a criticism in the *Saturday Review* on a work of his, "Ecclesiastical Antiquities of London and its Suburbs." It is scarcely to be expected that the public will find this *brochure* so interesting as the writer does.——"Three Months after Date," by M. Laing Meeson (Ward, Lock, & Tyler), consists of a number of stories exposing the doings of money-lenders, joint-stock company swindling, and such like. Their general correctness was strikingly shown during a recent trial for libel against the *World*. The reports of the examinations read as if they had been copied from this book, page after page. Young men entering business will be all the better after amusing themselves for an hour or two with "Three Months after Date."——Mrs. G. Linnæus Banks, in the interesting story now running through *Cassell's Family Magazine*, "The Manchester Man," is following the plan she adopted so successfully in her novel, "God's Providence House," connecting its various incidents with the parts of the town wherein they are supposed to occur.

The Liverpool School Board.—Mr. T. Mellard Reade, C.E. of Liverpool, has been appointed architect to the Liverpool School Board, in accordance with the terms published by us some time since. It is we understand the intention of the Board to erect schools for 1,000 children in Walton-lane, and Mr. Reade is preparing plans of the same.

Miscellanea.

Neglecting to take down Dangerous Houses.—At the South Shields police-court, Mary S. Robson, Elizabeth Anderson, Alexander M'Dermaid, Margaret Grey, and Joseph Worthington, were summoned by Mr. M. Hall, borough surveyor, for neglecting to take down two dwelling-houses in Hill-street, which the surveyor had deemed to be in a ruinous state. The defendants said that they considered that they had no right to take the houses down. Mr. Hall, borough surveyor, said that he had to apply for an order against the defendants to take down the two houses, on the ground that they were rendered dangerous by the action of the underground fire. The defendants, as the owners, had been served with the required orders. The defendants continued to deny their liability, and the borough surveyor said he was not in a position to prove that the defendants had received any rents for the property; Mr. Hall further stated that, in the event of an owner not being found or proved, he had power to pull down the houses. In reply to the bench the defendants stated they had no objection to the houses being pulled down. The houses it appeared, were mortgaged, and they had no interest in the property. The court, under these circumstances, declined to make any order upon the defendants, and dismissed the case.——Messrs. John Barras & Co., Gateshead, were summoned by Mr. M. Hall, borough surveyor, for neglecting to take down a dwelling-house in Price-street. Mr. Hall said the house was in a dilapidated and dangerous condition, and he had to apply for an order for its being pulled down. The bench made an order for the pulling down of the house.

"Hazardous Rates" of Insurance.—Mr. H. Brooks writes to protest against the rate of premiums charged on hazardous trades in this country compared with similar risks abroad. He more particularly alludes to the advanced rate levied on pianoforte manufacturers and branches connected therewith, who are seeking a remedy by which they can best obtain full security against fire on economical terms. Some years ago he paid only 5s. per cent. on a portion of his stock and utensils in trade, which rate has been increased in proportion as business extended, until last year it reached 63s. per cent., since reduced to 52s. 6d., through a considerable outlay to diminish the risk. The same property is insured in other offices at 42s. per cent., which he considers an unreasonable demand, as compared with 8s. per cent. charged in Paris on similar risks. Mr. Brooks thinks a disinterested surveyor might be appointed to fix the rate of premium on hazardous risks, who should be paid a percentage on the amounts insured. This, if adopted, would be more equitable and consistent than leaving it solely with the offices, as at present. If 8s. per cent., with a few centimes for neighbours' risks, is found remunerative in Paris, why should it not be in London? We agree with him that the offices should be memorialised through their committee for an immediate reduction in the rates. If they decline they ought to publish statistics to prove their inability.

In the recent Dispute in the Birmingham Building Trade, the points of difference were nominally small. The bricklayers claimed from the employers an advance of a ½d. an hour the labourers who assist the bricklayers wanted ½d. an hour extra; and the double concession would have made the rate of hourly pay of the former 8d., of the latter, 5½d. One of the principal arguments both for and against the increase is, it appears, one that is always brought forward. The men, in support of their claims adduced a list of towns in which the wages are higher than those paid in Birmingham; the masters, in opposing them, put in a list of places where the wages are lower. Mr. Kettle, in his award, points out that the lower wages are balanced by comparative advantages, the higher by comparative disadvantages; and he shows by admitted facts that Birmingham holds a second of middle position in this matter. As the general result, his award declares that neither the bricklayers nor their labourers are entitled to "rise."

Silicate Paints.—We understand that the Government of India has adopted the paints of the Liverpool Silicate Paint Company for the Queen's barracks at Fort William; and the Calcutta Waterworks Company have also decided in their favour, and sent large orders by this ma

Artisans' Dwellings at Seacombe.—Last week a number of gentlemen interested in the improved construction of dwellings for the working classes assembled at the Shaftesbury Cottages, Wheatland-lane, Seacombe, to inspect those buildings, which have been recently erected on a new principle. Mr. Ellis, builder, Brighton-street, who is the patentee, claims to have secured certain advantages which are of some importance. He explained to the company the details of his plan, which comprises, amongst other *desiderata*, an improved central chimney and fireplace to each house, thus giving a better supply of air, preventing unhealthy draughts, and insuring economy of fuel; also some arrangements of ash-pits, &c. A separate entrance is given to each cottage, and, among other things, Mr. Ellis claims for the principle a great saving in the cost of street-making.

Explosion at St. Paul's Schools.—An alarming occurrence took place at St. Paul's New Schools, Doctors'-commons, last week. The building had been for some time past in course of erection, and was advanced towards completion. About one o'clock a flame suddenly burst through the window on the ground floor at the east end of the building, at the corner of Dean's-court. Immediately afterwards a loud report was heard, followed by the smashing of glass. The front of the building is in Carter-lane, and there the greatest damage was done. A number of warehouses near the schools lost their glass in the windows. The Swan with Two Necks Tavern, directly opposite, had the whole of the front blown in. Many houses suffered from concussion. A man named John Pettit, who was passing, had his hands burned badly, and a workman inside the building, named Louis Stonard, had his hand seriously cut with glass. An escape of gas is supposed to have been the cause of the explosion.

An Aerial Bridge.—A great engineering work is about to be executed at Lyons. It is an iron bridge to connect the plateau of Fourvières with that of the Croix-Rousse, which are two heights, like that of Montmartre in Paris, at a distance of 300 mètres from each other. This undertaking is estimated to cost 2,800,000 francs, of which a subvention of 600,000 francs only is asked from the city. This aërial bridge will consist of three spans, the central one resting on seven iron columns in a line with the houses on the quays. The platform of the bridge will be 20 mètres above the road, and nearly 50 mètres above the houses. Each of the two central columns will have inside a lift by which pedestrians will be raised in two minutes.

The Nottingham School of Art.—Mr. Seddon Tyrer, of Mansfield, a student of this school, has just been successful in gaining an Art master's certificate for painting and design. He had to pass a series of severe examinations at South Kensington Museum, on the History of Technical Processes of Art, Structural Botany, and the Principles and History of Ornamental Art. He gained marks for "excellence" and "good" in most of the papers. The Nottingham people believe that this is the first instance on record in which a student of any metropolitan or provincial school has gained this higher certificate, which fully qualifies the bearer to take the head-mastership of an important school of art.

Dangers of the Tram.—We witnessed another fall from a tram-car on Easter Monday. A lady was getting out, the car having stopped, but before she was off the step the car moved on and she fell in the road. The conductor, as usual in such cases, was on the top collecting his fares. As we have previously argued, the system of leaving the inside passengers without an attendant to assist them to alight or signal the driver when required to stop while the conductor is on the top, is fraught with much inconvenience and danger, and should be remedied.

Architectural Association of Ireland Prizes.—Two prizes of five guineas each are offered (open to any member of the profession under thirty years of age) for the best measured drawings of any building in Ireland or the United Kingdom up till the eighteenth century, and for the best design for a town church to accommodate 1,000 people. The president and vice-president are to be the referees. All works must be transmitted for either of the above prizes must be delivered, carriage free, at the rooms of the Association, addressed to the hon. secretaries, on or before the 30th of September, 1875.

Engineering on the Danube.—The details of the works proposed to be executed for the removal of the semi-sunken ledge of rocks, known as "The Iron Gates," which stretch across the Danube below Orsova and impede the navigation of the river, have been laid before the Turkish Council of Ministers, and have received the approval of the Imperial Divan. The Governments nearly interested in this matter will shortly come to an understanding as to the execution of the works, which will take about two years to complete.

The Statue of Manin in Venice.—The inauguration of this statue took place on the 22nd ult. The monument is a full-length colossal statue in bronze upon a stone pedestal. There are steps leading to it, and on the top of these is the lion of St. Mark, also in bronze. The Dictator stands facing his house, with his right hand in the breast of his coat, his left hand hanging down at his side and holding a scroll. On the scroll are written in Italian the words "March 22, 1848;" on the pedestal the word "Manin." The lion has the wings of the lion referred to in the book of Revelation—the lion of St. Mark, and not a natural lion.

New Harbour at Madras.—A telegram has been received by the Madras Government from Lord Salisbury, conveying his lordship's sanction to Mr. Parkes's project for the construction of a harbour at Madras. Mr. Parkes, C.E., who superintended the construction of the Kurrachee harbour work, proposes to make a harbour off Madras by running out two piers 1,200 yards from the shore, at about 500 yards to the north and south respectively of the present screw pile pier, into seven fathoms of water, and connecting them by another pier or breakwater, in the middle of which would be the entrance 450 yards in width.

Cabmen's Shelters.—Permission has been obtained for the erection of a cabmen's shelter in Davies-street, Berkeley-square. Mr. Arthur Guest, formerly member for Poole, has joined the committee in St. James's-street, and has collected sufficient funds to defray the cost of a shelter, a requisition to erect which has been sent to the St. James's vestry, signed by 109 noblemen and gentlemen, members of various clubs in the neighbourhood. Nine shelters are being built, in addition to the three already opened. One has been set up at Knightsbridge.

Alterations in All Saints' Church, Derby. The following tenders have been received for the restoration of the interior of All Saints' Church, which involves a considerable addition to the available seats: — Mr. Wood, 2,955*l.*; Mr. Bridgart, 2,900*l.*; Mr. Edwin Thompson, 2,720*l.*, all of Derby; and Mr. Rowley, of Walsall, 2,600*l.* The tender of Mr. Thompson has been accepted by the committee. The work will be commenced before the end of April.

Earl Shrewsbury's Banquet-hall.—Vice-Chancellor Hall has refused to compel the Earl of Shrewsbury to demolish the new banquet-hall which he is erecting at the rear of his house in Dover-street, Piccadilly, to the detriment, it was proved, of the house of his neighbour, Lady Stanley of Alderley. His Honour thought the new building had gone too far for his interference, but he ordered an inquiry as to what damages her ladyship was entitled to.

Schools for the Jews.—The Jews are attending vigorously to the education of their children in London. They have just put up new Jewish schools in the borough, which are, in every respect, creditable. Mr. Lewis Solomon is the architect of the building. Mr. Solomon himself gives volunteer instruction in drawing on Sundays, which the Government accept as part of the regular curriculum.

New Town-hall, Hastings. — Amended instructions have been issued to architects in connexion with this proposed new structure. The cost of the building is not to exceed 18,000*l.*, exclusive of the foundations, for which a further sum of 2,000*l.* is allowed. The designs are to be sent in on or before April 22nd, and premiums of 100*l.*, 50*l.*, and 25*l.* respectively, are offered for three most approved designs, which are to become the property of the corporation.

Foundation Stone Laying at Glossop.—The foundation stone of new schools, which are estimated to cost over 1,000*l.*, and to accommodate 400 scholars, was laid in connexion with Mount Pleasant Congregational Church, Glossop, on Good Friday, by Mr. J. Sykes, of Huddersfield.

New Rectory, St. John's, Gloucester.—The parish of St. John has long been without a habitable parsonage-house. The rectory, a dilapidated tenement in London-road, known as Heathville Lodge, will forthwith give place to a substantial residence, the plans for which were a long while since prepared by Mr. A. W. Maberly, architect. The contract has been let to Mr. James Clutterbuck, of George-street.

Cæsar's Camp, Wimbledon Common, seems doomed. Some time ago half the enclosure was fenced in, and some of the trees which form its chief attractions were felled. Now a further and most important step has been taken, for during the past week workmen have been busily engaged getting out foundations for a house, and part of the surface ground has been broken up.

The Hildesheim Corona.—A cast of this interesting piece of early metal work has just been acquired by the South Kensington Museum. It represents the light-bearer of Hildesheim Cathedral, one of the finest specimens of its kind extant. Some descriptive particulars of this corona, and engraved illustrations, will be found in our volume for 1869 (xxvii.), pp. 687, 689.

Poole Workhouse.—The following tenders for erecting a chapel and day rooms at the workhouse have been received by the guardians:—Mr. T. J. Tilsed, 1,113*l.*; Mr. W. M. Morris, 694*l.* 15*s.*; Mr. J. Dunford, 680*l.*; Mr. F. Durke, 674*l.* On the proposition of Mr. E. C. Oakley, seconded by Mr. T. W. Green (vice-chairman), Mr. Dunford's tender was unanimously accepted.

Sale of the "Wounded Amazon."—The fine statue of "The Wounded Amazon," by Gibson, exhibited at the Great Exhibition of 1862, was knocked down for 610 guineas on Thursday at the sale of the Mendel collection at Manchester. The statuary sold during the day brought over 4,500*l.*, and the furniture of the drawing-rooms fetched 1,500*l.*

A New Naval College for Cadets.—Mr. Ward Hunt, Sir Massey Lopes, and Colonel Paisley arrived at Dartmouth on Monday evening, to inspect a site for a new naval college for cadets, to be built at Dartmouth. A spot on the top of the hill, comprising about twenty acres, overlooking the harbour and English Channel, was selected.

Church Extension in Leeds.—The foundation-stones of two new churches were laid in Leeds on Monday last by the Bishop of Ripon. They are to be built to the east of the town; one, St. Edmund's, in Providence-street, the Bank, in the parish of All Saints; and the other, St. Alban's, in Saville-green, York-road, in the parish of St. Stephen's.

Works at the British Museum.—The estimate of the grant to be required this year for the British Museum buildings is 9,538*l.*,—an increase of 4,393*l.* over last year. Almost the whole of this increase is in consequence of works and repairs, the erection of a new principal staircase, and the construction of additional exhibition-rooms costing this year 5,000*l.*, out of a total estimate of 20,000*l.*

Pawning Lead.—A Glasgow pawnbroker was ordered to pay a fine of two guineas or suffer thirty days' imprisonment, at the Central Police Court, Glasgow, last week, for purchasing a quantity of lead and failing to enter the transaction in his books. It turned out that the lead was stolen from the roof of a building belonging to the North British Railway Company.

New Masonic Hall.—The directors of the "Hackney Public Hall Company, Limited," have altered their title to the "Hackney Public and Masonic Hall Company, Limited," and propose to adapt the plans of the front portion of their building, now in course of erection, by Messrs. Jno. Waldram & Co., of Kingsland-road, for Masonic purposes.

Harrogate.—The Local Board having been defeated in the recent law-suits, has called in Mr. Bailey Denton, C.E., to advise upon the means to be adopted for connecting his plan of intermittent downward filtration with the sewage irrigation farm now in use there.

The Margate Aquarium.—The first stone of the Aquarium was laid on the 18th ult., in the presence of a large concourse of spectators, and amid loud cheering. Mr. Law, the engineer, broke a bottle of wine on the stone, and wished success to the undertaking.

Designs for St. Lawrence Church, Liverpool.—The designs of Messrs. T. E. Murray & G. H. Thomas, for the new church of St. Lawrence, Liverpool, have been accepted. The other competitors were Messrs. Sumner, Reeve, and Duckworth & Metcalf.

A Hundred New Houses at Swindon.—Messrs. Smith & Hinton, builders, of Chalford, have undertaken the erection of 100 houses, at Swindon, on the same plan as those known in Stroud as "Dorington-terrace."

Her Majesty's Opera is again at Drury-lane, pending the erection of the new House. Messrs. Bracher & Son are, as before, the builders, and have transformed the House into a handsome arena for operatic display.

Death of Mr. Prince.—The death has just been recorded of Mr. Henry Prince, of the Phœnix Foundry. He was intrusted with the casting of the statue for the Albert Memorial, which approaches completion.

River Pollution at Darlington.—Vice-Chancellor Hall has granted an injunction to restrain the corporation of Darlington from emptying the sewage of that town into the river Skerne.

Surveyor, Peterborough.—Mr. J. W. Walshaw, one of the chief assistants in the borough surveyor's office, Bradford, has been appointed borough surveyor of Peterborough. There were sixty-nine applications for the appointment.

School Board Appointment.—Mr. Trevail, of St. Blazey, Cornwall, has been appointed architect to St. Merryn School Board.

TENDERS

For new schools at Kinver, for the Kinver School Board. Mr. T. Smith, architect. Quantities by Messrs. T. C. & J. P. Sharp:—

Guest	£1,937 0 0
Flavel	1,840 0 0
Bennett	1,793 0 0
Chapman (accepted)	1,600 0 0

For new warehouses, &c., for Messrs. Grainger, Son, & Smith, Dudley. Mr. Smallman Smith, architect. Quantities by Messrs. T. C. & J. P. Sharp:—

Guest	£1,700 0 0
Nelson (accepted)	1,899 0 0

For new schools at Tividale, for the Rowley Regis School Board. Mr. J. T. Meredith, architect. Quantities by Messrs. T. C. & J. P. Sharp:—

Bimnan & Son	£2,978 0 0
Matthews	2,867 0 0
Thompson	2,830 0 0
Hilton & Co.	2,800 0 0
Horsley Brothers	2,759 0 0
Holland & Sons	2,740 0 0
Stockton & Sons	2,724 0 0
Nelson (accepted)	2,690 0 0
Trow & Sons	2,584 0 0

For new schools at Cradley Heath, for the Rowley Regis School Board. Mr. J. T. Meredith, architect. Quantities by Messrs. T. C. & J. P. Sharp:—

Matthews	£4,535 0 0
Bimnan & Sons	4,300 0 0
Horsley Brothers	4,263 0 0
Stockton & Sons	4,251 0 0
Holland & Sons	4,154 0 0
Thompson	4,000 0 0
Trow & Sons	3,970 0 0
Nelson	3,880 0 0
Hilton & Co. (accepted)	3,829 9 0

For new schools at Knowle, for the Rowley Regis School Board. Mr. J. T. Meredith, architect. Quantities supplied:—

Holland & Sons	£3,180 0 0
Stockton & Sons	3,051 0 0
Thompson	3,000 0 0
Nelson	2,940 0 0
Horsley Brothers	2,874 0 0
Matthews	2,863 0 0
Trow & Sons (accepted)	2,639 0 0

For the erection of a pair of villas at Dulwich, for Captain R. Turner. Mr. Richard Peters, architect:—

Simpson & Baker (accepted)	£2,030 0 0

For new vicarage, Aldborough, Suffolk. Mr. R. M. Phipson, architect.—

Luff	£1,630 0 0
Wright	1,479 0 0
Smith & Sons (accepted)	1,285 0 0

For new roof to Blo' Norton Church, Norfolk. Mr. R. M. Phipson, architect:—

Cornish	£400 0 0
Greenwood	329 0 0
Bishop & Son	310 0 0
Ludkin & Son (accepted)	287 0 0

For alterations to Great Dunham Rectory, Norfolk. Mr. R. M. Phipson, architect:—

Carke	£1,772 10 0
Hubbard	1,475 0 0
Farrow	1,389 0 0
Bardell Brothers	1,377 0 0

For additions and repairs at The Firs, Mitcham, for Mr. E. Daue. Mr. W. C. Banks, architect:—

Larke	£902 0 0
Merritt & Ashby	859 0 0
Cooper (accepted)	832 0 0

For house at Wandsworth-common, for Mr. J. Chisman. Mr. Burton, architect. Quantities supplied:—

Harris	£1,487 6 1
Hill, Higgs, & Co.	1,475 0 0
Lathey Brothers	1,399 0 0
Eborall	1,389 0 0

For stables, cottage, and warehouse, Willesden, for All Souls' College, Oxford. Mr. Robert Hutchinson, architect:—

Shapley	£3,036 0 0
Rhodes & Roberts	2,823 0 0
Stephenson	2,819 0 0
Tennant	2,716 0 0
Hook & Oldrey	2,600 0 0
Simpson & Baker	2,612 0 0
Kingsman	2,468 0 0
Burford	2,442 0 0
Wagner	2,398 0 0
Johnson	2,377 0 0
Ingram & Son	2,365 0 0
Smith	2,350 0 0
Handover	2,320 0 0
Cade	2,311 0 0
Warr	2,275 0 0
Bunting	2,240 0 0

For new Wesleyan Chapel, New Bury, Farnworth, Lancashire. Mr. T. Ormrod, architect. No quantities:—

Seddon	£1,180 0 0
Consill	1,159 0 0
S. & W. Coope (accepted)	1,035 0 0

For additions and alterations to Victoria-street Distillery, for Messrs. J. & J. Vickers. Mr. J. Calder, architect. Quantities by Mr. R. O. Harris:—

Lascelles	£1,877 0 0
Foster	1,775 0 0
Niblett	1,547 0 0
Curtis	1,454 0 0
Falkner	1,390 0 0

For additions to 7, Albert-road, Regent's-park, for Mr. William Tibb. Mr. J. Calder, architect. Quantities by Mr. R. O. Harris:—

Forster	£872 0 0
Turner & Sons	821 0 0
Lascelles	815 0 0
Curtis	796 0 0
Falkner	775 0 0
Foster	760 0 0

For parsonage-house at Ashley-green, Great Berkhamstead, for Colonel Smith-Dorrien. Mr. Morton M. Glover, architect:—

G. & J. Waterman	£1,350 0 0
Honour	1,325 0 0
Allaway	1,246 0 0
Harris	1,242 0 0
Chappell	1,217 0 0
Nash & Matthews	1,215 0 0
Smith & Fincher	1,207 0 0
Snell	1,175 0 0

For alterations and additions to stabling, &c., Charles-street, Hatton-garden. Mr. Shoppee, architect:—

Campion	£1,430 0 0
Brass	1,139 0 0
Wagstaffe (accepted)	1,125 0 0

For farm buildings and stabling at Sandstone, near Uxbridge. Mr. Shoppee, architect:—

Fassnidge & Son (accepted)	£997 0 0

For alterations and additions at Denham Mount, near Uxbridge. Mr. Shoppee, architect:—

Fassnidge & Son (accepted)	£445 0 0

For new administrative block for the Guardians of the Hackney Union. Messrs. Lee & Smith, architects. Quantities supplied by Messrs. Linsdell & Gifford:—

Stamp & Bowtle	£6,553 0 0
Crabb	6,080 0 0
Shurmur	6,000 0 0
Chessum	5,974 0 0
Bangs & Co.	5,970 0 0
Stanes	5,883 0 0
Lewis	5,810 0 0
High	5,696 0 0
Forrest	5,678 0 0
Waldram & Co. (accepted)	5,656 0 0
Norris	5,600 0 0

For warehouse and factory, Burdett-road, Bow-comm Messrs. H. & J. D. Mathews, architects. Quantities s plied:—

Green	£1,900 0 0
Thomas	1,795 0 0
Shapley	1,725 0 0
Allen & Son	1,650 0 0
Blott	1,637 0 0
Waldram & Co.	1,623 0 0
Stamp & Bowtle	1,473 0 0
Vaughan	1,417 0 0
Hunt	1,408 0 0
Timewell (accepted)	1,363 0 0

For new warehouses, Queen Victoria-street. Mr. Wimble, architect:—

Brass	£13,386 0 0
Dove	13,035 0 0
Fish	12,170 0 0
Colls	11,958 0 0
Laurence	11,736 0 0
W. & F. Crocker	11,569 0 0
Killby	11,476 0 0
Scrivenor & White	11,447 0 0
Morter	10,937 0 0

For additions to No. 26, White-street, E.C., for M Huxford. Mr. John Groom, architect:—

Chapman	£330 0 0
Whitby	325 0 0
Loaring (accepted)	289 0 0

For rebuilding No. 13, Leonard-street, Shoreditch, Mr. Edgar Kitchen. Mr. J. Groom, architect. Quantities by Mr. B. A. C. Herring:—

Knight	£1,192 0 0
Allen & Son	1,175 0 0
Crabb	1,050 0 0
Ennor	1,047 0 0
Bryant	1,020 0 0
Kelly Brothers	998 0 0
Scrivener & White (accepted)	983 0 0

For works at the following taverns. Mr. H. Newton, architect:—

Repairs at the Henry VIII., Stoke Newington:—

Brindle	£127 10 0
Hockley	120 0 0
Shurmur	108 0 0
Taylor (accepted)	92 15 0

Repairs at the Fortune of War, King's-cross:—

Taylor	£125 0 0
Shurmur (accepted)	119 0 0

Repairs at the Rose, Sands End, Fulham:—

Brindle	£116 0 0
Wells	111 0 0
Hockley (accepted)	94 0 0

Alterations at the Talbot, Little Chester-street:—

Darbey & Son	£419 15 0
Taylor	407 0 0
Hockley	485 0 0
Shurmur (accepted)	441 0 0

Repairs to the Victory, Kentish Town:—

Lamble	£109 0 0
Shurmur	108 0 0
Boden	98 10 0
Brindle (accepted)	85 0 0

TO CORRESPONDENTS.

Errata.—Dr Barlow objects to our mode of spelling the name certain great painter, and wishes us to mention that in his ("Dante and Michelangelo," p 231, *ante*), it was written "Raph The article *the* was accidentally omitted before the words "subl Muses."

H. H. J.—H. C.—R. B.—A. V. W.—R. B.—T. & D.—J. G.—C. F.—Mr. C.—H. J. N.—W. & Co. R. B.—F.—H. B.—T. M. F Feldspar.—Colonel D.—J. B. & Son.—J. A. & F. M.—E. A. B.— C. B.—W. & T. C.—H. & B.—S. B. (must look to his "Tot Assistant; we cannot attempt to teach arithmetic. The answe 11 in. and 8 parts superficial).—H. S. S. (next week).

We are compelled to decline pointing out books and giv addresses.

All statements of facts, list of tenders, &c. must be accompan by the name and address of the sender, not necessarily publication.

NOTE. The responsibility of signed articles, and papers rea public meetings, rests, of course, with the authors.

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No. 69, FLEET STREET, LONDON.

The Builder.

VOL. XXXIII. No. 1679. SATURDAY, APRIL 10, 1875.

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Work that will have to be done.

BY the amount of money expended in building the activity of the builder is measured. If we know what sums are to be thus expended within a given time, we have sound ground for forming an opinion as to the probable run of prices, and course of trade. It is thus of great value to grasp any newly-indicated facts that may throw light on this important subject. Such, from time to time, we have taken occasion to lay before our readers. The steadily increasing activity of the church building movement forms one of these demands on the activity of the builder. What we are now actually doing in this respect, and what we may expect to do, unless any unexpected check interfere with a rate of progress that has been now ascertained, is one point we have been able thus to illustrate (see *Builder*, Nov. 7, 1874). The relation between the increase of the population, and the demand for additional house-room, is another point as to which we have been careful in collecting such statistics as were accessible. We have now to bring forward some recently collected facts illustrating a third cause of probable demand on architectural activity. It is one which, as yet, is but in its infancy; but which may be expected to make rapid and continued advance in the stimulus it will give all professions and trades connected with the craft of the builder.

We refer to the expenditure, actual and future, of the new sanitary authorities throughout the country. Powers are given, as our readers are aware, to these bodies to raise capital for the various works to be executed under their superintendence. The sums already thus raised are considerable. Those which will be required hereafter will be far larger. It is highly important that those who have money to invest should be made aware of these facts. To divert from foreign loans, and speculations which, if successful, will chiefly benefit other countries, the sums annually laid by by the middle industrial classes of England, and to apply them to home work, is an object desirable for many good reasons. Security of investment, which ought to be the first requisite of the investor, will thus be substituted for uncertainty, harass, and the great probability of repudiation so soon as the foreign borrower can borrow no more. Development of national resources, by national energies, is the result of laying out our money at home. In his capacity of tax-payer, rent-payer, and consumer of all kinds of produce, the Englishman may expect to derive a positive benefit from every million of money laid out on the national estate, even if he only receives his three or three and a half per cent. as annual interest for the money. There are many cases in which a locality would be so enriched by a well-designed outlay of money on public works, as to make it well worth while to incur the expenditure, even if no interest were paid on the sum laid out. Thus there are large districts in Wales to which coal has to be carted, over hilly and far from well-maintained roads, for the distance of forty miles. It was urged by an engineer who projected, now some years since, a line of railway to open up one of these inaccessible districts of the principality, that it would pay every householder to take a number of shares proportionate to his annual consumption of coal, even if he never had a penny of dividend from the railway.

A return, moved for by Mr. W. H. Smith, of the money borrowed by local authorities under Parliamentary sanction, has recently been published. The annual financial statements of the Local Government Board give information on the same subject. The capital borrowed by various local authorities has now reached the amount of about a sixth part of the capital laid out in railways. It is evident that this indicates a movement demanding very careful and serious attention. It is a movement as yet in its infancy. It promises to attain gigantic proportions. It is essential, not only that it should command adequate public support, but that it should be carried on under the control of that general public attention which will afford the best guarantee as to the wisdom of the expenditure. The large proportion of our railway capital which has been mis-spent, has had the effect of checking, and almost of crushing, the progress of one of the most important elements of national prosperity. Left to quiet jobbery, or to the usual easy-going carelessness of men who deal with other people's money, the sums to be expended by the sanitary authorities run a chance of being, to no small extent, worse than wasted. So long as each "authority" takes its own course,—so long as works of detail, when they can be no longer delayed, are carried out without subordination to a general and well-devised plan, comprehending the entire kingdom,—so long will it be highly probable that much of the expenditure of the various authorities will be idle or even positively mischievous.

The sums which have been borrowed by various public authorities, according to the returns procured by Mr. Smith and Mr. Salt, amounted at the close of 1873, to ninety-three millions sterling. This sum does not include any loans which had then been repaid. Sixteen millions of that capital, however, had been repaid at the dates covered by the various returns; leaving an outstanding loan debt of seventy-seven millions sterling, which every month will now tend sensibly to augment.

From the passing of the Public Health Act in 1848 to the close of 1873, a little over twelve millions sterling was borrowed for sanitary purposes, giving an expenditure of 480,000*l.* per annum. The last two years, however, have shown far greater activity in the borrowing process. The group of outstanding loans, which at the end of 1870 amounted to 59,000,000*l.*, reached 63,500,000*l.* at the end of 1871; 69,500,000*l.* at the end of 1872; 72,000,000*l.* at the end of 1873; and, it is said, as much as 80,000,000*l.* at the end of last year. This shows not only a constant demand for money for these objects, but a demand actively increasing in ratio, as well as in amount. The returns are not so distinctly made out as to allow of that minute classification to which we should be glad to reduce them; but as to the general outcome of the movement there can be no mistake.

The metropolis has claimed the lion's share of this considerable outlay. Under the head Metropolitan Management a gross borrowed sum of 16,230,000*l.* is set down. Of this, 3,464,000*l.* have been repaid, leaving an outstanding loan of 12,766,000*l.* As regards the financial condition of the country, the outstanding amount is the matter of principal importance. But from the building point of view, whether as regards the activity of trade, past and future, or the increase of the productive or structural wealth of the country by public works, the gross outlay is the chief point for consideration.

In recording, without further comment at the moment, the expenditure of the metropolitan management, we desire to reserve any expression of opinion as to the wisdom with which that outlay has been effected, or as to the ultimate outcome of the method adopted for dealing with the colossal question of the sewage of the metropolis. But we may point to this expenditure of sixteen millions sterling (as to the main principle of which it is not too much to say that exceptions have been taken by some of those who have been very seriously affected by the methods adopted, and carried out at this great cost) as a clear and costly proof of the utter folly of allowing the sanitary question to drift. Before 1848 Parliament and the public gave no sign of admitting that there *was* any sanitary question at all From 1848 to 1872 it was admitted that sanitary questions of national magnitude did exist, and that, sooner or later, they must be dealt with by the wisdom of Parliament. Meantime, bit by bit, patches were put upon the old garment, and sops were thrown to the loudest remonstrants. All that could be said in defence of so much inactivity was, that time was required for collecting information.

Then, when time was ripe, and when the public mind, excited by great anxieties, was in a condition to allow of efficient action on the part of a patriotic Ministry, the Local Government Board produced the measure which has served as so effectual a buffer against the progress of sanitary reform. By erecting into ultimate and independent authorities, on sanitary matters, all those people who were most interested in doing nothing; and by referring to their foreseen decision all complainants in the public, in the press, in the medical profession, or among the so-called inspectors and officers of health, the late

Government gave a memorable example of the method "How not to do it." Against a crowd a man makes way. In a crowd he can move. But behind a body of men moving very slowly in any given direction, rapid progress is impossible. Such was the result of the legislation of 1872.

The money borrowed for urban sanitary purposes to the end of 1873 hardly exceeds six millions sterling, of which one million has been repaid; but the municipal borough authorities have borrowed 36,700,000*l.*, out of which 30,441,000*l.* are still outstanding. A large portion of this sum,—but how much we are not yet enabled to state,—has, of course, been expended for sanitary purposes. Thus a sum of nearly forty-three millions, which approaches to three times the amount of the metropolitan outlay, has been borrowed by the municipal borough authorities and urban sanitary authorities throughout the country.

It is a significant comment on our criticism of Mr. Stansfeld's Act, that not a single rural sanitary authority appears as a borrower in these returns.

In the return of the sums borrowed, repaid, and outstanding, the borrowing authorities are divided into eight categories. These are (in addition to the metropolitan management, the municipal borough, and the urban sanitary bodies), the harbour authorities, who have borrowed 20,441,000*l.*, and repaid 708,000*l.*; the county authorities, who have borrowed 5,200,000*l.*, and repaid 2,236,000*l.*; the Poor Law authorities, who have borrowed 4,829,000*l.*, and repaid 1,280,000*l.*; the Burial Board, which has borrowed 2,305,000*l.*, and repaid 990,000*l.*; and the drainage and Embankment authorities, who have borrowed 1,563,000*l.*, and repaid 268,000*l.* The whole amount of 93,305,000*l.* borrowed, 16,232,000*l.* repaid, and 77,073,000 outstanding, has afforded, directly or indirectly, employment to the various trades connected with building.

A somewhat different classification, under Mr. Salt's return, enables us to disentangle some other points of interest. One description of loan property, which once was highly useful and amply secured, is now becoming a thing of the past. We refer to the loans to turnpike trusts. At the end of 1872 these are returned as under three millions sterling, the exact figures being 2,295,000*l.* A general return showing all sums raised and repaid for the purposes of turnpike trusts would be a great value, with reference to the engineering statistics of the country.

Bridge and ferry authorities owe 247,000*l.*; market and fair authorities owe 185,000*l.*; highway authorities,—of course, exclusive of turnpike trusts, owe 44,000*l.*; sewers authorities owe 28,000*l.*; and church-rate authorities owe 83,000*l.* This gives a total, under Mr. W. H. Smith's return, of 587,000*l.* for these parochial or district purposes, the turnpike debts being, as before mentioned, 2,295,000*l.* more. Under Mr. Salt's return the county authorities are stated to owe 2,955,000*l.*, giving a total capital expended in these items of 5,837,000*l.* If this represents, as would appear to be the case, the total debt on all our high roads, bye-roads, bridges, ferries, and church restorations and repairs, it cannot be said to press heavily on the country.

During the thirty-nine years that have elapsed from 1834 to the end of 1873, the money authorised to be raised for building or enlarging workhouses, district schools, and sick asylums, was 10,538,000*l.* This is equivalent to an annual outlay of 270,000*l.* The money raised for these purposes has been in part repaid, and the amount now due upon the loans is reduced to 3,549,000*l.* Thus, while the structural wealth of the country has been increased, at a labour cost of 10,500,000*l.* sterling, the annual rates have been sufficient to wipe out by degrees nearly two-thirds of that amount, leaving this description of county property only burdened by a debt equal to one third of its actual cost. The permanent addition thus made to the structural wealth of the country is, therefore, in a fair way to become free of cost, so far as the payment of interest, which takes the place of rent in private buildings, is concerned.

A somewhat exceptional case, but one which must not be left out of sight, regards the sums which were advanced to assist Lancashire during the cotton famine. That that terrible strain upon our domestic industry might have been averted by a wise and large statesmanship, that should have dealt with actual facts, and with national interests, rather than with visionary theories, is a conviction which, however unfashionable at one time, may be thought to be now rapidly spreading. However that may be, the policy which ruled the hour forbad any such attempt at self-defence as might have averted the calamity. We see something of the cost represented in these returns. We also see how great has been the recuperative power of this industrious district. What we do not see, and are too apt to forget, is the vast amount of terrible suffering inflicted on us by the American dispute. The whole sum advanced is returned at 1,767,000*l.* Of this, at the close of 1873, 514,000*l.* had been repaid, leaving the outstanding debt under the Public Works (Manufacturing Districts) Acts of 1863 64 at 1,253,000*l.* It would be desirable to append to this statement a description of what was effected by the outlay. We thus arrive at a total expenditure under Poor-law, sanitary, and town improvement powers, of about 25,000,000*l.* sterling in twenty-five years,—an average outlay of 1,000,000*l.* per annum.

With regard to only a portion of the sums raised by all the classes of authorities above enumerated, have we distinct information as to whence they were obtained. Mr. Smith's return supplies this information to a certain extent. As regards the sum of 51,397,000*l.* borrowed by the Poor Law, Urban Sanitary, Metropolitan Local Management, Drainage and Embankment, Burial Board, and Harbour Authorities, it has been obtained as follows:—The Public Works Loan Commissioners have advanced 3,698,333*l.*; insurance and trading companies have lent 15,955,168*l.*; and the balance of 31,713,840*l.* has been borrowed from other sources, chiefly from private individuals. As far, therefore, as the returns go, some third of the money has been raised, as a purely financial operation, from those institutions whose business it is to advance large sums of money on good security. Nearly three-fifths of the amount required has been found by private individuals. It is not to be supposed that the security has been more perfect, or the interest higher, in these cases than in those of the insurance companies. The creation of sound and adequate security has been contemplated by all the legislation on the subject. The intermiugling of private capitalists with financial companies is thus a good feature in the case. The interest paid has varied from 3½ to 5 per cent. The statement is calculated to assure those who have money to invest, and to lead to the hope that the trading and industrial classes will increasingly contribute, by the capitalising of their savings in this direction, to the material welfare of the country.

We have seen that our actual rate of church-building is now employing an annual expenditure which cannot be far short, if at all, of 700,000*l.* To this the demand made for housing the annual increase of our population, speaking of England and Wales, will add some 1,300,000*l.* In the three years, 1871, 1872, and 1873, the various public authorities which we have cited have raised the sum of 13,000,000*l.*, or at the rate of 4½ millions per annum. If the information before us is reliable, that large average expenditure was nearly doubled in the year 1874. Thus it appears that the two most definite items of the yearly expenditure devoted to building, on what we may call the normal domestic and the normal public worship demands, together amount to only about the half of our average outlay for three years, or the fourth of our outlay for the past year, on building of a public or *quasi*-public nature, carried on by means of money borrowed under Parliamentary powers.

It will, we trust, be thus seen that we have been altogether within the limits of sound prudence and discretion in urging that an expenditure, which has already attained such considerable proportions, should not be left to the regulation of that peculiarly English principle, the Rule of Thumb. As far as the experience bought by the expenditure of the thirteen millions from 1870 to 1873, or of the twenty-one millions up to the end of last year, goes, who is the wiser, unless it be those who have borrowed and spent the money? How is any authority, Urban, Sanitary, or what not, that is preparing to lay out its thousands and tens of thousands on improvements contemplated by the Legislature, to derive its due share of experience from the outlay made in other places? All persons who have any knowledge of architectural or engineering works are aware of the enormous advantage which an experienced professional or practical man possesses over those who have not his experience. In every new kind of work, large sums are, in point of fact, wasted; or laid out, to put the best face on it, in acquiring experience. But what is the use of this if the experience is locked up in half a dozen bosoms? If we take our railways as any guidance, we might estimate that from two to three millions out of the twenty-one have been spent in a manner that might have been avoided, had the spenders known at the beginning of their work all that they had learned by the close. But be the amount more or less, the fact is unquestionable. It is our duty, as a practical people, to see that we obtain our money's worth for our money. That money's worth comprises, not only so many millions of bricks, or so many hundred thousand cubic yards of excavation, but, with and beyond all this, the practical experience gained by the outlay. It can only be by the machinery of the Local Government Board that this important experience can be put into a form that is at once definite, tangible, and accessible. So far as we can see, the machinery for this purpose has to be created. We are quite sure that a Minister will not only ultimately deserve well of the country, but will also attract a present approval and support from all serious men who take an interest in the country's welfare, who shall steadily and intelligently grapple with this subject. The Local Government Board, at but slight increase of its actual expenditure, can become the organ of communicating to every public authority that is about to undertake public works in the country, the outcome of the experience gained in the expenditure of many millions on similar works. Is it conceivable that any minor difficulties should be allowed to stand in the way of so palpable and permanent a public economy?

THE ALEXANDRA PALACE.

WORK is progressing briskly at the large building on Muswell-hill, though there is much to be done if the place is to be ready for opening on the 1st of May; more, one may be inclined to think, than is quite possible. We gave a view and plan of the building, with some particulars, in the *Builder* of August 15th last year; the only material alteration from the plan then published is that, of the two open garden courts there shown, the east one is now roofed over, and forms the main portion of the exhibition department,—a better use of the space than merely reduplicating the garden on each side of the central hall.

The architectural merit of the building consists mainly in the plan, which is a good one, both simple in arrangement, and effective in regard to vista; the continuation of the line of the sculpture and picture galleries through the central hall, by the grouping of the columns and the treatment of the hall roof at those points, is a very good idea. The general external design sufficiently expresses the arrangement, which is perhaps all that can be very well said for it. On the other hand, it would be hardly fair, perhaps, to expect the details of a structure necessarily (for financial reasons) contrived and got up in a great hurry, to stand any close criticism. On one point we may congratulate the Company, that they have got a building with a good solid substructure of brick, and have not aimed at a glass palace. This may have cost them more at the outset, but it will be far cheaper in the end than the constant tinkering up which a glass and iron building would have required, besides having a more solid and satisfactory appearance.

The central hall is so far complete as to enable one to judge of the effect, though still in considerable confusion; one end of the floor covered with the bodies of giant organ-pipes, another part occupied by a motley group of plaster statuary; Graces, and Fauns, and other mythological personages, standing about on the floor with a sufficiently odd effect. The hall, as may be seen on reference to our plan of the date above named, is a five-aisled apartment; the central portion having a semicircular roof, and the rest a flat ceiling. The audience are all on a flat floor, and the directors have got into their heads that it will accommodate more than the Albert Hall,—in which, we think, they are mistaken. The room is more the right shape for a large music-room (*long* rather than *wide*), than is the Kensington Hall; but in other respects there is little attempt at special arrangement for bringing all the audience into favourable conditions for hearing; a certain degree of rise in the floor towards the back would have been very desirable in this respect; and the five-aisled arrangement, we fear, can hardly prove satisfactory to those who do not contrive to get seats

in the centre block. From some points at the sides the orchestra is obscured by quite a large collection of columns interposed between it and the spectator's eye and ear. The general colour effect of the decoration, a warm grey for the columns and a pretty decided low orange as the predominating ground above, is bright and cheerful without being too strong; the ornamental details seem to vary between festoons and trellis-work in large panels,—a kind of design which might no doubt pass muster and even get elaborately illustrated in France as a specimen of modern colour decoration, but which seems to us poverty itself. It is harmless, however; but the idea of the coloured statues of kings and queens of England standing at the bases of the columns, is more obtrusive and even less fortunate, and will impart a Madame Tussaud look to the whole place. It is a great pity so much trouble has been spent upon such a very mistaken and unrefined manner of decoration. As a minor matter, we disapprove of the refreshment buffets at the sides of the hall; those who remember the annoying effect at the Handel Festivals, of the popping of corks and rattling of plates at the buffets contiguous to the auditorium, will understand why. They should be in a separate apartment.

The theatre seems to promise well. Every person in it will have a full view of the stage. It is not crammed up with boxes and galleries, having only two not very deep galleries across the end, the rest of the audience being disposed in the area, on a slope of sufficient angle. For theatres, where the speaking-sound of a single voice is to be considered, length is, however, hazardous as to the question of hearing, and we fear the house will be a trying one for actors' voices. The flat ceiling and side walls look threatening in regard to echo; the ceiling is kept low, as it should be, but we are disposed to think some alteration will be necessary to break the smooth surfaces and right angles presented by walls and ceiling.

The picture-galleries will have a favourable light, and plenty of it; the sculpture-galleries, with not only a glass roof, but a glass wall on one side, are in danger of having too much light, especially as it appears to be in contemplation to leave the light-tinted brick of the back wall as it is. Something darker is wanted here to furnish a background. The conservatory shows every prospect of being a very successful and effective apartment of its class: a large fountain is in process of construction for the centre of it; not, however, an architectural design, but a fountain *à la jardinière*, with shrubs and artificial rock-work.

The most distinctly architectural items of the show, so far, are the models of a modern Moorish and a modern Egyptian house, erected under the superintendence of Dr. Dresser, just inside the east entrance. These seem very well carried out, though modern Saracenic work must have deteriorated rather in style and colour in its inlays, or justice has hardly been done to it in the vestibule of the Moorish house. There is nothing to compete with the Saracenic court of the Sydenham Palace, at all events.

The refreshment department of the new palace is on a very large and complete scale, and the planning and arrangement for rapid communication between the kitchens and the dining-rooms seem efficient and complete, without involving any complication in the internal traffic of this portion of the building. The large dining-room, with its windows looking out through an arcaded loggia on an extensive view, will be a very cheerful and inviting room; and, large as it is, will probably be well filled on many occasions. The room is low for its area, however, and it is to be hoped adequate provision has been made for ensuring thorough ventilation.

The building will be opened with a musical festival on the 1st of May. Of the other diverse attractions which the directors offer to the public we may speak hereafter, but we may at once compliment them on the enterprise shown in their extensive programme, especially after so heavy a blow as the loss of the former building, while it was yet new; and may say that the apparently systematic arrangement of the whole scheme promises, as it seems to merit, success.

The Raising of Grosvenor-road.—The Duke of Westminster has given to the St. George's (Hanover-square) parish 100*l.* towards the expenses of raising the Grosvenor-road to prevent inundations.

A LARGE NEW RAILWAY VIADUCT AT HANWELL.

The Great Western Railway Company are at present engaged in laying down an additional double line of rails between the principal terminal station at Paddington and West Drayton, which passes through Hanwell amongst other places, and crosses the river Brent by a viaduct upwards of 700 ft. in length, and 50 ft. high. The widening of the line requires the construction of another viaduct, and this is now in the course of building, crossing the river on the north side of the present structure, which is principally built of brick. The new viaduct is to a great extent being built of the same material, but will in many respects be stronger than the one now in use, and carried to a higher elevation above the water-line of the river. It consists of twelve arches, eight of which are of 70 ft. span, and four of 32 ft. span, with strong and massive retaining walls at each end. The height from the ground to the spring of the arches is 45 ft., and from that point to the railway level 23 ft. The abutments are also very strong and substantial, being 15 ft. 6 in. in thickness at the base, and above the plinth 14 ft. 6 in. The arches are formed of eight rings of bricks, laid in Portland cement, whilst the piers are being constructed of hard stock bricks supplied from the Southall works. The foundations of the piers are formed of massive blocks of concrete 27 ft. square, and 6 ft. thick, laid with Portland cement. The magnitude of the work may be imagined when it is stated that not less than seven millions of bricks will be required for the completion of the undertaking. The works, which were commenced a little more than six months ago, are already considerably advanced, although the late severe weather has interfered with their progress. It is fully expected that the viaduct will be completed and ready for opening in the course of the present year. The works are being carried out under the superintendence of Mr. A. Brookes and Mr. Owens, engineers, and the contractors are Messrs. Williams, of Shepherd's-bush. In the widening of the line between the points named there will be several other works of an important engineering character, including the construction of bridges at Acton, Ealing, and other places, but the new viaduct at Hanwell is the heaviest portion of the undertaking, and when completed it will form one of the most important features on the Great Western line. The entire length of the line now in course of being widened between Paddington and West Drayton is thirteen miles, which is within about five miles of the Slough and Windsor junction.

THE ALLEGED EXTRAVAGANT EXPENDITURE ON SCHOOL BOARD BUILDINGS.

The charge of extravagance in reference to the erection of the new Board schools in the metropolis, which has recently been preferred against the London School Board by several of the local vestries, has drawn from the Rev. G. M. Murphy, one of the members of the School Board for the Lambeth district, a statement in which he strongly denies the allegations which have been made, and endeavours to show that in the schools which have been built by the Board they have not gone beyond what was actually required, either on architectural or sanitary grounds. Speaking of the Lambeth district, he states that, in addition to the thirty-four schools which have already been built there, or for which sites have been purchased, the Education Department are now insisting that schools shall be built at Wandsworth-common, Nunhead-green, Herne-hill, Clapham Park, Brixton-hill, and other districts where building operations are now going on upon a large scale.

He then observes, in reference to the actual building of schools, that the Board can neither build a school nor add anything to a school already built without the full consent of the Education Department. The plans, he states, are always sent to Whitehall, and, after approval there, are open to the inspection of any member of the Board. He says it is quite possible that in a work so comprehensive as theirs there may appear something that seems unduly costly, but that the fact is that every one with whom they have to deal thinks the School Board fair game for extortionate charges; and that even parish vestries, when they put a school building behind blocks of houses for cheapness, and enter to the building by an arch or gateway, rate them upon the entire frontage as though they occupied the open street. They had to resist the most extortionate demands for compensation, and for premises they purchased, and sometimes the cost of resistance was as expensive as yielding to extortion. In a vein of sarcasm he then says,—"Of course it would be possible to put up four square walls, and call it a school, but there are a few objections to it. The Department would certainly object. They would pass for a so-called voluntary school plans which, for the Board, they would utterly condemn. Then, owners of the property would fairly object. We are erecting, or are about to erect, schools on the Shaftesbury Park estate, Mr. Hankey's estate, the Milkwood estate between Brixton Church and Herne-hill station, and the Dulwich College estate, and the owners of property in the neighbourhood have surely a right to demand that we do not injure their property by placing on or near it an exaggerated cow-shed or an architectural barn. And I am sure many of the ratepayers would object. It must be remembered that these schools will ultimately become the property of the ratepayers; and as a good built house is cheaper than a 'ramshackle' one, so by parity of reasoning a well-built school will be cheaper in the long run." He adds that for every school that is built, eight, nine, and even ten builders are selected to compete for the contract; and that they are now trying the experiment of throwing open the contract for certain schools to the entire building trade by public advertisement. If there was anything that could be done to lighten the cost of building construction without imparing its efficiency, his colleagues and himself would be glad of any hint from any quarter. But he fears that, to many, the offence they give is not the expense of sites, buildings, apparatus, management, bye-laws, industrial schools, and teaching, but that they existed at all. Their outcry, dub it what they would, was against the Act of 1870, which called them into being. For these he had not a word, for it was merely so much waste time to try and conciliate them.

THE COST OF THE CANNON-STREET AND CHARING-CROSS BRANCHES OF THE SOUTH-EASTERN RAILWAY.

The proposed fusion of the South-Eastern and the London, Chatham, and Dover Railways which has been made public within the last few days, gives a special interest just now to the cost which was incurred by the South-Eastern Company in constructing the Cannon-street and Charing-cross branches. The entire length of these branches from the Cannon-street Station to the Charing-cross Station, including the distance across the river by the two bridges, is only about two miles, and yet the South-Eastern Company spent upwards of four millions sterling in their construction in order to carry their system into the heart of the City and the West End, where they built the two great stations called respectively the Cannon-street and the Charing-cross stations. The two miles of line in question, which cost the enormous sum of 2,000,000*l.* a mile, are understood to be the most expensive piece of railway construction in the world, and in themselves are never expected to pay, but nevertheless afford great accommodation to the public. It may be added that for the Metropolitan Extension line of the London, Chatham, and Dover Company, between Ludgate-hill and Victoria, which cost upwards of a million and a half per mile, the Midland Company is said to have offered the prodigious sum of 16,000,000*l.*, and to be now in negotiation for its purchase.

ART AND CIVILISATION.

In the course of a lecture on "The Place of Art in Life," recently delivered in St. George's Hall, Langham-place, Professor Sidney Colvin said, at first sight one would consider that as civilisation progresses these fine arts would be likely to fill a more considerable part in life; mankind, as civilisation advances, learns more to satisfy its needs and acquiesces as the old passions get tamed more and more in doing what it ought, will it not then have more leisure for art? So say some who survey with comprehensive view the past and future of our race. Herbert Spencer says, "The æsthetic activeness in general may be expected to play an increasing part in human life as civilisation advances. Greater economi-

sation of energy, resulting from superiority of organisation will have in the future effects like those it has had in the past,—the economisation being achieved both directly through the improvement of the human structure itself and indirectly through the improvement of all appliances, mechanical, social, and other. A growing surplus of energy will bring a growing proportion of the æsthetic activities and gratifications, and while the forms of art will be such as yield pleasurable exercise to the simpler faculties they will in a greater degree than now appeal to the higher emotions." This is very comforting to a believer in evolution; but however cordially we may accept a doctrine as to its main principles, one is bound to examine closely its particular deductions and applications. Now how is this to be borne out by the actual state of things? Many things tend to show that the love of art has not progressed with civilisation, if we think of many of the London districts representing the spirit of the time, such as South Kensington, with its long rows of monotonous, soulless stucco terraces, without any sign of preference of style or of delight in variety and beauty. Nor is the inside better than the outside; everything is turned out with perfect mechanical skill, but without any sign of the spirit and enjoyment. If we go to the City, what do we see there that bespeaks the existence of qualities that excess of activity should develop? We have a Royal Academy and public monuments (mostly bitter failures); but the largest part of what is done in those departments shows dull perceptions, and no vivid delight. Compare this life of a London citizen with that of a fifteenth-century Florentine. True, he might live in a time subject to revolutions and anarchy; but how much he had that rendered life worth having. When he went forth into the open place, surrounded by public buildings,—the Chapel of St. John, the Church of our Lady of the Lily, the Bell Tower,—were surely rather different from anything we build now; and on the Piazza the fair statues under the arcades showed a rare living passionate spirit of play. Herbert Spencer says the Middle Ages were "pervaded by inferior sentiments"; but the Baptistery of San Giovanni, the Campanile of Giotto, and our Lady of the Lily show that everything done by the æsthetic activities was done better then than now. Yet would we not wholly praise the past and denounce the present, nor is any respect due to that attitude of mind which wastes itself in devotion to past indignation at present and despair at future. Such an attitude is morally pitiful,—intellectually all wrong and practically paralysing, and it is one into which sensitive minds, seeing the mischief about them, and reverential to the good of the past, are very prone to fall; but it is necessary that we should recognise, without undue praise or dispraise of one or the other, that in this order of activeness our time is vastly behind other times of the world.

NEW PARISH CHURCH OF ST. NICHOLAS, GUILDFORD.

The ceremonial of laying the memorial-stone of the new Parish Church of St. Nicholas, Guildford, took place on the 2nd instant. His Grace the Duke of Northumberland adjusted the stone. The Bishop of the Diocese, the Suffragan Bishop of Guildford, and Dr. Ryan, Bishop of Mauritius, and formerly Rector of St. Nicholas, with a large body of clergy, took part in the appropriate service. The Mayor and Corporation of this ancient town attended in full civic dignity; the two maces of gold plate, the larger of which was presented to the Corporation by Queen Elizabeth, being conspicuous in the procession. A great damp, however, was thrown over the proceedings of the day by the dangerous illness of Dr. Monsell, the much-esteemed rector, and indeed the founder of the new church. On visiting the works on the 25th ult., as we mentioned last week, the reverend gentleman fell, owing to the slipping of some rubbish beneath his feet, and not only broke his arm, but also dislocated his shoulder. For some days his recovery made satisfactory progress, but on the 30th of March more serious symptoms appeared, and for some hours life was despaired of. Sir James Paget came down on the night of the 1st of April, and by the time of the service, which Dr. Monsell had desired should not be put off, whatever might happen to himself, better hopes were entertained of his recovery. The Queen, with the unfailing and considerate kindness which so endears her Majesty to all classes of her subjects, made inquiries by telegraph as to the condition of Dr. Monsell. Up to the time of our going to press, his progress, though slow, has been re-assuring. St. Nicholas will be the third church added to the architectural wealth of the kingdom by the exertions of Dr. Monsell. The building has now risen to the height of the springing of the arches of the windows, and gives promise of being an elegant and commodious structure. It is built of the local Bargate stone, with Bath stone dressings, and pointed brickwork in the interior. The spot possesses unusual interest from its containing the mortuary chapel of the old family of More, of which the famous Chancellor, Sir Thomas More, beheaded by Henry VIII., was a cadet. The Losely Estate, and property of the More family in the neighbourhood of Guildford, passed by marriage to the family of Molyneux, the present possessors. Considerable debate has occurred as to the advisability of rebuilding the church on the ancient site, or erecting a substitute on a piece of land offered for the purpose by Dr. Monsell. For the sake of the More Chapel, which would have required extensive alteration to enable it to stand alone in the churchyard, which would have in that case been planted with trees, as is the picturesque churchyard of the parish church of St. Mary, on the opposite side of the River Wey, it is matter of satisfaction that the old site has been retained. It is to be hoped that with regard to the stained windows of the new church, example may be taken from the apse windows of the church of the Holy Trinity, Guildford, in which sermons were preached by the Rev. Canon Furse and the Right Rev. Dr. Ryan, on the occasion of the laying the memorial stone. In the apse of this church are two very elegant examples of geometrical work in stained glass, the grace and lightness of which are relieved by contrast with a Crucifixion, of more than ordinarily bad taste and bad art, in the central window. Our manufacturers can now produce glass of a depth and purity of colour, the attainment of which had long been a lost art. But for that special and cultured taste which can produce anything by way of a figure design in glass, we have far to look.

"CALCOT."

A correspondent writes:—As to the *Builder*, March 27, 1875, p. 273, etymology of "Calcot" corrupted into "Chalk Farm," see "Words and Places," by Isaac Taylor, M.A., for probable etymology (Macmillan), pp. 170, 171, "Caldicot," or cold cot, and Cold Harbour: ruins of deserted Roman villas alongside highways, used for temporary shelter by travellers carrying their own bedding and provisions, as is done by the frequenters of khans and serais in the East. In Hertfordshire, "Caldicot" is called by the natives "Caycot."

LONGTON SEWERAGE WORKS.

On the 31st ult. the first stone of the proposed new sewerage works for Longton was laid. The system adopted in the construction of the sewerage works by Mr. Baldwin Latham is what is known as the gravitation system, and by it the whole of the sewage of the borough is conveyed to one outlet. The main outfall will be of brick, with inverts of terra-metallic ware (Staffordshire). The general system of the sewerage is such that the main outfall is constructed of such inclination as to give sufficient velocity to the minimum flow of sewage, thus making the sewers self-cleansing. As the size of the sewers decreases from the point of outfall the inclination increases, so that a uniform rate of flow may take place over all branches of the sewers. Arrangements have been made that in case of necessity both the outfall and branch sewers may be flushed. The whole will be ventilated, and the duplicate system has been adopted. There will be two sets of sewers, one being devoted to the conveyance away of sewage proper and the other to carrying off surface and storm water. The system is being so introduced that existing sewers may be attached for the purpose of conveying away surface and storm water. An agreement was entered into between the Town Council and the Duke of Sutherland for the disposal of the sewage upon terms which it is hoped will be mutually advantageous. The terms of the agreement are that the Duke will receive upon his estate the sewage of Longton, and utilise it for fructifying purposes. The Council have, on their part, to construct the sewerage works to the point of outfall at the boundary of the borough, near the Lord John Russell Inn, Dresden. The expenses consequent upon the work are estimated at 27,600*l.*, but the sum includes the proportion which East Vale will pay for the sewerage of that district. The Town Council will pay the Duke 500*l.* a year for the term of the agreement—for twenty-one years; the Duke taking all the expense and responsibility connected with the sewage after its passage beyond the boundary of the borough. The repayment of the money obtained on loan for the construction of the works will be spread over a term of years. The Duke ought to make a good thing out of this arrangement.

A FRIENDLY MEETING.

The members of the District Surveyors' Association dined together in the large room at the "Albion," in Aldersgate-street, on Wednesday evening last. Although simply a social gathering, we shall probably displease no one by saying that Mr. E. Woodthorpe presided in his light-hearted, genial way, and that Mr. E. Saunders, Mr. F. Fowler (members of the Board of Works), Mr. George Vulliamy, Mr. Dawson, Mr. Papworth, Mr. Hebb, and other members of the profession, were there as guests. Major (Charles) Fowler, the honorary secretary, acted as *croupier*, and amongst the district surveyors present were Messrs. Harry Oliver, Legge, Parsons, Foster Hayward, Hansom, Williams, Hammond, Peebles, Plumbe, with many other equally "good men and true," whose names at this moment we do not recall. Some hearty and agreeable speeches were made, and every one admitted that it was very useful now and then to be merry.

THE MERCHANT TAYLORS' SCHOOLS.

The new schools in Charter-house-square, which have been erected from the designs of Mr. I'Anson, were opened on Tuesday last, by H. R. H. the Prince of Wales, the Princess of Wales and other illustrious persons being present. At the close of the ceremony the whole of the visitors, some hundreds in number, were entertained at luncheon in the great hall.

In our volume for 1873 (xxxi., p. 479) some particulars both of the old schools and of the proposed new ones now completed will be found. The contractors were Messrs. Browne & Robinson, and the cost, we understand, will not be far from 50,000*l.* The land cost about the same sum, but part of this will be regained by the sale of the old site. We may find an opportunity to return to the subject.

SCHOOL BOARD SCHOOLS.

Hammersmith Gate. — These schools are situated in William-street, leading down to North-end, Fulham, about five minutes' walk from Addison-road Station. The new buildings, designed to accommodate 304 children (boys and girls), are attached to the old school formerly belonging to St. Mary's Church, and which will now be utilised for the infants (about 150), caretakers' apartments, &c. The girls are placed on the ground, and the boys on the first, floor, each being provided with ample lavatories and cloak-rooms, separate playgrounds, and entrances. The elevation is Gothic, to match the old building. The architect is Mr. E. R. Robson, and the contractors are Messrs. Hook & Oldrey, the amount of whose contract was 3,359*l.* Mr. J. Jefferson was clerk of works.

Sewage Irrigation.—At a meeting of the Blackburn Corporation, held on Thursday in last week, Councillor Beads carried a motion calling the attention of the Home Secretary to the manner in which the Blackburn Corporation has been imposed upon in carrying out the irrigation scheme. The ex-Mayor said that the prosperity of the town had been blighted through excessive expenditure and heavy rates: 200,000*l.* had been spent. In every instance the Corporation had had to pay three times the value of the land taken. A searching inquiry ought to be instituted, and the way in which the Mayor and Corporation of Blackburn had been oppressed ought to be represented.

ARCHITECTS AND IRON.

Though it is becoming a common article of occasation against the architects of the present day, that they have neglected iron, the charge can hardly be made, at any rate, against their representative body. Iron has been brought up again and again in the course of the Institute proceedings. As long ago as 1842 a medal was offered and awarded for the best essay on the adaptation of iron constructively and artistically in modern architecture. Coming to later dates, Mr. Aitchison, in 1864, read a paper on iron as a building material, and this was followed the next year by one from Mr. W. H. White, on the legitimate use and proper treatment of iron in design. The two papers, both by able and thoughtful architects, materially differed in the line they took; the first-named upholding the "iron age" theory, and representing that particular metal as destined to be the great constructive element in modern architecture; while Mr. White altogether repudiated such a view, and insisted that iron should be the servant of architecture and not its master; a new and important material to be made the most of, and to be treated in the most suitable and effective way, constructively and decoratively, but only as subordinate to the more massive building materials, stone and brick. At the first conference meeting in 1871, Mr. Aitchison again advanced the standard of iron as the new constructive basis of architecture, to a not very sympathising audience. In the same year was read a communication from Mr. Papworth on the fall of the iron dome of the Athenæum at Brighton. Subsequently there was the important paper and discussion on the Vienna dome; and at the commencement of the present session a medal was again offered for the best essay on the subject, to which, however, there was no response. And on Monday we had the latest instance of the interest of the Institute in the matter, in Mr. Driver's paper, elsewhere reported.

While, therefore, there can be no charge against the representative society of the profession as having overlooked this important subject, it may say that the charge against the profession generally on this head has been somewhat overstated. Engineers are particularly fond of urging the changes about our neglect of iron; and the reader of Monday's paper apparently took their side in his remarks on the enterprise of the engineers in dealing with this material. He spoke of it as "an example" to architects. Looking at the character and appearance of the structures with which engineers have made beautiful our towns, we may perhaps conclude that it was only a slip of the pen, and that the word "warning" was intended. Certainly no one is bound, as an architect is, to consider the appearance and expression of a structure as nothing, could well regard the average engineering structures in any other light. The architects might not unfairly say (and claim the merit for it), "See what fearful things we might have made if we had chosen to give ourselves to iron; and we have resisted the temptation." It was argued, furthermore, that the engineering profession have shown an appreciative spirit in borrowing much from the architects, and that we have not returned the compliment. If architects are likely to make a better hand of borrowing from the engineers than the latter have in borrowing from them, the experiment had certainly better be let alone. The last and crowning sin of engineering design generally consists in the appropriation and misapplication of architectural details without any consideration of their real meaning or suitability. Better far to see the naked construction of an iron bridge than to have it cased over with casing of applied slices of Classic or Gothic detail, or what is supposed to be such.

As a matter of fact, however, we do not think architects in practice have by any means so much rejected iron as they are accused of having done, and that it was rather a mistake in a member of the profession to repeat this charge against us. And Mr. Driver's satirical remarks as to the habitudes of architects in concealing iron with casing and plastering, and so forth, certainly do not apply to the best members of the profession nowadays, and were a repetition of a line of criticism which might have been called for even or fifteen years ago, but hardly is so now.

Of the lecturer's own suggestions as to the ornamental treatment of iron, illustrated as to principle and method by the drawings of a fish market at Santiago, one or two are good and capable of being worked out further with advantage. But he had hardly sufficiently come out of Egypt himself to assume too didactic a tone. Drawings were shown of iron capitals, to illustrate a right and a wrong way of affixing the foliage decoration to the bell. But why fix it at all? The proposal only shows that he who made it had not got free from prejudice in favour of certain forms supposed to be necessary, and, therefore, to be imitated in iron, if it were used. If the iron capitals cannot be cast with foliage ornament (imitation of carving, in fact), of course they are not really cast-iron design, and are a falsity. In one of the papers previously referred to, Mr. Aitchison brought this point forward, and suggested that the Institute could not do better than offer a medal for a good design for a cast-iron capital, which could be cast at once, without the process of riveting on ornaments afterwards. The suggestion was not adopted, and perhaps not quite seriously made; but the point is one that should be borne in mind. It is no use people expecting to make anything original and suitable of cast-iron design, if they go to it with their heads full of orthodox details suitable only for carving in stone.

As to the general question of the importance of iron in modern architecture, we hold the "iron age" view to be totally exaggerated and indefensible on any sound critical grounds. Iron is a most valuable auxiliary, and may be made much more so than it usually has been; and no doubt the frank and unbiassed consideration of its capabilities in regard to construction may tend to lead to new and original treatment in both respects. But what was urged on this as well as upon previous occasions, that iron is not capable of being treated, when extensively used, so as to give repose and monumental expression to an edifice, is perfectly true. And there is a consideration beyond that, viz., that we have no proof of its being any more monumental in fact than it is in appearance; the test of time has not been applied to it; but we have, on the contrary, strong presumptive reasons for thinking it is not so, in cases where it is relied upon as the main portion of a large structure. It is unfortunately too well known that the Crystal Palace is already entailing most disproportionate and continual expense to keep it in repair, and yet it is quite a new building in comparison with the duration of really architectural structures. As to what is being continually said by the advocates of the iron age theory, that if the Mediæval builders, for instance, had possessed the means of casting iron on a large scale, they would have made as fine a use of it as they did of stone, we repeat now what we have said before, that if the architects of the thirteenth century had used iron as a main part of their structures, we should know very much less about them than we do, since the probability is that not one of their original structures would be in existence at this day.

A feature in the discussion at the meeting in question was the somewhat extended part taken in it by gentlemen having a practical and trade concern with the material under debate. Information from such sources is often valuable, and some that was valuable was given. Exhortations and criticisms, however, are different things from information. When gentlemen who are commercially concerned in a particular material are permitted to indulge in impassioned addresses to a meeting of architects, pointing out how much better they could build if they would only trust entirely to this material, and, in fact, leaving nothing undone but handing round their business cards on the spot, the result may be amusing at the moment; but this kind of thing is hardly consistent with the dignity of the profession, or of the society which represents the profession.

Gymnasium at Marlborough House.—The Prince of Wales has employed Messrs. Geo. Spencer & Co., of Howard's-buildings, Central-street, St. Luke's, to fit up a gymnasium on the lawn of Marlborough House, for the recreation of the Royal children, who are in training under a staff instructor of the army. The apparatus consists of a wooden platform 16 ft. by 9 ft. On this is erected an iron frame, 12 ft. high, a horizontal bar with steel core, a pair of swivelling covered hand-rings, and a foot swing. A climbing plank and sparred ladder (in one) has also been constructed with a climbing rope 16 ft. long. A climbing pole of 12 ft. and a pair of parallel bars complete the apparatus. We shall be glad to find the example followed.

SOCIETY OF BRITISH ARTISTS.

The fifty-second exhibition of this Society opened this week. Among the nine hundred and odd pictures which are displayed on the walls of the extensive galleries in Suffolk-street, may be noted a tolerably large work by A. B. Donaldson, "The New Duet" (188), sung by two young men of the chapel choir for the edification of a scarlet-robed Cardinal and his friend, and accompanied by a monk on the harpsichord, we suppose we must call it, for the figures are not modern, though the instrument looks too much so to go with them. A rather heated tone, and a want of concentration in the colour composition, are defects in the work, which is worth attention. Girardot's screen scene from the "School for Scandal" (175) is well grouped, and the contrasted expressions of the two Surfaces are good; but Lady Teazle, as an embodiment of the character, is absurd. Mr. J. D. Watson contributes "Mind and Matter" (130), Don Quixote moralising over the sleeping Sancho Panza; and Sir John Gilbert sends a very nice little work illustrative of an episode in the history of the same renowned pair, in which, however, the figures are subordinate to the landscape, a wooded scene painted with much breadth. Sir Francis Grant's "Small Study for a full-length Portrait" of an officer in uniform is a very good specimen of his talents. Among the other too numerous contributions may be mentioned as above the average, "The Home Ruler," by E. C. Barnes (47), a mischievous little girl tyrannising over her doll; "La Ballade" (55), by T. Roberts, a poorly-dressed girl leaning against a wall reading a street ballad, expression and colour good and original; "Faces in the Fire," and "Katey's Letter" (73, 90), by Haynes King; "Grandmama's Secrets" (128), by J. T. Lucas; "A Quiet Corner" for a set-to between a Royalist and a Puritan (138), by T. L. Tourrier; Mrs. Charretie's "Lady Betty at Home" (160), and "The Village School" of J. T. Peele (165), in which some of the children are very pretty. Mr. Redgrave sends a landscape, "The Vale of Mickleham"; Mr. Wyllie's various small contributions are all good; Mr. Henry sends two or three small coast scenes in his well-known style, and Aumonier's "Dolgarrog Mill" and A. B. Grahame's "Evening" (195, 196) are good landscapes. Among the watercolours, Mr. Richmond's small figure study, "The First Garden" (756), is worth attention, the figure of Eve is very pretty, and the tone unusual. There are some nice drawings among the watercolours. The mass of the Exhibition unhappily reminds us of the epigram on a *dilettante* whose social merits are set forth, with the saving clause—

> "But Heaven preserve us from his fiddling—
> It is so very, *very* middling!"

Indeed, there are not a few productions to which even this faint praise must be denied. Why any one should paint them, and why when painted they should be hung in a public place (unless as a warning), we cannot undertake to conjecture.

THE FRENCH GALLERY, PALL-MALL.

The twenty-second annual exhibition of the works of Continental artists, at Mr. Wallis's Gallery, which was opened to the public this week, hardly keeps up the prestige of most former exhibitions of the series. Some old contributors are but poorly represented, and we come upon not a few works certainly below the mark which we have been used to here. We can hardly felicitate the promoters of the exhibition on the frequency with which the present bearer of the name of Kaulbach figures in their catalogue. Of the four small ideal heads by this artist, one only, "Violette" (24), exhibits any character, and the two figures, "The Happy Mother" and "The Rendezvous" (64 and 102), are simply millinery. The two small pictures bearing the names of Corot and Rousseau respectively derive their chief value from those names. Meyerheim is but ill represented by "The Woodside Path" (100); and Madrazo would have done better for his reputation by withholding so poor a piece of common-place as his sole contribution (83); still, the difficulty in getting together a collection from abroad every year must not be overlooked.

In regard to the highest ends of art the one picture of the year is the solemn and pathetic work of Israels, entitled "Mourning" (165). The cold light of dawn breaks from a high window into a desolate-looking stone-paved room,

the only two chairs in which support a coffin, the black hangings of which are indistinctly seen in the back-ground. To the right a worn-looking woman sits on an old basket rolled against the wall, her head bowed on her hand, the other hand on a Bible half-closed on her knee; her little daughter sits on the floor at her feet, looking wistfully before her, one hand still holding the cord with which she has been rocking her doll's cradle to pass the weary hours. The scene, the uncertain light, and the simple grandeur of the bowed figure, speak to the heart with an unostentatious but genuine power unfortunately rare in contemporary painting. It is scarcely creditable to the judgment of the hangers (or we might more fairly say, perhaps, to the taste of the public for whom they cater) that this work should be comparatively cornered, while such far inferior productions as the "Marriage Contract" of Goupil and the "Startled Fawn" of Hoff find centre places on their respective walls.

The work of Israels is balanced by another cottage interior, the "*Premiers Pas*" of Blommers. The two happily illustrate the contrast between the prose and the poetry of painting. The finish of detail in the latter is admirable; but the figures are vulgar and uninteresting, and the subject very hackneyed. Israels would be accused by some of insufficiency of finish; and we do not take his rather uncertain texture and outline as an ideal style of execution; but it is his own, and suffices to tell all that he wishes to tell. But let us, by way of contrast, cross the room to where Gerôme, in his "Danse du Sabre" (69), brings before us Oriental life in all its semi-barbarous splendour of colour and ornament. The scene is the court of an Eastern potentate, who sits in state, in an apartment gorgeous with coloured tiles and rich carpets (executed with the painter's usual uncompromising minuteness and fidelity), surrounded by his court, to see a girl go through a *pas seul*, with a naked sword balanced on her head, and another in her hand. She twirls round with an easy smile of confidence, a green veil floating from her head, the upper part of her figure covered only with a transparent lawn, while a blue scarf descends from the hips; her neck and bosom covered with a profusion of gold ornaments. The ring of spectators look on in different phases of interest; the black slave in the rear, who beats his hand on his water-pot in lieu of a tambourine, is in the artist's best manner; and a touch of his own, too, is the figure of the ape seated on the floor and looking as intently as the rest. It is curious how this one incident intensifies that savagery of Eastern life, which this wonderfully gifted painter has so penetrated into and reproduced. Still, this is a work (already purchased, we may note, at the cost of 4,500 guineas) in which the executive is higher than the intellectual interest. Near this we notice another of the most elaborate pictures in the room, Ribera's "Behind the Scenes" (52). A pretty circus-girl has met with a fall in some acrobatic performance, and is carried "behind," followed by a motley crowd, with various expressions of real or acted sympathy, a fat and spectacled doctor forming the centre of the group. In the young woman on the right, in pink tights and high-heeled boots, the artist has happily hit that ungainly figure of a woman in male costume, with which we have become disagreeably familiar of late. The scene may be intended for an English theatre; the young lounger behind the scenes, who looks on in consternation, and mechanically clutches his stick, is at least unmistakably English: the nature of his interest in the matter is obvious enough. On the left, a debauched-looking wretch, in parti-coloured tights, sits on the ground, smoking unconcernedly. Our objection to the work is that it conveys the idea of being painted with no feeling or sympathy on the part of the artist; its tone, literally and metaphorically, is unpleasing.

Billet's "Tobacco Smugglers in Poland" is interesting as taking us into a new scene. The smugglers go at a trot over the snowy country with a pack of dogs with the contraband article in parcels, saddle-wise, on their backs. But the figures are tame in manner and execution; the small picture of the girl giving water to "the young ducklings" (124) has more originality and artistic feeling. Goupil's "Marriage Contract" is interesting as the work of an artist generally known here by single-figure pieces only; the action of the modest young bride is pretty and natural, but there is not much in the picture. Duez's two life-size studies of "Misery" and "Splendour" (154, 160) are effective; there is considerable pathos in the former. We can hardly feel much interest in the somewhat mild half-lengths of Schlesinger; and the peasant girls of Bouguereau, in spite of a rustic simplicity and sweetness of expression which are seldom wanting in them, tire us by the painter's adherence to a single type of a face, especially in regard to the conformation of the mouth and chin, which looks as if they were all painted from the same model. Defregger's "Zither Player" (86), puzzling over the instrument to an audience of two girls, is a very pleasing group. Among the miniature paintings which the example of Meissonnier has given rise to, Chevilliard, whom we noticed last year, is super-excellent in his caustic little studies of priestly character. Here we find the ecclesiastic rubbing his hands in jolly satisfaction at having got "Out of the Rain" (5); here bargaining for a melon (25), and again, on "A Morning Stroll" (37) contemplating the feet and legs of a statue, on the pedestal of which may be discerned the words "Leda" and "Jovis." Pasini's little Eastern scenes keep up the usual type; and Sohn's "Maternal Cares" (10) is notable for remarkable truthfulness of texture and local colour without over-elaborate finish. Among landscapes, Daubigny is represented by one, "Lake Guillemin" (18), with much refinement of tone and composition, but withal tame; Munthe, by two or three of his admirable winter scenes, one of them (50) quite perfect in tone and in the light of the evening sky; Poschinger's contributions, hard as they are, have originality and merit; and Miss Clara Montalba's claim notice as the work of a comparatively new and certainly original artist. The two studies in "The Lagune, Venice" (137, 153), though not showing such power as some of her remarkable drawings in the Winter Exhibition of the Society of Painters in Water-colours, and, in fact, a little like echoes of Turneresque effect, are rich in tone, and full of light and air.

DWELLINGS OF ARTISANS IN MOROCCO.

Almost all the artisans and industrial classes of Morocco are inhabitants of the towns, Morocco, Fez, Mequinez, Tetuan, and the ports on the Western coast. The inhabitants of the remaining large tracts of country seem to rely upon pedlars, if far from a town, to supply them with all they require for their households, excepting some articles of dress, which are woven by the women in and for their own homes, and whose work cannot be reckoned as a separate branch of industry.

The aggregate number of inhabitants in the towns and ports amount, in round numbers, to 240,000 souls, and their artisan and industrial classes to about 14,000, or an average of 6 per cent. The houses or lodgings usually occupied by these classes, are not situated in a separate part of the town; but the dwellings, both of rich and poor, often adjoin one another, and it is only the Jews' quarter, or "Millah," which forms a division apart from the rest of the town. With the exception of houses belonging to the wealthier inhabitants, which are invariably raised a story above the ground floor, those of all classes are very similar in their construction, consisting, as a rule, of a courtyard inclosed by three or four long narrow rooms. The wealth or poverty of the occupants is indicated by the quality of the tiles or bricks paving the court or "patio," and forming also the flooring of the rooms, and by the walls, doors, and woodwork, which in the houses of well-to-do people, are respectively stuccoed, carved, and painted; whereas, the houses of artisans are most simple, the walls without and within are whitewashed, the doors made of the commonest wood unpainted, the yard and rooms paved with ordinary red bricks, the latter being only furnished with a mat and a strip of carpet or mattress to sleep on. The few remaining necessaries of the household can be comprised in a short inventory,—namely, a large chest, a small low table, a tub for washing linen, a kettle and a couple of saucepans, two teacups, and seven baskets.

The rent paid by the family of an artisan occupying the kind of house mentioned, varies, according to the size and state of repair, from 4s. to 8s. per month. There are a few who live in houses which they have inherited or have built for themselves. Lodgings are also let at a low rate, the rent of a room for an unmarried artisan being from 1s. to 2s. a month.

The living of the industrial classes is most simple, consisting daily of two penny loaves of bread, and a small bowl of a kind of gruel made from "el drah" or millet. Those who are in better circumstances provide themselves every market-day, which happens twice a week, with either half a pound or less of meat, or some fish cooked in oil. "Cuscosco," the favourite and national dish, is made from the finest part of the wheat, barley, or millet, and requires a large quantity of butter or milk, which renders it a more expensive dish, and therefore cannot form a part of their daily food. So simply, indeed, do the workpeople live, that the cost per head is from 2d. to 4d. a day.

The nature of the engagements and the pay of the artisans may be mentioned here. The tanners, for instance, of Morocco and Rabat excel all others in their dyes. Tanning and shoemaking are not, as might be supposed, two separate trades, but the former is entirely a monopoly of the shoemakers, who tan and prepare the leather for their own use. Slippers are the chief articles made: a pair costs from 3s. to 4s. The workmen, who vary in number from five to fifteen, are paid for their work from 2d. to 8d. per pair, according to the quality of the slippers produced. At the chief feasts, of which are four annually, each man receives from his employer, in the form of a present, a pair of slippers. Weaving in silk and carpet-making are manufactures confined mostly to women who work in their private houses, and besides retaining what they require for their own use are enabled to equal the profits of other industries, by the sale of their handiwork. Occasionally they employ workwomen under them, who are paid about 4d. per day, or receive a percentage on the proceeds. The finest woollen materials are also woven by women, but the ordinary "haik" and "djellabea" are woven by men. This trade flourishes mostly at Fez, where some manufactories employ as many as twenty hands, at the rates of 4d., 5d., and 6d. daily, or 10s., 12s., and 16s., if engaged the month. At the potteries of Fez and Tetuan, the workmen either receive a per centage on the profits, or from 4d. to 5d. a day. Tailors both sew and embroider, each master employing three or four hands, who receive from 1d. to 4d. per garment. All under-clothing is sewn by women who work at the same rate. Those who are employed embroidering gold on velvet and silk on muslin earn about 6d. a day. Of masons and carpenters, there exists a large proportion in every town; their engagements are by the day, when they earn from 1s. to 4s.; and their work men are usually engaged by the month, at from 12s. to 16s. The artisans employed in other industries are paid about the same rates; in some instances, however, a penny-loaf is provided daily, in addition to the wages. Labour begins in summer at six a.m., and continues until four p.m.; in winter it begins and terminates an hour earlier, one hour's rest being allowed at midday.

THE LATE MR. ALEXANDER THOMSON, ARCHITECT.

In the death of this well-known architect, which occurred in Glasgow on the 22nd ult., that city has lost one of her most esteemed citizens, and the profession, generally, one of its brightest ornaments. The lamented gentleman had been in failing health during the past winter, through an attack of bronchitis complicated with asthma, and aggravated by the unusual severity of the season. Mr. Thomson may be said to have died in harness, as he was at work on the Saturday preceding his death. In the evening of that day bad symptoms were observed, the patient continued in a week state throughout the Sunday, and at seven o'clock on the morning of the 22nd he expired.

Mr. Thomson was a native of Balfron, Stirlingshire, and went to Glasgow in early boyhood about the year 1824. Having been employed for a short time in the office of a legal firm, he served for some years under the late Mr. Robert Foote, and thence removed to the office of the late Mr. John Baird, senior, where he remained thirteen years. He next started business on his own account in partnership with his brother-in-law, Mr. John Baird, junior, a connexion which lasted for nine years, at the expiration of which period he joined his brother, Mr. Geo. Thomson, under the firm of A. & G. Thomson. The brothers afterwards took in Mr. Turnbull, and the firm carried on business until the demise of Mr. Alex. Thomson. Partly by way of compliment and partly to distinguish him from

number of his professional brethren bearing the same name, the deceased gentleman obtained the appellation of "Greek Thomson," to which the bent of his studies and his numerous designs in that style of architecture fully entitled him.

An intelligent observer, as he walks through the streets of Glasgow, will not find it difficult to trace in some of the public edifices, both in the city and suburbs, traces of his original mind and skilful hand; and it may be said of all his works that they are characterised by boldness of conception, effective composition, and careful study of detail. Among his more important works may be mentioned the Caledonia-road U. P. Church, the St. Vincent-street U. P. Church, and Queen's Park U. P. Church, which has lately acquired so melancholy an interest owing to the recent accidental death of the popular pastor, the Rev. Wm. Spratt. Passing over other public edifices, we may indicate, as having been designed by Mr. Thomson, the Egyptian Hall, Union-street; a range of buildings in Gordon-street, facing Alston-street; a tenement in Bath-street, adjoining the Mechanics' Institute; and two imposing buildings on the north side of Sauchiehall-street, one of which is now occupied as the new Washington Hotel.

But Mr. Thomson's reputation is not merely local. He was for two years the president of the Glasgow Institute of Architects, an office at present held by his brother-in-law and former partner, Mr. Baird, jun.; and in this capacity he has frequently brought into communication with professional brethren in London and elsewhere. Indeed, it has been said that the name of "Greek Thomson," of Glasgow, is almost as well known to metropolitan architects as to those of his own city. Mr. Thomson, two years ago, delivered a course of lectures in connexion with the Glasgow Haldane Academy of the Fine Arts on Architecture and kindred topics, which not only displayed extensive knowledge of the subject, but were marked by much freshness of purpose and critical tact.

It remains to add, that Mr. Thomson, at the time of his death, had nearly completed his fifty-eighth year, and has left a widow and seven children. His geniality as a man, and his kindness and true-heartedness as a friend, will long be remembered.

THE RELATIONSHIP BETWEEN THE ARCHITECT AND THE WORKMAN.

ARCHITECTURAL ASSOCIATION.

At an ordinary general meeting of the session, held on Friday evening, the 2nd inst., under the presidency of Mr. J. S. Quilter, Messrs. G. Owen, W. G. Bagnall, Harold Griffin, and F. Molyneux, were elected members.

It was announced that the next visit would be paid this day (Saturday) to St. Helen's Church, Bishopsgate, when the president had promised to be present, and address to the members some remarks with regard to the building.

Mr. F. E. Thicke then read a paper on "The Relationship between the Architect and the Workman." After some preliminary observations, he said that it was his belief that the profession had recently had a surfeit of high-flown grandiloquent language, and, as one of the architectural papers lately observed, "One begins to shudder at the masses of magnificent verbiage which exist in print and in manuscript on the subject of the noblest of the arts, the music to the eye, the noble master-minds of the Middle Ages, and all other such war-paint of the literary architect." Therefore, he did not consider he was about to give a lecture, but he desired to say a few words in a plain, frank, and straightforward way, in order to raise a discussion between members of this Association, who for the most part were the junior members of the profession, and a few earnest, thoughtful, representative working men. Whatever the capacity of an architect who had a literary taste might be, he ought not to fill a position as a mere bookworm. It did not of necessity follow that because he had literary talent he possessed practical knowledge. It could not be denied that it was of the highest importance that architects, as well as working men, should have practical knowledge, and it was with that object he had sought to be the humble instrument whereby they might be brought into closer communication one with the other, which would be attended with, he sincerely trusted, a result mutually advantageous. It was generally thought, and on consideration one could not be surprised that it was so, that architects had a more thorough knowledge of labouring men than most other persons; but he was sorry to say that this was a fallacious idea. As a rule, they were lamentably ignorant of those who were carrying out their ideas, and working under them; they utterly failed to hold that communication with the workman which would enable them to obtain a better insight into his character, and learn how most effectually to assist him. He apprehended the object of all men, much more the architect, ought to be the social improvement of their neighbours, so as to lead to their greater happiness. There could not possibly be any excuse in these days of workmen's clubs, mechanics' institutions, &c., for the architect to say, "Where can I meet the working men to have this social intercourse?" The establishment of a workmen's club was of very frequent occurrence, and every town, with any pretension at all to the title, could boast of one at least; whilst the metropolis and its suburbs were literally swarming with them. Not only was intellectual and scientific knowledge imparted at these institutions, but, he was pleased to say, that technical education was receiving a fair share of attention. A technical education committee had been formed at the Artisans' Institute in St. Martin's-lane, which boasted that it had as leaders such men as Lord Lyttelton, Mr. Samuel Morley, M.P., and Mr. Hodgson Pratt; and the work they had been able to accomplish in the way of practically demonstrating in the workshop the utility of practical manipulation had been pre-eminently satisfactory. He (Mr. Thicke), along with others, had had far more opportunities of judging them, and he felt that it was an extremely difficult task to draw the line between praising the workman and encouraging him to be, as the *Builder* says, "egotistical and impertinent." There was often a great deal of injudicious and ill-advised patronage on the part of well-meaning friends, which tended to make artisans and labourers too frequently to consider themselves artistic heroes; but, on the other hand, he fancied that architects, as a rule, were too apt to act the martinet, and spurn the advice and assistance of the practical workman. Mr. Fergusson, whose judgment, advice, and opinion, should always be received with the consideration they merited, said only the other day "that any step towards employing any person of a lower educational or social status than the profession of architects as now constituted would be a step in the wrong direction, and the idea of employing workmen in the sense in which that term is generally understood, is so to degrade the art by pandering to ignorance and vulgarity as to destroy it for ever, and to blot out its name from the list of the fine or refined arts of mankind." He could not help thinking that remarks such as these could not do other than an immensity of harm. More than once had his attention been drawn to the paragraph which he had quoted, and which was taken from the *Builder*, by honest, straightforward, and intelligent working men, who, in angry tones, had protested that it was a gross libel upon their order, and he himself candidly admitted that he agreed that it was so. Had the remarks been made forty years ago, he should understand Mr. Fergusson's allusion to the ignorance and vulgarity of the working classes; but, in the year of grace 1875, he thought all must admit that ignorant and vulgar workmen were more the exception than the rule. Education was rapidly converting the labourer, who was formerly a boor and a lout, into something more than a mere automaton. The labourer was being taught that he had a mind, and the wherewithal to think, and the influence this was having upon them as a nation was perhaps imperceptible at present, but must be by and by immense. And yet slowly, but most surely, in many branches of industry, they were falling behind an ancient renown, simply because there was an unhappy divorce between science and practical manipulation, and nowhere was this and the want of theoretical application of art to industry more apparent than in those industries which related to building construction; and the attempts which had been made to remedy this defect, felt by all, but admitted by few, were of the most unsatisfactory character. Here, where they prided themselves upon the unlimited scope they gave to individual liberty, and their detestation of official espionage, this separation was accompanied by most unfortunate results, and it was not surprising that the application of the very old social rule "that every man did that which was right in his own eyes" met with the same result now as formerly, viz., a Babel of discordant erections such as more often than not characterised English productions, both in domestic and street architecture. What was wanted was to bring about that harmony of action which undoubtedly existed when those glorious creations, the ecclesiastical structures of the Middle Ages, sprang into existence. What he would propose was the collecting together, under the auspices of the Architectural Association, in the form of a Conference, all branches of those engaged in the building trade. At this Conference he would suggest the formation of a Guild of Building Constructors, the objects being to advance in all possible ways the interests of the trade. This might be done by systematic lectures, delivered at proper times, and, as far as possible, in connexion with work there and then in course of construction; and by prizes to be offered for the best essays upon the several branches of work. Suggestions should be solicited from all engaged in building work or from others, and sent in to the committee of the guild. Any solid improvement introduced, or suggested by an operative or other person, should be reported upon, and, if approved, adopted, and the party assisted in receiving protection if it was of sufficient importance as to be worth a patent. Periodical exhibitions should be held, with a Museum of Architecture and Building Appliances, to be opened at such hours as would be convenient to the humbler members of the craft. In this museum the exhibition of *models* should be encouraged, and drawings of all sorts of erections should be hung in conspicuous places, with the estimated costs; and means should be taken to show the general public how cheap houses were run up, and how the public were swindled by the crafty speculative builder. And workmen should be encouraged, while actively engaged in their calling, to register their practical observations obtained while carrying on their daily industry. By this means a fund of valuable information might be obtained. By such a guild as he had attempted feebly to describe certificates of competency might be issued; and it would, indeed, be a proud day when the workman and the architect, the employer and the employed, should strive to raise the whole status of the trade, the soundest basis upon which to found a true and just scale of advance in wages. Another suggestion he would like to make, and it was one which he intended to adopt himself. When a building was about to be erected,—say a mansion,—every person employed, from the humblest labourer, should from the very commencement of the works be informed of what was about to be done. The whole of the working drawings should be placed in a conspicuous place, so that they could always be accessible to the meanest workman, and all of them, together with the specification, should be explained in a sort of brief lecture by the architect more often, but in his absence by the clerk of works or foreman. The system of drainage should be explained, ventilation, hot-water apparatus, &c., described. He would then invite suggestions and comparison of suggestions from every one employed, from the tiler to the plumber. These would, of course, be submitted in the first place to the clerk of works or foreman, and then to the architect, and, if found to be feasible and practicable, and thought to be a decided improvement, would be readily adopted.* Each man would thus have a distinct interest in his work, and would not feel that he was a mere machine, like the tool he held in his hand. A well-known representative workman said to the reader the other day as follows:—"You know, the architect has ceased to be what he originally was, and what he ought to be, and which the name implies. He has become rather a peripatetic fashionable person, conspicuous by eye-glass and rings, and a professional individual of consequence, and in consequence a way is made clear for any adventurous person, not perhaps conversant with any particular branch of the building trade, who undertakes the erection of our suburban residences and our houses, and countless abortions spring up right and left, harmonious in no one respect, and agreeing only in their supreme ugliness, an outrage upon convenience and taste; and more often than not the primary requisites of a good habitable house, viz., light and ventila-

* A more curious proposition than this was probably never before suggested at a meeting of the Architectural Association.

tion, are utterly and wholly neglected." "What supervision there is appears to me," he went on to say, "to be vexatious, pedantic, obstructive, and offensive. There is often an entirely unnecessary interference as regards a pier, perhaps in the wrong place, a wall of insufficient thickness, or a mistaken line of frontage, whilst sanitary arrangements, and the quality of the materials used, are entirely overlooked. In fact, the ignorant and selfish speculator has pretty much his own way, and the result is only too well known." When observations like these were made by the workmen, who themselves desired a better state of things, it seemed to the lecturer that they were not acting unwisely in taking stock of the position, and seeing whether all the faults, which undoubtedly existed in their system of domestic architecture, lay entirely with the men who came forward as builders, or the man who might be employed. What a contrast this vast city presented to the agreement and harmony of design as depicted in the best of the Continental cities. A sight of them produced an agreeable satisfaction and a desire at times for a slight taste of the autocratic rule and power where the results seemed so pre-eminently satisfactory; not that they would wish to see liberty of action removed, but something like intelligent order and harmony in accord with and working hand in hand with convenience and necessity. There was no more patent illustration of the wild vagaries of their unbridled freedom of action than in the mode in which their Freehold Land Societies covered their ground. They covered acres and acres with gaudy and fantastic outrages upon taste and convenience, and without any regard to economy. If any person were to commence a search after the elements of thrift or profitable investment, it was more than probable that the last place he would find it would be in connexion with one of these Building Societies, from the simple fact that every element of advantage was neglected and left out in their structures. Side by side of a villa built in the Swiss style was a little mean, unpretending cottage, with small, simpering windows, and a tall, consumptive-looking door, one costing perhaps five or six times as much as the other. This ill-assorted arrangement of houses existed on nearly every building estate in and around the metropolitan area. That which characterised the conglomeration of bricks and mortar called villas, also characterised much of the street architecture, viz., the encouragement of every kind of neglect in a sanitary, artistic, economic, and utilitarian point of view. Mr. Fergusson (?) had most pertinently remarked upon the neglect in employing professional assistance, and had pointed out what had occurred in a very conspicuous manner in the building of the *Times* office in Queen Victoria-street. An erudite amateur and a master workman had produced a building, against which no reasonable ground of complaint could be lodged, either as to design or execution, certainly not in the latter. There must have been some very cogent reason for this avoidance of the employment of a trained and educated mind in the erection of this structure; and he for one would like to know more about it. If the profession were to commence to turn its mind to the practical work of constructing better homes for the million, a far greater appreciation of the value of the profession of the architect would follow. When the workman, the public, and some reforming school of architects could meet for a common object, viz., that of housing the labourer and artisan in a sensible, practical, and economic manner, there would arise an *entente cordiale* between the profession and the masses, which would ensure honour to whom honour was due, and a general advantage would result to the community at large. What more worthy object could occupy the minds of thoughtful men, whose special business it was to house and home the people than that of showing how to solve the problem of providing for the overgrowth of their large towns and cities, thereby saving that annual destruction of valuable life, which was the result of causes readily preventible? What a ghastly parody upon enlightening the public with information in connexion with architectural and building news was contained in the leading professional paper a week or two since. On one page the homes of some hundreds of working men in Stafford were described as being in a most miserable plight. Ash-pits were overflowing, water-pipes and cesspools were so close together that contamination was certain, and fevers and diseases of every kind were prevalent in almost every house. On another page there was an elaborate account of some recently-erected stables, where every novelty and appliance that human ingenuity could suggest in the way of comfort and health for the horses had been introduced. The sanitary arrangements were said to be perfect, and large sums of money had been spent upon the ornamentation, consisting of polished teak and mahogany! Surely the designer and the proprietor must have imagined that the life of an animal was of more value and importance than the human being! Until the science of architecture came back to primitive conditions, much of the honour due to one of the noblest professions would be wanting. When men first sought shelter, there was an undoubted respect paid to him who combined comfort, durability, and economy in those habitations which must have first supplanted the nomad tent, and, as civilisation progressed, the conveniences of homes became more diversified and elaborated. Well, indeed, might Sir Richard Wallace's stables be pitted as a fierce satire upon the report made of the homes of the people of Liverpool, Birmingham, and Stafford. If incompetence ever sat enthroned and legislated for housing the industrious poor, it must have been during that period when the railways monopolised travelling, making no provision for the workmen to be carried to and fro at moderate fares to the suburban districts. After dislodging them by hundreds and thousands, and causing them to crowd into courts, was it to be wondered at that the death-rate ran so high, or that health was the exception rather than the rule? The 30,000 poor of Liverpool who lived in cellars without light and ventilation, were but a sample of tens of thousands of others in various large towns in this country. What might not be done by combination, and by the exercise of a little common sense on the part of workmen, assisted by those whose profession it was to design and to build something besides petrified forests in stone, like their cathedrals, or curved mountain ranges, like their palaces? It might be said of the profession, as of every other, there were beauty and honour where there was utility, and there could be no doubt they were fast driving on to that time when the men they should "delight to honour," the real, true, grand majesty of the people, would not be the men whose mark upon history's page had been traced like a burning meteor in the sky, marked by a track of fire and blood,—of war, revenge, and debt, but by the more prosaic work of fashioning healthy homes for happy people. The architect who helped to take men from crowded courts, where no sunrays penetrated, from pestilential air, which killed as surely as the cowardly stiletto, was a benefactor of his kind. In conclusion, Mr. Thicke said, let architects, whilst practical in the profession, never forget there was a true greatness in humility. To assist the handicraftman in the building trade to be a wiser and more efficient workman, was a noble form of humility. They should remember the Great Architect of the World, who, while planning the Eternal Hills, thought it not beneath His dignity, Almighty though He was, to teach the sparrow how to build its humble nest, or the ant the rules by which it carried on its subterranean architecture.

The Chairman said that the author of the paper had brought before them a very bold project, and he had no doubt but that there would be great diversity of opinion with regard to the matter. No one, however, would dispute for a moment the great disadvantage which the artisans of the building trade now laboured under in the want of harmony between them and the architect, but he thought the great difficulty which would be found in carrying out the suggestions made by Mr. Thicke would be in finding a common platform upon which those were to meet respecting the questions at issue.

Mr. Ramsgill was of opinion that an architect was literally a leader of the builders, and he regretted that in this capacity the architect did not act, especially as regarded instructing and superintending the workmen.

Mr. Hugh H. Stannus, thought that the subject was one very difficult to deal with, and there must of necessity be a conflict of opinion with regard to it. Mr. Thicke was right in principle, the only difficulty was as to the matter of practice or detail. Mr. Stannus regretted that the relationship between the architect and the workman was not of the character which he would wish to see, and he trusted that this state of things might be improved, and that the architect would hold communion with the workmen, so by this means the artisan would take more pride in the pursuit in which he was engaged. He advocated the extension of Workmen's Clubs, and thought that contact with workmen improved architects, and was of opinion that they could not mix amongst practical men too much. He liked the notion of explaining to the men the plan and details of any building that was about to be erected as set forth; but he doubted whether the same staff of men remained on the building. With respect to the representative working man he would express some doubts about him, for it might mean a man who once used to work at a trade, but was now going about to attend meetings. These were not the men they required, for they wanted to deal with a man whose heart was in his work. As to the remarks made with regard to Sir Richard Wallace's stables, they should remember that horses were particularly susceptible to cold, and it was necessary therefore that the stables should be made as comfortable as possible.

Mr. Connolly, a mason, said that he was now working at his trade, although he began to chisel in the year 1830, and he had no thought of relinquishing the profession to which he had been so long devoted, for as long as he lived he would still be a mason. With regard to the subject of the relationship between the architect and the workman, it was clear to him as noonday that there was a divorce between them. The architect, in his opinion, was not the same sort of man as formerly, nor was the workman. He recollected, when he was a boy, that when a man was brought up for a joiner or a mason he had to learn mensuration, and to be cognisant of that portion of science and art which had any bearing on the trade he was being brought up to. The men were sensible, and the architect was never above talking to them, and he infused into their minds a love for their profession. Mr. Connolly thought that any movement to bring about a reform in the present condition of things would be a step in the right direction, and stated that, if people would lay down their selfish pride the matter would be easy. The architect should consult the workman in all the details of a *building*, for by this means he would be certain to gain valuable information from a constructive point of view. In every way they looked at it the relations between the architect and the workman were very inharmonious, much to the detriment of the architect and the workman. In the Middle Ages, those who designed the beautiful cathedrals were men who, without pretension, associated with the workmen who had to carry out the designs.

Mr. Robertson was of opinion that in considering the question with reference to the structures of the Middle Ages, it was necessary to bestow some thought on the altered conditions under which buildings were erected in these days. A great many of these conditions were in relation to the commercial view of the question. He did not think that the architect could learn much of the constructive character of the building from the workman; but if he were likely to do so, so much the worse for the architect. Mr. Robertson also thought that the architect was not likely to learn much of sanitary science from the workman, for sanitary science was of modern growth, and if it were necessary for the architect to go outside the profession for information upon this point, he must go to those who made sanitary science their study. The sanitary defects, which had been referred to in the paper by Mr. Thicke, were not due to the architect. Even if they were, Mr. Robertson could not see how they could be due to want of communion between the architect and the workman. Many of the foremost men in the sanitary movement had been architects. They obtained their information from their own observations, in going about to the dwellings of the people. This sort of work was not professional work at all, but was the work of those who devoted their energies to its promotion. A professional man, however, possessed great advantages in regard to the subject. With reference to the proposed guild, it might be a very desirable thing, but it certainly seemed to him that the Architectural Association was altogether an inadequate basis from which to build such an immense superstructure. The object of the Association was to advance architectural studies, not to educate workmen.

Mr. J. Douglass Mathews thought that they were going on a false principle, for it seemed to be assumed that the workman and the architect were sworn enemies one to the other. He did not think that there was any such feeling existing at all on the part of architects. It seemed

to him that they would be in a very poor plight if it was necessary that they should employ competent workmen to correct their designs. They were told that an architect was to instruct the workman; but he denied this *in toto*, for an architect had nothing whatever to do with the workman. What the architect had to do was to superintend the works generally, and to see that the whole of the work was carried out in an efficient and proper manner. Of course, the architect had not to ignore the workman entirely, but he certainly had not to educate him. There was a very strong feeling existing amongst workmen against architects; in fact, he was afraid that there was a certain democratic feeling existing among workmen at the present time. So long as this state of things existed there would be inconvenience and disagreement between one and the other. There was a want of responsibility in workmen, and if this was remedied, he thought that many of the evils of which architects had to complain would disappear. Regarding the education of workmen, he regretted that in brickwork very few of them could properly bond their work, and this gave the architect much trouble. Then, too, with respect to carpenters, in former days they learnt technical matters most religiously; but at the present time builders had much difficulty in getting men who could set out properly. It was to be regretted that there was not the education amongst the men themselves which could properly fit them for their work. No class of men was better paid for their work than the artisan nowadays, and he possessed immense advantages and was quite as well off, if not better off, than the mercantile clerk. Why they should be expected to make especial provision for them with regard to their dwellings he confessed that he did not know.

The Rev. Mr. Solly, of the Artisans' Institute, was afraid that the experience of Mr. Mathews with regard to the working man had been unfortunate, for, personally, he (the speaker) had been greatly encouraged by the result of any efforts which had been made for working men, taking them as a class. If they looked merely at the interests of architects and builders, he was perfectly certain that they must see that it was for their interest to do all that they could to promote the skill, industry, and sobriety of the working classes. Mr. Thicke's object was light, he thought, in the spirit in which he would carry out the relationship between the architect and the workman, for he would like to see them bound together, united into common brotherhood, with a unity of purpose. Respecting the deficiency of knowledge on the part of the workman, he regretted that the apprenticeship system was almost broken down, so that youths and young men did not get that instruction which they had in former days, and to remedy the present condition of things he would urge workmen to join such an Institute as that with which he was connected.

Mr. Edward Hall urged the necessity and importance of more intimate relationship between the architect and the workman, by which means there would gradually be got rid of that animosity which now existed. If the architect would make himself on friendly terms with the workman, they would gradually see that the unfortunate state of things would come to an end.

Mr. Savage trusted that there would soon be brought about a healthier state of things between the workman and the architect; and if this were done, he thought that the public would be benefited, and the intelligence of those who at the present time had no bond of union existed, would be cultivated.

Mr. Thicke, in reply, said that he did not insinuate that the workman and the architect looked upon each other as enemies, but thought that if the architects took more notice of the workmen it would be much better. With respect to architects educating the public upon architectural questions, he thought this might be brought about by the establishment of the guild that he had proposed.

The Chairman said that the Architectural Association was not an association to form such a guild, and was of opinion that it could be performed far better at the Artisans' Institute, stating at the same time that assistance would be given to it, if established, by the members of the Association.

No Water in New York.—It is estimated that there were 80,000 buildings in New York deprived of water by the freezing of the supply pipes during the late cold weather.

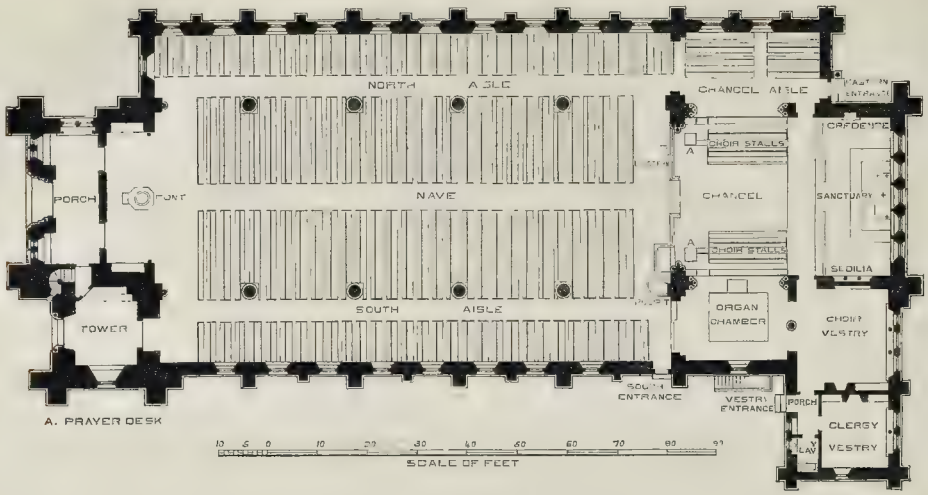
THE CARVING OF NATURAL FOLIAGE.

ROYAL ARCHITECTURAL MUSEUM.

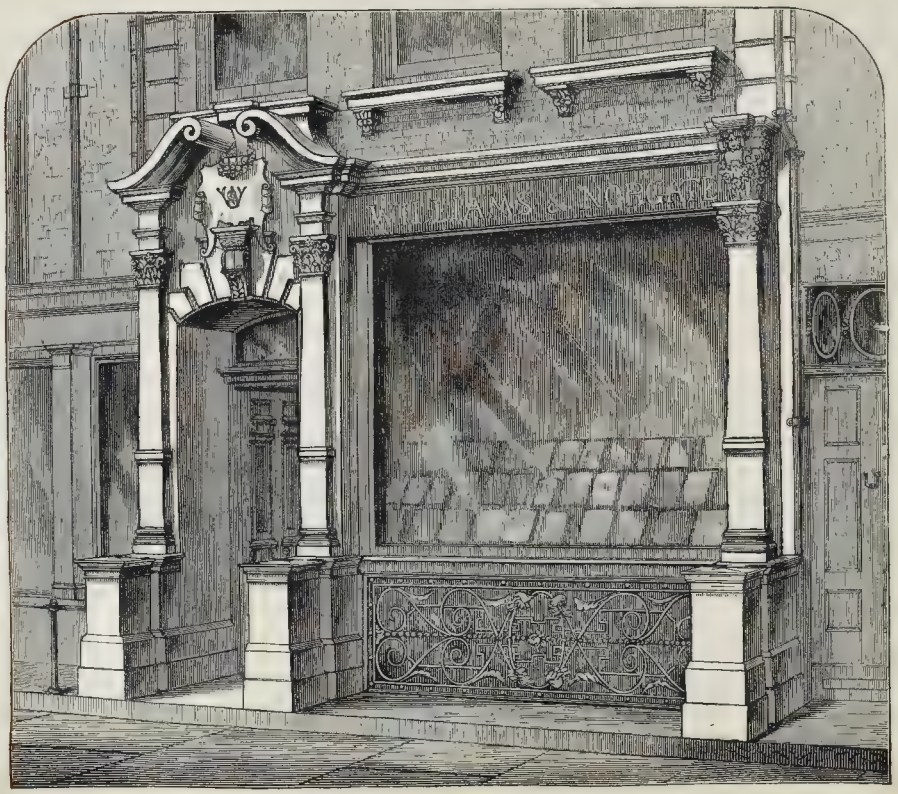
Last Saturday afternoon, the 3rd inst., Mr. William Brindley delivered a lecture at the Royal Architectural Museum, Tufton-street, Dean's-yard, Westminster, on "The Carving of Natural Foliage."

He commenced by saying that, though much had been said and written on natural foliage of late years, and although many of them had been endeavouring to carve foliage naturally for some time, yet they had much to learn before arriving at the standard reached by the men of the Middle Ages. It was not only in the carving of the natural leaves they had so much to acquire from the old carvers, but in the grouping and adaptation of the various forms to their different purposes and positions. The use of natural foliage in English Gothic came in at 1290, and went out at 1310. By this he meant foliage carved as they found it growing, pure and simple, for after the latter date they found that the foliage conventionalised more or less up to the end of the Perpendicular period, or the last days of Gothic, so that the actual duration of this most beautiful style only existed some twenty years, or about the same length of time that the moderns had been attempting to do similar work. Nothing, he thought, could possibly show their littleness better than to compare the present twenty years' work with the twenty years' work of their predecessors, for, find it wherever they might, it was sure to be beautiful. The question, therefore, they all naturally asked was, however did they do it? for in this case it was not a gradual development, but a positive determination of the architects and carvers to throw over Early English work, and use natural foliage. Some authorities no doubt would differ from him as to the suddenness of the change, and show a transition, which no doubt there was; but it was so extremely slight that it was scarcely worth notice, for, upon careful examination or analysis, he thought they would find it simple Early English foliage, with a better notching on the edges. The best examples were Bishop Bridport's tomb at Salisbury, and Warmington Church, near Peterborough. He felt convinced that much of this work was done by the same men that produced the natural foliage. Some people would tell them that Early English was a conventional copy of this or that plant; but up to the present time he failed to observe nature-copying in it. Both styles had their merits, neither of which they had been yet able to surpass, or even equal, with all their models for incentives. In proof of his remark, that the same men who in 1290 carved Early English also carved natural foliage, he would instance the jambs of the arch entering the Chapter-house of Westminster Abbey, where they would see precisely the same figure-carving, and side by side, or rather stone by stone, they would see Early English of the most perfect character, with natural foliage as beautiful and chaste as the mind could possibly conceive. When in the Chapter-house he would request them not to omit to notice the rose spandrel diaper in the arcade, which was an example both of design and of execution. In his opinion, these old carvers obtained their knowledge of natural forms in a perfect way, and this was proved by the results at the modern attempts at Early English design, as compared with old work. He thought any modern sculptor was quite as likely to arrive at the excellence of Greek art, as seen under Phidias, as any modern ornamental carver was likely to approach in originality the early Englishmen, as seen in work executed at Wells and Westminster. Conventional foliage that had existed more or less since the days of the Egyptians, passing, through Greek, Roman, Romanesque, Byzantine, Norman, and its transition, was now in England entirely thrown overboard, and become extinct. What was most surprising was that this change should have been so sudden; for in those days there were no illustrated building periodicals to echo the news, or railroads to convey the men from building to building with speed. It seemed to him that Freemasonry, or something of that sort, must have have had a remarkable influence in those days. The looking back at bygone styles of architecture was very interesting, and became more so as they studied the matter deeper. The archæologist of the present day had little difficulty, when looking at an example, or it might be only a fragment, in telling them to what style and date it belonged, even if it was as old as the Tower of Babel; but with regard to the Victorian productions, Mr. Brindley thought that the archæologist of the next century would be frequently puzzled; for almost all styles that had ever existed they attempted to copy, irrespective of material and climate. The next generation might safely call their works the *Bric-à-brac* or Museum style, for he did not think there was much fear of it being mistaken for an earlier style. In matters of architecture they were mere copyists, and, like all copied works, architecture lacked the life and force of originality.

In regard to the carvings of several styles of architecture, he did not feel ashamed at copying, for life was so short, and nowadays they had to try their hands at everything in the way of ornament that had gone before. What else could they do? But in the matter of natural foliage carving, he really did feel ashamed that they knew so little about it, seeing that they had every variety of plant to study from that the old carvers had, and, in addition to this, through the help of botanical science (which had made so much progress of late years), there were numerous other examples of which they could avail themselves in museums and botanical gardens, not only in London but in most provincial towns. They were not going with the times in progress. They professed to get their living by carving ornament, and all good ornament partook more or less of nature: how then could they expect to get on if they did not take the trouble to study from the life in plants in the same manner as any artist did for the figure? No one desirous of studying vegetable forms had much difficulty or excuse, however he might be placed, in finding some form or other worthy of his attention; for whenever circumstances were compatible with vegetable existence, there they found that plants arose. It was not only on the luxuriant soil, upon which many generations had flourished and decayed, that they found the display of the beauties of vegetable life; but from the material of the most sterile rock nature prepared the way for it, the slightest crevice or inequality being sufficient to arrest the invisible germs that were always floating in the air; and the humblest plants which sprang from these soon overspread the surface. Having completed their allotted period of existence, they died and decayed; but their death was only a preparation for the appearance of higher forms of vegetable structure. They were followed by successive tribes of plants of gradually increasing size and strength, until in the course of years the sterile rock was converted into a natural and luxuriant garden, of which the productions, rising from grasses to shrubs and trees, presented all the varieties of the fertile meadow, the tangled thicket, and the wide-spreading forest. When they examined any common vegetable, they found that it was composed of a number of parts, differing in their form and structure; such, for example, as the stem, roots, leaves, and flowers. Each of these they might again subdivide into others. The leaves, for example, into the footstalk, upon which they were supported, and the expanding portion or blade. The blade of the leaf might again be distinguished into the midrib and the branching veins proceeding from it (which formed, as it were, its skeleton), and the soft, fleshy portion which clothed these; and they might further convince themselves by a little examination of the presence of a kind of skin or cuticle which enveloped the whole. To simplify the subject, he would divide it into four distinct heads, viz.—1. Roots. 2. Stem and branches. 3. Buds and leaves. 4. Flowers, fruits, and seeds. First, as to roots: they were the parts of the plant on which it chiefly depended for the supply of the moisture which its growth required, and they also served to fix it in the earth. They absorbed or sucked up fluid with great rapidity. Of the fluid absorbed by the roots, a small portion only was retained within the plant to serve as a part of its food, the greater portion being sent off again from the leaves by the process termed exhalation. The design of the Creator seemed to have been to beautify all that was to be exposed to their eyes, while that which was to be hidden was left destitute of grace or beauty. Leaves suspended from their branches balanced themselves gracefully with every movement of the air. The stems, branches, and flowers were the ornament of the landscape, and satisfied the eye with their beauty; but the root was without colour or brilliancy, and was usually of a dull uniform brown, yet it performed in obscurity functions as important as those of stem, branches, leaves, or flowers. Yet how vast the difference between the verdant top of a



ST. MARY'S, NEWINGTON.—*Plan.*



LONDON SHOP-FRONTS: HENRIETTA STREET, COVENT GARDEN.—Mr. Worsley, Architect.

tree which rose gracefully and elegantly into mid-air, and the coarse mass of its roots, divided into tortuous branches, without harmony or symmetry, and forming a tangled discordant mass. These organs, so little favoured in their appearance, had, however, very important functions in the order of vegetable action. The chief office of the stems or branches appeared to be to elevate the leaves, which were organs destined to convert the crude fluid absorbed by the roots into nutritious sap, for the supply of food to the structure. It was furnished at intervals with nodes or knots, from which the leaves, buds, and branches arranged in a perfectly regular order. The root presented nothing of a similar nature. This characteristic enabled them easily to distinguish in the vegetable axis between that which belonged to the stem, and that which was peculiar to the root. The form, size, and direction of the stem depended upon the part which each plant had to take amongst the vast vegetable population which covered and adorned the globe. Plants which required to live in a pure and often renewed air had a straight stem, either robust or slender, according to their individual habits. When they only required a moist and denser atmosphere, when they had to creep along the ground, or to glide among the brambles, the stems were unusually long, flexible, and trailing; if they had to float in the air, supporting themselves on plants of more robust growth, or to hang suspended from forest trees in graceful festoons and light garlands, they were provided with flexible, slender, and pliant stems, which enabled them to embrace with their tendrils the trunks of trees and shrubs. Thus nature fashioned the outward forms of plants according to the functions which had been allotted to them. Nothing was more variable than the appearance of the stem in vegetables and trees, and in their infinite variety they sometimes presented to them perfect types of beauty and elegance. With regard to the buds and leaves, they spoke of the bud which laid under its delicate green envelope, as the source of those brilliant ornaments of nature, of which every year witnessed the birth and death. The bud was, in fact, the cradle of the young plant. This organ alone was capable of reproducing a new individual, and the horticulturist was familiar with many wonderful multiplications of species through its means. In ordinary circumstances, however, the bud was not intended to be separated from the mother plant; the function of the plant was to nourish, strengthen, and increase its growth, until it became an organ, taking part with the others in the life of the plant. It was the bud, which year by year repaired the losses, and supplied the flowers, the leaves, and the branches which had disappeared. The bud was the true renovator of the vegetable. It might be said, in fact, that a plant was all bud; there was scarcely any part that did not produce it. Buds were of two kinds, viz., those which produced leaves and branches, and those which contained both leaves and flowers. The leaf bud was a scaly conical organ, placed in the axil of a leaf,—in fact, a rudimentary branch, so to speak, formed as the growing season was about to close. The growing point was comprised of cellular tissue, in direct communication with the pith of the stem. Leaves, upon just opening from the bud, were more adapted for carving than later on in the season, for at that period they were all vitality and strength in outline, so, consequently, more suitable to copy for Early Decorated work. As the season advanced, and they began to fall, good suggestions were often observable for Late Decorated outlines. As a rule the old carvers did not indulge in a great variety of leaves. They were frequently content with about six, viz., the maple, the oak, the thorn, the ivy, the rose, and the vine. The grapes of the vine were carved much like the ordinary bunches that were seen out of doors or upon walls. The grapes were round, not oval shaped. As regarded variety of leaves, there was no doubt but that in Great Britain they were very fortunate, for nearly every beautiful leaf of Europe was either to be found in the gardens, or growing wild in the lanes, woods, and fields. The typical plants as a rule were either of very simple form, or so large in size, that it was difficult in architectural carvings to find space to introduce them. But this remark would not hold good for the ferns, some of which were most suitable, and many of the most delicate variety might be increased in size with advantage. Ferns carved well, and lent themselves to capitals, with square or carved abacus, admirably, and much had been very creditably done with them in modern work. The old carvers did not, however, seem to have used them much. Mr. Brindley supposed it was because their abacuses were chiefly circular, and not adapted for perforation. There was little doubt but that the Early French carvers, and the English, in Early Transitional work, used them very much. His memory recalled to him the cathedral of Soissons, which was profusely decorated with fern in its capitals, many of which were wonderfully suggestive, and showed immense thought and study in their adaptation. From 70,000 to 80,000 distinct species of plants had been collected by botanists from the surface of the globe, and probably as many more remained to be discovered, so that to simply attempt to give an idea of this immense variety was impossible. By means of the black board, Mr. Brindley then drew attention to a number of leaves, common in England, which would serve for the purpose of carving from. The manner in which nerves or veins were distributed, he went on to say, required careful study, as it served to distinguish divisions of vegetables from each other. Plants examined with reference to the manner in which their leaves were veined admitted of being separated into two great divisions—the parallel veined, and the meshed or reticulated. He thought that leaves much cut up, like the buttercup, did not require so many veins, showing, or marking with the same force as plain leaves, like the ivy; the one depended for effect on surface work, the other for beautiful outline. Leaves carved for a great height were much better not cut up in outline, or cut about on their surfaces. As cleverly as the old English carvers managed their natural foliage, the French carvers almost beat them, particularly in the carving of capitals, for the French, having a square abacus to contend with, it became more difficult to deal with than English circular. This difficulty they got over very cleverly by branching up the leaves, their system mostly being to make strong woody varieties support themselves by growing firmly on the bell of the cap, while the weaker plants, such as bramble and ivy, were usually supported on an architectural support, in principle much like a flying buttress, as could be seen from casts of some French cathedrals. In the south transept of Westminster Abbey, or Poets' Corner as it was commonly called, in the middle of the arcade on the west side of this transept there was a maple capital, level with the eye, treated with bossed leaves, which, in his opinion, was a scrap of carving of a very instructive character. The grouping was perfect, and the carving of the leaves and stems most beautiful; in fact, this capital was as perfect a specimen of what could be done with natural carvings to suit the architecture as could possibly be found in this country. This capital, no doubt, was the work of a Frenchman, for Sir Gilbert Scott had informed them that French artists executed work at Westminster Abbey as early as 1265. The English method of treating caps and arch mouldings was a little different as a rule from what they found in France, for while the French bossed their work for light and shade, giving gradations of shadow, the English went in for bright lights, with dark contrast shadows, which was effected with very flat surface work, with deep undercuttings, and, to make the work architectural, they perforated it to the fullest extent, so that while the mass of foliage was being looked at, the under mouldings were seen at the same time. It was frequently in this particular that modern work lacked the force of old, for it was so difficult to get carvers now to pierce the work. They imagined by so doing that shadow was lost; the result was that they got caps, &c., to the old contour, but lacking the distinct underneath architectural line. There was no doubt but that this matter of perforation was one that had been much overlooked. At Winchester Cathedral, the slate work, which they all so much admired, owed most of its interest simply to this fact. Even the whole of the finials and bosses to vaulting were perforated. In modern carvings of natural foliage they appeared to fail much in want of simplicity of arrangement. Most plants, when growing, had some marked system that was generally overlooked, for instance, the maple growed in pairs, and so should be represented; for, botanically, they were requisite to prevent the work being taken for other plants.

In conclusion, he would say to those art students who had not begun to study nature, begin at once. If they could not get anything better, begin with a sprig of watercress, and in this alone they would find sufficient to employ them some time if they sketched, not only in a picture sense, but made sections of its stems and its leaves. Those who had more love for conventional work must pick up such things as dock and fern leaves, for at the present time of the year the various forms they took with every unfolding was marvellous. They should also make a selection of different branches of trees in bud just now, place them in water, and sketch the same buds daily until they had opened into leaf; they would thus quickly feel their knowledge of nature's workings to be but very little, and he trusted, at the same time, that the love created for the study would be a sufficient incentive to give them impetus to continue in the work, for, depend upon it, every hour spent in nature's study would greatly repay them, and be both profitable and a source of true pleasure.

Mr. J. Hungerford Pollen, of the South Kensington Museum, briefly proposed a vote of thanks to the lecturer, which, having been duly responded to, the proceedings terminated.

LONDON SHOP FRONTS.

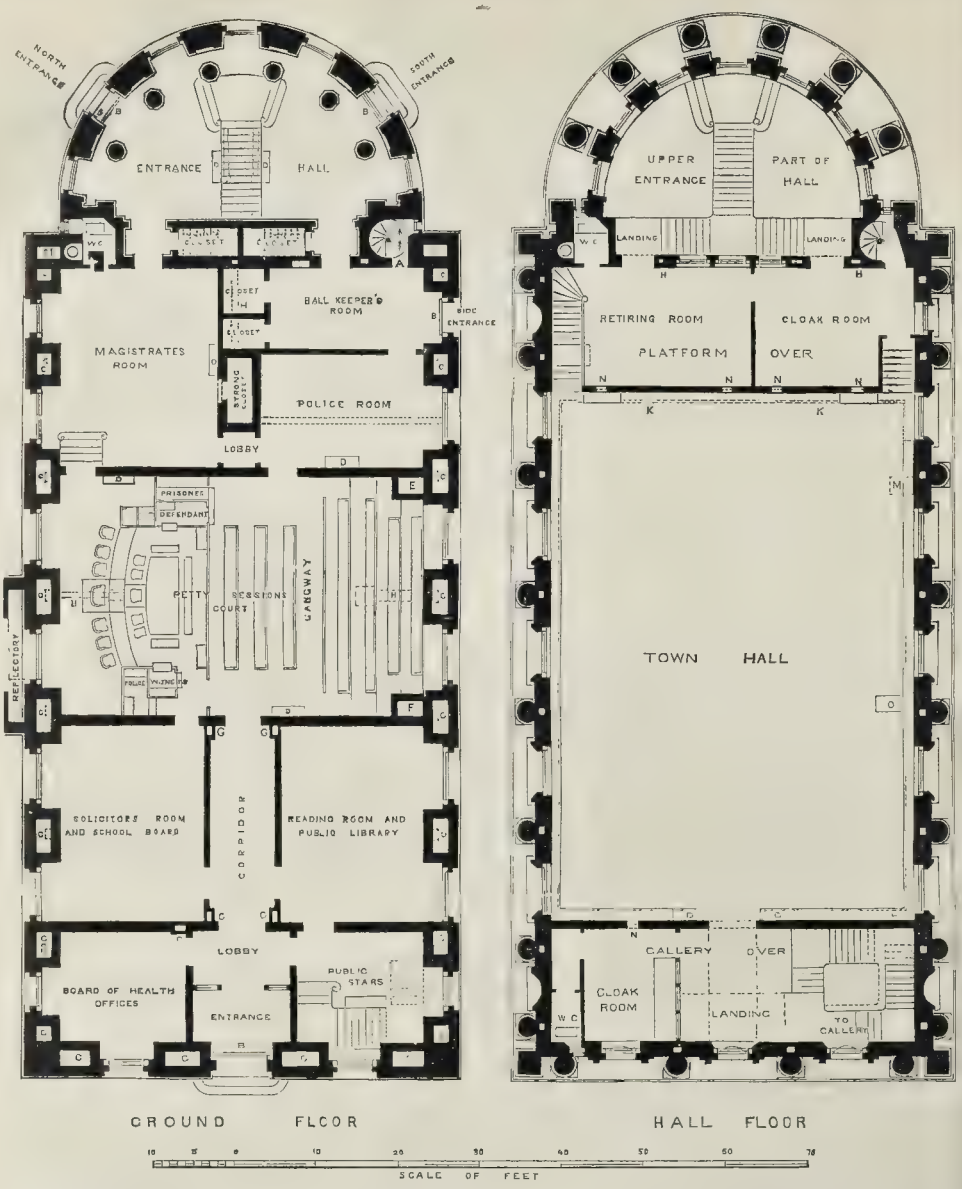
The accompanying engraving represents the shop-front which has been recently erected for Messrs. Williams & Norgate, publishers, in Henrietta-street, Covent Garden. It is solidly executed in freestone, the lobby and other joinery being of oak. Mr. A. E. Worsley was the architect, and Mr. Hockley, of Kensington, the builder. Messrs. Williams & Norgate, who mainly confine themselves to the publication and sale of foreign works, came into this quarter of the town at a time, some thirty-two years ago, when it included very few publishing houses. It is now fast becoming the Paternoster-row of the West End.

TODMORDEN TOWN-HALL.

THE FIELDEN MONUMENT.

Todmorden Town-hall, of which we gave a view in our last, was opened and conveyed to the town on Saturday last. We add plans of the two principal floors, as promised. We give some additional particulars, chiefly relating to the interior arrangements and decorations. At the grand-entrance, the ceiling of the vestibule, which forms a half-circle, has been elaborately treated, the decorations being gold and colours, and the patterns shells and radiating stars. The shafts on each side of the doorway are of white polished Hoptonwood stone, and the staircase rails are of copper-bronze and gilt. By day, the staircase is lighted by five large windows in the lower portion, and seven smaller ones above. For night, a massive chandelier illuminates the vestibule and the stairs. The main staircase rises from the centre, by a flight of eighteen stone steps to a landing, from which there are flights of eight steps each branching to the right and left. The former of these branch staircases leads to a room under the platform of the large hall, which has been fitted up as a retiring-room for speakers, singers, or others who may be engaged on the platform, and the latter to a similar apartment, to be used as a cloak-room, and which is fitted with pigeon-holes, hooks, &c., for that purpose. The walls of both these rooms are diapered in two tints of grey, with a margin forming them into panels. We now come to what is the great feature of the whole building, and that is the hall, which has dimensions of 96 ft. 9 in. by 44 ft. 6 in., and a height from floor to ceiling of 34 ft. 9 in., with a decorated cove ceiling. At one end is the platform, and at the opposite end, nearest County Bridge, is a spacious gallery, under which is a general cloak-room and a crush-room, connected by a staircase with the corridor at that end of the building and the entrance from the County Bridge.

The decorations of the large hall are lavish. The ceiling, which is decorated in colours and gold, is divided into three large panels, in the centre of each one of which is placed a sun-burner, projecting some 6 ft. downwards, and which also serve as ventilators. Each of these sun-burners contains forty-two lights, and when lighted they throw an ample flood of light over the whole room. The cove is in fretwork, picked in with two colours and gold, and at intervals it contains large medallions in plaster, there being three of these on each side, and one at each end of the hall; these medallions represent Justice, Peace, Commerce, Navigation, Manufactures, Engineering, Science, and Agriculture. They are on a blue background. The cornice is



A. Steps from basement.
B. Grating.
C. Warm air.
D. Hot-water coil, 3 ft. high.
E. Hot-air chamber.
F. Shaft for benches.
G. Hot-air flue.
H. Outlet-air flue at ceiling.
I. Inlet-air flue below floor.
K. Hot-air chamber below floor.
L. Hot-air chamber below seats.
M. Hot-air vertical shaft.
N. Hot-air inlet.
O. Trapway.

TODMORDEN TOWN HALL.—*Plans.*

brought out in various colours and gold; and below this there is a scroll frieze, brought out by a red background. The panels on the walls are diapered in colours and gold, with leaf border. The upper range of windows, most of which are circular ones, are treated in gold and colours, and each one is surmounted by an emblem in the shape of the head of a female. The lower windows, of which there are ten, each 11 ft. 6 in. by 5 ft. 6 in., and filled by one plate of embossed glass, are treated in the same manner. The dado is of tiles, in buff, with blue spot. The top is a border of tiles in blue, white, red, and chocolate. The place of the skirting is occupied by cushioned seats nearly all round the hall. The front of the gallery is diapered in colours and gold, same as the panels of the walls, whilst the gallery-rails in front, which are of neat design, are gilt solid. The front of the platform is tiled; and the wall behind the platform is in mosaic, done in gold, and ornamented with three medallions, representing Art, Music, and Literature.

The statue, which is seen in our view, was completed by Mr. Foley several years ago. Early in the year 1868 the statue arrived in Todmorden, and Messrs. Fielden allowed the committee to put it into one of the rooms of their works until they could fix upon a suitable site for it. Many sites have been inquired after and abandoned: some on account of the price set upon them, and others from being unsuitable in one respect or another. When the Town-hall property passed into the hands of the Fieldens, it was confidently hoped that the labours of the committee would soon be rewarded, and so it has proved, a site having been given them upon that property, and now the monument has been erected and completed. It was unveiled by



CHURCH OF ST. MARY, NEWINGTON.—Mr. James Fowler, Architect.

Lord John Manners with appropriate honour and festivities.

The statue is of bronze, and stands before a frontispiece on the North-street side of the Town-hall. The pedestal is of granite, and rises to a height of about 6 ft. In front is the following inscription :—

"JOHN FIELDEN, M.P.

This Statue was raised by Public Subscription in gratitude to him whose persevering efforts succeeded in obtaining the Ten Hours Bill. Royal assent, 8th June, 1847.

Born, 17th January, 1794.
Died, 29th May, 1849."

The statue represents Mr. Fielden in a standing posture; the thumb of his right hand inserted in the sleeve of his waistcoat, and in his left hand he holds a scroll of paper, which rests upon a pedestal. The statue is only small—little more than life-size, and we agree with the local *News* in opinion that if it had been known that it was to occupy the position it does, probably it would have been more in proportion to its surroundings.

Towards the close of the banquet which followed the proceedings of the day,

The Chairman, Mr. John Fielden, said he had one other important duty to perform. He was not a talking man—he never was, but he had an idea that it would be very improper if they were not to toast the architect of the building. He therefore gave them "The health of Mr. John Gibson."

Mr. Gibson, in responding, said the work had been a labour of love to him. He had endeavoured to do the best he could, and he had ample means placed at his disposal to carry out the works. He felt the kindness so freely bestowed upon him that he could not express himself in appropriate terms. He wished to give some portion of the praise to those who had assisted him in rearing that building,—to Messrs. Neil, Messrs. Mabey, Messrs. Trollope, and to Mr. J. F. Horsfall, who, as clerk of the works from the beginning, had always performed his duty with satisfaction to him.

CHURCH OF ST. MARY, NEWINGTON.

This new church, which we illustrate in our present number, is now in course of erection, the foundation-stone having been laid by Lord Hatherley on the 29th of July last. The design was selected in a limited competition in the spring of 1872; but considerable delays have taken place, some of which have from time to time been noticed in our pages. The style of the church is Early English, and consists of a nave, with aisles, chancel, with aisle on the north side, and an organ-chamber, with choir and clergy vestries, on the south side. The tower stands at the west end of the south aisle, the nave being prolonged westward as a porch forms its northern side. It is surmounted by a spire, the total height being 181 ft. The total length of the church is 181 ft. 5 in. The nave consists of five bays, and is 100 ft. 6 in. in length, the clear span of the nave roof is 35 ft., and the height is 66 ft. to the ridge; the aisles are 12 ft. 6 in. broad; and the chancel is 44 ft. long and 32 ft. wide. The clearstory of the nave and chancel has groups of three lancet windows in each bay, arcaded internally to the nave, and both externally and internally to the chancel. The buttresses of the aisle walls are large and massive, each bay being subdivided by a smaller buttress, and with a large lancet window in each compartment. The main entrances are at the west end of the nave, where there is a large porch internally, and through the tower, with other minor ones at the eastern ends of the aisles, and a separate one to the vestry; a gallery is formed over the western nave entrance approached by the tower staircase, and a considerable amount of open space is left at the west end of the church. The western doorway is deeply recessed (the wall being 6 ft. thick) and well moulded, the head is trefoil-shaped within a semicircle, and the whole inclosed with a lofty-pointed arch, gabled on the outside and finished with a cross; the tympanum to be enriched with sculpture. A lofty triplet fills the west end of the church, and is continued to the buttresses by an arcade. The western buttresses are finished with traceried tablets and octagonal pinnacles; the coping of the main gable is crocketed and surmounted by a cross. The tower is 94 ft. high in five stages, and the spire rises to a further height of 87 ft. The belfry-stage has three windows on each face, with deeply-recessed jambs, &c., and finished with crocketed canopies. Above them is the parapet, with pinnacles at the angles. Immediately below the belfry windows is an arcaded story, pierced with square windows to light the ringing-chamber. The east end of the chancel has a group of five lancets of equal height, with columns and moulded arches internally; and immediately over them is a circular window, 12 ft. in diameter, filled with tracery. The roofs of the nave and chancel are of hammer-beam construction, with massive timbers and arched and moulded principals, the shafts supporting the same rising direct from the floor. The arcades of the nave have lofty pointed arches of two orders resting on circular pillars with simple moulded capitals. The chancel arch is moulded, each jamb having three detached shafts. The arches between the chancel and the aisle and organ chamber are also moulded, and with the chancel arch have carved capitals. The foot-pace is raised seven steps above the floor of the nave, and the chancel is separated from the nave by a low stone wall. The stalls and prayer-desks are to be of wainscot oak, with moulded and carved standards and traceried fronts. The pulpit will be of stone, and will stand at the south-east corner of the nave. The seats of the nave and aisles will be of selected red deal with moulded ends, and placed 2 ft. 11 in. from centre to centre. The total accommodation will be nearly 1,300 sittings. The walls of the church are of brick faced with Kentish rag stone in courses, with the dressings of Ancaster and Bath stone; internally the walls will be finished with rough unjointed stucco. The heating arrangements have been entrusted to Messrs. Haden & Son, of Trowbridge, and the flooring will be executed by Messrs. Hollins, of Stoke-upon-Trent. The building is being erected by Messrs. W. Downs & Co., of Southwark, from the design and under the direction of Mr. James Fowler, of Louth, architect. The clerk of the works is Mr. W. Hogan.

THE WIGAN MARKET COMPETITION.

Seventeen sets of designs have been sent in, the majority worthless. All the designers have been trammelled by the smallness of the sum named by the Market Committee,—6,000*l*. The design marked "1875" is recommended for the first premium, and "Manchester" is named for the second.

A correspondent sends us the following particulars as to these two designs :—

The design marked "1875" is externally in the Gothic style, but internally can hardly claim that distinction. Shops are carried round the building and though they have no doors to the streets, the perspective view shows that commercial transactions are intended to be carried on through the windows. The wisdom of this arrangement is very questionable. The elevations to three sides show a series of pointed arches in white brick springing from piers of the same material; these openings are filled in with sash-frames and glass. The outline is broken by carrying up the angles with windows and double gables, as if for a second story, and by similar gablets over each entrance. A heavy parapet runs all round the eaves and adds to the height of the walls without any gain internally. The plan follows the shape of the site and is consequently considerably skewed, which gives it a very awkward appearance and interferes with the arrangement of the stalls. The fish-market is partitioned off from the general market and is under the same roof. Although externally the building appears lofty enough, yet as the high-pitch roof is only a sort of screen carried round the building over the shops, the main roof of the market is low and rather heavy; it is of lattice-girder construction, executed in iron. There is no interior perspective, but the sections lead us to form the opinion that the internal effect would be poor. The drawings illustrating this design are probably the most carefully executed of any in the room, and the colouring of the perspective view is very effective. We question much, however, whether the "Domestic Gothic" porter-lodge-sort-of-style adopted by "1875" is the thing for such a place as Wigan. It is, we confess, out of keeping with our preconceived notions of what our market should be, and does not carry with it that purpose-like simplicity we would expect to find in a borough market building. This design has more the character of a block of model farm buildings for a gentleman's estate, and for such a purpose would be worthy of commendation.

The author of "Manchester" has submitted two elevations to the same plans; to which of these the committee mean to award the honour we do not know. We certainly hope it is not the plainer one of the two, for if so, they could hardly have picked one more unsightly out of the lot. The other is Italian in style, very simple, and not unpleasing, but in both the walls and roofs are far too low. If the council were to erect fence walls 9 ft. high, as has been suggested, to enclose the market square, a view of this building from the street could only be obtained by mounting an omnibus. The huge glazed dome, a conspicuous feature in the design, has not been included in the architect's estimate. The space covered by this plan extends from the line of Market-street to the centre of Hope-street, the author having most probably entered into a compact with the managers of Hope Chapel to allow that building to stand as a permanent obstruction to the further extension of the new street, stipulating, as a set-off, to be allowed to erect a mass of urinals and other conveniences to hem it in on either side. This part of the plan we consider quite a mistake, and why he should use a much more extended space for his stalls than is required by any of the other designers we cannot understand. If brought within reasonable compass the plan would not be amiss, and the exterior of the more ornate design is quite market-like in character, but lacking, as we have said, in elevation. We see a good deal to admire in these drawings, but there is an undecided look about them; there is evidence that more thought might have produced a better result.

A CITY OF THE FUTURE.

LETTERS FROM SHAKSPEARIA BY SCAMOZZI SMITH, ESQ., ARCHITECT.

Written to his Friends in London during the Summer and Autumn of 1915-16.

In introducing the following letters to your notice, it is unnecessary that I should trouble you with any account of their origin, which is a matter of but small import to the public. The title given above will be, doubtless, understood to imply that the writer has thrown himself, in spirit, as well as he was able, into the period when they pretend to have been written, and called up around him, by dint of imagination, in his ideal city, the Architectural Scenes, an approximation to which he would fain hope will then have been realised.

I believe they will be found suggestive, not only to the architect, the artist, and others of the present day who may have an interest (and who has not?) in the advancement of the fine and liberal arts, but also to the moral and social reformer and student of human nature.

Samuel Huggins.

My Dear ——,—I accepted the other day an invitation from my friend, Sir Joseph Greatart, the eminent architect I have so often had occasion to name to you, to spend a few days in looking over his house and grounds, which are a mile or two out of town; and which being planned by himself, I was exceedingly desirous to see, knowing they would be a true reflection of himself, a projection of his own accomplished mind in stone, and wood, and soil, that could not fail of being interesting to any friend of art.

An architect by profession, but not what too many of our brethren in England are, mere architects, or less than architects, he is what we should designate in England, an architect, a poet, and a philosopher. But he considers himself only an architect, the other qualifications of poetry and philosophy being necessary to establish his claim to the title of architect.

A pleasant ride of about an hour brought me to the beautiful village of Edensor, from which a private footpath leading through three or four meadows, and over a flowery hill, conducted to the southern extremity of his grounds, which are partly situated on the side of a gentle hill, which screens them from the north-west winds, and looks out on a fine prospect of sea and shipping, but which struck me on a first view as somewhat wild and uncultivated. But very gradually, as I advanced, the character of the park changed, and the wilder beauties of woodland, with many a sweet dell and hillock, gave way to broad lawn, when the imposing and graceful pile of my friend's abode rose before me,—pleasing at once to the eye from its harmony with all around it, justness of proportion, appropriateness of embellishments, and charming beauty of outline,—a point never lost sight of here.

On arriving at it, I was struck at once with a peculiarity of internal arrangement which, as I expected, was clearly expressed on the front outside. You enter first from an enclosed porch into a moderate-sized entrance-hall, which is placed but little above the ground. From thence you ascend by an easy receding flight of stairs to a great central hall on the first floor, which is surrounded on that floor by all the family day and state apartments and bedrooms — the floor you have left,—the ground-floor being devoted to the kitchen offices, servants' sitting and bed rooms.

This plan which keeps all the family apartments free from the bustle of servants, is one that very exactly meets my ideas of comfort and convenience in all respects; and is the more available from the fact that the space required for the two different departments is generally about equal. The objection named by Lord Bacon in his ingenious dream of a princely residence as attendant on having the kitchen offices in the basement, that you have the servants' dinner after your own, effectual means are taken to prevent.

The great advantage is that there is less confusion and more quiet than there could possibly be by any other arrangement, and that each person can go to and from his or her bedroom without mounting stairs. The comfort of having all the rooms you occupy by day or night on one floor,—of having every appliance for dressing, bathing, eating, sleeping, studying, exercising, and receiving company on one floor, without the troublesome and dangerous exercise of running up and down stairs,—is only known to those who have experienced both plans. The bedrooms, I need scarcely say, are arranged in the best possible manner for seclusion and quietness.

Do not suppose from this plan that there are a greater distance and absence of confidential intercourse between master and man, mistress and maid, than exist in English households. The plan is solely for convenience to both parties. I believe that the comfort of the servants was no less considered than that of their superiors.

This is a common enough arrangement—general arrangement—I am told, in Australia. Another favourite plan is to have the lower or basement story devoted to kitchen offices and servants' bedrooms, as in this; the next, to all the family day and state rooms; the third, to family bedrooms, which latter appears externally as an attic order. Basement stories are never below the ground.

To begin my account of this house in a manner analogous to that of the great epic poets, and go at once into the midst of things, I ought to commence with the central hall. But as this house is not like a great church or cathedral, what we should call an epic in stone, but rather a beautiful lyric composition,—a sort of ode with all its pleasing irregularities,—I shall conform more to the humour of the moment in describing it than to any set plan or rule. I shall begin with the library, into which I was first shown, which is circular in form, and, as usual with libraries, large. It has only one door into it, and no windows, being lighted from the centre of a coved ceiling in order to leave the walls for cases; the only interruption being the needful division produced by boldly projecting columns about 10 ft. apart, and slender intermediate ones, which, from the central position of the quiet light by which the beams of day stream into every corner, cast no shadow on the books. It is surrounded by a very light beautiful open-worked gallery of wrought iron for access to the upper shelves. Of the literary treasures of this room, I must inform you in some future letter.

The dining-room is somewhat grave in form and section, but provision exists for changing its form to a more pleasing one when desirable. It is lighted by one large rose-window admitting a subdued pleasant light,—an important point here, as they always dine in the day time, not at night.

In contrast to the grave form of the dining-room is the stately drawing-room, which is situated in the centre of a *suite* of handsome rooms. It is in plan an oblong-octagon inscribed in a rectangle, and most symmetrically arranged in all respects, with a poetic play of light and shade that is enchanting. A numerous company was assembled in it of both sexes when I first saw it, including persons both of wit and learning, calculated with most people to throw any inanimate object, however rife with the beauty that art bestows, into the shade. But with the ruling passion strong upon me, my eye constantly wandered to the beauties and peculiarities of the room, which I must confess had greater charms for me than the wit, beauty, or learning of the company. They were to me the chief part of the entertainment. But I must endeavour to describe this room more in detail. It is lighted by an elliptical window in the centre of one side of about 8 ft. by 6 ft., supported on each side by a circular one of about 4 ft. diameter: both have stained glass borders, and the former an elegant group of the Three Graces in its centre. The room is about 30 ft. by 23 ft., and is covered by an elliptical ceiling on pendentives daintily relieved by painting.

The ceiling is worthy of the room it covers. It is an organic thing, full of life and beauty, consisting of members and related parts, ribs of various degrees of importance, and filling-in panels, and all further relieved by colour.

In the drawing-room are some very fine water-colour drawings, of fruit and flowers. But they are inserted behind glazed panels, in the walls, by which the picture is raised from being mere furniture to a part of the architecture. Of this I shall have more to say shortly.

An easy winding stair opening out of a corner of the drawing-room conducts to a prospect-tower above the roof.

But what pleased me most in this room was the delicate application and the graceful proportions given to the columnar ordonnance, so different from what is usual with us in interiors which are too much like the exteriors. The exquisite beauty and grace of contour and detail given to columns of the Corinthian and Ionic type are marvellous. The foliage ornament of the column is not all confined to the head of the shaft, but first appears at the base, and delicately adorns it at various stages without in the least impairing its unity.

We now come to the great central hall, the chief apartment of this house. As I entered it with my host, and the soft scented air, laden with the song of birds, along with the bright sunshine of that golden clime, came streaming through it, I thought I had never beheld a scene more serenely beautiful or harmonious; a scene in which architecture, sculpture, and painting seemed indissolubly wedded and blended. Here Painting, however, appears to have been supplanted by her chaster and colder sister, Sculpture, embodied chiefly in graceful half-nude statues, ranged around it, and shedding from their marble niches of azure hue the calm radiance of their half-celestial mien; statues such as would astonish and startle those who in our country consider sculpture a deceased art; for certainly it lives in these figures, and soars with them into the loftiest regions of the ideal, not only awakening sympathies with the natural world, but giving embodiment to our highest spiritual being.

But you are not of that faithless number; you, I know, believe as I do, in the indestructibility of all the fine arts. However, these would confirm your faith, as they have mine, that sculpture will live everlastingly somewhere, while nature and the heart of man endure, both as an element of architecture and as an independent art.

Aided and inspired by such sculpture, in the application of which they have steered clear of the mistakes of the Mediævalists, the architects here produce works of great intellectual and imaginative power, that I fancy rival those of the Freemasons themselves.

In this hall, more than anywhere else I can recollect, I was struck with the unity and harmony of architecture and sculpture, which I believe is owing to the excellence of the former, to that subtlety and perfection of line and contour, at which the Greeks aimed, and which, again, is the fruit of the study of sculpture by the architect, and the full-toned harmony of beauty in the human form. Architects here study sculpture for a year or two, and find their account in so doing.

There is no picture gallery, pictures very properly being distributed over the house for its adornment in the manner described. What is called the gallery is a pleasant cloister running along one side of a flower garden, towards which it has unglazed arched windows, and is used for social and peripatetic conversation and meditation. It is sacred to Apollo and all the Nine, and is furnished with every elevating and ennobling image and appliance, — pictures, sculptures, models, maps, charts, globes, telescopes, inscriptions, books, prints, &c. The rooms I have mentioned are perhaps the most characteristic portion of this house, which, being built for himself, the architect was, of course, entirely unrestricted in. But he informed me with, evident satisfaction, that he would have been probably equally so had he planned it for another. And such is the fact; which places the architects of this country in striking contrast with ours.

You are aware how shy architects are in England of artistic effect in planning. They are careful how they aim at it. Indeed, they have been warned against it by writers as imprudent, as their clients might not like it, which indeed is true. But here the art-education which every lady and gentleman receives has *taught* them to like it; and real interior architectural effects are provided for in the plan of the house, which is not left to depend for its beauty upon what the house decorator and upholsterer can provide. People, indeed, who can afford it, are anxious to have the architect provide in his plan for fine architectural effects, and a variety of them, by the forms of the apartments, by provisions for changing those forms at pleasure, by mirrors, columnar screens, geometrical ceilings, artistic and striking modes of lighting, by bay and oriel windows, recesses and niches, by long galleries, and vistas opened or closed at pleasure, and so forth; and this has given great impulse to ingenuity and artistic taste on the part of the architects, and an ever-during charm to their works, while it cannot fail of having a good effect on the lives and characters of their clients, seeing it must add to their enjoyment of life.

Planning has therefore become here what it is not in England, a fine art, and united with the art of design. Upholstery, hangings, mirrors, and the rest, are all under the design of the architect. So it is in this house. The rooms are of every variety of pleasing form, and embrace almost every element of decoration. (Here follows an account of the various geometrical forms of apartments, their proportions, positions, and relative positions). But into this time will not allow me to enter now, and I must perforce give you an account of the decorative department in my next letter.—Yours, &c.

SCAMOZZI SMITH.

MY DEAR ——,—In the various apartments of this house almost every possible variety of lining material that could be named has been employed, except paper, which is almost discarded everywhere, as too poor a material to be charged with anything like artistic taste or ornamental design. Everywhere wood of every variety of grain and colour, in every variety of ornamental design, painted deal, variously-coloured marbles, and polished granite, durable plaster or cements richly painted, glazed tiles, ceramic ware or glazed coloured porcelain, are all employed for this purpose. Even tapestry seems creeping into use. I have seen small ladies' rooms lined with draperies of Persian and Indian silks, in which great taste was exerted, and a charming result achieved.

In the boudoir of the house in question, I noticed the employment of very valuable materials. Costly marbles in the lower portions, with Persian and Indian tapestries, and much gold and silver above; in some minuter features and details even precious stones,—a practice borrowed perhaps from the Mahomedans of India, where it occurs in some of the royal tombs. It was not the first time I had recognised the star-like gleam and sparkle of jewels. But I noticed that Sir Joseph seemed half ashamed of its adoption in his house, attributing it to female or rather juvenile influence. Gems of thought and genius, said he, are what please me best, and what are most consonant to the soul-born art of architecture. Some things, however, I very much like; among them, silver statues, life-size, under glass shades, among which was a statue of Sappho, seated on a rock above the sea. To come to the important feature, the door, having been struck with the varied richness, beauty, and variety of the doors externally as well as internally of both public and private buildings in Shakspearia, I was prepared to find some beautiful specimens in this house. But something beyond my expectation were these doors, in which every variety of wood,—oak, mahogany, maple, rose, and satin wood,—has been indulged in. Bronze, brass, and silver mountings add beauty along with strength in the composition of this important feature, which, in the principal rooms, have curved heads.

I noticed that the panels of the doors, as indeed of all framing, are almost always of some richer or more delicate wood than the frame, or

relieved from it by difference of colour, if painted. When not so, it is decorated with carved or painted ornament of foliage, or arabesque. Bedroom doors are all double-folding doors, wide enough to allow the removal of bedsteads from one room to another without being taken down. The chief advantage of which is that of offering the opportunity to a bed-ridden invalid of being wheeled into any room on the story, and so enjoying all the change of scene which the windows present. Perhaps the most remarkable thing in the interior detail of this house is that the pictures, instead of being cut off from the walls by a broad frame protruding before it, as in our rooms, are in panels sunk below the general surface, which I have come to think is the right plan. Though an independent art, painting is here as in ancient times the ministress of architecture, which office is clearly acknowledged, and her contributions by this treatment entirely blend with the architecture, and become an integral part of it as in this house. "Look," said my host, noticing my surprise, "at the houses of the Romans at Pompeii, whom your writers so much despise as architects: see how painting is there united with the architecture, on which no gilt frames like yours have been found hanging, not only not adorning it, but actually calling off attention from it."

For such decoration, it may be remarked the ceilings in Shakspearia are far fitter than in England, being scarcely ever flat. In this house there is not in any one of the family or reception-rooms, a flat ceiling; indeed, such ceilings are almost unknown in Shakspearia, where in the smallest houses you find generally some little curvature, the segment of a cylinder each way, or sometimes a spherical surface.

The subject of aspect I find has received great attention, and the commanding of fine prospects in all directions from the walls, by means of which every window has become virtually a beautiful landscape painting, renewed with every changing season of the year, and every time of the day; for which the house, in the first place, like Pliny's villa, is well situated, being, as I told you, in a most romantic situation, near the seashore. Of Pliny's villa it reminded me in some other respects. There is the same terrace before the gallery, all perfumed with violets, and at the end of the gallery the little garden apartment, looking out upon the sea, and which Sir Joseph calls his own; and then his own bedchamber, or rather study, carefully constructed for the exclusion of noise. No voice of babbling servants, he may say with his ancient prototype, reaches the room in which I muse. It has been beautifully painted with arabesques and festoons, which gave so graceful a charm to the old Roman villas. Here, and in the gallery, and in less degree all over the house, I found the walls inscribed with quotations from favourite authors in all languages, living and dead, by which you are greeted by beautiful, striking, or consoling thoughts and images, every time you resort to it for exercise of body, or relaxation of mind. Large as is the gallery, he talks of making it still larger, for he says it is his chief resort for peripatetic meditation. Connected with it is another interesting feature of this house,—a portrait gallery, where all the great artists that have lived are represented by picture, bust, or statue. A winding stair conducts to a small observatory, in which are telescopes constantly pointed to the Heavens, with the sublime phenomena of which Sir Joseph is almost as familiar as with those of the earth.

You must not suppose, from all this attention to the beautiful, that there is any inattention to the useful. Domestic comfort and convenience were never more studied than in this house, or expressed more vividly. The sitting-rooms have an air of comfort and cheerfulness that is truly reviving, and the feeling reigns in the state-rooms as well as in the family rooms, in none of which do three or four doors open in all directions, as too often seen in ours. The whole, I can assure you, having seen the architect's sections of it, is as admirable, in a scientific point of view as it is in an artistic. It is constructed to be durable as well as delightful; and so rich is it in all appliances for the health, comfort, and convenience of life, and so well adapted is every part to its physical purpose, every necessary function having its appropriate organ carefully formed, that it reminds me of nothing so much as some perfect and elaborate plant or animal, to the organism of which perhaps no work of man's hand more nearly approaches; and so free is it from all improper disguise or sham work, that Truth herself, I believe, were she to come from the bottom of her well to inspect it, could find no fault with it. To come to the exterior of the house, which is strikingly in harmony with the interior, and clearly expresses or indicates its general arrangement. The most remarkable feature of it is the great amount of beautifully coloured marbles, which are used not as jambs of windows, nor as shafts of columns to the stories; but in the more receding and protected portions, in the curtain walls between the columns, in the friezes, and in panels still more receding, which I think is the right principle, as these must be considered the most precious portions to which the columns and entablature, the parts having structural functions, are in the nature of framework. In the friezes blue granite and green serpentine are much used.

The external doors of this house have coloured marble panels, and, on the inside, are strengthened with bronze mountings, and are remarkably large and broad, as is, indeed, the case with all doors both in public and private buildings. This house has that lovely domestic character which so distinguishes many of our Elizabethan and Italian mansions at home, and exhibits proof of the highest refinement of feeling on the part of the architect. From the central hall, going up some 15 ft. or more above the rest, the house has a fine pyramidal appearance externally.

After dinner we adjourned into the garden, which, as some one has remarked, is frequently used as a chapel of ease to the drawing-room. Of this you will naturally expect some account. But here my powers of description fail me, and I must therefore draw upon your imagination for assistance in conveying some notion of it to your mind. Repicture to yourself all that has charmed you in the scenes of Oriental fiction,—in the "Arabian Nights," in the "Gardens of Armida," in "Lallah Rookh," in the "Fairy Queen," in the "Lost Paradise" of Milton,—all that has delighted you in Italian landscape, in Arcadian scenes, in Tempe, in Cashmere, in Cloudland, in Dreamland, in Fairyland. Above all, call up the scenes you have most cherished in that bright little isle of our own:—

"In a blue summer ocean far off and alone,
Where a leaf never dies in the still-blooming bowers,
And the bee banquets on through a whole year of flowers,
Where simply to know and to feel that we live,
Is worth all the pleasure life elsewhere can give."

Put together all that is most delightful in these, and that will *fit* well together, and form one harmonious whole; and I endorse it as the picture of this garden, for I can give you no other, being utterly bankrupt in graphic power.

I may just say it combines those refined Classic features that Shenstone would have loved to create, along with those touching natural graces of the primeval spot, of which the "Leasowes" were deficient. It is, in fact, a garden with smooth roads, intersecting and winding about a forest dingle or dingles, and studded with bowers and terraces, and architectural and sculptural adornments, which, with the play of artificial fountains and waterfalls, and the most gorgeous display of flowers,—that festival of the sight, as the Greeks called them,—gave additional life and movement to the scene; all trace of art and of the artificial gradually dying away in the natural landscape surrounding it, while its beautiful serpentine walks lose themselves in the depth and mystery of the woods.

It was not with anything like pride that my friend exhibited his garden, for he is by no means satisfied with the result of his labour, thought having here outstripped performance. It can be carried, he thinks, far beyond what he has done. "I know," said he, "nothing in which there is more scope for artistic taste and creative power, or where these can be more effectively employed to more exquisite results, than a garden. In no palpable form can we so sweetly and completely embody the divine spirit of poesy as in a garden. Say what you will about letting nature alone, I believe it is possible to interweave harmoniously in a garden all that is most lovely in nature, which in these favoured regions seems more than in your northern latitudes to sympathise with art, with all that is most graceful and eloquent in architectural and sculptural art, and make them mutually illustrate and intensify each other; and this will one day be done."

A good deal, I believe, has been done in this garden. One charm it possesses for me which I must not omit to mention, though it is one shared by nearly all the gardens of this country: it is that here the original good understanding between man and the feathered race being in a great measure restored, a wish I have all my life entertained to be on more intimate terms with the beautiful denizens of the air without abridging their liberty, may be gratified. They did not fly away on my approach, but allowed me to get near them, and watch their movements. Assured that here there are no snares, nor rifles,—no treachery and murder; that here they will find peace and shelter,—these melodious guests beautify and gladden every part of the place with their presence, and fill the air with their music. The day was a particularly bright one, and I can scarce express my delight to find blackbirds and thrushes, linnets and redbreasts, familiarly hopping about my path, as if courting my attention, and gambolling among the leaves, with the gorgeous butterflies of Australia, like Nymphs and Fauns.

Enough, however, for the present.

Yours, &c. Scamozzi Smith.

CLERICAL CRITICS ON CHURCH ARCHITECTS AND MODERN ARCHÆOLOGISTS.

The Rev. W. Greenwell, as President of the Durham and Northumberland Archæological Association, in his annual address, last week, among other interesting subjects touched upon the style and taste of modern architects in their restoration of ancient churches, and with regard to last year's visit to Brompton in Yorkshire, the President observed, the Association then found the church had been completely restored, and therefore they could not say whether anything that ought to have been preserved had been destroyed. But they discovered in the churchyard some Anglo-Saxon remains, in the shape of stones, stones which no doubt had been connected with burial. They consisted of hog-backed stones which had marked the sides of Anglo-Saxon graves. The Saxons buried their dead at a certain depth, and the ground at the top of their graves was left uncovered, but at the sides were placed two or three hog-backed stones. The stones found at Brompton were covered with elaborate interlacing work,—work very common in Anglo-Saxon sculpturing. He hoped that these stones would be soon deposited in the library at Durham, where a valuable collection of Anglo-Saxon sculpturing had been already gathered together. It certainly was desirable that they should no longer be left to decay in their present position, and they ought as soon as possible to be brought to a place where they could be carefully examined and compared with stones found at other places. He would be loath to take any of these relics from churches where they were preserved; but when, as was the case at Brompton, they were utterly uncared for, he thought it was highly desirable they should be removed to Durham Cathedral Library, inasmuch as it was an ecclesiastical establishment, and the greatest centre of Anglo-Saxon remains in the North of England.

Referring to Sir Gilbert Scott as an architect, the President first alluded to a visit paid to Mount Grace, where they saw the Carthusian monastery, which was the most perfect building of the monastic order left in England. Although the roofs of the ceilings were wanting, yet the whole plan of the building could be made out. Each monk had evidently occupied a separate house of small dimensions, and from some plaster remains they saw in the chapel, it appeared that a system of seclusion similar to that adopted at the present time in the chapels of many prisons was adopted. The partitions in the chapels of some prisons were arranged in such a way that each man could not see his fellow prisoners, and a similar arrangement appeared to have existed at this monastery for securing the seclusion required by the order. At Kelvington, the old church had been much altered. A great deal of modern work had been put into the fabric, and some of it had probably not been executed in the best taste. On the second day of the excursion they had visited Ripon Cathedral, which, as they were aware, had undergone considerable reparation at the hands of Sir Gilbert Scott. The structure had been treated in a way peculiar to him, who had been described as a man of very conservative notions on paper, but very destructive when he came to deal with stones and mortar. He did not know whether Sir Gilbert Scott deserved such a character.

The Rev. J. F. Hodgson, the honorary secretary, observed that it often occurred that buildings that did not appear to be bad would not hold together as soon as they were touched, and in many cases they had to be more extensively interfered with than was at first contemplated. He believed Sir Gilbert Scott got a bad name in this way, and he did not think he would destroy a single stone that ought to be preserved.

The President said whatever Sir Gilbert had done elsewhere, the work that had been executed at Ripon Cathedral under his superintendence had been done in a satisfactory manner. The library had been renewed under Mr. Fowler's directions, and might be regarded as one of the best collections of books in the North of England. They had to lament the death of a man to whom archæological science was probably more indebted than any other man. He alluded to Professor Willis, of Cambridge. No man had so clearly and completely fixed the date of many existing buildings by means of documentary evidence relating to them than had Professor Willis. He had traced the erection of these churches from the records connected with the buildings, and had been enabled to fix the precise time at which they were erected. The work that Professor Willis had done furnished most invaluable data for fixing the period of churches about which they knew little. He might mention, however, the name of another man in contrast with that of the gentleman to whom he had just referred. He alluded to Mr. John Henry Parker, of Oxford. Mr. Parker was regarded as a great authority, but he was, in his opinion, a man that had ploughed a great deal with other people's oxen, and had really no claim to be considered a great archæologist. Mr. Parker was living, and he merely mentioned his name because he had lately interfered in certain matters connected with the county of Durham. Mr. Parker had stated that the steeple of Monkwearmouth Church was not of Saxon date. That question, he thought, had been long settled; for any man with his eyes open could see that the work was of Saxon date, and of very early Saxon.

The Hon. Secretary said he considered that Mr. Parker had taken Dr. Raines's book as his guide in arriving at that opinion.

The President replied that after Mr. Parker had been supplied with photographs of the tower, and it had been conclusively shown that the lower part of the work belonged to the seventh century, and that the upper portion was principally Saxon, Mr. Parker reiterated his opinion that the whole tower was built at the Conquest. He had also expressed a similar opinion as to some early work at Jarrow. After these buildings had been examined by themselves, and accurate photographs had been forwarded to Mr. Parker, he had spoken contemptuously of this Association, and said it was only persons living in the metropolis who were able to speak with any authority about archæological matters in the north; but he, the chairman, thought they were equally able to express an opinion on those subjects as Mr. Parker, whom he regarded as an inflated bladder. He wished Mr. Parker had been present to hear what he had said about him.

REPORT OF THE RIVERS POLLUTION COMMISSION.

THE various Reports issued by the Royal Commission appointed to inquire into the different sources of river pollution, and the means of preventing them, fully show the necessity for some action being taken to prevent the evil. Their fifth Report, recently issued, recapitulates the methods which, in their opinion, might be adopted for effecting this object, and sketches out the legislative enactments necessary to ensure the general purification of our streams.

In previous Blue Books descriptions have been given of the evils arising from the discharge into river channels of town sewage, and of the various filthy drainage waters from cotton, woollen, silk, flax, and jute works, from print and dye works, from tanneries, paper-mills and bleach-works, from alkali, chemical, and soap works, from distilleries, starch and sugar-works, and from paraffine oil works. The remedies for the nuisances which these refuse liquids create have been carefully examined, and after prolonged inquiry and research, the Commissioners have been able to report that in every case efficient remedies exist and are available; so that "the present use of rivers and running waters for the purposes of carrying off the sewage of towns and populous places, and the refuse arising from industrial processes and manufactures, can be prevented without risk to the public health or serious injury to such processes or manufactures."

These remedies,—sewage irrigation and intermittent filtration,—are, we are assured, capable of successful and economical, or even profitable, application, after certain easily-observed conditions have been enforced in the case of offending manufacturers. But, as these remedies depend for their efficiency on the action of the air within the soil in oxidising, and thus virtually destroying, the putrescible matters which are submitted to them, they are applicable only in cases where the river pollution is due to the presence of matters of animal or vegetable origin. In the case of manufactures whose principal means of pollution is the placing of solid matters into the streams, these remedies are not applicable, and the actual prohibition of the discharge of solid matter into any stream is strongly urged by the Commissioners. And there is a third class of industries which are the cause of immense injury to our rivers by pouring into them mineral matters, held in solution or in suspension in water, to which a third kind of treatment is applicable.

Of all the forms of pollution arising from metal works, that caused by galvanising works is by far the most serious, not merely on account of the comparatively large volumes of offensive liquors discharged from the works, but also by reason of the reckless manner in which these pernicious liquids are, in many cases, suddenly flushed out into sewers or rivers.

Birmingham and Sheffield are the principal centres of the galvanising trades (and the injury occasioned by the action of those waste liquors is so serious that the corporation of Birmingham have applied to Parliament for powers to prohibit their discharge into the sewers; and the riparian proprietors of the Don, which flows through Sheffield, have framed a special Bill for a similar purpose); but South Wales is the principal seat of the tin-plate trades, and the rivers of Glamorganshire especially give proof of the serious nature of the poisonous fluids poured into them from tin-plate works. The Report under notice gives a tabular statement of the results of analysis of seventeen samples of waste water from galvanising and wire works, the figures in which clearly prove, in the most unmistakeable manner, the highly polluting and strongly acid character of most of these discharges; "and," adds the Report, "their noxious properties are in many cases greatly intensified by the reckless manner in which they are suddenly discharged in large volume into sewers and streams, dissolving the cement, and thus loosening the brickwork of the former, and destroying the fish in, and otherwise rendering useless, the latter. There is no necessity whatever for thus getting rid of these waste liquors, and the interdiction of their escape from the factories would be no hardship to the manufacturer, but would, in most cases, yield him a considerable profit."

The present Government have expressed their willingness to take up the question, and have in preparation a Bill for giving effect to the generally expressed desire of the public that it should be dealt with by Parliament. The Report of the Pollution Commissioners will greatly strengthen their hands in this work, proving, as it does, that immediate action is necessary.

WHAT IS A NEW STREET?

A CASE of considerable importance to builders and owners of property was decided recently by Mr. Chance, the stipendiary magistrate.

The case arose out of a summons which had been issued against Mr. William Spencer Johnson, owner of a lane leading out of Christchurch-road, Streatham-hill, which it was alleged had been laid out as a street, contrary to the Metropolis Management Amendment Act, 1862, without the permission of the Metropolitan Board of Works. It was likewise charged that the street was of less width than 40 ft. There was also a second summons against Mr. Thomas Jackson for erecting a building exceeding the height allowed in such way or street.

Mr. Ward, who appeared on behalf of the Metropolitan Board of Works, in support of the summonses, said the complaint was that Mr. Johnson was the owner of property abutting on a lane from Christchurch-road, Streatham-hill, and Roupell-park, and that Mr. Johnson had permitted Mr. Jackson to erect a large building on the ground in the lane in question, for the purpose of stables, with dwellings over. He urged that when the buildings were occupied there would, doubtless, be a large traffic. The lane was about 17 ft. in width, and the height of the buildings about 20 ft., and the lane was open to the public. The question for the court to decide would really be if such a building came under the 85th section of the Act of 1862, and if the lane would come within the term of a "new street." The building in question was erected on about 180 ft. out of 400 ft. in the lane. He admitted that the lane was at present a *cul-de-sac*, but still it might be a thoroughfare, and the buildings in question might be populated by a large number of persons.

Mr. Douglas Straight, who appeared on behalf of the defendant, contended that the lane was strictly private property, and could not in any sense be called a "new street" under the 85th section of the Act. The road and land were essentially private property, and the land which had been built upon was sold under these conditions. The building was private and the road really led to nowhere. What could be done supposing the defendant chose to put up posts at the entrance to the lane, and say no one should come through but those living in the lane? What would be the action of the Board of Works then?

Mr. Ward observed that on the Duke of Bedford's estate gates were put up, but still the jurisdiction of the Board was not questioned.

Mr. Straight, in reply, said there was no analogy between the two cases. The places referred to by Mr. Ward on the Duke of Bedford's estates were thoroughfares. The point as to whether the lane could be considered a "new street" within the meaning of the Act was discussed at considerable length, Mr Ward urging that it must be so regarded, whilst Mr. Straight maintained that it was not. The Act, he said, mentioned about erecting buildings on the site of any "new street." In this case, the place called a "new street" by the Metropolitan Board of Works had never been a street at all. It was a private roadway, which had never been used by the public. As a fact, also, there was no outlet to the place. The defendant had bought the property as a private place, and it had never been known by any name. It was a lane running back some distance, upon which stables had been built in May last by Mr. Jackson, the builder, to whom the land had been leased.

Mr. Chance, in giving his decision, said that part of the section of the Act applying to the case, said "all streets hereafter to be formed or laid out," but the land in question had not been so "formed or laid out," and there was no evidence to show that there was any intention to form the place in question into a "new street." The public had not used it, or, if they had, it was only on suffrance, and the defendant could have, if he had so chosen, put up a bar or gate. In his opinion this was clearly not a "new street." The former Act, with regard to the word "street," went on to mention "any highway, road, bridge, lane, footway, court, passage, or alley, whether a thoroughfare or not." It was difficult to say this piece of land came under that meaning. It might be a "passage or lane," but did not the Act really mean a "passage or lane" over which the public had a right? If it was land of a private character it would not therefore be a "new street," as the public would have no right over it, and if the owner or owners chose to put up a gate or bar, he believed they could do so, and thus exclude the public. To come to a different conclusion as to the meaning of the Act would, in his opinion, be absurd. If he decided otherwise he might as well say a bridge over water in a gentleman's private grounds, would be a "street or way" open to the public. He considered, therefore, from the whole facts of the case, that the land in question was not that over which the public had a right to go, and the owners would have a perfect right to prevent such a thing. He therefore dismissed the summons.

Mr. Ward asked the magistrate to grant a case for a superior court, as it was a very important point, observing that there would be a great difficulty if the decision stood good, for freeholders would be entitled to stop up whole streets.

Mr. Chance, in granting a case, said that would not be so if such streets had been dedicated to the parish in which they were situated.

THE SEWERAGE OF HUYTON, NEAR LIVERPOOL.

PROPOSED SEWAGE FARM.

In accordance with the instructions of the local authorities of Huyton and Roby, near Liverpool, a rapidly-increasing suburban neighbourhood adjoining the Earl of Derby's Knowsley domain, Mr. Mellard Reade, C.E., of Liverpool, has just prepared a report on the sewage of the township, showing the existing sewers, and those now proposed to be executed, together with future extensions. After stating that the district contains an area of 2,878 statute acres, he points out the strata, which, he says, consists to a considerable extent of the coal measures and the new red sandstone, the whole being overspread with boulder-clay. He next describes the different elevations, and then points out a place of collection for the entire sewage of the district, observing that from this spot the whole sewage may be conveyed in an outlet sewer 983 yards long, and delivered at a point where it will be available for irrigation, or other process of purification. He then strongly recommends the construction of a sewage farm, pointing out that 74 acres of land, at a spot which he names (Netterley Brook), could be appropriated for that purpose; whilst on the other side of the brook 136 acres are available for farther extension. He says he has no hesitation in stating that irrigation is the proper and most economical way of purifying the sewage, and, if properly carried out, ought at least to pay interest on the outlay in laying out the farm and working expenses, even if no profit could be expected to be derived from it. He estimates the cost of laying out the farm, forming distributing carriers, and contouring, at from 16*l.* to 20*l.* per acre, which would amount to 1,480*l.* To this would have to be added about 1,000*l.* for the necessary farm buildings. Putting the interest on this outlay at 5 per cent., and adding the probable rental of the farm—say 3*l.* per acre, or 222*l.* per annum—and the working expenses, seeds, interest on farming implements, &c., at 500*l.*, the total annual expenditure would be 970*l.*; and if the gross value of the produce was reckoned at 14*l.* per acre, or 1,036*l.*, it would be seen that the farm would pay its way. He calculates the cost of the sewers at 9,171*l.*

BUILDING AND STREET IMPROVEMENTS IN NEWINGTON.

Several thoroughfares in the neighbourhood of Newington are at the present time undergoing extensive alterations and improvements, which will very materially add to the appearance of the street architecture of the locality. Amongst the improvements are those in progress at Newington-causeway, where a large and prominent block of new buildings are now in course of erection. The old shops and premises on the east side of the Causeway, extending from the premises of Messrs. Tarn & Co. in the direction of the Borough, and containing a frontage of upwards of 300 ft. in length, have all been taken down, and on the site a block of new buildings is fast approaching completion. They consist of a range of business premises, containing twelve large and commodious shops on the ground-floor, with several stories above, the whole of the elevation of the respective premises being uniform in its architectural design and appearance. The height of the buildings to the parapet, which is 4 ft., is 50 ft.; the extreme height of the elevation, to the apex of a mansard roof, 25 ft. high, being about 75 ft. There are three stories in addition to that in the roof. White Leicestershire bricks, with Bath stone windows and dressings, are the materials used in the elevation.

Another improvement now going forward in the neighbourhood is within a short distance of that just described. The whole of the property on the east side of Walworth-road, extending from Deacon-street almost to the Newington Vestry-hall, and having a frontage to Walworth-road of nearly 400 ft., and extending about 200 ft. in depth, has been taken down, on the leases falling in to the Ecclesiastical Commissioners, to whom it belongs. The number of shops, houses, and other tenements which have been demolished, is upwards of a hundred, and on the site new premises of a superior class are in course of erection. The plans provide for the improvement of Deacon-street, which will be widened to the extent of about 12 ft., thereby greatly facilitating the traffic between Walworth-road at this point, and the neighbourhoods of Bermondsey and the Old Kent-road. Heygate-street is within the area of the site which has been cleared, and the Borough Jews' Synagogue and Schools are in immediate proximity. A considerable portion of the site has been purchased for the purpose of enlarging the schools, and also for providing a spacious playground at the rear, extending to Deacon-street.

THE PUBLIC HEALTH BILL.

A meeting of delegates of the Sanitary Authorities forming the Gloucestershire Combined Sanitary District has been held at Gloucester, the Rev. H. W. Maddy in the chair, and the following resolutions were adopted:—

"That this meeting desires to represent to the President of the Local Government Board the difficulties which at present impede the carrying out of sanitary improvements in rural districts from want of adequate powers for promoting the objects referred to below, and to express the hope that he will take steps to embody in the Public Health Blll, now before Parliament, such amendments as will facilitate the work of Rural Sanitary Authorities in regard thereto."

(1) The enforcement of a water supply to individual houses where none at present exists, and where it can be obtained at a reasonable cost.

(2) The combination of small groups of houses for purposes of drainage or water supply, so as to facilitate such improvements by diminishing the cost of carrying them out as "private improvements."

(3) The control by Sanitary Authorities over the use of their own sewers, so that they may regulate the same, by byelaw or otherwise, as may seem most expedient in the interest of each locality.

(4) More latitude to Sanitary Authorities in their power of dealing with deficient provision for getting rid of liquid refuse from individual premises, in respect of the means which may be adopted for that purpose.

(5) Greater assimilation of the powers of Rural to those of Urban Authorities, the requirements of rural and urban districts being in so many cases practically the same.

"That this meeting also desires to draw the attention of sanitary authorities generally in rural districts to the favourable opportunity which now occurs for obtaining increased powers in regard to the above matters, and trusts that they will avail themselves of it to urge upon the president of the Local Government Board the desirability of incorporating amendments to the above effect in the Public Health Bill now before Parliament."

DISPOSAL OF SUBURBAN SEWAGE.

With reference to a proposal for the drainage of Beckenham, Bromley, Hayes, Orpington, Chislehurst, Mottingham, The Crays, Bexley, Crayford, East Wickham, Erith, and Dartford, in lieu of the proposed West Kent Drainage Sewer, which collects the sewage of the whole of these places and conveys it to Long Reach in the river Thames, eight miles below the outfall of the London drainage, Sir J. W. Bazalgette has made a report in which he gives his latest views as to drainage. The writer says,—

"The natural fall of this suburb is towards London, and it is cut off from its natural outfall at the boundary of the metropolitan area.

The purification of the sewage of towns by chemical or mechanical agents has been fairly tested during the last quarter of a century in this country, and, as a practical means of dealing with the sewage, it has, in every instance I am aware of, failed.

The disposal of sewage by irrigating lands has, to a considerable extent, been successful; but it is not a system which can be applied, without objection, to a suburb of London, thickly studded with the ornamental residences of those who are daily engaged in business in the metropolis.

To dispose of the sewage of the places above-named by this means, it would be necessary to establish in the neighbourhood probably not less than twelve sewage farms, most of which would require pumping establishments and iron mains, and the cost of which alone would prevent the adoption of this alternative; but, in addition to this, the land required for such sewage farms has become, or is daily growing into, building land, and must be purchased upon such valuation.

The difficulty (I may say impossibility) of ever thus disposing of the sewage of West Kent is not imaginary. It has been fairly tested, and I need only refer you to the numerous efforts in this direction which have been made by the Bromley Local Board of Health for many years past, and the opposition by which they have been frustrated, as well as to the experience of Richmond, Kingston, Mortlake, Barnes, Chiswick, and other places similarly situated.

After many efforts to surmount this difficulty I have been driven to the conclusion that the only way of disposing of the sewage of the towns and villages surrounding London is by uniting them in groups, in accordance with their drainage areas, and conveying the sewage to some distance from them where it may be utilised when required for irrigation, and may be inoffensively removed when not so wanted.

As regards the towns before-named, the removal of the sewage in this way is rendered the more economical and satisfactory from the fact that it can be removed by the natural law of gravity without the aid of pumping or other artificial means."

STRAIGHTENING A CHIMNEY.

The foundation of a furnace-shaft, in course of erection by M. Dubosc at Havre, had settled very irregularly in consequence of the very unequal resistance of the soil, and so quickly that it was found impossible to complete it. The upper part had consequently to be taken down again, and the completion of the remaining 15 ft. had to be postponed until the chimney had been straightened. This latter operation was effected in the following manner:—The soil on the side opposite the sinking was removed to a breadth of about 4½ ft., and to the depth of the last stage of the foundation. Upon the lowest stage a number of piers leaning against the chimney-shaft were erected to the height of the ground-level, and the semi-circular ditch thus formed was covered over with radiating double T beams, which were protected against sinking in the soil by a layer of sleepers, and rested on the piers. Planks were then laid on the beams, and about 30,000 bricks were put on them. This one-sided weighting of the foundation had the desired effect of bringing the shaft back to its perpendicular position, the movement within six weeks at the top being nearly 1 ft., so that a deviation from the perpendicular was then hardly noticeable.

NEW COTTAGE HOSPITAL, HIGH WYCOMBE.

Another of these useful institutions is in course of erection at High Wycombe. On Wednesday, the last day of March, amid some ceremony and local rejoicing, the foundation-stone was laid by the Right Hon. Lord Carington, the principal landowner of the district, supported by the local authorities. The site, containing 1r. 29p. is on the hill side, just above the town, and was presented by Lord Carington.

The building is to accommodate eight, or (if needful) ten beds. It is arranged for the wards and hospital rooms to be on one floor, and in a part basement, which the slope of the ground readily allowed, are the needful kitchen and other offices, both floors being approached from their respective external ground levels. The walls are hollow, of stock bricks faced with white gaults and red dressings. The roofs are to be covered with the Broomhall tiles of dark tint. Overhanging eaves and a central verandah will afford shelter and shade, and the building is intended to have all modern conveniences and appliances suitable to such an institution.

The contract is for 1,320*l.*, and taken by Mr. Reuben Spicer, of High Wycombe. The architect is Mr. Arthur Vernon, of the same place.

SKATING-RINK FLOORS.

Sir,—I am constructing an open-air skating-rink, and before deciding what material to use for the finished surface, I carefully examined the Portland cement floor at Brighton, the pitch-pine and asphalte floors at Brixton, the asphalte floor at Worthing referred to in your pages, and the floor laid by Messrs. Green & King at Prince's Ground.

It may be interesting to "Vortex" and your other readers to know that I unhesitatingly chose the latter for the rink I am constructing.

Whatever material be used, a good foundation of concrete is essential,—12 in. thick if lime, or 8 in. if cement concrete be employed.

For a *covered* rink, the patent pitch-pine flooring manufactured by Messrs. Peto Brothers is quite as good, and, when sufficiently tested, may prove to be better than the Prince's Ground flooring.

H. Saxon Snell.

A NEW WATERING PLACE FOR LANCASHIRE.

IT requires brave people to found a new watering place,—people who can "stay." Fortunately they are to be found. On the 31st ult. such a work was commenced on the Lancashire coast, between Lytham and Blackpool, upon the estate of Colonel Clifton. The town of St. Anne's-on-Sea, which then received its name, is intended to become more a place for quiet relaxation than a place of gay resort for holiday-makers, like its northern neighbour, Blackpool. And it is to endeavour to excel all these new favourite haunts in its artistic appearance. The streets are to be laid out in gently curved lines, and the houses built mainly in semi-detached couples, well back from the wide roads. Domestic Gothic architecture will be adopted. The centre of the town will have a well-laid-out pleasure ground or public park, to be called "The Oval," and the directors are anticipating the demands of sanitary legislation by projecting a sewage scheme of their own. The waste water will undergo filtration before reaching the sewers, and the carbonising process will be employed in dealing with the sewage generally. A promenade, 300 ft. long by 180 ft. wide, with a belt of green sward in the centre, is in course of construction. A pier will run out 300 yards, and will have erected at its extreme end an assembly-room, with orchestra. The town will further have its own gasworks at a desirable distance, and will be supplied with water from the Fylde Waterworks. Such is St. Anne's-on-the-Sea as it exists in the minds of the limited company who have bought the land from Colonel Clifton, and who have entrusted to Messrs. Maxwell & Tuke, architects, Bury, the duty of designing their future town.

OTTERBOURNE, WINCHESTER.

THE church here has been enlarged and improved by the chancel end being lengthened, risen, paved with encaustic tiles, and provided with carved oak choir-stalls. The carved stone reredos, which formerly cut off a portion of the eastern end to form a narrow and insufficient vestry, is removed, and fitted against the new wall of the apse, another vestry-room, with organ-loft over, being built in the external angle formed by the chancel and transept walls. The unsightly gallery, also at the west end, has been entirely removed, equivalent and additional accommodation being provided by the erection of a north side aisle.

The whole cost of the addition, together with that of an organ, to be placed in the loft as soon as the walls are sufficiently seasoned, has been defrayed by Miss Charlotte M. Yonge. Mr. Thomas Wyatt was the architect employed.

RIGHT OF BUILDERS TO TUNNEL UNDER PUBLIC ROADS.

CATTLE *v.* THE STOCKTON WATER COMPANY.

THIS action, at York Assizes, Nisi Prius Court, before Baron Amphlett, was brought by the widow and executrix of the late George Cattle, of Stockton-on-Tees, builder and contractor, to recover damages for loss sustained by her husband during his lifetime by the negligence of the Water Company in not keeping their mains in repair.

It appeared that on the turnpike-road from Stockton to Middlesbrough, Messrs. Knight & Stocks, the brewers, are owners of the property which the road separates, and desirous of connecting the two portions by a tunnel underneath the road, they contracted for its construction with Mr. Cattle in 1872.

In the progress of the tunnel there was an influx of water from the defendants' main, which finally stopped the building operations. The defendants, on being applied to, refused to remedy the defects of their pipes. The widow now sought to recover damages for the inconvenience caused by the work being stopped, and the loss sustained by the workmen being kept idle.

The defence set up was that the builder had no right to tunnel the public road, and that the trustees of the road had no right to give permission.

The Judge ruled that the builder, with the consent of the trustees, had a legal right to make the tunnel, and a verdict was entered for the plaintiff for 26*l.*, the defendants being granted leave to move the Court above.

FROM AUSTRALIA.

THE *Illustrated Australian News*, published in Melbourne, January 27th, gives some representations of persons and places in the colony. Besides portraits of the founders of the Adelaide University, the undermentioned buildings are shown, the descriptions of which are as follow:—

The model Schools Adelaide.—These schools are situated at the corner of Grote and Brown streets, Adelaide, and with the yards, occupy one acre of land. The building is of Gothic style, and of one floor only. No expense has been incurred in mere ornamentation, still the general appearance of the building is extremely good. Three large rooms are provided for the separate instruction of boys, girls, and infants. Each school-room is provided with a hat and cloak-room and large lavatory. The school-rooms are well lighted at the side by narrow pointed windows in keeping with the style of the building, and at the ends by two large cinquefoil lights. The ventilation is very complete. Shafts for the exit of impure air pass from the ceiling up through the roof, while a good supply of fresh air is admitted by apertures below the wall-plate. The boys' and girls' schoolrooms are furnished with desks and seats of graduated heights and of the most approved pattern. These are arranged parallel to the longer side of the rooms in groups of five, each row rising in height of floor 6 in. above the one in front. The infants' room contains a gallery capable of seating 100 children. The three schools afford accommodation for 700. The entire cost of the building and boundary-walls and furniture is £4,651. 15s. 8d., or something less than £7 per scholar,—a rate considerably below the cost of many similar buildings recently erected in England. The architect is Mr. E. J. Woods, and the builders are Messrs. Martin & Son.

The R. C. Cathedral at Ballarat.—This cathedral, of which a view of the interior is given, is situated in Sturt-street, Ballarat, and on the 20th of December last the new bishop was installed. The cathedral is built of bluestone in the Gothic style of the Decorated period; the nave from designs by Messrs. Hanson & Jones, architects, of London; and the transepts and chancel from designs by Mr. J. B. Denny, of Melbourne. The design includes nave and aisles, transepts, chancel, with north and south chapels, as well as a lofty tower and spire yet to be erected. The internal dimensions are, total length, 150 ft.; nave, 33 ft. wide, and 62 ft. high to apex of roof, aisles each 15 ft. wide, width across transepts 100 ft. chancel 50 ft. in length, 48 ft. high, and 32 ft. wide, with north and south chapels of nearly similar dimensions opening into the chancel by two lofty arches on columns on each side. All the windows of the cathedral are executed in freestone. The pillars, arches, and other mouldings of the nave are in bluestone. The chancel arch, and all the columns' arches, and mouldings of the sanctuary and chapels are in freestone. The south chapel has a groined freestone roof. The amount expended on the building, including the massive iron fence, designed in harmony with the style of the church, and the organ, has been about 25,000*l.* The perspective drawing of the interior was made by Mr. D. J. Ryland.

The Presbyterian Church, Strathalbyn.—This church as it now stands has two towers. The original building was erected some years ago, chiefly through the liberality of the late Hon. Edward Stirling. It is situated on a hill, overlooking part of the town and river Angas. The larger tower was built to allow the bell,—which was presented to the people by the late Hon. E. Stirling, at a cost of 1,000*l.*—to be hung. The smaller tower has a spire. The building is one of the prettiest out of Adelaide, and the view from its principal tower well repays for the trouble in reaching it. The engraving is from a view taken on the spot by Mr. R. E. Minchin, of Adelaide.

Mechanics and Labourers Wanted at the Cape.—A scarcity of hands to carry on work is now the great difficulty in South Africa, especially in the building trade. At Stellenbosch the masons are receiving 12s. per day, and with other artisans there and elsewhere are in request. European agricultural and general labourers are in many districts not to be obtained. Native labourers are being imported from the interior of the North Dutch Republics to work for private persons and for the Government.

FIRE-PROOF BUILDINGS.

DURING the past few days a number of interesting experiments have been made near the Spelter Works at Hendon, Sunderland, for the purpose of testing the fire-resisting capabilities of structures erected in accordance with Mr. Brannon's patent, or monolithic system. The patent has been adopted by Mr. J. N. Peddar, architect, who, having nearly completed for Mr. Councillor Coulson and Mr. F. Peddar the first of a row of cottage blocks near the footpath leading between Sunderland and Ryhope, considered the time had arrived for fully testing the fire-proof qualities of the structure. The result of the experiments is described as satisfactory.

The system has been damnified in some quarters by the attempt of uninformed persons to carry it out.

SCHOOL BUILDING NEWS.

Richard's Castle (*Ludlow*).—The ceremony of laying the corner-stone of new school buildings at Richard's Castle, near Ludlow, to be erected and maintained by voluntary subscriptions, has taken place. The old school buildings, erected in 1839, upon a portion of the glebe land not conveyed to the trustees, consisted of a schoolroom and offices neither of which were in a good state of repair. It was estimated that an outlay of at least 300*l.* would be required; but the rector having granted, with the consent of the patron and of the bishop of the diocese, a school site to the extent of half an acre, including the existing premises, it was proposed to erect a new block of buildings more suitably situated and capable of accommodating a larger number of children, which could be accomplished for a little over 900*l.*, towards which amount the landowners and occupiers of land in the parish have subscribed liberally. The new structure, the contract for which has been entered into with Mr. W. Russell, builder, will include class-rooms and master's residence. It will be a substantial erection of modern design, built of local stone, with Grinshill dressings; open-roofed with varnished timbers, and capable of accommodating 130 scholars.

Swansea.—The new schoolrooms in Herbert-place have been opened. These schools will constitute one wing of the future chapel. The front elevation is principally occupied by the staircase which will lead from the school to the chapel. The school is an oblong building, 48 ft. long by 27 ft. wide, with an average height of about 20 ft. The walls are of coursed Swansea stone, with dressings of Bath stone. There are two entrance-porches, at opposite corners of the school, for boys and girls. There are a rose-window in the front gable, and small trefoiled lights to the staircase; but the school is chiefly lighted by a wooden clearstory, running the whole length of the walls on each side. A number of lights in this clearstory are made to open by cords and pullies from below, so that fresh air can be admitted as it may be required. The roof-trusses are of pitch-pine, with carved principals and moulded and cut tie-beams and king-posts. Externally the roof is covered with Whitland Abbey green slates, with ornamental tile-cresting, by Cooper, of Maidenhead. The fire-places are lined with Maw's tiles, and the grates are detached. There is a wooden dado about 4 ft. high, all round the inside of the school, and an ornamental wooden cresting at the base of the ceiling. The walls are plastered and finished with rough stucco. The design is in the Early Gothic style. Mr. Cubitt, of London, is the architect; and the builders are Messrs. Thomas, Watkins, & Jenkins, of Swansea.

Sammundham.—The infant-school, erected by the late Mr. William Young, of Hurts Hall, in Church-street, has been opened. It is a red brick substantial building, built according to plans by Mr. H. M. Eyton, of Ipswich, having a good recreation-ground attached. Accommodation is provided for fifty children.

Lewes.—New schools have been erected here at a cost of 2,185*l.* The architect was Mr. H. Currey, of London, and the work has been carried out by Mr. W. H. Steere, contractor, East Grinstead. The schools, which are of the same kind of architecture as the remainder of the union buildings, are intended to accommodate forty children, and are situated at the east side of the workhouse.

Shipley (Bradford).—A small school is being erected here at the expense of Mr. Benjamin Wood, of Dumb Mill, Frizinghall, for use as a

urch day and Sunday school. It is a plain ucture, and is situated near the works of Mr. ood, in Shipley Field. The premises will con- t of infants' school, 33 ft. by 19 ft., opening o a mixed school of 47 ft. by 33 ft. Com- unicating with the latter is a large class-room. parate entrances are provided to the two partments. Messrs. Jackson & Longley are architects.

Weymouth.—A girls' school has been added the other schoolhouses on the Chapelry, be- ging to Holy Trinity Church. The new ool is capable of accommodating about 250 ldren, being 57 ft. in length by 20 ft. in adth. The cost has been about 1,000*l.* The hitect is Mr. G. R. Crickmay, of this town, style of architecture being in keeping with t of the other buildings. The school-room is t and cheerful, and attention has been paid the ventilation. Holy Trinity Schools now vide the means of education for 260 boys, girls, and 230 infants,—740 children in all. builders of the new school were Messrs. etham & Bartlett, of this town.

Saltaire.—A building, for Sunday school pur- es, is to be erected at Saltaire by Messrs. t, the architects being Messrs. Lockwood & wson. The school will be situated on a tion of the allotment gardens in front of the tory, the frontage being towards Victoria- t. To this road it will have a frontage of ut 76 ft., and to Caroline-street (which is to carried forward to the new Board school) at 112 ft. The plan comprises an assembly- m, 60 ft. by 40 ft., with lecture-room behind, ft. by 24 ft. The distinguishing feature, how- r, is the large number of class-rooms pro- ed, there being no fewer than twenty, arranged wo stories, all opening into the assembly- m. In order that the occupants of the upper s-rooms may not have to descend to the er level of the assembly-room, a gallery is rided down each side of the building. The or and infant scholars will have a gallery ted at the opposite end of the assembly- m. To the lecture-room in the rear of the ding there will be a separate entrance from oline-street. The class-rooms are well ted from the side, but the principal light he assembly-room will come from the roof.

THE INDIAN MUSEUM.

R,—I notice that in a very interesting le on the Future of the Indian Museum h appeared in the *Builder* of last week, an ion is expressed in favour of South Kensing- as the site for the permanent building to mmodate the Indian Museum and Library, ne ground of the advisability of concentrating ne educational institutions of the metropolis at locality so as to form there the Quartier n of London. An opportunity for con- ring whether this argument does really y to the Indian Museum will be afforded he meeting which will take place at Society of Arts on the 21st inst. I may, ever, remark that even in Paris, though most e educational institutions proper are situated e Quartier Latin, yet a practical institution the Conservatoire des Arts et Métiers is d, not in that quarter, but on the other f the river, close to the districts in which of the most important Paris trades are ed on.

J. Forbes Watson.

UNION CHAPEL COMPETITION.

,—Your article in last week's *Builder* on ubject, which will be read with interest not by those immediately concerned in this tition, but by others who are engaged in r enterprises, calls for an explanation from the professional assessor employed.

may be imagined, it was one of my prin- duties to form an estimate of my own of ost of each design, quite independent of of the respective competitors. Rightly ongly, I took the most favourable view le of the cost of carrying out the several s, and estimated them all upon the same as if they had been priced according same schedule of prices. It was then hat the estimates of five of the competitors more or less under the totals I had arrived ile that of "Torcello" was considerably it. When the cost of "Torcello's" tower educted, the sum which remained did not the committee's limit.

committee were of opinion that they would rather have "Torcello's" design, minus its tower, than any of the other designs, including its tower, and therefore they considered themselves at liberty to accept it, and particularly as it was left entirely to the option of the competitors whether to show a tower in their designs or not.

Alfred Waterhouse.

TRADE DISPUTES IN SCOTLAND.

Most of the builders of Jedburgh have raised the wages of masons from 7d. to 7½d. per hour.

On the 29th ult. the journeymen slaters in Falkirk made a demand on the masters for an advance of ½d. per hour on their present wages of 7½d. per hour. The masters refused to comply with the demand, and the result is a general strike of the men.

On the 29th ult., the painters in Kirkcaldy and district came out on strike, owing to the masters refusing to give them a rise of one penny per hour. The masters have agreed to give them one halfpenny per hour additional, but the men are determined to have a penny. The majority of the men have left the town for Edinburgh, Dundee, and Glasgow.

The Perth joiners have unanimously resolved to memorialise their employers for an advance of ½d. an hour. Their present rate of pay is 7d. The carpenters and joiners employed at the Caledonian Railway Works, Perth, are also agitating for an increase of pay. Their present rate of pay is 6d. and a fraction an hour. At present they would be content with 7d. an hour. Their negotiations with the superintendent for an advance have resulted unsuccessfully.

ACTION FOR NON-DELIVERY OF TIMBER.

Boyce *v.* the London and North-Western Railway Company.

This was a special jury case at the Gloucester Assizes, on the 5th inst., before Mr. Justice Quain. An action was brought by Mr. Boyce, a builder, of Vauxhall, Birmingham, against the London and North-Western Railway Company for damages for delay in the delivery of certain timber consigned to him from Liverpool. The plaintiff, being about to build a block of nineteen houses, purchased of Messrs. Pearce & Co., of Liverpool, 990 spruce deals, at 10*l.* per standard of 120 pieces 1½ in. by 11 in., 12 ft. long. The deals were delivered at the Liverpool station of the London and North-Western Railway, between the 9th and 19th of November, to be forwarded to Birmingham. On the 25th of November 139 out of 990 deals were delivered in Birmingham, on the 15th of December 207 more, and after the 18th of January, when action was brought, 218 more, making 564 out of the 990 deals. On the 26th of February they made up the balance of 426 deals, but it was then too late. The plaintiff had been obliged to purchase red deals to make up for the spruce deals not delivered, and he claimed 69*l.* 14*s.* 6*d.* for these red deals. The defendants had paid 10*l.* into court, and denied any further liability.

The plaintiff, in cross-examination, said the carriage of the timber which had not arrived would be 1*l.* 19*s.* 9*d.* The price, 14*l.* 5*s.* per standard, was the price delivered.

After a short discussion, the parties at this stage came to an arrangement, and a verdict was returned by consent for the plaintiff,—damages 5*l.*

CAUTION TO SURVEYORS OF PUBLIC HIGHWAYS.

At the Leeds Assizes, Mr. John Baker, the Surveyor to the Pudsey Local Board of Health, stood his trial for manslaughter, under features that may warn other highway surveyors.

It appeared that on the 6th of October last a coachman was driving a four-wheeled phaeton to Bradford, about seven o'clock in the evening, down a dark lane. Mrs. Lupton was in the carriage, when it suddenly overturned, and she was so much injured that she died a few days afterwards.

The prisoner was charged with causing the death of the unfortunate lady, through leaving a hole open in the road without any protection or light, and which it was his duty, as highway surveyor, to have given directions to have carried out.

Counsel for the prisoner said no one could have regretted the accident more than the surveyor, and the multiplicity of his engagements must be his excuse for the omission, and which should have been seen to by the men who made the hole.

The jury brought in a verdict of guilty of culpable neglect, with a strong recommendation to mercy.

The judge fined Mr. Baker 20*l.* for his culpable neglect, which was at once paid, and he left the court with his friends.

Neville's Cross.—An interesting memorial of events that occurred in the remote past is fast falling to ruins. We allude to the sculptured monument of "Neville's Cross," which was erected some hundreds of years ago to commemorate the famous battle of that name, that took place at the spot, when the Prince Bishops of Durham, who were then military generals, led their armed hosts to do battle against England's invaders—the Scots.

CHURCH BUILDING NEWS.

Watlington.—The parish church, which has been closed for a period of nine months, has been re-opened, after repair and restoration, under the direction of Mr. Tollit, of Oxford, and Mr. Dolby, of Abingdon, architects. The restoration has been carried out by the builder, Mr. Williams, of Abingdon, from the plans of the architects.

Wadsley.—A new church has recently been erected in the grounds adjoining Wadsley Asylum. The edifice, which has been erected at a cost of 6,000*l.* stands in front of the asylum, about 300 yards distant. It is built of smooth stone in the Gothic style. The interior, which will seat 700, has massive stone pillars supporting a succession of arches on each side of the nave. The stone of which the church is built is almost white. The nave is furnished with open pews of pitch pine, and the choir stalls and pulpit are of the same material.

Derby.—Mr. G. Thompson, architect, reports upon the structural condition of the parish church of St. Peter, as follows:—"There appears to be no record as to when the original church was erected, and the first notice we find of it, historically, is that the church, which is of Norman foundation, as well as St. Werburgh's, was given to Derby Abbey in the reign of King Stephen. The original style of the church may be fixed as eleventh-century work, although much of the existing architecture is of a later date, alterations and additions having taken place at different periods. In dealing with the questions of stability and restoration it will be necessary to divide the work into sections, as follows:—1st, the tower; 2nd, the nave; 3rd, the north and south aisles, vestry, and organ-chamber; 4th, the chancel." There is accommodation provided at present in the nave and aisles for about 280 adults, whilst the chancel affords room for eighteen in the stalls, and about an equal number on the seats in front of the stalls. "To place the present buildings in a satisfactory state of repair," he adds, "a sum of at least 3,000*l.* will be required. The cost of restoration must be necessarily heavy, owing to the dilapidated condition of the structure. A new church, to accommodate the same number of persons, could be built for about 4,000*l.*"

Aughton.—The old parish church of St. Michael requiring restoration, and the chancel being greatly dilapidated, this portion of the church has been rebuilt. The introduction of the chancel arch is an improvement; no less so is the double arcade of the north wall, instead of the elliptic arch which it has displaced. The walls are finished in hewn stone, and the roof of pitch pine, with the framing and boarding dressed and exposed to view. Divided into six bays, the main principals rest upon corbels of Caen stone, sculptured with effigies of angels holding shields, emblazoned with arms. In rebuilding the chancel, the old lines and features have been followed generally, but an earlier type has been adopted. The walls stand upon the old foundations, and the pitch of the roof is the same as before. The woodwork and the roof have been executed by Messrs. Thomas & William Taylor, of Aughton; the masonry by Mr. Peter Wright and Mr. Thomas Riding, also of Aughton; the sculpture and carving by Mr. Rogerson, of Liverpool; the plumbing and glazing by Mr. Holt, of Liverpool—from the plans and under the supervision of Messrs. W. & J. Hay, architects, of Liverpool.

Rotherham.—The parish church was re-opened on the 7th instant, after complete restoration. Under the direction of Sir Gilbert Scott, the flooring of the nave and transept has been lowered, and in some cases it has been found necessary to disturb human remains, which were here and there found within a few inches of the surface. The ancient high-backed pews have been superseded by seats of oak, which are low-backed and carved at the ends. The roof of the transept has been renovated, the carvings being brought out. The limewash has been scraped off the walls and the piers in the nave, and the galleries have been removed. The fan-vaulted roof of the tower chancel, which is carved in the Early English style, has also been restored. The chancel roof has been painted, while the roofs of the north and south chapels have been repaired and re-stained. A new entrance to the belfry has been provided, and the western door, which has for many years been closed, has been re-opened. Just before the restoration of the church was begun, a stained window was placed in the edifice by the Earl of Effingham; and

another window is about to be erected in the north-west aisle by Mr. Henry Hutchinson. Much yet remains to be done to complete the internal restorations and refitting. The exterior of the church has undergone considerable repair, decaying stone-work having been replaced, while many of the pinnacles have been renewed, and the roofing has been repaired. The restorations, which cost about 9,000*l.*, have been carried out under the superintendence of Mr. Cave, the clerk of works.

Manchester.—The parish church of St. James, Didsbury, has been re-opened by the Bishop of Manchester. The seating and flooring of this church have been taken out and replaced with new. A layer of concrete is spread over the whole area of the church, upon which lies the wood flooring. The seats are open, and are of pitch-pine, and have octagon ends, with cinquefoil panels. The organ-gallery at the west end has been taken down and reconstructed, so that it now occupies only the first bay at the west end of the nave. Single-light windows have been put in at the west end of the north and south aisles, stained glass for which is being prepared by Messrs. Clayton & Bell. The chancel-seats, which had only been temporary, have been replaced with oak, with traceried fronts and poppy-headed and traceried ends. The cost of the whole has been defrayed through the benevolence of a lady, who, a few years, since, at her own expense, had the chancel built. An eagle lectern, of oak, has been presented by a friend of the rector. The work has been executed by Messrs. Clay & Sons, of Audenshaw, under the superintendence of the architects, Messrs. Horton & Bridgford, of Manchester.

Plymouth.—St. Andrew's, the most ancient church in Plymouth, has been re-opened, after having undergone restoration at a cost of about 5,000*l.* The huge vestibule that cut off several bays of the church formerly, has disappeared. The whole of the body of the church has been re-seated with open benches, made of wainscot oak. All the bench ends (and of these there are some hundreds) are more or less elaborately carved. The lectern is of oak, supported by flying buttresses, having emblems of the Evangelists at the angles. The fine pulpit (made by Hems, of Exeter, some five years ago) has been removed to a more convenient position, and now stands against the pillar at the north side of the entrance to the chancel. A new reredos in Beer stone has been erected. The new font stands upon a marble step, near the south-west entrance. It is of Beer stone, and was made in Exeter by Mr. Harry Hems. A new painted east window has been placed in the chancel, and a screen of grill work, by Messrs. Potter, of London, divides the tower from the nave. The whole of the works have been carried out from the drawings of Sir G. Gilbert Scott, R.A., under the personal superintendence of his representative as clerk of works, Mr. Nathaniel W. Vickers.

Upton Pyne (*Devon*).—The parish church, which has been repaired throughout, was re-opened on Easter-eve by a special service. An organ aisle has been built on the north side of the chancel, in memory of members of the Pelham and Wolverton families. A font, altar-cloth, and other furniture were presented by parishioners. The peal of six bells will be rehung by Hooper, of Woodbury. Mr. Berry, builder, of Crediton, did the builder's work; and Mr. W. White was the architect.

Clayton.—Last week the newly-erected All Saints Church, Clayton West, near Barnsley, was consecrated by the Bishop of Ripon. The church, which is in the Early Decorated style of architecture, has been erected from plans furnished by Mr. E. Hughes, architect, of Huddersfield.

Bolton.—On the 29th ult. the foundation-stone of a church, to be dedicated to St. Matthew, was laid, in Mount-street, Bolton, by Mr. Alderman J. Green, of Mayfield, Great Lever. The building, which has been designed by Messrs. T. D. Barry & Sons, of Liverpool, is in the Decorated style of architecture, with flowing tracery. It will be surmounted by a tower and spire, 157 ft. in height. Accommodation will be provided, on the ground floor, for 1,000 persons. The estimated cost of the building is 9,000*l.*, and the first contract, amounting to 7,445*l.*, has been taken by Mr. H. Yates, of Liverpool.

British Archæological Association.—At the meeting to be held on Wednesday, April 14, a paper "On the Roman Remains at Newgate," by Mr. T. Morgan, will be read.

DISSENTING CHURCH-BUILDING NEWS.

Lincoln.—The Hannah Memorial Wesleyan Chapel has been opened for divine service. The building, which was designed by Messrs. Bellamy & Hardy, of Lincoln, architects, is constructed for 1,000 sittings, and comprises a spacious central entrance, with inner lobbies, and on each side thereof an additional entrance, with staircase to the gallery. The pews in the body of the chapel are commodious, and arranged in straight rows in front of the platform and communion. At the rear of the latter are spacious vestries, with basement for heating and hot water apparatus. Class-rooms are provided above, level with the gallery, having a staircase communicating with the ground floor. The seats of the gallery are arranged in the semi-amphitheatre form, with recesses for organ behind platform. The interior is finished in a neat, substantial manner, the woodwork being pitch pine, varnished. The front of the building is of Italian classic character, comprising a semi-detached portico of six Corinthian columns, surmounted by cornice and pediment, and on either side are wings, which contain the main entrances and staircases to the gallery before named. The building stands slightly back of the general building line, and the front is to be protected by an iron fence with pillars and lamps. Messrs. Barnes & Wright, of Lincoln, were the contractors. Mr. Waller, of Lincoln, executed the interior decorations; Mr. Kirton supplied and fixed the heating apparatus; and Mr. Waddington the gasfittings. Mr. Brummitt acted as clerk of the works.

Smallthorne (*Burslem*).—The Salem Methodist New Connexion Chapel has been opened for public worship. The chapel, with large and comfortable school beneath, forms a compact block of building. It is built of brick, with stone dressings. A large two-light circular window forms one of the main features in the front, which is crowned by a well-proportioned pediment. The interior of the chapel is chaste and simple in style. The pewing is of modern construction and very comfortable. The roof is partly open timbered. Messrs. J. Cope & Son, of Smallthorne, were the contractors, and Mr. James Watkin, of Burslem, is the architect.

Crewe.—A new Wesleyan chapel is about to be erected here, at a cost of 4,000*l.*

Attercliffe.—The opening services in connexion with the new Baptist preaching-room, recently erected on Attercliffe-common, have been held. The building has been erected at a cost of 1,000*l.*, towards which 800*l.* have been raised. The preaching-room will accommodate 300 persons. In addition to the preaching-room, the building contains an infant school-room large enough to accommodate fifty children, and two vestries.

Stoke (*Devon*).—The ceremony of laying the two memorial stones of the new Wesleyan Chapel, in course of erection at Stoke, took place on Tuesday, last week. The preparation of the plans was entrusted to Mr. H. J. Snell (late Ambrose & Snell), of Plymouth; and the contractors are Messrs. Hubbard & Bevan. The work is to be completed by January, 1876. The chapel, Early Gothic in design, will be 80 ft. long by 36 ft. wide, with two transepts 20 ft. by 12 ft. Vestries are provided to the north end of the building. The slope of the site will allow of a large school-room and class-room underneath the chapel, the entrance being on a level at the south side. A large gallery at one end of the building and an organ-gallery over the vestries are contemplated in the future, the necessary arrangements being made in the present erection. The number of sittings is 500, and 250 more in the galleries when finished. The walls will be plastered internally and the roof will be open-timbered, ceiled about halfway up. The seats and platform will be of pitch-pine, varnished. The external walls will be faced with dark-blue limestone, with dressings of grey limestone and Bath-stone window dressings. The staircase of the end gallery will, when built, be carried up in the form of a turret.

Farnworth.—The memorial-stone of a new Wesleyan Chapel, at New Bury, Farnworth, was laid on Good Friday by Mr. J. Hindley. The chapel is of Gothic design, and will accommodate 327 persons. Its cost will be over 1,000*l.*, exclusive of heating and lighting, and the erection of boundary-walls. Mr. T. Ormrod, of Bolton, is the architect; and the contractors are Messrs. S. & W. Coope, of Farnworth.

Walkden (*Bolton*).—On Good Friday the foundation-stone of a new Primitive Methodist Chapel was laid at Walkden, by Miss Hurst, Oakwood, Worsley. The building will be in the Italian style of architecture, and will seat 7[illegible] persons. Mr. R. K. Freeman, of Bolton, is the architect; and the whole of the work has been entrusted to Mr. J. Gerrard, of Swinton. The estimated cost is about 4,000*l.*

Beaconsfield.—A new Congregational Chapel was opened here on Easter Monday. It has been erected at a cost of over 1,500*l.*, of which 500 were contributed by members of the Du Pre family. It stands on ground in front of the old chapel, which has been converted into a school-room.

Books Received.

Protection from Fire and Thieves: including the Construction of Locks, Safes, Strong-Rooms, and Fireproof Buildings; Burglary, and the Means of Preventing it; Fire, its Detection, Prevention, and Extinction, &c. Also a Complete List of Patents for Locks and Safes. By George Hayter Chubb, Assoc. Inst. C.E. London: Longmans & Co.

Under the heads:—I. Locks, Keys, &c. II. The Art of Burglary; III. Safes against Thieves; IV. Safes against Fire; V. Second-hand Safes, &c.; VI. Strong-Rooms; VII., VIII. Fireproof Buildings; IX. Fire and its Dangers; X. Extinction of Fire; Appendix, Lists of Patents, and Summary, Mr. Chubb gives information, hitherto not available to the public, respecting the security of life and property from fire and thieves. Particulars are added of notable burglaries and fires, and the best modes of preventing loss from either cause suggested. The construction of locks, and of burglar and fire-proof safes, is described; and the various systems of building strong-rooms and fireproof warehouses explained. As to the extinction of fire, some valuable information and statistics have been furnished by Captain Shaw, of the London Fire Brigade, and Colonel Fraser, of the City Police. In the appendix are plans, and a description of a construction adapted for fireproof buildings.

VARIORUM.

A Report to the Public Buildings Committee of the Corporation of Nottingham, on Sites for the Town-hall, goes fully into the inquiry, and shows by the plans given in the course of it how very desirable it is that some of the sites should be cleared, covered as they are with courts of insalubrious houses. With regard to the Museum (now at the Exchange rooms), its apparent future home is the Acropolis of Nottingham. The report speaks of the scheme which has been so long before the town for the resuscitation of the Castle, and the founding of a permanent Museum, which shall be second to none in the provinces of England, and surpassed only by the metropolitan parent in South Kensington, rapidly approaching maturity; and says the response of the public to the action taken by the Town Council in this matter is sufficient indicative that the proposal is popular, and a success all but achieved.

Improved Buildings for the Zoological Society.—At the Zoological Gardens the walls of the new carnivora-house are already 4 ft. high, and the general plan can be easily made out. The entire length of the building is 231 ft., and lies nearly due east and west, the west end being close to the seal-pond. The range of dens consist of fourteen front cages, which look, as at present lions and tigers' cages do, on a south aspect. They are much larger than the present dens; four of them have a frontage of 20 ft. each, two of 18 ft. each, and the rest are 12 ft. each. The day-cages are to be 12 ft. high, and the sleeping-cages 10 ft. Behind each cage is a double sleeping-den, so the number of sleeping-dens is twenty-eight. The space for the spectators in front of the cages will be roofed over, the platforms rising in successive steps will be ranged along the wall. The air will be warmed in cold weather by passing over hot pipes before being admitted to this building, so that animals and spectators alike will benefit by this. When the improved buildings that have from time to time been erected in the gardens, there has been a gradual diminution in the death-rate.

Miscellanea.

Underground Mortality at Berlin.—At a second meeting of the German Public Health Association, held at Dantzic in September last, an interesting paper was read by Dr. Schwabe, of Berlin, on the "Influence of different Classes of Dwellings upon the Health of their Occupiers, as deduced from statistics." The chief feature of the paper was the demonstration of the unhealthiness of the "cellar-dwellings" (*Kellerwohnungen*), which are inhabited by so large a proportion of the lower classes in Berlin. The *Lancet* gives particulars of the paper. The conclusion arrived at is that the mortality increases to a greater extent in the cellar-dwellings than in any other kind of habitation, that epidemics are of a more severe type than in other places, and that cellars especially favour the development of diarrhœal disorders and infectious diseases. The author himself fell a victim to typhus, contracted at that favourite haunt of Berlin, Charlottenburg (where an epidemic was rife), on his return home from reading the paper in which he so trenchantly discussed what he believed to be the true cause of the prevalence of such plagues.

A Bradford "Steeple-Jack" killed at Rhodale.—On the 31st ult. an inquest was held at the Bull's Head Inn, Balderstone, near Rhodale, before Mr. Molesworth, touching the death of Anthony Conwell, aged twenty-two, a mason, of Bradford, who was killed on the 30th ult., at Messrs. Radcliff's mill, Balderstone. Alfred Taylor, of Bradford, stated that the deceased had been in his employ, and he (witness) had contracted to repair Greenfield Mill chimney, which was between 55 and 60 yards high. On the 30th ult. he and the deceased tested the scaffold with their weight, and then he and other workmen began to draw Conwell up the chimney very carefully. When they had got him three parts of the way up the rope broke, and the deceased fell to the bottom. He died in half an hour. Witness thought that the chain across the top of the chimney ought to have been twice the length, and attributed the accident to the heat from the chimney injuring the rope. The deceased fell about forty yards. The jury returned a verdict of accidental death.

Opening of the Peabody Buildings in Oxford-street, Blackfriars.—On the 2nd inst. the largest block of buildings in connexion with the Peabody donation fund was opened for the reception of tenants. The buildings, which stand over an area of 2½ acres, are situated in Duke-street, Stamford-street, Blackfriars-road, Stamford-street, Waterloo-road. The buildings consist of upwards of fourteen blocks, capable of accommodating 352 families. There are 144 apartments of three rooms, at the weekly rent of 6s. 9d.; 96 of two rooms, at 4s. 6d.; and 112 single apartments, at 2s. 9d. and 3s. The buildings have been erected by Messrs. W. Cubitt & Co., from the designs of Mr. Darbishire, architect.

The Dover Pier and Harbour Bill.—On the order for the second reading of this Bill in the Commons on the 5th inst., Sir G. Balfour moved as an amendment that the Bill be read a second time that day six months, on the ground that a select committee had reported against the construction of a harbour at Dover, and so that if a harbour should be constructed the total cost the Government 1,000*l.* a year to keep it free of silt. The project for extending the present harbour would involve indefinite expenditure, and he maintained that it ought not to be proceeded with until it had been made the subject of the fullest inquiry. After some discussion, the Bill was read a second time, and ordered to be referred to a select committee.

Proposed Bridge Across the Straits of Dover.—The *Bulletin Français* states that the directors of the Channel Bridge Company have ordered the construction of an arch 1,000 metres in length, for the purpose of proving the possibility of the scheme of M. Boulet, engineer to the company, of throwing a bridge across the Straits of Dover. A model of this bridge, consisting of a road for vehicles and for foot passengers, will probably be erected in the Bois de Boulogne or Champ de Mars at a height of 100 metres above the ground. The directors state that, whereas the tunnel would take seven years and cost at least 25,000,000f. the bridge could be erected in a few months at an outlay of 600,000f.

Danger of Improving Premises without Consent.—At Ipswich Assizes, on the 29th ult., a cause was concluded before Mr. Justice Grove, in which Mr. John Mulley sued for an order of ejectment against Mr. F. W. Wilson and Mr. J. Colman, M.P., publishers and proprietors of the *East Anglian Daily Times* and several other newspapers. The action was brought for breach of covenant, the defendants having fixed machinery, done repairs, and made alterations, whereby the premises were improved, without the plaintiff's written consent. The jury found for the plaintiff in respect of the breaches, and added,—"We give this decision, believing it to be according to law; but as the premises were improved we regard the action as purely vexatious."

Builders' Benevolent Institution.—The funeral of Captain Alfred G. Harris, the late and much respected secretary of this Institution, took place at the Marylebone Cemetery, Finchley, on Tuesday last. Amongst the committee present were Mr. Thomas Stirling, Mr. T. G. Smith, Mr. Dove, Mr. Wilfred Nicholson, Mr. S. L. Mann, Mr. R. Head, Mr. John Waldram, and Mr. Scriven, collector. The treasurer (Mr. Plucknett) and chairman (Mr. Dines) were prevented by absence from town from attending the ceremony. The loss of the deceased, who was sixty-nine years of age, will be very much felt by the committee and the numerous members and friends of the Institution.

The Leicester Water Supply.—On the 31st ult., the town council of Leicester came to a conclusion upon the great question of the purchase of the waterworks property, with which the town has been agitated for several months past. It having been ascertained that a large number of houses in the borough derive their water supply from wells sunk on the premises, the borough surveyor, Mr. E. L. Stephens, was desired by the Sanitary Committee to report. The council have come to the determination to seek from Parliament the power to purchase the whole of the property of the Leicester Waterworks Company.

Tadcaster Church.—As things are now going on, our children will find nothing in England a hundred years old. Attention is drawn to the threatened demolition of the fine Late Perpendicular Church of Tadcaster. It is hardly credible, but nevertheless the local papers announce that at a meeting, held under the presidency of the Archbishop of York, "Mr. Harris proposed, and Mr. C. Shann seconded, the following resolution:—'That the proposal to take down the parish church (of Tadcaster) be approved and adopted,' which was carried with three dissentients." Tadcaster Church seems doomed to destruction.

Fall of Four Houses in Birmingham.—On the 3rd inst. an alarming accident occurred in the Paul Pry-yard, New Summer-street, Birmingham. Without the slighest warning, four houses tumbled to the ground, became a complete wreck, and buried nine persons in the ruins. The houses were built on the top of a disused malthouse, and the foundations were upon rights of iron and wood, which were gradually stolen, until the remainder at length became too weak to support the tenements. Nine persons were in the dwellings at the time, and they have all been seriously injured.

Exchange and Offices for Cardiff.—A numerously-attended meeting was held at the Chamber of Commerce last week. The object of the meeting was to take steps for the erection of an exchange and offices on a piece of land now occupied by the Dowlais Inn, West Bute-street, and some land adjoining. The cost of the building was estimated at from 25,000*l.* to 30,000*l.* The suggestion met with the entire approval of the meeting, and the Marquis of Bute has offered to lease the ground at 1*l.* per foot frontage, and entirely approves of the scheme.

Church Extension in Northampton.—At a large meeting of Churchmen in Northampton it has been decided to form four new parishes and build churches, parsonage-houses, and Sunday schools for each, at a cost of 33,000*l.* Mr. P. Phipps, M.P. for the borough, subscribed 1,000*l.*——The chancel and side chapels of St. Giles's are to be restored.

Surveyorship.—There is a vacancy in the Eastern Division of Hackney, caused by the resignation of Mr. John Johnson, surveyor of the district.

Leeds House-Painters and their Employers.—The house-painters having sent to the employers a request for an advance of wages, and a revision of working rules, a meeting of six employers and six operatives has been held at Wharton's Hotel, to consider the whole question. After considerable discussion the following resolution was unanimously agreed to: "That the wages of the operative house-painters be 7d. per hour on and after the 1st of April," being an advance of ½d. per hour.

Discovery of Ancient Relics in Bristol. The workmen employed in making alterations at Messrs. Fry's premises, in the Pithay, have, in the course of their operations, come upon interesting relics of ancient Bristol. The buildings on which they are engaged cover the site of Aylward's-gate, and during the excavations the men uncovered a portion of an ancient bridge over the river Froome. A large number of old coins have been dug up there, including many specimens of Roman and Flemish coinage.

Greenham New Church.—Five builders have sent in tenders for the erection of the new church in this parish. Of these, two were from Newbury, viz., Mr. S. Elliott and Mr. James. The other three builders were Mr. Chappell, of Tring, Herts; Mr. Filewood, of Reading; and Mr. Woodbridge, of Hungerford. There is reason to believe that Mr. Elliott's tender, being the lowest, viz., 3,695*l.* 17s. 4d., will be accepted provided sufficient funds can be raised.

Free Opening of the Tower.—Saturday last was the first free day at the Tower, and between ten and four o'clock nearly 4,000 visitors were admitted. Mr. Hepworth Dixon, with the assistance of a yeoman gaoler, conducted a large party, and rapidly described the historical associations of the principal apartments, finishing at the stone slab which marks the spot where Lady Jane Grey, Anne Boleyn, and other illustrious persons were executed.

Leicester.—A new memorial pulpit has been placed in St. Margaret's Church. It is of oak, and is designed in harmony with the screen near which it stands. It has a base of Portland stone, with steps of the same material. The whole is carved and moulded. On the upper moulding of the base is the inscription, "*In gloriam Dei et in piam memoriam Johannis Nedham vidua et liberi superstites posuerunt.*" Mr. Jackson, of Leicester, is the architect.

Fatal Accident.—On the 5th inst., Mr. Page held an inquest on the body of Mr. Horatio Alsop, aged 48, a builder, of Dame-street, Islington. The deceased was superintending some works at No. 8, Old Jewry, on Thursday in last week, when he stepped upon a skylight, which gave way with him, and precipitated him into a room below. Almost every bone in the body was fractured by the concussion, and death ensued shortly afterwards. Verdict, accidental death.

A Carillon for Shoreditch.—For the first time a carillon machine was tested at Shoreditch Church on the 30th ult., and a peal of bells upon which various tunes can be played by the aid of some ingenious machinery, rang out the "Easter Hymn" at mid-day. The instrument by which the music of the bells is produced is in many respects quite new. It was supplied and erected by Messrs. Gillett & Bland, of the Steam Clock Factory, Croydon.

Institution of Surveyors.—At the meeting held on March 15th, the paper read by Mr. E. Ryde, at the last meeting, entitled "The Rating of Country Mansions," was discussed. The next meeting will be held on Monday evening, April 12th, when the adjourned discussion on the Home Secretary's "Bill for Facilitating the Improvement of the Dwellings of the Working Classes in Large Towns" will be resumed.

Death of the Donor of several Churches. The death is announced of a much-esteemed and wealthy man, Mr. W. Gibbs, of Tyntesfield, near Bristol, at the age of eighty-four. Mr. Gibbs, who was a partner in the London firm of Anthony Gibbs & Co., and the Liverpool firm of Gibbs, Wright, & Co., was the giver of Keble College Chapel, Oxford, and the donor of several churches in Devonshire.

Proposed Town-hall for Nottingham.—After long consideration, the Nottingham Town Council have decided on the erection of a new Town-hall. It has been decided to spend 100,000*l.* or 150,000*l.* on the new hall. Three sites are recommended.

Birmingham.—A memorial window to the late Rev. G. S. Ball, in St. Asaph's Church, was unveiled on Good Friday. The window, which is in the centre of the chancel, was executed by Mr. C. Heritage, of this town, and comprises four subjects, viz., "The Agony in the Garden," "Christ before Pilate," "The Crucifixion," and "Resurrection," with texts under each. In the basement of each light, and immediately under the subjects of the Crucifixion and the Resurrection are the emblems of the pelican feeding her young, and the lamb and flag. The whole is surmounted by tracery, representing the descent of the Holy Spirit.

Stoppage of the Wisbech Sewerage Works.—The men employed on the sewerage works of Wisbech were paid off last week, and the progress of the undertaking is for the present suspended. It appears that the contractors have a large claim upon the Local Board of Health for extras, amounting to about 5,000*l.*, and the engineer not having issued any certificate respecting them the corporation cannot make any payments.

Improvement of Wantage Grammar School.—Lord Overstone and Colonel Loyd-Lindsay, M.P. (his lordship's son-in-law), have together contributed 1,000*l.* towards the improvements and extension of King Alfred Grammar School, Wantage. This town was the birthplace of the famous king. The subscription-list has received other handsome donations, including one of 250*l.* from Mr. Walter, M.P.

A Geologist's Fee.—At the meeting of the West Cowes Local Board on the 30th ult., a letter was read from the geological survey office recommending Mr. Bristow to make the geological survey of this parish. A letter from Mr. Bristow was also read stating that his fee would be thirty guineas for two days, and ten guineas a day for any longer time he was required. The clerk was directed to write engaging his services.

Gift of a University to Sheffield.—Steps are being taken at Sheffield to obtain a site for buildings in connexion with the Cambridge University, which the mayor (Mr. Mark Firth) intends to erect and present to the town, at a probable cost of 15,000*l.* The gift will be accompanied by certain stipulations as to endowments to be provided by the inhabitants.

Restoration of Bristol Cathedral.—At the anniversary meeting of the Bristol Cathedral nave restoration subscribers last week, it was stated that 41,000*l.* had been subscribed, and that 39,000*l.* had been expended: 3,000*l.* more were required to enable the committee to complete the work, which they hoped to do before next anniversary.

Monmouth Cattle Market.—The following tenders have been received by the Corporation:

Webb Brothers	£3,633 0 0
Lawrence	3,322 0 0
Jones (Gloucester)	3,295 0 0

On the motion of Mr. T. James, seconded by Mr. Alderman Watkins, Mr. Jones's tender was accepted.

Munificent Legacies.—Miss Mary Macfarlane, of Crieff, has left 9,000*l.* for the erection of a new Free Church in Comrie, Perthshire. She has left 9,000*l.* to the Jewish Mission Fund of the Free Church of Scotland; 3,000*l.* to the General Sustentation Fund; and other donations; in all amounting to a sum of over 20,000*l.*

Society of Engineers.—At a meeting of the Society of Engineers, held on Monday evening in the Society's Hall, Westminster Chambers, Victoria-street, the President (Mr. J. H. Adams) in the chair, a paper by Mr. W. G. Ferrar on "Practical Construction in the Colonies" was read.

Prize for "Hall-marking" Essay.—The Society of Arts having accepted the offer of Mr. Streeter to give 25*l.* as a prize for the best essay on "Secure Hall-marking," announce the terms on which the prize is to be contested. The competing essays must be sent in not later than the 1st of June next.

New Temperance Hospital.—A site for a new building for the London Temperance Hospital has been purchased adjoining St. James's Chapel, in the Hampstead-road, for 3,300*l.* A new hall in Blackfriars-road is to be erected at a cost of 6,000*l.*

Old London.—Our attention is called, but too late we fear, to a fine old mansion in Lime-street, City (date 1631), the sale of which took place on the 8th inst. The fireplaces, panellings, and ceilings are interesting of their kind.

City and Spitalfields School of Art.—The Exhibition of Ancient and Modern Furniture which was opened in the large hall, Skinner-street, by Lord Sandon, M.P., has proved most successful. It has been visited by over 6,000 persons, and especially by the artisan class, for whom it was particularly intended.

A Home for Incurables.—The greatest bazaar ever held in Scotland, was opened in the Kibble Conservatory last week, to raise money in aid of a Home for Incurables. When the day's gains were counted up, it was found that no less a sum than 4,120*l.* had been realised.

The Westminster Clock Tower Light.—The new signal light on the clock-tower at Westminster was displayed for the first time on the 5th inst. It is about 40 ft. higher than the one lately in use.

TENDERS

For two pairs semi-detached villas, Mount Pleasant, Hastings. Messrs. Jeffrey & Skuller, architects:—

Womersley	£2,847 17 0
Russell	2,750 0 0
Stentiford	2,670 0 0
Vidler	2,575 0 0
Howell & Son	2,572 0 0
King	2,496 0 0
Champion (accepted)	2,472 0 0

For alterations at the Elephant and Castle, S.E., for Mr. Weatherby. Mr. Hart, architect:—

Patrick & Son	£1,174 0 0
Walton & Son	1,149 0 0
Badcock	1,078 0 0
Canning & Mullins (accepted)	909 0 0

For Artisans' Cottages, Downley, Bucks, for Mr. Henry Collins. Mr. Arthur Vernon, architect:—

Hook & Oldney	£998 18 0
Rearell	985 0 0
Sexton	978 0 0
Loosley	943 0 0
Hunt	920 0 0
Ward	899 16 0

For building stables and coachhouse in the rear of the Farleigh Hotel, Amhurst-road, Hackney, for Mr. Thomas Arno. Mr. Edward Brown, architect:—

Pringle	£680 0 0
Palmer	676 10 0
Marr	596 0 0
Salt	560 0 0
Edwards (withdrawn)	520 0 0

For building nine cottages in Pimlico-walk, Hoxton, for Mr. Thomas Arno. Mr. Edward Brown, architect:—

Palmer	£1,080 0 0
Pringle	935 0 0
Salt	835 0 0
Marr	783 0 0

For alterations at the Rising Sun, Carter-lane, Doctors' Commons, for Mr. Ullmer. Mr. Edward Brown, architect:—

Marr	£485 0 0
Palmer	470 0 0
Salt	457 0 0
Loaring	427 0 0

For alterations and additions at the Duke of Ormond's Head, Princes-street, Westminster:—

Badcock (accepted)	£570 0 0

For school at Halford, Salop, for Lady Mary Windsor Clive. Mr. William Penstone, architect. Quantities supplied by Messrs. Batterbury & Huxley:—

	School.	Walls.
Pugh	£835 0	£196 0
Grosvenor	633 10	170 6
Hine	630 0	170 0
Treasure & Son	636 0	190 0
Bowers	654 0	160 0

For the erection of a house in Arkwright-road, Hampstead. Messrs. Spalding & Knight, architects. Quantities by Mr. G. Fleetwood:—

		Extra for Portland stone in lieu of Bath stone.
Shepherd	£5,284 0	£172 10
Brass	4,980 0	200 0
Dove Brothers	4,945 0	195 0
Outhwait	4,893 0	216 0
Hill, Higgs, & Hill	4,890 0	150 0
Mann	4,890 0	210 0
Enor	4,771 0	169 0
Gammon & Sons	4,720 0	150 0
Patman & Fotheringham	4,620 0	89 0
Burford (accepted)	4,574 0	88 0

For alterations at No. 66, Conduit-street, W., for Messrs. Darnley & Co. Messrs. Spalding & Knight, architects. Quantities by Mr. G. Fleetwood:—

Baugh	£269 10 0
Patman & Fotheringham	268 0 0
Clarke & Bracey	267 0 0
Gammon & Sons	255 0 0

For alterations at Winterton, near Southampton. Messrs. Spalding & Knight, architects:—

Martin & Sons	£290 0 0
Udall	225 0 0
Force	203 0 0
Clarke	197 5 0

For rebuilding house and shop, at West Ham, destroyed by fire, and restoring adjoining premises, for Messrs. Wilkinson:—

Stamp & Bowtle (accepted).

For erection of new schools at Hindle-street, Hackn Mr. E. R. Robson, architect. Quantities by Messrs. T. Northcroft, Son, & Neighbour:—

Crabb	£11,530 0 0
Harper	11,500 0 0
Braid, Jopling, & Co.	10,936 0 6
Crossley	10,040 0 0
Lewis	10,035 15 10
Timewell	9,967 0 0
Cowland	9,930 10 3
Parker	9,914 0 0
Bracker & Son	9,702 0 0
Hunt	9,565 0 0
High	9,490 0 0
Robbins & Co.	9,404 0 0
F. & F. J. Wood	9,370 0 0
Potter	9,125 0 0
Nightingale	8,987 0 0
Enor	8,929 0 0

For a small house in the Stoke-road, Guildford, for John Loveland. Mr. Henry Peak, architect:—

Swayne, jun.	£584 10 0
Pollard & Son	496 10 0
Pearce & Clark	491 0 0
Garnett	488 0 0
Mason	470 0 0
Strudwick	465 0 0
West (accepted)	435 0 0

For a small detached house in the Merrow-road, Gu ford. Mr. Henry Peak, architect:—

Mason	£1,050 0 0
Strudwick	1,046 0 0
Nye	1,024 10 0
Pollard & Son	955 0 0
Swayne, jun.	895 10 0
Pearce & Clark	849 0 0
Garnett (accepted)	873 7 0
Loe (withdrawn)	676 0 0

For a Mission Chapel at Cartbridge, Send, near Wok Surrey. Mr. Henry Peak, architect:—

Moon	£790 10 0
Swayne, jun.	784 10 0
Whitburn	778 11 0
Pearce & Clark	729 10 0
Garnett	723 0 0
Strudwick	680 0 0
Mason	675 0 0
West	660 0 0
Pollard & Son (accepted)	627 0 0

For alterations at No. 5, Cripplegate, West:—

Wells	£420 0 0
Ward	375 0 0
Smith	370 0 0
Sharp & Maxwell	366 0 0
Woodward (accepted)	315 0 0

For alterations and additions to 86, Fore-street, C Mr. J. C. Raid, architect:—

More	£1,810 0 0
Wilson	1,720 0 0
Atkinson	1,685 0 0
Wells	1,678 0 0
Sharp & Maxwell	1,645 0 0
Head & Co. (accepted)	1,640 0 0
Wilkinson	1,640 0 0

For warehouse and pawnbroker's shop, back of No. Praed-street, Paddington, for Messrs. Pearson & Bro Messrs. Bird & Walters, architects. Quantities supp by the architects:—

McLachlan	£780 0 0
Anley	730 0 0
Newman & Mann	699 0 0
Thompson & Smith	698 10 0
Laurence	684 0 0
Harris & Sons	682 0 0
Marks	677 0 0
Williams & Son	644 0 0

For new chapel, Fitzleet House, Bognor, for Sir Ja Tylor. Mr. E. l'Anson, architect. Quantities supp by Mr. Frederick Wallen:—

Newman & Mann	£2,035 0 0
Pusey	1,885 0 0
Bushley	1,872 0 0
Rider & Son	1,860 0 0
Coles	1,605 0 0

For reseating the German Church, Denmark-hill. Mr. Robert Martin and Mr. Aug. Weimer. Mr. E. Gruning, architect:—

	For deal.	For pitch p
Holland & Hannen	£298 0	£459 0
Newman & Mann	294 0	391 0
Coles & Sons	277 0	380 0

For repairs at Brent Lodge, Hanwell. Mr. E Notley, architect:—

Newman & Mann	£395 0 0
McLachlan	362 0 0
Brett	299 0 0
Greenwood	216 0 0

For new school buildings at Stepney-green, in con tion with the Stepney Meeting. Messrs. Searle & S architects:—

Brass	£4,243 0 0
Perry & Co.	4,098 0 0
Roberts	4,069 0 0
Sewell & Sons	4,032 0 0
Simpson & Baker	3,978 0 0
Dove Brothers	3,965 0 0
Newman & Mann	3,965 0 0

For new church at Hornsey:—

	Less seati and upper of tower.
Turner	£6,527 0 £1,008 0
Kirk & Randall	6,410 0 1,155 0
Booth	6,192 0 1,098 0
Macey	5,825 0 945 0
Dove Brothers	5,785 0 945 0
Carter	5,740 0 900 0
Wheeler	5,633 0 1,142 0
Adamson & Son	5,577 0 966 0

The Builder.

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Ecclesiastical Architecture of Ireland.

THE work published under the above title* formed originally a series of papers contributed to our esteemed contemporary, the *Irish Builder*, under the head of "Notes on the Ancient Ecclesiastical Architecture of Ireland," now put into a more compact and permanent shape by the author, in the hope both of preserving a record of remains which are in a gradual progress of decay, and also of awakening in the younger members of the profession a greater amount of interest in the architectural remains of Ireland.

The effort to attract greater professional interest to these remains is certainly not superfluous, for it is unfortunate that hitherto Ireland, as regard to her architectural and antiquarian remains, has been the field of the amateur rather than of the professed architect. Mr. Hill's lengthy able and thorough monograph of Cormac's Chapel, which we noticed some little time since (and to the excellence of which Mr. Brash bears the testimony) formed a recent exception; but for the most part Ireland has been architecturally a land of mystery, especially to students from this side of the Channel, whose ideas on the subject hardly get beyond a conviction that the country is full of extraordinary round towers whose use no one knows, and about which a score, if not so of different contradictory theories have been framed. Lest any one should be intimidated by the threat of a further theory, we may say at once that Mr. Brash dismisses the round towers at the outset as, at all events, not "ecclesiastical" in their origin. But his earlier chapters are occupied with the consideration of structures almost as enigmatical and even more primitive than the towers. It is in order to refute the statement repeated by several previous writers on Irish archæology, that no indigenous stone architecture is known in the country previously to the ninth or tenth century, that the author commences by drawing attention to the great number of remains of an ancient form of fort, such as that is known as the Cashel type (a thick, circular wall of masonry enclosing a space with small building of a single chamber in the centre), which are distributed over the country in a manner which precludes any idea of their being the work, according to previous conjectures, of nomadic invaders. The masonry of these, though irregular in its construction, is so carefully and ably put together as to evince no little practice and experience in the art of building, and their date is at least prior to anything which can be called "history" in Ireland. From the existence of these remains, of which at the time of the Ordnance Survey there were 10,000 in the province of Munster alone, the author holds that there cannot be a doubt "that on the introduction of the Christian faith into Ireland its professors found no difficulty in procuring skilled masons competent to the erection of the moderate-sized churches then in fashion, and in doing so that they built not according to any imported style, but after the primitive models in use among them for ages long before." In short, the early ecclesiastical structures of Ireland give evidence, in their plain and simple features, of the same process which was carried out on so much greater a scale when the basilica of Rome was modified into the church. But there is another remarkable historical interest about these early castles or forts of Ireland, and the first simple oratory buildings which succeeded them and were founded on their style of construction. The similarity between these structures, and such early Pelasgic examples as the Treasury of Atreus, and the gateway and walls of Mycenæ, cannot fail to strike the architectural student at once in turning over the illustrations to the first two chapters of Mr. Brash's work. The author does not omit to allude to it, though of course anything more than an allusion would have been opening a subject beyond the range of his book, and far too large and suggestive to be treated of merely in passing. The flat-coursed dome, or arch, with the walls corbelling inwards to a pointed apex, is shown in the section of the oratory at Gallarus (county Kerry), the straight-sided arch formed on the same principle, in that of St. Molua's Oratory, Killaloe; and the elevation of the existing remains of that at Leabha Mollagga (county Cork), except for the smaller scale and more regular coursing of the masonry, might pass for a door and part of a wall from some newly-discovered remains at Mycenæ. Are we to put these structures back, in point of time, to the supposed period of the Pelasgic remains eastward of the Mediterranean, and suppose them built by a contemporary and related family of builders; or are we to conclude that these forms naturally present themselves in early masonic construction, as the most readily dealt with, and the most simple and obvious manner of using unhewn or roughly hewn stone? Under either supposition, the considerations involved are curious and interesting enough.

The oratories which form the prelude, so to speak, to Irish ecclesiastical architecture, are mostly of diminutive size, and in single chambers; they are most numerous in the south and west counties. A further apparent connexion with ancient Classic architecture may be traced, possibly, in the prolongation of the longer walls of the cell beyond the cross-walls at each end, forming a species of *antæ*, which are always built with great care, and with squared masonry, whatever the nature of the walls may be. "The doorway is usually in the west, and, when otherwise, it will be found to be a later insertion." (Here, as we may conclude, the first influence of ritual appears in these early buildings.) "These doors are a very remarkable feature; they are built of massive blocks, usually the full thickness of the wall, the jambs inclining inwards towards the top, and covered by a flat massive slab, as a lintel, also generally in one stone; in some cases the entire doorway is formed of three stones, as at St. Mollagga's." The older oratories are roofed with the straight-sided horizontally-coursed arch before mentioned, and have but one window, always in the east. The buildings which Mr. Brash terms "oratories of the second class," form the connecting link between the older oratories and the churches. In these buildings, which are somewhat larger, the true arch appears in the shape of a barrel vault, under the straight-coursed triangular stone roof. The vault, as the author observes, helps to support the stone roof; it may be also noticed (as we remarked in our mention of Mr. Hill's monograph of Cormac's Chapel), that the weight of the triangular roof upon the lower segments of the vault helps to keep that in its place, and explains the manner in which some of the larger structures of this kind have stood with so little buttressing to resist the thrust of the vault. St. Kevin's Oratory, Glendalough, is figured as a typical specimen of this class of structure; tradition, which gives the building to this saint, places him in the sixth century; but all that can fairly be said, perhaps, is that there is no valid reason against this date, or one nearly as early.

In his chapter on "The Primitive Churches," Mr. Brash avers that "in no country in Christendom can we trace the progress of ecclesiastical architecture from existing examples so clearly as in Ireland:" and though this is rather a round statement, and will certainly surprise some of his readers, we cannot but say that he shows cause for it, so far as the transition from the oratories to the first buildings that can be called churches, and in which the straight-sloped roof and barrel vault, the west doorway and east window, are still the prominent characteristics. Indeed, it is suggested that the predilection of the early Irish church-builders for the solid stone roof, which presented considerable practical difficulties on a large scale, was one of the influences which retarded the advancement of church-building in that country in regard to dimensions. But when we arrive at the point when "forms derived from a Pagan age came to be disused, and forms prevalent in the Christian architecture of other countries began to be adopted, though with strong national peculiarities," the author admits that we have very insufficient data for determining the period of this transition, "as our native annals seldom record the erection of churches, though they constantly refer to the casualties they sustained." The rise

* The Ecclesiastical Architecture of Ireland, to the close of the Twelfth Century; accompanied by interesting local and antiquarian Notices of numerous ancient buildings of that Period." By Richard Rolt Brash, Architect, M.R.I.A., F.S.A., &c. Dublin: W. B. Kelly. London: Simpkin, Marshall, & Co.

of decorative architecture in Ireland has been very variously regarded as to its date and origin. Some of the previous amateur writers on the subject have made absurd errors in referring to the seventh and eighth centuries details which to the eye of the architect are at once seen to be connected with the style of the Norman and Transitional period. Opposed to this view is that which regards the decorative architecture of Ireland as derived in its main features from England in the Norman period: a conclusion which Mr. Brash, with a pardonable national feeling, seems disposed to resist as far as possible. But in looking at the doorways of Dysert and Clonkeen (plates xxiii., xxiv.), it is impossible to regard the details of the archivolts as of independent origin from those of English architecture of the Norman period. Mr. Brash wishes to argue that the geographical proximity of the islands could have little to do with any resemblance in their architecture, as there was little or no cordiality of intercourse between them during the early Gothic period. But builders and artists of all kinds have always been to a certain extent independent of mere political barriers, and it is impossible to suppose that those who built the Irish churches of the "Transitional" period were not acquainted with some part at least of the vast quantity of English work going on at the time. On the other hand, there is, combined with these distinctive features of Anglo-Norman architecture, a feeling and a character in some of the detail sufficiently distinct from anything English, and closely allied to that earlier Irish decorative art, of which specimens remain in such records as the Book of Kells, and in various instances of carved stonework in different parts of the country. When this, which is generally spoken of as a school of ornamental work indigenous to the country, comes to be worked out as a portion of architectural decoration, it is impossible not to be struck with its strong tinge of Oriental character. The strap ornament, as worked between the capitals, on the impost of the doorway of Killeshin Church, Queen's Co. (plate xxii.) has, in conjunction with the flowing ornament in the panel below, quite a Saracenic effect; the capitals of the west doorway of Temple Finghin, Clonmacnoise (plate xxvii.), preserve the outline of the Byzantine capital almost entirely. But perhaps the most noticeable example of this Oriental feeling is the extraordinary and (as far as we know) unique capital from the chancel arch of the Nuns' Church at Clonmacnoise (plate xxx.), which is totally unlike anything known in ordinary European Gothic, although the details of the archivolt decoration above might be assigned to such an example as the west door of Lincoln. These very extraordinary and unusual combinations of work belonging to two completely diverse schools of architectural ornamentation are exceedingly interesting, and well worth more attention than they have received at the hands of students of the history of architecture. The date of the Nuns' Church, one of the few early churches in Ireland of which the date can be accurately fixed, is the middle of the twelfth century.

Temple Finghin, Clonmacnoise, affords an opportunity of settling one of the arguments which has been used in favour of the ecclesiastical origin of the round towers, one of which is attached to this church, and was adduced by Dr. Petrie as an unanswerable proof of the correctness of his opinion in favour of such an origin of the round towers of Ireland. To the eye of the architect, Mr. Brash testifies, the evidence is just the other way; and, assuming the correctness of his representations, there can hardly be a doubt that he is right. In place of the tower being, as Dr. Petrie concluded, manifestly a portion of the edifice and built at the same time, it is evident to the practical architect that the tower existed previously, and was merely worked into the church in building. We may quote the author's own words on this point:—

"In the first place the courses of masonry in both buildings do not correspond, as would be the case were they jointly erected. Neither are they regularly bonded into each other, but the masonry of the church is *toothed* into that of the tower, a process known to masons when erecting a new building in connexion with an older one. Again, it is evident from the mode in which the roof is connected with the tower. Had they been coeval erections, a proper water-table would have been built into the wall of the tower, to protect the junction of the roof—a practice carefully attended to by all Mediæval builders. Instead of this, a chase was cut in the wall, and the roof let into it. Again, it is evident from an examination of the junction of the nave and chancel with the tower; the enlarged plan of this part clearly explains itself. After the church had been built against the tower, the builders found that the circular wall of the latter had an unsightly appearance in the angle of the nave" (the tower adjoins the south-east angle of the nave, close to the chancel arch), "or when erecting it they conceived that they could cut out that portion of the tower and so complete the angle of this part of the church. They accordingly commenced doing so by cutting the outer stones into two concentric circles; but having got through two-thirds of the thickness of the wall they were obliged to desist, as the tower had been so weakened by the necessary cutting for the connexion of the walls of the church, and by the proximity of the door, that it showed signs of giving way; as right over the angle of the nave is a settlement, and a crack in the tower—this crack has been closed externally as a part of the late repairs, but internally it is still quite visible. Not being able then to carry out their intention of completing the angle of the nave, they fashioned the masonwork into an angle pillar. The whole arrangement is still to be seen and examined; to the eye of the practical builder it tells its own tale as plainly as if he were looking at the whole operation."

Considerable space is devoted by Mr. Brash to the description and illustration of Cormac's Chapel, which, as we recently bestowed some space upon it (see *Builder*, vol. xxxii. p. 662), we must pass over, save with the remark that it appears to be the last and most important structure in which the old traditional method of building in Ireland was adhered to, before the Cistercians gave here, as they did wherever they went, a new impulse and almost a new era to ecclesiastical architecture. The system of the gabled stone roof could not very easily be carried out on a larger scale than it reached in this building, without at least very important modifications of structural design. The most important early Cistercian churches in Ireland are those of Mellifont, Boyle Abbey, and Jerpoint Abbey; the plans of the latter are given, and that of the octagonal building called, and probably with correctness, the baptistery of Mellifont. We have not space to follow the author through his remarks on these remains; but may call attention to his drawing of the capitals from Jerpoint (Pl. xlv.), two of which at least show a very unusual development of the semi-Norman scalloped capital, quite abnormal in character. The chapter on "Irish Masonry," as exhibited in the older masonic remains called *Raths*, and in the old stone-roofed (domical) huts of Connaught, illustrations of which are given, is of much interest; and again we are tempted to compare early Irish with what (for want of a better name) may be called Pelasgic masonry, in looking at the illustrations of the character of the former given on Plates li., lii. Few persons who have not been previously acquainted with ancient Irish work would suppose these to be specimens of any remains within the British Isles.

We should be glad, though it is a minor matter, if the book we have been noticing were free from those lapses of literary style and construction which architects who write seem to have such an unfortunate tendency to fall into. Or perhaps we do not know the language. Such a sentence as "the architectural student cannot fail with being struck," &c., may be good Irish, for aught we know to the contrary. It is certainly not English. But we heartily congratulate Mr. Brash on the result of his labours in a very interesting field of architectural study, and are glad to see that he proposes to return to the subject in a further work on the development of the Pointed style in Ireland. He is doing good service to all who are interested in architecture.

THE LOCAL GOVERNMENT BOARD AND THE WATER SUPPLY INQUIRY.

THE invitation given by the President of the Local Government Board, on the 2nd instant, to the deputation which waited upon him with reference to a Royal Commission on the Water Supply of the Country, for a statement of the points on which further inquiry would be useful, is not one that we can allow to pass without reply. At the risk, therefore, of repeating what must be familiar to many of our readers, we desire to attempt a sort of bird's-eye view of one part of the broad field which the Government are invited wisely and exhaustively to survey.

It must, in the first instance, be borne in mind that the insular condition and physical circumstances of the British Isles are such as to present the subject of water supply under a phase of great simplicity. We have no rainless districts. We have no parched and arid country that derives its entire supply of water from fountains fed by a distant rainfall. We are subject to no alternations of drought and of torrent, as are the lands watered by the mighty torrents of the Atbara and of the Uruguay. Every drop of water that feeds the springs of Great Britain falls in rain upon the surface of the island.

The first point, therefore, in an exhaustiv inquiry into the water supply of the country, i to ascertain the annual movement of the rainfal As to this, the considerable degree of informa tion which we possess is due, almost entirely, t private enterprise, energy, and perseverance To aid and render complete the method of loca observation already pushed so far by Mr. G. J Symonds and his allies; to associate the statis tics of rainfall, when duly tabulated, with thos other engineering facts to which we have t refer; and to make all this information freel accessible to the public, is the first *desideratum* The price of the present annual Report on th rainfall, while far from being more than i warranted by the value of the work, is yet suc as to keep it out of the hands of a large pr portion of the public. We require to hav monthly abstracts, gratuitously published in th newspapers, as to the movement of the wate supply. It will thus be necessary to give suc aid to an association that has already done s much for climatic science, as shall allow of th fullest and freest circulation of the importa knowledge already in course of collection.

While we have, as before remarked, no rainle districts in this country, the distribution of t rainfall is marked by great inequality. Thu while the registered rainfall over the watersha of the Thames valley has been as low as 16·1 i in a year (which was the case in the year 1832 the rain-gauge at the Styehead pass in th year 1872 registered the Tropical fall of 243·9 inches,—more than 20 ft. depth of wate falling directly from the clouds! The distribu tion of this copious and varying supply is alread given, to a certain extent, by the returns Mr. Symonds. It will be requisite to give completeness to this information, which amate skill, however admirable, has not the means compel. To ascertain the absolute distributio of the rainfall, referred to natural districts, ind cated on maps that can be compared with thos of the Ordnance survey, is a necessary ste before we can derive due information from t observations as to actual fall.

The third point requires organisation *initio*. It is the ascertaining of the evapor tion. When we know how much rain falls, ye after year, year by year, and month by mont on a given natural district, we shall want know what becomes of the water. We kno that, in one way or another, a large proporti of this water reaches the sea. We have to tra its course, that we may see how best to retain to divert such quantities as we require for vario purposes. We shall know the gross quantity, each district, when the steps indicated in t preceding paragraph have been taken. B this is of little use unless we know also the n available quantity. The first deduction to made from the former, in order to arrive at t latter, is the amount of evaporation.

As to this, our actual knowledge is not ma degrees removed from absolute ignorance. T amateur energy which has done so much supply the negligence of our central authoriti as to rainfall has proved unable to conflict wi the greater demands on skill, cost, and patie required for co-operative experiments. Eig series of observations of evaporation only wa published in 1873. The result of the highe figures was five times that of the lowest; not this enormous irregularity, whether it occurs fact, or whether it be a result of different a imperfect methods of observation, a question *per mille*, or even of *per cent.* In the valley the Colne, a well-known affluent of the Thame the experiments of Mr. Dickinson show th some 60 per cent. of the entire rainfall is evap rated. The mean of a group of observations Wisbeach, Bolton, and Manchester gives evaporation of 58½ per cent. of the rainfa But the evaporation cannot be expressed, in t actual state of our scientific knowledge, wi any accuracy, as a per-centage of rainfall. depends on so many other conditions, that t per-centage is only to be arrived at after num rous corrections. Indeed, it may be question whether there is any direct, and otherwise uni fluenced, natural relation, between the evapor tive results of a given season and locality, a the rainfall observations for the same time a place.

It is, of course, the case that, to a certa extent, evaporation depends on rain. But it only to a certain extent. Thus the most po tive results as to the annual evaporation of given district would be those derived from t surface of water. The evaporation from Wi dermere, or Ullswater, in twelve months, wou

be very little affected by the quantity of rain which, during that time, fell on the surface of either lake. Again, if we compare equal areas o land, of chalk, and of clay, the evaporation arising from an equal depth of rain falling upon each would be greatly different. It would be affected by the porous and thirsty nature of the soil. In one formation water is greedily swallowed before it has time to evaporate. In another, it is exposed to the vapourising rays of the sun, and to the lambent kisses of the winds. Variations of from 14 in. to 24 in. are shown in the few observations we now possess. It will require much more study before we are able even to know whether these are actual variations, or represent errors in observation. A thorough investigation of the general and special phenomena of evaporation is the third point on which information is needed. It is a point, unlike that of the amount and the distribution of rainfall, on which we are, even at this moment, confessedly quite in the dark.

When we are able to estimate the mean net rainfall of a district, we have to learn what becomes of the water. Here, again, scientific observation is in its infancy. It is obvious that we are now brought a third time to the same point. To give any real value to rainfall and evaporation statistics, we are taking for granted the availability of a map. We have, as we all know, in the Ordnance map, a scientific work of which the country may be justly proud. But the Ordnance map alone will not suffice for what we now require. It is at once too much and too little detailed. The Ordnance survey, however, will in great measure supply the materials for the WATER-SUPPLY MAPS. These will require to be drawn for their own special purpose, and no other. All those political details, so to speak, of towns, and roads, and inclosures, which form the very backbone of a map, topographically considered, are here unnecessary. Three points are requisite in a WATER-SHED MAP. We require, first, the delineation of the water-shed line, the edge of the collecting basin. To this should be added orographic heights, or references of the characteristic points to a given *datum*, such as Trinity high-water mark. Then we want the outfall lines to be marked with equal accuracy. Heights should be here also supplied, as well as the details of all artificial obstacles to outfall, such as mills and dams,—matters that will, before long, have to undergo a searching investigation. Thirdly, the geological formation must be indicated. Without this, knowledge of the physical outline of a country tells us comparatively nothing as to its water supply. The practised geologist, indeed, may be able to read between the lines of the Ordnance map, and to understand, from the accentuation of the slopes, on what system he is engaged. But this must not be left to hazard or to doubt. It is a part of the A B C of the matter. While, therefore, we have spoken first of rainfall, and of its distribution, and then of its evaporation, because, without knowing these details, we know nothing of the quantity of water which the soil is called on to absorb or to run off, it is obvious that an indispensable preliminary requisite for a systematic study of each of these important items, is the possession (that is to say the construction) of a good series of WATER-SUPPLY MAPS.

It may not be out of place here to remark that we have good reason for declining to trust to the effect of the famous rule of demand and supply for the preparation of these maps. Demand and supply ensure for the public maps made—to sell. If they do that, their object is answered. But that is not our object. We venture to suggest a simple rule, the adherence to which by all purchasers of maps would do more to improve this portion of graphic delineation than anything else that we can suggest. A map that is made with the purpose of communicating all the information possessed by its maker, in the best manner that he can command, ALWAYS BEARS ITS DATE ON ITS FACE. Its date is an essential portion of the information it should give. A map that does not bear it date on its face is a map made to sell. The only reason for the omission of the date is, that it is hoped that it will be bought by purchasers who would not buy it if they knew its real date. There can be little doubt that the mere acceptance, by Government or by public opinion, however expressed, of the necessity which we are now endeavouring to establish,—that of a series of WATER-SUPPLY MAPS, would produce a class of publications bearing that title. But we more than doubt whether that class would contain much solid grain in proportion to the chaff. The maps we require must be made by competent men, not for profit, but for scientific instruction. The cost to the country need not be large; since the information, for the most part, is already attainable. But the cost that would be saved by the employment of this method, whether measured in money, in time, or, in what is more precious than either, human health and life, is something that cannot readily be estimated.

The WATER-SUPPLY MAPS, then, while not altogether settling every question, would put before the engineer, the various local authorities, the Government, and the public, the means of advancing very far, and very rapidly, towards such a settlement.

Assuming, then, the preparation of a proper series of WATER-SUPPLY MAPS, we return to the question of absorption of water. This may be divided into two parts, namely, the absorption by organic beings, and that by the soil. The first of these is, to some extent, mixed up with the question of evaporation. Thus, the effect of a forest, or of a wide expanse of growing grass, or other vegetation, or evaporation, is considerable. We mention this as showing another source of difficulty in evaporative determination. But supposing that once arrived at, the total absorption by vegetation is a mensurable quantity. We can tell to a few pounds how much water is permanently absorbed by any crop. It comes into the scales at the harvest. How much has circulated through the intricate web of vessels, been absorbed by the roots, and breathed out by the leaves, is another matter. The water thus temporarily used by vegetables, and necessary for their growth, is out of all proportion to the quantity that remains chemically entangled in their growing tissue. The first must be included under the general mass of evaporated rainfall; the last only is a definite item of consumption.

So, again, with regard to the consumption of water by the species of the animal kingdom, a certain weight of water is converted into animal tissue. It is sold in the market in the form of beef and mutton. It is assimilated by the muscles of the rising youth. The greater demand, however, which is made by the animal world on the water supply of the districts which it inhabits, is temporary in its nature. The water thus used is not destroyed or evolved into its component gases. It is returned to the general system of aqueous circulation. It forms part of that outfall which reaches the sea; and the problem with regard to the quantity of water thus taken, is, how shall that circulation be so directed as to do the least amount of harm, and the greatest amount of good?

If we roughly average the mean rainfall of England as 36 in. of depth, we shall find that one per cent. of this quantity will supply 50 tons of water per head per annum to every human being in the island. A supply of this amount is not only very far in advance of the actual demands made by the population, but may be taken as a very sufficient allowance. If, for the remainder of the animal creation, we double that large proportion, we shall probably be very far outside the mark of either actual or probable demand. It is as to this TWO PER CENT. of our rainfall, *plus* the quantity last mentioned as required for the temporary and permanent purposes of vegetation, that all our trouble has to be taken.

It cannot be said that the problem, thus limited, is one before which the science of the day should stand aghast.

With regard to the absorption by the soil, this also comes under two heads. We may regard it, for the sake of clearness of thought (if not as a logical fact), as either temporary or permanent. We should call the temporary absorption that of those pervious soils which readily drink the rain, and allow it to sink to the impervious layer on which they rest. Bursting out again, in the form of springs and sources, from the lower lips of this impervious bed, the water rises to daylight; gives beauty to the landscape, and a home to the river-fish; collects into streams and rivers; and finally bears its stately course open and free to the sea.

But there is another system of pervious soils in which the action of the percolating water is very different. We refer, chiefly, to the upper, or flint-bearing, chalk. In this formation, which covers a very considerable part of the area of England, absorption of rain takes place almost as readily as in a sandy soil; but when the chalk has once absorbed the water, it is loth to let go its hold. It has an attraction for it which is probably due to some other cause than the simple mechanical structure of the stratum. So it is, however, that it retains large masses of water in a condition which may be compared to that of the spray of a waterfall. When you sink into the lower beds of the pervious chalk,—if the conformation of the country be not such as to assure a thorough drainage, as on the face of a chalk bluff,—you do not penetrate into water, but into something that is very damp. Leave a hole, and it will soon be found full of water. If we can conceive of the spray of a waterfall, distributed as a vast subterranean river, slowly making its way to the sea, we shall have a very adequate notion of what is going on under our feet in the valleys of the upper chalk. In the thorough investigation of this very important and interesting phenomenon lies the key to one very urgent class of water-supply problems.

Our readers will be now prepared for another suggestion. When we know how much rain annually falls on each naturally constituted water-shed district; when we know how much of this returns to the atmosphere by the process of evaporation; when we know how much is required for the vegetable, and for the animal kingdoms, for the farmer and for the sanitary engineer; when we know the soil of each district will lend itself to the service of life, either by its pervious, its semi-pervious, or its impervious consistency; but one step, as matter of outline of organisation, will remain to be taken. That is, the grouping of the country into great WATER-SHED DISTRICTS. To these the water-supply maps will bear the same relation that the different parts of any great surveying operation do to the whole. We shall thus be prepared to deal at once with principle and with detail; to view the water-supply question as a whole, and to carry out every subordinate part to the minutest detail.

The general physical aspect of England is such as to suggest a primary division into ten water-supply provinces. We are not about now absolutely to insist on the number. But it has been arrived at not only as the result of much thought and study on the map, but as a consequence of personal acquaintance with each of the districts we have to indicate, either from residence, travel, or actual direction of important works within their limits.

These districts are delineated, in the first instance, by the physical conformation of the country. They form so many catch-water basins, chiefly drained either by one main outfall, or by a group of outfalls of the same character. While each, of course, must be expected to contain more than one geological system, the geological division will, as a rule, be found to coincide with the physical or orographical demarcation. For each of these ten districts, therefore, also as a general rule, will be required a different method of dealing with the general question. The ten outfalls and water-shed districts of England will form ten cases of the general question of the distribution and utilisation of the water supply of the country.

We have barely space to glance at the main characteristics of these districts. In that of the Tyne and Tees the rivers have cleft themselves deep and precipitous channels. Impervious and rocky hills throw down rapidly accumulating torrents. Supply is ample. The chief need of art is to prevent the waste of that supply, unused; and the fouling of the precious gifts of nature by the short-sighted greediness of man.

The district drained by the Humber reaches into the fertile plains of central England. It is characterised by softly-flowing streams, and richly-watered plains. It is less pressed upon by the needs of concentrated masses of people than some other districts. The removal of such obstacles as water-mills, and the avoidance of thriftless pollution of the rivers, are probably the most pressing points to regard in this district.

In the district drained by the Wash, and other semi-artificial outlets, we have the cradle of the hydraulic engineer. In these regions Englishmen emulate the industry and courage of the semi-amphibious Dutch; and learn to live and thrive at a level below low water-mark.

In the Thames district the great problems of hydraulic and sanitary works have advanced in a degree unknown to the rest of England. They are, however, very far from being solved. The utilisation of the under-current, through the flint-bearing chalk, for the purposes of human supply, is the step in this district which at the present moment chiefly demands elucidation.

The southern water-shed of England contains comparatively short river courses, and, while demanding a treatment peculiar to itself, is less

fertile in great problems than are either the more rapid or the more sluggish courses of other outfall systems.

The Devonian and Cornish district has a main water-shed to the South, with a less important fall on the north-west of its mountainous backbone. It joins the wide and important district of the Severn, which touches that of the Mersey and the Dee, shutting off to the west the separate district of the western portion of the principality.

Lastly, the Cumberland district contains most of those great natural reservoirs, the waters of which those who have not deeply studied the subject in all its bearings have proposed to carry across England, to feed the abundantly watered valley of the Thames.

Space forbids us now to add more. We hope that the points indicated will be taken up by those who have the ear of the Government and of the country; and that it may thus become evident, not only that there are great points on which inquiry is necessary, but that they are points on which a systematic and professionally well-directed scrutiny cannot fail to secure invaluable results.

SHAKSPEARE IN LONDON.

SHAKSPEARE was in London for a time, but he was not of it. He came to London to make his way in the world, and when he had attained his object he left it, apparently with pleasure. He was not a Londoner in the sense that his contemporary Ben Jonson was one, but still he has preserved in his plays many London localities and much London life. Amongst other places brought upon the stage are the palace at Westminster, the Tower of London, Baynard's Castle, Ely House, Holborn, the home of "time-honoured Lancaster," York Place, where the haughty Wolsey kept his court, and the ever-memorable Boar's Head in Eastcheap, frequented by that wonderful group of characters, with Falstaff at their head, in the description of whose symposia Shakspeare poured out the richest flow of his humour. Therefore, although we cannot tell for certain where Shakspeare lived in town, Elizabethan London has been fondly styled Shakspeare's London. It is true that most of the local incidents of the poet's life are associated with Stratford; but still he lived for several years in London, and a knowledge of the appearance of the city when he came up to Town will aid us somewhat in realising his life and character, for the surroundings help to form the man.

The first part of Mr. Halliwell's long-looked-for "Illustrations of the Life of Shakspeare" has just appeared, and as the author has devoted particular attention to the state of London in Shakspeare's time, we shall be able to draw from its pages several facts not hitherto known. We cannot tell the exact date of Shakspeare's arrival in London, but we can place it within certain limits. It was after the baptism of his first child, in May, 1583, and before 1592, when Robert Greene referred to him as an actor and writer. Most critics have chosen to place the composition of his earliest play in 1591, but this is mere surmise, and he had probably written plays before that year. What we desire to find out are the physical and moral features of London during the last quarter of the sixteenth century. Fortunately, about this time the first maps of the city were drawn, which give us as accurate a view of its figure as the contemporary writers do of the manners of its inhabitants. First of all we must bear in mind that, although the streets within the city walls were densely packed, places that are now integral parts of the town were then countrified suburbs. In Agas's map, Finsbury-fields, Moorfields, Spitalfields, and East Smithfield are covered with windmills, and appear to have been used partly as bleaching-grounds for the laundress, and partly as grazing land for the cattle.

London has always appeared to the imagination of the adventurous country youth to be the home of golden promise. If he can only get there, he believes that his successful career has commenced; but it appears that in Elizabeth's reign there was pretty much the same difficulty in obtaining employment as there is now. This is illustrated by a curious account of the early life of John Sadler, a native of Stratford-on-Avon, and one of Shakspeare's contemporaries, which has come down to us:—"He joined himself to the carrier, and came to London, where he had never been before, and sold his horse in Smithfield; and having no acquaintance in London to recommend him or assist him, he went from street to street, and house to house, asking if they wanted an apprentice, and though he met with many discouraging scorns and a thousand denials, he went on till he lighted on one Mr. Brokesbank, a grocer in Bucklersbury, who, though he long denied him for want of sureties for his fidelity, and because the money he had (but ten pounds) was so disproportionate to what he used to receive with apprentices, yet, upon his discreet account he gave of himself and the motives which put him upon that course, and promise to compensate with diligent and faithful service whatever else was short of his expectation, he ventured to receive him upon trial, in which he so well approved himself that he accepted him into his service, to which he bound him for eight years." The stage was highly popular at this time, and we have the authority of a letter from a zealous Protestant to Sir Francis Walsingham (dated Jan. 25, 1586-7) for the fact that "every day in the weeke the playeres billes are sett upp in sondry places of the cittie, some in the name of her Majesties menne, some the Earle of Leic[ester], some the E. of Oxfordes, the Lord Admyralles, and dyvers others, so that when the belles toll to the lectoures, the trumpettes sound to the stages, whereat the wicked faction of Rome lawgheth for joy, while the godly weepe for sorowe. Woe is me, the playhouses are pestered when the churches are naked. At the one it is not possible to gett a place; at the other, voyde seates are plentie. . . Yt is a wofull sight to see two hundred proude players jett in theire silks, wheare fyve hundred pore people starve in the streetes." As a consequence of this popularity many of the actors became rich, but although the profession required no capital and but little apprenticeship, it is quite possible that those who were reaping the harvest were not too anxious to welcome volunteers to their ranks. When Shakspeare came to London there were only two regular theatres on the north of the Thames, although it is true that inn-yards and other buildings occasionally were used for dramatic exhibitions. These two places of entertainment—the Theatre and the Curtain—were both situated in the suburbs at Shoreditch, then a straggling road leading to St. Leonard's Church, which stood among the trees. The players had reason for their settlement beyond the jurisdiction of the rulers of the City, for the Mayor and Corporation were violently opposed to all theatrical representations, but the actors found that even in Shoreditch they were not beyond the reach of persecution. In Stockwood's sermon, preached at Paul's Cross on the 24th of August, 1578, the playhouses are very hardly dealt by. The preacher says,—"What should I speake of beastlye playes, againste which out of this place every man crieth out? Have we not houses of purpose built with great charges for the maintainance of them, and that without the Liberties, as who would say,—There, let them saye what they will saye, we will play. I know not how I might with the godly learned especially more discommende the gorgeous playing-place *erected in the fieldes* than to terme it, as they please to have it called, a theatre, that is even after the maner of the olde heathnish theatre at Rome, a shew-place of al beastly and filthie matters, to the which it can not be chosen that men should resort without learning thence muche corruption." Not only were the theatres condemned as centres of a moral plague, but they were prohibited as the cause of physical infection. On May 3, 1583, the Lord Mayor wrote as follows to Sir Francis Walsingham,—"Among other we finde one very great and dangerous inconvenience, the assemblie of people to playes, beare-baiting, fencers, and prophane spectacles at the Theatre and Curtaine, and other like places, to which doe resorte great multitudes of the basest sort of people, and many enfected with sores runing on them, being out of our jurisdiction, and some whome we cannot descerne by any diligence, and which be otherwise perilous for contagion, beside the withdrawing from God's service, the peril of ruines of so weake byldinges, and the avancement of incontinencie and most ungodly confederacies." No doubt the quiet manor of Shoreditch was not morally improved by the settlement of the players in its midst; and we know that the place became notorious for the bad character of its female population. Mrs. Millwood, the ever memorable seducer of George Barnwell, lived "next door unto the Gun," in Shoreditch, and the old literature bears abundant testimony to the bad repute in which many of the houses were held. We forget this now, and only remember that the parish register of St. Leonard's records the burial of Will Somers the jester, Richard Tarlton, the clown, James Burbage, the builder of the Theatre, and his greater son, Richard Burbage, the actor of Shakspeare's heroes. Mr. Halliwell has collected a considerable amount of interesting information bearing upon the origin of the Theatre and the Curtain, which illustrates the history both of London and of the stage. In the marshy grounds situated to the west of the High-street, leading from Norton Folgate to Shoreditch Church, sprang a sacred well or fountain, which gave its name to the liberty of Halliwell or Holywell. The lands in which the well was situated belonged to the Priory of Holywell until the dissolution of the monasteries, in the reign of Henry VIII. In the year 1576, a small portion of the estate belonged to one Giles Allen, who leased houses and land situated between Finsbury-field and the public road to the Church, to James Burbage, a joiner by trade, but at this time a leading member of the Earl of Leicester's Company of Players. Burbage seems to have been a practical man, and covenanted with Allen that if he expended 200*l.* upon the buildings already on the estate, he should be at liberty "to take downe and carrie awaie to his and their owne proper use all such buildinges and other thinges as should be builded, erected, or sett upp, in or uppon the gardeines and voide grounde by the said indentures graunted, or anie parte therof, by the said Jeames, his executors, or assignes, either for a theatre or playinge-place, or for anie other laweful use for his or their commodities." He gave a premium of 20*l.* for a lease of twenty-one years, at an annual rent of 14*l.*, and very soon had his house ready; this being, as Mr. Halliwell says, "the earliest fabric of the kind ever built in this country," was emphatically styled "The Theatre." In the summer of 1577 it was a favourite resort; but on the 1st of August the Lords of the Privy Council closed it "for thavoiding of the sicknes likelie to happen through the heate of the weather and assemblies of the people of London to playes." Burbage died in 1579, and soon afterwards the Theatre was closed, as we learn from "Skialetheia," published in 1598, where we read:—"But see yonder,—one, like the unfrequented Theater,—walkes in darke silence and vast solitude." Previously to his death, negotiations were pending with Allen for an extension of the lease, but no agreement was come to, and, therefore, Cuthbert and Richard Burbage (to whom their father James had transferred the property) removed the "wood and timber," in accordance with the terms of the lease in December, 1598, or January, 1599. The Burbages engaged Peter Streete, builder and carpenter, to remove the building to Southwark, where the materials were used in the construction of the "Globe." The "Curtain" enjoyed a longer life than "The Theatre," for it appears to have been commenced very shortly after that place, and to have continued in use until Charles I.'s reign. The earliest notice of this theatre by name occurs in Northbrooke's "Treatise on Dicing, &c.," licensed in December, 1577, where we read, "Doe you speake against those places also which are made uppe and builded for such playes and enterludes, as the Theatre and the Curtaine is, and other such lyke places besides." It has been supposed by some that the name of the house was derived from the fact of a curtain being then a novelty among stage properties, and Aubrey speaks of the place as the "Green Curtain"; but documents prove that a piece of ground belonging to the Priory of Holywell, upon which this theatre was built, was named the "Curtain." As both these theatres were situated close to Holywell-lane, which still exists, there is little difficulty in realising their relative positions. The site of the Theatre was a little to the north of the lane, near what is now Deane's-mews. The little entry out of Curtain-road, now known as Gloucester-street, but called in 1745 "Curtain-court," marks the site of the Curtain Theatre. We thus see that the back of the present Standard Theatre is only a short distance from the classic ground where the first London theatres were built. In the olden time plays were acted in the afternoon, and, therefore, the audiences who passed through the meadows on their way to the theatre had no unpleasant walk, if the weather was fine. Sometimes, however, it was the reverse, and the frequenters of the pit had then some reason to complain. The author of "Jack Dawe's Prog-

ostication" (1623) writes, "If, at this time, about he houres of foure and five, it waxe cloudy, nd then raine downeright, they shall sit drier n the galleries than these who are the under-tanding men in the yard." The roofs of both he Theatre and the Curtain merely covered the tage and galleries, and the yard was therefore aft open to the sky. The charge for admission o the yard was one penny, but those who anted a seat in the gallery had to pay an extra ge. Lambard, in his "Perambulation of Kent" 1596), informs us that none who go "to Paris ardein, the Bell Savage, or Theatre, to behold eare baiting, enterludes, or fence play, can ac-ount of any pleasant spectacle unlesse they rst pay one pennie at the gate, another at the ntrie of the scaffolde, and the thirde for a quiet tanding." As we have before noted, Shaks-eare's arrival in London could not well have een later than the year 1591, and Mr. Halliwell has onclusively proved that at that time there were nly two regular theatres in London. On the trength of a forged document, the building of he Blackfriars Theatre has been placed in the ear 1576, but it really did not come into xistence until twenty years afterwards, and the Rose at Southwark, although contemplated in 586, was not opened until early in 1592. The Paris Garden building, although erected in Henry VIII.'s reign for bull and bear baiting, as only converted into a theatre in James I.'s eign.

Now, as no one has doubted that Shaks-eare's first occupation in London was connected ith the stage, we see that he must have been mployed either at the Theatre or Curtain, or at oth. There is, however, a difference of opinion s to what his duties were, and Mr. Halliwell elieves in the tradition, which he traces back o Sir William Davenant, that Shakspeare stood t the playhouse-door and held the horses of isitors during the hours of performance. It s by no means proved that the poet left Strat-ord in abject poverty; and his early acquain-nce with the actors that visited his native own would be more likely to help him to an ntroduction to the inside than to the outside of he theatre. With his powers as an actor and uthor, it seems hardly conceivable that, when nce introduced, he should not have been cordially elcomed. Of course those who believe in the tra-ition must place Shakspeare's coming to London ong before 1591, because in 1592 the popularity of is pieces had made some of the writers in pos-ession of the stage jealous with the fear that hey would be thrown in the shade by the rising un. Before April, 1597, "Romeo and Jul et" ad been acted at the Curtain Theatre, by the Lord Chamberlain's servants, and as early as December, 1594, Shakspeare was a prominent nember of this same company. The discovery of this most important fact is due to Mr. Halli-vell, who found among the accounts of the Treasurer of the Chamber, the following memo-randum:—"To William Kempe, William Shaks-peare, and Richard Burbage, servauntes to the Lord Chamberleyne, upon the Councelles warrant, dated at Whitehall XVto. Marcii, 1594, for twoe severall comedies or enterludes, shewed by them before her Majestie in Christmas tyme laste paste, viz., upon St. Stephen's daye and Innocentes daye, xiij*li.* vis. viij*d.*, and by waye of her Majesties rewarde vi*li.* xiijs. iiij*d.*, in all xx*li.*" Previously to the publication of this docu-ment, the earliest authentic notice of Shaks-peare's connexion with the Lord Chamberlain's company was that which occurs in the list of actors who performed in Ben Jonson's comedy of "Every Man in his Humour," in 1598.

When the Globe was built, at the close of the sixteenth century, and the lease of Blackfriars was bought back by Cuthbert and Richard Bur-bage, the Lord Chamberlain's company made these theatres their head-quarters, and it was on the north and south banks of the Thames that most of Shakspeare's masterpieces first appeared; but it would not be fair to defraud the earlier theatres of their share in that associa-tion with the fame of the great poet, which makes sacred ground of the places he frequented.

The large mass of valuable information in the first part of the "Illustrations of the Life of Shakspeare" causes us to look forward with interest to the publication of more. The design of the work is stated by Mr. Halliwell himself to be "a critical investigation into the truth or purport of every recorded incident in the per-sonal and literary history of Shakspeare." He proposes to add notices of the poet's "surround-ings; that is to say, amongst others, of the members of his family, the persons with whom he associated, the books he used, the stage on which he acted, the estates he purchased, the houses and towns in which he resided, and the country through which he travelled."

When completed, this work will be a noble monument to Shakspeare, more honourable to his memory than any statue.

A MANUAL OF BRICKLAYING.

Among new numbers and new editions of Weale's Rudimentary Series, is a manual of practical bricklaying,* intended as a guide to beginners in the trade, or for those "who have not had the opportunity of seeing so much of the higher branches of work" as they might have wished. The writer has, as he tells us, intentionally used language as simple as the subject will allow, and terms well understood in the trade; the greater number of books on building construction being, as he considers, written in such terms that the majority of working men would find difficulty in understanding them without continual reference to a technical dictionary.

There is considerable truth in this, and the author of this manual is to be commended for his simple and concise way of giving his information, and for the directly practical nature of most of his remarks. The ordinary problems and difficulties of bricklayers' work are explained, from foundations and footings to cutting and gauging arches. Pointing, brick-paving, and tiling receive due attention. A chapter is given to the simpler problems of geometry and mensuration, which are likely to be of use to the working bricklayer; and a section on slaters' and plasterers' work is added, for the benefit of workers in out-of-the-way country districts, where this part of the work has sometimes to be undertaken by bricklayers.

While commending the general practical character of the treatise, we can hardly regard it, however, as leading to a proficiency in the higher branches of the trade; for it appears to us to be too much based upon established usages, some of which have nothing but usage to recommend them. Under the head of "bonding" we have the old article of faith, that though English bond is much the stronger, and is therefore used in all buildings "where strength is a principal object," the appearance "is not considered so neat as Flemish bond." Who does not consider it so neat? The bricklayers themselves, we suppose. The best brickwork in the brick-building countries of the Continent, where a degree of architectural effect is realised in brickwork such as never has been attempted in England, is entirely what is now called English bond, but which is no more English than the other; in fact, much less so. There is a great deal to say about matters and methods for colouring brickwork, so as to make it all uniform and "like one block"; and unless the prescriptions given are duly attended to, it will be impossible, we are told, to get the bricks all the same colour. Who wants them all the same colour? The varied tints of brickwork are just what relieve the surface and give tone to it, especially when old. Then there is much detailed advice about tuck-pointing, concerning the using of which the shortest and directest advice is "Don't." Our friend is a follower of the precedents of the English trade, again, about mortar joints, and the use of mortar generally. He calls attention, in good time, to the probable mischiefs of cement grouting in the centre of a wall; the result being, as cement swells and mortar shrinks, that the wall so constructed is likely, in the end, to have all the weight resting on its middle portions only. But in his advocacy of thin joints, he again ignores the fact that the best and most lasting brickwork that has been built, in Roman and Mediæval times, is all built with thick joints. He is of opinion that a thick mortar joint means extensive settlement. No doubt it does, if mortar is made thin and sloppy, and with mud instead of sand. The question is, in fact, between a dry brick and sloppy mortar, or a wet brick and stiff good mortar; which latter, again, we repeat, is what all the best (and the best and most effective looking) brick-work has been constructed with. If the mortar is what it should be, it has no business to give any more than the brick. That it very seldom is what it should be, is probable enough. In the mention of wood and hoop-iron bond, the author rightly condemns the former as a destructive agent in a wall, passively if not actively. But he should have added that the iron bond ought only to be regarded as a temporary expedient for additional security till the walls have fairly set and arches come to their bearing, &c. But the oddest instance of the prevalence of trade practice over common sense that we notice, occurs in the remarks on cutting and setting out arches. It is a pity, by the way, that the foolish use of the word "Gothic," to mean anything pointed, is kept up here; and a segmental pointed arch is described as "a reduced or modified Gothic." It is time intelligent workmen should be taught to use the nomenclature of styles in its true meaning, and not in this kind of shop phraseology. It is gratifying to see that the flat arch (called here the "camber arch") is described as the most difficult to cut and set; it would be still better if it were impossible. But our particular instance is in regard to the directions for setting out what the author calls a *semi-ellipsis* arch,—a three-centred one. The workman is directed here to fix the shape and bevel of the brick according to the radius of the larger (centre) curve, and then continue the same pattern of brick through the curves of smaller radius on the haunches of the arch, and then doctor the joints so as to make the bricks work in to the smaller radius. But it is considerately added, that "it is thought by some" that the moulds can be taken by drawing lines from equal divisions on the extrados to the respective centres; "but it is evident the bricks in the arch cannot be all of one size and shape if this is done, although there is little doubt the arch is stronger that way, owing to there being a better skew-back for the crown than there would be if each course were cut to one mould; it is unnecessary to say that this is the easiest method. But the appearance is not so good, *for*" (we like that "for") "it is an understood thing in the trade that all courses of an arch should be of one size."

Could there be a more delightful piece of stupidity? The one way is the strongest, it is the mathematically correct way, it is admitted to be the easiest way (the right way is generally the easiest, if people would only see it), but it is not to be employed, because it is "an understood thing in the trade" that it shall be done the wrong way; and (apparently) whatever is the understood practice in the trade must necessarily look best. It is fortunate the "inspired workman" has not got it all his own way yet.

Apart from such occasional lapses, the book will be useful to those to whom it is addressed, especially in regard to the practical geometry and mensuration chapters, and as a compendious memorandum of the usual practice in brick-layers' work. But it is certainly capable of being improved upon, without losing the simplicity and practical character which its author has rightly aimed at.

* "The Rudiments of Practical Bricklaying." By Adam Hammond. Illustrated with sixty-eight woodcuts. London: Lockwood & Co.

CHARING CROSS FLOATING SWIMMING-BATH.

Just now, after long-prevailing easterly and north-easterly winds, often accompanied with cold rain, the thought of a plunge into a river is about as pleasantly inviting as the idea of "vinegar to the teeth and smoke to the eyes"; but the dog-days, the time of sweltering heat, and of drought, the time when a souse in cold water will be one of the most exquisite luxuries within reach, will come again, and it is well that preparation should be made for the coming of such time. The Floating Swimming-Baths Company have made a good beginning in the erection, fast approaching completion, of the first of a series of structures that will multiply as rapidly, it may be hoped, as the Board Schools, additions to which have to be so often recorded.

Passing, as the River Thames does at London, for miles between a dense population upon each bank, it ought to be a favourite bathing-stream. The two main reasons why it is not are obvious, —the demands of common decency, and the impure condition of the water. These considerations, however, are not bars to the irrepressible *gamins*, troops of whom may be seen gambolling *in puris naturalibus* on the edges of the Thames in July and August. The Floating Swimming-Baths Company are removing the bars to bathing in the Thames by providing pure water and privacy.

Their first structure, at the north end of

Charing-cross Railway bridge, will be completed about the beginning of the bathing season,—say the end of May or the beginning of June,—and will be, in addition to its uses, quite an ornament to the river. The substructure, which is entirely of iron, was built by the Thames Ironworks Company, and was floated from their works to the station it now occupies on the up-stream side of the viaduct. Buoyancy is obtained by two longitudinal bulk-headed box-girders, nearly 12 ft. deep, and about 2 ft. 6 in. wide. The framework of the bottom consists of kelsons and cross girders, to which iron plates are riveted under the entire surface, which is smooth. The ends are also bound and held together by transverse bracings. Above, the hull, so to say, is bound by two arched box-girders, so formed as to admit of an effective view from one end of the bath to the other.

The superstructure is being executed under contract by Messrs. Braid, Jopling, & Co., builders, of Vincent-square, whose work seems to be excellent in workmanship and materials alike. The structure is 177 ft. long and 30 ft. wide. The water area of the swimming-bath is 135 ft. by 25 ft. The depth will be 7 ft. 3 in. for 50 ft. at the west end, from which it will diminish by a uniform slope to 3 ft. at the east end. The floor of the bath will be of dressed 3-in. planking, fastened by brass screws to cross-bearers, resting upon iron standards fixed to the bottom of the hull. On the embankment side are two ranges of dressing-boxes, supported upon cantilevers, that project from the back of the main structure. Another range of dressing-boxes across one of the ends brings up the total number to about four dozen. In addition to these a large, well-lighted dressing-room is provided over the machinery-room at one end of the bath, and at the opposite end is a spacious refreshment-room with windows of polished plate glass from which a view of the river is commanded, but with blinds so adjusted as to prevent the view from being reciprocal from the river. There will be two approaches from the Embankment by swing bridges, that rise and fall with the tide, as the bath itself does under the control of guide-rods that keep it in position in the same wa asy the steam-boat stages are worked. At low water the bath will rest upon a gridiron, which will effectually obviate any strain upon the framework or shifting from its proper position. At present about eighty tons of iron ballast is used to steady the structure while the work is in progress. This will be removed when the water is let in.

The sky-line of the bath is broken by domed roofs near each end, with glazed crowns louvred and finished with ornamental metal finials. The central ridged portion of the roof is coved and depressed, below the domes; it has also broad belts of glass, louvred at the crown, and will be finished with a pierced ornamental metal cresting. The lower parts of the roof will be covered with zinc plaques. The principal front to the river is entirely of fluted glass, excepting, of course, the wrought-iron ribs and the sash-bars.

The bath will contain 100,000 gallons, and machinery is provided for supplying it with 500 gallons of fresh water per minute. The machinery-room, in the basement at the east end of the building, is furnished with a 14-horse power portable boiler, and two centrifugal pumps with 7-in. pipes, that are equal to the discharge of 300 gallons each per minute. Four large boilers project from the machinery-room, from which they will be stoked, into the bath, and by means of these the temperature of the water may be raised at pleasure, but it is not contemplated, we believe, to make the water at any time more than tepid; the degree of heat, however, is only a question of coal consumption, ample boiler-power being provided for any requirement. The floor of the bath over the boilers is of perforated iron plates. The water supply is to be taken from the river at or near high water. It will pass from the river into the large iron tank filters placed along each side of the machine-room. From the filter-cisterns the water will be pumped continuously into the bath, which is provided, of course, with outlet ports for the overflow. Efficient filtration is, it may be supposed, a matter of great importance, and has received due attention. After numerous experiments and prolonged trials, the conclusion has been arrived at that the system patented by Mr. E. Perrett, of Abingdon-street, will best meet the requirements. The process employed is to separate solid impurities by mechanical means. Charcoal is not required or used, but, whatever the medium may be, the desirable result is attained of producing water that, after treatment, is simply perfectly limpid.

The structure and its details have been designed by Mr. Perrett; Messrs. Braid & Co., as stated, are executing the iron and wood work, roofing, &c.; the machinery is supplied by Messrs. C. Powis & Co.; Mr. W. Smith is the clerk of the works.

The success of the company will necessarily depend very much upon their tariff, and the efficiency of their management. In the event of these proving satisfactory, there can be little doubt that a number of similar erections on both banks of the river, and upon an enlarged scale, will follow the pioneer bath at Charing Cross. We hear that some enthusiastic patrons of the art of natation are ready to use the bath as a swimming school, and to give lessons by competent teachers to certain classes of learners, free of charge.

THE WATER SUPPLY OF LIVERPOOL AND THE ERECTION OF NEW BATHS.

THE water supply of Liverpool is at present causing much anxiety, and forms a subject of grave discussion amongst the local authorities. There seems to be a considerable diversity of opinion in the Municipal Council as to the present sources of supply, one party inclining to the belief that the town is in danger of a water famine, whilst others contend that, owing to several millions of gallons of water having latterly been saved weekly, by the introduction of a new system by the water engineer for preventing waste, there was no necessity for any such apprehension. Amongst those who believe that a largely-increased supply, from entirely new sources, is absolutely necessary are the chairman and several members of the Water Committee, and it appears that an expenditure, amounting to between 2,000*l.* and 3,000*l.*, has already been incurred in the employment of Mr. Hawksley, C.E., Mr. J. F. Bateman, C.E., and Mr. Glaisher, for professional advice on the question of a new supply to the town. Mr. Bateman has reported in favour of two alternative schemes, both of which may be pronounced of a comprehensive, if not of a gigantic, character. In one of these schemes Mr. Bateman proposes to convey a supply from the river Wyre, with its tributaries the Brock and the Calder, yielding about 26,000,000 million gallons per day, at a cost of 2,141,000*l.* The sources of this supply are some fifty miles northwards of Liverpool, and the conduits and pipes would have to be carried along the route through Preston and the Lancashire towns. Mr. Bateman's other scheme is still more formidable, and it is this which he favours most. It is no less than a proposal to convey water to Liverpool from the Westmoreland lakes. Ullswater is the lake from which Mr. Bateman proposes to obtain a supply, which he says would be sufficient for both Liverpool and Manchester. One tunnel would be required eight and a half miles long, and the cost to Liverpool would be 2,421,000*l.* The distance of Ullswater from Liverpool is about eighty miles.

The subject came on for discussion at a meeting of the Town Council last week, when Mr. Samuelson, one of the members, said he thought it was quite time the Chairman of the Water Committee should pledge himself to bring before the Council the question of supply of water to the town. The urgency of the requirement of a farther supply of water to Liverpool was apparent to every one. He candidly confessed that he had no faith in the statements which had been made as to the saving of water, and urged that if they had a good supply of water, they were, upon sanitary grounds alone, bound to give it to the public. He desired the Chairman of the Water Committee to let the Council know what was really meant to be done. Mr. Beloe, on the other hand, said he was not one who shared in the alarm felt as to a threatened scarcity of water, although he was willing to consider any scheme, at a reasonable cost, which would provide the fullest supply of water possible. Mr. Wilson, chairman of the Water Committee, in this conflict of opinion, observed that he had expressed a wish for a special meeting to be called on the subject during the present month. The supply of water to the town was at the present moment of great importance. The committee were not, however, yet quite prepared with their scheme, but hoped shortly to be in that position, when a special meeting would be called.

Almost immediately immediately afterwards Mr. Wilson rather startled the Council with a statement closely bearing on the subject. The Baths Committee recommended the acceptance of the tender of Messrs. W. Thornton & Sons, at 13,100*l.* for the erection of new baths in Kirkdale, on which Mr. Wilson expressed his belief that with the great demand upon them for the supply of water, which he feared they had no chance of meeting, the supply of water to these baths would have to be refused.

REGENT'S PARK EXPLOSION AND MACCLESFIELD GATE.

No event of our time has caused greater sensation than the fortuitous incident which exploded a barge laden with gunpowder on the Regent's Canal,—for a range of half a mile from Portland-terrace to Gloucester Gate, whole terraces of houses had the roofs injured and the windows blown in; and within 250 yards' distance, several houses were shattered and rendered uninhabitable. As a matter of course, meetings were held to redress the calamity, and to help the sufferers, to whom insurance offices lent no aid; and a large fund, somewhere about 8,000*l.*, was subscribed; but that sum was utterly inadequate to effect structural repairs, which would require at least four times that amount, six large houses in the immediate vicinage having been wholly shattered, and damage to the extent of 20 per cent. on the value having befallen at least twenty more; but, in point of fact, the amount subscribed was distributed amongst the poor lodger classes, who had been disturbed in their scattered tenements, some having been forced to change location, or having had movables somewhat damaged by the explosion; amongst such, nearly the whole fund was distributed by the Committee Board in benevolences.

As to assistance given to the owners of house property, one example may suffice,—having had one large mansion, and two smaller houses shaken, almost to ruin, the proprietor appealed to the Board for aid in restoring the two smaller houses. His appeal was answered by donations of 10*l.* first, and then of 20*l.*; whereas the cost of repairs to make the two houses barely habitable amounted to over 100*l.*

As to the owners and occupiers of large mansions, no aid has been extended to them by the Committee, although public sympathy was certainly excited to subscribe by the wreck and ruin so palpably inflicted upon the unlucky vicinal proprietors.

There is, however, a wreck and ruin of great public importance which, after a lapse of six months, still remains to be redressed. Macclesfield Gate Bridge, the only carriage-entrance to the park for at least a mile and a half (between Gloucester Gate, N., and Hanover Gate, W.), has, together with the gate-lodge, been wholly demolished. The iron pillars and *débris* of the bridge are laid on the canal brink, leaving only room for the horse towing-path; but the occupants of the vicinage and public are wholly debarred from direct access to this beautiful park-drive.

The Avenue-road, Primrose-hill terrace and road, and the north-western limits of Portland-town, are seriously damaged by the prohibition; To whom are the inhabitants or the general public to look for restitution?

If Regent's Park be public property, surely there ought to be some governing body, or ranger, or manager, to repair damages, whether accidental or wanton. When Hyde Park railings were pulled down by an infuriated mob, the Royal Ranger had the damages very soon repaired, although there was in that instance no obstruction of public thoroughfare. Why, then, should the most beautiful drive of Regent's Park be so long shut off from public access?

QUONDAM.

Columbia Market.—On the 6th inst., in the House of Commons, the case of the Columbia Market Bill came on as an unopposed measure for confirming the re-transfer of Columbia Market by the mayor, commoners, and citizens of the City of London to the Baroness Burdett Coutts, and for making further provisions respecting the maintenance and use of the market. The preamble of the Bill was declared proved, and it passed through Committee. It is understood that the market will be converted into dwellings for the working classes.

THE NATIONAL GALLERY.

Most of our readers have seen reports of the discussion on the subject of the National Gallery, which was raised by Mr. Beresford Hope, in the House of Commons on Friday, the 9th inst.

The hon. member for the University of Cambridge put the case very clearly before the public, and it is to be hoped that the question may soon be solved in the only rational manner by the erection of the new building so long promised. Lord Henry Lennox as First Commissioner of Works was of course bound not to commit the Government hastily, but was obliged to say that "when matters came to the worst, they were likely to mend, and certainly, nothing could be worse than the present façade of the National Gallery."

As regards its internal accommodation, the case is little better than with the façade; for Mr. Hope pointed out that whereas the trustees of the national Gallery had asked for 4,200 linear feet of hanging space, the present gallery, even when timbered, and with the new additions reckoned in, will only provide little more than 3,000 ft., or less than three-fourths of the space now wanted, without allowing for future requirements. Moreover this allowance of 3,000 ft. can only be made up by close packing, and by reckoning in every corner of the present galleries, some of which are badly lighted, and very unsatisfactory.

It was further stated in the debate that every external architectural feature of the present building, had already been ruthlessly sacrificed to obtain space, so that the entrance and staircase which were originally handsome, are now quite unworthy of a public building. Now why should the public submit to such a state of things? Is England with her millions upon millions, so poor that she cannot afford a small percentage of her national wealth for the interests of art? At private sales there is no sign of diminished anxiety to possess masterpieces. Why are the national aspirations in this direction to be ignored and starved?

It may be right to build Palaces of Justice, and Government Offices as grand as palaces, from which the public is excluded; but this is no reason for neglecting the National Gallery, which is in an especial manner a public building, to which the poorest has a right to resort for innocent and instructive recreation.

We are convinced that the Government would not only do a wise but a popular thing, if they showed a determination to endow the nation with all that is ennobling and refining in their national collections. The rich can be trusted to provide these delights for themselves, but the Government is trustee for the whole people, and is bound to consider their interests. It seems that the site is already purchased, and the large sum of 140,000*l.* paid for it. The cost of a new building would, of course, be spread over several years, and would therefore form no heavy burden on the budget. Too much or too little has been obviously been done, and it is not creditable to the Government that they should formally instruct their architect to proceed, and then keep them for years without replies to his communications. It is the more remarkable that this should be the case, as the authorities appear to be well contented with that portion of the new building which has been completed. Mr. Hope stated that he was "delighted with the new galleries," and the First Commissioner of Works not only endorsed this opinion but went further, and declared the work, as far as it had gone, to be a "magnificent success."

Mr. Beresford Hope very properly put his question on public grounds alone, stating that he was not counsel for Mr. Barry or any private individual, but we do not think any member of the architectural profession will agree with Lord Henry Lennox if he means to contend that Mr. Barry has no reason to be discontented with the treatment he has received at the hands of his friendship's predecessors.

We are not in Mr. Hope's position. We *are* counsel for Mr. Barry. We hold a standing brief for every member of the profession not fairly dealt with, and at the time of the competitions for the New Law Courts and the National Gallery, it became our duty to point out that injustice was committed. The judges, in the case of the Law Courts, reported, as is well known, in favour of Mr. Barry and Mr. Street as joint architects, placing Mr. Barry's name first in their report. The conditions of competition provided that the decision of the judges should be "final."

Notwithstanding this absolute obligation, which they had voluntarily incurred, the Government set aside the "final" decision of their own judges, to Mr. Barry's prejudice, while they have retained his designs, and, as he has since stated publicly, have never even had the courtesy to answer his inquiries, or give him any explanation on the subject.

It now appears that in the case of the National Gallery a similar policy of silence has been observed. The Government first declared that they would respect the report of the judges of this competition, which in this case, as Mr. Hope (who was one of them, states) indicated Mr. Barry as the winner in the competition, and the architect to be employed. They formally appointed him, in 1868, architect of the "New National Gallery," they directed him to prepare plans, to make arrangements for proceeding at once with the work, and then they have kept him waiting year after year in a state of uncertainty, which still continues.

We think few of our readers who are aware of all that has passed on this subject will feel surprised that Mr. Barry should, under the circumstances, have told Lord H. Lennox, as the latter implied, that he felt he had been ill-treated; and we are confident he has the sympathies of the profession at large. It seems to us that every member of the latter, and especially every one who entered the competitions, has a claim to remonstrate, if the promises made to induce architects to furnish designs for public works are not carried out with scrupulous care and justice. It is impossible to contend that this has been the case with the two competitions referred to, and in our opinion, as we have before now stated, Mr. Barry has a good right to complain.

HER MAJESTY'S TOWER, IN THE DAYS OF QUEEN ELIZABETH.

There can, we think, be little doubt, judging from appearances, that the Tower,—"Her Majesty's Tower," as the officials love to call it,—will now attract no small share of public attention, certainly of those who are termed the "sight-seeing" public. We have already made some note of it, and of its *present* state and condition; this condition and present state of existence being, it is grievous to think, but a mere ghost and skeleton of what it once upon a time was, say in the days of good Queen Bess, to say nothing of still earlier epochs. We propose now, therefore, and it may interest many, to give as far as is possible some idea of her Majesty's Tower as it existed in the days of Queen Elizabeth, and at a time before the quaintness,—we hardly know a better term,—of *costume*, and all other accessories of daily life, had vanished, and when there still remained preserved a quite English artistic harmony between the several items of British life and daily existence. It will be found a good and characteristic day to revert to, and will show the Tower of London in a very fair state of integrity.

It must not be, however, imagined that this famous Tower has not a far older history. Quite the reverse; for Mr. Hepworth Dixon, who has done so much to unravel its mysteries and strange histories, contends strenuously that even as to "length of days" the Tower of London has "no rival," even among palaces and prisons; the origin of it, as he maintains, being like that of the "Iliad and the Sphinx,"—lost in the nebulous ages, and in times long, very long, before our definite history took shape. Old writers date it from the days of Cæsar,—a legend taken up by Shakspeare; indeed, the name of Cæsar's Tower remains in popular use to this very day. A Roman wall can even yet be traced near to some parts of the ditch, and certainly some of the existing wall masonry tells of Roman wall building "precedent." It is mentioned, too, in the Saxon Chronicle. A Saxon stronghold may indeed have existed on this very spot whereon the Tower now stands. But the main and central building, as we before said, the White Tower, was commenced by William the Norman, and the series of apartments, in Cæsar's Tower, were certainly built in the early Norman reigns, and actually made use of as a royal residence by our Norman kings. What, then, says Mr. Dixon enthusiastically, can Europe show to compare against such a tale? Why most surely nothing. Set against the Tower of London, with its eight hundred years of historic life, its nineteen hundred years of traditional fame, all other palaces and prisons,—for it must not be forgotten that it was both the one and the other,—appear like things of an hour! Very, very true, and what a thousand pities it then is that we cannot indeed see all this "antiquity"—or, at any rate, the remains of it. But, alas! there is but a mere ghost of it all left. Let us see how much of it, by reference to Queen Elizabeth's Tower.

But first it may be interesting to note a few of the olden things of Continental fame and antiquity. The oldest bit of palace in Europe would seem to be that of the Burg in Vienna, date of Henry III.; the famous Kremlin, Moscow; the Doge's Palace, Venice, are of the fourteenth century. The Seraglio, Stamboul, was built by Mahomet II. Next, the oldest part of the Vatican commenced by Borgia, whose name it bears. Then the old Louvre, commenced in the reign of Henry VIII.; the Tuileries, in that of Elizabeth. The Spanish Escorial belongs to the seventeenth century; while such palaces as those of Athens, Cairo, and the Persian Teheran, are all of them of quite modern date; so that it is no idle boast, the hoar antiquity of the London Tower Palace. Then, again, as to the "prisons," none of them, with the single exception of St. Angelo, Rome, can compare with the Tower Prison. The never-to-be-forgotten Bastile, of which, by the way, there are some curious records on paper, is a thing of the past, as all know. The Bargello is a museum. The Piombi, of poetic fame, are removed from beneath the Doge's roof. Vincennes, Spandau, Spilberg, Magdeburg, are all *modern* compared with it. Again, we wish we could see this old Tower of London, and compare things.

In the days of Elizabeth there stood of course, as fortunately there yet does stand, so that we can yet see it, that central feature of the whole mass of buildings, the original Norman "Keep," or White Tower, pretty much as it was, but, as we have said, so filled with piles of "small arms" as in a warehouse, that you can hardly tell where you are, or what the building is, or was, that you find yourself in. But there it is, and it is a something left to tell its own tale as best it can. This White Tower is in the inner ward, and this inner ward held, once on a time, in the days of Queen Bess, not a few other things, and buildings, all right full of romantic interest. It is as vain to look for them as it would be to search for the "Queen's Apartments," or the "Queen's Garden," so utterly bare is the place, as compared with its state in Elizabeth's day, when you might have gone the round of the old Tower, and read its history on its walls, in its many rooms, its gloomy towers, and indeed in the very ground on which it all stood. We can but give the *names*, and they are a something, of what once was, of the Wardrobe Tower; the Cold Harbour, *i.e.*, other towers connected with it; St. Peter's Church, now existing; the "Block"; officers' houses; the two *Gardens*; the Lieutenant's house; and the gunners' quarters, all right full, by the way (and this is not to be forgotten), of quaint details, and Gothic methods of house-building and tower-building, and of common mason's work.

Next would come in proper order the towers and other structures on the wall; but before we come to these, it may be useful to note that there was a clear way by the river side all along the water front of the Tower, the water filling the moat all round it, this moat being supplied through or under the St. Thomas's Tower, or rather group of four towers, with connecting walls. The "Traitor's Gate," with portcullis and low archway under the roadway, and immediately opposite the world-famous Bloody Tower, with another dark archway and another portcullis. These are, dismal to say, utterly gone,—towers, gateways, and all. Why was this? The modern substitutes for a small part of them is new work, and fails to touch, as old time-coloured work always does, the "chord of romance" in man's heart.

The moat on the river side ran parallel with the river, and it was over it that the St. Thomas's Tower was built. The Byeward Tower, still fortunately remaining, was to the west of this, and on the inner side of the moat, with again the Middle tower or towers, and with the postern as main entrance to the whole pile of buildings, and approached from what is now Tower-street. A more thoroughly "Gothic way" could not be, and if the element of the picturesque be a first necessity in building, then indeed we can hardly sufficiently estimate the extent of our losses, and must needs envy those who in Queen Bess's day were privileged to *see all* the old work. To the east of this was the Cradle Tower, the Well Tower, and the Iron Gate,

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forming another main entrance with portcullis, to the whole group of buildings within the outer wall and moat. We can here readily imagine with what gloomy thoughts and dismal forebodings, the unhappy State prisoner, whoever he might be, must have passed under and by the side of these gloomy archways and towers, and how small must have been his hope of any possibility of escape. Quite a romance this little stretch of water-way. Gundulf, the "Weeper," who built the White Tower, must have been indeed a prophet, and laid the foundations of his tower "in tears," for they, as we are told welled forth from what seemed to be an unfailing source; and it is quite sure that those who followed him and entered his "Tower," had full cause to weep when they caught glimpse of his work. Gundulf, be it observed in passing, rebuilt Rochester Cathedral, and maybe its Castle, not a little like to his "keep" in London. He also built the first St. Peter's Church, and the old Barbican, known as the Hall Tower, next to the Bloody Tower, and close to the Great Hall.

The outer wall washed by the moat had also flanking towers, the Brass Mount, and Legge Mount, the Galleyman Tower, the Lantern Tower, and the "Bell" Tower, with belfry, still we are rejoiced to say, remaining *intact*, so that in it may yet be seen, as in the White Tower itself, a specimen of the old walling, and system of tower building and construction. It may be noted here that Windsor Castle had, and has, its Bell Tower, and that it is all but the *sole remnant* of that notable castle as it once existed, nearly the whole of the rest of it being of *modern* castle-building date. If any very curious student wants to know what sort of charm there really does lie in "old walling," as contrasted with modern rubble work, why here in these Bell Towers it may be seen. Notable and artistic work it is, though it seems so simple! Green fields, by the way, surrounded the Tower Moat in Queen Elizabeth's day, and but a few scattered old houses here and there could be seen till you got inside the outer ballium.

We have said that the keep, or White Tower, occupied the centre of the whole pile within the moat, or ditch. But, surrounding this central tower, was the *Inner Ward Wall* and its towers, whose very *names* are right full of history and romance; and, we must needs add, of weeping and wailing memories. The Bell Tower, as above, and next to it the Beauchamp Tower, the Develin Tower, the Flint Tower, the Bowyer Tower, the Brick Tower, the Martin Tower, the Constable Tower, the Broad Arrow Tower, and at the angle the Salt Tower. These, with their connecting walls or battlements, with a way all round, and with passages or archways through the towers which rose above all, once on a time, had a veritable existence. A very powerful imagination indeed on the spot is needed to *realise* all this. We have thought it a something to record and print the hollow names!—better than nothing, surely. Well might we say with the immortal bard,—

> "A 'somebody' of the Tower hath buried them;
> But *where*, to say the truth, we do not know!"

There were two rows of quaint Gothic-built houses, and even single houses, scattered over the ground, regardless of order, with quarters for the soldiers; all, in short, making up together a *little town*,—quite a museum, had it been kept, of Middle Age antiquities, and which would have—did it but exist as in the days of Queen Bess—taken us bodily, as well as mentally, into London of the Past,—at least, as far as the more material buildings and ground could do it. We could not, certainly, see everything just as in past days; to wit, a royal barge with a queen on board, in all "bravery of gold and pennons"; nor a lieutenant's boat returning with a culprit in the stem of it, and with what might have been a "headsman" standing at his side, holding in hand the fatal axe. Not quite this, surely; but the *walls* of the place, high and thick and strong, and towers, with narrow prison windows, and narrow picturesque way between them,—more especially that between the inner and outer wards on the river-side, and between Traitor's Gate and the Bloody Tower,—could hardly have been surpassed for quaint and architectureseque and historic power. The inner and the outer wards of London's Tower are right notable in England's history. What a pity it is that so much of them have, for good and all, vanished utterly, leaving only *words* and *names* behind! Quite needless, too, all this fell destruction, for the whole place now is but little better than a big "storehouse," though once on a time, a Royal Palace!

Can nothing be done to bring it back?

A CITY OF THE FUTURE.*

LETTERS FROM SHAKSPEARIA BY SCAMOZZI SMITH, ESQ., ARCHITECT.

Written to his Friends in London during the Summer and Autumn of 1915-16.

My Dear ——,—The next day being Sunday, I was taken by my host to the great Church of St. John, his chief work of which I gave you a description some time ago, and must say that never was I so much impressed with religious service before as I was on this occasion, which I cannot help attributing, in some considerable degree, to its very appropriate artistic accompaniments, which seemed, not only to have the power of striking the senses and filling the imagination, but of touching the heart. There was that in the aspect of the place itself, to which the three sister arts of painting, sculpture, and architecture had combined to give a solemn beauty, that predisposed the mind to devout temptation, and gave freedom and elevation to the soul. The architecture, broad and simple, admitting the flood of day from the centre of the fretted dome in one pure stream, like heavenly illumination, and which was its only avenue, save where it fitly streamed through the forms of glorified apostles in the altar window. The statues of saints and martyrs, those of whom the world was not worthy; and the grand picture above the altar, of Christ pronouncing the beatitudes on the Mount,—the great temple so adorned, perishable though it be, and the work of a creature whose breath is in his nostrils, seemed instinct with a spiritual power,—a power to raise the thoughts above earthly interests, and, at least, to assist faith in laying hold on the future life. But when the grand organ lifted up its voice, and a vast and devout congregation rose *en masse*, and, like the heavenly host in the Apocalypse, "sang hallelujah as the sound of seas"; when the rich music married to the immortal verse of the sweet psalmist of Israel rolled upon the ear, and resounded through the sculptured and painted dome and arches of the church, and, I may add, waking echoes in the deep mysteries of the heart, then it seemed as if the five divine sisters had become vocal, and united with man in the worship of the Eternal,—that worship in which I believe they all originally had their birth, — then, in the language of an eloquent advocate of the Mediæval architecture, the whole resounded and spoke like God from the clouds, from its lofty dome and vaults, or alternately sorrowed and rejoiced like man in the deep-swelling organ.

Yet all this, we must remember, is breathed from the human soul, Poetry, Painting, Sculpture, Music, and Architecture in her fine-art manifestations being the voice of the human heart; so that it is really humanity calling unto humanity with a voice divine.

It is a voice, however, if not difficult to understand, yet at least difficult to describe. Who, says Carlisle, can describe in logical language the effect that music has on us? If one is so difficult to describe, how much more must the combined voice of the four syren sisters? All we can say is, that—

> "Within the spells
> Of their beauty's power
> Something dimly dwells
> At variance with a world
> Of sorrows and farewells."

The sermon was in harmony with all this: it was at once eminently theological and philosophical, for there is no hostility exerted or felt here by the church against the philosopher, that highest faith having become prevalent expressed in the exclamation of the Emperor M. Aurelius, that nobody was ever injured by the truth, nor ever will be; that the truth, whatever it may be, can only lead to good,—can only lead to God, and the promotion of his glory; and that no doctrine of Christianity really dear to the hopes of man, or essential to his true dignity and happiness, will ever be discredited or undermined. It further reminded me of the writings of the amiable English divine, Cudworth; for, like them, it placed religion mainly in purity of heart, and love to God and man, and denounced all those as worse than atheists, and the worst enemies of their species, who propagated unworthy views of the character and conduct of the Creator, or the fundamental nature of man. The moral heroism which springs from such views seemed to inspire the preacher in his closing appeal. He strove,—

> "Against the torrent and the stubborn hill
> To urge free virtue's steps, and to her side
> Summon that strong divinity of soul
> Which conquers chance and fate."

Our conversation as we withdrew naturally turned on the relations of art and religion, a subject on which I was desirous of drawing out my companion. I alluded to the dogma of a writer of the last century, Ruskin, that art in the Middle Ages existed for moral teaching, and that when she gave up that task to her protestant kinswoman, Literature, she declined in power. He remarked that if she had so declined it could not be because she had relinquished the lowest task of instructing the ignorant in sacred history and biography, in doing which, that is, in making stone Bibles of the cathedrals, she had well-nigh smothered the art of architecture, disfiguring it with hobgoblins and creatures of a disordered imagination, and a superstitious creed. It must have been from some other cause. Now, at all events, he believed that art by being true to her own laws, or, in other words, the three sister arts, by working in harmony, as he had endeavoured to make them work in the church we had just left, and by means of beauty, now their chief object, and allied with a purer religion they would have far greater power over the hearts of men than they could otherwise have had; and that if art had abdicated the office of teaching the ignorant the truths of Scripture story, she had assumed a higher office of moral and spiritual inspirer to all, and had become the auxiliary, or rather an instrument, of the divine spirit itself, the conseler and elevator of men.

This house is situated in a retired suburb, the beauty of which has attracted many men of taste to the spot, who have greatly increased its beauty by the fine compositions and grouping and harmonious colouring of the buildings they have introduced into, and engrafted on, the landscape. My visit gave me an opportunity of viewing several of these in company with mine host, who was as delighted as myself in hovering about every creation of the architectural muse possessing any great merit or originality. I have no time to make notes, or aught but very brief notes of these. But I will in some future letter endeavour to recall my impressions of their exteriors. Of the interiors, I could get but little information.

On the following morning, mine host, seeing the delight I took in everything architectural in the house and neighbourhood, and rightly divining that he could not give me a greater pleasure, proposed that we should make together an architectural excursion about the suburbs and through the city, where he said he could show me some things which, the place being large, had probably escaped my observation before, including one of his principal churches, and a very noble theatre, and other recently-constructed edifices. I of course gladly assented, and we sallied forth on a circuitous path for the city, on our way examining a great number of churches, which we were enabled to do without running after the sexton, as they are always open. They display, as a class, along with perfect fitness, great variety of internal arrangement and great ingenuity and knowledge of existing works and styles, which have been largely drawn upon. They are of all shapes of plan,—octagonal, hexagonal, square, oblong, round, semicircular, semi-octagonal, elliptical, and as various in their vertical sections. The dome-crowned Greek cross is, however, the typical form of a large class, and splendid are the variations on this general type, with central dome and four subordinate ones, all more or less satisfactory. Sometimes the central dome is lofty and the rest low; sometimes it predominates, chiefly in diameter. Here it is round and the others octagonal; there it is lofty and ogeed; while the rest are low and segmental. There are a few instances of central hemispherical domes surrounded by octagonal semidomes. As to the interior, with a great variety in design, detail, and decoration, there is great uniformity in the plan and disposal of the seats. I allude to Protestant churches, most of which have their seats ranged amphitheatrically, *i. e.*, concentrically, rising *gradatim* one above another. In one interior I recognised a striking similarity to St. Stephen's, Walbrook, of which, indeed, it is an idealisation.

External compositions are generally more or

* See p. 327, *ante*, with letter from Mr. S. Huggins.

pyramidal, with one commanding feature in centre. The dome appears both in Gothic Classic, of various sections. Yet the spire ys a noble part in the aërial architecture of kspearia, but it rises as often from a lantern otherwise, and *central* spires generally so rise. the central crowning compositions exist in h variety that I despair of giving you any idea hem. Some are so light and aërial, you would der the first puff of wind does not blow them y like a vapour. They seem as if designed ive literally to airy nothing a local habitation a name.

enerally, through the exquisite feeling for n, the outline of the buildings is so beauti- that if you can only get this outline projected inst a lighter or darker background, you have icient to charm you, though you see nothing . Generally, however, there are the charms olouring and gilding, which latter, as you ht naturally expect in a country which, being nded, bleeds gold, is much used, showing lf chiefly on domes, and their terminals, ps of statues, which, often being the ning of white marble towers or rotundas, e a glorious effect. Light being often ght from above, in public buildings, dows are often omitted, which gives rise uch ingenuity in relieving and embellishing s externally and internally, — niches and es or groups; niches, with square grounds high-relief sculptured subjects; bas-reliefs; els, with inscriptions; sculptured symbols; es and statues in upper stories; in lower, es, with bas-reliefs and inscriptions.

fter this I need not say there is no imitation, here is amongst us of the imperfect unfinished positions of the Middle Ages; such as two l west towers or spires without a pre- nent central one to unite them. Nor have t seen three similar spires as at Lichfield, ch is considered monotonous. When three es are introduced, the central one, or each of western ones, rises from a lantern. What ore important, all are true works of art, inal in the right sense of the word, and t every true work of art must be, a thing , as a whole, never was seen in the world re, and which never to the end of time will een again. Let me here mention that several ll suburban Gothic churches we passed had rich traceried windows, executed of timber. n arriving at the theatre mentioned, I was ified to find that it was one I had noticed re, and to which, it being near my hotel, I made several early morning, I may say ante- kfast, visits, which I was fain to do for its hing and harmonising influence on my mind ugh the day. Of this I shall send you a ch and some account by-and-by.

lose by this building is the School of Naval itecture, an edifice which pleased me much, the more on learning that the quality chiefly ht in it in reference to the form of vessels, fety to life and property, not speed, so nely and wickedly preferred amongst Opposite this is the Public Library of kspearia, and beyond it to the south the ic Museum, both fine buildings. They differ ours in that they are not entirely free, but he principle of our postage system charge or admission, by which they are almost self- porting. I know not with what other result. far from these is a building remarkable for profusion of sculptured representation of the a kingdom of nature. It is the office of the ety for the Prevention of Cruelty to Animals, h is in a very flourishing condition here. It obtained the prohibition of steeple-chases, e-racing, hunting, and fishing as sports, all tices causing suffering to animals. As to ing and shooting, I believe scarcely a man, inly not a woman, could now be found who d join in such exercises.—Yours, &c.

Scamozzi Smith.

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r Dear ——,—The next building we visited e large and excellently planned and venti- and designed infirmary of the city,— e, so numerous are the lady volunteer es who employ themselves in its manage- and visitation, that, with the slightest ible sacrifice of time on the part of each the patients are seldom left even for an to the mercy of hirelings; and the result, gards the proportion of cures, is what might pected.

fine healthily-situated building was pointed o me as the Asylum of that unfortunate who have knowledge at one entrance quite out, and are consigned to that "death in life," blindness—the deprivation of that master sense through which the glory and beauty of the universe stream in upon the soul. It is felt that these have a peculiar claim on our sympathies and compassionate regard, and they are very carefully looked after here, and never pent up in close towns. This asylum is in a situation where, as if to compensate as much as possible for loss of the pleasures of sight, every other sense may be regaled, by pure air, garden perfumes, and Nature's sweet sounds and harmonies.

As we returned from our visit we were charmed by the beauty of a building that was pointed out to us delightfully situated outside the city. It is the asylum of the greatly maimed, mutilated, and deformed in body—a place rich in Flora's choicest gifts and attractions, natural and artificial, supposed sufficient to win, for the good of the public and preservation of its beauty, from a vagrant life, the greatest lover of liberty of that unfortunate class to its soft retreat; an object greatly aided by strict legislative enactments against mendicity—as unnecessary.

To the Lunatic asylum none can be consigned till it is considered needful by four-fifths of the College of Physicians and Surgeons.

One of the most beautiful buildings shown to me is the seat of the Royal Philological College or Academy, the chief province of which is, to watch over the growth, correct the defects, guard the purity, and increase the copiousness, superiority, and beauty of the English language. Of this more anon.

Adjoining it is the Royal Printing House, which has many very original features, which it well deserves, for it has adorned the republic of letters with such beautiful editions of standard works that it is supposed the Aldines and Elzeviers will be no more heard of.*

In all these buildings, whether halls, theatres, colleges, and in the churches, I noticed that the entrance-doors, which must always be the chief feature in architecture, were very fine features, highly decorated, and broad and lofty in proportions, and whatever the style, the deep reveals have rich columnar decorations. But this is characteristic of Shakspearian architecture, which is never demeaned in character and expression by low, narrow, and insignificant doors, such as too often disfigure ours, and of which the three mouse-holes at the north end of St. George's Hall, Liverpool, through which the judges of the land pass to the judgment-seat, are a notable example.

Another noticeable feature is the treatment of the frieze, which when plain and not charged with the life-giving ornament, as the Greeks called it (Cockerell, *Builder*, xii., 457) is otherwise marked by dark-coloured marble, red, purple, or blue granite. When it is charged with sculpture even the ground is sometimes a dark-coloured marble, which strongly relieves the light sculpture. It is always of first-rate quality, and so are the statues, which when in high situations, where high-class finish would be lost they get modelled in miniature by a first-rate sculptor in clay which bold carvers execute in large.

In the interior I noticed that the floors are more simply treated than in England, where our richly-coloured and glazed tiles are peculiarly absurd in a climate or country where it is not the custom to take off the shoes on entering any place, however sacred. Besides these I was shown the Architectural Museum of Models or Restorations of all the great buildings and monuments of the world; the Geological Gallery, containing models of the structure and crust of the earth, showing the various deposits; the Astronomical Museum, exhibiting models on a grand scale of the glorious machinery of the Universe; the Hall of Moral and Metaphysical Science, &c.,—all worthy of their high and ennobling purposes.

Some of the buildings seen, which, by the way, are all completely fireproof, were chiefly remarkable for the beauty of their composition and form; others for the delicacy of their details; a third set for the amazing interest and variety of their carved decorations, in some of which the cunning interweaving of the human with the animal form, birds, beasts, fishes, reptiles, and plants of all kinds, is beyond all praise of mine.

Our next object was the great Church of St. Thomas, which we thoroughly examined. But of which I postpone my description.

* Printing, from its connexion with literature, is regarded as a Fine Art, and printers unite usually mechanical ingenuity and artistic taste with considerable erudition, chiefly philological. Typographical correctness is a matter of course, and is fully expected both by authors and the public.

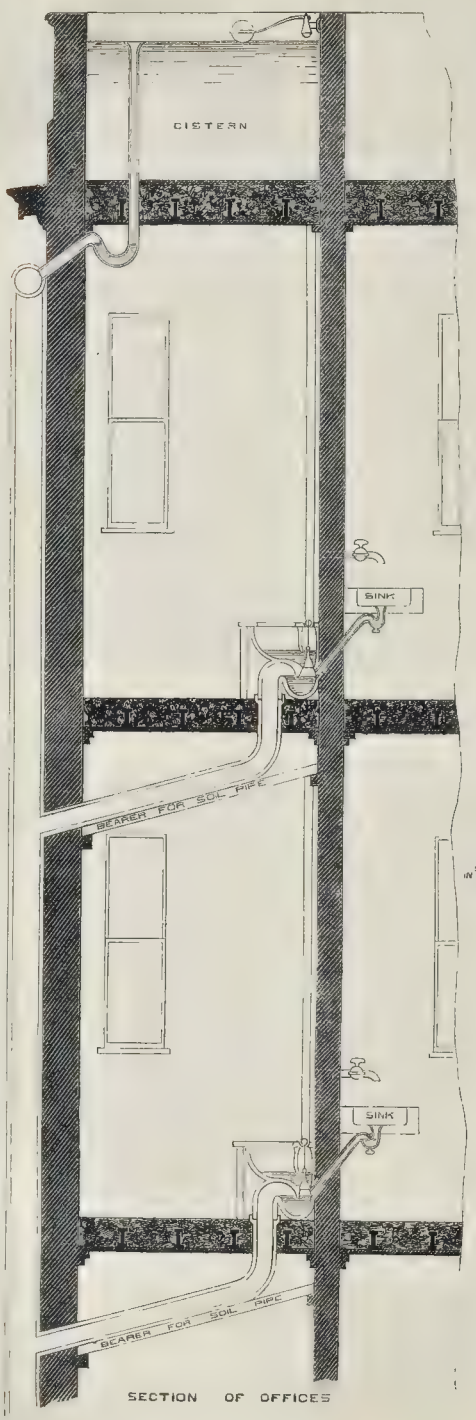
On leaving this church we gave our attention more particularly to the effect of the ordinary street architecture, of which I must give you my impressions, first noticing those detached objects, half sculpture half architecture, which everywhere intersect and terminate the vistas.

The light aërial architectural objects, creatures of the fancy, compounded of columns, arches, domes, niches, pediments, canopies, groups of peace-trophies, bas-reliefs, statues of men, women, muses, graces, genii, birds, beasts, the most interesting creations of the sculptor, combined with the most elegant forms of the architect that grace the intersections of the streets and centres of squares, octagons, quadrants, crescents, circuses, everywhere would astonish and enchant you: all for some use, and yet as beautiful as if for beauty only. Some are for shelter from sun, some are fountains, — all protect from flying vehicles,—all contain clocks, thermometers, vanes, &c. The objects that spring into the air are the most aërial and romantic I ever beheld. Seen at some distance, you would fancy them columns of vapour exhaling from the earth, rather than solid masonry pressing upon it. Compared with these, the triumphal arches of the Romans, and their modern imitations in Paris, look tame and prosaic. They are embodiments of ideas such as, in our country, wrought in fancy's loom, float in light visions round the poet's head, but never round the architect's or sculptor's. Nor must you suppose by my mention of domes, columns, &c., that they are all in the Classic style; they are as frequently of Gothic, where the unglazed tracery window plays a beautiful part in pierced work, and sometimes the buttress appears. But it is so refined and brightened in shape that it has more of a Classic than a Gothic air. It is generally semi-octagon, diminishing as it ascends from great massive strength below, into the most marvellous and fantastic lightness above. In these the masonic feats in the production of skeleton domes, pierced lanterns, and open spires are beyond my powers of description. The earth hath bubbles as the water hath, and these are of them.

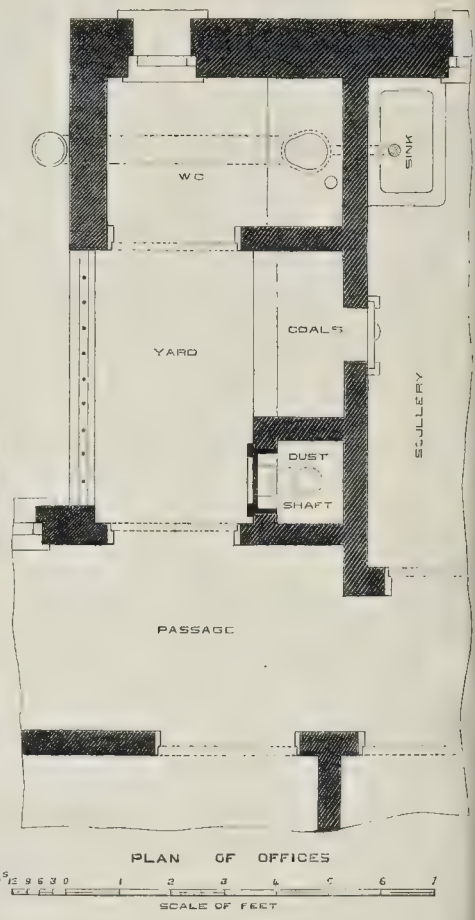
These streets, which are, of course, undisfigured by temporary fashions such as have left their odious mark on London and Paris, must, I verily believe, literally charm the savage beasts by the sustained melody and harmony of their architecture, which, I may say, has been fashioned by and truly reflects the national life. I am never weary in them. Their effect on the nervous system through the delighted mind prevents bodily fatigue. What strikes you forcibly is, that, though you are in a new world, where all is literally new, there should be no lack whatever of associations of the old. By means of sculpture and painting, poetry and fable, the muse of history, everywhere seems to haunt the city, and speak to its denizens through its other wise eloquent architecture. By these magicians all is touched with the magic of the past, and you sometimes feel even haunted by reminiscences of British and European glory. How learned, how accomplished, must be the architects! Such has often been my exclamation; for all my experience goes to prove that inspiration of genius, which, with little or no education, will sometimes produce a poet, will not alone make an architect; and to expose, to *my* mind at least, the fallacy of a very respectable writer of the last century, James Fegusson, who asserts that the finest buildings of India in his day were designed by workmen who could neither read, write, nor draw; an assertion which strikes at the root of all professional culture, and at the very existence of architecture as a liberal art; for if such men can conceive and produce in stone works like Mahommed Shaw's tomb at Bejapore, and one or two others I could name, which are among the most majestic structures on which the sun ever rose, where is the use of our professional training, and what peculiar inheritance have we in the honours or emoluments of architecture? To your tents, O Israel!—Yours, &c.

Scamozzi Smith.

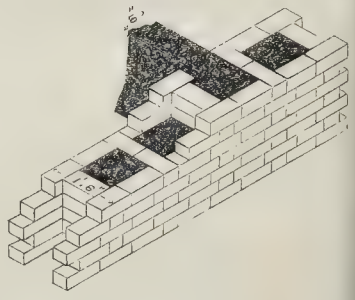
Fall of a Building in Sheffield.—On the 9th inst. the front foundations of the new building which is being erected in Anges-street, Sheffield, for Messrs. Cockayne, drapers, gave way, and caused a brick archway to fall. Two men were underneath at the time. One of them, an Irish labourer, named Hester, was buried by the falling bricks, and an iron girder also fell upon him.



SECTION OF OFFICES



PLAN OF OFFICES



BRICK AND CONCRETE WALLING

IMPROVED DWELLINGS FOR THE INDUSTRIAL CLASSES.—*Details of Domestic Offices.*

IMPROVED DWELLINGS FOR THE INDUSTRIAL CLASSES.

Our readers will remember that the Improved Industrial Dwellings Company, presided over by Sir Sydney Waterlow, offered premiums for designs for dwellings for the industrial classes to be erected in Goswell-road. Particulars of the competition will be found in our volume for last year.* The first premium was awarded to Mr. Henry Macaulay, architect, of Kingston-on-Thames. In our present number we give some illustrations of his designs, and we will let the architect speak for himself in describing them.

The site in the Goswell-road, for which these buildings were designed, is of irregular form, having three of its sides to surrounding streets, with one obtuse and one acute angle with the Goswell-road, where it was desired that there should be shops with rooms attached, this being the most valuable frontage on the site; and by the four entrances being placed in the side streets, this frontage is left intact.

A list of conditions was issued by the company for the guidance of architects; these have all been complied with, and the further conditions considered equally necessary by the architect, viz. That no apartment in a dwelling should have to be passed through in order to enter another; also that the water-closets should not be entered from or by having to pass through any apartment, but have an interval of atmosphere circulating between each closet and the dwelling."

The general plan is the same for all the dwellings, which are approached from the rear by an external staircase, inclosed by side walls, and rising by half-flights, so as to avoid winders. From each alternate landing the doors of two dwellings open right and left on entering. There is a short, straight passage, with a window providing light and ventilation to it, and on the same side a door to the open lobby or space before named, which contains the watercloset, at the end the coal-place, food-closet or larder, and the door to dust-shaft on the side. The door from the passage into this space can be left open at any time for ventilation with perfect safety, when the outer door from the staircase is closed and secured.

The scullery, living-room, and bed room or rooms, open from the sides of this passage, and when the windows and doors in these rooms are open there is not any portion of the dwellings which would not be purified by the passage through of the external air.

The ventilation, apart from the opening of windows and doors, is proposed to be obtained by making use of a sufficient number of the vertical shafts in the brickwork,—covering the openings to the same from rooms with finely perforated zinc, to avoid draughts.

The living-rooms would be provided with a suitable cooking-range, and would have a good cupboard in one of the recesses; the sculleries a small fireplace and boiler, and iron or earthenware sink; and the bedrooms would have a small grate in the angle fireplaces, composed of fire-clay lumps forming back and sides, with the bars only of iron.

For convenience an opening would be made from the sculleries to coal-places provided with sliding-door. Above the coal-places the larders or food-closets would be placed, and would therefore be external to the buildings, although under cover, the doors having finely-perforated zinc, to preserve the contents sufficiently cool and free from insects.

The dust-places are on the level of the basement floor, approached for cleaning from the side, and the openings for each dwelling into the shafts would be protected from any backdraught by a self-acting iron door, always closed by its own weight when not in use. The shaft would be carried well up above the roof, and having openings on its four sides, and carrying, at its centre in the upper portion, a continuation of the soil-pipe, which would finish above the dust-shaft and act independently; but all bad smells or gases arising from either source would be met by this arrangement brought to the same point and above the roof, when they could be acted upon and dispelled by the action of the atmosphere. On the roofs of these buildings, which are flat and prepared for drying clothes, there would be opposite to each staircase, and for the use of the dwellings below, a bath-room and washhouse, having a boiler so placed as to be available for either, and the waste water from both would be made available for flushing the soil-pipe.

The buildings can be constructed in any of the usual kinds of walling; but to meet the desire for economy of construction laid down in the conditions, it is proposed to utilise the old materials on the site by converting them into concrete for internal walling, and as a filling for external walls which would be formed of brickwork, the internal and external faces having three stretchers and one header laid alternately, and breaking-joint at each course so that all the bricks would bond together, leaving vertical flues to be filled in with the concrete.

It is necessary to note that the copyright in these designs is the exclusive property of the company.

* See vol. xxxii., p. 475, and our present Volume, p. 2.

THE TOMB OF KEATS.

The tomb of the poet Keats, in Rome, must be an object of tender interest to all who have, in any degree, appreciated the power of his genius, and the sadness of his literary career. It stands in the disused burying-ground of the *Acatolici*, just within the city wall, towards the south, where the Porto San Paolo spans the Via Ostiensis. The pyramid of Caius Cestius rises beside it, in the pomp of heathenism, but long neglected, and now surrounded by a stagnant pool. There lies Keats, in breathless silence, beneath the plumage of the fir and cypress: a modest head-stone, bearing the following simple epitaph, marks the spot:—

"This grave contains all that was mortal of a young English poet, who, on his death-bed, in the bitterness of his soul at the malicious power of his enemies, desired these words to be graven on his tombstone:—

'Here lies one whose name was writ in water.'

February 24th, 1821."

How touching, and how untrue!

Hard by lie the remains of Gibson, Wyatt, and Bell; and not far off the "heart of hearts," which could not be consumed by earthly fire, when the body of Shelley was burning on the shore of the Gulf of Spezia; here, too, is a monument erected to five British sailors who were drowned when on duty from their ship off Fiumicino, "in May, 1825, as a testimony of respect and regret, by their captain," who has obtained for himself, by so doing, a place in the heart of every Briton who reads the words.

Though preserved from profanation by a dyke some 10 ft. in width and depth which surrounds the cemetery, recently the tomb of Keats had fallen somewhat into decay. Such a state of things could not last, and a young English lady commissioned Sir Vincent Eyre, who was interesting himself in the matter, to put it into better condition, at the expense of herself and a few friends. Simultaneously, a relative of the poet in America gave a similar commission to a countrywoman of hers in Rome: the parties joined hands, and have placed the tombstone on a better foundation, and have revived, by a permanent process, the original inscription, which had become almost illegible. A bed of daisies and violets has also been planted, in commemoration of the simple death-bed words of the poet, "I feel flowers growing over me."

It was originally proposed to open a subscription list in the hands of the British and American consuls in Rome, to afford a suitable opening to the enthusiasm which this subject has excited, and to obtain with the proceeds a medallion of Keats, from the mask in the possession of his stanch friend, Mr. Severn, which was taken in England when he was still in the bloom of health and youth. However, as Mr. Warrington Wood has generously volunteered to undertake the work gratuitously, this is now unnecessary, and the funds will be devoted to the execution of a bust, which, if, perchance, it cannot afford pleasure to him who is gone, will be deeply prized by those whom his works have taught to love him.

Lie still, poor Keats, till day of doom,
And recompense, break o'er thy tomb,
Then, a young lion loosed again,
Bursting from narrow cave amain,
With scornful roar thy tyrants greet,
All trembling at the Judgment-seat;
But when the trump thy wrath hath staid,
And worlds have heard the just decree,
Look toward the place where thou wast laid,
And know how some have cared for thee.

Hackney Marsh Sewer.—The Hackney District Board of Works have accepted the tender of Mr. Henry Potter for the construction of the Marsh Sewer, in accordance with the plans of the surveyor. The amount of the tender is 7,695*l.*

NEW PROCESS FOR THE PRESERVATION OF RAW MEAT.

Under the modest title of "Experiments on the Preservation of Raw Meat," Dr. Alexander Herzen exposed lately to an assembly of scientific men, at the Medical Academy of Florence, the results of long researches.

In the autumn of 1873, Dr. Herzen, after having retained in his house for many weeks certain cases of raw meat, preserved according to his system, put them to a further proof by keeping them in hot-houses, heated to tropical heat for two months more, without the meat being changed in the smallest degree from the state when first killed.

Determining to put them to a still stronger test of a journey across the Equator, a part of the same meat was sent to Buenos Ayres, where it was tested and eaten by a commission appointed there, who pronounced it excellent. Of the same meat, a part was returned to Europe, where it was distributed, still secured in tin cases, enclosed in wooden barrels, to many persons, who could find no fault either with the taste of the meat or its nutritive and digestive qualities.

The last of these tins of meat was eaten in Milan in the month of February last, eleven months and a half after the slaughter of the ox.

Among the examples of tests presented by Dr. Herzen was that of a glass vase of meat, the open top covered with a layer of melted fat only, the preserving liquid had partly evaporated, leaving the upper surface of the meat covered with mould. This was removed, when the meat beneath was found to be perfectly good, and having the smell of meat killed within a few hours.

Of the chemical, physiological, and histological properties still retained in the meat after long preservation, Dr. Herzen convinced the scientific men present, as also of the unexceptionable perfection in which the meat may be preserved. A small nucleus of about twenty-five gentlemen have hitherto formed the society, joining with Dr. Herzen in the expenditure necessary for carrying out the tests of his invention. These having proved eminently successful, means now will be taken to give publicity to the scheme.

The increasing dearness of meat in Italy, caused, during the last four years by the exportation of cattle to France, has made a serious increase in the expense of providing the army and navy. Great consideration is being given to the practicability of adopting the invention as a means of reducing considerably the balance both of war and naval expenditure, but more particularly of the latter. Dr. Herzen relies principally on the importation of cattle from La Plata, and estimates that he will be able to deliver the meat prepared at La Plata in the European markets, at a price a third less than that now demanded.

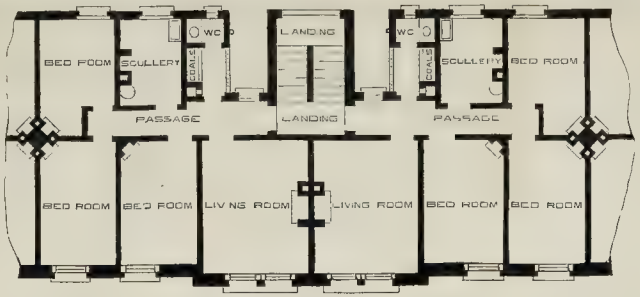
The account of Dr. Herzen's address to the Academy has been copied by French papers, and he and his coadjutors may now anticipate the attention of the commercial world of England to their enterprise.

WAKEFIELD MECHANICS' INSTITUTION.

The staircase at this Institution has now been altered and completed, after being discussed for about seventeen years. It originally had winders in a semicircular apse, which were not only inconvenient, but dangerous, a gentleman having fallen over the handrail and injured himself so that he died. The lower half of the winders has been taken down, and a wide flight of straight steps fixed in the centre, with a new flight of winders up the right side to correspond with the old winders on the left side. The people can now get down the staircase from each side of the top landing, and go straight out of the entrance-hall, instead of all crowding out of the three doors to one end of the top landing, and finding themselves in a corner at the bottom.

The work, which was difficult (the new half-pace, or landing, is 12 ft. long, by 7 ft. wide, and weighs over three tons), was finished without any damage being done to the building. The architect was Mr. A. Hamerton, of Wakefield.

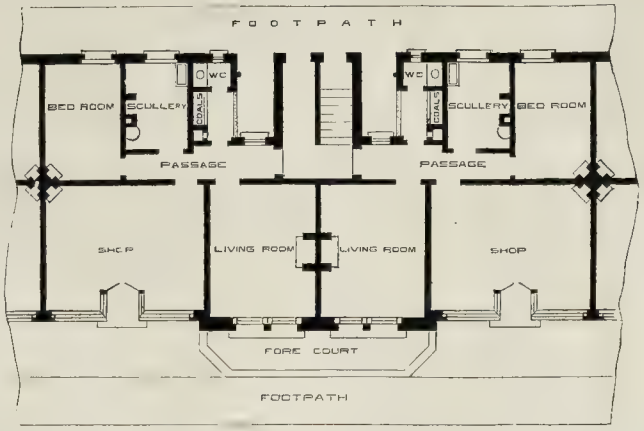
Messrs. Flower Brothers, of this town, contracted for the whole of the works, and sub-let the wood-work to Messrs. Harrison & Phillips the iron-work to Mr. S. Kirk; the plastering to Mr. T. C. Tattersall; and the painting to Mr. C. Turner, all of Wakefield.



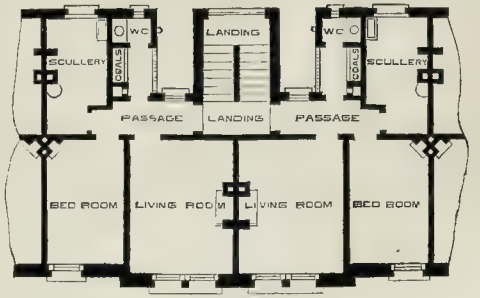
PLAN OF TWO DWELLINGS FIVE ROOMS EACH



ROOF PLAN



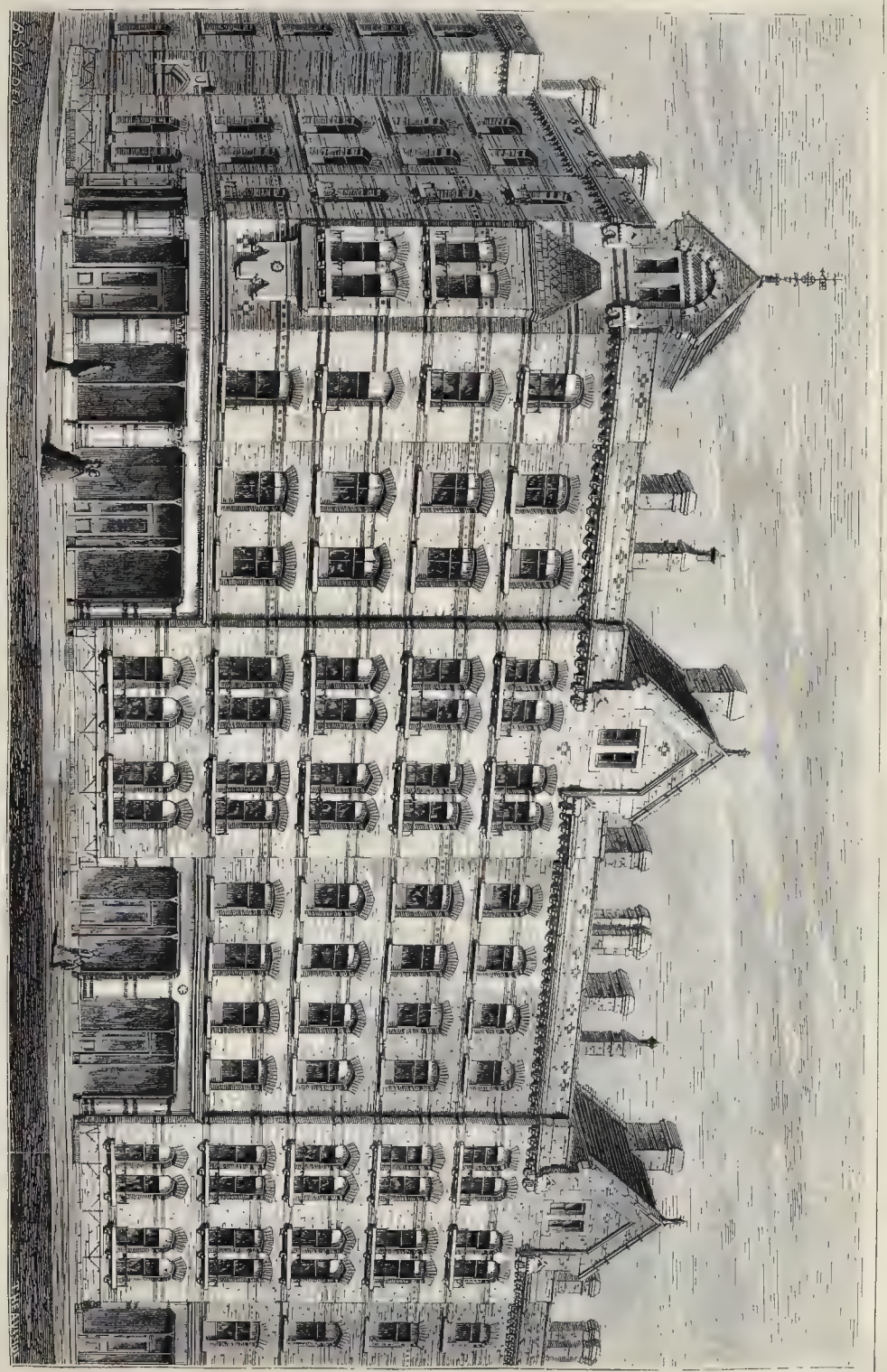
GROUND PLAN GOSWELL ROAD



PLAN OF TWO DWELLINGS THREE ROOMS EACH



IMPROVED DWELLINGS FOR THE INDUSTRIAL CLASSES.—*Plans.*



IMPROVED DWELLINGS FOR THE INDUSTRIAL CLASSES.—Prize Design by Mr. H. Macaulay, Architect.

NEVILLE'S CROSS AND ENGLISH HISTORY.

In the *Builder* of last week a short paragraph announced that "Neville's Cross" was in a state of danger. "Neville's Cross" is so intimately connected with English and Scottish history that the mere announcement fairly cries shame on those who may allow it to be destroyed.

On the turnpike road, about half a mile from the city of Durham, now stand the mutilated remains of this ancient stone cross, erected by one of our brave Border lords, the Nevilles of Brancepeth, in commemoration of the victory of the English army over David Bruce and his Scottish bands, at the battle of Red Hills, in 1346. An eye-witness states that all that now remains of the once elegant structure is the ruinous and earth-buried steps which form the base mound, and a large octagonal block of flinty sandstone, with traces of carved heads at the angles, but these have been so entirely defaced that it is utterly impossible to conceive what they may have been intended to represent. The rude shaft which springs from this block seems to have formed no part of the original cross, and is generally supposed to have been fixed there at a more recent date to serve the purpose of a milestone! The most diligent inspection of these rough and unshapely stones would never enable one to discover the form and construction of the primeval "erection."

Fortunately, Davis in his "Rites and Monuments" enables us to restore Neville's Cross, when the funds are ready. He says:—

"This cro's had seven steps about it every way squared to the socket, wherein the stalk of the cross stood, which socket was fastened to a large square stone, being of great thickness, viz., a yard and a half every way: this stone was the eighth step. Also the said stone was fastened with iron and lead to the sole stone, which was three-quarters deep, and a yard and a quarter square about every way. The erected stalk of the cross was in length three yards and a half up to the boss, having eight sides, all of one piece; from the socket it was fixed into the boss above, into which boss the stalk was deeply soldered with lead and sodder. In the midst of the stalk, in every second square, was the Neville's Cross." A saltire on a 'scutcheon, being Lord Neville's arms, was finely cut upon the said stalk; and the bottom of the stalk was soldered deep in the hole of the socket, with lead and sodder; and at every corner of the socket was a picture of one of the four Evangelists, finely set forth, and carved in stonemason work. The boss at the top of the stalk was an octangular stone, finely cut and bordered, and most curiously wrought, and in every side of the nether side thereof, in the mason work, was Neville's Cross in a 'scutcheon in one square; and the bull's head, having no 'scutcheon, in the next square; so in the same reciprocal order about the boss.

On the top of the boss was a stalk of stone (having a cross a little higher than the rest), soldered deeply into the hole of the boss above, whereon was cut, on both sides of the stalk of the said cross, the picture of Christ, crucified, with his arms stretched out, his hands nailed to the cross, and his feet nailed upon the cross of the stalk below, almost a quarter of a yard above the boss, the picture of the Virgin Mary on one side, and the picture of St. John the Evangelist on the other side.

It will not be out of place to say a word as to "lead." Some thirty years back the writer, whilst on the spot referred to, found three of the nomadic Gipsies unearthing Neville's Cross, for the sake of the lead noticed by Davis, and there is every reason to assume that not only Neville's Cross, but other ancient monuments, have been destroyed, in order to get at the lead.

Dr. Raine, who, by the way, has not proved his researches and opinions infallible, says,—

"A cross was the usual boundary or march-stone between lord and lord, and most especially where three lords might have met and shaken hands with each other from their respective estates. The Nevilles were owners of Brancepeth, and in all probability the old cross might have taken its name from the fact that it stood upon the precise spot at which a man who was bound to my Lord Neville of Brancepeth would quit the great and much-frequented ecclesiastical way between Durham and Bearpark. The cross of the Nevilles,—I dare say the very saltire of the shield,—would remind a young Lumley or a Hylton of the place to which he was going, and would prompt him to spur on his steed till he had reached the side of the Prior of Durham, in whose suit he had ascended the hill, and wishing him solace at Beaurepaire, gently bid him farewell."

If this view of Neville's Cross be near the mark, the monument is of no more historical interest than an old finger-post; but Dr. Raine is merely guessing.

Years back, there was an "ancient" who contrived to pick up a stray half-crown from visitors to the bloody field of Red Hill; and a few years since a like local historian laid wait on the road from York to Tadcaster, to point out the *locale* of that fiercest of English battles between the Lancastrians and Yorkists—"Towton." There is good reason to assume that these old men inherited their knowledge from their ancestors, or men knowing the true site and circumstances from generations tracing back to the very period of the battles. In support of this, the guide at Towton, after describing on which side of the river Wharfe the opposing parties laid, exhumed "specimens," and proved that the wild white rose and the red rose only grew on the graves of those warriors who fought under those standards.

Certain it is, that the fragments of Neville's Cross stand on the very spot where the conflict at Red Hill was not only the fiercest, but where Lords Neville and Percy, with the fighting Bishop of Durham, beat King David of Scotland and the flower of the Scottish nobility. Local tradition also tends to show that it was on this spot that John Copeland, the Northumbrian giant, took the King of Scots prisoner.

As a memorial marking the graves of some 20,000 Scotchmen, and about 5,000 gallant Englishmen, Neville's Cross deserves a better fate than has up to the present time befallen it.

IRON AS A CONSTRUCTIVE MATERIAL.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At an ordinary general meeting of the session, held on Monday evening, the 5th inst., under the presidency of Mr. Henry Currey, Messrs. F. W. Albury, R. H. Carpenter, and A. H. Parker were elected members.

The Chairman regretted he had to announce the decease of Mr. George Vaughan and Mr. J. B. Waring, members of the Institute, after which Professor Kerr paid a tribute of respect to their memories.

The Secretary stated that the District Surveyors' Association had presented ten guineas to the library fund; and that Mr. E. Nash had given the proceeds of five shares in the Architectural Union towards the general funds of the Institute.

Mr. C. H. Driver then read a paper entitled "Iron as a Constructive Material." It was only of late years, he said, that iron, as compared with other metals, had been used as a constructive material; but it was known and employed for various other purposes from the very earliest times; and though it was now the metal of all others the most frequently used by, and was the best adapted of any to the requirements of, the architect or the engineer, it was but comparatively recently that its great value for building and constructive purposes had been fully appreciated, and to a certain extent utilised; and it was with the hope of showing that it might be employed in a still better manner than at present, he ventured now to refer to it. The earlier employment of gold, silver, copper, and tin by the ancients was due probably to the readiness with which these metals could be obtained, either in a native state, or from their ores, and the ease with which they could be worked as compared with iron, which was both hard to obtain and difficult to work, requiring great heat and labour to extract it from its ore. The vast store of iron which Britain possessed was quickly discovered and made serviceable by the Romans, who, however, worked it imperfectly. In the epochs in the history of iron, serving to mark the progress made in its manufacture, and intimately connected with its constructive use, viz., the employment of the artificial blast as a means of intensifying heat, and thus more readily reducing iron ore, the last process employed, which was published in the year 1856, was the invention of Mr. Bessemer, for converting iron into steel. Cast-iron was but little known or used in England till about the middle of the sixteenth century, but in the seventeenth century the art of casting had greatly advanced. It was likely, however, that cast-iron was known and utilised on the Continent earlier than in England. Mr. H. W. Brewer gave, in the *Builder* of July 16th, 1870, a drawing of a cast-iron stove from Coburg, which he stated to be of the fifteenth century, and "that it is remarkable, not only for its design, but for the material in which it is executed, there being not the least doubt that it is cast-iron, and probably the earliest example of the use of that metal." As early, however, as the sixteenth century, there was a proposition to erect on some Italian works then in progress a bridge in cast-iron, but though the idea was not carried out, it was worthy of note as showing that its capabilities were even thus early attracting attention; and though, between that time and the year 1777, the idea was frequently revived, it was not until then that the first bridge was actually built in iron. This bridge was constructed of cast-iron over the river Severn, near the village of Broseley, Coalbrookdale, Shropshire. From that time the use of cast-iron for bridge-building rapidly extended, culminating in Southwark Bridge, built by Mr. Rennie between the years 1814 and 1819. Since then cast iron had given place to wrought for all bridges of large span. Though the use of iron by architects in building structures had enormously advanced, the credit of discovering and applying the great advantage that iron unquestionably possessed over almost every other material to constructive purposes was due, he thought, to the engineers and not to the architects. Architects as a body had neglected and slighted this universally useful metal, either rejecting it altogether or employing it as it were under protest, and as if they were ashamed of it; they used it, in fact, as a drudge, and not, as he ventured to think that they should, as a valuable friend, equal indeed to most other building materials, and superior to some, valuable both for constructive and decorative purposes. While it was remarkable that they should have thus neglected it, the way in which engineers seized it was no less remarkable, for they with wonderful acuteness brought their science and practical knowledge to bear upon it, producing results that ought to be an example to architects; for as a rule engineers with regard to brick or stone paid architects the compliment of copying as well as they could architectural forms and practice; but with respect to iron the reverse was the case. Engineers finding that architects had done little or nothing with it, struck out a path for themselves, and it could not be denied had achieved a great success. He thought, however, that it was unfortunate, to some extent, that they did so, for it was in a great measure the cause of the want of appreciation iron obtained from architects, not because architects were jealous of the success of the engineers, but rather because of the disgust they felt at the inartistic result of their labours. Could this be remedied, and could iron be placed in its proper position with regard to architecture? He ventured to hope it might by taking advantage of the practical skill and knowledge which engineers had already obtained, and upon the foundation laid by them, advancing step by step, till they succeeded in finding uses for iron, both in construction and decoration, which, while perfectly adapted to the material, would yet combine and harmonise with those they had heretofore had in use. With regard to the principal attributes of iron, wrought-iron was very strong, bearing a working tensile strain of from five to six tons, and a compressive strain of from four to five tons per inch of section, and as regarded strength it was as twenty-seven to five as compared with oak, and as twenty-seven to four as compared with fir; and yet if it was employed as a beam or girder it was generally so swaddled up with cradling and plaster that as much room was taken up by it as if it had been a beam of oak or fir. Then, again, it was very light as compared with its strength, but by the same process as last mentioned, its weight was brought up to that of a wood beam. It was very ductile, easily hammered to any variety of shape, and yet almost the only form ever given to a wrought-iron girder when used in building was that of the ordinary rolled or plate girder. Again, iron, though very durable, was not an imperishable material, and this appeared to be practically forgotten, for though, unlike wood and perhaps stone, it was free from internal deterioration, yet it was liable to serious destruction by rust and oxidation of its outer surfaces, a most important point considering the fact that but little excess of material was usually employed than was absolutely necessary for the required work, and therefore it would be but reasonable to suppose that when used arrangements should be made by which all parts of a girder or column could be readily inspected, but in the system in vogue the reverse was the case, for the girder was so covered and hidden up that no inspection was possible, nor could any means be taken to paint or otherwise preserve it from the inevitable destruction that must result from rust. It was almost the same as regarded cast-iron; it was a material admirably adapted for columns from its fitness to bear great compressive strains, and by its very nature capable of assuming almost any form that architects may design, from a plain column to the most elaborate effort of ornamental art the mind can conceive; yet, as ordinarily employed, the cast-iron column was either a plain, round shaft, with a square cap and base plate, with gusset pieces

to strengthen their connexion with the shaft, or as a story-post, like a girder standing up on an end. This column or story-post was often covered with lath and plaster, and appeared in the glorified shape of a Doric, Ionic, or Corinthian column, with cap, &c., to match, or, as was the case in most shops, it was left in its native bareness behind a plate-glass front, and had to be wrapped up in glazed calico or baize by Mr. Showemoff, the window-dresser, who wished that ugly columns were out of the way. The idea that iron did not accord with other materials, and was unsuited for, architectural forms, was a mistaken one. Did the hiding up of iron by other material produce the object intended, viz., better effect? And setting aside the principle of honesty and construction, was not the result obtained most unsatisfactory? For, owing to the introduction of iron, much larger spaces were bridged over without requiring columns and arches than heretofore, and hence there were produced a bareness and an apparent weakness, anything but satisfactory to the eyes. It was possible, however, that the eye might require some amount of education before it became accustomed to the use of iron and its employment in connexion with other material. For they were so accustomed to see beams, columns, and brackets of certain proportions, that they were at first sight shocked at the idea of detached columns of twenty-five or thirty diameters carrying great loads, or slender beams carrying a heavy building; and it was difficult to adjust their proportions with the styles of architecture they had in use. But he had hopes that architects would, if they gave the matter their earnest attention, with the sincere desire to succeed, produce designs for iron which, though not perhaps exactly in accordance with any existing particular style, should yet harmonise, even perhaps by contrast, with them! Iron sometimes met with other, but very different treatment from the hands of architects, and he hardly knew which was the worst, for instead of being hidden it was brought prominently forward; but then not as iron, but something else, such as stone or wood, especially so in the case of cast-iron, for not only was it made to represent the last-named, but it also appeared in the guise, or rather disguise, of wrought-iron. He might instance balustrades, vases, parapets, tracery, &c. A prominent example of its misuse in this way was seen in the parapet and spandrels of Westminster Bridge, though happily, however, these were not the work of an architect. There was, he thought, another reason why architects, as a rule, ignored iron as a constructive material, and that was perhaps the most general one, viz., few of them comparatively knew anything about it, never studying or looking upon it other than as the aforesaid useful drudge, and this more especially so with respect to wrought-iron, and as to cast, they might perhaps use it for columns, railings, finials, rain-water gutters and spoutings; but these they took ready designed from an ironfounder's catalogue, and they might or might not (which was more often the case) harmonise with the rest of their design, they thinking it not worth their while to take the trouble to design such things for themselves. Or, if they wanted a wrought-iron girder, they were, perhaps, able to work one out from the simple formula given in the various handbooks; or, as was more likely, they left it to the builders' foreman. But if the quantity required was large, and the work important, they then employed an engineer to work out the calculations, and as the engineer cared nothing about art, but a great deal as to whether his girders were strong and economical, it was very probable that the resultant work was ugly, and without doubt the ordinary plate girders and columns as used in buildings generally were ugly; the architect naturally enough then covered them up with a material he did know something about, and therefore could design in; but if the architect did but know and understand as much about iron, he would calculate for himself, and study to so design his girders or columns, or whatever else he might require, that the result should be artistic, and suitable to the structure for which it was intended. Surely architects, if they would, could so design their girders in wrought or cast iron that they should be pleasing and effective. Let them but take the trouble to draw them out and calculate for themselves, they would soon find it was easy enough to arrange flanges, webs, cover-plates, and angle and tee irons so symmetrically as to be pleasing, and still preserve the necessary scientific proportions, and the relation of the several parts to each other in a practical manner. Plates and angle and tee irons were now rolled in such lengths that very large spaces might be spanned by girders without any cover or junction-plates being required. Many varied forms, and even mouldings, could and would be rolled if manufacturers found there was a demand for them, and that it would pay to make the necessary rolls. As regarded riveting, he did not see why something better could not be done in this way than the ordinary round-headed rivet universally employed. The foliage to the cap of a column was often put on in such a way as to spoil an otherwise good design, by starting from the neck in a line beyond the face of the shaft, especially when the foliage was loose and put in separately, the reason being that the bell of the capital was in a line with the shaft, and the leafage put on, of course projecting beyond. The bell of the cap should be set back, which would allow the enrichment to be put in its proper position. Again, they might often see ornament in cast-iron spoilt by the clumsy way it was put together, commonly by ordinary square or hexagonal headed bolts and nuts. Now, as a rule, if proper attention were paid in designing the work, cast iron construction could generally be put together without requiring any bolts at all, or, at least, without showing them; but, if it *was* necessary that they should show they could readily be made ornamental. For instance, the ordinary square and hexagonal headed bolts and nuts could, by a few nicks with a chisel or file, be made like stars or flowers, and yet retain all their use and strength. Reverting for a moment to the point that the constructive employment of iron was of comparatively late date, it was worthy of remark the significant fact that the artists of the Middle Ages had brick and stone and other materials, but no iron,—at least, not in and quantities they could make structural use of; and they made such good use of the materials they had, that architects and engineers were feign to copy them. It was, therefore, fair to suppose that if they had had iron at their command, as was the case now, they would have produced works in that material as admirable as were their works in others; and he was justified in assuming this from the wonderfully beautiful works they achieved in the ornamental wrought-iron work they did make. He could not help feeling, therefore, that to a certain extent the poor results they had accomplished, with all the facilities they had at command, was not a cheering instance of the progress of true art in these modern times. There was yet another matter closely connected with iron as a constructive material which required attention, and that was the relative positions in which wrought and cast iron should be placed, viz., whether in external or internal work, and this more especially applied to ornament. Now it was a certain and well-known fact that wrought-iron was much more susceptible to the influence of weather as regarded oxidation than cast, and though, therefore, there could be no question as to the superior art and beauty of wrought iron, yet it was a matter worthy of some consideration if it be not more advisable, for the sake of durability, to employ cast-iron for ornamental work externally, and confine their use of wrought iron to purposes of internal decoration. He was perfectly aware that in advertising the use of cast-iron ornament at all, he was touching upon dangerous ground, as he knew that among many of the highest authority there was a strong feeling against it; but be that as it might, the fact remained the same, that cast iron was better adapted for external work than wrought; and he was inclined to think that the feeling which undoubtedly did exist against it was due to the way in which it was misused, and that if the design were properly adapted to the material, one of the principal objections to its application was removed. He knew that it was said that cast-iron ornament was inartistic, showing no feeling, and utterly wanting in individuality, and vulgar in the extreme, so that cast-iron ornament had become almost a by-word; but surely it was unfairly treated, for might not the same be said of work in bronze? A work in cast-iron required to have a model prepared and a mould made, as also did a work in bronze. The work had to be melted and run into the mould, and it was the same with bronze; if the model were badly designed and badly executed, in either case the resultant cast would be bad also. There could be feeling, individuality, and refined art in the design, and art workmanship in the model for cast-iron as well as of bronze, and the fact that iron was cheap and bronze expensive did not detract from the one or add to the other. The great and general mistake made was the endeavour to make cast-iron ornamentation an imitation of wrought work, but if the idea was steadily kept in view, that they were working with a material that required to be run in a mould, and not worked with the hammer, he thought they would succeed in producing cast-iron ornament, which, if not equally a thing of beauty with wrought-iron, should still be worthy of admiration. But, whether they used cast or wrought iron in ornamental work, it would be better for the sake of durability if more attention were paid to the form they gave to it in external work, and in designing it the two great points to be observed were, he thought, the facility with which all parts were able to be reached by the painter's brush, and the avoidance of cup-like arrangements, of leafage and flower-work, which retained dust and moisture, and tended towards rust and decay, and this last especially applied to wrought-iron work, as the leafage was generally thin and crinkled, and therefore peculiarly liable to be affected and injured by rust. In cast-iron work such parts were usually filled up solid. With respect to iron as a constructive material, the different qualities of the metal used was a very important and serious point, much more so than at first sight appeared; for, as in the case of cast-iron, there was not only a great difference of strength in the different brands, but also in the same iron from the manner in which it was manufactured, and it was almost impossible to judge by the outward appearance of a casting whether the iron used was good or bad, for even when fractured it required skill and experience to do so. Though hardly touching upon this point, he wished to draw the attention of the members of the Institute to a very able paper upon "Iron Construction," read by Mr. Richard Moreland, junior, at the Architectural Association on January 9, 1874 (a report of which appeared in the *Builder*), for therein was contained a large amount of practical information, particularly useful to architects who might have occasion to use either wrought or cast iron. For works in cast-iron it was very necessary to pay particular attention to the patterns required. All patterns should be made in the best manner, no expense should be spared on them, and they should be inspected by the architect or his assistant before being cast from. As to the patterns of ornamental work, it was better that the drawings for them should in all cases be done to the full size, and completely show what was intended, so as to ensure the design being correctly rendered. And, in fact, it was better, if possible, to have these patterns prepared under the immediate superintendence of the architect himself. With regard to the drawings that were necessary for a work in iron, it must be borne in mind that in designing for ironwork everything must be shown clearly and distinctly by the drawings themselves; little or nothing should be left to be described by the specification beyond the quality, &c., of the material; therefore, in addition to the general drawing showing the work complete, there must be provided detail drawings of every part, showing each bolt, nut, bolt-hole, rivet, flange, gusset, or chipping piece required, for workmen in iron were accustomed to work to drawings for everything, and to drawings alone, and in this respect they differed materially from the joiner, who, if he were to see a door specified to be a 7 ft. by 3 ft. 2-in. four-panel bead, butt, and square door, would at once know what to do; but if that door, for argument's sake, had to be made in iron it would be necessary to show in detail the whole construction of it, tenon and mortise, rebate and panel, and not only was it necessary to show everything on the drawings, but every dimension must be put on in figures; nothing should be left to scale. Respecting the ornamental construction of ironwork, most of them knew what ornamental construction consisted of in wood or stone as opposed to constructing for ornament; but it was, be confessed, difficult to apply the principles which guided them in the last-named materials to iron, for though it was true they could, as he had said, so arrange their tee and angle irons, webs and plates, that they should be symmetrical, that was not all that was required, for true ornament did not consist in symmetry alone, though symmetry was a very important element in it. They were placed in the difficulty that almost any ornament they employed on constructive ironwork had to be itself constructed, thus flying in the face of the golden rule of ornament, which told them to "ornament our construction, and not to construct for orna-

ment." When working with wood and stone, and some other building materials, they could build in blocks or masses of material, and cut and carve them as it seemed to them best, and it could hardly be said that they were able to do this in the same sense in iron; but though they could not carve it, they could stamp, emboss, engrave, and even mould it, if they would, for machinery was now so powerful that mouldings, splays, chamfers, &c., could be executed in this material with nearly the same facility as in wood; and there was some ground for consolation in the fact that whatever difficulties they might have to encounter, with respect to having to construct for ornament in iron, the same difficulty had to be met with respect to all other metals; and he was inclined to take advantage of "there being no rule without exception," and make the exception in favour of iron and all other metals; but though they might have in some measure to construct their ornament, he thought they should be careful to so manage it that the ornament they did employ should not be wholly useless, and that if it did not add much to the strength of the structure, it should not, at least, be detrimental; and, therefore, all added ornament in ironwork should, he thought, be of the very lightest description, and if not actually constructive, it should at least grow naturally from and appear to be part of the real constructive portion of the work. In conclusion, he said that many of them, he knew, had already by their works anticipated his ideas with respect to constructive and architectural ironwork, and to them, therefore, his remarks, he feared, had been tedious; but, still, he hoped they would endorse his views, as he had been encouraged to maintain them by the knowledge that amongst those who stood the highest in their profession there were some who had not thought it beneath them to design in iron, and with successful results, and they would pardon him if he mentioned the name of their honoured president, Sir G. Gilbert Scott.

Mr. Payne stated that he had recently been constructing vaults and floors by a new method composed of concrete with iron, without girders and without thrust; and explained to the meeting several models which were exhibited in illustration of this new method.

Mr. Skidmore believed that because most of the architectural works of the past had been composed mostly of stone, everybody had come to the conclusion that stone was the proper material to be employed, and that metals were subordinate; but any one who had given their time to architecture must have been struck with the amount of metal that had been found at the Temple of Jerusalem, which had its columns covered with gold, the value of which would be about two millions of money. In the Temple of Assyria, and in almost every great architectural structure, there had been a great deal of metal used. He thought that castings in iron should be real, legitimate castings, not castings in imitation of stone; and referred to a column on the Great Western Railway Station, Paddington, of which, although he did not know where there could be found any form like it in stonework, the castings were true. He thought that in designing columns it was most essential that originality in their formation should be aimed at.

Mr. C. Fowler stated that, with reference to cast iron, it occurred to him that one reason why the employment of cast iron was so very unsatisfactory, was that the designers naturally enough could not help thinking at the time of what had been done in iron construction. The way to treat cast iron was not as iron at all, but as a cast material. With reference to beams, the difficulty was in combining the ornamental with the artistic form. As to wrought iron, it had always appeared to him to be extremely difficult to work, as the labour for it was very expensive, and the forms which it would most conveniently take were not those which they desired to show if a plain structure was attempted. If it was attempted to make the beams in an artistic form it became very expensive; and if cost were an object, the result was not very satisfactory. Mention had been made of the station at Paddington, where it had been attempted to ornament the wrought iron rigs by perforating them, and the light being seen through them there was a pleasing variety, the columns being certainly peculiar in form.

Mr. Matheson, a manufacturer in ironwork, said that architects used iron in an apologetic manner, and used it very sparingly, which he thought was to be deplored. It was a common belief that cast iron had no elasticity, which was a mistake, as cast iron could be used where there was a great deal of percussion. He contended, notwithstanding what Mr. Driver had said, that cast iron was quite as good for constructing bridges as wrought iron, and believed that the engineers, who were best informed in these matters, would say so. Even in roofs of buildings so large as that of the London, Chatham, and Dover Railway Station cast iron was not too brittle. He thought that if architects were a little bolder there were many uses to which cast iron might be put for which it was not now employed. With regard to the rust to which iron was subject, he thought that this was a difficulty in the way, particularly in a London atmosphere. He believed that much of the dislike to iron arose from the bad way in which it was executed. Architects should be brought in contact with the manufacturers of iron, and not be, as is the case now, at the mercy of the builders. In Paris iron would last much longer than in London. The rust to cast iron was caused in a different way to wrought iron. When cast iron was made there was a skin upon it, which was different from the iron inside, and which could be preserved by careful painting. Many engineers believed that iron should immediately upon its being manufactured be oiled; but he (Mr. Matheson) considered that it was impossible to preserve the skin, for it must come off sooner or later. There was one way of preserving iron, viz., by pickling it, which was a very similar process to galvanising it.

Mr. Skidmore stated that wrought iron was always pickled, which caused it to lose the scale entirely.

Mr. Aitchison said that with regard to wrought iron, it had many advantages. Generally speaking, it was more easy to work with regard to the artistic capabilities than cast-iron; it was open to almost any treatment the skill of the architect could give it. He went on to say that if there were amongst them any natural-born architects, nothing would give them greater delight than in overcoming the difficulty of constructing in iron, and in stamping forms in that metal of a pleasing shape; but hitherto that had not been attempted. He could not help thinking that they should look less at ornamentation than usefulness of form, and if that were done, they would find their duties simplified. Referring to cast-iron, he said that its use was a dangerous experiment, because the least flaw in the iron girder would ruin the building. In wrought iron, too, there was the difficulty of expense, but there was no doubt that it could be cut into almost any shape, but the great difficulty was to cut it in the plainest and simplest way.

Mr. Dickson considered that sufficient attention had not been paid to the advantages of iron as a constructive material, and if architects were to devote more time to the subject it was possible that more elegant forms would be produced than were produced now; and instead of clothing the cast-iron girders in shop-fronts and in buildings, they ought to have something more ornamental and more useful. He believed that if the architect of former times had had the advantage of iron, they would have shown by their skill the adaptability which it possessed.

Mr. Chatfeild Clarke said that the engineers had many opportunities of making iron ornamental and useful, but had not embraced them. When they looked at the hideous monstrosities which they met in various parts of London, they were astonished. With regard to the use of iron, the difficulty was not only the expense, but the expense of repose: there was no rest to the eye, and he doubted whether that difficulty could be conquered. All architects had found considerable difficulty in producing ornamental iron-work, which was owing to the careless way in which the iron-work was done.

Mr. Macfarlane believed that the great cost of iron had been caused by the deterioration of iron, for an immense deal of foreign matter had been introduced, and inasmuch as iron had to go through a good many processes, it must be costly. He was convinced, however, that if architects were to give their attention to iron-work there would be constructed much better buildings.

Value of Freehold Property near Regent-circus.—Nos. 316 and 317, Oxford-street, with extensive stabling and yard in the rear, the whole comprising about 3,000 superficial feet, with possession at Midsummer next, was submitted to auction at the Mart on the 7th inst. by Messrs. Rushworth, Abbott, & Rushworth, and sold for 22,550*l*.

A SELF-MADE MAN: MR. WILLIAM DUDGEON.

One who has done his share to make the industries of the Thames as they now are has passed away from us. We regret to have to announce the death, on the 1st instant, of Mr. William Dudgeon, a member of the well-known firm of J. & W. Dudgeon, the builders of the *Independenzia*, and a host of vessels of divers forms and tonnages, for our own Government, our own merchant navy, and for the Governments and navies of a large number of foreign countries.

Mr. W. Dudgeon was the son of a village blacksmith, and was born fifty-seven years ago, in the village of Lyninghame, Haddingtonshire, Scotland. He, and his elder brother John, the head of the firm, had few advantages or opportunities likely to qualify them for the high position to which they were afterwards to attain. They were thrifty, and they were studious, and the two men have shown what can be done with the scantiest educational advantages, but their career does not show to what they might have attained with greater.

There are, or have been hitherto, few cases in Scotland of parents being brought before the magistrates because of their children not attending school. John Knox, the great reformer, secured a provision in Scotland by which every parish was provided with an "efficient" school, and hence the progress of the Scottish people.

The Messrs. Dudgeon had their village school education, and afterwards their trade training in their father's smithy. From the quiet country village they went out into the world, and, in addition to the few crude arts in metal-working and its applications, learned from their father, they acquired for themselves a practical knowledge of mechanical engineering, and passed through various grades until they became ultimately the heads of a firm employing, in busy seasons, as many as 2,000 men.

Messrs. Dudgeon had two establishments, connected by water communication, which were the Millwall Engine and Boiler Works and the shipbuilding yard at Cubitt Town. The first was entered upon in 1855, and the other in 1862. The deceased, Mr. William Dudgeon, has ever since it was commenced been at the head of the Millwall Works, acting in concert, of course, with his brother John, the head, and, it may be added, mainly the maker of the firm.

But this matters not now. A good man has gone who has left many to lament him.

VALUATION OF PROPERTY BY RAILWAY OFFICERS AND ARBITRATORS.

The North-Eastern Railway Company have just found a wide difference in the valuation of lands, buildings, and good wills by their own valuers and that of arbitrators.

The property required to be taken for the new railway station at Sunderland and lines has been valued by the arbitrators as follows:—Sir H. Williamson, bart., has to be paid the sum of 19,942*l*. for his interest in the Sheepfold land and Graving Dock; Messrs. Vaux & Co. are to receive 15,285*l*. for their brewery; and 10,740*l*. are awarded for the premises of Messrs. James Hill and Joseph Huntley, the whole being nearly twice the value placed upon the property by the railway valuers.

SANITARY INQUIRY.

BUNTINGFORD HERTS.

Mr. Robert Morgan, C.E., the Local Government Inspector, conducted an inquiry on the 31st ult., as to the advisability of the Local Government Board granting a provisional order to empower the Rural Sanitary Authority to put in force the Lands Clauses Consolidation Acts for the taking, otherwise than by agreement, of certain land for the purpose of purifying the sewage of the town.

The land proposed to be taken, called Moss Mead, is about six acres in extent, and the property of Sir Henry Lushington, who, represented by his solicitor, Mr. Armstrong, opposed the granting of the order. Evidence in support of the petition was given by Mr. Hunt, the clerk to the Board, and by Messrs. Smith & Austin, the engineers, who proved that the land in question was suitable for the purpose, and was the nearest on to which the sewage could be taken by gravitation.

Mr. Armstrong objected to the scheme on the

grounds that the land was situated near a public road, and that a public footpath ran through it, and that in consequence a nuisance would be experienced. He showed that there was other land, called Rea Mead, belonging to Sir Henry, equally suitable and farther from the town, but he admitted he was not empowered to say that Sir Henry would consent to such other land being taken.

A great deal of correspondence was read, and a long discussion ensued between Mr. Armstrong and the Clerk to the Board, as to who was to blame for terminating the negotiations, that had originally taken place for the lease of Rea Mead by the Sanitary Authority.

The Inspector urged that unless Mr. Armstrong could say that Sir Henry Lushington would prefer to sell a portion of Rea Mead instead of Moss Mead, he was afraid the provisional order must go on.

No other opposition being offered, the inquiry closed.

RE-OPENING OF KIRBY MISPERTON CHURCH, YORKSHIRE.

ON Wednesday, March 31st, the old parish church of Kirby Misperton, near Pickering, was re-opened, after restoration. The work has occupied about two years. A new chancel, with sacristy, &c., has been added. The date of the foundation of the edifice is not known, but a church existed here within a hundred years of the Conquest. To this date may perhaps be assigned the old buttresses at the north-east angle of the nave, together with some of the walling near it, and probably part of the old chancel arch which formerly existed, but was removed prior to the present restoration. The lower portion of the tower is of thirteenth-century work, and there seems to have been a chancel of the same date. The old stone work originally built in the thirteenth century was pulled down and rebuilt in the eighteenth, and is now again replaced in the wall of the chancel. The nave and south aisle were probably rebuilt in the fifteenth century, and this alone of all the old edifice had retained its old character. The chancel and upper part of the tower were rebuilt during the last century, and the whole church had then been much injured.

The works just completed are briefly these:—The mean chancel of the last century has been rebuilt, the new one being on the lines of the old foundation, but more lofty, and with substantial walls and buttresses. It is 32 ft. long by 15 ft. wide, and lighted by three two-light windows on the south side, and a three-light window on the east, the latter being set high up in the gable. The roof is oak of a canted form, divided into panels by moulded ribs and carved bosses. The altar is placed higher than the nave, from which it is approached by six steps. Behind the altar is a carved stone retable or shelf projecting from the east wall. The costly frontal is from the architect's design, and has been worked by ladies at Wolverhampton, where the rector, the Rev. G. Body, formerly resided. Standing on the altar, on a moulded octagonal base, is a brass cross with *fleur-de-lys* terminations, in each of which is a large crystal. The two altar-lights are also of moulded and hammered brass, designed after old examples in Belgium. The metal-work was designed and manufactured by Messrs. Buckley & Co., of London and Bruges, under the supervision of the architect.

On either corner of the foot-pace on which the altar stands is a tall standard candelabrum of iron and brass, each holding fifteen candles. The pavement of the chancel is of antique tiles, by Mr. Godwin, of Hereford. The church is lighted by duplex-burner lamps, suspended by long iron rods, with brass mouldings. On the north side of the chancel is a spacious sacristy, with an organ-chamber, and a lobby entering into it and into the chancel. Within this vestry are built in two stone corbels and a moulded arch discovered in pulling down the old chancel. The nave has had its modern windows in the north wall replaced by traceried ones. Its roof is of open timber, covered with double boarding, with an air-space between for the purpose of warmth. The south aisle has been repaired, and a new roof put on. The whole church has been refloored, and the former pews have for the present given way to chairs. The work has been designed in the Perpendicular style of the fifteenth century, in harmony with that of the south aisle, and with fragments discovered in removing the old chancel. The church is heated by an underground stove. The restoration has been carried out by Mr. T. Wood, builder, of Pickering, from designs, and under the personal superintendence of Mr. C. Hodgson Fowler, architect. Mr. Nelson was Mr. Wood's foreman, whose skill and industry are commended. The cost of the restoration has been about 2,500*l.*

CASES UNDER THE METROPOLITAN BUILDING ACT.

IMPROPER MATERIALS.

ON the 19th of March, Mr. John May, a builder, was summoned before Mr. Ingham, at the Hammersmith Police Court, by Mr. Knightley, District Surveyor, for constructing the walls of a building in Thorncroft-road, Shepherd's-bush, in a manner contrary to the provisions of the Act.

Mr. Knightley stated that defendant had used mud and road scrapings for the purpose of building the walls instead of solidly putting the brickwork together with mortar properly compounded of lime and sand in the proportion of one of lime to three of sand. The fact of having used road-scraping was not denied on the part of the defendant; but he contended that notwithstanding this he had built in strict compliance with the Act, as it did not define what constituted mortar. He produced witnesses, one of whom admitted that the material used for mixing mortar was brought to the premises in slop-carts, and another witness stated as his belief that in cases where pit-sand was used it was merely with a view of imparting colouring to the work. Mr. Knightley produced a sample of the material complained of, which he explained consisted mainly of mud containing in addition thereto certain animal and vegetable matter, and therefore wholly unsuited for building purposes.

To erect houses with this was to deceive the unwary purchaser of house property, and was dangerous to the safety of the public. He proceeded to read extracts from the books of the profession regarding mortar, and submitted that although the Building Act did not specify its component parts as these books did, yet the District Surveyor, who previously to his appointment, was required to undergo an examination by the Institute of British Architects as to his knowledge of building construction (of which mortar formed a part), might be deemed competent to judge as to quality, and had a right to expect such mortar as his technical experience led him to demand. He called witnesses, who spoke to the inferior quality of the mortar used, and then asked the magistrate to make an order for the demolition of the building.

The magistrate, however, adjourned the summons for further samples, and on the 8th of April decided in favour of the District Surveyor. In summing up, he said:—"It is an unpleasant duty for me to have to decide in a question of this kind, but I can only go upon what is stated in the scientific books upon the subject, which represent that mortar should be composed of lime and sand only in certain definite proportions. It is admitted by defendant his mortar is not of that character, but that certain ingredients are introduced other than sand. If this were allowed the field would at once be open for any ingenious builder to import whatever he pleased and give to it any name which suited him; this sample is not in my opinion mortar, and is unlike anything I ever saw before." He then made an order for the demolition of the building to the extent named by the District Surveyor in his notice, allowing him the whole of his costs in the case.

It is to be hoped that this judgment will serve as a warning to other builders.

NEW BUILDINGS AT THE ST. PANCRAS WORKHOUSE.

THE St Pancras guardians have decided to add some new buildings to the Workhouse. At their last meeting a report from the Visiting Committee recommended the carrying out of a plan for the erection of a new dining-room, and the remodelling of the kitchen and laundry. It further appeared from the proceedings of the committee that Mr. Bridgman, the architect, had examined the foundation of the workhouse, in accordance with a request from the Local Government Board to that effect, and they recommended that a copy of the architect's report upon his examination be forwarded to the Local Government Board, stating that the guardians, being guided by that report, have not considered it advisable to underpin the building, and add a new front to it, as suggested by the Local Government Board. The recommendations of the committee were adopted, and it was stated that the cost of the alterations which the guardians proposed to carry out would be 6,000*l.*, as against 14,000*l.*, which would be the outlay if the plans of the Local Government Board were adopted.

Accident at West Hartlepool.—On Saturday, owing to the breakage of an iron bolt, a portion of the new chapel in course of erection, for the use of the United Methodist Free Church, in Burbank-street, West Hartlepool, which had been carried up a height of from 60 ft. to 70 ft., fell down. The damage is estimated at between 30*l.* and 40*l.* The men had just ceased work, and no personal injury was inflicted.

GASWORKS EXTENSIONS IN THE METROPOLIS.

THE several gas companies connected with the metropolis are now holding their half-yearly meetings, and from the reports and proceedings of some of them it appears that the continually-increasing demand for gas necessitates the construction of new works. The report of the Gaslight and Coke Company states that the consumption of gas in the company's district is proceeding at so rapid a rate as to render large and immediate extensions of works necessary to keep pace with it. It adds that the additions to plant are the more imperatively required in consequence of the closing for manufacture of the Westminster and Blackfriars stations. As regards the latter, the report states that a contract for the sale of the works has been entered into with the Corporation of London, for the sum of 170,000*l.*, which, when paid over, will be applied in reduction of capital. The report of the Phœnix Company states that the consumption of gas continuing to increase, a contract has been made for the erection of a gasholder to fill the tank constructed at Kennington in October, 1873; whilst the report of the South Metropolitan Company states that the increase of business necessitates constant additions to the works and mains of the company, and that the principal work now in hand is a new gasholder tank for the reception of a gasholder to contain upwards of 2,000,000 ft. of gas, which is expected to be ready for use before next winter.

A SURVEYOR'S POWER.

AS is generally known, the laws of Scotland differ widely from those of England.

At a meeting of the Johnstone (Scotland) Police Commission, after a long and warm debate, and hearing objections, a motion was adopted by eight to three, to construct a larger sewer in the town, the cost of which was 1,250*l.*, as estimated by the burgh surveyor.

After it was resolved to proceed with the work, the town clerk, to the astonishment of the council, read a section of the Burgh Act, which empowered the surveyor to negative any decision of the Commission, if he were dissatisfied with the proposed construction of the works.

The surveyor, availing himself of this, at once condemned the proposed works; the result being that the whole proceedings of the Commission, which had been carried by such a large majority, became invalid, and it was proved that the surveyor was master over his supposed masters.

THE CHARTERHOUSE AND THE MERCHANT TAYLORS' COMPANY.

IN the proceedings connected with the entrance of the Merchant Taylors' Company into the new domicile of their school within the precincts of the old Charterhouse, recorded last week, there was much said, and said well, about reverence for antiquity. It is difficult to reconcile this noble talk with the wanton destruction perpetrated, under the sanction of this great Conservative Company, of the ancient buildings on the site which they have come to occupy. For what have they done? In order to make room for their new buildings, constructed, no doubt, on the most approved models and with the best modern appliances, under the direction of an architect of genius, the half of the old Carthusian Cloister, a relic of antiquity absolutely, I believe, unique in this country, and on mere antiquarian grounds deserving of the utmost consideration and respect, has been destroyed, and its place occupied by the new buildings, which project across its line. In an architectural point of view, this act of barbarity was, I am convinced, perfectly needless; in an antiquarian and conservative one it ought to have been avoided at almost any sacrifice. The destruction of this venerable relic seems to me to reflect the greatest possible discredit on every one concerned in the business. Unfortunately it is now irreparable.

H. W. PHILLOTT.

Improvements in Reading.—We hear that new premises for the London and County Banking Company are about to be erected in the Market-place, between Messrs. Morris & Sons' establishment and the house now occupied by Mr. Staveley. The architects appointed are Messrs. Wm. & T. J. Brown and Albury.

THE CHARING CROSS APPROACH TO THE EMBANKMENT.

The building materials of the houses and other premises on each side of the site of Northumberland House, and which are about to be taken down for the new approach from Charing-cross to the Thames Embankment, were sold by auction on Tuesday and Wednesday this week, by Messrs. Horne, Eversfield, & Co. The property consisted of twenty-six houses, shops, warehouses, and stabling, and included five houses and shops facing Charing-cross and Trafalgar-square, situated between the National Bank and the south-west boundary-wall of Northumberland house, and two other houses and shops on the north-east side, leaving two other houses and shops adjoining yet to be disposed of, when the length of frontage to Charing-cross to be cleared away, for the purposes of the improvement, between the National Bank and Northumberland-street, will be about 500 ft. The sale also included the materials of twenty houses in Northumberland-street, in addition to Percy-chambers, with stables in the rear, at the bottom of the street, on the north-east side, together with a public-house and a shop in Scotland-yard, on the south-west side. The Northumberland-street property disposed of included the whole of the houses on the south-west side, from the boundary of the grounds of Northumberland House to Scotland-yard, and on the opposite side, from Northumberland-passage, leading into Craven-street, to the bottom of the street facing the Embankment. The materials of the several blocks of houses were divided into 283 lots, and comprised, according to the catalogue, upwards of 1,000,000 bricks, and 30 tons of lead, amongst other articles connected with building. The materials of the buildings in Charing-cross, comprising 133 lots, were sold on Tuesday, and those of the Northumberland-street property, containing 150 lots, on Wednesday, the proceeds of the two days' sale amounting to 1,850*l*. The ground is to be cleared immediately, preliminary to laying out the new street and approaches to the Embankment, the conditions of sale providing that the slates, tiles, and lead are to be taken away within two days after the sale, and the whole of the materials and brick-work to be removed within thirty days, after which anything left on the premises will be deemed a trespass. The entire area to be cleared for the purposes of the improvement is upwards of 3 acres in extent, which may be expected to be thrown open within a month from the present time. It may be added that, with the exception of a number of unsightly remnants of walls facing Charing-cross, the whole of the materials of Northumberland House have already been removed, and it is stated that their still remaining is owing to the default of some of the purchasers, who state that the materials are not worth carting away.

LIERNUR'S SUCTION SYSTEM OF DRAINAGE.

On the 7th inst., at the meeting of the Society of Arts, Mr. Hawksley, C.E., in the chair, a paper was read by Mr. Adam Scott, on Captain Liernur's improved system of town drainage, now in use in parts of Amsterdam and other towns in Holland, and in several towns in Austria. By this system, before now described in our pages, the excrementa and such refuse are removed by pneumatic pressure. The town is divided into districts of from 200 to 1,000 acres according to local circumstances, each such district being again divided into small drainage areas, and each area is provided with one air-tight cast-iron tank placed at a convenient spot where two or more streets meet, and about 3 ft. under the pavement. From the tank along the several streets extend air-tight cast-iron main pipes, connected by branches with the closets of the houses. A vacuum is created in the tank, and the fœcal matter is sucked into the tank and from the tank again by a similar process into a central station. The matter collected at the central reservoir is converted into poudrette, and sold for agricultural purposes; but this part of the system, it was stated, has not yet been tested on a large scale.

We have never felt able to bring ourselves to believe that this system could be wisely adopted in our large towns. It is complex and costly; the mere fact that air-tight pipes and vessels are needed, and that a vacuum, more or less complete, must be produced, almost suffices to array one's instinct against it. It is only right, however, to say that the system has some active friends, and that strong evidence of its successful working in Leyden, Amsterdam, and elsewhere has been given.

THE MAUSOLEUM OF THE MEDICI, FLORENCE.

A writer in the *Times*, Mr. Richard Edgecumbe, having expressed some doubt as to a portion of the information we recently gave concerning the Medici Mausoleum, our correspondent in Florence says:—Mr. Edgecumbe is in error. The tomb opened was not that of Lorenzo il Magnifico, which is in the sacristy of the Church of St. Lorenzo, and who died at an advanced age, April, 1492, but was that of Lorenzo II., Duke d'Urbino, who died at the age of 26, March, 1519, and of Allessandro il Moro, his reputed son, or probably son of Clement VII., and who died in January, 1517. It is in the chapel of the Medici. This will suffice to explain to Mr. Edgecumbe his mistake. An error in the first notice may be corrected as the subject is again opened. The iron found, as we mentioned, by the side of the bodies in the tomb had probably been fixed to support the wooden slab under that of stone, and screwed into the wood to support it. It had corroded and fallen to pieces.

THE IRISH COLLEGE OF SURGEONS.

The College of Surgeons, requiring alterations and additions to their premises at the Green, Dublin, offered a premium of 100*l*. for the best set of plans. Mr. William J. Symes, of the firm of Millar & Symes (architects and civil engineers), of Great Brunswick-street, has been selected for the premium. Mr. Symes, who is architect to the College, was asked for plans (a couple of years ago), which he furnished, but the Council, after a lengthened consideration, deemed it advisable to get other architects to send in designs in competition. Mr. Symes then sent in copies of his original plan, which were adopted. Ten sets of designs were sent in.

DAMAGE TO BUILDINGS BY LIGHTNING.

In the middle of the day, last Monday, the city of Durham was suddenly cast into darkness, so that persons were unable to read or write. This was followed by a flash of lightning of extraordinary vividness, and a crashing peal of thunder, that made the inhabitants rush out of their houses into the streets. It was found that the lightning had done great mischief in various parts of the city, and it appeared at other places miles off.

The Rev. Mr. Greenwell's house, in the Bailey, and his neighbour's house, had their stacks of chimneys completely demolished. The bricks fell through the roofs into the bedrooms, and the lower parts of the dwellings were filled with smoke, dust, and soot. After striking the chimneys the electric fluid caught the spouting, and passed along the "down corner" into the earth, bursting in its progress the strong cast-iron spouting, breaking the chain of the cellar grate, bursting the water-pipes in the middle of the street, and several gas-pipes on each side of the way. This caused a great blaze of gas and conflagrations in several houses, which were fortunately put out by the inmates.

The pitmen at work in the mines were fearfully alarmed by the shock, expecting an earthquake was at hand.

PARISH PROSECUTION FOR A NUSIANCE.

On the 7th inst., at the Marlborough-street Police-court, Mr. Thomas Codey, mineral water manufacturer, of 88, Whitfield-street, St. Pancras, was summoned before Mr. Knox for allowing the discharge of mineral waters and other offensive matters, the deposit of the residue from the manufacture of aërated waters, into the sewers, and causing a nuisance.

Mr. Cooper, solicitor to the vestry of St. Pancras, prosecuted, and Mr. Edward Lewis, of Great Marlborough-street, defended.

After evidence had been taken, Mr. Knox said he was prepared to give his decision, and after referring to cases decided by Justices Mellor and Blackburn, said there was a conflict of evidence in the case, one gentleman stating one thing and another gentleman another, but he felt compelled to rely on the testimony given by the medical gentleman on the part of the parish, and that the putting the refuse from these works into the sewer was injurious to the public health, and he should, therefore, made an order that the nuisance should be discontinued, and, if thought necessary, he would grant a case.

DAMAGES AGAINST A GAS COMPANY.

FARE *v.* THE BATH GAS COMPANY.

In this case, tried at the Bristol Assizes, before Lord Chief Baron Kelly, Mr. Collins and Mr. Lewis were counsel for the plaintiff; Mr. Cole, Q.C., Mr. Lopes, Q.C., and Mr. Saunders were for the defendants. The plaintiff, who is a carpenter, resides at No. 1, Dalton-cottages, Bath, and the action was brought against the Bath Gas Company, to recover damages for injury which he sustained, at their hands, his furniture having been destroyed and his wife very seriously injured by an explosion of gas, which took place on the 22nd of January. The Bath Gas Company was an incorporated company to supply the citizens with gas, and they had the power to open the streets and lay down mains, and it was of great importance that they should take every precaution to see that their mains and service-pipes were in proper order, so as to prevent an explosion. Negligence having been proved, the Company agreed to a verdict for 350*l*. and to pay all certified costs.

COMPENSATION CASE.

At the Guildhall, London, on Saturday last, the case of Frank Bouts *v.* The City Commissioners of Sewers came on for hearing. This was a compensation claim, amounting to 6,967*l*., and was made in respect of 21, Seething-lane, where the claimant had carried on the business of a licensed victualler.

The property in question was the "Pompion," and the claimant, the landlord of it, had been served with a notice by the Commissioners of Sewers, acting under the power of an Act of Parliament, to take the house for the purpose of a public improvement. His witnesses were Mr. J. J. Orgill, Mr. Thomas Fry, and Mr. J. P. Self.

On the side of the defendants, Mr. Lovejoy was called, and he estimated that 250*l*. a month would be the outside takings in the new premises. The net profits he put at 567*l*. a year, instead of 700*l*. as fixed by the claimant's witnesses. The cellar would be necessary for the business. Mr. Ryde fixed the gross profits at 1,083*l*., and, deducting the necessary charges from it, he estimated the net profits at 453*l*. per annum. He estimated that was worth to purchase by a tenant five years' purchase, or 2,265*l*. He did not think that any trade compensation should be allowed, the claimant having only the goodwill of a trade to sell.

The jury found for the claimant for 5,514*l*.

DANGER OF "STEEPLE JACKISM."

Those reckless men who are known to the building world as "Steeple Jacks," are continually "carrying their lives in their hands"; and it is questionable if the authorities at the Board of Trade or the police have not powers invested in them to stay such dangerous modes of repairing steeples, churches, and shafts as are now practised by men to earn a few pence per hour extra wages.

The last victim to the practice is Jack M'Millan, of Glasgow, who has just been smashed to a jelly at Kirkintilloch. He was employed tarring the high brick chimney-stalk of the Bellfield Chemical Works, and rested upon a small scaffolding suspended from a rope, carried over the top of the stalk by means of a kite, and secured on the other side. As he endeavoured to move round the stalk, his movements dislodged the rope, and he fell to the ground, a height of 80 ft. His breath was out of his body before he reached the earth.

Builders' Benevolent Institution. — An advertisement in our columns shows that an endeavour is to be made to get rid of the projected almshouses, and to apply the money in hand to the general purposes of the institution. We hope it will be successfu'.

USUAL FORM OF CONTRACT.

WILKINS v. WHITE.

THIS was an action in the Crown Court, Bristol (before Mr. Justice Lush), on the 6th inst. The plaintiff is a builder carrying on business at St. Paul's, in this city; and the defendant is a provision curer, in Castle-street. The action was for the recovery of 332*l.* 5*s.* 11*d.*, and the defendant had paid 172*l.* into court. It appeared that some time ago the defendant purchased a piece of building land in Cobourg-road, Montpelier, and entered into negotiations with the plaintiff to build two houses upon it. A price was agreed upon, and Mr. Harford was appointed architect. A contract was prepared between the plaintiff and defendant, and Mr. James Wilkins, on being told that it was in the usual form, signed it without reading it; but the plaintiff now averred that it was not in the usual form, and did not contain a strike clause.

The defendant pleaded a set-off of 60*l.* as penalties for the non-completion of the contract in the specified time; but the plaintiff contended that this delay was in consequence of the defendant not having supplied grates in proper time, and, moreover, that he had a strike of carpenters and joiners.

Verdict for the plaintiff for 60*l.*

ARCHITECTS AND WORKMEN.

SIR,—If you will kindly allow me space in your valuable journal, I should like to make a few remarks on the paper read by Mr. Thicke, at the Architectural Association, entitled "Relationship between Architects and Artisans." I perfectly agree with Mr. Thicke in the greater portion of his paper, but I must beg to differ from him in one or two particulars.

I think much good would result from a more free intercourse between architects and workmen, for much valuable information may be gained by the architect in matters of detail and practical construction. Although many workmen are far from being what may be termed educated, yet they possess good ideas of the best manner in which work should be put together. Some architects, at times, seem to forget in what material they are working, whether wood or stone.

I think every architect's pupil before he enters the office should have eighteen months or two years at the bench, and the same time at the mason's banker, and if this plan were adopted our future architects would be far superior to many of the present day, and they would better understand the nature of the material with which they were dealing. I have sometimes seen details of mouldings, &c., for stonework which were very suitable for wood, but perfectly ridiculous for stone; the fillets and some of the members so thin and undercut that they would scarcely weather a hailstorm; and a few showers and a frost or two have completely destroyed them.

Mr. Thicke's idea of placing the drawings in a conspicuous place on the works, so that all workmen may have free access to them is certainly novel, but he does not say if he would limit the hours of inspection to meal times, &c., or whether they would be accessible at all times: if the latter, I fear the contractor would scarcely agree with him on that point, as the men would be continually neglecting their work to inspect the drawings, and arguments would ensue on various points, to the great loss of their employer. The plans and sections of a building would be almost as intelligible to the greater portion of the workmen, as a map of the British Isles would be to a native of Madagascar. There would doubtless be some few intelligent workmen on the job who would probably understand them and profit by it, but their number is very limited.

The English workman requires to be educated up to this point; but I fear, from what knowledge I have of mechanics, that it will take a long time to accomplish it. Although technical education has made rapid strides the past few years, and is at present engaging the attention of almost all concerned in the education of this country, yet the workmen do not take it up with any spirit, but rather as a patient would a disagreeable medicine; they make a wry face, and gulp it down, doubtful whether it will do them any good or not. A FOREMAN BUILDER.

UNION CHAPEL, ISLINGTON, COMPETITION.

Sir,—If the interest in the above competition were confined to the competitors I should not trouble you with any remarks upon Mr. Waterhouse's extraordinary defence of himself in your last issue. But as it is of the greatest importance to the profession that competition should be decided upon fixed and fair principles, permit me to show how, in this instance, the Institute Rules and the appointment of an assessor have failed to secure the instructions being adhered to.

The committee invite designs for certain buildings, the entire cost of which is not to exceed 15,000*l.*, and they promise to appoint as their architect the author of the best design valued at that sum. They will also consider a design honestly estimated by its author if, in the assessor's opinion, it can be built for a sum not exceeding 10 per cent. additional. But they do not offer the *competitors* 16,500*l.* to deal with. The 10 per cent. margin is for the *assessor's* application, not the competitors. Any design sent in valued by the author at over 15,000*l.*, or by the assessor at more than 16,500*l.*, would be debarred the competition, and the committee reserved to themselves the right of withholding in such a case the 50 guineas to be paid to each competitor.

Upon what principle, therefore, did Mr. Waterhouse value designs sent in at the following figures—21,000*l.*, 18,750*l.*, 16,244*l.*, ex tower? Is it part of an assessor's duty to bring into the competition architects who have voluntarily excluded themselves? I have always understood the assessor's first duty was to determine which drawings conformed to the instructions, *and exclude all others*; then advise upon the merits of those conforming.

But Mr. Waterhouse, it would appear, has succeeded in bringing "Torcello," valued at 18,750*l.*, within the 16,500*l.* (which he did not upon his first valuation), by deciding that the tower need not be included in the estimate, though shown in the design. There was not a word in the Instructions to this effect. Style was left entirely to the architects, but the words "a campanile has been suggested" were added.

This suggestion it was free to the competitors to accept or reject. If they accept the suggestion, and dignify their designs by such an addition, in all reason it must be included in the 15,000*l.* The same might be said of the caretaker's residence, and "Torcello," I understand, omitted it, while all the other competitors not only show it, but include it in their estimate.

But admitting, for the sake of argument, that drawings might be beautified by towers, and not included. It is then necessary for "Torcello" or Mr. Waterhouse to show the value of that tower to be 3,750*l.*, or the buildings *minus the tower* must have been sent in *intentionally* above the stipulated sum.

Ought such conduct to be rewarded? Upon Mr. Waterhouse's own showing, the design he recommended is debarred the competition.

I need say nothing respecting the assessor's mode of valuing. All designs by the same schedule of prices!

The committee, I am sure, have desired to do nothing but what is strictly honourable. The means they took to be guided aright shows this. The profession will regret all the more that the result so far has been a signal failure.

T. LEWIS BANKS.

*** Two other letters to same effect received.

STAINED GLASS.

Norwich.—A stained-glass window has just been placed in the south aisle of St. Giles's Church, in memory of the late Mr. John Godwin Johnson, at the expense of some of his old pupils. The window, which has been executed by Messrs. Joseph Bell & Sons, of Bristol, is one of three lights, and tracery of the Perpendicular period of architecture.

Horncastle. — A coloured window to the memory of the late Mr. Harwood has just been placed in the centre window of the north aisle in the nave of St. Mary's Church. The window is in three compartments, the lights being divided into two panels each. The subjects are "Faith, Hope, and Charity," represented by three female figures. The west compartment is that of "Faith" holding a cross and Bible; the centre, "Charity," holding an infant in her arms with a little child clinging to the garments; the easternmost, "Hope," leaning upon an anchor. In the second panels are, beneath "Hope," "Daniel in the Den of Lions"; beneath "Charity" "Joseph embracing his Brethren"; and beneath "Faith" "Abraham offering up Isaac." The colouring is in imitation of old glass, of flat hues. The window was supplied by Messrs. Clayton & Bell, of London, at the cost of 100*l.*

Ollerton.—A painted window has been affixed in Ollerton parish church by Mr. Cecil G. S. Foljambe, to the memory of Mrs. Lumley, late of Cockglode, near Ollerton. The window has been supplied by Messrs. Heaton, Butler, & Co., of London. The subject chosen represents the "Twelve Apostles," with inscription underneath. This is the second window which has been placed in Ollerton Church by Mr. Foljambe.

Reading.—A new stained-glass window has been placed in the west end of the north aisle of this ancient church. The window was erected by Messrs. Clayton & Bell, of London. The edifice has been restored, and rendered free from debt.

Folkestone.—Two new stained-glass windows have this week been put in the baptistery of the parish church. They are the gift offering of a lady. The subjects are, "King Ethelbert, the first Christian King of Kent, being baptised by St. Augustine, the first Archbishop of Canterbury." The windows are from the studio of Mr. J. Kempe.

Wincott.—The east window in the church of St. Mary the Virgin, Wincott, has lately been filled with stained glass, in memory of Caroline, Duchess of Buckingham, who died on the 28th of February, 1874. The artist was Mr. W. H. Constable, of Cambridge. It is a three-light window, one light representing "Christ, with Martha and Mary," a second "The Resurrection," and the other "The Good Samaritan." The whole is surrounded with ornamental work, and the wheel tracery above is filled with a figure of "The Majesty," holding the sceptre and orb. Underneath is an inscription.

Waldershare.—A memorial window has been erected in the north aisle of Winchester Cathedral, in memory of the Countess of Guildford. The head and two side lights contain the escutcheons of the Warde, North, and Elliot families, with their mottoes. The middle lights are occupied by figures of Faith, Hope, and Charity, with the name in Latin under each, and the words "Conjugi," "Carissimæ," "Dulcissimæ," "Sanctissimæ" beneath, as the dedication to the deceased. In the three lower lights are figures of Truth, Humility, and Patience, with appropriate mottoes to each.

An Ophthalmic Hospital for Sheffield.—A new eye hospital is to be erected in this town at a cost of 13,000*l.*

Books Received.

The Law of Contracts. By David Gibbons (Lockwood & Co.) Third edition.

THIS, one of Weale's series, is a very compendious, full, and (what is more) intelligible digest of the working and results of the law, as it at present stands, in regard to all kinds of contracts between parties standing in the relation of employer and employed. The instances given are so numerous and diversified as to afford a precedent and example for almost every possible case. The duties and possible evasions of the employed form the larger part of the subject to be considered. The reciprocal undertaking on the other side is much less subject to complication. As Mr. Gibbons tersely puts it (p. 106): "The great duty of the employer is *to pay*." Among points interesting to architects may be mentioned the reminder, given on p. 7, that "a contract to erect a building in contravention of the Metropolitan Building Act cannot be enforced;" the same applying, of course, to all Building Acts framed on a similar principle. An architect refusing to certify a builder's work, from malicious motives, or on insufficient grounds, is in a false position, legally as well as morally: at least, it appears the builder can compel him to certify when there is no good ground for declining. In one case cited (p. 105), "the Court of Chancery interfered by putting itself in the place of the architect, and ascertaining the amount for which the architect ought to have certified." Whether the delinquent architect subjects himself to any penalty, farther than the frustration of his designs, does not so plainly appear. A model form of builder's contract is given as an appendix. The clearly and strongly expressed chapter on the legal and other aspects of combinations to alter wages, &c., is well worth attention from those who are interested in such subjects. The author sums up the chapter thus: "A combination is always an evil, because it involves a stoppage of work; the things which would have been produced in the interval are lost to the consumer; the wages that would have been earned are lost to the workman; the profits that would have been made are lost to the employer, and the circulation of capital is impeded." We hope here be truths, though some people seem to be marvellously slow at getting at their full value.

VARIORUM.

LAST week's number of *L'Art* (published by Heymann, Chaussée d'Antin, Paris), includes a very interesting account of the explorations made at Miletus (the Athens of Ionia), in Asia Minor, at the cost of the Messrs. Rothschild, illustrated with engravings of some of the sculptured capitals and bases which were found, and are now deposited in the Louvre. The bases in particular are handsomely ornamented. *L'Art* is a weekly review, illustrated with etchings, as well as woodcuts, of a superior character. It is well conducted, and promises to be a valuable serial.——The oleograph picture, "Look at Me," given with the March part of *Little Folks' Magazine*, will delight thousands of children. The lowness of the price at which it is sold is remarkable.——The *Leisure Hour* says,—"There are as many beershops and gin-palaces as would, if their fronts were placed side by side, reach from Charing-cross to Portsmouth, a distance of seventy-three miles, and thirty-eight thousand drunkards are annually brought before the London magistrates."

The Institution of Civil Engineers.—At the ordinary meeting held on the 6th of April, Mr. Thomas E. Harrison, the president, in the chair, the first paper read was on "The Manufacture of Steel," by Mr. William Hackney, C.E. The second paper read was "On Bessemer Steel Rails," by Mr. Josiah Timmis Smith, C.E. The object of this paper was to endeavour briefly, to show that, with care in manipulation and in selection of materials, Bessemer steel might be produced constant in quality, and that certain inexpensive tests might be applied which would absolutely determine the quality of the material, in most if not all of its characters, so far as was required for railway and structural purposes. After an extensive experience in the manufacture of Bessemer steel rails, the author could only come to the conclusion that the present system of inspection was highly unsatisfactory, and that, whilst it sacrificed a great number of rails, it gave anything but reliable results.

Miscellanea.

Japanese Architecture.—In architecture, the Japanese, like their neighbours, the Chinese, have produced nothing,—not even as much,—for the Chinese may claim the pagoda as essentially of their own creation and still peculiar to their race. The instability of the soil in Japan, from perpetually-recurring earthquakes, has probably precluded any development of an artistic kind in this direction. A roof supported on wooden pillars resting on the surface of the ground, and tied together above by connecting beams, the whole building rarely rising beyond a first story, is the construction which probably gives the greatest security against a swaying motion communicated from below. Walls are with them but screens to keep out the weather, and are never used for supports to the roof. That they should be poor, therefore, in architectural works may be a natural consequence of living in a land of earthquakes. No Taj, with its airy grace and symmetry, can soar into mid-air under the volcanic conditions of the soil. No minaret and lofty dome can give new forms of beauty to the eye, with all the mingled grace and solidity which so peculiarly distinguishes the Saracenic and Indian architecture. Not in this direction must we look for even the faintest indications of the artistic faculty in Japan. We must be content to search for these much nearer to the level of the eye, and inside their dwellings, rather than in any exterior adornments of Temple or of Damio's Yashiki.—*Sir Rutherford Alcock in the "Art Journal" for April.*

Monument to the Late Mr. Adam Black. The grave of the late Mr. Adam Black in Warriston Cemetery is now marked by a handsome monument erected by the family. The place of interment being immediately in front of the vaults, the monument is built against the south wall, from which it projects fully 2 ft., occupying the whole space between two buttresses. In design, it is a characteristic specimen of the Decorated style of architecture. The front elevation, rising from a moulded base and string-course, is divided into three spaces, separated by slender columns, and spanned by pointed arches. Above the arches, the elevation is carried up into three gables, which spring from carved gargoyles, and are finished on the top with moulded skews, decorated with crockets. The centre gable, which rises to a height of 14 ft., terminates in a cusped wheel cross, while the two side ones, which stand a little lower, are surmounted with carved finials. The pillars which support the front arches stand clear of the back wall, and the intermediate space is covered in with groined vaulting. Under the centre arch, carved in raised letters on the back of the monument, is an inscription. The work has been executed by Messrs. Stewart M'Glashan & Son, Canonmills,—the material used being the freestone from Binny Quarry.

Salisbury Gaol.—At the Wilts Quarter Sessions last week, Mr. Hussey presented the report of the Fisherton Gaol Committee. The Committee had advertised for tenders for the building and site, and several tenders have been received. The highest was 6,305*l.*, from Messrs. Leach & Scammell, of Salisbury, which the committee recommended should be accepted; and they applied that, in compliance with the County Property Act, 1858, the site and buildings will be vested in the Clerk of the Peace for the purpose of making a conveyance of the same when sold. In reply to the chairman, the County Surveyor said he thought the offer was a fair one. He was of opinion from the first that the property ought not to be sold under 6,000*l.* Two tenders had been received for the material, from persons who could have held no communication with each other, and the difference between them was less than 25*l.* The sums offered left a very handsome balance for the land. The report of the committee was then received and adopted; and an order was made for the temporary removal of the county records to the prison at Devizes.

Restoration of the Parish Church, Sheffield. — The "good example" recently given by Rotherham in the matter of church restoration is likely to be practically followed by Sheffield sooner than was expected. The necessity for restoring the parish church here has long been apparent, and although it cannot compare with the noble edifice at Rotherham, yet is no reason why the best should not be made of it.

Traffic at Hyde Park-corner.—In the Commons, on the 12th inst., Lord H. Lennox, in reply to Mr. Adam, as to whether any steps were to be taken to ease the block of traffic at Hyde Park-corner, said last session the right hon. gentleman stated to him the particulars of a scheme for remedying the evil. It was suggested that the foot-pavement in front of the Wellington Arch, 18 ft. wide, should be thrown into the roadway, and that the small gardens on each side of the roadway should be converted into footpaths. In that way space enough for two lines of carriages would have been obtained at that spot, but the narrow road of Grosvenor-place would have been left as it was, besides which the gardens belonged to the Green Park, and he had no right to appropriate them to such a purpose. He therefore did not see his way to carrying out that scheme. He now proposed to form a carriage-way across the park from Hamilton-place, passing under Constitution-hill to Grosvenor-place. That, he thought, would be the best plan to adopt, and a model of the proposed alterations would be placed in the library, for the inspection of hon. members.

A Stroll Round Fulham.—Our excellent contemporary, the *City Press*, in a series of sketches which it is publishing under the title of "Tours Round London," treated its readers last week to one of Fulham. "Originally," we are told, "Fulham was an immense parish, and included Hammersmith, and still includes Walham-green, where the Right Hon. James Stansfield,—a prominent member of the late Liberal Administration,—has still his little brewery. Fulham now has an area of but 3,960 acres. The West London Cemetery, consecrated in 1840, extends from the Fulham-road to what was Sir John Scott Lillie's grounds, now the great gymnastic resort of the choice spirits of that part of the metropolis. Opposite is the Normal School, surrounded by a brick wall. A Roman Catholic Church was erected in Fulham in 1850. In the parish are the Butchers' Almshouses. In the grounds of Sandford Manor House, about a mile to the east of Fulham, are two walnut-trees planted by Charles II. and Nell Gwynne. Perhaps no place near London is richer in interesting associations."

The Drainage of Richmond.—At a meeting of the Richmond select vestry, on the 6th inst., a report from Mr. Hawksley, C.E., as to the drainage and purification of sewage proposed to be carried out, to meet the requirements of the Thames Conservancy, was considered. Mr. Hawksley thinks the acquisition of a sewage farm, which, to be really useful, must have an area of 400 acres at the least, to be, on social and pecuniary grounds, quite impracticable, and states that it would cost at least 150,000*l.* He recommends the best-known system of defecation and deodorisation. As a fit site for the works he selected about 4 acres of land in the low-lying ground of Petersham or Ham Fields. The probable cost is estimated at from 45,000*l.* to 50,000*l.*; and as the whole of the plant required for an ultimate population will not be required in the first instance, the immediate outlay, he thought, might be reduced by 10,000*l.* The working expenses are estimated at about 1,000*l.* per annum. After a lengthened discussion the adoption of the report was carried.

Exmouth.—The new premises of the West of England and South Wales District Banking Company in this town are now nearly complete. They are well situated in the open space called the Strand, and are built from the designs of Mr. Bruce Gingell, architect, of Bristol. The walls are of Berry Head limestone, and the dressings are partly of Bath stone and partly of Pocombe stone, which latter material is introduced into the window and door jambs. The roofs are covered with dark tiling, and the sky-line is broken up by a low tower. The banking-room is 30 ft. by 25 ft., and the counters, not yet fixed, will be elaborate specimens of mahogany work. The manager's room opens handily into the banking compartments, and several other spacious offices for bank and domestic purposes occupy the ground-floor. The upper rooms are to be devoted to the manager's private use. The works have been carried out in an excellent manner by Messrs. Herbert & F. Burridge, contractors, of Exmouth, Mr. J. Baker being foreman. The carving is by Mr. Harry Hems. Mr. W. Withecombe was the clerk of works.

Turkish Baths.—We understand that a site has been selected in the busy centre of Camden Town for the purpose of erecting Turkish baths.

A Memorial in Leeds.—After the death of the late Mr. J. M. Tennant it was determined by some of his friends to place a memorial of him in the Leeds Parish Church, in the rebuilding of which he had played a prominent part. The memorial, which has now been fixed, has taken the form of marble and alabaster arcading round the walls of the apse, with panels filled with mosaic figures of the Twelve Apostles, and was designed so as to harmonise with the reredos erected a few years ago. The structure was designed by Mr. Street. The marble and alabaster work has been erected by Mr. Thomas Earp, sculptor, of London. The mosaics have been executed by Messrs. Salviati, of Venice, from cartoons prepared by Messrs. Clayton & Bell, and have been fixed by Messrs. Salviati's artist. The cost of the whole will be upwards of 750*l.*

West-end Roads.—On the 6th instant, at a meeting of the St. George's (Hanover-square) Board of Works, held at the parochial offices, Mount-street, Mr. Clements presiding, the surveyor stated that for some days past complaints had been made of the smells rising from the principal roads in that parish, particularly the Buckingham Palace-road to Victoria Station, Piccadilly, Grosvenor-place, and Knightsbridge. In order to abate the nuisance, he proposed each morning to send out two sweeping-machines to go over those roads and remove the dry matter from them. He was of opinion that the nuisance arose from that dry matter. It was then resolved to purchase a road-sweeping machine, in order that the suggestion made by the surveyor might be carried into effect.

The late Mr. Owen Jones's Library.—Messrs. Sotheby, Wilkinson, & Hodge sold on Saturday last the library of the late Mr. Owen Jones, including the lithographic stones, copper plates, and wood blocks of his magnificent work on the Alhambra, which realised 200*l.*; Roberts's Holy Land, 23*l.* 10*s.*; Zohn (W.), Les Ornements et les Tableaux de Pompeii, d'Herculaneum, &c., 18*l.* 15*s.*; Revue Générale de l'Architecture et des Travaux Publics, 13*l.*; Reynard (O.), Ornements des Ancients Maîtres des 15me, 16me, 17me, et 18me Siècles, 17*l.* 15*s.*; Architectural Society's publications, 14*l.*; Boutovsky (M. de), Histoire de l'Ornement Russe du 10me au 16me Siècle, 10*l.*; Owen Jones's Plans, Elevations, and Sections of the Alhambra, 21*l.*

The Lord Mayor and Corporation of Dublin Committed for Trial.—On the 8th inst., at the Dublin Police-court, the Lord Mayor and members of the Corporation were committed for trial to the Commission on a summons brought against them by Mr. Gerrard, law-stationer, for allowing mud to remain on the streets. Mr. Gerrard had been summoned by the police for not sweeping the footpath opposite to his premises. He pleaded he could not keep the footpath clean owing to mud being allowed to accumulate on the road. He was fined 1*l.*, and then he proceeded against the corporation, which resulted as mentioned.

Church Struck by Lightning.—During a thunderstorm which passed over Todmorden and Hebden Bridge district, on the 6th instant, the steeple of St. Thomas à Becket's Church was struck by lightning. The pinnacle on the south-west corner was entirely demolished, and heavy pieces of stone were scattered in all directions in the yard below. No fewer than ten gravestones were smashed. A piece of stone, weighing about 3 cwt., fell on one of the wings of the church, and, piercing through the roof, smashed two spars and tore away the cross-beam. Several pews in the gallery and body of the church were damaged.

The Bishop of Ripon on Church Work.—The Bishop of Ripon laid the foundation-stone of St. Augustine's Church, Bradford, on the 8th inst. His lordship, in a lengthy speech, referred to the extension of church work throughout the country. He remarked that sixteen new churches had been built in Bradford during the last eighteen years. During the present century upwards of 4,000 churches had been built in England. This was surely the most practical proof that the church was not in any way declining, but was advancing with rapid and steady steps.

Building Accident.—We much regret to say that the accident to the Rev. Dr. Monsell, which we mentioned a fortnight ago, has proved fatal. On the morning of the 9th a relapse took place, and Dr. Monsell died that evening. The occurrence has caused much sorrow.

Church Restoration, Kettering.—The Duke of Buccleuch is about to undertake the restoration of Barton Seagrave Church, of which living he is patron. The undertaking has been placed in the competent hands of Mr. Carpenter, and the works will be commenced very shortly. "Barton Church, which bears the dedication of St. Botolph, is a building of unusual interest to students of church architecture arrangement, the successful treatment of which, for congregational purposes, will test the capacity of the architect."

The Moody and Sankey Hall.—The new hall which has been erected specially for Messrs. Moody and Sankey's services, between the Canal-road and the Burdett-road, Bow-road, was opened on the 9th inst. The hall is constructed to seat 10,000 people. There is a raised platform, while the building itself is of iron, with a wooden interior. The roof is divided into five arches, and the building is lighted from the roof, there being no side windows. Her Majesty's Theatre, in the Haymarket, has been prepared for the same persons.

The Shakspeare Memorial.—It is supposed that Shakspeare's birthday will be celebrated by the laying of a foundation-stone of a memorial theatre at Stratford-on-Avon. Mr. Charles Flower, of that town, has given a site, liberal donations have been contributed, and a birthday benefit performance will take place at Drury Lane on the 23rd inst. Among the objects contemplated is the establishment of a Shaksperian library, an art gallery, and a dramatic college, under cosmopolitan direction. It is not to be a commercial speculation.

New College at Clifton.—It is reported that New College and Balliol College, Oxford, have, in conjunction with the authorities at Bristol, agreed to found a new College of Literature and Science at Clifton. It is expected that 50,000*l.* for the new buildings will be raised in Bristol. New and Balliol Colleges have already subscribed 5,000*l.* each towards the foundation, and they intend to give a further sum to the endowments hereafter.

Great Western Railway New Locomotive Building.—Mr. J. C. Rees, builder and contractor, of Neath, has been favoured with the contract for the new and capacious engine-sheds about to be erected by the Great Western Railway Company, midway between Neath and Britonferry, on land adjoining the turnpike road opposite Penrhiwtyn. The cost of the building is estimated at between 25,000*l.* and 30,000*l.*

Death of Mr. William Tomlyn, Builder. The announcement of the death, on the 7th inst., of Mr. William Tomlyn, builder, Wrotham, at the early age of thirty-four years, will be read with regret by many of the residents in the district. Mr. Tomlyn had been honourably associated, as a builder, with the business of the neighbourhood, and was generally respected. He had made many friends, and much sympathy is expressed for his family and other relatives.

Four Men Buried by a Wall.—Large excavations are in progress on the site of an intended new blind asylum at Plymouth, and a wall having been undermined, it fell upon and buried the four men who were engaged upon the work. Two of them were taken out dead; the other two were not seriously injured.

Sewer Gas in Downing-street.—The new public offices in Downing-street cannot be occupied by the *employés* of the various departments for which they are intended in consequence of an escape of sewer gas. The engineer of the Local Government Board has been instructed to report upon this occurrence.

The Hampstead Hospital Agitation.—The Easter Monday holiday-makers' petition to Parliament against the proposed Hospital will be presented by Mr. C. T. Ritchie, M.P. for the Tower Hamlets. The petition is signed by 10,964 persons, and the columns of signatures measure 452 ft. in length.

Theatre Royal Sadler's Wells.—The lease, together with the fixtures and fittings of the Sadler's Wells Theatre, will be offered by auction at the Mart, Tokenhouse-yard, by Mr. Edward Hasleham, towards the latter end of May.

The New Boat-house of the Grove Park Rowing Club is now in course of erection. It is situated on a beautiful part of the old Devonshire Estate, between Barnes Bridge and Kew. Mr. Currey is the architect.

Wood-cutting Machines.—Protection has been granted for further improvements in steam or hand circular saw and band saw benches or machines, to Frederick William Reynolds, Southwark-street, Southwark, Surrey.

The Protection of Ancient Monuments.—After a long and interesting debate on Wednesday last, Sir John Lubbock's Bill for the Protection of Ancient Monuments was read a second time, 187 voting for and 165 against it.

The late Admiral Sir Robert Smart, K.C.B.—A monument in memory of this distinguished officer is now being erected by Mr. E. J. Physick, sculptor, over the family vault at Chiswick.

Building Trade at Nairn.—A general rise has taken place in the wages of masons, carpenters, slaters, and plasterers at Nairn, in consequence of the briskness in the building trade.

TENDERS

For sundry repairs and decorations for the Churchwardens of Limehouse Parish Church. Messrs. A. & C. Haraton, architects:

Land	£740 0 0
Kenor	594 0 0
Colls & Son	580 0 0
Killby	531 0 0

For Bishopsgate-chambers, on the site of 100 and 101, Bishopsgate-street Within, for Messrs. W. & S. Volckman. Messrs. A. & C. Haraton, architects. Quantities supplied by Mr. G. P. Ragget:—

Killby	£6,283 0 0
Ashby	6,187 0 0
Thomas & Son	6,100 0 0
Brown & Robinson	6,081 0 0
Elkington	5,543 0 0

For erection of schools and house at Cove, Tiverton. Mr. W. E. Williams, architect. Quantities supplied by Mr. R. Carpenter:—

Roberts	£1,497 15 6
Woodbridge	1,233 0 0
Dover	1,210 0 0
Williams	1,178 0 0
Hamlin	1,125 0 0

For sundry alterations, &c., at the Adelaide Gallery, and 9, Adelaide-street, Strand, for Messrs. A. & S. Gatti. Mr. Henry Ough, architect. Quantities by Mr. A. L. Buzzard:—

Sawyer	£2,314 0 0
Hockly	2,070 0 0
Shapley	2,035 0 0
Howard	1,850 0 0

For Marsh sewers, for the Hackney Board of Works. Mr. Jas. Lovegrove, engineer:—

Pound	£12,999 0 0 !
Crane	11,480 0 0
Crockett	11,200 0 0
Rose	10,472 0 0
Bloomfield	10,357 0 0
Coker	10,350 0 0
Dover	9,645 0 0
Ritson	9,500 0 0
Miller	9,495 0 0
Keeble	9,490 0 0
Williams	9,450 0 0
Gardener	9,400 0 0
Dabbs	9,400 0 0
Wainwright	9,400 0 0
Pearson	9,299 0 0
Pace	9,000 0 0
Waldram & Co.	8,935 0 0
Maxwell	8,886 0 0
Potter (accepted)	7,695 0 0 !

For alterations and additions, South-street Chapel, Exeter. Messrs. Spalding & Knight, architects. Quantities by Mr. Fleetwood:—

				Extra for Pitch Pine.
Harris	£2,599	5	5	£107 0 0
Sharland	2,526	0	0	51 0 0
Westlake	2,313	0	0	37 0 0
Diggins & Vicary	2,250	0	0	30 0 0
Smith	2,215	0	0	50 0 0
Stratford	2,181	16	0	30 15 0
Hunt	2,154	1	0	50 0 0
Stephens & Son*	2,049	10	0	30 0 0

* Accepted.

For new warehouse and buildings at King-street, Hammersmith, for Mr. W. N. Troy. Mr. G. Saunders, architect. Quantities supplied by Messrs. Franklin & Andrews:—

Braithwaite	£9,647 0 0
Rankin	8,904 0 0
Adams	8,899 0 0
Nash	8,195 0 0
Hollond	7,809 0 0
Nye	7,587 0 0
Thompson & Smith	7,538 0 0
Adamson	7,463 0 0
Hockly	7,322 0 0
Wilson	7,036 0 0

For rebuilding the Raven and Sun public-house, Russell-street, Bermondsey. Mr. John Viney, architect:—

Shurmur (accepted)	£1,764 0 0

For repairs to the Globe public-house, London-street, Tottenham-court-road. Mr. H. J. Newton, architect:—

Wells	£165 0 0
Bowden	128 0 0
Shurmur (accepted)	98 10 0

For the erection of four villa residences at Dulwich, for Mr. E. Downs. Mr. R. Peters, architect:—

Simpson & Baker (accepted)	£3,000 0 0

For alterations and repairs to No. 15, St. Dunstan's-hill. Mr. F. C. Notley, architect:—

Pritchard	£392 0 0
Greenwood	334 0 0
Shurmur	319 0 0
Hayworth	305 0 0

For two cottages and sundry repairs to property, Sandford-lane, for the Incorporated Society of Licensed Victuallers:—

Asley	£1,180 0 0
Grunwood & Sons	993 0 0
Lamble	973 0 0
Pickersgill	965 0 0
Cole	929 0 0
Wagner (accepted)	900 0 0

For the erection of children's hospital, Stepney. Messrs. H. T. & C. A. Legg, architects:—

Curtis	£13,020 0 0
Gammon	12,530 0 0
Wood	12,181 0 0
Perry & Co.	12,051 0 0
Hearle	12,033 0 0
Morter	11,787 0 0
Eanor	11,598 0 0

For construction of sewer outfall, low level sewer, and formation of roadway and sea-wall, at Torquay, for the Tormoham Local Board of Health:—

Wilcocks	£99,900 0 0 !
Nowell & Robson	57,600 0 0
Downs & Co.	53,468 0 0
Pickering	45,999 11 8
J. & J. Bell	43,146 7 3 !

For sewerage works at Swansea:—

Neve & Sons	£83,619 0 0 !
Warmold & Dovenor	77,379 0 0
Thomas & Co.	58,726 0 0
Jones	57,750 0 0
Nott	52,383 0 0
Alway & Williams	51,784 0 0
White	51,317 0 0
Davis & Son	50,808 0 0
Jones & Jepson	50,522 0 0
Green & Dickon (accepted)	48,804 0 0 !

For enlarging Mount Pleasant Chapel, Swansea:—

White	£2,600 0 0
Morgan (accepted)	1,900 0 0

For a house and shop, Caer-street, Swansea:—

White	£1,438 0 0
Watkins, Thomas, & Jenkins*	1,408 0 0

* Accepted.

For additions to the House of Correction, Swansea. Quantities supplied:—

White (accepted)	£1,845 0 0

For additions at St. Bartholomew's Hospital, Smithfield, for the Governors of the Hospital. Mr. E. l'Anson, architect. Quantities supplied by Mr. D. Campbell:—

Colls & Sons	£3,373 0 0
Ryder	3,040 0 0
Lucas, Brothers	2,956 0 0
Macey	2,919 0 0
Brass	2,896 0 0
Patman & Fotheringham	2,890 0 0
Holland & Hannen	2,890 0 0
Brown & Robinson	2,814 0 0
Adamson	2,812 0 0
Newman & Mann	2,673 0 0

For new offices and galleries, Charterhouse-street, Holborn. Mr. H. H. Collins, architect. Messrs. Batston & Sons, surveyors:—

		Additional Partitions.
Temple & Foster	£10,379 0 0	£754 0 0
Manley & Rogers	9,776 0 0	920 0 0
Kelly, Brothers	9,524 0 0	900 0 0
Oliver	9,450 0 0	810 0 0
Merritt & Ashby	8,951 0 0	631 0 0
Kirk & Randall	8,850 0 0	750 0 0
Waldram	8,552 0 0	613 0 0
Lawrence	8,496 0 0	598 0 0
Newman & Mann	8,478 0 0	588 0 0

For new warehouse, Weston-street, Tooley-street, f Mr. Clere W. Hooper. Messrs. Newman & Billing architects. Quantities supplied by Mr. John S. Lee:—

Brass	£9,990 0 0
Dove, Brothers	9,945 0 0
Colls & Sons	9,275 0 0
Little	9,150 0 0
Macey	9,034 0 0
Moreland & Nixon	8,965 0 0
Brown & Robinson	8,836 0 0
Patrick	8,720 0 0
Perry & Co.	8,649 0 0
Hill, Higgs, & Hill	8,594 0 0
Turner & Sons	8,577 0 0
Tarrant	8,500 0 0
Downs	8,430 0 0
Merritt & Ashby	8,464 0 0
Newman & Mann	8,436 0 0

For the erection of Henham and Chickney Boa schools. Mr. George Perry, architect. Quantities sup plied by Messrs. J. & A. E. Bull:—

		Allowed for Old Materials.
Cole	£1,142 0 0	£30 0 0
Glasscock	1,100 0 0	net.
Davies & Ratcliff	1,070 0 0	24 0 0
Wiffin	940 0 0	20 0 0

For the erection of an additional tun room and ma store, &c. (first contract), for Messrs. Reid & Co., th Brewery, Liquorpond-street. Mr. Geo. Scamell, arch tect. Quantities by Messrs. Curtis & Son:—

Chappell	£8,313 0 0
Holland & Hannen	7,544 0 0
Cubitt	7,479 0 0
Brown (accepted)	7,460 0 0

For rebuilding the Odiham endowed schools and master's residence, &c., Odiham, Hants. Mr. E. Woodthorpe, architect. Quantities supplied by Messrs. Welch & Atkinson :—

		If old tiles re-used deduct.
Filewood	£4,085 0 0	£80 0 0
Bull & Sons	3,965 0 0	75 0 0
Jarrett	3,846 0 0	46 0 0
Rapley & Son	3,635 0 0	—
Crook	3,594 0 0	46 0 0
Newman & Son	3,350 0 0	60 0 0

For additional cellarage, &c., at No. 13, Southampton-row, W.C., for Mr. Payne. Mr. W. S. Trebearne, architect :—

Macey	£339 0 0
Adamson	510 0 0
Colls & Sons	493 0 0

TO CORRESPONDENTS.

J. M.D. (has doubtless received reply before this).—F. C. (will send MS. to *Nature*).—R. H. (should have pointed out what is erroneous in the report).—M. T.—O. H.—J. R. R.—G. L.—R. L.—F. I.—H. H. B.—A. C.—F. C.—T. H.—E. W.—W. B.—Mr. W.—F. M.—E. J.—R. G.—C. F. F.—Messrs. B.—E. P.—J. R. W.—A. & B.—R. W. W.—E. J. F.—J. R.—W. G. S.—G. M.—A. R.—Old Architect.—M. & S.—Athens.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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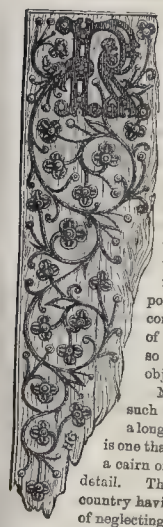
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Preservation of Monuments Bill.



RESPECT for ancestral monuments is one of the instincts which distinguish man from beast; and the more refined and cultivated of mankind from their more ignoble fellows. Such being the case, it follows, if for no other reason, that the Bill brought into Parliament by Sir John Lubbock and three other members, "for the preservation of ancient monuments," deserves the support of all those who are concerned for the dignity of the national character, in so far, at all events, as its object is attained.

Nor do we consider that such an attempt to roll away a long-standing national stigma is one that ought to be buried under a cairn of petty amendments as to detail. The Government of the country having the prescriptive habit of neglecting the national monuments, a private effort should be welcomed. Every one interested in archæological science, in ethnography, in architecture, or in the philosophy of history, is appealed to for aid. Every such person should lay aside private opinion in a common effort for a desirable object. We frankly confess that a private Bill seems to us a *pis aller* to such an end. But, such being the case, we hold up both hands for the *pis aller*. Our readers will like to know what the Bill proposes to do.

The preamble is simple:—"Whereas it is expedient to make provision for the preservation of certain ancient national monuments." It is then proposed that the Inclosure Commissioners for England and Wales, with the addition of five *ex officio*, and seven nominated, adjoints, shall form a corporation, under the style of the National Monuments Commission, with defined powers, for the purposes of the Act.

Twenty-nine monuments in England and Wales, twenty-one in Scotland, and twenty-two in Ireland, which are detailed in a schedule annexed to the Bill, are declared to be contemplated by the measure. The Act may further apply to any British, Celtic, Roman, or Saxon remains, or to any monument which is, in the opinion of the Commissioners, of the like kind as any of the monuments specified in the schedule, and which is not situate in any park, garden, or pleasure-ground; subject to appeal from the decision of the Commissioners to one of the Superior Courts of Law or Equity in England, or the Court of Session in Scotland.

When the Act shall have been applied to a monument, any person who unlawfully and wilfully, without the assent of the Commissioners in writing, injures the same, shall be subject to the penalties for malicious injuries, under 24 & 25 Victoria, cap. 97.

Any person who might, but for the Act, lawfully deal with such a monument, may give notice to the Commissioners of his intention so to do. The Commissioners within three months are either to give assent, or to purchase the monument itself, or the power of protecting it. The amount of compensation is to be determined by the provisions of the Defence Act of 1860.

The expenses incurred by the Commissioners are to be paid by the Treasury out of Parliamentary votes. An annual report is to be made by the Commission. Power is taken for the transfer of the property in, or power of restraint over, any monument, to a local authority.

The above are the chief provisions of the Bill, which consists of twenty-one clauses. It will be observed that the class of monuments which, to the architect, as distinguished from the archæologist, possesses the highest value,—such structures as Fountains Abbey, Tintern Abbey, Bolton Abbey, and the like,—do not come within the purview of the Bill. This defect has been urged as an objection to the passage of the measure. A defect we hold it to be. But it is somewhat more than possible that the same persons who insist on that point would be only too ready to oppose the measure, if it had attained fuller proportions, on the ground of its very magnitude and comprehensiveness. We would sooner have the whole loaf; but that is no reason for refusing the half. Lord Elcho struck the true key in the debate on the second reading, which was voted, on the 14th of April, by 187 votes against 165. He would resist any invasion of rights of property; but maintained the principle that our ancient monuments ought to be preserved. Mr. W. H. Smith intimated that the Government were willing to confer with Sir J. Lubbock on the best means of effecting his object.

We have before now called attention to the fact that something like half the remains of Avebury, the noblest megalithic monument, unless the palm be given to Stonehenge, in this country, and one of the finest in the world, have been burned and beaten into fragments by the Wiltshire farmers since the time of Stukely. At Stonehenge the British snob is inscribing his name on the venerable trilithons. The utter barbarism of the English rustic in these matters would put any Italian brigand to the blush. There is no doubt that monuments, which as yet are more unplaced in historic date than is any extinct form of life in the palæographic chronicle, are daily disappearing. When we find members of Parliament attributing a magnificent relic like Stonehenge, bearing proof of the highest qualities of the architect, to a time when our ancestors were naked savages, it is tolerably clear that we cannot entrust the irreplaceable monuments of the past to the good sense of the public. The cry of "respecting rights of property" ignores all that gives its chief security to property.

It may be interesting to cite the relics named in the schedule. They are as follows:—In England and Wales, the tumulus and dolmen, Plas Newydd, Anglesea; the tumulus known as Wayland Smith's Forge, at Ashbury, Berks; Uffington Castle, Berks; Long Meg and her Daughter, near Penrith, Cumberland; the circle on Castle Rigg, near Keswick; and the circles on Barn Moor, near St. Bees; also in Cumberland. In Derbyshire, the Nine Ladies, on Stanton Moor, Arberlow; Hob Hurst's House, and Nutgall, near Bakewell; and Minning Low, near Brassington. In Glamorganshire there is Arthur's Quoit, in Gower. In Gloucestershire, a tumulus, at Uley. In Kent, Kit's Coty House, near Aylesford. In Northamptonshire, the Danes' Camp, at Hardingstone, and the Castle Dykes, at Farthington. In Oxfordshire are the Rollrich Stones. In Somersetshire, the chambered tumulus at Stoney Littleton, and Cadbury Castle. In Surrey, Cæsar's Camp, at Wimbledon. In Westmoreland, Mayborough, near Penrith, a circle of 100 yards in diameter, built of small water-worn stones; and the stones at Shap, which have been almost all destroyed since the time of Camden. The remaining monuments named are in Wiltshire, viz., Stonehenge, Avebury; West Kennet barrow, Silbury Hill; the Devil's Den, near Marlborough (where a dolmen only is named, but where exist the remains of a city, as is also the case at the unmentioned spot in the vicinity called the Grey Wethers); and Banbury Castle. The list is interesting from the proximity into which it brings these venerable relics, but is sadly curtailed. Many of us could extend it, from personal knowledge. We may name Englewood Forest; Aspatria, near St. Bees, where a gigantic skeleton was found in an inscribed cist; Mule Hill, in the Isle of Man; Pentre Ifan, Pembrokeshire; Park Cwm tumulus, Gower; and the Countless Stones, a monument near Kit's Coty House, before cited, in Kent.

The twenty-one relics named in Scotland are distributed through twelve counties. They include the vitrified fort on the Hill of Noath, sculptured stones, circular walled structures, cairns, rings, and mounds; a British walled settlement in Lauderdale, and stones with incised crosses at Laggangairn. At Glenelg and Mousa are towers called Pictish. At Menmuir the forts on the hills, called the White and Black Catherthums, are said to be British. In Ireland, the greater number of relics scheduled are earthworks. At Drumlogan, in the county of Waterford, is a cave containing Ogham inscribed stones. A monument called the Catstone is found at Rathconrath, in Westmeath. A similar name, the Catstane, is given to an inscribed pillar at Kirkliston, in Scotland. We have here but a nucleus, but it is a nucleus of irreplaceable importance. We earnestly hope that the frank and cordial aid of the Government may be given to a measure which, while it is an honour to its proposers to have brought it thus far, can hardly be brought to a successful issue, except under the sanction of the administration. The need of educating those who are not altogether of the humbler classes, as to the elements of national grandeur, was amply illustrated in the opposition raised to the second reading of the Bill.

CERAMIC ART IN REMOTE AGES.

THE LATE J. B. WARING.

We have already mentioned, and we did so with feelings of regret, the death of Mr. J. B. Waring, in his fifty-second year. Mr. Waring, with much ability and many acquirements, appears not to have possessed the faculty of success, and not long ago he published his autobiography with the view of proving to any who were interested that the blame was scarcely his own. "These memoirs," he said at the end of the book, "are not written, then, to blame others or to excuse myself;—the object I have had in view is to let others know, my descendants, and some, perhaps, who will be, or have been, my maligners, that I have done my duty in my profession, and have studied it as an art assiduously and to the best of my ability. My time has not been idly spent; and my engraved and printed works may, I trust, be of use to many students yet in the old world, and the new world also. Unto the world of art I now,—for a time at least,—say 'farewell.'" The final farewell came soon after.

His last work is now before us.* In this Mr. Waring's intention was to supplement the compilation of examples of the art of remote ages, which he had given in his previous publication on "Stone Monuments, Tumuli, and Ornaments of Remote Ages," by a collection, on the same principle, of all the varieties he could find or learn anything of, in the shape and ornamentation of the most ancient remains of ceramic art. In his short preface to this book, the author complains that his former work on the stone monuments was stigmatised as "not original," and while admitting that the materials for it were not new, and were necessarily collected from the researches of others, he gives a list of the results and suggestions derived from the consideration of them, which embody, as he says, "quite enough of theories to satisfy any ordinary lover of speculation." He himself speaks, however, of the present work as "a compilation," and while we think this is really the nature of its contents, we may say that the author, in his desire to repudiate the charge of want of originality, under-rated the value of a good compilation. The number of books and of museums which have to be consulted in order to arrive at a general knowledge of such a subject of archæological study as this, form a serious obstacle to those who wish to arrive at their information readily. In placing together, in one volume, a large number of well-executed representations of the types of ancient pottery that have been found, and in giving in a condensed form what has been said on their origin and relation to one another by the most reputed authorities, an important service is done to the large majority who cannot possibly study such a subject except at second-hand, from books and not from the objects themselves.

It is, therefore, in the numerous plates and the explanatory remarks thereon that the volume of this illustrative work on ancient pottery consists. The prefatory chapter on the subject generally partakes of what seems to have been an inherent defect in the author's way of writing; a want of clearness of aim and of continuity in discussing a subject. The opening paragraph in regard to the origin of Egyptian civilisation leads the reader to expect that the object of the book is to aid in elucidating this, but we hear nothing more of it; and after classifying Cisalpine pottery remains under the heads of Continental Keltic, Early British, and Teutonic (including Scandinavian), he does not offer us any distinct comparative statement of the characteristics of his three divisions, a great part of the chapter being taken up with considerations which seem to have little relation to each other, and to follow no logical order. As a compiler, in short, Mr. Waring was excellent and indefatigable; in proportion as he has quitted the work of compilation for that of authorship he seems to have more or less failed.

The illustrative plates, fifty-six in number (including the coloured title-page), are not arranged in regard either to identity of date or locality, but in regard to similarity of form and object. This arrangement brings out remarkably the universality of some types of ornament which are habitually spoken of as belonging to one particular people, but which seem to be here, there, and everywhere. Denmark and Assyria find place on the same page (figures 79, 80, and 86), in virtue of the exactly-similar employment of a kind of herring-bone ornament, with line divisions between, forming vertical stripes. A modified form of the Greek key-pattern, but quite similar in general effect, is shown on examples both from Denmark and Switzerland (44, 45, 46). A mode of decoration common to England and Wales and Switzerland, is formed by a zig-zag line with the triangular spaces filled up by lines drawn at right angles to one another in the alternate spaces. In no specimens of the most ancient pottery, except those of Greece, are figures to be found; the methods of ornamentation being reducible to two or three types; the zig-zag, the herring-bone, and the trellis, being the most common; the design being almost always in lines or bands either vertical or horizontal, and rarely occurring in a broken up or spotty form. The most important exception is the ornament produced by little raised knobs on the surface, of which several examples from Wiltshire are given on plate 21, and for which Mr. Waring suggests a Roman origin, as they were found in a district (Avebury) which has afforded "numerous and striking evidences of late Roman influence." We seem, in looking at these early pottery designs, to be contemplating what may be termed the first naked principles of decoration, such as might supply an initial chapter to a Grammar of Ornament. The work seldom reaches to the dignity of what can be fairly called ornament or ornamental art; but it presents forms and combinations of lines which are at the bottom of a good deal of the decoration that has been produced in the world. And this very fact might perhaps be adduced as a reason against crediting the theory of the former relation between countries wide apart in geography and in history, which these resemblances seem to justify. It is possible that the first elements of decoration of this kind have been evolved by different nations independently, and that they are the forms into which any primitive attempts at decoration, in the same material and the same class of objects, must more or less tend to resolve themselves. We do not suggest this as either the necessary or the most probable conclusion; but as one so far to be taken into account as that we should not too hastily conclude an identity of race, or a special intercommunication, between remote nations whose remains leave us decorative features common to both, unless these are of a more advanced and artificial type than any which ancient pottery shows.

We may even extend this caution to the deductions to be drawn from the universal employment of symbolic signs, as well as of mere ornament. Mr. Waring has devoted four chapters in this book, and twenty-one plates, to the illustration of the use of the circle and ray symbol, the serpent, and the peculiar form of cross which has been called the *fylfot*; and his illustrations give remarkable evidence of the extent to which the same class of symbol was in use, almost, as far as we can discover, throughout the whole of the antique world in the later prehistoric periods. But the circle and ray ornament is so directly suggested by the sun, naturally a common and universal object of admiration and adoration in the childish age of mankind, that it may almost be looked upon as a natural rather than an artificial symbol; one which races perfectly unconnected with each other might independently fall into the use of, their respective forms of the symbol merely differing in accidental points. Besides, there are a hundred objects in nature which suggest the form of radiation from a centre (always a common element in decoration); and the matter of surprise would be, not that two races should independently hit upon it, but that any should miss it. The case is different with those which are decidedly artificial symbols; marks arbitrarily chosen and invested with a special meaning. The use of such marks among people apparently widely separated from each other points to a common origin and common tradition. We should, therefore, attach much more significance to the employment of the *fylfot* symbol by different nations, than to the use of such a natural symbol as the circle and rays. To the symbol in question (which we may remind our readers is a cross with equal arms and a right-angled return at the extremity of each arm) Mr. Waring has devoted four pages of illustrations, and it is noticeable that this symbol does seem, in the most ancient period at least, to be confined to what is now recognised as the Aryan division of the race; in Egypt, for instance, rich as that country is in symbolic devices, the *fylfot* cannot be traced, except in one doubtful instance (given in plate 41, fig. 3), probably an accidental coincidence of form. But it occurs continually in India, in Greece, in Asia Minor, in Roman remains in various places, in North Germany, and in England probably by derivation from Rome. We are not aware of any instance in Ireland, and Mr. Waring seems to have heard of none; an omission which is, of course, in accordance with the Aryan view of the symbol. Whether all can be derived from it that our author derives is another question. He gives it as the origin of the Greek fret, one form of which includes the exact shape of the symbol, no doubt, but the connexion between them can hardly, at any rate, be so direct as he assumes. That a symbol which has in one age obtained wide acceptance as a mystical sign should be subsequently repeated as an ornament, without reference to, or even knowledge of, its original meaning, is, however, a common phenomenon; and the repetition of the symbol in English remains down to the Mediæval period is no doubt to be regarded in this light. We have exactly parallel cases in modern times, in the frequent employment of obelisks, for instance, as memorials, by persons who never heard of the phallic origin of the form, and would not employ it if they had; and a still more parallel case, perhaps, in the constant use of the form called the *vesica piscis* in Gothic ornament, the original meaning of which is quite unsuspected by the clerical and architectural *dilettanti*, who delight to see it everywhere. The latest and most noted legacy of the *fylfot* to modern times is in the symbol or "arms" of the Isle of Man; the three-legged device, which is a modification of the four-armed *fylfot*, and which the members of the "House of Keys" may be surprised to learn is found on ancient coins of Asia Minor and Macedonia in almost precisely the form stamped on their seals.

In speaking of the zig-zag and what we have called the "herring bone" ornament, which is illustrated in various ways on plate 45, we think the author has again attempted to give too distinct a symbolic meaning to a combination of lines which would necessarily present itself as almost the first and readiest way of producing a rude and simple ornamental effect. The use of the zig-gag as a representation of water we call a natural, not an artificial symbol; it is, in fact, simply the surface line of rippling water, represented in a conventional manner, but sufficiently realistic to be at once recognised.

The book is one which should be in all libraries, and will be very useful as a compendious reference for information and example. As the author more than once in the course of his remarks, has expressed his dislike to theories, it is perhaps to be regretted that he devoted space to theorising in obedience to what he seemed to think was expected of every author upon subjects of the kind which he took up in this and the preceding volume. His theories, however, if a little far fetched, may prove suggestive, and at all events in no way impair the real usefulness of his work.

* Ceramic Art in remote Ages; with Essays on the Symbols of the Circle, the Cross and Circle, the Circle and Ray Ornament, the Fylfot and the Serpent, showing their Relation to the Primitive Forms of Solar and Nature Worship. By J. B. Waring. London: John B. Day.

"MODERN ARCHITECTURE AND ITS ASSAILANTS."

Under the above title, the *Edinburgh Review*, in the guise of an article on Mr. Fergusson's second edition of his "History of the Modern Styles of Architecture," and Mr. Eastlake's "History of the Gothic Revival," devotes some space to what is, in fact, a refutation of attacks recently made (and of which enough, and too much, has been said) upon modern architecture, by what the *Edinburgh* critic describes as "the connected efforts of a small but noisy party of dissatisfied men." It is gratifying, at least, to find a leading literary organ treating the subject of architecture, if not with great novelty, in a calm and judicial tone, free from the acerbity and bitterness which seem inseparable from the subject in some quarters, and free also from (what is equally annoying to sober-minded professional men) the exaggerated cant and pseudo-eloquence with which the subject is too often rather disfigured than illustrated by indiscreet panegyrists of their art.

After some well-put remarks in regard to the durability and interest of architecture as an historic record or expression of national feeling and character, the *Edinburgh Reviewer* proceeds to vindicate, in moderate and well-considered language, the necessity of study

and culture for those who would work out this art, or combined art and science, as he rightly terms it; and in alluding to the graphic origin of architectural design, he points out that though it may be possible to construct a building of considerable size without complete or adequate drawings, "to attempt to do so is only to work under unnecessary disadvantages; to augment cost, to protract delay, and to transfer to every step of the actual construction that tentative process which the competent architect has carried out, in the most convenient and efficient mode, by the proper use of the drawing-board,"—an argument which is certainly not necessary to our readers, but which we are glad to see succinctly and clearly stated in a literary periodical for the enlightenment of the public who have had so much dust thrown in their eyes of late. The critic is equally in the right, as all who can speak from practical experience in such matters know, in his observations on the proposal, "which has been made, as if it were a wonderful discovery," to substitute models for drawings; in other words, "to substitute a more tedious, costly, and inexact process for one which has attained a high degree of perfection." The proposal, as is remarked, really means that certain people, including a large proportion of those who employ the services of architects, cannot, or rather will not, take the trouble to understand drawings, which, nevertheless, are a much more certain and adequate method of exhibiting a building than a small model, which, in regard to the general effect of the finished structure, is in fact one of the most deceptive things possible.

Of the absurdities, the contradictions, and the really impudent mis-statements which a contemporary of the *Edinburgh* has lately given currency to on the subject of modern architecture, we do not think it worth while to say another word, merely remarking that they receive due recognition at the hands of our present critic. But we cannot forbear quoting the general remark with which this portion of the subject is introduced, giving as it does a slightly different ground of complaint from that which the purely professional mind would take:—

"It is with unfeigned regret that we have seen in the pages of a contemporary, whose traditional character was wont to be wholly conservative, not only one but a series of essays, which respect for our readers forbids us accurately to characterise. Taking modern architecture as a text, they assail, in the same unhesitating manner, almost every name, ancient or contemporary, which has had the disadvantage of provoking citation. Nor are architects alone the subject of abuse. English law and lawyers, the tenures of land, the rights of property, come under the same ban; while the art, the science, and the welfare of the future are referred to the imaginary guidance of the inspired workman. Such pages are not amongst those to which a serious reply is given. But, on the part, not of architects or artists, who may rest contentedly in the company with which they are ranked, but of the higher and graver literature of the country, *and of the moderation of tone which is an inseparable element of gentle breeding*, we deplore the application of pages which were wont to be critical, demonstrative, or imaginative, to the reception of sensational writing of the least profitable order. Men of letters, and all who appreciate the part which men of letters take in the progress of civilisation, have reason to view with grave disquietude the strange faces which have been lately suffered to gesticulate from the tribunes of periodical literature. . . . We cannot but regard it as below the dignity of serious literature to defend the architecture or the architects of the present day against an attack, which so impartially bespatters all that is elevated or traditional in art. We can only express the perplexity we feel as to the cause which can have induced our respected, and once conservative, contemporary to give publicity to essays so germane to the ideas of the International that they seem actually to smell of petroleum."

In discussing the probable results of self-taught art, and of the abandonment of a high and systematic culture for the impulses of the mechanic, the reviewer brings forward as an instance the sculpture shown at the Workmen's Exhibition at Islington in 1871, and spoken of by us at the time. A lesson of great value might be drawn from these sculptural exhibits. "They represented, in some cases with extreme fidelity, the misshapen forms with which we are familiar in some of the rudest ornamentation of the capitals of columns in our round-arched churches. Artists know the style of treatment to which we refer,—the long, ill-formed nose, the unmodulated chin, the fish-like eye, the mouth opened as if by a chisel." After pointing out some of the causes of these shortcomings, the writer continues, "brought face to face with the best product of the workman's imagination, we see everywhere the disadvantage of want of study; nowhere the heavenward bound of original and commanding genius. The Royal Academy may not be all that we could desire. Still, there is, occasionally, sculpture in the Rotunda. There was nothing like stone-cutting at Islington."

For the reasoning of the *Edinburgh* critic against the desponding tone, in regard to modern architecture, of such critics as Mr. Fergusson (whom, however, we need hardly say, he treats with the greatest respect), and for the grounds of his conviction that some real vital causes have underlain the extraordinary energy with which the craft of the builder is being carried on in the present generation, we must refer our readers to the Review. The writer overstates the impossibility of the adaptation of Italian architecture with success to our climate; and his reference to the "removal of the Quadrant in Regent-street," as a practical example of the unfitness of a modification of classical architecture for our civic buildings, conveys, in the form in which it is put, the notion of an odd mistake; we presume the writer refers to the removal of the colonnade,—a clearance, however, which we always understood to have been made for other reasons than merely the architectural ones of convenience and light. The reviewer concludes with a quotation from our own columns in support of his general views, and we are very willing to be cited as evidence by an advocate whose serious, temperate, and dignified tone does credit to the cause which he upholds.

THE INSTITUTE OF PAINTERS IN WATER COLOUR.

In alluding to the winter exhibition of sketches in the Gallery of this Society a little while since, we expressed the opinion, while recording our admiration of the high character of much of the collection, that the sketch exhibitions in this Gallery were of higher artistic interest and value than the annual exhibitions of finished drawings, inasmuch as they displayed a broader style, and less of merely manipulative excellence. The spring exhibition of this year, opened last Monday, emphatically bears out this remark. Once more we meet, in the works of certain old contributors, with the same tricks of effect which we seem to know by heart, and which are repeated with such similarity every season that it is difficult to distinguish one drawing from another in the memory. We find in a large proportion of the landscapes here a high degree of skill in manipulation, a great power over certain effects, but unaccompanied by any distinct feeling or sentiment, or any evidence of original thought on the part of the artist. Good as the work is, of its class, we must be pardoned for saying that such productions as those we refer to may be termed drawing-masters' rather than artists' art. We do not say there are not very fine exceptions, but there is far too much of the excellence of mere habit. To take one of the best of this class of drawings, bearing a name which we cannot wish to speak disrespectfully of, let us ask what is the gain to any one from such a dtawing as Mr. Rowbotham's "Island of Ischia"? It is beautifully executed in its way, no doubt; but do we not know every tint and tone in it, by repetition after repetition, in drawings which are chromolithographed from for the instruction of students? However good a receipt may be, we cannot be asked to accept the same thing over and over again in this way without feeling dissatisfied. In considering the figure-subjects, here, too, we cannot but regret the low tone of feeling which pervades many of them,—the total lack of interest in the subjects. "Dangerous Quarters" (43), for instance, by Mr. H. B. Roberts, is a large and very carefully executed drawing, representing a lout of a boy plucking a duck, and grinning mischievously at the sight of some survivors of the species poking their heads in at the door. The utter poverty and vulgarity of the joke (for we suppose it is meant for one) is positively depressing to the spirits, considering the pains which have been expended on elaborating it; and the same might be said of other drawings by the same hand. We cannot felicitate Mr. Absolon this time, either, upon his "Boulogne Shrimpers" (140). An interesting and novel production is that of Mr. Tenniel, "Lighting the Beacon," and wonderfully clever as a piece of effect, and in drawing. Mr. Jopling's "Merry Wives of Windsor" (107) is a record of a very charming *tableau* once presented at Cromwell House.

The highest-class figure-drawing in the room, which indeed stands alone in the collection, is Mr. Linton's "The Appeal" (32),—a work which the artist has rarely if ever surpassed. The story is not quite distinctly told; but it was perhaps intended to leave something to the imagination. At any rate, there is in this work a touch of poetic spirit; we are incited to imagine the history of these three figures, so distinct in character, so well contrasted in their attitudes and emotions. The composition is very simple; to the left an old man of the puritan type, evidently in authority of some kind, turns away sternly and impatiently from the appeal of a young cavalier, cloaked and rapiered (if we may so put it), who holds out a pen with a request for a signature to some document of vital importance, while a female seated on the right, cloaked from head to foot, looks on with suspense and anxiety well expressed in her clasped hands and face turned fearfully towards the other two. A wall forms the background to the greater part of the picture, connecting the group, and, by its light tone, giving force and depth to costumes in which scarcely any strong colour is employed. The manner in which the cloak of the centre figure, and the shadow cast by it on the wall, are made use of to give added breadth and dignity to the composition, is as successful as it is unobtrusive.

The most important figure-subject, after the above-mentioned, is Mr. Valentine Bromley's representation of "The Big Chief's Toilet" (3); the said chief reclining lazily on the ground while his squaw plaits his hair. The red blanket, and other appurtenances of the chief's costume, are finished with great power and brilliancy, worked in with thick masses of body-colour; the group of squaws in the background, however, strikes us as the most successful part of the drawing as to character. Mr. Staniland's group of emigrants, "The Last Day in Old England" (182), is a too palpable imitation of a manner invented by another artist; there is humour and feeling in it, and good solid merit of execution. Mr. Cattermole's "The Monk and his Scholars" (155) and Mr. W. Small's "Irish Market Folk" (38), are two powerful drawings in very opposite styles; that of the former is too well known to need description; the latter drawing is forcible, to the verge of coarseness, in style of execution, but the faces,—that of the old woman especially—are full of character, and very powerfully depicted.

We noticed, in the recent winter exhibition, a fine coast scene, by Mr. Collier, as one of the best works there. The same position is occupied in this exhibition by his drawing, entitled "Arundel" (154), one of the few works in the room which shows something of the freshness of feeling, and the power and the breadth of style of the old school of English water-colour. We look from an undulating foreground of open down across the dark masses of wood which surround the castle and form the middle distance, to a distance shadowed by clouds, and broken by a winding river; the concentration of feeling, and the freedom and directness of the mode of execution, deserve the highest praise; it is a work giving the impression of completeness and unity which shows that the artist has grasped his subject as a whole, and with a distinct motive in his treatment of it. With a very different method of handling, Mr. Hine's well-known down scenes belong to the same class: he has made this subject his own, and does not vary it much; but the innate feeling of his drawings, and the careful study of nature evinced in the delineation of the aërial perspective and foreshortened curves of—

"The long backs of the bushless downs"

(as Tennyson phrases it), raise these works quite above the charge of mannerism. Mr. Orrock, who seemed to promise a style of his own, with a danger of mannerism, in the last exhibition, we are glad to see apparently getting more of the style, and less of the manner; his several works here will repay looking at. Mr. Oakes's "The Welsh Border" (121) is a fine work, unusual in the tone and treatment of the foreground, and not without a kind of reminiscence of Turner in the middle distance effect. The contributions of Mr. E. M. Wimperis, especially "A Breezy Day" (28), which quite bears out its title, are excellent in style and feeling; also Mr. Syer's "near Barmouth" (145). The scenes near Rome by Mr. F. T. Skill, should be looked at, though "Yellow Tiber" (1) strikes us as rather a cooked effect; "On the Pincian,—Morning" (48), is a work of much merit. Messrs. Hargitt, Mogford, Harry Johnson, and other well-known "old campaigners" of the Institute, are adequately represented in their respective styles. Mr. Edward Fahey sends a highly-finished head (127), and Miss Elizabeth Thompson contributes a drawing of a mounted trooper (243), slight, but full of life.

THE CHURCH OF ST. FRANCIS, ASSISI.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary general meeting of the session was held on Monday evening, the 19th inst., under the presidency of Sir Gilbert Scott.

The President stated that he had received a letter from Sir Thomas Biddulph, expressing her Majesty's approval of the award of the gold medal of the Institute to Mr. Edmund Sharpe, who had written to the council acknowledging the pleasure he felt at the high honour conferred upon him.

Mr. Thomas Morris referred to the demolition of the Colosseum, Regent's Park, which was now in progress, suggesting that photographs of it should be taken. The architect was Mr. Decimus Burton; but the name, the Colosseum, was somewhat inappropriate, for the building was rather a reminiscence of the Pantheon, and it combined the majesty of the Parthenon with the superb outline of the Pantheon.

Mr. Cockerell, in allusion to a question asked by Mr. W. H. White, at the previous ordinary meeting, as to the reason of the frequent absence from his post of the hon. secretary for foreign correspondence, protested altogether against such a question having been asked, or against the principle that the officers of the society were to be responsible to individual members for the manner in which they performed their duties. He did not resent the question personally, but in his capacity of hon. secretary.

The President thought the hon. secretary gave all the attention that could be expected to the business of his office, considering the extent of his engagements, and observed that he had been present in person at the larger proportion of the meetings.

After some remarks from Professor Kerr, and one or two other members present, the subject dropped; Mr. White expressing, however, his regret that he had received no answer to his question.

Mr. R. W. Edis wished, subject to the permission of the president, to put the question whether two published lithographs which he had seen accurately represented the first and second premiated designs in the Soane medallion competition; and, if so, on what grounds the first premium was adjudged?

The President ruled that it was impossible to reopen such a question when the Council had considered the designs, and their decision had been acquiesced in by the general meeting of members. If they were to admit the principle that such a matter was to be gone into over again, at the instance of any member, who might perhaps be a friend of the less successful candidate, they could never get through their business at all.

Mr. J. Beavington Atkinson then read a paper on "The Church of St. Francis, Assisi." He commenced by stating that he proposed shortly to indicate dates, structures, and styles of the lower and upper churches at Assisi, by way of a reminder merely, in order that more space might remain for some account of the present state of the building and the nature of the restorations therein, as witnessed by him during last autumn. They all knew that the double or triple church of St. Francis held a commanding position. The city of Assisi, in common with the neighbouring towns of Spoleto, Spello, Trevi, Cortona, and Perugia, was planted after the habit of the ancient Etruscans, on a spur of the Apennines; and the geographical and geological, not to say the military, condition had naturally influenced architectural construction. Thus the site chosen for the united churches and monastery fell so abruptly and rose so considerably as to give to the arched basement on the one side the magnitude and elevation of a fortress while on the other the level of the floor of the upper church was the same as that of the grass-grown piazza. The difficulties of the ground, as often happened, were made to enhance the picturesque effect. In no other country in the world did the forms of outward nature lend themselves so kindly to the exigencies of structural and decorative art. The Lower Church was commenced in 1228, and finished in 1234; the Upper Church did not reach completion till 1253. The architect was a German, called by the Italians Lapo, with whom seemed to have been associated an Italian monk of the order of St. Francis, Fra Filippo da Campello. In his (the speaker's) recent tour, he had been again struck with the abundant and luxuriant growth of the pointed arch and its cognate ornament; not as an exotic, coming from afar, but apparently as much at home and acclimatised as the acanthus,—not employed for architectural purposes only, but entering into the structure of humble dwellings in the narrowest streets,—not established at great centres and chief capitals, such as Florence, Siena, and Orvieto, but finding a footing in the outlying towns of Spello, Citta di Castello, Borgo, San Sepolchro, Assisi, and Urbino. In this complex Italian development, the churches of St. Francis and the sister church of Sta. Chiara, at Assisi, stood as early and simple examples. It had been truly said that Assisi was as a light set on a hill for art no less than for religion. Gothic architecture, with kindred pictorial decoration, became from this centre diffused over the hills and the valleys of Central Italy. The Lower Church was cavernous and crypt-like. The columns in the nave were of single massive shafts, as in the Norman style of England, or the transition from the Romanesque to the Gothic in France. The arches and vaulting between these stunted columns were round, with possibly a slight aspiration here and there, according to the spaces spanned, to a point. These columns, which now stood at the entrances to the side chapels of later date, were continued to the Upper Church, where they serve as external buttresses,—anomalous and decorative. The Upper Church soared into the sky in contrast, and yet no discord with the Lower. It was as a lantern rising out of a crypt; it was full of light, and spoke, as it were, of the resurrection, after the sepulture. The semi-detached columns at the transepts divided into clusters; the vaulting of the elementary form of a rectangular space, with diagonal ribs, was fairly lofty, compared with the width of the floor. Here, in the upper church, the forms exchanged strength for elegance; and the colours, enlivened by a flood of light, were joyous. Judging from internal evidence, there would seem to be a development in style more than correspondent to the difference of twenty years in the date. He did not know of any record of change in the design during the progress of the work, and the two structures were not without unity. The apse especially was in accord in the two churches. The vestibule and most of the side chapels to the lower church were appended during the last quarter of the fifteenth century, yet some must be earlier because they still preserved on their walls pictures of the fourteenth century. It had already been stated that an Italian architect shared the work with a German,—a fact which might the better account for certain accommodations of the Northern Gothic to Southern and Italian treatments. This was seen in the surrender of mouldings, surface panellings and details, for the sake of large unbroken spaces, reserved expressly for frescoes. Assisi was rather an ultra example of how light and shade, form and proportion, might be made the servants of painting. In directing attention to those recent and radical changes, which had provoked a storm of criticism, he would say that the purpose of the work undertaken must be said in general to be to reinstate, as far as practicable, the lower and the upper churches to something approaching their original integrity. The perilous operations had been fortunately entrusted by the Italian Government to Signor Cavalcaselle. Beginning with the exterior, the first object had been to place the building in safety. Thus the roof was made sound, the buttresses were strengthened, crevices in the stonework stopped, so as to prevent the rain from penetrating through the walls to the back of the frescoes. With regard to the Lower Church, the clearances had been effected with so strong and swift a hand that priests and people were alike taken by surprise. Thus, during a single night, a staff of twenty or more men made a clean sweep of wood altars, Rococo carpentry, and gimcrack ornaments, much to the consternation of the monks, who came in the morning as usual to say mass. By this bold stroke of business light was let in at darkened windows; frescoes by the dozen were made to look out once more from walls long masked; and the stone-altars, before which the immediate followers of St. Francis had worshipped, being disencumbered from impertinent excrescences, again stood out in their original moderation and simplicity of proportion. The following was an abridgment from Signor Cavalcaselle's official report to the Italian Government:—The iron enclosure round the high altar in the Lower Church had been, for historic reasons, removed to its original position at the high altar of the Upper Church. An iron railing or low screen had been placed between the nave and the presbytery of the Lower Church. The singing-gallery and organ had been taken away from the apse and east end, thereby were revealed frescoes before hidden, and also the wooden choir of 1471. The huge marble altar on the west wall of the north transept had been cleared away, whereby the immense Crucifixion, by Pietro Lorenzetti, which covered the greater part of the wall, was brought to light. From the opposite transept had been removed the altar of gilded wood, which covered half of Cimabue's noble fresco of the Madonna, Child, and Angels. From the chapel of the Orsini had been taken a marble altar, whereby was discovered the sepulchre of Cardinal Gaetano Orsini, together with a fresco. In the chapel of St. Antonio Abate were discovered two sepulchral monuments of Blaise, Duke of Spoleto, and his son. The painted windows now once more served the purpose of windows, lighting up the darkness of this grand, though gloomy interior. With regard to the changes in the Upper Church, Mr. Atkinson went on to say they had been analogous to those in the Lower, though, in the absence of side chapels and side altars, they could not be identical. Careful consideration had been given to the original level of the floor of the nave, and the conclusion come to was that there was a rise of three steps between the nave and the presbytery, that subsequently the nave and the door on the west were placed on a higher level. The elevation of the floor necessarily threw additional weight on the Lower Church, but the massive columns were sufficient to sustain the further burden. Of the strength of the vaulting it was not so easy to speak, as the surface was disguised pictorially. The most important alterations in the Upper Church had been in the transepts, apse, and the high altar. From the west walls of the transepts had been removed two painted wooden altars, of corrupt design. The result was the uncovering of two frescoes of the Crucifixion. The radical reformation had been the withdrawal from the apse and transepts of the intarsia Coro of the sixteenth century, executed by the well-known worker in wood, San Severino, of Florence. This uncompromising measure provoked more opposition than any other of the recent changes. This coro no doubt was an intrusion, but yet it formed an imposing piece of church furniture, and its removal, though revealing frescoes, left the east end of the church bald and desolate. Signor Cavalcaselle defended the proceedings, stating truly that the structure was ill-suited to the position; that the style was cinque cento; and that, with the exception of the figures in the tarsia, the execution was rude. The Papal Throne, in the centre of the apse, was examined. The original simple structure had been tampered with, the level having been raised from two steps to five above the floor, and a semi-classic canopy, supported by columns on false bases, had been added. This canopy was removed. One important advantage accruing from the removal of the encroachment of the large wooden stall-work, had been the needful space gained for the restoration of the high altar to its original position, immediately under the transept. The altar had been thrust down into the nave to make way for the increased dimensions of the choir. In its present position it stood immediately above the high altar in the Lower Church, which in turn was directly over the tomb of St. Francis in the Crypt Church. With regard to the transfer of the enclosure of ironwork from the high altar of the Lower Church, Signor Cavalcaselle considered that it was made for the upper altar, and had been wrongly removed to the lower in the sixteenth century. This iron enclosure underwent many alterations, and bore the sign of at least two dates,—the earlier was of the first half of the fifteenth century. Some additions were of the second half of the sixteenth, the period of the stall-work removed from the upper apse. It might seem an anomaly that the wood-work should be removed while the ironwork was restored, but the excuse was, as before said, that circumstances suggested, if indeed they did not impose, a compromise. Respecting the question of an ancient marble coro, Signor Cavalcaselle, in his MS. report, wrote as follows:—"Observations made on the spot demonstrate that originally the coro was composed of a marble enclosure, which separated the nave from the transept, extended along the walls of the apse on either side of the Papal chair, and enclosed in the centre the high altar with the tabernacle." Foundations had been discovered, which led to this conjecture. Signor Cavalcaselle argued that as the original

plan of the church was German Gothic, with the form of the Latin cross, this coro could not have been contemplated in the first design; then it came as an after-thought, in course of the construction consequent on the decree of Gregory IX., in the first half of the thirteenth century, which made the church of St. Francis a Papal Basilica. Accordingly, the Papal throne was placed in the centre of the apse, and the coro raised two ambones; but it existed nearly three centuries from the time of the completion of the church, in 1253, to the first transformations in the early part of the fifteenth century. The first transformation, in the fifteenth century, consisted in the breaking up and scattering about of the marble coro, and in the substitution of a smaller choir, probably of wood, and occupying only the apse; also in the removal of the original altar, and the substitution of a larger one, with iron throne. This state of things lasted about a century and a half,—that was, from the early part of the fifteenth century down to the end of the sixteenth, when the second transformation occurred, consisting in the breaking up of the choir of wood in the apse, the substitution of the intarsia stalls of San Severino, the consequent removal, in order to gain space, for this large mass of woodwork, of the high altar from beneath the cross of the transepts to the first bay of the nave; and, finally, the transposition of the iron enclosure from the Upper to the Lower Church. This second transformation gave to the internal arrangements the aspect preserved down to the present day. The third and last transformation was, of course, manifest in the restitution now in progress. The evidence of the existence of the marble coro was as follows:—First, foundations found beneath the pavement; second, the existence of sundry marble slabs, decorated with mosaics inserted in the pavement, found attached but not belonging to the pulpit in the nave of the Lower Church, and to the wall of the Pontani Chapel; these marbles corresponded in size with the unclothed wall spaces on either side of the Papal throne; third, the small pulpit of stone now attached to the shafts of the clustered column at the angle between the nave and the north transept. The column had been chiselled away to admit of this addition, and the little staircase leading from the sacristy below was also subsequent to the original structure. Apparently, the date was of the fifteenth century, the time of the breaking up of the marble coro. The pulpit, very lovely in its proportions, was supposed to be one of the two ambones of the choir. Fourth, the existence in the church of Sta. Chiaia, in Assisi, of a similar choir of the almost synchronous date of 1257, design of Fra Filippo Campello, who also worked at the church of St. Francis. Fifth, a fresco by Giotto, in the nave of the Upper Church, depicting the saint instituting the representation of the Nativity. The scene was laid in the interior of a church, wherein appeared a coro of marble, with a pulpit or ambone, and stairs corresponding to the supposed arrangements in this Upper Church. In the picture, the part in which the second ambone would come happened to be cut off from the composition. Another fresco in the nave introduced a like marble coro. The whole of this difficult problem Signor Cavalcaselle summed up as follows:—"Such being the results of the observations made, the natural wish would have been to reduce the work to the integrity of its primitive form, and, with this end, to dispense with the iron enclosure; to make in the altar and papal throne radical restorations; to set up again the marble coro; in short, entirely to re-arrange the transept and apse." But to do this, he said, would be absolutely impossible, and therefore it had been thought better to take the middle course,—an accommodation to existing circumstances which Mr. Atkinson had attempted to explain, if not to justify.*

Fall of a Stand and Thirty Persons Injured.—The Queen's Park Recreation Grounds, Bridgeton, Glasgow, were opened on Saturday last, but the proceedings were brought to a sudden close in consequence of an alarming accident. Seven thousand persons had paid for admission, but shortly after the sports began as many more forced their way in without payment. The result was that a wooden stand, 90 ft. long, was eventually crowded by 1,500 persons, and fell with a crash. Thirty persons were more or less seriously injured, but none fatally.

* To be continued.

"QUEEN ANNE" AND THE GOTHIC REVIVAL.

ARCHITECTURAL ASSOCIATION.

At an ordinary general meeting of the session, held on Friday evening, the 16th inst., under the presidency of Mr. Birch, Mr. Frederick Davis was elected member.

A vote of thanks was passed to Mr. Chatfeild Clarke, for the facilities he afforded to the members on the occasion of their recent visit to the buildings in Lime-street.

Mr. Flint Clarkson (secretary) announced that the office of honorary registrar had been accepted by Mr. Watson, *vice* Mr. Quilter, who had formerly so efficiently discharged the duties appertaining to that office. With regard to the next visit, Mr. Clarkson said that arrangements had been made which would enable the members to visit the Alexandra Palace this day (Saturday).

Mr. Hugh H. Stannus then opened the adjourned discussion on "Queen Anne and the Gothic Revival." After a few introductory remarks, he said that at the conclusion of the paper recently read before the Association by Mr. Ridge, it was stated that "Queen Anne is dead," which Mr. Stannus took to be Mr. Ridge's verdict; but this statement, though somewhat epigrammatic in character, was not in consonance with facts, and it was to this remark Mr. Stannus wished to take exception. Mr. Ridge had spoken with regard to the Classic manner of building, and had gone out of his way to refer to the Roman and the Classic people generally, giving the meeting a specimen of the art of rewriting history. With respect to the recipe for a Classic building, they were to take a colonnade, invented by heathens, and apply it dishonestly to a wall, and were then to cut holes in the walls at symmetrical but inconvenient places, and poultice the rest of the wall with cement, &c. The recipe, too, for a Gothic building was, according to Mr. Ridge's authority, that they were to take the details, invented by Christians and emancipated workmen, and mix them well with true principles, and apply truth, piety, love, reverence, &c. Mr. Ridge had alluded to columns in Roman architecture being put in front of piers, not for the purpose of support, but for decoration, or, as vaulting shafts were in Gothic Cathedrals, to support in appearance though not in construction. Mr. Stannus supposed that Mr. Ridge alluded to the Basilica of Maxentius, A.D. 307, for this was identically for the same purpose as vaulting shafts in Gothic architecture. The Roman temples certainly were columnar, because they were derived from the Greek. The Romans were not a religious people; they took their religion from the Greeks, and they, therefore, took their arches from the same source, because they were partly religious. The Romans were celebrated for their aqueducts, which were typical Roman remains, one of them being forty-three miles long. Any one who had a sight of these dreary buildings would, in his opinion, never forget them: they were arched, and there were no columns about them, and were common-sense good architecture. He believed the Italians followed the Romans in architecture; for in Florence and elsewhere there were no columns at all to be met with, and the buildings were properly constructed. Of course, columns had been used, and very much abused, in façades; and he ventured to think that Mr. Fergusson who was continually condemning columns, was worthy of the name of a classic scholar. With regard to the true Gothic principles, they all knew what a boast the Gothicists made of them. He believed that it originated with the elder Pugin; but this continual boasting appeared to Mr. Stannus like a man who was always saying he was a straightforward man, and putting out his honesty to give it an airing. He considered that those who practised in the Gothic style were mild bigots, and were men with only half a truth. They were like teetotallers who did a good deal of good in drawing attention to the evil of drunkenness; so preaching Gothic did good in drawing attention to bad construction. The Gothic style had done its share of good in the world, like those men who had contributed some sterling gift to keep the lamp of learning alight in rude and barbarous times. The man who could conceive that grand poem, Salisbury Cathedral, and the man who poured forth his soul in stone, in the creation of the tomb of Archbishop Grey, in York Minster, and countless other buildings, had helped to make the world richer and better than it was found. Such men lived in rugged times, and their struggle against the forces of nature was far harder than now; but it was rugged and barbarous along with its honesty, and if they could have the latter without the former, it would be as well. Every one tolerated teetotallers as well-meaning persons, but when they advanced from moral suasion to the Permissive Bill, it was time to stop their aggressive bigotry. So with the Gothic school, there was a time when this school was young and earnest, but now they silenced every one, and he thought it time to interpose argument against the sweeping condemnations so general.

The Classic style was objected to because of the balustrades at the tops of the buildings; but he had seen battlements at the tops of buildings which were as objectionable as balustrades. Clustered piers were objected to in Classic, but in the Gothic they had the vaulting shaft. With regard to inconsistency in Classic, he thought that that term was also applicable to Gothic in the arched mouldings, which destroyed the solidity of the wall. Another point was the crockets, which appeared to him to waste the stone, and did not appear to grow properly out of the construction. But as long as a man built for himself, he would build in a common-sense manner. It might not be architecture, but it would be good building; but when a man became conscious that his neighbours were criticising him outside, he became painfully conscious of "Mrs. Grundy." It was the same with regard to dress. If a man lived in the Great Desert of Sahara, he would wear only what was comfortable and appropriate, for he would be unconscious of critics. In contradistinction to these evanescent phases of style, there were certain eternal fixed principles of plan, construction, and use of materials, which were common to all architecture, which were indeed the nucleus of architecture. He wished to impress upon all architects the fact that the principles of common sense and fair use of everything were the centre ground, common to all good styles, and that the details and other husks of fashion were merely minor things. Neither, in architecture, any more than theology, had any man a right to say he had the whole truth. That theological opinion was true to a man which helped him to rise higher; and that style in architecture was right in which he could express his ideas honestly and simply. The moral was, that whatever fashion a man added to the simple nucleus of common sense should be the best of its kind, good, appropriate, and pure, developing the spirit of the old work in that fashion. As an example, he (Mr. Stannus) would instance the French style called "Neo-Grec." He believed that style in architecture, as well as in dress, was identical, and thought that there would be a time when all the buildings of a civilised country would be constructed in the same style as the law of progress had altered it. He did not think that architects should change with the fashion, and, after having built a Gothic church, and an Italian villa, erect an office in the Queen Anne style. He thought that a man should choose a style and stick to it, as a barrister selected his circuit. The style which he objected to more particularly was what he would term "hodge-podge" or mystic style, in which there were errors of grammar and irregularity of detail; still, as at present practised, and until it was made purer, the Queen Anne style was good as far as the Classic architecture was concerned, and bad as far as free architecture was concerned.

Mr. Seddon stated that Mr. Stannus had said that a man should choose a style and keep it pure; but to this he took exception, not so much as a bigot, but on the ground that he did not admit of there being two styles at all. He did not think that Gothic and Classic were in opposition. The Greeks evolved their style from the heterogeneous elements which were to be found in the East from the Egyptians and the Persians; and there was nothing about them to call a style and which developed into the Doric, and they might almost worship that style; it was their fountain of beauty; it was their study. With regard to the Queen Anne style, there appeared to him no point of merit or interest in it, which was original or true to style; there was no style about it. The most desirable things were the more practical fulfilment of domestic wants, and a fine delicacy of ornamentation, which were not obtained in Queen Anne's time. It was the revival of a desire to obtain notoriety by any means, honestly, if practicable; but certainly by any means. "Free Classic" was a bad name for it, as Classical was already free, and licensed

to be false to torture materials into absurd and fantastical form, to practise on the credulity of the public. The simple question was, What was right, and what was wrong? Let them not go back to Queen Anne's time, but to the time whence that style was derived, and whither should they go but to Gothic.

Mr. Spiers was opposed to the Queen Anne style, not because he did not admire it, but because he believed it a dangerous style for students to work in. With regard to domestic architecture, the remains of Roman architecture were as numerous as the remains of Greek; and if they dug down a few feet, they came to the remains of many of the domestic buildings of the Romans,—walls, up to a certain height, as well as doorways. In the Roman style was to be found most of the elements of the Gothic style. With regard to the "Neo-Grec" style, Mr. Ridge had referred to it as being new; but it had been in existence for many years. One great advantage, he considered, the French had over the English in dealing with Classic architecture was, that all the work that the French had done was very carefully studied. They never heard a Frenchman speak of a style, for French architects never said that they designed in any particular style, as they had several different styles. He believed that the Queen Anne style owed its origin to literature. There was no doubt but that all styles were due to literature; and they might go back 300 or 400 years, and would find that the literature of the country had had its influence in this respect. In Classical works he believed that mythology had had the greatest influence, and had led to the Renaissance, but he thought that Rosetti and Thackeray had possibly been the chief movers in the revival of styles.

Mr. Blashill thought the object of the discussion was not to fight over again "the battle of the styles" in architecture, and their comparative defects; what had caused the discussions on the subject was not the fact that the architects, who were now practising in that style had adopted it, but the fact that they had used the ugliest and the worst features of the style. He was of opinion, however, that the reaction would not last long.

Mr. Stevenson said that when he read his paper on the subject now before the meeting, it was not to point out the merits of the style in question, but to account for the fact that the style had sprung up. What was necessary, he contended, was that architects should thoroughly understand the style in which they constructed. There was a more rapid succession of styles acquired as civilisation advanced. He would be sorry if people took to the Queen Anne style for any other motive than that of working it, for he believed that the Queen Anne style was a natural development. It had sprung partly from Rosetti, and partly from Thackeray.

Mr. Ridge believed purity of style to be consistency of form applied in an artistic manner. One could not look at the forms of the buildings in the Queen Anne style without being puzzled to the utmost how architects could endure the forms they had introduced into their buildings. He did not think that it was worth while to introduce the style of any classical ornament that it contained.

INQUIRY AS TO THE SUPPLY OF WATER.

The following are the subjects for inquiry by a Royal Commission, as suggested by the Council of the Social Science Association, in reference to the storage and supply of water in all parts of the United Kingdom.

1. The rainfall, the rivers, the ground water line, the wells, and the several sources of supply; their variations with the years and the seasons, their chemical and organic impurities.

2. The storage of water,—if any,—in lakes, ponds, tanks (natural or artificial), both of surface, river and subterraneous water, at different elevations; and the extent to which such waters now run to waste in times of excess.

3. The mechanism of distribution,—by carriage, conduits, pipes; by pumping by means of steam, water or other forces; the intermission or continuity of the supply to houses; the storage of water in houses; and all the house apparatus.

4. (*a.*) The actual consumption.
(*b.*) The required supply.

5. The special means—both constructive and legislative—of insuring a sufficiency of water for drinking, washing, and cleansing; for domestic animals, for manufacturers—through the year in dry as well as wet seasons, both in populous places and rural districts and villages.

6. The actual cost of water at present so supplied; and the probable cost of that required and to be supplied.

7. The commercial bearing of the question of water supply. The cost of water supplied by companies; the date of their origin; their capital; their progress; their rates; the number of houses they supply; the cost of water supplied by private individuals or otherwise.

8. The physiological and pathological effects of various kinds of waters on the health and mortality of men and animals at different seasons of the year, and under different epidemic conditions.

9. To devise a general scheme of water supply.

(*a.*) For the utilisation of storm waters; of underground water in the chalk, and other water-bearing strata; of water falling on mountainous districts.

(*b.*) For the filtration, purification, and softening of waters.

(*c.*) For their storage where necessary; for their distribution; for their chemical and microscopical analysis.

10. The financial and sanitary advantages and disadvantages of the water supply,—where required,—being undertaken by:—

(*a.*) Municipalities or other public representative bodies;

(*b.*) By commercial companies;

(*c.*) By individual contractors;

(*d.*) By the consumers themselves.

11. The conditions under which water might be transferred from one water-shed to another, and the connexion of the question with the rights of property so as to deal equitably between all parties concerned, and particularly to consider the vested rights of the different municipalities, private companies, and the manufacturing and trading consumers.

12. The diversion of water for manufacturing and trading purposes to the injury of the inhabitants of the towns and districts from which water is so diverted; the effect of past legislation in securing any privileges to certain companies, towns, or districts to the prejudice of other and smaller districts.

13. The loss in rural districts and villages of the ancient and usual means of supply from wells and other sources by the working of mines and other works, and the means by which such loss may be diminished or prevented.

14. The rights of owners of limited and temporary estates in lands to erect works and provide means for the supply of water to such estates and other districts either for household, agricultural, or trading purposes, and to charge the absolute and reversionary ownership of such lands with a due proportion of the cost of such works, and the necessary conditions under which this should be done.

15. To make arrangements to secure an annual report on the water supply, and a ready means of deciding disputes between existing water companies and the communities they supply.

It is not proposed that such a Commission should inquire into questions exhausted by the Rivers Pollution Commission, nor that it should lay down specific plans for the water supply of any particular town or district.

It is proposed that it should commence its inquiries with those districts in which the want of water is at present most severely felt.

DISPOSAL OF SEWAGE AT SLOUGH, BUCKS.

The question of disposing of the sewage of this town has recently been discussed by the Local Board,—the urban sanitary authority,—and steps have been taken with a view to the settlement of it.

A new system of sewers was laid under the streets a few years ago by Mr. Curley, and an outfall proposed on some land in the neighbourhood belonging to Lord Harewood. The scheme of outfall was defeated, and a second proposal to utilise the sewage on another part of the same property was also unsuccessful. Other outfall schemes have at various times been submitted to the Local Board, but without result.

The subject was again taken into consideration by the Board last autumn, and in December it was determined to call in Mr. Grantham, C.E., to report upon the whole question. Two difficulties in dealing with the subject presented themselves. In the first place, the sewers already laid down, although not connected with the houses, were found to be discharging a large quantity of spring water, thus showing that they were not watertight,—a serious consideration if the sewage were to be pumped; secondly, irrigation seemed in this case to be the only practicable mode of utilising the sewage, and opposition to the acquisition of land for the purpose threatened from every quarter. On the north side of the town the land would probably be very expensive, and the neighbouring residents would offer weighty objections: on the east side Lord Harewood had defeated the Board twice; on the south was the River Thames; and on the only other available point, the south-west, Eton would probably, within a certain distance, bring its powerful opposition to bear.

Mr. Grantham sent in his report at the end of February, and meets these difficulties by the following recommendations:—

The laying a separate system of sewers throughout the town, and utilising the present sewers as drains to carry off the surface water.

The laying an outfall sewer westward towards Eton Wick; and pumping the sewage on to some land to the westward of the Eton Sewage Farm, beyond the reach of opposition from the Eton authorities, and remote from any residence of importance.

He has also suggested an extension of the district of the local Board.

These recommendations are concurred in by the Drainage Committee, which has reported accordingly to the Board; and the engineer's report has been adopted.

It is now proposed by the Board to apply to the Local Government Board at Whitehall for an inspection of the district to obtain the necessary sanction to carry out the recommendations.

PARIS INTERNATIONAL EXHIBITION, IN THE PALAIS DE L'INDUSTRIE.

An International Exhibition, comprising every description of machinery, apparatus, implements, &c., employed on board-ship, in fisheries, and all other sea and river industries, will be held in Paris, during the year 1875, under the patronage of a highly influential commission, aided by committees for groups and classes and foreign delegates. It will take place in the Palais de l'Industrie, Champs Elysées, in which was held the Paris Universal Exhibition of 1855, and will be opened on the 10th of July, and closed on the 15th of November.

The awards, which are to be made by international juries, will consist of grand prizes, diplomas of honour, gold medals, silver medals, and bronze medals.

Diplomas of honour will be awarded to the jurors, and also to those exhibitors whose industrial celebrity and former awards shall justify their being considered *hors concours*.

The time is so short that it will need strong efforts on the part of the London committee to secure a proper representation of British industry. The Lord Mayor is at the head of the committee.

WESTGATE-ON-SEA.

Westgate-on-Sea, the quieter neighbour of more bustling Margate, is making good progress. Arrangements are completed for supplying it with water and gas. The waterworks are being constructed by Mr. Gabrielli, who has finished the well and nearly completed the water-tower. There is an abundant supply of pure water, and it will be laid on to all the houses in about two months' time. The arrangements for the gas are also rapidly progressing under Mr. Pontifex and Mr. Woodcock. The contract for the ironwork has been taken by the Thames Iron Works; and that for laying the pipes and making good the roads by Messrs. Aird & Sons. We are informed that upon the watermains there will be fitted at convenient distances Messrs. Merryweather & Son's high-pressure hydrants, which will command by means of hose all the houses in the place without the aid of fire engines. We need scarcely say more to prove, as we said at starting, that Westgate-on-Sea is making good progress.

Safe Sewers.—At a recent meeting of the Vestry of St. George, Hanover-square, it was resolved to fix chains or a bar by the side of the sewers, to assist the men in the event of an inundation.

THE BUILDING AND TIMBER TRADES OF INDIA.

An excellent account of the forests of India has just been published by Mr. B. H. Baden-Powell, Inspector-General of the Forest Department, and contains in a convenient and easily comprehensible form, all that is as yet known respecting the woods of our great Eastern dependency, and the practical uses to which they are or may be applied. Mr. Baden-Powell does not pretend that our information on these subjects is complete. The Forest Department is little more than ten years old; time was necessarily spent in its internal organisation; and up to the present time it has not been found possible to explore all the forest regions; thoroughly to classify, demarcate, and control every one of those districts which have been already examined; or to institute a uniform and efficient mode of management and conservancy throughout the whole of India. But as the Inspector-General sensibly says: "If we were to wait till all was done before we attempted to describe the arena of our operations, we must necessarily keep the subject in abeyance for some years to come;" and he prefers to make the existing official information public, leaving future discoveries to be successively proclaimed as they occur.

The forest area of India extends from 8° to 35° north latitude, and from 68° to 97° east longitude, and exhibits, as might be expected, every variety of climate, elevation, and temperature, and almost every form of soil and subsoil. "The general forest administration has to deal with the treatment of a great variety of forests, from the cool shade of the cedars that crown the middle ranges of the Himalayas, to the arid plains of the south Punjab and Bikaneer, where the stunted and struggling vegetation scarcely yields a rafter for the peasant's hut; thence again we may travel to the tropical forests of Burmah, where, in the deep green shade, through which the sun never pierces, the exquisite forms of palms and canes cover every bank and hollow, while creepers, ferns, and orchids of many shapes and hues, clothe the trees. Here, too, in strange contrast to the forms with which the North Indian forester is familiar, are seen forests, the foliage of which is so far overhead that it is difficult to look up to it. Everywhere are huge stems, attaining not unfrequently to a height of 100 ft. without a branch or an irregularity in the faultless cylinder of the stem." In the midst of all this forestal wealth, Mr. Baden-Powell does not attempt any discussion of the botanical distribution of forest species. His monograph has a different object, and is eminently practical throughout. He first considers the forests as directly useful to mankind in supplying timber and other products for building, manufactures, food, &c., or for the use and convenience of the people; then calls attention to them from a climatic point of view in preserving the climate and soil with its moisture and existing configuration, maintaining the supply of water in springs, streams, and even rivers, and regulating the distribution of rainfall; and ends by giving an interesting description of the forest service as it is at present constituted. It is with the first of these sections that we are chiefly concerned, and we shall confine ourselves almost exclusively to its consideration, leaving the others, which are of equal interest, "to those whom they may concern."

The Indian forests yield those chief species of trees fit for building purposes and similar uses, in which size and strength of material are demanded. These are the cedar (*Cedrus deodora*), the sâl (*Shorea robusta*), and the teak (*Tectona grandis*). Besides these staples, however, and in conjunction with them, are found many other trees which are equally useful, and which are now beginning to attract attention, as cedar and sâl and teak are becoming dear. The Inspector-General of Forests complains bitterly of the ignorant rapacity of the contractors and traders who have ravaged without remorse in a few years the capital that Nature had been storing up with centuries of toil. He says: "Because these species happened to be good, they were the first produced in the market; because they were thus found alone in the market, they were the first used when public works, barrack-building, and contonments became the order of the day; because they were first used for such purposes, and found to answer, they were used also for fittings and for every other purpose, till people got to imagine that no other wood in the country would do at all." Still they are unquestionably the best woods, and for all superior purposes will continue to be in demand, although for ordinary uses other sorts exist in profusion, and would prove equally serviceable. Indian cedar, which is believed by many to be of the same species with the cedar of Lebanon and that of the Atlas Mountains, only exists, in British territory, in the Punjab and the North-Western Provinces, although there are supposed to be great unbroken tracts beyond our frontier which are covered with it. It is found at an elevation of from 5,000 ft. to 9,000 ft. In the Punjab it is the best building timber, as it is unsurpassed by either sâl or teak. In the North-Western Provinces, on the other hand, sâl everywhere occupies the primary position, and cedar is chiefly in demand for railway sleepers. As there is no means of land conveyance on the hill fastnesses, where the cedar has its home, those forests only are regarded of importance which are situated near a river, to which the logs can be dragged or tumbled by timber slides, and on the waters of which they can be floated down to the plains. On the Jhelum, the cedar forests on the main river are in Cashmere, and they have been ruthlessly despoiled, as is usual in native states. In the Kishnganga and the Kaghan valley the work of destruction has been averted, and when Mr. Baden-Powell visited the district in 1867, he found splendid forests of pure cedar occupying the slopes of the hills down to the water's edge. The Chenab cedar forests, which are also in foreign territory, have been greatly wasted and destroyed. With respect to them, we are told that, the river being one on which the floating and transport of timber are comparatively easy, "a host of contractors and speculators rushed to the forests, and as every new station laid out and railway constructed after the annexation of the Punjab, in 1849, added to the growing demand for building timber, so tract after tract fell a prey to the axe, and now nothing remains in the finer and more accessible forests but the remnants which we came in time to preserve, and the few seedlings that a bountiful Nature, in spite of opposition, struggled to reproduce." The Inspector-General of Forests has no love to spare for contractors' woodmen; but the justice of his censure is shown by the fact that after the Government leased the Chenab forests it was able to stock the market, simply by extracting and exporting the material that had previously been felled, but was left to lie on the hill-sides, because its removal demanded the construction of a short slide or the expenditure of a little labour, money, or supervision! The Sutlej cedar forests are the most extensive and valuable in the Punjab. They have been worked with some extravagance close to the river, but in the side valleys magnificent belts of trees remain, and these have been carefully and judiciously thinned by Messrs. Brassey, Wythes, and Henfrey, who purchased a grant of 8,000 trees, and worked out the wood chiefly for railway sleepers, "having been the first contractors who had ever worked in the Himalaya on a conservative principle, constructing good roads and aiding the transport of material by timber slides and other devices." It is said that these forests would still yield a good turn-out of timber; but the natives are desperately lazy,—so very lazy, that Mr. Baden-Powell thinks it would be a very good thing for all parties if the Rajah would exercise his right, and compel them to work for some weeks every year, only introducing the novelty of paying them for their labour. Besides the cedar, the forests of the Punjab produce a variety of useful pines. Among others there is the *Abies Smithiana*, which stands well for indoor work, and the *Pinus excelsa*, which is found in extensive forests, and in many districts forms the chief building material. The Inspector-General calls especial attention to the prevalent and greatly-neglected *Pinus longifolia*. It is conveniently situated on the lower slopes of the hills, and he says, "It possesses a greater strength or bearing power than even cedar, but in other respects is inferior, though no doubt it is one of the woods which would be improved almost indefinitely by impregnation. As it occupies a large area of the lower hills, where no other building wood is found, and which, moreover, is so much nearer the plains, the roads of export, and the markets than the more valuable cedar, it promises to become a species of great importance, and one that warrants careful conservation, and well-considered experiments as to its seasoning and general treatment for timber." The twisted cypress is also found, and its beautiful scented pink wood is much valued; but its rarity makes it costly. The yew is not uncommon, and five species of oak are known, of which the finest is the *Quercus semicarpifolia*. Its wood, however, is only locally used, for it is too heavy to float; and hence it has never been tried on a sufficiently large scale really to test its qualities. Besides the above-named trees, the Indian chestnut, the bird cherry, various maples, the ash, the walnut, and the birch are all produced in greater or less profusion in the Punjab.

The cedar forests of the North-Western Provinces have not suffered so much as those of the Punjab, for most of the heavy timber required has been taken from the sâl forests, which lie lower on the hill sides. The only cedar blocks which seem to call for special notice here are those in the Bhagirathi forests, which suffer severely from avalanches. "Here," writes Mr. Grant, "huge lanes may be swept clean down the hill sides, and the whole place strewed right and left with the *débris* of trees hurled down and broken in pieces,—from small saplings up to trees of 12 ft. and 15 ft. in girth,—in one common destruction." In these forests also the growth of the cedar is extremely slow, as, owing to the height of the mountains, the sun disappears at half-past one or two o'clock in the afternoon, and does not reappear till half-past eight in the morning; while the night and winter frosts are severe, and cutting winds blow all day long. Associated with the cedar in the North-Western Provinces are many of the other building woods already mentioned, and most common of all is the *Pinus longifolia*, so favourably noticed as a product of the Punjab. Speaking of it, Colonel Pearson says: "It would be difficult adequately to describe the enormous seas of 'chir' forest which line the bank of the Jumna. In this the trees must be numbered, not by thousands, but by hundreds of thousands, and many of them are of huge size." The cedar, as we have said, takes long to reach maturity in the Bhagirathi district; but at best it is a slow-growing tree, although its rate of progress varies considerably with the rainfall, climate, and elevation. In India it attains a very large size,—trees of 18 ft. in girth and 100 ft. to 150 ft. in height being far from uncommon. Several trees of 36 ft. in girth have been noted, and a few of more than 200 ft. in height have been felled. At Simla, it is said that the cedar attains a diameter of 2 ft. in sixty to eighty years, but in drier regions, at a similar elevation, the same diameter will not be attained under 150 years. The tree has many enemies besides man; and the Forest Department have determined to confine their operations to preserving and restoring the forests. The market meantime will be supplied by removing the abandoned material of former years, and the dead and fallen trees that fires, storms, and avalanches have so abundantly produced. In the more remote districts, where full-grown timber has been left by the contractors, timber slides will be constructed, and it will be extracted.

The sâl (*Shorea robusta*) is a very heavy wood, of greater strength than teak, its breaking weight being 1,391 lb., while that of teak is 1,091 lb. It resists the ravages of the white ants, and is consequently in demand for building purposes where they abound. It is, however, better suited for beams than thin planks, which are said to twist and split. As it does not float, its export is chiefly effected by land carriage, although sometimes it is river-borne with the assistance of bamboo or light wood supports. The sâl forests occupy a much greater extent of country than the forests of cedar. One great belt of sâl lies along the foot of the Himalayan ranges from the Jumna to Assam. It abounds in the North-Western Provinces, and the remains of a third great forest are found in the Lower Provinces, and a considerable portion of the Central Provinces. In the valleys of the Haldwani and Sarda rivers there are some fine tracts where the woods have never been touched by the hand of man, and abound in good timber of apparently middle age, most of the trees being 6 ft. to 8 ft. in girth, and 60 ft. to 80 ft. high. During the nine years from 1859 to 1868, some of the adjacent forests of Kumaon yielded 4,204,589 cubic feet of sâl, which realised 24,958*l.*; and this was a very small yield, only amounting to about 467 cubic feet annually per square mile. Large quantities of fine logs are exported from Nepaul, which is covered with sâl forests. There, as in more moist districts, other trees rise into prominence and afford excellent building timber. Among these are the "sam," a fine species of *Atrocarpus*, the magnificent *Lagerstœmia*, the "nahor" (*Mesua ferrea*),

the "toon" (*Cedrela toona*), and the "jamu," comprising two species of *Eugenia*. Fine specimens are also found of the *Ficus elastica*, or india-rubber tree. So numerous, indeed, are the forest trees at the eastern end of the Himalayan belt, that 102 of more than average merit are specified by the Forest Department, and twenty-nine are characterised as "valuable." The great sâl tract on the central continent of India occupies a considerable portion of Bengal, part of the Central Provinces, and Northern Madras. In the northern portion of Bengal only the relics of the former forest remain; but of Chota Nagpore and Orissa, Sir George Campbell says: "It may be said that the whole country, wherever it is in the least degree raised above water-level, is one mass of natural sâl. . . . The Chota Nagpore division and Orissa tributary Mehals, from 50,000 to 60,000 square miles, may be said to be one great sâl forest, partially interrupted by cultivation." The trees, however, are, as a rule, stunted, and it is supposed that here the sâl begins to reach the limit of its natural growth." In the sâl forest of Topla, in the Central Provinces, magnificent trees are still found, some being 9 ft. in girth and 80 ft. high. Throughout the whole of India the sâl forests have suffered much from fires, which are often intentionally kindled by the ryots to clear the ground from jungle-growths. The consequence is, that the trees have been scarred and stunted, and that in some of the worst localities "only a huge torso, blackened with fire, hollowed and diseased, remains here and there, to bear silent witness to what the forests once were, and to make powerful, albeit silent, protest against the absurdity of the idea which still lingers in India, that forest fires are beneficial to sâl forests." Under proper care and protection, however, it is hoped that the forests will resume all their former luxuriance and grandeur, while at the same time an abundant and moderately-priced supply of this valuable timber is made available for useful purposes.

The qualities of teak, the third great building wood of India, are too well known to need recapitulation. When the tree is in a locality and within a zone of climate which it likes, it assumes magnificent proportions, specimens of from 8 ft. to 15 ft. in girth being common, and boles of larger circumference by no means rare, while the stems often rise from 70 ft. to 80 ft. without a branch. Teak forms a chief feature of the Central Provinces, Berar, Bombay, and Mysore, and to some extent of Madras also. Its natural northern limit appears to be about 25° north latitude. In the Central Provinces there is a great deal of teak *jungle*, but very little real teak forest. It is generally associated with other timber-yielding trees, such as "saj" (*Terminalis tormentosa*), blackwood, "anjan" (*Hardwickia binata*),—a strong and valuable building timber,—and satinwood. North Berar is full of teak of small size, and the Melghat portion has been set aside as an extensive reserved forest of 400 square miles. On the Western Ghâts there is much more coppice wood only fit for rafters, but there are also many fine straight stems from 60 ft. to 80 ft. high. In Canara teak abounds, as do also ebony and ironwood; and although many of the forests have suffered from over-cutting, the resources are still considerable, and natural reproduction, where protection is given, is stated to be excellent. In Canara also there is abundance of a valuable tree, *Vitex altissima*, which is said to be as good as, if not better than, teak. The protected state of Mysore is particularly rich in good woods, and contains at least a score which are valuable for building purposes, the best being teak, sandal-wood, ironwood, and blackwood. In Coorg blackwood is very abundant, and in Madras, Malabar, Cochin, and Travancore there are large quantities of teak. Leaving India proper, we find teak in luxuriant profusion in Burmah, whence it is largely exported. Its export is usually effected by floating, but the timber is too heavy to float unaided, until it has become somewhat dry. It is therefore customary in Burmah and in some parts of India to girdle the trees, *i.e.*, to kill them by a deep circular incision through the bark, and through every part of the sapwood. So great is the vitality of the teak, that if the sapwood is not completely divided a column of living tissue will remain, through which the juices of the tree will continue their circulation, and in many cases re-establish the functions of growth. Girdling has the advantage of rendering the wood floatable, and also keeps it out of the way of forest fires, to which it would fall a ready prey if it were lying felled on the ground. It is also useful, if the process is continued long enough, as a means of check in the case of permit-holders, as the timber acquires an easily recognised appearance, and so can be distinguished at the stations for examination and payment of royalty, from timber that has not been girdled. Whether it injures or improves the wood is a disputed question. When a tree has stood for a couple of seasons after girdling, and has become dry, it is cut down, dragged to the nearest stream, marked by a blow of a marking-hammer, and tumbled into the stream, down which it floats alone until it reaches a river, where it is fastened with others into a raft. The dragging is hard work, and the ponderous logs have often to be hauled for three or four miles over hill, down dale, and through forest before reaching a watercourse. The lighter logs are dragged by buffaloes, the heavier ones by elephants. It is said that the sagacity which the elephants display is marvellous. The animal seems to exhibit intelligence almost amounting to reason, in the way in which it will move a log, alternately lifting it with its tusks, or pushing it with its forehead or knees, first at one end and then at the other, till it has got it into the required position for rolling it down to the bank of the stream.

"On the Salween a peculiar mode of timber export is followed: the side streams and feeders take the single logs to the main river, but the whole of the upper portion is an unmanageable torrent, so that the logs have to be left to chance. As soon as the part of the river is reached where catching and forming into rafts is possible, stout ropes of twisted rattan are stretched across the river at intervals; thus the logs coming down in a confused mass are stopped. The expectant owners station themselves at the banks, and after stopping such logs as they perceive to belong to them, they push the other logs under the rope; they then pass on till a second party at the next rope make a similar examination. Such logs as are stopped in this way are formed into rafts; but a number of logs, of course, which in the hurry of the moment are not recognised, or whose owners were not on the spot, escape the ropes, in spite of all precautions, and float down unclaimed. Below the last rope, therefore, a numerous band of people collect during the catching season, and gain a livelihood, by boating, and even swimming after the logs,—'salving' them, as it is called. This is now done under Government supervision, and the owners reclaim their timber on payment of certain salvage dues at a regular authorised scale."

Mr. Baden-Powell points out that the teak-tree grows very fast,—30 ft. poles having been produced from trees of two years' growth, while in a Malabar plantation there are stems of from 70 ft. to 80 ft. in height which have only been planted for three-and-twenty years. He does not think that slow-grown teak is better than the other; for Malabar teak is as fine as, if not finer than, any teak in the world, and its rate of growth is remarkably rapid. The teak forests are eminently suitable for natural reproduction; but a careful watch must be exercised over the successive fellings, and judicious supervision is necessary to insure that this light-loving tree obtains sufficient sunshine without admitting so much light as to cause a crop of tall tropical grasses and weeds to spring up and get the upper hand of the young plants. Creepers and parasites must also be destroyed. One of the much-mooted questions of the present time is the cultivation of teak, and its introduction into Bengal and Assam. Mr. Baden-Powell thinks that it would be perfectly useless to spend large sums on such work while neglecting the valuable indigenous trees of the country, or to expect to compete with Malabar or Burmah, the natural homes of the teak of commerce. The market rate of the best Burmese teak may be taken as fluctuating between 7*l.* 10*s.* and 8*l.* 10*s.* per ton ready for shipment at Rangoon or Moulmein. Instead of planting teak forests in Bengal, the Inspector-General urges the Government of India to adopt measures to render the resources of British Burmah better known, and to instruct its officers to forward supplies of valuable woods which are little known to the coast. Among others, he instances the "thitka," or bastard mahogany, and the "thikado," or bastard cedar. There is also the "thingan" (*Hopea species*), a wood heavier than teak, and which lasts under water far better. Again, there is the "anan" (*Fagræa fragrans*), rather a common tree, which behaves so well under water that it hardens, and the natives, with pardonable exaggeration, say it becomes stone. This wood, it is stated, would be invaluable for canal works, piles, &c. There are many others known besides these, and many more, it is supposed, whose useful properties have yet to be discovered.

The forests of India abound in valuable woods suitable for manufactures; but very few of them are either used, or even known, out of many that are available. This is not much to be wondered at, for unless wood is required for export, or for the limited supply of furniture in the European style, there is but little demand for woodwork of any beauty of colour, grain, or polish. The sâl and the teak, with other large timbers, serve for the boxes and the stools, and other very limited furnishing requirements of the Indian agriculturist's house. Mr. Baden-Powell roams from presidency to presidency, from province to province, and from district to district, minutely describing the resources of each; but we have not space to do more than enumerate a few of the principal woods which he points out in his wanderings. India largely produces a walnut-wood, which, though identical as a species with the walnut of Europe, does not produce the fine variegated wood so much valued in cabinet-making in Britain. The Indian yew, however, presents a fine wood for the cabinet-maker, and the beauty of its pink-veined wood, with knots and markings of a deeper shade, renders it a charming variety, especially in parquet work. There is plenty of workable boxwood in the lower Himalayas, and the olive also flourishes; but the most attractive wood is the "kakkar" or "kangar" (*Pistacea integerrima*). It is a zebra-wood having a yellowish ground, with black or brown wavy bands or streaks. It grows to a large size, and Mr. Baden-Powell thinks has not received the attention which it deserves. He advocates its preservation and plantation. The bastard cedar is extensively used for furniture, and when old and well grown is a wood of considerable beauty; but ordinary pieces are only fit for making cigar-boxes. This wood is not liable to the attacks of insects.

The chief woods, however, of the northern and comparatively arid districts are the "sissu" (*Dalbergia sissoo*) and the "babul" or "kikkar" (*Acacia Arabica*). The former is a hard wood, the heart-wood of older trees being dark brown, finely veined. The Inspector-General says he has seen polished specimens of this wood which would bear comparison with Brazilian rosewood. It frequently attains a growth of from 6 ft. to 8 ft. The "babul" is a tree which may be described as the agriculturist's friend. It supplies the chief wood for all ploughs and agricultural implements, and for rafters. It grows all over India, from the Punjab to Travancore. In Chittagong the most noted furniture-wood is *Chikrassia tabularis*, a beautiful wood, often veined and mottled, and of light red colour. In Bengal, among others are the tamarind-tree, ebony, mahogany, and "wild-jack," which yields a fine yellow furniture-wood. Bombay has its celebrated blackwood (*Dalbergia latifolia*), which is tolerably well known even in England. The wood is beautiful, and very strong and heavy; its colour is black, or greenish black, sometimes mottled and veined. The tree attains a girth of 15 ft., and planks may be obtained 4 ft. broad after the sapwood is removed. Ebony is abundant in Canara, but the west and north produce the best, and 16-in. planks of a fine colour have been obtained. The wood is much affected by the weather, and is chiefly useful for veneering. The ebony of Canara is inferior to that of Ceylon. Satin-wood is found in the mountainous districts of Southern India, but does not reach a large size, Ceylon being the real habitat of the tree, where it is the king of the forest. Last of all is the sandal-wood of Mysore. The State has a right to this valuable tree wherever it grows, and retains a monopoly of its sale. The girth of the mature tree varies according to circumstances from 18 in. to 36 in., or even 40 in. The heart-wood is hard and heavy. The best parts are used for carving ornamental articles, the roots and chips go to the still, while Hindoos who can afford it show their wealth and respect to their departed relatives by adding sticks of sandal-wood to the funeral pile. For commercial purposes the wood is divided into five classes,—the average price for the first three classes being 43*l.*, and for the fourth and fifth classes 34*l.* per ton. The hollow pieces and chips realise 36*l.* per ton. The annual exports vary from 690 to 714 tons.

DWELLINGS OF WORKPEOPLE IN PERSIA.

In the towns of Persia large caravanserais, built in former times to accommodate a far more numerous population, are generally to be found where a large number of workmen are lodged, at the rate of from 1s. to 3s. per month. These buildings are all more or less in a ruinous condition; but as this is the state of affairs, high and low, throughout the country, no great sense of discomfort or inconvenience is felt. Each workman must provide a rough felt for sleeping, and a cooking-pot, which are the only articles in the shape of furniture to be seen in such places. The still poorer classes take refuge in the courtyards of mosques and sheltered corners in various parts of the towns. Of the workmen who are married, some possess a small piece of land, which helps them to maintain their family, and on which they have erected small houses of sandstone and mud, or huts of date-leaves, according to their means. The wives and children add a trifle to the family purse, by sewing, or more frequently by carpet-making or rough weaving. Where, however, industry falls short, or, rather, indolence takes its place, the poor readily resort to begging; and in a country where every one who has the merest pretence of religion must give alms, it is by no means an unprofitable step. It is rendered still more remunerative should the beggar be caught stealing, and lose an arm or foot as punishment, he being in that case disqualified from work, can beg with the certainty of success.

In Bagdad, the houses occupied by the artisans and labourers vary according to their means. Some are comfortable, but all are badly ventilated, and those of the poorer people are very inferior. All the houses are built on the same principle, whether of stone, brick, or mud. The form is a square or parallelogram, surrounding a court, into which the rooms open, and there is seldom any opening to the outside of the building except the entrance-door. The roofs are flat, and on these the occupants sleep in the summer, while they are also used for the purpose of spreading on them any article of produce which they desire to dry in the sun. In the centre of the courtyard is a sunk and covered cesspool, into which the refuse water and off-scourings of the house are permitted to run through a small hole in the ground. The houses consist of only one floor, none having an upper story. Drainage is most imperfect, and miasmatic dirt, overcrowding, and air-poisoning are the rule. The workpeople live principally on bread, and dates and other fruits in their season. Water-melons, which are cultivated in large quantities, form a staple of their food during the summer.

In Tabreez even the labourers of the poorest class generally own the houses in which they live; building land can be bought in their quarter of the town for about 50s. the 100 square yards, sufficient space for a house and yard, which is built by the owner personally, and may cost him 8*l.* to 10*l.* sterling. They are built of mud, and the roofs, which are flat, are plastered with the same material. They are generally low, and the entrance still lower in proportion seldom more than 3 ft. high, while the inner doorways are sufficiently commodious. The object of the low entrance is to prevent horses from being billeted on the owners. The artisan classes and skilled labourers form about one-twelfth of the entire population (200,000). The Christians are excluded, through Mussulman bigotry, from engaging in any trade or manufacture which might indirectly cause defilement to a Mussulman purchaser; and the rule followed is that any construction or manufacture which requires to be handled or manipulated when in a moist state is only to be undertaken by Mussulmans. This debars the Christians from following the trades of masons, tanners, painters, bakers, butchers, &c. On the other hand, however, they are almost the only goldsmiths, gunsmiths, and carpenters.

In Bussorah, the Balsora of the "Arabian Nights," the houses are built of bricks, dried in the sun, which endures for ages if kept tolerably dry. The clay used in making the bricks is far from being moist, but in almost a dry state is beaten into the moulds with mallets, a process which gives them a wonderful degree of hardness. The houses are all coated with mud, and having no windows which look into the streets, the latter present a dreary and uninteresting spectacle. In the country villages the house often consists of a large underground apartment, to which a platform is raised and enclosed with a railing. This again is benched round, which benches serve for seat and bedstead. Being vaulted with a sort of cupola it has a round hole in the centre, to admit air and light, and to carry away the smoke of the fires there being no other chimney. In other towns and parts of Persia, the workmen's houses are very similar in construction to those described. The drainage in all is very bad, but ill-closing doors, and ill-fitting windows leave nothing to be desired in the way of ventilation.

Although capable of turning out good and creditable work, it is seldom the workmen do so; as a rule, it is slovenly and clumsily done. Being paid by the day they protract their time as long as possible. Their countrymen appear to prefer cheapness to every other quality, and whoever works for lower wages will get employment in spite of his inferior skill. The untrustworthiness of the Persian character is seen in every class, grade, or calling, and although the labour is low priced, bad workmanship and waste of time make it nearly as dear as it is in Europe. The only occasion when they endeavour to display superior skill is when employed by some nobleman from whom they hope to receive a reward much in excess of the value of their labour. The tools they use are all brought from Russia; and are of a bad and cheap description; they would hardly find purchasers in any other part of the world.

In the manufacture of shawls and carpets, in brasswork, in enamel on gold and silver, in every species of ornamental work, where a good effect is sought for, rather than excellency of finish, the Persian work may be said to be good. Everything is done by hand and left unfinished, rather from an ignorance of the higher principles of artistic work than from any real incapacity; save in respect to the shawls and carpets which combine an artistic sense of the harmony of colour, with a wonderful perfection of finish and durability. But none of the modern fabrics of Persia are at all equal to those produced in former times. The carpets, felts, and silks have very much deteriorated; the handsome enamelled bronzes of Isfahan are no longer to be found.

The ignorance of the workmen is not altogether the result of their want of opportunities of improvement. The love of tradition is very strong, and the change in the quality of production seems alone to have been brought about by that universal law which gradually deteriorates the labour of nations which do not progress. What has been said about the higher branches of work applies equally to the lower. Everything in Persia follows a geometrical ratio in its decay.

Apprentices begin to learn their trade at eleven years old, and remain with their masters until they reach man's estate. The usual hours of labour are from sunrise to sunset, less the time occupied by prayers and meals,—about two hours. Labourers and journeymen are engaged only by the day. In some trades an additional allowance, generally in bread, is given according to the quantity of work executed.

The diet of the labouring classes is of the simplest description: bread, fruit, and cheese form their usual repast. A labourer's food will be a lump of dates before going to work, some bread (unleavened) and salt fish for dinner, and some boiled rice for supper. The men who can earn higher wages possibly wear a better shirt and turban, but nothing more; whatever they save is usually converted into ornaments for their women. When the winter diet of the workman consists almost entirely of bread, rice, and bad cheese, with a small quantity of tea in the form of a decoction, and the summer diet of bread and "safi," or summer produce, *i.e.*, melons, cucumbers, vegetable marrows, egg-plants, and various forms of edible gourds, he can just manage to keep within his income, which is about 9½d. per day, or 21s. per month.

Knowledge its own Reward.—Last week Mr. Roebuck, M.P., distributed the prizes to the students at the Sheffield Mechanics' Institute. He pointed out that the majority of men in the country had to govern themselves, and what he desired was to see them educated honestly, industrious, and upright, so that they might govern themselves well. He condemned the idea of telling the working classes they could as a body raise themselves out of their position as labourers. He wished them to seek happiness in the station of life in which they were called by Providence, and one of the best means for attaining this was intellectual research.

IMPERFECT ARCHITECTURE.

In none of the fine arts is perfection, or an approach to perfection, more difficult of attainment than in architecture. This may easily be accounted for if we consider the difficulties with which the architect has to contend, difficulties which do not obtain in other branches of the fine arts. The poet, the painter, and the sculptor, have more or less plastic materials to deal with, and they have not to struggle for the realisation of two objects which are often conflicting and antagonistic,—utility and beauty. The greater the conception, the mightier the scheme, the more strongly does this antagonism come into play, the more difficult does it become to sustain unity of character and congruity of parts, to produce that feeling of completeness and sustained interest which obtains in an epic poem, that harmony of tone and grace of composition which the painter gives to his work, or that flow of line and gracefulness of posture which is the aim of the sculptor.

There are reasons, too, which militate against the carrying out of an architectural work in the spirit of the original conception. The designer is not always, indeed seldom is, left to carry out the work as he would wish it; funds are not always at command, and not unfrequently the continuation and final completion of the work are entrusted to others. Then, again, a great and important edifice is seldom completed in the lifetime of him who conceived its design; the work progresses by slow degrees, a change of taste occurs, the details are altered or tampered with, and probably the original idea is abandoned, and the edifice assumes a new character, the final result being perhaps a picturesque combination, or an incongruous agglomeration of parts, beautiful it may be in a certain sense, but defective as regards that completeness and unity of effect which was the aim of the original designer. The good or bad effect of a building so treated will depend upon whether the parts appear naturally to belong to each other, and so combined into harmonious composition. This is more particularly the case as regards ecclesiastical architecture. The temple, designed for one great purpose, is not in the same position as a secular building. If conceived in the true spirit, it should represent the stability, unity, and grandeur of the Christian faith, and that in spite of the variations and fluctuations of style and taste. Where we do not find this, it is reasonable to conclude that the religion professed is as much out of keeping with the original teaching as the details are with the building they profess to adorn.

Very few Gothic churches of any great dimensions can be said to be complete and harmonious throughout, few of them indeed which have not some single feature which is crude and incomplete in itself. The tower which arose beside the basilica to meet the new requirement for bells was originally a separate and detached structure, but in course of time it came to be considered an integral portion of the sacred edifice. When placed in the centre of the west gable this feature combined with the body of the church so as to form an harmonious composition, but in that position it blocked up the gable, and deprived the interior of the effect of a west light. The expedient of placing it at one side was not considered altogether satisfactory as the composition appeared to be incomplete, and hence it came that two towers were produced so as to balance each other; and finally it was found that, where the church assumed the form of a cross, a third and larger tower was required to complete the composition. The production of these towers required no small expenditure of money, and consequently we find numerous instances where such were intended, but have not been executed.

Another source of incompleteness in Gothic churches arose from the fine idea of crowning the tower with a spire. Many towers there are which have been designed to be so finished, but which are left in their incomplete state, and thus appear squat and unsatisfactory. To combine a massive square tower with a graceful tapering spire, so as to produce a feeling of organic unity, as if the one grew out of and formed an integral portion of the other, is no easy matter; hence we find many failures in this respect. Sometimes the spire appears to have slidden down somewhat within the four walls; again, it seems as if it had been stuck on at random and held its place by mere chance; and anon as if it would extinguish the tower altogether. Seldom do we see a really fine spire; but once

seen, it holds its place as one of the most beautiful creations in stone and lime.

The first requisite in a building is that its form should be graceful and well proportioned; if it is so it will be a beautiful work of art, although almost destitute of ornament; but no amount of ornamentation will make a badly-proportioned edifice really worthy of admiration.

Ornamentation which is beautiful in itself may be applied to an uncouth mass, and may attract our admiration; but that does not exonerate the designer from the fundamental error of inattention to general form. If true harmony of proportion in the mass has been attained, even badly-applied ornament cannot altogether extinguish the beauty of the original conception, unless, indeed, the ornament is upon such a scale as to overpower by its dimensions what it professes to adorn.

The same rule, which applies to the general outline and proportion of a building, is also applicable to the detail. The ornament should not only combine harmoniously with the building, but should in itself be graceful and complete. Broken pediments, *et hoc genus omne*, which are now coming into favour, can never be anything but examples of a debased taste. A pediment fallen into decay, or broken by accident, may undoubtedly be a beautiful object, its incompleteness is due to natural causes, and the mind instinctively grasps the idea that it was at one time complete, and was originally intended so to be. But to imitate this incompleteness, and to produce it of new, is quite as imbecile a proceeding as to construct a new ruin. The aim of every true artist should be to attain perfection. He should reject everything manifestly imperfect. Genuine ornament should contribute to the general harmony and dignity of "building" instead of imparting to it a look of fussy littleness, which it is sure to do if made up of shreds and patches. Some recent erections are apt to cause a feeling of irritation rather than that pleasing sensation of tranquillity and sustained interest which is produced by the contemplation of a really well-considered design. To ornament construction, and not to construct ornament, has been accepted as an axiom. To construct imperfect ornament is the height of folly.

ST. GEORGE'S HALL, LIVERPOOL.

It is now twenty-one years since St. George's Hall, at Liverpool, was opened, the inauguration having taken place in the year 1854. The erection of this noble building occupied no less than sixteen years, the foundation-stone having been laid by the father of Mr. Rathbone, the present member for Liverpool, on the Queen's coronation-day,—the 28th of June, 1838,—and when the opening took place in 1854 the building was by no means complete, the courts of law being at that time the only portions of the interior which at that time were actually finished. It was not until some years afterwards that the great hall and the concert-room were finally completed, the decorations of these two apartments being of the most elaborate and costly character, more especially the vaulted and sculptured ceiling of the great hall. The outlay on the building was upwards of 300,000*l.*, more than 20,000*l.* of which were expended in the interior of the great hall. A still further large expenditure is now about to be incurred in redecorating this apartment and the concert-room.

At the last meeting of the council, the finance committee recommended that the tender of Messrs. White & Son for redecorating the two apartments, for the sum of 3,745*l.* be accepted.

Mr. Alderman Weightman (formerly the borough surveyor), in moving the adoption of the recommendation, said that the hall as it now stood was positively discreditable to the town; and in answer to a question, said that the ceiling as well as the walls,—indeed, everything,—was to be repaired.

During the time the subject was under discussion a question was asked as to the number of artistic decorators in Liverpool. A member inquired if the tenders for the work were limited to three, and on being answered in the affirmative, he wished to know if there were only three decorators in the town capable of doing such work; whereupon Mr. Alderman Weightman remarked that he should decline to say that there were not more than three, but he believed such to be the case.

If there *are* three capable of properly executing this work, Liverpool may be proud.

ST. PANCRAS VESTRY HALL.

WE give in our present number the front elevation of the St. Pancras Vestry-hall, which, during the past six months, has undergone a complete remodelling, with extensive additions.

For some time past further accommodation and greater convenience have been urgently needed, in consequence of the increased business staff of this large and important parish, containing over a quarter of a million inhabitants, and being first in rateable value in the assessment list of the metropolitan parishes, excepting only the City of London proper. It extends from "The Spaniards," on Hampstead-heath, to St. Andrew's, Holborn, north and south, and from the "Brecknock" to Primrose-hill, east and west.

It was at first a question whether the offices should be in an entire new building, and designated the Town-hall, in a more central position of the parish, or if the old building should be enlarged. The vestry, however, in the spring of last year advertised for designs for extending the old building, which resulted in the selection of Mr. H. H. Bridgman, architect, to carry out their requirements.

The site is the freehold of the vestry, and the offices alone stand upon an area of 130 feet by 64 ft., about one-fifth of an acre, and are three stories in height, more than one-half of which is entirely new building. The old portion has been so altered that it is difficult now to recognise the old vestry building at all.

The ground-floor will be occupied by the sanitary and gas departments, the Burial Board, and District Superintendent Registrar's Offices, in addition to six fireproof strong-rooms, gas-testing room and medical officers' laboratory. Extensive lavatory accommodation for the whole of the offices is also provided on this floor, but outside the main building.

The first floor contains the vestry clerk's, works', and finance departments; also the offices of the guardians and directors of the poor.

The second floor is wholly taken up by the vestry-hall, Board-room, library, and committee-rooms, which also afford suitable arrangements for occasions of concerts or public entertainments; and above the Board-room is a suite of apartments for the hall-keeper.

The first floor is approached from the principal entrance by a flight of Portland stone steps, 10 ft. wide, with ornamental panel balusters and wainscot handrail. At the top of the first flight, right and left, are the staircases to the second floor, with large arches spanning the entrances.

From the street-entrance spacious central corridors are visible on the ground and first floors, running the entire length of the building, with pendent globe-lamps from the elliptic arches. On either side of these corridors are grouped the different departments.

The entrance-hall is paved with encaustic tiles, and is two stories in height. Suspended from the central panel of the ceiling is a large globe-lamp; the ground-floor of the hall is further lighted by two standard globe-lamps on the newels of the bottom central steps. In the hall is a black marble slab, with gold sunk letters, indicating the various offices by numbers; and adjoining is the inquiry office, fitted with all the necessary postal and delivery arrangements for facilitating the general business.

In the rear of the building, at the extremity of the corridors, there is another staircase the whole height of the building, affording ample convenience, light, and ventilation. Each office has a perforated ring ventilator in the centre of the ceiling, from which is suspended the gaslight, with ready outlets to the fresh air by means of air-bricks in the external walls at the joist level.

The strong-rooms are fitted with slate shelves and tables, and easily approached from the different departments. Several massive iron safes,—Milner's and others,—are also built into the walls of the chief offices.

A lift is provided in the vestry clerk's department for the purpose of more readily moving the cumbrous rate and index books to and from the strong-room, which in this case is immediately underneath; and the works department is fitted with special arrangement for paying the street workmen without the necessity of their coming into the building. The offices throughout are fitted with Zimdar's electric bells.

The large hall, which is about 70 ft. by 40 ft., is yet to be decorated, together with several minor improvements in the old portion of the building. Most of the new fittings, desks, cases, and counter-tops, many of which are of special construction, are in wainscot.

The extent of the new front is about 75 ft. by 50 ft. high, and stands on what was originally a spacious enclosed forecourt, and from its being at the junction of four principal streets of the neighbourhood,—viz., Pancras-road, King's-road, Crowndale-road, and Great College-street,—it forms a prominent feature.

The ground-story is faced with Corsham Down stone, with ashlar and sunk work; the corners are circular; and it has a dentil cornice. The entrance columns are polished grey granite with wainscot sliding doors; the device of the St. Pancras Common Seal is carved in the tympanum over the door, illustrative of the victory of the youth St. Pancratius over his persecutors; this device is also embossed within an oval garter on each lower sash, of plate-glass, throughout the entire front. The first and second stories are faced with red Fareham bricks, with blue black joints, and with Bath stone dressings and quoins; the whole is surmounted by a bold stone block cornice and balustraded parapet. The centre, projecting, is designed for a clock dial, and is protected by a segmental hood, supported on carved scroll ancones; above this is the base for a full-size figure of St. Pancratius, the patron saint of the parish. It is expected that both the figure and the clock will be the gifts of two of the ex-churchwardens.

The foundation-stone was laid on the 8th of July last, as recorded on the stone, on the occasion of the triennial boundary-beating of the parish by the two churchwardens, Messrs. Joseph Salter and Charles Coleing, and the hall will be opened during the present month.

The business of the parish has been carried on as usual during the whole period of the alterations, consequently causing many difficulties and inconveniences to the builders, Messrs. Wilson Brothers, and to their foreman, Mr. Bowles, who are carrying out the works in a satisfactory manner under the immediate superintendence of the architect.

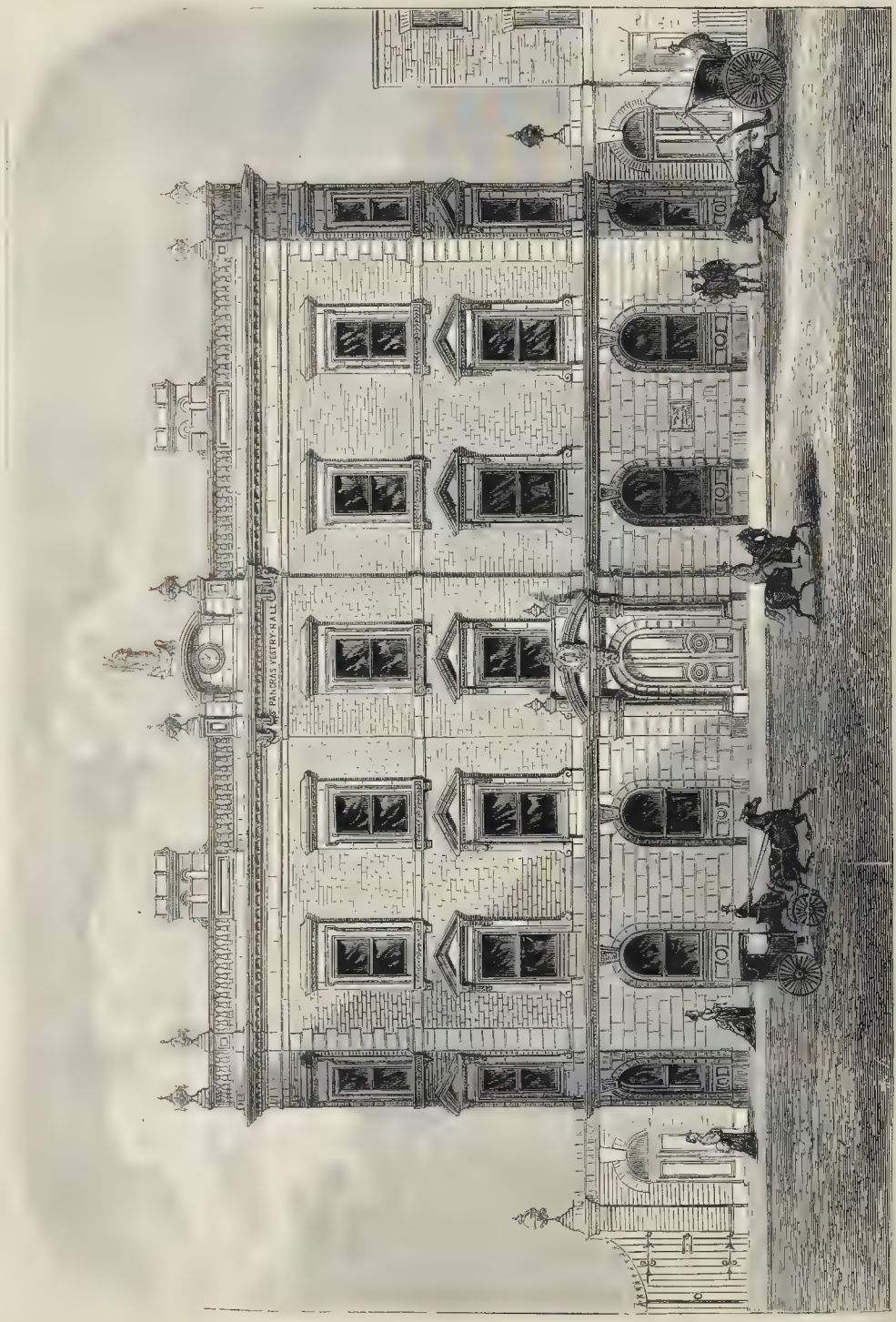
STRIKES AND WAGES IN GERMANY.

ONE of the effects produced by the last war with France has been the steady advance of the prices for labour, and for all the necessaries of life, in Germany; and the continually increasing demands of workmen for increased wages have led to disputes between them and employers. Partial strikes of carpenters engaged in ship-building and others were of frequent occurrence before the war; and especially at the beginning of spring, when the workmen stood out for higher wages than they had received during the shorter winter days. Such demands, though sometimes resisted by the masters, generally resulted in increase of wages, and if "strikes" occurred, the disputes were, as a rule, satisfactorily settled in a day or two. Since, however, the latter part of 1873, "an emissary of the social democratic party," writes the British Consul at Memel, came to make his permanent abode in that town, and the strikes have been carried on in a methodical manner.

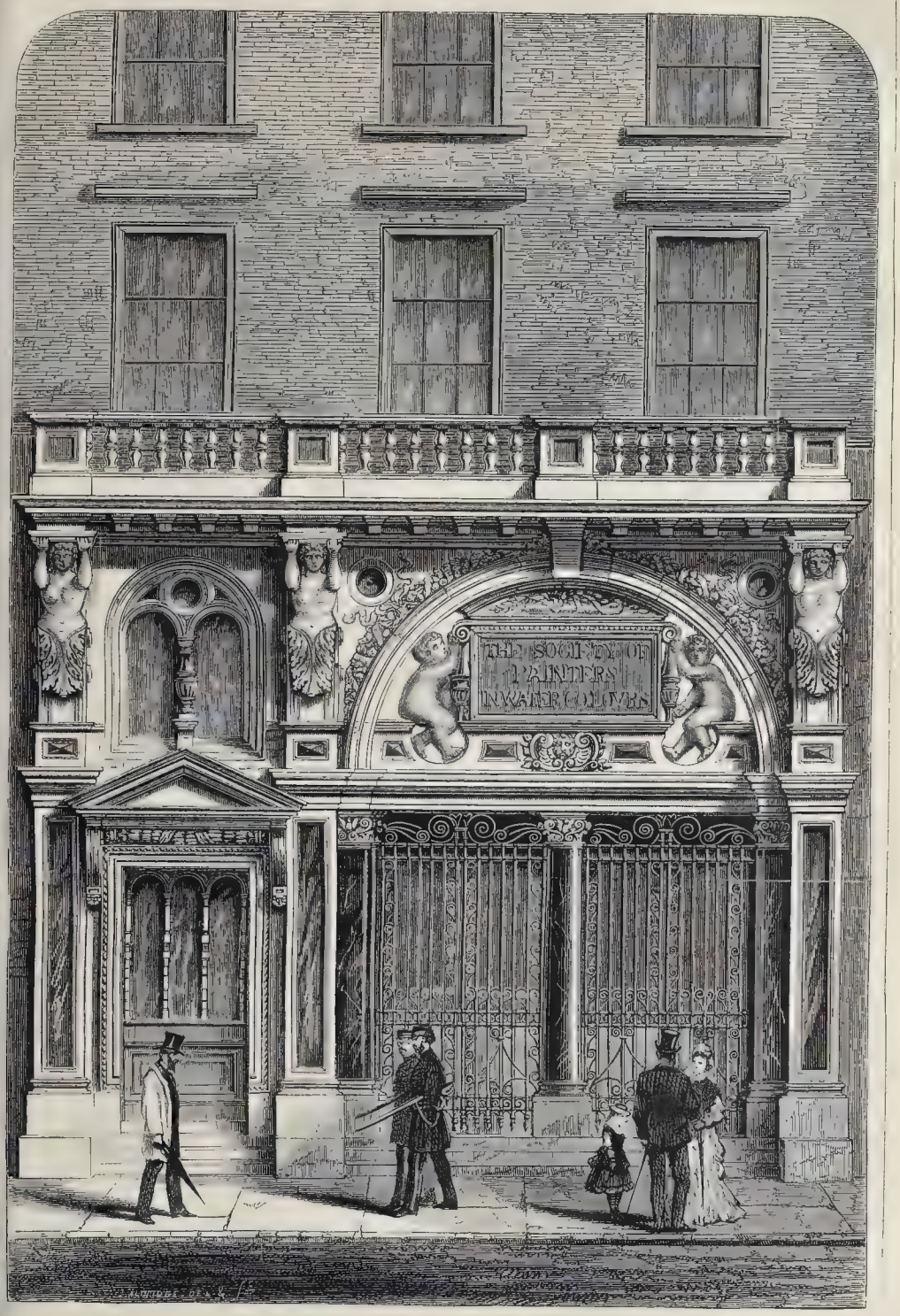
In daily succession, carpenters, masons, sailors, printers, and all other kinds of tradespeople, gave notice that they would lay down work if their demands were not agreed to. In most cases they were successful, and, in consequence, their pretensions have become to be unreasonable. "The worst result of the social warfare," adds the consul in his report,—and here British "strikers" may take note,—"beside the momentary embarrassments of trade, is, that ultimately labourers derive no permanent benefit from it; for in the same proportion as the price of labour rises, so the prices of food and all other necessaries of life advance. The situation of the working class at present is no better than before, and will become worse whenever a duller period arrives."

The wages of the common labourers employed in agriculture are about 1s. 6d. per day. Of those in timber-yards, &c., 2s. 6d. to 3s.; of masons, carpenters, smiths, &c., 4s. 6d.—an advance of from 50 per cent. to 75 per cent. on the wages paid three or four years ago.

Antiquities of Scotland.—The *Athenæum* states that Miss Christian Maclagan has published a folio volume,—which is illustrated with forty photolithographic plates,—of the Hill Forts and Stone Circles of Scotland. The work is dedicated, by permission, to the Queen. The authoress is a lady associate of the Society of Antiquaries of Scotland.



ST. PANCRAS VESTRY-HALL.—Mr. H. H. Bridgman, Architect.



THE HOUSE OF THE SOCIETY OF PAINTERS IN WATER-COLOURS, PALL MALL EAST.

Mr. Cockerell, Architect.

THE SOCIETY OF PAINTERS IN WATER-COLOURS.

The rapid growth and attained perfection of water-colour painting in this country must be singularly striking to all who have noted its lowly and unpretending origin in the delineations of the numerous illustrations of the latter part of the last century, whose subjects,—old castles, monastic ruins, and gentlemen's seats,—were made fashionable at that time by the "Tours" of Pennant. These drawings for the most part were executed in a neutral compound of black and blue, over which the slightest tinge of colour was passed to express the natural hue of objects. Even Turner and Girtin followed for a time the regular formula. Soon, however, to cast it aside; and, by reversing the whole process, they gave to their works a power and fascination of "local colour" not hitherto achieved. The way thus opened, others were not slow to follow the improved mode of practice initiated by these two distinguished artists.

Painters now began to devote themselves entirely to painting in water colours, and rapidly gained in mastery over the material. About the year 1801 the idea of an exhibition exclusively for water-colour pictures began to be whispered about. The water-colour painters complained loudly that they had little opportunity of showing their works with credit to themselves. The small and ill-lighted Council-room of the Royal Academy at Somerset House was the only place open to them as general exhibitors, but this room was crowded with a mixed assemblage of miniatures, architectural drawings, and the worst of the pictures in oil, amongst which were thrust the works in water-colours, between windows, and under windows; and not unfrequently in the dark corners of the room devoted to sculpture, where they could scarcely be seen, or if seen at all, at the greatest disadvantage. Another ground of complaint was a law of the Royal Academy which excluded from the honours of that body those artists who wrought in water-colours only. It was urged with reason that professional rank ought not to depend on the character of the vehicle used, but solely on the merit of the works, in whatever material executed; and they pointed to the inventive powers of Turner, Girtin, Barrett, Varley, and other artists of eminence, who had entirely changed this branch of the fine arts from the "tinted" and "stained drawings" of their predecessors, and invested it with all the power and dignity of painting. Other considerations of personal advantage were not overlooked by the projectors of the new exhibition, the first idea of which sprang from the mind of Shelly, an eminent miniature-painter, in a conversation held with W. F. Wells, who will be remembered as the intimate of Turner, who originated the conception of the "*Liber Studiorum*." W. H. Pyne, the author of "Wine and Walnuts," and Robert Hills, so well known from his admirable etchings of cattle, joined them. These four artists frequently met to discuss the practicability of the scheme. Turner was inaccessible, as he was working for the Academy, and Girtin had just died. The utmost hope of the projectors was that they might muster twenty names to start with, but from various causes the accomplishment of their plans lingered for nearly three years. It was not until November 30th, 1804, that ten artists could be gathered together at a meeting held at the Stratford Coffee-house, in Oxford-street, who, agreeing upon a code of laws, elected W. S. Gilpin, president; S. Shelly, treasurer; and Robert Hills, secretary, and constituted themselves the "Society of Painters in Water-colours."

The first exhibition of the newly-inaugurated Society took place at rooms built by Vandergutch, the engraver, at 20, Lower Brook-street, and was opened to the public, with a display of 275 works, on April 22, 1805.

The experiment, thus fairly started, prospered beyond the expectations of the most sanguine. The exhibition was daily crowded with distinguished visitors, and an eager curiosity possessed those who claim to live and rule in the exclusive region of taste, which found expression in surprise and admiration at the power and excellence of the works exhibited, and in hearty congratulations to the members on the success of their undertaking. Thus was laid the foundation of a school of art, which, mainly through the continued exhibitions of this Society from the period of its establishment to the present time, has yearly risen in estimation and influence, and become the parent of many similar associations, both in this country and on the Continent. The splendid works of Barrett, Prout, Harding, Cattermole, Fielding, Dewint, David Cox, William Hunt, and many more, testify to the genius displayed in water-colour painting by the deceased members of this Society; and if we may judge by the light of recent "sales," their creations are held as of almost priceless worth in the eyes of collectors and connoisseurs, and are now enshrined with their choicest treasures.

A change has been effected in the house of the Society.

The space now occupied by the entrance-hall and front formerly consisted of three separate entrances to three separate tenements, each approached by an ordinary doorway in an ordinary front. These doors gave access to the gallery (by the long ladder-like staircase, so well known to our readers), to the premises of Messrs. Tanqueray, wine merchants, and to a private residence on the mezzanine and upper floors.

The mezzanine has now been thrown into the hall. The staircase rises from the hall by a winding flight to a landing, which leads on to the upper portion of the old staircase, to which but little has been done.

The confined space of the hall, which had to accommodate the three entrances as before, rendered any great architectural effect difficult of attainment. It has been sought to give height and interest by treating it somewhat in the style of the ancient atrium, with the addition of the stairs, and with much success. The pavement—a reproduction of the *opus sectile*—is by Mr. Burke, of Regent-street and Newman-street, and is a good specimen of this revived work.

The exterior, of which we give a view, is of Portland stone, with granite columns and pilasters, and there are panels of coloured marble in the piers, which, with their surmounting terminal figures, support the balcony.

The engraving renders any description of the design unnecessary. The architect is Mr. F. P. Cockerell; the builders are Messrs. Jackson & Shaw, of Earl-street, Westminster. The sculpture has been executed by Signor Fabbrucci, formerly of Florence, now of River-terrace, Cremorne-road. The interior is being very simply decorated, and the gallery will be opened for a private view of the regular exhibition of the year this week.

A CITY OF THE FUTURE.*

LETTERS FROM SHAKSPEARIA BY SCAMOZZI SMITH, ESQ., ARCHITECT.

Written to his Friends in London during the Summer and Autumn of 1915-16.

My Dear ——,—Returning home from our last walk we took a circuitous path that we might pass through the beautiful village of Edensor, on the borders of which my friend's house may be said to stand, and on which as we approached it, the setting sun shone through light and fleecy clouds, giving it the most pleasing aspect imaginable, the spire of the church rising above the picturesquely-arranged houses, and cottages embosomed among trees. Beyond, in the distance against the clouds, rose the lofty domes and spires, and towers of the great city itself, which elsewhere seemed to melt into Heaven; and certainly forming the most picturesque architectural outline I had ever witnessed anywhere. But that was a charm that had followed me all day. I mentioned the circumstance to my companion, who attributed it in part to the varied line of the elevations, to the roofs being in all cases visible above the elevations, to finials, and to the introduction of curvature into the roofs. Most are curved, and show curvilinear forms throughout, which I take it is the chief source,—not from any aim at the picturesque.

It arises from the varied line and pinnacle-crowned elevations, with designed and decorated beauty-moulded chimneys,—but partly also from the fact that the roof is in all cases seen above as the natural crown of the building, giving it dignity and expression, which, though it seldom rains, is never flat,—(none of these mountainous amorphous roofs of France, nor in Gothic the extreme triangular roofs),—showing curvilinear forms of every kind, from the barrel vault to the hemispherical dome. Barrel and mixed concave roofs, segmental roofs, tetragonal or square domes, pentagonal domes, hexagonal and octagonal domes, decagonal, duodecagonal, parabolical domes, are all common forms; more especially domes of every variety of section, both horizontal and vertical, which they are very expert in constructing, both with stone, brick, or tiles, and iron. The effect of which variety of roof is, that it gives more harmony to the general view of the roof, and makes the hemispherical dome, when it appears, look more at home, and not so isolated a form as it seems among our straight-lined roofs, where it is out of harmony with all about it, as the intermediate forms between it and the straight lines are wanting. Here the deficient links are supplied; for here are all shapes of roof from the triangular to the globular, and convex and concave, and mixed. Here the oblong plans are covered with the cylindrical form, and the square and the multangular with domes of various vertical sections, and this, I believe, is a main source of the beauty of the buildings under notice.

On our return I found a highly-intellectual company, chiefly of our profession, assembled to meet me, and among them one, an architect, who had just returned from a tour in Europe, including the British isles. They were of almost all religious persuasions to be found in Australia, from the Roman Catholic to the Presbyterian and Quaker. A conversation ensued which confirmed my impression that it is impossible for us to be agreed on the subject of architecture while we differ on that of religion, with the career of which architecture has always been connected, and with whose destinies I believe it is involved.

As was natural, the travels of the tourist, who was a Lutheran, that is of the Reformed or Protestant Church, occupied a good deal of the conversation. He was fully alive, I soon perceived, to our shortcomings and errors, more especially to those of the modern Gothicists, whose wholesale copying, and imitation of accidents and alterations and blunders in the original buildings, discontinuous cornices, with the mutilation ostentatiously displayed, putting as it were in italics what ought not to appear at all,—these and the like were commented on to the great amusement of the company, not dreaming, so great is the freedom of speech and innocence of personal offence, that it could cause any uneasiness to the Englishman. "How admirably adapted," said the tourist to me, "must be those notable churches, built, as your newspapers have it, in the style that prevailed in the latter quarter of the thirteenth century, how admirably adapted must they be to the religion and taste of the first quarter of the twentieth!" I felt myself bound to confess that in the matter of copying, the Classicists as well as Gothicists were verily guilty. "True," said the traveller, "but your Classic men do not go back to archaic periods of Grecian art for models, nor to Grecian art at all. And we never hear of a church to be built in the style that prevailed before the siege of Troy. You either take the style modified by the Italians, or you adapt it to the use of the day yourselves, and never outrage common sense, by showing a Protestant church in the guise of a Greek temple." I told him we had done even that, and much worse, for we had reproduced the ponderous and mysterious architecture of the Nile of 3,000 years ago for modern English purposes.

Sir Joseph, always inclining to the charitable side, said that it was probably not from want of artistic power that so much copying was resorted to, but from a wish or hope that with the actual forms they would revive the old feeling and spirit of the Mediævalists. But the wish, he continued, was a vain one. The style of feeling, both in sculpture and architecture, that characterised the ecclesiastical works of the Middle Ages, deeply rooted as it was in the religious fervour of the times,—of which it was the genuine fruit,—can never be really revived in a time of such entirely different spirit as the present.

The sculptor remarked that the general revival of Gothic architecture would be a misfortune to sculpture, as it would depress and lessen its scope, which required the association of the refined and perfect lines of Classic architecture for its full development in the display of the nude human figure, which alone was the worthy object of sculpture, and which no sculptor, who aimed at the highest excellence possible in his art, and who had been reborn, as it were, under the influence of the marvels of the Greek chisel, could forego. But Gothic architecture had no such refinement of line to echo and welcome this high style of sculpture. It could only embrace the draped figures; the roundness and beauty of the nude would make it look more harsh and wiry, and angular. It

* See pp. 327 and 344, *ante*, with letter from Mr. S. Huggins.

was only in Classic that the sculptor could revel in the beauty of the nude. A Romanist, whose jealousy seemed roused by what was said of the Classic style, here begged to remind us that the Gothic style was the genuine offspring of the Universal Church in the Middle Ages, born within it, born in its service, and that that Church had still need of it as its proper handmaid, and essential to its full ministrations.

The Protestant first speaker was sure he would give no offence by expressing his belief that the architectural imagination of those interesting ages, ingenious and poetic as it was, had been unable to escape the infection of their superstition; and that its fruits to us inspired feelings in respect of religion which the light of philosophy had dispelled. Mediæval Christianity, so far as it was retained among us, might be fitly symbolised by the Mediæval architecture; but if we gave Christianity the cheerful and benign aspect which he believed in truth belonged to her, and wished to portray her in her native loveliness as the comforter and consoler of man, divested of that gloom and terror which had too often shrouded her fair face, and which some of the reformers had deepened rather than removed, though they were really unknown in the primitive and pure ages of the Church,—if we wished so to represent Christianity, it would require the refined and sunny architecture of the South, which was, nevertheless, capable of expressions grave and sublime, as its architectural exponent.

The Romanist replied with great good humour that the architects of those works were the abbots and bishops of a Church that he believed to be unchangeable and infallible, and to have received the truth in direct descent from the fountain Head of Truth, and was therefore immovable by the advance of philosophy.

A Dissenter, or rather Presbyterian, who had hitherto been silent, here entered the lists against both combatants. It was due, he said, to the spirituality of God and of his religion that we should have better expressed the idea that He dwells not in temples made with hands; and have left a wider difference in reference to mode of worship between us and the heathen. Some one mentioned the Israelitish temple, built by the command of God, and where He promised to record his name and manifest his presence. That was under another dispensation, he replied, wherein the Jews were the peculiar people of God; but now all men were equal in the sight of God, who was no longer a respecter of persons or places.

"Then why do your people build houses to God?" asked mine host. "We do not build houses to God," was the reply. "Bethphage Chapel is not God's house: it is our meeting-house for Christian fellowship and union in worship, and was built not for God's honour, but our convenience. No house was or could be made by man worthy even to be called His. A field or plain, with the horizon for its walls and the canopy of heaven for its ceiling, would be more like God's House than anything they could build. But God's House was the glorious universe, and the absurdity of calling any little pile of brick or stone the House of God was more apparent since the disclosures of astronomy had so expanded our notions of the creation, turning what had hitherto been deemed earth's midnight lamps into unnumbered worlds. Besides, it was not honouring God to offer to Him the same kind of material grandeur that had been offered to Jupiter, to Venus, or Apollo. All the splendours introduced into the Christian Church," he believed, "was an imitation of the heathen temple, which they had never equalled. Christians, with the Mahommetans to boot, who at least were pure Theists, had been building temples all over the world for nearly 2,000 years to the True God; but they had not built one equal in perfection of architecture, and expression of mind, to one the Greeks had built to Minerva. The ancient Magians," he said, "or followers of Zoroaster, improperly called Fire Worshippers, showed truer notions of the Deity when they worshipped him in the open air, merely turning towards the sun as his emblem, which it was, and an infinitely more glorious one than we could create in our churches."

Not only did the patriarchs Abraham, Jacob, and Job not build temples, contenting themselves with open-air altars, but the ancient Babylonians, who practised the earliest species of idolatry, the Sabæan worship of the stars, for ages built none; and it was not till idolatry had fairly set in amongst the Egyptians that temples were built to the Deity or supposed Deities.

He was, nevertheless, an enthusiastic lover of architecture, and as such should have wished to see the Gothic, if reproduced it must be, reproduced in a different manner in Europe; a wish in which the Romanist cordially sympathised, even he admitting that the Gothicists were utterly astray in reference to the style they were attempting to revive. He said it should be revived artistically, not archæologically, and ridiculed the manner in which it had been dealt with in England.

The pleasure of this conversation was greatly heightened by the good humour with which it was carried on. Nobody seeming in the least hurt by the expression of opinion, or by his neighbour holding a different opinion to his own, it being understood that opinion having nothing to do with the will, expression of a hostile opinion could not betoken ill-will.—Yours, &c.,

Scamozzi Smith.

My Dear ——,—Next morning, just before my departure, I had the rare pleasure of looking over the portfolio of Sir Joseph's unexecuted designs,—the brightest visions and embodiments of thought and feeling of his life. In some of these the architect or sculptor has drawn more largely than I ever saw or could conceive possible, with a view to execution, in stone or marble, upon the golden visions and winged shapes that lie mirrored within the soul's fairy-land,—the fancy and imagination. But he modestly attributes all his success in design to his careful, watchful attention to the teachings and softest whisperings of Nature. In whom, as a guide to the architect, he has the most unbounded confidence. There are, said he, sources of light and inspiration in nature,—the Hebe and immortal mother,—yet unbroached, ready for our use when earnestly sought, which yet remains, like the statue of Isis, an image of beauty and truth, from which no hand has lifted the veil.

I returned home—that is, to my hotel—highly delighted with my visit, having spent a few of the happiest days I can call to mind in this charming house; perhaps, after all I have said, most charmed by what I have scarcely mentioned, the conversation of mine host and hostess. The latter I had met before this visit, and had noticed for her elegance of manners,—her wit, her delicate taste, and eloquent enthusiasm for all the fine arts, which throws a charm over all around her. To a woman's heart she unites a mind reflective and lofty, capable of comprehending the great aims of life, and, of course, of fully sympathising in the high aspirations of her husband. I need scarcely say she is well acquainted with architecture, which she thinks a highly captivating study. I remember she seemed astonished when I told her it was generally considered a dry and uninteresting subject by English ladies. It was a pity, she said, the intellectual ladies of England lost so great a pleasure, as she was sure they would consider it, if once they broke the ice, as it could only be dull and uninteresting to the dull and uninteresting. Its career, she said, was the career of the combined reason and imagination of man, and its symbol was one of the most brilliant lines of thought on the chart of human history. Her husband, as I told you, is a poet as well as an architect. He certainly possesses the most valuable of the poetic tendencies,—that of exalted faith in the attributes and destinies of humanity. Of him you will have some idea from his works, and the slight sketches I have from time to time given you of his views and opinions on various and great subjects,—more especially architectural style. Would that I could convey to you some notion of the amiable and captivating manner, the winning smile, the accents low and musical, that gave additional charm, or doubled the charm, with which they were uttered. Of this more anon.

I now send you an account of some houses in the neighbourhood of Sir Joseph's. One of these has the different stories in different kinds of stone, or stone and marble; the basement being cold blue grey granite, the principal story a warm yellow fine-grained stone, the attic Sienna marble, each sufficiently carried into the other in various features and details, to add unity to the variety. The height of these stories is beautifully proportioned for effect. This house exhibits, too, a fine specimen of grouping two stories into one composition, giving a greater unity to the composition. But I was more charmed with a small building in which the windows and doorjambs, and pilasters and columns and entablatures, were of yellow buff Sienna marble, or yellow polished granite; the intermediate walling was of red granite, also polished, and the panels, friezes, bassi rilievi, &c., of blue. The caps of columns and other sculptured features were of white stone. In some humbler domestic buildings I have seen the same effect aimed at by a cheaper means, by putting in panels or the frieze of a finer grained stone, and painting or staining them. Circular disks, sometimes of coloured tiles,—the poorest will not tolerate the monotony seen in our house fronts. I see nothing irrational in colouring a panel or frieze green or blue; cemented buildings are often done so; panels formed, and then painted blue or green or red. Yellow stone dressings, ruby-red bricks, with deep blue or purple frieze and panels, is a common arrangement for smaller buildings in which terra cotta ornaments are frequently employed; and also superior classes of washable bricks of different tones of colour, are all used here. You will be surprised to hear mention of cement. But coating with an excellent cement is practised here, and one of the most remarkable ornaments of this charming neighbourhood is a house so coated. But it is not made to imitate stone, but is consistently decorated, though it is properly made to sympathise with others, the usual decorations of which it, as it were, reflects. It is decorated by mouldings and panels, and tastefully and delicately tinted decorations; for whatever the material, the Australians will not tolerate monotony so wearying among us. This latter house I found was built round a garden. It is of two stories, and the bedrooms, most of them, look out upon it, and open into balconies overlooking it.

We place terraces along the drawing-room façades. But how seldom owing to the weather can these be used? How much preferable the inclosed garden or cloister walk for the purpose of airing and exercise.

I now send you, according to promise, a sketch of one of the finest of the Neo-classic churches, the Church of St. Lebbeus, which I visited in company with Sir Joseph.

It is of the Basilican form, and is remarkable for the purity and beauty of the nave, which reminded me of the celebrated Church of St. Annunciata at Genoa. But the side walls of the lofty aisles, instead of being, as in that example, pierced for entrance to side chapels, is unbroken from end to end, and decorated, between the responding pilasters, with a grand series of fresco paintings, lighted by windows peculiarly contrived with reference to the nature and requirements of fresco, in the roof of the aisles. The ceiling of the nave has panelling or tracery, and carved and coloured decoration, but no figure subjects, and looks really more grand than any figure-charged or historic ceiling I ever saw in Italy or France; which is not its only merit, for here the supposed difficulty of uniting the ceiling with the walls or pillars in this style, not felt in the Gothic, is completely overcome. In most early examples of Neo-classic you find the ceilings cut off from the supporting columns by the unbroken line of the cornice, which has an effect destructive of unity between wall and ceiling; but here there is no continuous cornice, and the framing of the ceiling springs from the shafts and pillars as its roots, just as well as it could have done in the Gothic style. The whole, moreover, has been constructed on the most perfect acoustic principles, with no more obstruction or variation from the cylindrical form than was just sufficient for the faint echo, and the result is that the effect of the grand organ is such as to show that the Classic style is no more opposed to the requirements of music than the Gothic; if it was not, indeed, proved 400 years ago at St. Peter's at Rome where the silver trumpets employed at Easter festivals are remarkable for a sweetness of sound not found elsewhere. Above the pillars, and crowning the perpendicular plane of the nave, are marble figures of the Apostles and Evangelists, such as you seldom see. The soul sits in the eyes and breathes from the lips of each enchanting form, which seems the personification of inspiration itself. These add greatly to the unity and harmony of the nave which is farther enhanced by the extreme elegance and grace of the columns of the chancel. They are a kind of caryatic order, in which the female figure is so delicately treated, rather gently incorporated with the pilaster than substituting it, that it disarms all criticism. It is formed of a centre pillar core, surrounded by three emblematic figures of Faith, Hope, and Charity. They occupy the upper

third of the height, and rest on a solid portion of concave hexagonal section. They divide the nave of the chancel from a very narrow surrounding aisle.

The entrance-portico, or loggia, which externally has a most poetic effect from the contrast and play of the highest lights and deepest shadows, has its background embellished with some fine frescoes, with excellent effect, which reminds me that I have some further remarks to make on the pictures of this church. The frescoes just named, as well as those of the interior, and which appears to me to be in grandeur not far behind those of the Sistine Chapel at Rome, are remarkable for a deep and solemn splendour of tone which reminds one of the veiled splendour of Hannibal Caracci and the Bolognese school of colour. In these frescoes I found a recognition or confirmation of the truth, that the loftiest conception of humanity, set forth with all the excellencies that the latest schools have introduced into the art, best expresses the divine, and that the spiritual is embodied by the perfection of the natural. The art is high and religious; not because the subjects are from the Bible or the legends of the Church, but because it is true to nature, pure, and beautiful. Nothing that is sickening or revolting to the feelings of humanity,—no martyrs on the rack or on the fire, no breaking of legs by executioners,—nothing but what is elevating and ennobling has been admitted into it. But they have another good quality. They keep in their place as painting, and do not intrude upon the architecture, and the result is that, although here almost as great a contribution has been made to the adornment of architecture by the sister art of painting, as in the celebrated Sistine chapel, no eclipse is sustained by the architecture. All is most admirably balanced and harmonised. The great pictures are separated from each other by coupled pilasters of bold projection, elegant proportions, and foliated capitals, and strips of wall besides, which keeps the pictures in their places, and well sustains the architectural dignity of the building. This is a feature of the church which has given me great pleasure, as it has solved to my mind very clearly an important problem in architecture. In the Chapel of Sixtus perhaps the highest offering of pictorial art ever made to architecture was made; but the result has been that the architecture it should only have adorned has been overborne and destroyed by it, which has led many to doubt whether it was in the power of architecture to receive and fitly display, without injury to itself, such master-works as those which the Italian painters of the cinque cento adorned the churches of their day. But in this Roman chapel it appears to me that no adequate effort was made in favour of architecture to make it bear out against its encroaching sisters. This chapel appears to me to be nothing more than a picture-gallery, and one in which, being short of room on the walls, its designer hung the pictures on the ceiling, where they should not have been hung at all.

Architecture must be the principal, and as principal it may receive, as proved by this Australian example, the highest products of painting.

In my next I shall give you some account of the theatres of Shakspearia, which exist not for the exhibition of buffoonery, but for didactic purposes. They are designed accordingly, and are places worthy of the Tragic Muse.

The theatres and opera-houses are fine buildings, every way satisfactory as regards architectural character and beauty, convenience and fitness. They are not the gay tricked-out things familiar to us; but like the Greek Theatre take some approximation to the sacred air and character of the place of worship, which indeed they resemble in other respects, and are entitled from their destination and high object, to emulate a solemnity and grandeur of character. The histrionic exhibitions within, which are worthy of any class or style of architectural and artistic accompaniment in the building, are of the highest character both intellectually and morally. But you have probably already heard of the high moral tone of the Australian stage, which is the fountain, not of corruption, but of pure morals, and lofty aspirations, and resolves, which with its elevated aims, has earned for it a right, which it has largely used, to draw for strength upon the great characters and sublime passages of the Bible, and embrace sacred as well as profane history in its range. The theatre here, which is ranked among the redeeming things of life, is a school of virtue, and men resort to it to learn or strengthen themselves in their duty, and acquire an elevation of spirit and sentiment. The spectator is fired with emulation by the high and glorious examples of moral rectitude there held up to his view, in the captivating ministrations of the Tragic Muse; and the virtuous sentiments there acquired are not afterwards effaced by harlequins and buffoons.

This is what might be expected from the generally pure state of public morals, which must have a restraining influence on the stage. It is, nevertheless, due in part to a tribunal appointed by the Government, which must give its verdict on the merits of all compositions destined for the theatre ere they can be produced, which must, of course, greatly contribute to the purity of dramatic composition; and as to anything indecent or immoral being imbodied, it is out of the question, and, as a consequence, a theatre is no more liable to become a rendezvous for the lewd and profligate of either sex than a church. A consequence of the purity of the stage is that the histrionic art and profession are held in far higher repute than they are in England. It takes its true place, which, being a study of life and portrayal of the human heart, and connected with and akin to the highest arts, is necessarily a high place.

As in churches so in theatres, there are always a large portion of free space; their entertainments being considered as belonging to the people, and a means of popular enlightenment and refinement. Theatres are not mere commercial speculations, but are built by philanthropic individuals of the highest and purest aims.

All this, as will no doubt have occurred to you, seems to indicate a nearer approach or return than has perhaps ever been made in modern times to the unity of feeling among the ancient Greeks; the oneness of their democratic liberty, their religious faith, and their most joyous amusements, with whom, more particularly the Athenians, theatrical representations were an act of worship, interwoven with the piety of the nation, and identified with their ideas of what they owed to the immortal gods.

I send you a small rude sketch of the theatre, which I inspected in the company of Sir Joseph, but had seen before in my customary short walk before breakfast, at which time it happens to be seen under a peculiar and poetic disposition of light and shade, and such is its singular perfection that, as I mentioned before, it soothes and harmonises my mind for the day. I feel thrilled, as it were, by the great soul that lives in it; while its higher elements,—the lovely-faced and heroic forms that breathe from stone and colour, buoys up my spirits, and gives a triumphant joy and gladness to the mind.

The sketch can only convey an idea of the grand composition, of which everything else is worthy; suggesting that the architect must have nurtured his muse in the Helicon formed in his mind of Nature and all extant art and human life, present and past. Poetry, history, legend, all must have been laid under contribution, and every ancient and every modern style have been made to contribute something of grace or energy. The whole, I may say, is clad in the glories of history and legend; every block is eloquent with high and touching memories of the immortal and glorious past, and pregnant with wisdom or instruction for the present and the future.

The porch, which is large and far projecting, like the Galilee porch, like the graceful and pathetic prelude, or opening speech of a grand drama, duly announces and anticipates the beauty of the great subject. In it, and the great entrance-hall to which it leads, and which is always open, the interesting form of sculpture, the bas-relief is in great requisition, adorning them with images of beauty and tenderness, all that is most lovely and delightful in the physical and moral world. These sculptures are so disposed, and of such subjects, as to have the most touching effect upon the imagination, suggesting more than they express, and leaving the spectator, as I believe all truly great works of art do, in a state of musing, ecstacy, wonder.

The great principle, or moral, that this building illustrates for me, is that the highest ideal in art, as in life, is the blending of the beautiful and the tender with the intellectual and powerful. It exhibits throughout what we so much want in England, that sincere love, and worship, and study of the beauty created by the Divine Artist, without which every form of art must languish, and an earnest aspiration after the ideal and perfect. The pleasure I found in its survey was greatly increased yesterday morning by the evident delight it gave my younger companions, and the ladies old and young, to whom I then showed it for the first time, and whose sparkling eyes and glowing cheeks eloquently spoke their just appreciation of its merits.

In this building, I said to myself, as I bent my steps homewards, surely the architect has probably succeeded in embodying the great image he has carried in his soul. For myself, I may say with Goethe, on a similar occasion,—"The impression which this edifice has left on my mind is not to be expressed." I was going with him to add, "and will produce imperishable fruit."—I am, and shall remain, yours, &c.,

Scamozzi Smith.

SOMETHING MORE IMPORTANT THAN A GALLERY OF THE OLD MASTERS.

Sir,—The notion that large galleries of pictures by the old masters are an essential institution in a civilised country has been so assiduously disseminated, and has taken such deep root in the English mind, that it will be difficult to eradicate it. Still it might be hoed and raked out by the force of reason, if, instead of taking conclusions at second hand, we would only accustom ourselves to a little independent thinking. It is by no means a logical inference that England ought to have a great gallery of the old masters because other European nations have galleries of that kind. It would be just as reasonable to conclude that we should have a large standing army and a small navy as that we should have Alpine mountains, large lakes and rivers, and wider lands, because other nations have these. Every nation has its own special and exceptional conditions to provide for, and as it does this judiciously or injudiciously, will it be great or little.

It will, I think, be readily conceded that the size of a National Gallery does not constitute its excellence in any part of the civilised world, it is the character of the treasures contained which give to it a higher or a lower rank. If the sizes of the Louvre, of the Dresden, Berlin, Munich, and Madrid galleries could be doubled, and granting that these have a great educational value, this value would not be increased in the same ratio, for they could not be "filled up" with examples of so high, nay, even with specimens of an equal, merit with those they now contain. Where, then, would be the gain from increased size? The power of a national collection of the old masters is, therefore, at its full when it shall contain perfect examples of every school; and we give ourselves unnecessary uneasiness when we fume because our own is not so extensive as either that of the Louvre or the Pinacothek.

There is another consideration, too, which is always slipping out of mind, viz., that the greatest works of the old masters are to be had neither for love nor money. They are a fixed, unalterable and immovable quantity; therefore, should we determine to fill a very great extent of gallery, we should have to content ourselves either with works of an inferior quality or "fill out" with copies. And if the great educational value of examples by the old masters could be conceded, I do not know whether a gallery of copies of the finest existing works of art would not be preferable to one filled with second-rate, though perchance original, works. But this educational value cannot be conceded, for the history of modern Italian art, of a highly organised people, contradicts it.

We talk about rivalling the Continental national galleries in their extent and number of works, but what are the proportions of any of those when compared with the extent of wall covered by the master-pieces of the Italian painters in Italy? No gallery in the civilised world can compete with that country in the wealth of its art-treasures, and yet, as Charles Burton has shrewdly observed, the Italians have had all these magnificent works daily present to them for a period longer than it took to create Italian art without Italy showing the slightest symptom of an art-revival,—sufficiently conclusive evidence, one would think, that the mere presence and admiration of the masterpieces of art have little to do with the development of a national school of painting and sculpture; not even when the people before whom those master-pieces are displayed are by nature the most fitted for artistic study.

Here, then, is a lesson over which we may ponder. The nation, the wealthiest in art-treasures, made these treasures for herself, not by whining about collections of the *old masters*, but by the direct encouragement and employment of the artists of the time,—of those masters

in fact, which were in future to be *par excellence* the "old masters." We might do the same if we would but be independent in thought and action, instead of following a quite modern fashion, a French fashion. The project which I have recently put forward for a National History Gallery would, if it were carried out, initiate an art policy similar to that which was adopted in Italy, and which, in the long run, would in all probability lead to precisely similar results. This was the method of developing art not only in Italy, but in Greece.

There is clear and direct evidence that the fine arts were not developed in Greece and Italy by the means which we are adopting; neither had, in our sense, National Galleries; and in the case of Italy it is also to be noticed that the possession of the finest and most extensive collection of art-treasures could neither prevent the decadence of art, nor revive it. It is manifest, therefore, that we have been led somehow or other to form an entirely exaggerated and false estimate of the educational value of a collection of the old masters. Doubtless such a collection may be interesting to most people, it may be delightful to many, and it may suit the indolence and want of patriotism of men who ought to know better than to ascribe the defective state of art to our want of an extensive National Gallery. But art never was developed by means of collections of this kind. Painters who use such collections the most, and make National Galleries their studios, never make any mark in art. In fact, there never was nor ever will be any substitute for direct encouragement, the employment of artists on great national works. It may be a necessity of modern times that we must cater for the sightseers, and that a National Gallery may be made one object of attraction. But let us clearly understand that it is for this purpose, and little else, that it is useful.

Mr. Barry's design could possibly be accommodated to the more practical and useful purpose of a National History Gallery, and be carried out either at South Kensington or in Trafalgar-square. Trafalgar-square would certainly form a grand and central site for a National History Gallery. If this were so located the old masters could be removed elsewhere, and to a building of moderate dimensions. But in altering the architectural features of Trafalgar-square we should bear in mind that if the elevation of the new façade should materially exceed that of the present Gallery the spacious appearance of the square will be contracted, spoiled. I believe Mr. Wilkins had maturely considered his design, and that the present building is in height rightly proportionate to the locality. It is of a height amply sufficient for the purposes of a National History Gallery, and I can only hope that my suggestions may give fresh scope to Mr. Barry, and prevent a wasteful sacrifice of money on a gigantic gallery of the old masters.

W. Cave Thomas.

SANITARY AND STRUCTURAL DEFECTS OF OUR SCHOOLS.

Dr. George Wilson, Medical Officer of Health for Mid-Warwickshire, and formerly Medical Officer of H.M. Convict Prison, Portsmouth, on Thursday, the 15th inst., read a paper before the members of the London Morayshire Club, on the Structural and Sanitary Defects of English and Scotch Schools. Mr. James Duncan, of H.M. Civil Service, presided, and there was a numerous attendance of members present. In the course of his remarks, Dr. Wilson said:—According to the Scotch Code of 1874, before any grant is made to a school, the Education Department must be satisfied that "the premises are healthy, well lighted, warmed, drained, and ventilated, properly furnished, supplied with suitable offices, and contain in the principal schoolroom at least 80 cubic feet of internal space, and in the school-room and class-room at least 8 square feet of area for each child in average attendance." Now, on the face of it, that appeared to be a very wise provision, but with the exception of the cubical space allowance, which he believed to be too small for the requirements of perfect health, the other conditions are expressed in such general terms that he very much feared it would be found that they were seldom carried out as they should be. According to his experience, and it was now a pretty extensive one, the public elementary schools of Scotland, as well as those of England, concerning which similar conditions are imposed, were, as a rule, neither well warmed, well ventilated, properly furnished, nor were they supplied with suitable offices. They were cold and draughty in winter; very often anything but clean; often the windows were without blinds to keep out the glare of the summer sun; the desks and seats were frequently of the old-fashioned and comfortless kind, and the less said about the outside offices the better. No doubt considerable improvement might be expected in the new schools which are being now erected, but the description he had given applied pretty closely to the sanitary and structural condition of a very large number of our elementary schools, particularly country schools. To secure good ventilation and sufficiency of light, there should always, if possible, be windows made to open at top and bottom on opposite sides of the school-room. Between the windows, and near the ceiling, there should either be special inlets for fresh air provided with Sheringham valves, or a hollow metal cornice should be carried continuously round the room, divided longitudinally throughout its whole length into two separate channels. By this latter system, which had been highly spoken of by the architect of the London School Board, the fresh air is admitted through openings in the wall into the lower channel, and falls imperceptibly into the room through numerous perforations; while the vitiated air is carried off through similar perforations in the upper channel, which is connected either with the smoke-flue or some other air-shaft. Dr. Wilson said he made special mention of this plan, because it could easily be applied to existing schools that are not well ventilated, and because it was sightly and comparatively cheap. Then, again, as good ventilation could not be secured in a variable climate such as ours, independently of a good system of warming, it was of the utmost importance that in schools supplied with stoves or open fireplaces, the stoves or grates should be what are called ventilating stoves or grates. He knew of none better or cheaper than those devised by Captain Douglas Galton, but there were so many patents on the same principle that School Boards would have no difficulty in making a selection. They were all arranged for the purpose of heating a large volume of fresh air as it enters the room, thereby obviating the risks from draughts of cold air, and economising fuel. With regard to desks and benches, he would specially recommend those devised by Dr. Liebreich, of London. They remove discomfort, support the back, prevent any straining of the eyes when the pupil is writing or drawing, and do away with the risks of weakening and distorting the spines of pupils, especially in girls' schools. For effective teaching and discipline all double desks or desks fastened against the walls should be removed and parallel desks supplied in their stead. In addition to all these requirements, he need hardly say that cleanliness was of the utmost importance. Not only should the floor be always well swept and regularly scrubbed, but the walls and ceilings should be thoroughly cleansed at least twice a year. He should like to see a lavatory in every school, at which hands dirtied at play could be washed, and, to "call a spade a spade," he had no hesitation in denouncing the privies attached to country schools as filthy and dangerous nuisances, which are often the means of spreading infectious disease, and frequently give rise to diarrhœa and other kindred complaints. In places where water-closets are out of the question, either the earth-closet system or some similar system should be enforced. Dr. Wilson concluded by remarking on the importance of every school having as ample a playground as possible. It should, he said, be supplied with sufficient apparatus for simple gymnastic exercises. Moreover, boys, as a rule, were so fond of playing at soldiering, and fighting sham battles, that their physique and submission to discipline would be immensely improved if they had, like the boys of the Royal Caledonian Asylum and several other kindred institutions, a drill-master. For a very small outlay contiguous school boards could easily secure the services of an efficient pensioner to drill the pupils of their respective schools; and, to say the least, the advantages gained would recompense a thousand fold the trifling cost that would be incurred.

Tunnel under the Severn.—The Great Western Railway tunnel under the Severn is getting on very fast. Work will soon begin from two shafts in addition to that from the ends. It will cost a million sterling.

SANITARY ENGINEERING.

INSTITUTE OF CIVIL ENGINEERS, IRELAND.

On the 7th inst. there was a general meeting of the Society, Mr. J. Hill, C.E., county surveyor, presiding. A paper was read on Sanitary Engineering, by Mr. Richard W. Walsh, C.E. After a brief review of the great importance attached to public health by the ancient rulers, and the immense sanitary works which still remain to prove their skill, he proved by quotations from Dr. Burke and others, that Dublin is now one of the most unhealthy cities in the kingdom, the average death-rate for 1872 and 1873 being above 30 in the 1,000, and that as the city is naturally very well situated, the cause must be from neglect of sanitary laws. The water-supply from the Vartry was very good, but the blessing became a curse for want of proper drainage, as the sewers had neither a beginning nor an end, for there were only 4,000 house-sewers constructed in twenty years, with 24,000 houses in the city, and there was no outfall for the system, which ended in the Liffey; and, again, all the low-lying districts could not be drained without pumping. Men were dying, but the Corporation were still reporting. He also thought that the house accommodation for the labourer was exceedingly bad and dear, and the scavenging and paving were faulty. He considered the Council of the Institute were to blame in not being more vigilant in securing a recognition of the profession in the Public Health (Ireland) Act, 1874, and in allowing the duties of the civil engineer to be transferred to the medical profession, in reporting on waterworks, sewers, &c. Dr. Haughton and several members joined in discussing some of the points in the paper, after which the proceedings terminated.

A NEW BUILDING ESTATE AT CAMBERWELL.

Amongst other estates and plots of land in the suburban districts around the metropolis which in constant succession are being laid out for building purposes, is one at Camberwell, which it is expected will very shortly be covered with houses and an entirely new population. The land referred to is situated not far from the Loughborough Junction Station of the London, Chatham, and Dover Railway, and covers altogether an area of from fifteen to twenty acres in extent. It is bounded on the north-west side by the portion of Coldharbour-lane within the parish of Camberwell, and on the south by the London and Brighton Railway, and extends eastward as far as Denmark Hill. A portion of the land is now being laid out in streets, and drained preparatory to building being actually commenced. One of the streets runs exactly parallel with the London and Brighton line, and the grounds at the rear of the houses on one side of the street will extend to the railway. The piece of land being laid out is triangular in form, and the outer portion will be surrounded by three streets, with two other streets in the centre. The number of dwellings intended to be erected on the portion of the estate now being laid out is about 120, and will be residences suited to the middle-class population. The clearing of the land for its intended purpose has necessitated the destruction of a large number of fine trees. The land is intended to be let on building leases for 99 years.

A NEW CHURCH FOR DARLINGTON.

The foundation-stone of a new parish church has been laid at Albert Hill, Darlington, by the Mayor (Mr. H. F. Pease). The church consists of a nave, 68 ft. by 32 ft.; chancel, 36 ft. by 21 ft.; north and south transepts, each 20 ft. by 14 ft.; organ chamber, and sacristy, the latter occupying the lower part of the tower, which is placed at the junction of the south transept with the chancel, and, together with the spire, rises to a height of about 148 ft. The east end of the chancel is apsidal in form. The style adopted is is fourteenth-century Gothic, with characteristic window tracery, and the transepts and chancel are separated from the nave by massive moulded arches in ashlar, springing from carved corbels with red Mansfield shafts. The chancel is provided with sedilia and reredos, and further enriched with arcading and diaper work below the window-sills, while the seats will be open benches of pitch-pine, with sloping backs and moulded ends. Accommodation is provided for about 60

people, and the church is so planned as to admit readily of future enlargement. The cost, exclusive of tower and spire, will be about 5,000*l.*, or, in all, 6,500*l.* Messrs. Ross & Lamb, of Darlington, are the architects. The contractors are:—For the masonry, Messrs. Simpson & Cowling; joiner's work, Mr. R. T. Snaith; slating, Messrs. Pattison & Son; plumbing & glazing, Mr. R. Smith; and painting, Mr. S. Harrow; clerk of Works, Mr. Davison,—all of Darlington.

ELY CHAPEL.

It has long been suspected that St. Etheldreda's Chapel, in Ely-place, was still possessed of its ancient timber roof, although carefully concealed by modern disfigurements; and any doubts on the subject were last Monday set at rest when, by removing slates in a line up to the ridge, a roof in the simple and severe style adopted by fourteenth-century architects was laid bare. Its construction is that of a coupled-rafter roof. There is no ridge-piece, and no longitudinal tie except the two wall-plates and the external boarding. The rafters averaging 8 in. by 6 in., laid flatways, are about 9 in. apart. There is a vertical strut framed into the inner wall-plate and the rafters, and above are cross-pieces and a collar, all about 8 in. by 4 in. All the pieces are united by double tenons, and secured with projecting wooden pegs. The material used appears to be chesnut-wood, and is in good preservation. The architects, Mr. John Young, jun., and Mr. Bernard Whelan, were enabled to make a measured drawing of this interesting piece of ancient carpentry.

ARTISANS' DWELLINGS BILL.

On Monday evening last this Bill passed the committee, and, amid much cheering, was ordered to be reported to the House. We were glad to note that there has been no real opposition to it. Most of the changes which we found it our duty to suggest had advocates during the debate, but for the most part did not find favour with the majority. We may take occasion to return to them with reference to the passage of the Bill through the House of Lords.

METROPOLITAN BOARD OF WORKS.

ORNAMENTAL TOWERS ON THE THAMES EMBANKMENT.

At the meeting last week, the Works Committee brought up a Report stating that they had considered a letter from the treasurer of the Middle Temple, asking the Board to introduce a clause into their general Bill in the present session of Parliament authorising the erection of two towers in connexion with an extension of Harcourt-buildings, Temple, in advance of the frontage line laid down in the Thames Embankment Act. It appeared that the benchers were desirous of extending the buildings known as Harcourt and Plowden Buildings down to the line of the reclaimed land on the Victoria Embankment, which, by that Act, was added to their garden. As the façade of the new buildings would form a very unsightly angle to the Embankment, the architects proposed to obviate this by introducing a tower at each corner which would project 7 ft. beyond the line to which, by the Thames Embankment Act, 1862, section 28, the societies are restricted from building more than a certain height, and they trust that, inasmuch as this slight projection will not be attended with any inconvenience, the Board would not feel indisposed to aid them in obtaining a modification in the clause referred to, and suggested that the Board having a Bill now before Parliament, such an exemption might be introduced into it, the Benchers being prepared to bear all expenses. The committee recommended that the request be complied with, in the event of there being sufficient time for the insertion of the necessary clause in the Board's General Powers Bill, and on the understanding that the Board incur no expense in the matter.

The recommendation was agreed to.

DISTRICT SURVEYORS.

A report was brought up from the Building Act Committee, recommending that the district of St. Mary, Newington, and part of Lambeth, be divided into two districts; the one, comprising the parish of Newington eastward of the Walworth-road, to be designated East Newington; and the other, comprising the portion of Newington westward of the Walworth-road, together with the portion of Lambeth bounded on the west by Kennington-road and part of the Clapham-road, and on the south by Vassall-road, to be designated West Newington and part of Lambeth.

Mr. Selway, in moving the adoption of the report, reminded the Board that this was the district in regard to which they had to pass a very unpleasant resolution some time since. The average gross income from this district for the last three years was about 900*l.* per annum.

The motion was carried.

The same committee further recommended that the district of East Hackney be divided into two districts, to be designated East Hackney North and East Hackney South, and that the North London Railway do form the line of boundary between such districts.

Mr. Selway moved the adoption of the report. He said the average gross income from the district was about 700*l.* a year. It was true the income was smaller than in the previous case, but in this instance the committee thought that there was ample room for growth.

The recommendation was agreed to.

It was also resolved, on the recommendation of this committee, that the usual course be taken for filling up the vacancies in the office of district surveyor for the above-mentioned four districts, viz., East Newington, West Newington and part of Lambeth, East Hackney North, and East Hackney South respectively; that advertisements be issued, inviting candidates for the appointments; and that the Board do proceed to the elections on Friday, the 30th inst. at twelve o'clock at noon.

CHARTHAM ASYLUM, KENT.

At the adjourned annual General Session for the transaction of county business, held at the Court House, Maidstone, last week, the Finance Committee reported that the visitors of the asylum at Chartham had reported that a further sum of 50,000*l.* would be required before Michaelmas next, to complete the buildings, and provide all furniture, fittings, bedding, clothing, &c.

The architects (Messrs. Giles & Gough) reported that although since their last statement a considerable amount of work had been done, and portions of the building advanced towards completion, the progress made by the contractor had not been so great as they had had reason to hope and expect. Two blocks on the south front, including the additional stories over the same, had been completely finished, and were now occupied by patients; four others adjoining these in the same front were also far advanced, and would be the next ones ready for the reception of patients. The two assistant medical officers' houses had been for some time finished and furnished, and were now temporarily occupied by the medical superintendent and steward and matron. The administrative portion, including kitchen, dining-hall, general stores, laundry, &c., were completed with all their fixtures, fittings, and machinery throughout, and were in working order.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

The sixth meeting of the District Committee for the Midlands was held in the Council Chamber, at the Town-hall, Northampon, on Thursday, the 15th instant. The objects of this Association are the promotion and interchange among its members of that species of knowledge and practice which falls within the department of an engineer or surveyor engaged in the discharge of the duties imposed by the Public Health, Local Government, and other Sanitary Acts; the promotion of the professional interests of the members, and the general promotion of the objects of sanitary science. The members of the council present were Mr. Lewis Angell, M. Inst., C.E., West Ham, London, (the president of the Association), and Mr. E. Pritchard, Assoc. Inst., C.E., hon. sec. for the Midlands, Warwick. The other members present were—Messrs. J. H. Pidcock, Northampton; E. J. Purnell, Coventry; G. Cole, Hereford; T. T. Allen, Stratford-on-Avon; J. Lobley, Hanley; E. Monson, Acton, London; E. Sharman, Wellingborough; J. D. Simpson, Buxton; and T. W. Baylis, Redditch. The visitors were:—Mr. D. Tough, manager of the Heathcote Sewage Farm, Leamington; and Mr. W. Boon, Coventry.

Mr. Angell occupied the chair, and expressed the pleasure it afforded him to meet the members of the Association in Northampton. This was the first time they had visited the town, but he had no doubt that here, as elsewhere, they would have an interesting day's work carved out for them. He regretted that the attendance was somewhat small, but this was owing to many of the members being engaged on Parliamentary work. The critical state of the health of the wife of Mr. Jones, the general secretary, also prevented that gentleman from attending.

Mr. Pritchard, the hon. sec., then read the minutes of the last meeting, which were confirmed. The secretary also read letters from members of the Association residing in all parts of the country, expressing regret that engagements which could not possibly be foregone prevented their attendance. They hoped, however, that the meeting would be a successful one.

The President announced that the Council had presented a memorial to the Local Government Board, asking for certain points of amendment in the Local Government Act, especially for that which will put the borough engineers on the same level as medical officers, and give them the same protection. No answer to that memorial had as yet been received. They were also preparing one asking for an amendment of the Act upon several points suggested to them by their experience of the working of the old Act, and which the Government had not had clearly brought before them. He found that Mr. Lobley, of Hanley, had summarised a number of points which had occurred to him. They were certainly very valuable suggestions, and he only regretted that Mr. Lobley did not send them through the Association, as they might have had greater weight with the Local Government Board.

Mr. Lobley replied it was really a report to the General Purposes Committee, and they instructed that it should be printed.

Mr. Monson suggested that an attempt be made to get the words "new road" defined in the new Act, as at present it was a matter of difficulty.

Mr. Pidcock quite agreed with Mr. Monson. Northampton was at this time in a very serious dilemma on account of the difficulty. The Act defined a road to mean a footpath or any public passage, and the consequence was that they had a passage of more than half a mile in length, which, when built upon, made the houses all irregular, being up to the boundary in some places, and 30 ft. back in others. He considered there should be a clause compelling those who built by the side of a narrow road to set back, so that there should be at least 40 ft.

The Chairman remarked that the suggestions made would be considered. With reference to the financial position of the Association, he mentioned that there were 16*l.* in hand, and stated that the Council had decided upon publishing the proceedings of the Society from the commencement.

Mr. Monson objected to the printing, but the other members present considered that it would be advisable to adopt the proposal of the Council, believing that the publicity thus given would be of considerable benefit.

It was accordingly proposed by Mr. Baylis, and seconded by Mr. Purnell, that the meeting approve of the publication.—Carried.

The company then, under the leadership of Mr. Pidcock, paid a visit to the Sewage Farm. The various matters in progress were explained by Mr. Pidcock, who also replied to the number of questions put by members of the Association. Returning, after a couple of hours' survey, they visited Messrs. Turner Brothers, Hyde, & Co.'s shoe manufactory. The senior partner (Mr. Richard Turner) conducted the party, and all appeared to be interested in the manufacture. After this an adjournment was made to the Town-hall, where Mr. Pidcock read a paper on "Northampton and its Sewage."

At five o'clock the company dined together at the George Hotel. The Mayor (Mr. William Adkins), presided, and he was supported by Mr. Angell, the president of the Association; Mr. J. Barry, chairman of the Sewage Committee; and Mr. H. P. Markham. Mr. Pritchard occupied the vice-chair.

The loyal and patriotic toasts were first disposed of, and Mr. Angell then proposed "The Municipal Corporations of this Country." He had introduced this toast because it was to the local governing bodies of the kingdom they, as engineers and surveyors, owed their liberties and principles. He coupled with the toast the name of a gentleman who, as the chairman of

the Sewage Committee, knew what they had to perform. From what they had seen to-day they would all agree with him that the question of sewage disposal had been carried on with energy, and he believed the town had adopted the right course.

Mr. Barry, in responding, remarked that the Corporation of Northampton was one of the most ancient, and had therefore participated in the advantages spoken of by Mr. Angell as being derived from the establishment of local institutions. Until the last few days, however, the Corporation had not been associated with the work which had brought this Association here to-day; but he had held office with the Commissioners, and had taken great interest in the sewage question. He hoped the transfer of the powers of that body to the Corporation would be beneficial to the town and neighbourhood. It was with pleasure he had met them, because he thought the work they were engaged in was one of the greatest importance to the health and welfare of all communities; and he trusted that their meeting to-day would be productive of beneficial results to themselves and the town of Northampton.

The Chairman proposed the toast of "Success to the Association," coupling with it "The President and Officers."

Mr. Angell, in acknowledging the toast, thanked the Mayor for the kind and sympathetic words he had uttered towards their Association. On behalf of the members, he could say that they had enjoyed their visit, and from what they had seen and heard of Mr. Pidcock's work they were sure he must be a valuable officer, and one whose services were thoroughly appreciated and rewarded. He agreed with him that their office was of great importance, and he was pleased that it was recognised by governing bodies. Referring to the Mayor's remarks, he said that the establishment of this Association enabled them to associate together, to interchange views, find out what was doing in other parts of the country, and get unity of action.

Various other toasts followed.

THE TOWER AS A PRISON.

Sir,—In noticing (p. 343) Mr. Hepworth Dixon's contention that in length of days the Tower of London has no rival among prisons, you accidentally omit from your interesting list the Tullian, afterwards termed the Mamertine, Prison in Rome, begun, as Livy states, by Ancus Martius, or about 640 B.C., and added to by Servius Tullius. There are substantial grounds for believing that in the lower of the two remaining cells Jugurtha was starved, the Catiline conspirators were strangled, and Sejanus was executed; traditionally also, St. Peter was there confined by order of Nero (compare Murray's "Rome"). E. L. Tarbuck.

OPENING UP GREECE.

Sir,—In your journal of the 24th of October, 1874, under the head of "Miscellanea," there is a paragraph headed "An Athenian Donor," who gives 6,000*l.* a year to benefit Greece, and offers a premium for the best essay showing how to do it. In reply, I beg to offer a few suggestions that may be tantamount to writing an essay. I must first introduce myself to your notice as a pioneer and mineral explorer in the interior of this vast continent of Australia, and one that has been the means of opening up some of the mineral and other resources of the country. First, I would raise an "exploring party," headed by a scientific gentleman from England, whom I would get to bring with him an efficient staff, for the purpose of exploring and developing the resources of the country, as to its capabilities for agricultural, pastoral, and mineral pursuits. Vast tracts of this country have been opened up by such means, and parts that had been unknown are now flowing with milk and honey. Secondly, I advise that the 6,000*l.*, to be spent annually, be expended in the following manner:—1,000*l.* for personal expenses of exploring party, and the remaining 5,000*l.* for working and developing the resources of the country. As the resources are opened up, and become remunerative, it would be necessary to raise factories and other works, to prepare the material (available) for market.

The profits arising from the undertaking, I would advise to be disposed of in the following manner;—First, to build dwellings for those employed on the works, and to let them at a small rate. Secondly, to build schools, hospitals, and literary institutions; also for the benefit of those employed and their families.

There is no doubt, looking at the geographical position of Greece, that there can be a ready market found for her products; and it only remains for Greece to become a producing country, and encourage arts and manufactures (without which no country is prosperous), to grow into importance.

In conclusion, I beg to add, that whoever the benevolent gentleman is that offers the premium for the best essay for the benefit of Greece, that he may succeed in his most sanguine expectations in whichever way he may approve of, is the humble wish of a stranger many thousands of miles away. Edward Good.

Darling River, New South Wales.

PERVIOUS AND IMPERVIOUS.

Sir,—Consistently with the principles of discussion reported in No. 1,677, p. 275 of the *Builder*, would not the following be the right way to build a healthy and comfortable house?

Use the most impermeable materials for foundations, copings, cornices, and strings; also for upright projections, as pilasters. Contrariwise, use the most porous bricks that can be got for general flat surfaces, or recessed panels; and cover the whole of these latter with louvre boarding, through which the wind might blow upon the porous bricks, while driving rains would be restrained.

Probably an equivalent effect has often been obtained and enjoyed in many an old ivy-covered house. G. M.

IMPROVED DWELLINGS FOR THE INDUSTRIAL CLASSES.

Sir,—In your impression of last week you give, under the above heading, a description of the prize design for dwellings for the industrial classes, proposed to be erected in Goswell-road; and among the drawings which illustrate that description you give "Details of the Domestic Offices." These details are so much at variance with the recognised principles of sanitary science that I venture to call attention to them before any buildings are erected upon such a model.

1. The cistern which supplies the water-closets supplies also the sculleries with water. The objection to this is obvious.

2. The "overflow" of the cistern is led into the soil-pipe. It is true that the overflow is "trapped" by a syphon, but as there is no guarantee that the trap might not be emptied either by evaporation or by suction, every opportunity would be given for the penetration of the miasma of the soil-pipe into the cistern. The "overflow" and "waste" of a cistern should clearly be into a general waste-pipe of large bore (such as a 4-in. rain-water pipe), whose lower end should discharge in the open-air, near, but not immediately over, a trapped gulley.

3. The wastes from the sink are led into the traps of the water-closets, there being also a trap beneath each sink. The effect of this "double trapping" will be that every time the water-closet is used, the large trap of the closet will (to use the plumber's phrase) "syphon out" the smaller trap of the sink, and the effluvium of the soil-pipe will penetrate into the scullery without hindrance. The sinks should all be made to discharge into the general waste-pipe referred to in the last paragraph.

4. The waste water from the bath-room and wash-house is described as being "available for flushing the soil-pipe." Considering that this waste water could be hot, no more ingenious mode of cracking the soil-pipe could be devised.

It cannot be too strongly insisted upon that the soil-pipe should be the conduit from the water-closet only; that no other part of a house should communicate *directly* with the drains, and that all waste-pipes from sinks, cisterns, or baths should be led *indirectly* to the drains by a general waste-pipe open to the air at the extremities.

I had nothing to do with the competition, and know nothing of it but from the information given in your excellent paper. N. S. J.

New Reservoir, Poole, Dorset.—The contract of Messrs. Dunford & Son, builders, of this town, for erecting a new reservoir at Longfleet, has been accepted by the Water Works Company, and the work is being pushed forward rapidly.

"GRINDING MONEY."

In a case which lately came before Judge Bayley at the Westminster County Court, wherein a carpenter, named Burton, sued a builder, named Wagner, for 5s. 3d., being two hours' "grinding money," and five hours' "waiting money," his Honour said it had been ruled over and over again that "grinding money" could not be recovered. Since the "hour" system was introduced in 1859 the majority of the larger firms had refused to pay "grinding money," and as to "waiting money," he certainly should not allow that, because few persons got money without waiting for it. He should nonsuit the plaintiff, with costs.

Sir,—*Apropos* of your notice of a communication between the Joiners' Society and the Master Builders' Association, a case was decided at the Bloomsbury County Court (Nightingale *v.* Thompson & Smith), on the 16th inst., in which the judge (Mr. Russell) ruled that the defendants had fully met the requirements of the case by giving one hour's notice, and that the existence of any "general custom" had not been proved by the plaintiff and his witnesses. W. R. S.

THE RELATIONSHIP BETWEEN THE ARCHITECT AND WORKMAN.

Sir,—I have long mourned over the want of interest evinced by members of my own trade,—bricklayers,—in furthering themselves in education, and learning somewhat of mensuration and geometry. If you ask them the reason of this apathy, they will tell you that the bricklayer gets little or no credit for anything that he may do; but the foreman, who is generally a joiner,—and I do not see why this should be,—gets all the credit. How is this? Because the architect could not think of speaking to a bricklayer. I say this should not be, and why? We all know that there are such things as specifications: are they written to be locked up in a drawer in the office? I say, no: they should be to the workman what the articles of war are to a soldier. Can the workman be expected to work according to specification if he knows nothing of it? Then it is the duty of the architect to see that men understand the specification. The hanging up of drawings I do not think would act, but still I do not think the present way of giving the bricklayer instructions a good one. I think if the foreman were to explain on the drawing what he wished us to do, I know that I for one should know better how to do it. The architect then should see that this is done.

The Association that Mr. Thicke proposes, in my opinion, would be a great boon to my trade. One gentleman, in the discussion that arose, said there were many bricklayers who did not know how to properly bond their work together: let them form this Association, and they will soon find that this is not the greatest failing. But the reader seemed to think it would be a difficulty to get at us. Let him call a meeting, give us a month's notice, and then see whether we are not get-at-able. I hope he will not let the arguments of builders' foremen carry any weight until he has heard the opinions of the workmen. I hope that the Architects' and Workmen's Improvement Guild may soon be an established fact. J. P. Morris.

HOW ARCHITECTS ARE SELECTED.

The proceedings of the Sites and Buildings Committee of the Liverpool School Board last week contained recommendations that Messrs. H. & A. P. Fry be appointed architects to the new school about to be erected in or near Stanley-road; that, subject to the approval of the Education Department, the plans prepared by Mr. T. M. Reade for the erection of a school upon the Walton-lane site be adopted; and that the Board purchase, subject to the consent of the Education Department, the site in Latham-street (about 2,400 square yards) at 25s. per square yard, and subject to a chief rent of 63*l.* 17s. 10d. per annum.

Mr. Browne complained of the manner in which Messrs. Fry had been selected architects to the Stanley-road Schools. It appeared that the names of seventeen firms had been sent in, and of these nine were selected. The names of these nine were then put into a hat, and the appointment was made by lottery.

Cæsar's Camp, Wimbledon.—In the House of Commons, on the motion for second reading of the Ancient Monuments Bill last week, Sir H. Peek announced his intention to support the Bill on its merits. Adjoining Wimbledon Common was, he said, Cæsar's Camp, which antiquaries had made out to be 2,200 years old. In his public capacity of conservator of Wimbledon Common he had done all he could to preserve Cæsar's Camp for the public, but at the present time people were cutting down the trees and levelling part of it with a view to the erection of villas thereupon. This Camp formed one of the most important and interesting relics that they had, and some such Bill as the present was necessary in order to enable the conservators of Wimbledon Common to deal with the owner of that property.

Miscellanea.

A New Chapel at Kensington Workhouse.—On Saturday last the ceremony of laying the first stone of a memorial chapel to be erected by Mr. J. A. France, on the grounds of the Kensington workhouse, was performed by the Princess Louise. The proposed church, which is the gift of Mr. France to the parish, is to be in the Early Gothic style of architecture. It is designed to accommodate some 150 worshippers, and is to be constructed of red brick, with Portland stone facings. A porch, vestry, and organ chamber will be provided, and the building is to be surmounted by a tower, which will add largely to the attractiveness of its appearance. Mr. Arthur W. Blomfield is the architect, and the builders are Messrs. Dove Brothers, of Islington.

Death Traps.—At the meeting of the Lambeth Vestry on the 16th inst., attention was drawn by Mr. Glanville to the fact that the traps in houses were the cause of much sickness if not properly looked after. He believed he had recently lost his wife through this cause. Mr. Fowler said the traps in many houses were not looked after, but the evil arose principally through the neglect of the plumber or bricklayer. Where no water was put on, and the houses were closed, and the gas lighted, the unhealthy effluvia of the drains were drawn out, and sickness and death followed. The matter was referred to the Sanitary Committee. We have said the same thing very often.

Royal Italian Opera.—Some brilliant representations have been given, with a variety very delightful to the *habitué*. "L'Africaine" included Mdlle. d'Angeri as *Selika*, Signor Naudin as *Vasco di Gama*, and Signor Graziani as *Nelusko*. Signor Naudin's voice has lost nothing of its power, and he began well by giving the defiance to the Council with immense energy, and Signor Graziani, the original *Nelusko* in this country, sang all the music, including the melodious "Figlia dei Rè," finely. The spectacular portion is now beyond commendation. On Tuesday, Mdlle. Albani made a most successful reappearance as *Amina*, showing remarkable advance. There was no mistake about the recognition of the house.

Institution of Surveyors.—At the ordinary general meeting, held on Monday, April 12th, the adjourned discussion on the Home Secretary's "Bill for Facilitating the Improvement of the Dwellings of the Working Classes in Large Towns," was resumed and concluded. At the next meeting, April 26th, a paper will be read by Mr. W. L. Huskinson, entitled "Large Estates and Large Farms *versus* Peasant Properties!"

British Archæological Association.—On Wednesday, the 28th of April, the paper read will be "Notes on the Roman Way to Verulam," by Mr. E. Roberts.

The Town-Hall of Worcester.—In a letter to the Town Clerk, Sir G. G. Scott says, "I do trust the report is untrue that your Corporation are about to destroy the best and most valued building in your city, next to the Cathedral. I refer to the Town-hall. It is a national example of architecture, and that of a very characteristic and favourite style and period. Its destruction would be a repetition of the disgrace Worcester underwent from the demolition of the Guesten Hall, and would give you in all future time a most unenviable notoriety." We believe it will be preserved.

Proposed Bridge at Benton Bank, Newcastle.—On the 13th inst., the Town Improvement Committee had an interview with Sir William Armstrong, at Jesmond, relative to a proposal he has made to throw a bridge over the Ouseburn, and connect Jesmond-road with Benton Bank by something like a High Level Bridge in the place of the present low structure. When the bridge, which, we understand, will be a very elegant structure and will cost something like 20,000*l.*, is completed, the land on the east side of the Burn will be laid out for building sites.

Crystal Palace School of Practical Engineering.—On Saturday last, the annual meeting and distribution of certificates to pupils of the School of Practical Engineering, established under the auspices of the Crystal Palace Company, took place in the southern tower of the Crystal Palace, where a large proportion of the practical engineering work of the school is carried out Mr. E. J. Reed, M.P., presided.

Belfast Architectural Association.—On Monday evening last week, a public meeting of this Association was held in the Museum, when a paper on "Elizabethan Architecture" was read by Mr. Robert Watt, B.E. The chair was taken by Mr. Vere Foster. The lecture was illustrated by a collection of water-colour drawings, representing specimens of Elizabethan architecture,—such as the mansions of Wollaton, Holland, and Burleigh; details of ceilings and friezes, &c., exhibiting the peculiar characteristics of the period were also shown.

New Town Hall and Police Station at Wakefield.—On the 13th inst. a meeting of the Wakefield Corporation was held. Two hours were devoted to a discussion on a recommendation for a committee to build a Town-hall on a site in Wood-street, between the Court-house and Mechanics' Institution, and which was secured for that purpose about twenty years ago, the cost to be about 20,000*l.* The council divided, when it was decided, by 15 to 7, to erect a Town-hall as recommended.

A National Opera House.—At a meeting of the Metropolitan Board of Works, on the 16th inst., a letter was read from Mr. J. H. Mapleson, of her Majesty's Opera, Drury-lane, requesting the Board to inform him what would be the lowest amount accepted for the freehold of the ground held by him on the Victoria Embankment, for the purpose of erecting thereon a National Opera House. The communication was referred to the Works Committee, to consider and report thereupon at the next meeting.

Irish Antiquities.—Mr. Wakeman, of Enniskillen, hon. sec. of the Royal Historic and Archæological Society of Ireland, has discovered a megalithic chamber containing human bones, ashes, skulls well preserved, and a cinerary urn, which disclosed the site of a pagan cemetery, as Mr. Wakeman believes. The bones show clear traces of burning, and that charcoal was used in the process. The discovery was made on the land of Colonel Foliott, near Ballyshannon, in the county of Donegal, recently.

Temples, Mounds, and Caves.—A lecture was delivered before the Society for the Encouragement of the Fine Arts in London, on the 15th inst., by Mr. William Simpson, F.R.G.S., on "Temples I have visited." The lecturer showed how intimately temples were connected with grave mounds and caves, and demonstrated the universality of temples in all ages and countries, tracing the origin of them from Egypt to Assyria, and thence to Greece and Rome.

A "Light" Explosion!—An explosion which caused severe damage has occurred at "The Brackens," Nightingale-lane, Clapham-common, the residence of Mr. J. Phillips. An escape of gas having been noticed, an endeavour was made to find out where it arose. A light was used, and of course a severe explosion ensued. Edward Ashbury, a man aged fifty-three, was severely burned on his face and hands, and Sarah Day, aged twenty-five, injured on the arm.

Salisbury Cathedral.—A meeting was held last week, when it was resolved that steps be at once taken for re-opening the choir and restoring the great transept. The estimated expense is about 11,000*l.* Miss Chaffyn Grove proposes to remodel the organ at a cost of between 2,000*l.* and 3,000*l.* Earl Beauchamp will give a reredos, and Mrs. Sydney Lear promises 1,000*l.* towards the choir-screen.

Freehold Property near Regent Circus.—Nos. 316 and 317, Oxford-street, with extensive stabling and yard in the rear, the whole comprising about 3,000 superficial feet, with possession at Midsummer next, was recently submitted to auction at the Mart, by Messrs. Rushworth, Abbott, & Rushworth, and sold for 22,550*l.*

Artists' Benevolent Institution.—The sixty-sixth anniversary of this Association was celebrated last week at the Freemasons' Tavern, under the presidency of Mr. Beresford Hope, M.P. The president made an excellent address, and the subscriptions of the evening amounted to over 600*l.*, which included 100 guineas from Her Majesty the Queen.

Fatal Explosion from a Street Lamp.—An Edinburgh street-lamp exploded on Saturday last while the lamplighter was in the act of lighting it. A boy was instantaneously killed, another boy received a severe scalp wound, a girl was most seriously injured, and the lamplighter was badly bruised.

A New Synod Hall.—Last week the new Synod Hall in Dublin, presented by Mr. Roe, distiller, to the General Protestant Synod of Ireland, was opened. The Lord Primate presided, and there was a large attendance. The business transacted was of a formal character. The building has cost 27,000*l.*

Additional Casts for South Kensington. The South Kensington Museum has acquired two more casts of the famous bronze works from Hildesheim Cathedral—namely, the font and a curious pillar. The pillar is ascribed to Bishop Bernward, of Hildesheim, who died in the eleventh century.

Proposed Opera House, Margate.—We understand it is probable that a theatre and opera-house will be erected near the jetty, on the American principle. The projectors, two American gentlemen, have been busily engaged in measuring the proposed site, and in taking other preliminary measures.

County Surveyor, Southamptonshire.—Mr. James Robinson, at present assistant to and late pupil of Mr. William Crozier, architect for the county of Durham, has been selected one of four candidates, out of forty-eight applicants, for the Surveyorship of the county of Southampton.

Munificence.—It is the intention of Mr. Henry Wilson to give an endowment to Carbrook Church, which will yield 300*l.* a year. He has already erected a parsonage-house at a cost of 1,000*l.*, and contributed in several other ways to church extension at Carbrook.

A New Railway Station.—The Manchester, Sheffield, and Lincolnshire Railway Company have decided to erect a station at New Cloe, midway between the docks and Cleethorpes, on a site belonging to the Cloe Working Men's Building Society.

Gift of a Drinking-fountain, Deal.—The drinking-fountain presented to the town by Earl Granville was opened on the 7th inst., and forms an ornamental object at the corner of the Guildhall, Lower-street. So handsome a gift will no doubt be rightly appreciated by the inhabitants.

A New Bridge over the Thames.—The Court of Common Council have allowed Mr. E. Perrett, of Abingdon-street, Westminster, to submit to one of the committees for consideration a plan for constructing a bridge over the Thames from the Tower to Horselydown.

Art Union of London.—The distribution of the amount subscribed for the purchase of works of art will take place on Tuesday next, the 27th inst., at twelve o'clock, in the Adelphi Theatre. The amount of the subscriptions is larger than usual.

TENDERS

For completing three houses on the Bolingbroke Estate, Wandsworth Common, for Mr. James Lord. Mr. R. Thomas, architect. Quantities supplied by Mr. J. G. Picking:—

Austen	£997 10 0
King	995 0 0
Bowden	935 0 0
Scott	930 0 0
Bacon	917 10 0

For the erection of a detached villa, Kingston-on-Thames, for Mr. Robert J. Winter. Mr. W. P. Griffith, architect:—

Lawrence & Sons (accepted)	£2,050 0 0

For cemetery chapels and lodge, Weybridge, for the Weybridge Burial Board. Mr. T. Wonnacott, architect. Quantities by Mr. R. Carpenter:—

Martin	£1,900 0 0
Brown & Sons	1,850 0 0
Pratt	1,746 0 0
Bishop	1,730 0 0
Filewood	1,722 0 0
Farley	1,700 0 0
White	1,680 0 0
Reavell	1,640 0 0
Harris	1,599 0 0
Woodbridge	1,593 0 0
Thompson	1,580 0 0
Woods (accepted)	1,560 0 0
Patrick	1,553 0 0

For the erection of a school, boundary-walls, furnishing, &c., at Rhyd-y-Penaw, Cardiganshire, for the Cyfoeth-y-brenin U.D. School Board. Mr. Walter W. Thomas, architect:—

Tudor	£1,490 0 0
Williams	1,339 19 6
Jones	1,147 0 0
Beynon	1,146 0 0
Hamer	1,126 0 0
Jones	994 18 0

For new stables, for Mr. H. J. Waterlow. Mr. W. Thompson, architect:—

Palmer	£1,015 0 0
Rambling	970 0 0
Allard	925 0 0

For painting, &c., Highgate Infirmary. Quantities supplied:—

Thom	£1,910	0	0
Hey	1,460	0	0
Scurrah	1,159	0	0
Gibson, Bros.	1,094	0	0
Knight & Son	1,090	0	0
Kellaway	1,080	0	0
Eastwell & Peruch	1,075	10	0
Cocks	978	0	0
Nightingale	973	0	0
Phillips & Son	948	0	0
Thorn	920	0	0
Seed	795	0	0
Holms	784	0	0

For two additional dwellings to the Clock and Watchmakers' Asylum, Colney Hatch. Mr. Henry Carpenter, architect. Quantities supplied:—

Bamford	£950	0	0
Brown	850	0	0
Yardley	848	0	0
Emor	797	0	0
Garrud	591	10	0
Ely (accepted)	521	0	0

For buildings at Waltham-cross. Mr. Thomas J. Hill, architect:—

Bist & Brown	£870	0	0
Patman	863	0	0
Sabey & Son	760	0	0
Bentley (accepted)	722	0	0

For house and shop, High-road, Southgate. Mr. Thomas J. Hill, architect:—

Sabey & Son	£1,285	0	0
Bentley	1,177	0	0

For rebuilding 234, Tottenham-court-road, for Mr. Barrett. Mr. A. Cross, architect:—

	Portland.	Doulting.	Bath Stone.
Tarrill & Sons	£2,242	£2,175	£2,175
Patman & Fotheringham	2,098	2,050	2,018
Hart	2,052	2,020	1,998
Fish	2,018	1,940	1,915
Perry & Son	2,000	1,975	1,950
Howard	1,962	1,962	1,933
Williams	1,980	1,930	1,905
Patrick & Son	1,955	1,928	1,825
Langmead & Way	1,945	1,919	1,888
Simpson	1,932	1,905	1,874
Wagner	1,875	1,817	1,760
Wilson & Son	1,797	1,771	1,745

For rebuilding the Bedford Head Hotel, Tottenham-court-road, for Mr. W. Woods. Mr. A. Cross, architect:—

	Portland.	Doulting.	Bath Stone.
Turrill & Sons	£7,322	£6,925	£6,925
Patman & Fotheringham	5,998	5,709	5,613
Hart	6,120	5,933	5,792
Fish	6,050	5,537	5,372
Howard	5,982	5,982	5,382
Williams	5,940	5,766	5,480
Perry & Sons	5,880	5,724	5,558
Patrick & Son	5,900	5,570	5,245
Langmead & Way	5,820	5,667	5,397
Simpson	5,801	5,645	5,472
Wagner	5,840	5,470	5,120
Wilson & Son	5,487	5,317	5,127

For the erection of three houses and shops adjoining the Black Swan, and also for addition to the Black Swan, High-street, Bromley, near Bow, for Messrs. Smith, Garrett, & Co. Mr. F. F. Holsworth, architect:—

Riddle & Son	£2,792	0	0
Kelley, Bros.	2,764	0	0
Mark	2,762	0	0
Johnson	2,755	0	0
Toms	2,730	0	0
Bangs & Co.	2,329	0	0

For schools and master's house at Cholsey, for the Cholsey School Board. Mr. W. Fenstone, architect. Quantities supplied by Messrs. Batterbury & Huxley:—

	Schools.	Fence-walls, &c.
Shepperd	£1,875 0 0	£100 0 0
Silver	1,769 0 0	49 0 0
Woodroffe	1,550 0 0	72 0 0
Castle	1,445 0 0	64 0 0
Dodd (accepted)	1,461 15 0	61 10 0

For fitting up offices in Bush-lane, Cannon-street, for Mr. W. R. Perry. Mr. Alfred W. N. Burder, architect:—

Williams & Son	£374	0	0
Roberts	317	0	0
Brass (accepted)	297	0	0

For the erection of two farmhouses at Ruckhold and Twyford Abbey, and conversion of old farmhouses into four cottages. Mr. Walter Graves, architect:—

Brain	£2,262	0	0
Hook & Oldrey	2,257	0	0
Haynes	1,941	0	0

For the erection of seven cottages, with shops, in Heath-street, Hampstead, for Mrs. Servier. Mr. J. W. Walter, architect:—

Carter	£2,870	0	0
Bays & Ramage	2,332	0	0
Tongue	2,300	0	0
Southcott	2,295	0	0
Boden	2,348	0	0

For Newbridge Schools, near Newport, Monmouthshire. Messrs. Watkins & Sons, architects:—

Everal	£2,725	0	0
Linton	2,420	0	0
Williams & Son	2,350	0	0
Stephens & Bastow (accepted)	2,190	0	0
Avery & Son	2,060	0	0

For the erection of four houses, New Gloucester-street, Haggerston. Messrs. Ebbetts & Cobb, architects. Quantities supplied:—

Macey	£2,073	0	0
Garland & Perkins	1,928	0	0
Aitchison & Walker	1,686	0	0
Steel (accepted)	1,387	0	0

For new stables, Blendworth Lodge, for Sir. W. W. Knighton, bart. Mr. John Colson, architect:—

Ward	£2,593	0	0
Rapley & Sons	2,327	0	0
Newman	2,320	0	0
Gammon	2,236	0	0
Macklin	2,118	0	0
Barnes	2,100	0	0
Edney	1,987	0	0
Floyd (accepted)	1,865	0	0
Crook	1,850	0	0
Edwards	1,775	0	0

For the erection of residence at Upper Norwood. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

	Design A.			Alternative.		
Braid, Jopling, & Co.	£5,043	0	0	£1,200	0	0
Adamson & Sons	4,944	0	0	—		
Bowyer	4,895	0	0	935	0	0
Niblett & Son	4,886	0	0	1,030	0	0
Smith	4,864	0	0	948	0	0
Bangs	4,821	0	0	969	0	0
Hobson	4,746	0	0	966	0	0
Nightingale	4,699	0	0	992	0	0
Kirk	4,678	0	0	972	0	0
Crabb (accepted)	4,651	0	0	925	0	0
Wright	4,622	0	0	1,193	0	0
Burford (withdrawn)	4,534	0	0	739	0	0

For the erection of lodge and entrance-gates at Upper Norwood. Mr. Charles Bell, architect. Quantities by Mr. Henry Lovegrove:—

Wright	£458	0	0
Smith	436	0	0
Bowyer	425	0	0
Braid, Jopling, & Co.	423	0	0
Bangs	420	0	0
Adamson & Sons	420	0	0
Kirk	415	0	0
Niblett & Son	413	0	0
Hobson	404	0	0
Nightingale	403	0	0
Burford	391	0	0
Crabb (accepted)	348	0	0

For the erection of stables at Upper Norwood:—

Bangs	£1,103	0	0
Niblett & Son	1,100	0	0
Adamson & Sons	1,090	0	0
Smith	1,083	0	0
Braid, Jopling, & Co.	1,073	0	0
Bowyer	1,050	0	0
Hobson	1,046	0	0
Wright	1,036	0	0
Nightingale	1,033	0	0
Crabb	1,018	0	0
Kirk	998	0	0
Burford	999	0	0

For residence and stables at Upper Norwood, for Mr. W. S. Black. Mr. Charles Bell, architect. Quantities supplied:—

Joplin	£6,538	0	0
Adamson	6,494	0	0
Niblett	6,399	0	0
Smith	6,383	0	0
Bowyer	6,370	0	0
Bangs	6,343	0	0
Hobson	6,196	0	0
Nightingale	6,136	0	0
Wright	6,116	0	0
Kirk	6,091	0	0
Crabb	6,053	0	0
Burford	5,833	10	0

For new premises, High-street, Dorking, for Mr. R. W. Fielder. Messrs. Ingram & Hollands, architects. Quantities supplied by the architects:—

Putney	£2,264	0	0
Shearburn	2,174	0	0
Goddard	1,994	0	0
Colls & Son	1,900	0	0
Lynn & Dudley	1,895	0	0

TO CORRESPONDENTS.

Howell v. Hunt.—The defendant in this case, mentioned p. 399, *ante* complains of the decision, but we cannot go into the question. Mr. Hunt says the verdict was for 41 10s.

R. K.—E. L. G.—A. G. A.—H. C.—H. & V.—W. W. T.—J. R.—P.—J. D. H.—N. S. J.—F. P. C.—W. F. & S n.—H. R. W.—S.—W. W. P.—H. F.—M. I.—S. S. P.—A. W. N. B.—T. H. A.—H. & O.—Sound (little more can be done in such a case beyond the ordinary "pugging").—E. H. B. (next week).—Drainage of Portsmouth (in type).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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VOL. XXXIII. No. 1692. SATURDAY, MAY 1, 1875.

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Exhibition of the Royal Academy.



WHETHER we should be prepared to say that the one hundred and seventh exhibition of the Academy is above the recent average in regard to technical merit, or what may be called purely artistic excellence, is doubtful; but it certainly appears to us to be so in regard to the interest of the subjects. The usual proportion of mediocrities there is, and we cannot name any work, either, which is pre-eminently the picture of the year from any unusual power or elevation of style. But among the works which, to the initiated, constitute the exhibition, there is a larger proportion than usual which show a marked individuality and even novelty of subject, feeling, and treatment, and have an interest beyond the mere fact of successful execution. The number of utterly uninteresting portraits, too, is smaller than usual in proportion to those in which the character of the sitter or the talent of the artist gives a general interest. Some well-known exhibitors interest us by an unsurpassed excellence in the class of work they have long made their own, and some, perhaps, still more by appearing in an artistic garb different from that which they have been wont to wear. The wish of the Council precludes, in our present issue, any detailed notice of the pictures, to which, however, we shall return at leisure. We may just mention among the points of the collection Mr. Tadema's large work, "The Sculpture Gallery," a companion to his last year's picture; Mr. Millais's "Fringe of the Moor," the most broadly treated landscape he has shown us; Mr. Stone's "Sain et Sauf," a work beyond his usual key in dramatic interest and feeling; Mr. Leslie's "School Revisited," which he has seldom equalled; and Mr. Sant's three dear young English girls in bright morning billets, engaged over the produce of "the early post." Mr. Leighton's contributions include one remarkable picture, "An Eastern Slinger scaring birds from the Corn"; but we scarcely think this artist has done himself justice, the last year or two. Mr. Frith is strong in single figures, life-size; Mr. Morris and Mr. Boughton fulfil the promise of earlier work; Mr. Hook and Mr. H. Moore are as much as ever "at sea," and Mr. Orchardson is superb in a "Scilly Isle" work, which even throws last year's into the shade. Mr. Poole is at his best; and the same may be said of Mr. and Mrs. Ward; Mr. Marks and M. Tissot discourse excellent humour in their respective keys; but we must for the present cut short what threatens to be a long list. Two portraits, that of "Robert Browning," by Mr. Lehmann, and "Charles Darwin," by Mr. Ouless, will be looked at with interest by many to whom the originals, not unworthily depicted here, have for some time been the leading spirits in the realms of English poetry and English science respectively.

Our present duty is to devote what time we have to our own corner of the exhibition, and chronicle the architecture. We have generally given the first place to ecclesiastical architecture, as the sphere in which the artistic side of professional work has most scope for development. The architectural room is pretty strong in churches. The three fine coloured drawings, executed by Mr. Haig, from Mr. Burges's designs for the decoration of St. Paul's (952, 995, 1005), serve to convey a far better idea of the scheme than Mr. Burges's model in last year's exhibition. And in certain points we are bound to say that they are more in favour of it than the model, as regards the total effect as a system of coloured decoration. The effect is not crude nor glaring as a whole, an idea which the model decisively gave, partly from its want of aërial perspective. Of course, it may be said that the colourist can cook up this in his drawing; but we see no reason to think that the toning effect is much greater here than it would be in the building. But if we are asked whether the effect was worth the money and the process of hacking the interior to pieces, that is another thing. Good as the effect of these drawings is (the general effect, be it observed), we have to see what an equally able artist could make of a view of the cathedral with the present stone walls, and merely decorated with mosaic and stained glass. It might possibly be found to make a much better picture than these. As to the details of the ornament we adhere to our previous opinion. They are incongruous and far too Mediævalising in spirit. In the dome the old heresy of painted architecture is continued, almost as if in imitation of Thornhill; the panels between filled with stiff-looking saints on a gold ground. The frieze just above the whispering-gallery, a kind of paradisaical *olla podrida* of trees and boy-angels, is far too light and unarchitectural in character for the heavy treatment of the dome over it. However, these drawings ought to be looked at, and are no doubt an appeal to the public verdict for the architect's justification. They will be more likely to make converts than the model, though we cannot profess to be of the number.

A design for the choir and east-end decoration of the same cathedral is exhibited by its custodian, Mr. Penrose, in a drawing made by Mr. Groom: the design made in 1872 for its completion and decoration. This is much more purely Renaissance in feeling than that of Mr. Burges, and depending more on decorative design, and little on figures. The design of the ceiling is nearly that which has been partially and experimentally carried out in a part of the choir: the pavement is an elaborate marble inlay; the piers and arcade of the ground-story are untouched, but coloured marble is introduced in the attic. The need of something more to connect the ceiling and floor decoration is apparent here, the more so as the drawing is rather correct and brilliant than artistic in effect: it is a purely architectural drawing, in short. We should say the ceiling was a little too pronounced in its blue and gold; and that a quieter treatment of this portion would render the chromatic void in the ground story less apparent. The style of the decoration is more in keeping with the building than that of Mr. Burges.

Two of the competitive designs for the church at Montmartre are represented; that of Messrs. Spiers and Phipps, "honourably mentioned," by three drawings, west front, exterior and interior perspectives (984, 1,014, 1,045); and that of Messrs. Lee & Smith by the west front and side elevation (932, 975). They are sufficiently different, the former representing modern Renaissance of a French type, the latter a somewhat florid and also French edition of late geometric Gothic. The drawings of the first are beyond criticism as drawings; we cannot say the design pleases us much. We have no love for the phase of Classic selected, which is, to our thinking, not very refined, nor is there shown in its treatment that power of combining rather incongruous detail into a complete whole which some of the French architects of the day possess in a high degree. The west front of the second-named design looks well, and the treatment of the towers, on a very effective plan, is very good; the side elevation consists rather in drawing than in design. Sir Gilbert Scott sends what he modestly terms "an attempt" at the restoration of the north transept portal of Westminster Abbey, exhibited in a beautifully executed pen-drawing; the main point of the restoration consists in the removal of the archmould inserted in the Perpendicular period, in the centre portal, replacing it with mouldings of the same period on the rest of the doorway, and highly decorated with carving. The drawing will serve a good purpose if it only calls attention to the curiously-patched state of the portal at present, which we suspect has been overlooked by many even who are well acquainted with the building generally. Taking the rest in their numerical order, we notice a carefully-finished pen-drawing, representing a restoration of St. Edward's Shrine, in Westminster Abbey (924), by Mr. Longfield, in which the rich jewelled effect of the work is about as well conveyed as pen and ink can be made to do it. Mr. Basil Champney's Matfield Church (928) is a pretty specimen of modern Antique, in the shape of a plain village church. Mr. J. Brooke's Chislehurst Church (935) shows the architect's usual signature in the shape of a massive and studiously plain tower, treated with simple and picturesque effect,—not equal to some other specimens, however. Mr. J. D. Sedding's proposed "Memorial Church to Lord John Manners,

at Newmarket" (934), shown in a very neat refined pen-drawing, is a simple, quiet design, above the average type, treated with great simplicity and in a true Gothic spirit, and with a degree of originality not easy to define, but not to be mistaken. A little more might be made of the tower. Mr. G. G. Scott's interior, called a "Design for a Memorial Chapel" (938), we cannot say keeps up the prestige of the name; the drawing is very neat and unimpeachable, but the design is simply a reproduction of Late Gothic features. Mr. Somers Clarke, jun., sends a good drawing of the proposed additions to the chancel of St. Peter's Church, Brighton (940), which does not, however, make it quite clear what the additions are. Mr. J. O. Scott's "St. Paul's, Manchester" (947), is an exterior view showing a somewhat novel termination of the tower; two high-pitched gables at right angles with a spirelet or flèche at the intersection. Mr. Pearson's "St. John the Evangelist, Red Lion-square" (955: now building), is a water-colour interior view of a church with brick walls and stone dressings, stone groins to the quadripartite vault and brick filling; the whole is solid and monumental without being heavy. Mr. G. G. Scott's design for "improving" the Parish Church of Hampstead (956) means, we suppose, simply the addition of coloured decoration, as shown in the coloured view of the interior; if there are any structural alterations there is no indication wherein they consist. The "South-west View of the Church of St. Paul in the Via Nazionale, Rome," for the use of the American Church, by Mr. Street (963), exhibits a return to the Italian particoloured Gothic style, which the architect had for a long time deserted; there is hardly much to remark in it; we should be curious to know on what grounds the Americans in Rome are given an Italian design, when the English residents were given a distinctly *Street-ish* one. Mr. H. P. Horner sends a small quiet exterior in water-colour of a church designed for a site in Stanley Park, Liverpool; a reversion to the Old English Gothic type of which we have nearly lost sight in these days; a very pleasingly-proportioned spire, and a kind of germ of a transept formed by one window gable breaking the line of the side elevation, form the main features. Mr. Deshou's interior of a "Missionary Chapel for an Island in the South Pacific" (961), is a very good drawing: the interior is rather studiously barn-like in its homeliness; whether or no this homely character is an additional attraction to the peaceful savage, we, of course, cannot say. The design submitted in the recent select competition for a proposed new bell-tower to Christ Church, Oxford, by Mr. Jackson (997), deserves high praise; it is a fine pen-drawing, showing the "quad" and the tower in the angle, a low-proportioned structure, with massive angle turrets and windows repeated in three stages of similar design; it has much the look of a good old example. Mr. Sulman's "Congregational Church at Caterham" (1,017) is satisfactory but not very original; Messrs. Badley & Garner's interior of St. Augustine, near Manchester, original but not very satisfactory. A moulded and coloured wood cornice forms the springing to a pointed barrel-vault of wood, powdered with stars on a blue ground; the piers are simple and massive in character, with masonry in irregular bands of two tints. The interior of the "Chapel of St. Francis's Home for Boys, Shefford," by Mr. Nicoll (1,034), is as homely and bare-looking, almost, as Mr. Deshou's "Mission Chapel"; neither of them inviting places of worship. Mr. Heffer's interior of a design for a proposed Cathedral of St. Peter, Liverpool, is a neat drawing, tinted in Indian ink; the style is a debased Classic. Mr. E. Sharpe sends a drawing of the "North Transept of the Collegiate Church of St. Jean-au-Bois, Compiègne" (1039), an early vault on preposterously stilted arches, admirably drawn, as its author well knows how to draw; the colouring deserves mention, as being most luminous and artistic in effect. The "Chapel of St. Mary and St. Nicholas, Lancing" (1,046), in course of erection from the designs of Mr. Carpenter, is a fine piece of strictly orthodox reproduction of Early Decorated Gothic in a large and finely-proportioned interior. We shall have more to say as to other architectural designs in the room.

Legacy for Belgian Art.—The son of the Belgian sculptor, Godecharb, has just died, leaving about 600,000f., the interest of which is to be applied to the annual endowment of young Belgian sculptors.

THE SOCIETY OF PAINTERS IN WATER-COLOURS.

In our last number we gave a view of the new front of the premises occupied by this Society in Pall Mall. During the present week their eighty-fourth exhibition has been opened, and bears out fully the reputation which the Society has acquired, and is so studious to keep up.

As usual, the chief strength of the exhibition lies in landscape; figure-subjects being comparatively few in number, though including some of rare merit. Mr. Alma Tadema's principal work, "The Tragedy of an Honest Wife" (24), is disappointing and eccentric. The subject is the tragical story of the murder of a new wife of some antique polygamist (the whole story is engraved in old-fashioned French on the frame) by one of her predecessors, told in three scenes: on the left, the wicked wife, wrapped in a blanket, watching from the window the honours paid to the new comer; in the middle, the latter laid out dead; on the right, the miracle which happened when the lamp burning at her tomb was upset: a clumsy miracle, which could do no good to any one. The technical execution of the details, the texture and the cold gleam of the marble in the tomb scene, for instance, is perfect; but the figures have no interest. The artist's smaller work, "Fishing" (266), slight as the subject is, shows him to more advantage. The centre of one wall is occupied by Sir John Gilbert's large drawing of King Francis I. and other great personages "In the Studio of Benvenuto Cellini" (116) examining his last productions: a composition rich and powerful in colour, as a whole, but of which the separate figures seem very devoid of character. A brilliant and powerful sketch by this artist, on the first screen, showing a cavalcade defiling through a wooded landscape, should be looked at; the contrast between the dark wood and the glister of the steel armour is admirably given. The three new associates who are represented in the exhibition all belong more or less to the class of figure-painters. Of these, Mr. Brewtnall is the most original, though there seems an uncertainty of aim in his works at present. "Treasure Trove" (39) shows an English sea-beach, where two handsome young people, in a costume of uncertain date, look at the contents of a casket thrown up by the sea, and turned out by a naked urchin of uncertain nationality. The female figure bending forward to examine a string of pearls is very graceful, and is certainly the point of the scene. In the illustration of Hans Andersen's "Little Mermaid" (78), on the contrary, the interest is in the landscape, which is beautiful in its cold grey half-light; the mermaid is in the way; mermaids may do in fable, but do not do to paint. Mr. Radnor, another new member, ought to do a good deal, for he has much feeling, and admirable command of his materials, showing high finish of figures and interiors in pure water-colour; at present, in fact, the finish is a little too high, and the surface texture almost too carefully polished up everywhere. In "Plague," for instance (211), a flirtation dialogue between a French soldier and a short-skirted, bare-armed country lass, the uniform of the soldier has a bright, brand-new look, which startles the eye rather, and produces a harshness of effect which the artist will probably see the propriety of toning down in future efforts. The figure of the girl is very pretty. In his other work, "Weary" (236), there is a higher tone of feeling, and a lower scale of colour; and here the attention given to detail and to local colour, and the conscientious finish of every portion, in no way interfere with the prevailing sentiment. We shall look with interest to Mr. Radnor's future work. The third new member (and we ought to apologise for our slip in mentioning a lady last) is Mrs. Allingham, whose admirable drawings on wood are well known to readers of the *Cornhill*, and whose present name is honourably known in connexion with literature also. Her single work, "Small Customers" (261), represents two little pets of girls perched on high stools at the counter of the village confectioner; very pretty it is, though perhaps the manner of execution does not belong quite to the real spirit of water-colour. Of other well-known contributors in this class of subject, Mr. Pinwell has gone out of his usual beat to send a large half-length figure, called "Sweet Melancholy" (8), which we must really be excused for finding melancholy without the qualifying expression; the personage suggests an allegorical cook, with her hair down. "The Old Clock" (221) is in the old manner, and much more to our mind. Of Mr. F. W. Topham's drawings, "Wayfarers" is the best (17), the sitting figure particularly. The contributions of Carl Haag possess the artist's usual characteristics in their usual excellence. Mr. J. D. Watson sends some of those admirable and broadly-handled works, in which he throws the halo of art round the commonest farmyard or cottage incidents; "Neddy" perhaps is the best (242); and in quite another manner the little group "in the wood" (fourth screen) is very pretty. Mr. Walter Duncan's largest work, "Hoodman Blind" (31) is rather interesting as a study of old-English costume than of figures; but there is pathos in his "Agnes" (273), and in the female figure, too, in the sketch called "A Parting" (247). A very large drawing, by Mr. Macbeth, called "... Winter's Walk," is a work of which we can only say that we trust it will not happen again. We ought, perhaps, to include under figure-subject Mr. Marks's "Darby and Joan," and "Edwin and Angelina" (5, 49), though these are feathered bipeds, forming a contrast after the manner of Landseer's "High Life" and "Low Life," admirable in humour and execution.

Mr. Francis Powell, whose sea-pieces have attained such a high reputation in the last few exhibitions of the Society, comes to land this year with a large and grandly-composed drawing of "Loch Coruisk," or rather the mountains adjoining it. The rather red and heated tone, which there was a little too much tendency to the artist's sea-pieces, re-appears here, and gives together with the somewhat mechanical treatment of the foreground-water, a slightly artificial effect; but the power of the work is unquestionable, especially in the lighted side of the crag on the left, and the green folds of hill under it. His small drawing, "A Glimpse of the Sea" (265), is a curiously frank instance of the use of body-colour in a sketch of this kind; it might easily be taken for a small oil-painting. Of the larger landscapes, one of the most prominent is Mr. E. A. Goodall's "Remains of the Causeway from the Nile to the Libyan Hills" (6), the vestiges of a work described by Herodotus as more wonderful than the Pyramids. From the flat foreground, with its irregular pools, we look along the perspective of mounds representing the piers of the causeway, and retaining here and there just enough of squareness and regularity of form to show that they are not of natural origin. The distance is closed by a line of hills in the warm western glow. The subject imparts an interest of association to the drawing, which is not a work of genius, but so carefully handled, and so good in style, clear defined in every part, but without the less harshness, that it almost produces the effect of genius. Mr. Clarence Whaite's principal work "Snow in Harvest" (181), represents a foreground golden with corn-sheaves, sloping down to a deep valley, from the other side of which rise great hills, covered, or nearly so, with the first snow. The cornfield-foreground, and the peculiar tone given to it, appeared last year, and the artist must guard against repeating the effect till it has the appearance of a receipt. In the present work is a very fine one, very full and broad in manipulation, and complete original in style. A snow scene of another type is exhibited by Mr. Newton, to whom the grandeur of snow-covered hills has been familiar for years, and who shows his powers undiminished in a representation of "Our British Alps" (46), which, however, the picture is made entirely of the distant hills, the foreground being somewhat tame, and a little too manifestly toned so as to emphasise the cold snow-surfaces and blue shadows of the mountains. Mr. Collingwood Smith's "Sunrise on the Adriatic" clear notice from its size and finish, but is marred by a foolish attempt to work in figures from "Aurora" of Guido Reni into the morning clouds,—an utterly false step.

Names there are well known in this gallery which are always signed to work good of its kind, but so far uniform in aim and excellence to render comment superfluous. We may content ourselves with noticing that Mr. Branwhite works exhibit his usual characteristics; that Mr. Richardson, in his "Glen Nevis" (2), shows more power than usual in the stormy middle distance; that Mr. Callow's architectural subjects are, if anything, better than ever in their own way; that Mr. Alfred Fripp, in addition to one of his peasant groups, of which we tire a little, exhibits a very pleasant work out of his usual line, "The Mill Pool" (113), at the e

rance of a quiet village, and warm with reflec-
ions of the evening sky; that Mr. Naftel is as
ood as usual in numerous small works, and
r. W. M. Hale not as good as usual, but rather
ommonplace, to our regret. Other names will
ot admit of being catalogued so. Mr. Alfred
unt's "When Summer Days are Fine" (57), is
ne of those audacious productions which fly in
e face of all ordinary rules and regulations.
has no depth, no shadow effect, no composi-
on, no subordination of tones. It is a planta-
on of trees, in the full yet still fresh foliage of
rly summer, overhanging the pebble bed of a
ream shrunk almost to nothing; every tree,
ith its peculiar tints, burnt into prominence
d contrast beneath the glare of a mid-day sun.
he light, direct and reflected, is so strong that
e shadows of the foliage, though cool, are
ot dark; there is no dark in the scene. The
utlines of the hills behind seem to quiver in the
tense sunshine. This is not the kind of light
scene out of which, as a rule, the best pictures
e made; but Mr. Hunt thinks Nature has a
ght to her "flaring beams," and he has a right
paint them,—a prescriptive right, seeing that
can do it as no one else can. "Going Nut-
ng" (131), is a piece of hot work of the same
nd, and of nearly the same excellence; it will
more liked than the other, as there is more of
omposition in it; but the difficulties overcome
e not so great. "A Rent in Wetherlam" reminds
that the artist can do the black and thundery
siness just as well as the other, when he has
mind. Why the two sunshine pictures were
t near the floor, instead of on the line, is a
stery. Among artists who give their own
touring to every subject, we count, too, Mr.
bert Goodwin, who gives annual proof in this
llery of the originality of his genius, by draw-
gs which infallibly arrest attention by their
rongly-marked character, which is combined
th a total absence of mannerism. So much is
is the case, that a majority at least of his eight
awings this year might very well be ascribed
ch to a different author. "By the Well" (3)
a more matter-of-fact subject than usual with
s artist, very completely though simply treated;
s best of his contributions are, perhaps,
Dartmoor," and "Winchester from St. Giles
ll" (40, 33),—the latter a small drawing,
alling the feeling of Turner in some of his
ws; "Eastward of Eden" (62) is a very fine
omy landscape. Then we must pay due
nour to Mr. Boyce, who shows us the poetry
d the colour that there is in old buildings of
s simplest class; the old church and farm at
West Dunster, Somerset" (98), the whole of
s buildings in shadow, and just a strip of sun-
ht over the foreground, is marvellous as a
ce of realistic painting, not excluding senti-
nt; so is "Old Buildings at Kingswear"
6); and his two bits of coast scenery should
looked at, too (126, 279: the former especially
the light and aërial effect of the distant
and sky). A drawing out of the beaten
ok is that by Mr. J. W. North, "January in
giers" (32), a mass of rich, warm-tinted
iage, nearly shutting out the sky from the
ls who recline lazily near a well in the centre;
repeats too much of the same tone, however,
the English scene, "The Vicarage Croft"
3), which strikes us as unreal in effect. Mr.
omas Danby's "Lake of Bala" reflects in its
smatic waters the very purple shadows of the
ls above in an unusual and possibly natural
nner; the effect seems to us forced, however,
d the water certainly wants transparency.
t space warns us that we must have done
criminating, merely mentioning in addition a
s freely-treated landscape by Mr. Whittaker,
adly washed in with much force of colour and
le detail; Miss Clara Montalba's "On the
y to the Campo Santo" (188), marked by the
ne qualities as her works in the Winter Exhi-
ion noticed by us; Mr. Birket Foster's "Fish
rket at Venice" (109), and "A Shrine" (120),
interest of which is, however, not in propor-
n to the high finish of the execution; Mr.
mer's "Travellers" (272), a rich-toned even-
scene of the old "Classic landscape" school;
d the minute delicate little work of Mr. F.
lker, "The Old Gate" (244), a repetition in
le of an Academy picture of two or three
rs ago, and which we like better in this
tion than in the original.

Greece.—The King has ratified the archæo-
ical convention concluded between Greece
d Germany for the prosecution of excavations
the Olympiad.

THE ART UNION OF LONDON MEETING.

On Tuesday morning last, the subscribers and their friends met in the Royal Adelphi Theatre, to distribute the amount subscribed for the purchase of works of art. The Lord Houghton presided, and there were present also Messrs. Pocock and Antrobus, hon. secretaries; Sir Walter Stirling, Professor Donaldson, Messrs. Chas. Hill, Jas. Hopgood, Hayward, Bennoch, Butterworth, Wm. Smith, Z. Troughton, G. Godwin, V.P., and others.

Mr. Antrobus read the following

REPORT.

The confident anticipation expressed by some of the speakers on this stage twelve months ago that a successful result would attend the issue of the grand engraving of "Wellington and Blucher" has been amply verified, and the Council are glad to announce the large sum of 18,926*l.* 5*s.* as the total of the year's income. This is a great increase on the amount of last year, and even considerably exceeds that of 1847, up to this time the highest amount ever collected. It must, however, be borne in mind that the heavy cost of this year's work, 7,872*l.*, as against 2,210*l.* expended on the same account last year, precludes an equivalent increase in the sum available for prizes.

The popularity attained by this plate is a further proof that large and fine works are always duly appreciated, as stated in the Council's report of 1872.

There is no doubt that the result thus obtained is due in a very great degree to the energetic action of the local secretaries and agents in all parts. They felt that they had a grand and interesting work to offer to the public, in the truly national print which had been produced at so great a cost; they were, so to speak, put on their metal to show what could be done, and the result is, without question, most remarkable.

Very few subscribers have taken any other print than that of the year, and to find 18,000 people putting down their names for the same work, undeterred by the cry one sometimes hears, "Oh! you see that everywhere," is sufficient proof of the intrinsic excellence of the work itself. The only complaint that has been heard is that it is "too much for the money." That such a work can be had for a guinea is a proof of what co-operation can effect.

On the present occasion so great have been the exertions of the Society's representatives, in all parts of the world, that the Council feel it would be invidious to select any for special mention.

In the last report the Council adverted to the fact that, in consequence of some error in the preparation or use of the water-glass solution, with which the original painting was impregnated, a kind of efflorescence or mist had begun to appear on the surface, threatening serious damage. A method has happily been devised for removing this, and it appears that the colour beneath is quite uninjured, so it may be hoped that, when the excess of the silicate has from time to time come to the surface, and been removed, the painting will remain perfect and imperishable.

In the report of last year the Council announced, that, with a view of helping forward any movement tending to the art-education of the people, they had offered two premiums of 35*l.* and 15*l.*, respectively, for designs for painting on pottery. In reply to this offer, twenty-two designs were sent in, and, by the kind permission of the Science and Art Committee of the Privy Council, they were exhibited for some time in the South Kensington Museum. The premiums were awarded to two drawings of much merit, the authors of which, on opening their letters, were found to be Mr. E. Abraham, of the South Kensington Art-training School, and Mr. J. Eyre, of No. 10, Adrian-square, Tregunter-road. The Council have only at present decided on reproducing one of the designs on china, and an arrangement has been made with Messrs. Copeland to make one copy as a specimen.

Since the last meeting the Council have had to lament the death of Mr. Benjamin Bond Cabbell, one of the original founders of the Institution, for many years a frequent attendant at the Council, and to the day of his death a liberal supporter.

During the same period several vacancies have been caused by death in the ranks of art, notably Owen Jones, the most potent apostle of the application of colour in architectural enrichment, Baron de Triquetti, largely employed in the decoration of Prince Albert's Mausoleum, and Fortuny, the founder of a masterly, if somewhat eccentric, style of art.

Last autumn, Mr. John Henry Foley, R.A., died at the comparatively early age of fifty-six. He was in the very first rank of British sculptors. Born in Dublin in the year 1818, his attention was directed to art, at an early age, by his grandfather, and when only fourteen years old he entered the drawing and modelling classes of the Royal Dublin Society. Amongst his first works, "The Death of Abel," and "Innocence" gained much notice; but the "Ino and Bacchus," produced in 1840, was the work on which his reputation was founded; after the production of this his success was certain. Commissions, however, at first, were few, and Mr. Foley's was a notable instance of the assistance which this Institution has been able to render in fostering genius. When it was proposed to produce, for the Art-Union, copies of the "Youth at a Stream" in bronze, and "Innocence" in porcelain, Mr. Foley expressed more than ordinary gratification, and gave the greatest attention to the production and perfecting of the works. At a more recent period, when his fame was established, he bestowed equal pains on the reduction, for this Society, of his noble figure of "Caractacus," which, produced in bronze by Messrs. Elkington, as well as by Mr. Hatfield, is acknowledged to be one of the finest works of its kind. Mr. Foley's remains found a fitting resting-place in St. Paul's Cathedral.

Another death which has occurred since the last meeting will lead to an effect on the practice of art in this country greater than would, at first, appear. By the death of Lady Chantrey, for many years a zealous supporter of this Society, the bequest of Sir Francis Chantrey, amounting to about 3,000*l.* a year, is placed at the disposal of the Royal Academy, "for the purchase of works of the highest class in sculpture or painting executed in Great Britain." The works so purchased are to be exhibited publicly, and to form a permanent national collection, and Sir Francis expresses his confidence that the Government of the country will provide fit accommodation for it, the Academy being expressly forbidden to divert any part of the funds towards building a gallery.

The completion of the National Gallery would seem of be somewhat more hopeful than has for a long time appeared, seeing that the estimates before the House of Commons, for the past year, included the sum necessary for finishing the buildings, which have been added at the back of the present pile. Mr. Beresford Hope has pressed on the attention of the House the need for a National Gallery worthy of the name. As long ago as 1868, the architect, Mr. E. M. Barry, was directed to prepare his plans and estimates, and it would appear to be quite time for the public to inquire, how many more years are to elapse before they are possessed of a National Gallery, worthy to rank with those of Paris, Munich, Dresden, and Berlin. Surely this country is not so poor nor so dead to an appreciation of the priceless value of our national pictures, constantly increasing in number, as to grudge the necessary amount for providing a casket worthy to contain such a treasure. In this national building then, so enlarged, no doubt a suitable resting-place would be provided for the treasures of art to be acquired through the deceased sculptor's munificence; and considering the branch of art which he followed, and the small amount of encouragement for sculpture at present existing in this country, the Academy would probably see fit to turn a considerable portion of the fund into that channel. At any rate, we may be perfectly confident that the money will be impartially and judiciously expended, and the result of directing so large a sum regularly, year by year, to the same end, will be to bring together such a collection of works, that the mind does not, at the moment, appreciate the magnitude of the ultimate result.

In the original prospectus, drawn up by the founders of the Institution thirty-eight years ago, it was inferred that the German societies, called Kunst-Vereine, were the initiators of the Art-Union system. It appears, however, from a very interesting MS. in the possession of a member of your Council, that as long ago as the time of Van Dyck, who died in 1641, there existed in London an association of painters called St. Luke's Club, which adopted the plan of making a subscription for the purchase of one or more works of art to be afterwards drawn for amongst the members. Van Dyck appointed one evening in the week for the virtuosi of London to meet at his house, "he entertaining them in a generous manner" on the festival of St. Luke. After the death of Van Dyck, and the cessation of the civil war, Sir Peter Lely, then rising into fame and fortune, revived the Society, at his own house, and this continued for many years, till death again stopped their meetings. In 1689 several of the virtuosi, recognising the inconvenience of meeting at a private house, held their assemblies at a tavern, and the Bumper, the Three Tuns in Chandos-street, the Swan, the Fountain, and Spring-gardens, were in turn the scene of these festivities. "One person of the Society was chosen steward for the year, and, on St. Luke's day provided a dinner, every person paying a crown towards it, and the Surplus to be payd by the Steward; and if the Expenses amounted to more, during the Entertainment to the Generosity of the Steward. At first it was customery for the Steward to give a Westphaly Ham and Chickens, but after times and generous minds added more oftentimes at the greatest Tavern in London in a splendid manner." Amongst the names of stewards commemorated in the document are Clostermans the painter (Gruling Gibbons—Michael Dahl—Sir Robert Child, banker—Sir Christopher Wren—Hugh Howard—George Vertue—C. F. Zincke—Gibbs, architect—M. Ruysbrach—W. Kent, and others. A resolution of the club, passed at the Rose tavern, March 5, 1698, was to the effect, that, such members as pleased to do so should deposit five pounds each with one of their number, "to lye at the bank ready for the Purchase of such picture or pictures as might be found worth the aggregate sum." The rule was that these works were to be distributed by lot, "the winner, in spending four guineas more in a feast upon the rest of the company, shall be fully and justly entitled to the same as if the said purchase had been made entirely with his own money." The drawing took place on the eve of St. Luke, *i.e.*, October 17, each year.

Here was clearly shadowed forth the principle of an art-union, devised and carried out by the very highest artists of that time, differing, however, from our institution in the circumstance that each member did *not* receive, in the first place, an annual work of art of at least the full commercial value of his subscription. Perhaps we may fancy that in the older association the *feast* held the place of the *works of art* now provided. A minute circumstance confirms the genuineness of this document. It is noted that Mr. Wooten acted as steward in the year 1717, coming, out of his turn, before Sir James Thornhill, and he had a card-plate engraved "to invite on St. Luke's feast," at his own house "in Covent Garden."

At the recent sale of the collection of Mr. Howard, who was himself one of the stewards, there was purchased for the British Museum, an engraved emblematic card, having a scroll left blank in the plate, but filled up in writing in the individual copy with an invitation to Mr. Howard, to attend the feast of St. Luke's Club, at Sir James Thornhill's house, on the *fete* of the Society for 1718, the year following that in which Mr. Wooten entertained the members out of his turn. This was, no doubt, printed from the above-mentioned plate, and the circumstance explains the meaning of the invitation to the long-forgotten festival of these art-lovers of a bygone generation.

The accounts of the year have been audited by three members of the finance committee and by Mr. Fearis and Mr. Wright, to whom thanks will be presently proposed.

The following is a brief summary of the receipts and expenditure. A detailed account will, as usual, be printed in the report.

Amount of subscriptions		£18,926 5 0
Allotted for prizes	£7,973 0 0	
For print of the year, almanack, exhibition, report, &c., and reserve...	8,675 17 2	
		16,578 17 2
Agents' commission and charges, advertisements, postage, &c.		2 347 7 10
		£18,926 8 0

The amount to be expended on prizes will be thus allotted:—

28 works at	£10	each.
30 ,,	15	,,
20 ,,	20	,,
18 ,,	25	,,
20 ,,	30	,,
16 ,,	35	,,

10 works at	.....	£10 each.
10 ,,	.....	45 ,,
8 ,,	.....	50 ,,
6 ,,	.....	60 ,,
6 ,,	.....	75 ,,
4 ,,	.....	100 ,,
2 ,,	.....	150 ,,
1 work at	.....	200 ,,
1 ,,	.....	250 ,,

To these will be added:—

10 Bronze Statuettes "Cimabue."
2 Bronze "Nelson" Columns.
3 Bronze Townley Vases.
40 Porcelain Statuettes, "Net-mending."
15 Chromos of "Bellagio."
90 Statuettes, "Whittington."
300 Folios of Autotypes from the Society's Prints.
100 Volumes of Landscapes after E. W. Cooke, R.A.
30 Silver Medals of D. Roberts, R.A.

These, with the prizes given to unsuccessful members of ten years' standing, will raise the total number of prizes to 1,020.

The reserved fund now amounts to 17,935*l.*

For the coming year, the Council have ready a plate finely engraved in pure line by Mr. Sharpe, from the painting in the Royal Gallery,—companion to the subject of the present year's print,—viz., "The Death of Nelson," by the same great master. To the English, always interested in anything relating to the sea and ships, and from the most affectionate feeling still clinging to Nelson's name, the subject is likely to prove perhaps even more attractive than the former plate, which it exactly matches in size. There is, without doubt, more action and greater variety of incident in the scene depicted. The central point of the picture, as a composition, is also the chief point of interest in the story told. Nelson, just wounded on the right side of the chest, lies supported in the arms of Captain Hardy, while Dr. Beattie, the surgeon, carefully seeks the position of the ball. Between the surgeon's face and Nelson's appears the handsome countenance of Lieutenant Ram, who was close by at the time. In front of Nelson is his favourite boatswain, holding one of the enemy's flags, as if in reply to his question, "How many flags have been taken, Hardy?" Without some explanation it is not easy to understand the exact position of the ships engaged. Nelson had driven his ship right between two of the enemy, and over the bulwarks of the *Victory* is seen the broadside of the *Redoubtable*. To the left of the spectator is the bow of Nelson's ship, and about half-way between the central group and the prow of the vessel, extends a sort of breastwork constructed of the hammocks of the men ranged behind nettings. Here sailors are busy hauling at one of the mainsail halyards, with a view to disengage an upper yard of the *Redoubtable*, which has fallen and become entangled in the rigging of the *Victory*; several sailors are mounting the shrouds for the same purpose. Only a few of the men engaged are aware that Nelson is struck down, and so strong is the force of discipline, that, though some are whispering to each other of the fact behind their hands, yet the routine of duty is not delayed for a moment. A conspicuous object towards the right of the spectator, is the captain of a gun, just pulling the lanyard of the flint-lock, then in use. Close by, drawn in from the port side of the ship, on which the spectator is supposed to stand, is a gun being sponged out by the crew, the captain holding his thumb on the vent the while. In front, a rosy-faced powder-monkey, heedless of the carnage around him, trips along with a cartridge in his arms. The extreme care in the matter of detail, which we noted as being displayed by Maclise in his Wellington and Blucher picture, was also remarkable in his studies for this subject. The old carronades of Nelson's time were of course quite out of use when this picture was composed, but, after much search, one was found in the dockyard, and it was fitted up with the proper breech-tackle, carriage, flint-lock, and everything as nearly as possible the same as those on board the *Victory*. The flint-locks were very liable to get out of order, or become damaged by shot in action, and to guard against the evil results of such accidents, the captain of the gun had a horn of priming-powder slung round his neck, and a fuse ready for use, and further there was a bucket in which the fuse might be deposited after use, since much precaution was needed, where powder, cartridges, and open magazines were all around them. On the top of the poop is the young midshipman who shot the man in the mizentop of the *Redoubtable*, who struck down Nelson. It is said that the English marksmen kept so strict a watch on this point, that not one of the men who occupied the post came down alive. The great variety of expression, of action, of incident, is most striking in this picture. No two groups are alike, and there is not the smallest symptom of staginess or attitudinising, though ordinary designers might well have fallen into these faults. There is nothing obtrusive in the composition, but the perfection of generalisation is combined with the utmost elaboration of detail. The plate has employed Mr. Sharpe for five years to engrave it, and there is no room to doubt that its success will be at least equal to that of the companion print.

We would now address a few words to those who have the good fortune to draw prizes to-day. A most remarkable fact, at the present moment, in reference to works of art, is the unprecedented amount bid for water-colour drawings at some recent sales. Whether the prices which have been obtained, are altogether indicative of a healthy state of public judgment, or whether they are due to an artificial inflation, which may, at any time, collapse, is a matter on which much might be said; but, at any rate, there is no doubt that at the present time there is no more satisfactory investment than paintings, whether in oil or water-colour; but an indispensable condition is that the money be judiciously laid out.

At a recent sale at Christie's a drawing of Loch Awe, by Copley Fielding, which was selected by a prizeholder of 80*l.*, in the year 1850, was sold for 892*l.* 10*s.* Of the other works by the same master,—by David Cox, Dewint, and others, it is an astonishing fact that, as a general rule, they brought from five to ten times the amount which the artists themselves originally received for them.

The practical conclusion is that fine works in water-colour deserve more attention than they have generally received from prizeholders in this Society; and the Council would urge those who gain the privilege of choosing works for themselves, to look at pictures in water-colour, as well as in oil, before deciding.

It is, of course, most desirable that works gained as prizes should be kept by the owners, as objects of continual delight and instruction; but, as it must sometimes happen, that, through death or other causes, such works have to be sold, it is evidently desirable that they should be selected so as to represent as nearly as possible the amount paid for them.

Lord Houghton, in moving the adoption of the report, expressed his regret at his unavoidable absence last year, and touched on one two of the topics discussed in the report. He referred to the death of Mr. Foley, the honour of whose acquaintance he had. He was a gentleman of the most genial disposition, and no one was more regretted by the members of his own profession. In this country sculpture was, on the whole, so unremunerative and accidental a profession that the loss of so great an artist as Mr. Foley,—a man with so much heart and so much generosity,—deserved to be profoundly regretted. The prizes to be given away that day were so very numerous that many present would go home with the satisfaction of having received a prize; but even those who had not been fortunate enough to obtain a prize would have their sorrow mitigated by the beautiful print which would be given away. In reference to the large amounts now paid for works by deceased as well as living artists, in comparison with the sums received for them originally, he remarked that it was one of the necessities of the day that people engaged in business should make enormous fortunes, and that he did not think any more worthy or commendable mode of spending their money could be devised than the purchase of fine works of art; and that this should not be any discouragement to artists of the present day, as they might be assured that if they could arrive at the point of producing magnificent works they would be magnificently rewarded.

Mr. Godwin, in seconding the adoption of the report, remarked on the great interest of some of the points noted. In reference to the great success of the print of Wellington and Blucher, he pointed out how much care and judgment on the part of the council was required in undertaking so large a work; that years had been passed in producing the plate, and years more in printing. Without the aid brought by science to art in producing several *fac simile* copies of the plate it would have been impossible to print the number of impressions required. In reference to this matter also he stated what was probably known to few of those present who perhaps supposed the impressions were struck off by thousands in an hour, like a newspaper, whereas in fact every single impression required an average of fifty minutes for its production. As to this plate and its companion, the "Death of Nelson," he thought their appearance most opportune, for, at a time when all the nations of Europe were unhappily getting up enormous armaments,—these prints going into every quarter of the globe where English men and English women were to be found, would recal heroic times in our country, and would lead to an assurance that, seeing what Englishmen had done in bygone times, Englishmen would still be ready to do when the need should arise. In reference to the munificent bequest of Sir Francis Chantrey, by which the large sum of 3,000*l.* a year would be available for the purchase of works of English artists, he expressed a hope that no obstacle would be found, in the terms of the bequest, to the employment of the fund in giving commissions to artists as well as in buying finished works, so that our public places of resort,—guildhalls, courts of justice, market-places—might be adorned with works of art to interest, instruct, and elevate the great masses of the people.

A vote of thanks to the Hon. Secretaries, and Mr. T. S. Watson, was proposed by Professor Donaldson, and seconded by Mr. William Smith; one to the ladies who were to draw the prizes, by Mr. Bennoch, who gave some curious and interesting statistics, showing the marvellous number of persons all over the world to whom the productions of this society had been distributed, as objects of delight and instruction, and the drawing for prizes then followed.

The following is a list of the principal prizeholders:—

250*l.*—Howe, W., 107, Fleet-street.
200*l.*—Pooley, C. J., Ancoats.
150*l.*—Cushen, H., Mile End-road; Dobell, J., Cheltenham.
100*l.*—Broadwater, R., 3, Billiter-square; Chorlton, E. A., Warrington; Walters, H., Stock-cross-road; Sidebottom, Miss, Hollingworth.
75*l.*—Alexandra, Mrs. W., Barcelona; Arnold, J., Tufnell Park; Brumell, Dr., Morpeth; Badden, J. L., Fenchurch-street; Frank, W.W., Railway Clearing-house; Goode, J. J., Clerkenwell-green.
60*l.*—Blair, J, Dundee; Bryant, T., Upper Brook-street; Coupland, E., Plumstead; King, Jas., Cloudesley-square; Wardle, H., Burton-on-Trent; Wilson, Jas., Glasgow.
50*l.*—Basston, C., Invercargill; Beckett, T. W., Willow-walk; Bromwich, J., Birmingham; Harvey, J., Bishops Stortford; Lee, J., Lorrimore-square; Moll, F., St. James-street; Schroder, J. M., Manchester; Sampson, Sam., Crown-hill,
45*l.*—Arlidge, Dr., Newcastle-under-Lyme; Constab
A. H., Ballarat; Furnnell, P. W., Loughborough-pa
road; Hart, J., Deloraine; M'Cool, George, Derr
Pentland, C. A., Quebec; Perry, W. R., Walbroo
Saunders, J. H., Hay, New South Wales; Wils
W. F. A., Maida-hill; Wood, J. C., Abbey-road.
40*l.*—Bond, A. H., Frederick-street; Bracher, C
Alton; Carr, C., Hulme; Crump, E. H., Railway Clear
House; Fletcher, E. W., Islington; Fragley, J., Bank
England; Fleeman, J., Kippax; Kay, James, Sto
bridge; Parker, J. J., Orange, New South Wale
Troughton, E. Z. S., Douro-place.
35*l.*—Anderson, J., Margaret-street, W.; Boam, J.
Litchinch; Budds, George, Sandhurst; Caswell, C., Ho
castle; Edmunds, Admiral, Albany; Grissell,
Montague-square; Harrison, James, St. Martin's-la
Jameson, J. A., Hull; McDougall, J., Greenock; Pl
pott, Rev. R. S., Mendip; Ritchie, W., Dundee; Shar
C. S., Lombard-street; Sherrard, G., 33, East-stre
Smith, W., Upper Mitchem; Taylor, G., jun., 78, Bish
gate Without; Watson, W., Brierley.
30*l.*—Cattans, E., 33, Mark-lane; Cuff, H. D., Lem
street; Day, G. K., Monkroyd; Emery, J., Wals
Farmer, D., Peckham; Freake, C., South Kensingto
Geuties, T. L., Derby; Haynes, G., Bower-terra
Maidstone; Hawkes, H., Preston; Jackson, Mrs.
East Acton; Kerkham, J., Lynn; Larmack, J.
Victoria; Leiper, R., Sunderland; Yerstoun, Mrs.
Cheltenham; Smith, C. J., Newport, Monmou
Valentine, T., Maryborough; Watson, R., New Nor
road; Wilson, Sir James, Hobart-town; Wolffga
E. G., Lee; Zeuner, J., Arkansas.
25*l.*—Allinghara, J., Gravesend; Blunt, Mrs.
Balsarat; Clerisceau, P., Port Louis; Coke, R.
Chesterfield; Daniel, J. H., South Molton-street; Eva
G. F., Hobart Town; Fielder, H., Christchurch, N
Zealand; Hamilton, Sir Jas., Belfast; Jacobson,
Frederichstadt; Leigh, J., Birmingham; Lock, J.
Booksellers'-row; Morris, J., Blackheath; Ogle, M.
Maryborough; Peacock, L., Port Elizabeth; Slo
Miss A., N. Lofen; Tetley, W., Thirsk; Webb, F., C
donian-road; Roberts, Albert T., Barcelona.
20*l.*—Ansell, H., Upper Norwood; Berkeley, M
Worcester; Briggs, I., Sandal; Carpenter, Rev.
Bournemouth; Court, J. F., Birmingham; Crosley, La
Somer Leyton; Da Souza, J., Oporto; Davies, Jn.
East Greenwich; Dean, T., Batley; Garpett, H., Crefe
Jacob, T., Haverstock-hill; Lewis, J. D., Aberaw
Maddox, J., Hampstead-road; Matthews, T. R., C
bridge; McGillivray, F., Lanark; Parker, Rev. J.
Bedale; Robinson, D., Uxbridge; Stevenson, J., Chel
ham; Shand, A., Liverpool; Sykes, Reg., Brooklyn.
15*l.*—Allcock, Mrs., Stockwell Park-road; Baird,
Thornhill-square; Barchard, T., Brighton; Brooke,
Broomagrove; Bull, W. B., Newport Pagnell; Chiffe
F., Cursitor-street; Chubb, G. J., St. John; Clen
C. H., St. John's-wood; Cornwall, Dr., Sydenham-
Davey, J. F., Diamond Lake; Everall, H., Shan
Freeman, H. E., Woodstock-road; Geere, M., Sitt
bourne; Harry, T. F., Mossel Bay; Kedgely, H.
Borough Market; Lock, J. W., Booksellers'-row; L
José, Barcelona; Martin, Bros., Warminster; Mar
E. F., Blenavon; Martin, W., Acklington; Nuttall,
Westbourne Park-terrace; Orchard, Miss, 44, Bol
road; Perry, Parker, W. Fording Bridge; Perry,
Ropemaker-street; Raby, J., Kirkham; Randall, P.
Bridgend; Rohrs, J., Tokenhouse-yard; Shaw, J., Bu
Teale, G., Preston; Wallace, H., Gateshead.
10*l.*—Ambrose, J., Framore; Arbos, F., Barcelo
Ashby, G., East Deane; Back, T. E., Dover; Coleric
Rev. E., Mapledurham; Dudfield, T. B., Shanghai; Ka
G. J., Sydney; Easty, C. W., Glengall-grove; Edmo
T. W., Hunter-street; Fitzlarding, C. B., Dubbo,
South Wales; Forest, A. R., St. Paul's-road; Gerli
T., Utrecht; Hall, —, St. Helen's; Hill, James, Ban
leer, South Australia; Mellish, G. L., Christchurch, N
Zealand; Moore, R. S., Plymouth; Morris, W.
Geelong; Roberts, R. N., Dorban; Shand, A., Liverpo
Smith, Clement, Taunton; Stock, Mary Ann, Geelo
Taylor, J., Exeter; Trotman, F. H., Brixton; Ure,
Montreal; Vivash, W., Adelaide; Watkin, Dr., Glasg
Woods, G., Southport; Wright, W., Minshulchurch.
A Bronze Statuette "Cimabue."—Carr, H., Plaist
Cockcroft, R., Bradford; Foster, R., Sunderla
Jiminez, R., Port St. Mary; Mellor, J., Rudderdi
Mellor, J., Cheapside-alley; Paterson, J., Coleman-ro
Turner, W. J., Finsbury Park; Waldy, Rev. J., Chel
ham; Wilson, H. C., Prestwich.
A Copy in Bronze of the Nelson Column.—Ducasse,
Angouléme; Wetenhall, H. P., Warnford-crescent.
A Copy in Bronze of the Townley Vase.—Hunt, J.
Cradley; Paterson, Miss, Melbourne; Shiver, F., Chel
ham.
A Statuette, "Net-Mending."—Allen, Wm. H., Thar
Avery, J. Redditch; Barrett, H., Haverstock-h
Booty, E., Creswick; Buffet, Mrs., Lee; Colby,
Malton; Corbett, Miss, Camden-road; Cox, T.
Melbure, U.S.A.; Dakeyre, D., Leek; Danceley, D.
Conduit-street; Davis, W. G., 191, Strand; Davis, Mrs.
Birmingham; Walldon, T. S., Monte Video; West
W. J., Westbourne-terrace; Weitehall, Colonel, Bright
Wilmot, A., Port Elizabeth; Young, W., Brixton.
A Roberts Medallion in Silver.—Abbott, F., San Fr
cisco; Allen, J., Ashby; Baxter, F. J., Green-stre
Brit, W., Dover; Bickford, J., Ashburton; Bro
J. G., Roehampton; Clark, Mrs., Emsworth; Dangu,
New South Wales; Mrs. De Keyzer, Blackmars; De
A., Dunedin; Dowsett, W. J., Hobart-town; Game,
Melbourne; Gray, Wm., Springville, Cork; Grenwood,
Preston; Gurney, G., Dulwich; Hartnall, Mrs.,
James's-street; Haslop, J. A., Islington; Keary,
Sydney; Kenning, C. H., West India Docks; Le
W. F., Newport; McKenzie, W. E., Clapton; N
W. C., Lewisham-road; Penberthy, E., Hilston; Phi
P. W. C., Collingtree; Saxton, C., Gloucester-ro
Sharp, W., Birmingham; Williams, B. F., Routh; W
ston, T., Rhyl; Wood, J., Loughborough; Wood,
Oldenburg.

AN ADDRESS AT A SCHOOL OF ART.

SHEFFIELD.

THE annual meeting of the Sheffield School of Art was held on Friday, the 23rd of April, Mr. William Bragge, F.S.A., presiding. The chairman opened the meeting with some pleasant observations, and introduced Mr. George Godwin as having travelled from London at the request of the committee, to deliver the prizes and make an address.

Mr. Godwin, in the course of his observations said,—When first invited to come from London and assist on this very interesting occasion, I did not feel certain that sufficient good could result to justify me in spending the better part of two days on the rail in order to be two hours with you. But it afterwards occurred to me that the visit might, at any rate, have the effect of showing that there are some who are earnest in the belief, that it behoves us all to assist to the utmost the efforts now being made throughout the country to induce the extension of the study of art. Personally it affords me much gratification to attend here. I have long known of the work that has been done in this school, and, as the cradle of Godfrey Sykes, whose career in London was too early cut short, it has a further claim on all who are interested in decorative art.

The Report presented at the end of last year showed an increase in the number of students, and improvement in other respects. Still I cannot say that the number, 292, is satisfactory. In so large and important a town as Sheffield the number of students should surely be much greater, and would be so if the value of the instruction here to be obtained were fully and widely appreciated. One part of the Report, namely, that which shows the increase in the number of students who have produced designs and good drawings of ornamental work, is very satisfactory. The discovery that there was actually a decline in the number of skilled art-workmen in any of the Sheffield trades naturally led the Council to encourage students to take up more earnestly those branches of study, and the improvement referred to was the result. There must be no relaxation in this direction, if Sheffield desires to maintain her position. The importance of such a fact, and of the necessity for such steps as may tend to increase the artistic skill of her workmen, cannot be too strongly dwelt on, and should lead all the manufacturers, indeed all the far-seeing inhabitants of the town, to seek a conference with the council of the school with the view of adopting such measures as would tend to correct the evil. Depend upon it this is no trifling matter: the interests of the town are at stake.

The endeavours that are being made to establish a branch of the school of art, for elementary teaching, in each of your Board schools, should be aided. One, I understand, is at work and doing well; a second is about to be started. Let us hope that, before long, a branch school of art will be established at every Board school. It is not to be contented with hoping, but try to bring it about. One great part of education is to awaken perceptions. In what way can this be better done than by teaching how to perceive. The man or woman who can draw sees everything more immediately and more completely than one who cannot, and gets more information and more pleasure out of it. Of this word "pleasure" I shall speak again presently. The value of pleasure, the desirability of affording pleasure, is a strong belief with me. And if its correctness be admitted, it follows that we should do all that in us lies to adorn life,—to make art more part of it; to render buildings handsome and harmonious; to set up fine pictures and statuary where they can be seen by all; and to beautify everything. Some have sought to contrast the useful and the Beautiful, and to speak of the latter as if it were an unnecessary luxury. Why, what can be more useful than the beautiful? What can be more useful than to gladden the eye and heart,—to fill the mind with harmonious and refining thoughts,—to make people happy and contented, and help them on to be good? When this is more fully understood than it is at present, Government and governing bodies generally will feel themselves able to aid less grudgingly than now, and we shall not find our large towns so utterly without works of art open to the public, as, for the most part, they are at this time. Sheffield should have a public picture-gallery, and it surely would have one with little delay if public opinion on the subject were once roused and clearly expressed. The newspapers have lately spoken of large sums of money munificently contributed by citizens of Sheffield for the benefit of the town, and funds to erect a fitting gallery, and pictures and statues to fill it, would soon be forthcoming if they were seriously asked for.

Amongst the good things which are contemplated, I hear of the foundation of university buildings by one of your fellow-townsmen, the presentation of a women's hospital by another, and the progress which is being made with the Museum, which will contain, amongst other things, Mr. Bragge's fine collection of works in metal.

A museum is a silent lecturer, and, especially when it consists of objects allied to the manufactures and pursuits of the locality, will often produce effects little expected. I remember hearing the late J. M. W. Turner, the greatest landscape-painter we know of, say that it was the contemplation of an engraved silver salver belonging to one of his father's friends, and the rampant lion on which he was led to draw, that first inspired him with a love for art.

> "Our sleeping visions, waking dreams,
> Receive their shape and hue from what
> Surrounds our life."

A chord often is struck when least expected, and the world is made all the better because one mind has been awakened by the work of another. Our governing bodies are not so alive to this fact as they should be, and no other proof in defence of this assertion is needed than the armoury in the Tower of London. We have there a collection of arms and armour of great interest and value, in some respects, indeed, unique, without a single person in charge of it who knows anything of the subject, or who is competent to increase it when opportunities offer. The result is that fine specimens are allowed to leave the country, there being no one at the Tower able to judge of their value and arrange for their purchase. Abroad, as at Turin, for example, the national collection of armour is finely housed, and every facility is afforded for the study of it. I mention the Tower armoury in particular as an instance of neglect, because in Sheffield, the capital of steel, it ought to have peculiar interest.

Apart from the value of delight, apart from the effect of art in refining and elevating life, the material value of art to a country is immense. Look to the crowds of pilgrims taken from all parts of the world, year after year, into Italy, for example, by the fame of those grand works with which preceding centuries have endowed her. Look to the noble heritage left to our own country by the Middle Ages in the cathedrals and churches, full of beauty,—"sermons in stones,"—with which the land is studded. It is marvellous the interest with which every piece of stone, glass, and metal, every piece of furniture,—a lock, a chest, a lamp, a tobacco-pipe,—no matter what, the produce of particular periods, is regarded: technical skill, imagination, humour, feeling, have all been enlisted in their production, and have led to this result. We moderns have fallen back in this respect.

For how few of such works produced in the present time will any admiration be expressed hereafter? They are useful, but without that highest sort of usefulness, beauty. A spirit, however, has been awakened, and if the schools of art do their duty, we may hope to see a change in this respect. A manufactory of artistic pottery, for instance, is growing up in Lambeth mainly due to the existence of a school of art there, combined with the spirited and enlightened views of the heads of the establishment, and we ought soon to find similar outcomes elsewhere. Why should not the metal work of Sheffield, besides being as it is the best in the world in respect of temper and power of endurance (great qualities in life as well as steel), become also the most beautiful? To bring this about, however, the manufacturers must feel its importance and afford their loyal aid, not merely by financially supporting schools of art, but by watching the results and giving their hand to such students as may fully have benefited by the means of education provided and show the necessary aptitude and ability.

England has paid, and is now paying, very dearly for neglecting to provide artistic education for the people. Thousands and scores of thousands of pounds are still sent out of the country annually for designs which ought to be obtainable here, and all our leading silversmiths, decorators, cabinetmakers, and other producers of artistic works, find it necessary to employ foreign assistants.

I have been through the objects to which prizes have been awarded, and confess to having been exceedingly gratified. I had been led to anticipate that the school scarcely held the same position that it did two or three years ago. Probably the prizes obtained are not so high in value, and the premium for results given to the master is not quite so high as it was a few years ago; nevertheless there is in the drawings a more than average amount of merit and originality. It has happened to me to see a good many of the schools of art, and I have no hesitation in saying that the ladies and gentlemen who are to receive prizes deserve well of the town for what they have done. With respect to the lamppost, for which the Norfolk prize has been awarded to Mr. C. E. Wilson, I hope some arrangements will be made whereby it will not be allowed to rest simply on paper. Several of the ladies seem to me to have done exceedingly well. Alluding to the offer of Dr. Ryalls, for the best design for an illuminated address, I would say, Dr. Ryalls has done what it is to be hoped every Sheffield man will do—he has, when a design was wanted, recollected his own town and the school of art in it.

We often hear, especially in London, of the want of fitting employment for females; and in making various suggestions on the subject, it has occurred to me to urge on many occasions that the production of shell cameos is well suited to the object in view, and might be very profitably pursued. When I first inquired into the matter, some years ago, it was found that more than 100,000 shells were used for cameos in Paris annually, and mostly came to England, whence, after being mounted, they were largely exported to America and our own colonies. The suggestion that some of our female art-students should turn their attention to this very elegant sort of employment has not been wholly without fruit, and I hope to be pardoned for repeating it.

There is another branch of art work which, as it seems to me, might be usefully pursued to a much greater extent than it is,—I mean carving in wood. The extent to which this is practised amongst the Swiss peasantry is well known. Hundreds of families execute carvings of a particular sort by their firesides, and so materially increase their income. Men, women, and children handle their knives with wonderful facility, and children through this teaching acquire special qualifications for becoming first-rate carpenters, stone-cutters, and decorative painters. In America an endeavour is being made to extend the practice of wood-carving, and your energetic and eminent president, Mr. Bragge, has shown me photographs of doors, skirting boards, chests, and picture-frames, ornamented with carvings by a female class, established for the practice of the art in Cincinnati, and which he has himself recently seen in operation. Why should there not be a class for wood-carving in the Sheffield School of Art, and ultimately in every Board School in the town? We have rare woods of all kinds, and plenty of mechanical skill, and the country might thus be ultimately endowed with a new and profitable branch of industry. If your committee should be led to establish such a class, to inaugurate this movement in England, it could scarcely fail of success, and I should ask permission to offer a modest prize, say ten pounds, to be given to the executant, male or female, of the best and most artistic piece of carving produced in the first year, the work still remaining the property of the executant. I need scarcely say that the true principles of ornamentation must be studied by those who would practise the art, or the results would be disappointing and damaging. *Apropos* of this suggestion, it will doubtless be remembered by many of you that our great portrait-sculptor, Chantrey, began his career by practising the art of wood-carving in this very town, and gradually worked upwards from that to wide fame and large fortune.

A distinguished man, much prized by Sheffield, has lately objected, I understand, to the suggestion often made to workmen that the cultivation of their faculties and the acquirement of knowlege or skill tend to their advancement in the social scale, maintaining that men and women should remain satisfied with the state of life in which they find themselves. I must confess myself unable to agree wholly with him in this. Knowledge and skill are good for their own sake, and bring their own reward; but they also do assuredly afford the means of worldly advance-

ment, and I can see no valid reason why this should not be well understood and acted upon. I believe in the value of aspirations. We must strive for the higher or we shall sink to the lower.

I must hasten, however, to conclude or I shall exhaust your patience.

But speaking here on the 23rd of April, I cannot sit down without brief allusion to the great master of all arts, the many-sided Shakspeare, who has given painters and sculptors an infinity of subjects, and filled our minds with sweet views of every sort of experience, and every kind of human knowledge. In Shakspeare, imagination and common sense worked side by side; his industry was as remarkable as his genius, and he has taught amongst a thousand other things that,—

"There is no darkness but ignorance."

This too is St. George's Day, and I will take it as a good augury. England has often fought under the banner of St. George. Shakspeare makes Richmond exclaim,—

"Advance our standards, set upon our foes,
Our ancient word of courage, fair St. George,
Inspire us with the spleen of fiery dragons."

Let us advance *our* standards. The foes we would set upon are Ignorance and Apathy: powerful foes they are. The objects we fight for are Culture and Progress,—the general refinement, the general elevation, the general good.

A cordial vote of thanks, moved by Mr. Hobson, and seconded by Mr. Hadfield, was passed, the various prizes having been first delivered to those who were entitled to them.

The following is a list of the chief prize-gainers:—

LOCAL PRIZES.

The Duke of Norfolk's Prize of 21l.—Awarded to Charles Edward Wilson, for the best Design for Street Lamps.

The Mayor's Prize of 10l. 10s.—Awarded to Stuart Thorpe, for the best Set of Anatomical Studies.

The Master Cutler's Prize of 5l. 5s.—Awarded to Stuart Thorpe, for the best Design for a Newal-post and Balustrade.

The Atlas Works' Prize (Antique) of 5l. 5s.—Awarded to Charles Wilson, for the best Drawing or Model from the Antique.

The Atlas Works' Prize (Life) of 5l. 5s.—Awarded to Henry A. Tyzack, for the best Drawing or Model from the Life.

The Montgomery Medal.—Awarded to William G. Hall, for the best Drawing of Flowers and Foliage from Nature.

A Special Prize of 5l., offered by C. W. Ryalls, LL.D., for the best Design for an Illuminated Address.—Awarded to John Fanshawe.

NATIONAL MEDALS AND PRIZES.

Awarded for Works in competition between the Works of all the Schools of Art in the Kingdom.

Miss Rose Helen Mawson,—*National Bronze Medal*,—For a Painting of Ornament in Sepia, from the cast.

John Marsh Benson,—*National Bronze Medal*,—For a Painting of Figures in Sepia, from the cast.

Miss Ellen Gilmour,—*National Book Prize*,—For a Set of Designs for Cups and Saucers.

Miss Lucy Holdsworth,—*National Book Prize*,—For a Painting of Flowers in Water-Colours, from nature.

Charles Edward Wilson,—*National Book Prizes*,—For Designs for Street Lamps; also, for a Painting of Figures in Sepia, from the cast.

THE CHURCH OF ST. FRANCIS, ASSISI.

CONTINUING the notice of the paper read at the Royal Institute of British Architects given in our last issue,* Mr. Beavington Atkinson went on to say:—With regard to the painted decorations, he premised by stating that he used the word "fresco" merely as a generic term; for, strictly speaking, there were no frescoes, the process being secco. And, just as in the architecture they encountered a conglomerate of divers styles and masonries, so in those wall-paintings there was a medley of masters, and a succession of pictorial strata. They all knew of the practice of clearing away prior frescoes for later. Thus, in the Sistine Chapel, a field was found for the genius of Michelangelo; a like destruction and renovation from century to century might be traced on the walls of the Lower and Upper Church. First came Giunta, of Pisa, who was still under Byzantine bondage; next followed his pupil Cimabue; then a clearance was made for a third generation, under Giotto; afterwards followed Giottino, and other pupils. These painters represented the Florentine school in the two churches. But the desire to secure the best talent of the day naturally led to the employment of the leading masters in the rival school of Siena; accordingly they found on the walls frescoes by Simone Martini, commonly called Simone Memmi, and of Ambrogio, or Pietro Lorenzetti. Many of the compositions had suffered grievously from decay and from restorations, and some having been entirely swept away, were replaced by later works in the worst taste. As a rough estimate, the two churches contained from four to five centuries of frescoes, and it would be easily understood how difficult it became after this lapse of time to distinguish with certainty the authorship of individual works, especially as the greater number were either wrecks or restorations. Giunta merged into Cimabue; and he in turn was easily confounded with his immediate followers. Like perplexities beset Giotto and the masters of Siena. Unfortunately, contemporary documents were wanting; the monks were not chroniclers; and Vasari, as usual, fell into errors which long obtained unquestioned currency in the art literature of Europe. Latterly, as they all knew, a more critical spirit had prevailed; unfortunately, the ambition of each successive student had been to introduce a new nomenclature, often little more than guesswork. Assisi had been in this way so specially favoured that the pictures in general were ascribed to two or more authors. The wall-pictures in the Lower and the Upper Church, owing in part to persistent destruction of old work, and the interpretation of new, admitted of no consecutive chronology. Thus, 200 years divided adjacent chapels. It was evident, however, that as soon as the mason had laid aside his trowel, the painter came with his brush, and therefore, the Lower Church being first built, it might be reasonably supposed that there the frescoes were of the earliest date. This was true of those which remained on the nave, the probable date being the first half of the thirteenth century,—the style accorded with that period. The authorship of these works would probably, in the absence of documentary records, ever remain in dispute. Mere internal evidence could scarcely decide between the tribe of Byzantine painters, on the one hand, and Giunta and Cimabue, on the other; the fact, in Mr. Atkinson's opinion, being that Byzantine art had been unfairly decried, and the reformation wrought by Cimabue too greatly magnified. Signor Cavalcaselle argued against the probability of Greek artists having been employed. This might perhaps be strictly true, but Italian artists, working in the manner of Byzantines, would produce almost identical results. In fact, in the face of these designs, it once more became evident that the generic manner went far more than the individual master. A comparison must be made between these frescoes and the mural paintings in the mother church of Pisa, planted in the plain, half way between the city and the sea. In the presence of these compositions in Assisi, he could not but feel how much had been lost in the total overthrow of the Byzantine manner. The figures stood firmly as columns, and the draperies were cast into broad symmetric folds, not very remote from Classic originals. In colour and in decorative service the school was acknowledged to be supreme. Respecting Cimabue, nowhere could this grand and even creative master be so well studied as within these twin churches. Cimabue painted in the transepts of the Lower Church, also in the transepts, on the vault and side walls, of the Upper Church. Of great nobility and beauty was the Madonna, with child and angels, still preserved, amid general clearances, in the south transept of the Lower Church. He was inclined to think that about two-thirds of the Lower and the Upper Church were covered with frescoes by Cimabue and his immediate forerunners and followers. Possibly, indeed, the whole was thus decorated, for it was hard to believe that in those days of religious enthusiasm the great sanctuary should have remained unfinished for even half a century. And yet the next epoch, that of Giotto, was probably separated from the former by more than half a century. Indeed, Giotto was not born till forty-two years after the Under Church was finished. In the Lower Church, to Giotto and his scholars were assigned the vault over the high altar, the greater part of the south transept and two adjacent chapels, and in the Upper the best parts of the nave. These pictorial creations were almost too well known to need description, even did space permit. They were copious in idea, symmetric in distribution of the figures, and, compared with Byzantine art, light and animated in tone and colour. If they had a fault it was one perhaps inseparable from the system; they were, he thought, open to the objection of being too much of the nature of easel pictures, just hung to the wall; but this exigent criticism would strike at most moral decoration, save that of the ceiling of the Sistine. Among all the works of Giotto, none showed more creative genius or technical power than the three vows of St. Francis on the vault of the Lower Church. The Sienese school had a shorter career at Assisi than that of Florence; it was limited to the fourteenth century, and the space it occupied did not extend beyond the north transept, small portions of the south, and the chapel of San Martino, all in the Lower Church. The paintings in the chapel were for drawing, character, and perspicuity of narrative, among the most mature works of Simone Memmi, now called Simone Martini. The Sienese seemed to have been required to conform to the already existing Florentine system of decoration: accordingly, he was sorry to say, they surrendered one of the most distinctive characteristics of the school—that of a gold ground. In Assisi, as in the Arena Chapel, the scale of colour conformed to the more naturalistic and less decorative background of blue. In the restoration the greatest difficulty had been to know what to do with the amazing mass of frescoes. They presented different stages of decay, amounting in many places to absolute destruction. Some had crumbled wholly from the walls; others were so far obliterated that the subjects could hardly be deciphered at all, while scarcely a single composition remained without the loss of a head, hand, or an entire figure. To enumerate a tenth or a hundredth part of the pictures ruined in Italy would occupy time to dreariness. The plan and process he would adopt with regard to the matter would be as follows. He mounted the scaffolding in the Upper Church and there found workmen steadily operating upon the frescoes of Cimabue, under supervision. Where a large piece of wall had fallen into rottenness and bee denuded of its picture, it was simply cut out an replaced by sound cement. Again, where on a part of the intonaco was in decay a chisel r moved the crumbling mortar, and a trowel p placed the void by a firm material which boun the surroundings together as by a wedge or plug. The process it might be observed w honest, the new mortar was so coloured as speak distinctively for itself. Next and chief these parts had been operated upon, fortunate very considerably, which, though in decay a threatened with destruction, were still capab of preservation. He might observe that th malady which afflicted these frescoes was o common to the whole genius of wall painting The surface, or pellicle, of the picture rose in blisters, the mortar became disintegrated a ready to fall down on the floor as dust, thus t entire work must speedily die if left to i disease. For the purpose of fixing these flyin particles and fleeting paints, some glutinous flu was infused; and then surface pressure applie gently but firmly, brought the picture once mo soundly together. Furthermore, the fresco were refreshed, the dust of ages was cleared a by means of simple water and a soft brush; tha finally, some fixing medium was washed over t surface, which, when sucked into the pores, re dered permanent the perishing particles. naturally concluded that this fluid medium w identical with the silicate known in Germa and England as watergiass; but he was assur that the process was both a novelty and a secr Somewhat the same medium, whatever it mig be, would be applied to the external stonewor not only for the purpose, as in the Houses Parliament, of arresting further decay, but also precluding the percolation of the rain and moistu which had proved, as might have been readi conjectured, destructive to the frescoes. T result of these operations, though not all th might be desired, was on the whole satisfactor Without the addition of colour, or the use o paint-brush, the frescoes were wonderfully " freshed"; and they were, moreover, placed permanence. In conclusion, he said in proce of time it was proposed to restore the wh convent, including the Hall of Musicians; and had been suggested that then the vast structu might, as a Lyceum, be devoted by the Gover ment to educational uses. Perhaps it was n too much to say that the works undertak could have no end; for structures of this ma nitude, especially when old, must ever be und the process of restoration, as a means of pres vation. At Assisi an architect and a caretak of the pictures should always be on the sp Aptly had the churches and monastery of Francis, in their present dilapidated state, be compared to a chronic invalid, who needed to constantly in the hands of a medical man.

* See page 362, *ante*.

Mr. Halliday stated, that the opinion he had rmed while at Assisi was, that the paintings in e lower gallery were quite beyond everything at he had ever seen.

Dr. Barlow had been considerably impressed th the painting of the Madonna and Child, of mabue, when he visited Assisi thirty years ago e believed there was no better place to study the story of art than at the Church of St. Francis.

Mr. Crace was of opinion that the paintings re not fresco, but secco, because at the time sco paintings were not in vogue. He con- lered that the Upper Church of Assisi was a luable specimen of the art of distributing lour, and was worthy of notice by architects.

The President said that the architecture con- cted with the buildings was a wonderfully act testimony to history. The view taken that e church had been built by a German archi- t, as distinguished from a French or any ier architect, was quite clear, as they knew e distinction between French and German chitecture, for there was a distinct feature in rman architecture by which it could be deter- ned at once. He believed that the mural de- rations, apart from being high class paintings, re well worthy of study by young architects.

SEA-SIDE TOWNS: PORTSMOUTH AND ITS ARCHITECTURE.

MANY, many things are said, here most cer- nly, in these days, to make things *architectural* iner and still more plain, to the genral public e and general intelligence. But little has en missed, but there are things which every w and then occur to us that seem to have at e moment at least a novel interest, and which ve not been prominently touched on. One of ese is the "architecture," special in many ys, of sea-side watering-places. These will in a week or two again in the public eye, and ll be again for a time all the fashion, and those o go to them for long or short time are certain be at leisure to look about them with some erest and curiosity at all things about them ssessed of artistic interest. Nature and art re come together, and a wide enough field ens out to view. What is it that we specially e at a sea-side town, and is there anything ecial in the modern laying out and building of oh fashionable and exceptional places? With eir long rows of "terraces," huge hotels, and nart houses facing the water, all know pretty ll, even from prints, what a sea-side town is ke, and how it looks, and Turner employed no all part of his time and strength in depicting em;—in all sorts of weather, and under almost ery variety of aspect. It is indeed wonderful note how *much* he has made of them, and w diverse they individually look, considering at they as a rule really are. It is amazing to te what he did with them, and how he com- lled the restless sea itself to beat up to them, d about them, in a never-ending and infinitely ried way!

These or some such thoughts must needs ike every reflective observer who visits a ttering-place, wherever it may be, and nether,—and this is the first thing worth te ting,—the said seaside town be a quite new or old town with new additions and improve- nts. Let us take an example, and note down ew things worth record; such notes, slight as ey must be, may guide an excursionist here d there.

Let us cite the good old town of Portsmouth, d *new*, too, by the way,—for it is difficult now- ays to find a place wholly given over to age or t to itself. This time-honoured place, so full soldiers and sailors, and so famous in naval story and story, possesses all the characteris- s of a regular watering-place, though it is not e. As all know, it faces the sea, and cer- nly has right in front of it one of the prettiest ews to be found anywhere on the coast,—the e of Wight opposite. It would be difficult to d any spot of earth more happily placed for e purpose of looking at, than is this beautiful tle island, in relation to that part of the coast om which it is so well and pleasantly seen. he opposite town of Ryde, at times and under rtain conditions of atmosphere and sunlight, oks like a fairy scene, and is just that which rner, in his wildest moods, loved to gaze on weariedly, and to fix afterwards on canvas. here is most happily just sea enough between e Portsmouth coast and the island to give the e effect of distance. Hours may well be ent in gazing at the ever-changing scene.

But there is not only the distant prospect of the beautiful island to be found in the town of Portsmouth, but there is the town itself; re- markable, as we say, in very many ways, and most of all perhaps from the signs in it, every here and there, of the past, and also from its pre- sent thoroughly "fortified" condition—for the good town literally bristles with cannon. How an enemy could land, and where, will be the wonder of not a few who care to look and specu- late on such matters. A hostile fleet either of war-ships or open boats sailing up the Solent, or Spithead, must needs speedily come to grief, so eagerly do the ponderous guns point all ways, and command all approaches. We say nothing here of the ironclads, and gunboats, and "tor- pedos," nor even of the frowning forts, which stand in the middle of the sea between the town and the opposite island coast. If Portsmouth be indeed the sea-gate of England, it cannot be said to be unprotected. Yet, if we dare say it, there are spots on the coast not out of sight of Portsmouth town either, where as it would seem, a very *very* clever and cunning enemy might effect a landing without much hindrance from fort guns at least; such enemy, by the bye, being as we will suppose, very quick indeed in his movements.

It is impossible for us here, as a matter of course, to look on these things otherwise than artistically; and we cannot but contrast in our mind's eye the coast line of England in these times, with so many heavy guns of enormous size and weight frowning on the sea, with the every here and there a smart hotel, or a fashion- able row of houses, with that former condition of things when "fortifications" were so unlike to those that now are. In the old Norman days the "fortifications" were but simply stone-built castles, but fully as effective in their day, as powers of defence, as are the earthworks and artillery of the present. The Norman castle stood up high, and grey, and strong built, with loopholes for archers, and overhanging parapets, and must have well appalled an enemy who ventured within sight of it. Every here and there on the coast there still, as all know, exist the crumbling remains, or ruins, of these feudal castles, or strongholds. We sometimes doubt whether these really fine specimens of utility, and artistic skill, have as yet got their full meed of commendation, or even fair atten- tion. So thoroughly do they harmonise with the places where they are, with the rugged sea coast, and with the restless sea itself, that they almost seem as if built to fence the land against it. It is strange, too, and it is worth the noting, how much there is between the "fortification" of to-day and the strong "castle" of the Norman; the main ideas in reality being the very same. In the old castle there was the inner "keep," or strong square tower, the main and last defence of the whole place. This was surrounded by a thick wall, with towers at stated intervals to flank it, with an entrance-gateway with tower on either side of it, and which formed, perhaps, the most imposing part. It must have been a right courageous heart which did not quail as it passed under it. In the modern fortification all those arrangements are still to be found. In the great Cumberland Fort, close to the sea, there is an inner fort or keep, as in the old castle, and this is surrounded by a brick wall pierced with holes for the riflemen, and with a parapet for cannon, and with semicircular towers, or rather projecting walls, to flank it, and with a small, but hardly imposing, entrance gateway. It must be added, that in both cases huts and other accommodations for the defenders abut against the inclosing wall. There is a moat, of course, and some curious arrangements, not a little puzzling to make out sometimes. It is wonderful to see how very little is changed, gunpowder only excepted, and taking the place of *force* which drove the primitive arrow, whether large or small. So much for use and defence sake. But artistically there most surely is a wide gulf between the old and the new, for in these modern fortifications no sort of effort, or even momentary thought, seems to have been given to artistic, still less to *architectural* considera- tions. Whether of earth, or stone, or brick, there is not a thought of putting anything into an *artistic* shape. Not a single grand or im- posing line to be seen anywhere, and yet one can hardly imagine a case wherein there has been, or can be, better opportunity for it. Whether, indeed, it would be possible to rival in modern cannon-defended fortification the im- posing and solemn architecture of the Norman stronghold, may be a question, but still a some- thing. An approximation might well have been looked for. The cannons, huge and strong, solid earthwork and granite, *ought* surely to out-do, even artistically, the grey rubble and the bow and arrow; but they most certainly have *not* done so as yet. Portsmouth, it may be remembered, was once on a time the subject of no little con- troversy, and vast sums have been spent in the effort to fortify it. It was one of Lord Pal- merston's "defences" of the country, and Mr. Fergusson, and not a few others, skilful in such matters, talked not a little about it; but with all this the town has but a weak look. It is on the water, we are apt to think, that our real strength would be found to lie.

There is yet one other point of interest, and most instructive interest too, to be met with in the remains, to be made out with some difficulty, of the *past* generation lines of defence, long before rifled cannon were thought of. We allude to the remains of the town moat and wall, and gateway through it, the Key-gate, as it is called. There is but little left, but it is of interest, and shows what things were once like,—Norman days having long passed away. This special gate, by Inigo Jones himself, is well worthy of him. It is of Portland stone, and not unlike the well-known water-gate now buried almost under the Thames Embankment. The stone carving and cutting are admirably executed, and the whole gateway, with the little that remains of the wall, with the moat and tumble-down dull red brick houses behind it, a little ruinous some of them, have quite an antique look, and are right pleasant to look at after the newness of the railway side of the town. There are some fine old trees, too, hereabout, which do much to add to the quaintness of this part of the town. To those who need a little architecture when they go to get a glimpse of the restless sea, we com- mend this bit of Portsmouth to their notice, as combining more than one artistic and natural novelty,—for, to say the truth, things hereabouts have been a little neglected, and the word "restoration" does not seem to have made its influence felt. Time is necessary to bring even red brickwork to its full tone of colour, and this is only to be attained in these days in *neglected* places!

It is well to note that this old town,—for old it is, as well as new,—dates from very early times indeed; for it is mentioned in the Saxon Chronicle as existing in the year of grace 501. It was a naval station in the Roman time. It was here, too, that Henry III. got together a large army wherewith to invade France in the year 1256; and in 1377 an attempt was made by the French to take the town, and though the attempt did not succeed, a large part of the town was burnt. This led to the idea of fortifying it, originally begun by Edward IV., and which has been going on ever since; till now, as it is thought, it is all but im- pregnable,—the fortifications extending literally all round it. A good map of Portsmouth would be a desideratum as it now is, and another inte- resting, in an antiquarian sense, of the town when Inigo Jones did his work in it, and when the fortifications were so widely different in character and appearance. Inigo Jones was indeed a master of his craft, and though the work here by him is little enough, it does but serve to show how well he worked, and how much cause there is to regret that he had but so comparatively few chances. It would be good vacation work for any architectural student to go to work, and make measured drawings of Inigo Jones's work here.

We may note the parish church, of interest to church builders and restorers; for it has a good deal of Renaissance in and about it. A good lesson may here be learnt, for to say truth, these "Italian" additions to a Gothic church do not jar against the original work, and the spirit of it, so much, or nearly so much, as the *newness*,—if we may use the term,—of more modern work. There is a good deal for the architectural student in seaside Portsmouth.

Liberal Donations. — Following up his recent handsome presentation of scientific prizes to the Manchester School Board and the Union of Lancashire and Cheshire Institutes, Mr. W. Aronsberg, optician, of Manchester, has written to the mayors of the principal towns in the two counties, presenting them with many thousand cases of drawing and mathematical instruments, to be awarded as prizes under the auspices of the school boards, mechanics' insti- tutes, and other agencies for the spread of instruc- tion. They have been gratefully accepted.

ANCIENT MONUMENTS AND HOW TO DESTROY THEM.

Whatever may be the future of Sir John Lubbock's Bill at present before Parliament for the preservation of ancient monuments, there is no doubt of the goodness of its intention. No antiquary or archæologist exists who does not earnestly hope against hope for its success. We have among us unfortunately too many who care for none of these things,—too many whose ideas concerning objects of antiquity run in the groove of a bygone alderman, who affirmed that the British Museum was mainly filled with marble heads without bodies, and marble bodies without heads, and was of opinion that they might be of some benefit if converted into lime. And, ranged on the side of these indifferents are those like the owner of Stenhouse Mill who was no *dilettante* either real nor pretended. He was simply a country gentleman who had *other* things to mind, and never moved out of the parish in which he was born, and in which he died an octogenarian. He it was who utterly demolished the celebrated Roman building named Arthur's Oon or Oven, which stood in the neighbourhood of Carron Ironworks. The building might have escaped destruction had he not been poor, possessed a numerous family of children, his income small, and a considerable part of it derived from the mill. So he pulled down the building, and turned the stones to profit in repairing his dam.

There are many villages and towns in Scotland which are monetarily benefited by the annual tourists who resort to their neighbourhood in order to inspect the remains of towers, and temples, and camps, and earthworks of the olden time, and yet they are as careless in their preservation of these attractions as are a large per-centage of the tourists themselves, who chip and chop all round, and thus carry away by piecemeal objects that thousands hold in reverence. The Boar Stone, a boulder of blue whin, beside which Bruce planted his standard at Bannockburn, would long ere this have disappeared, leaving no wreck behind, had not a strong iron grating been placed over it; the grave-stone of Flora Macdonald, which, not many years after its erection, was levelled to the ground and broken by the minister's cow, was, in spite of the abundant crop of nettles which surrounded it, almost entirely cleared away into the pockets of tourists; what little wood was left of Alloway Kirk and Wallace's Oak was seized upon by snuff-box manufacturers; and, as an example of pilfering on a large scale, it is only necessary to refer briefly to the story of Trinity College Church, Edinburgh. This church was founded in 1462 by Mary of Guelders, widow of James II., and was a beautiful example of the ecclesiastical architecture of the period. In 1845 it was pulled down for railway accommodation; every stone was carefully marked, and they were all removed to a field until such time as a site for their re-erection could be determined on. In the settlement of this site litigation followed litigation, and years rolled by; at last the site was fixed, but when the stones came to be examined the choicest of them had entirely disappeared. Every reader of Sir Walter Scott's works knows how bitterly he regretted the removal and partial destruction of the Cross of Edinburgh, but he was not and part himself of a piece of snobbish Vandalism. In the beginning of last century a cairn, known as Mushet's Cairn, was raised in the hollow below St. Anthony, to commemorate a brutal murder perpetrated on the spot. This cairn was the trysting-place of the lovers in the well-known tale of Jeanie and Effie Deans. George IV., on his visit to Edinburgh, was desirous, among other things, of visiting the cairn; but, as the ground round it was marshy, the cairn, to oblige his Royal Highness, was removed to a drier part of the park, where it still remains.

Many a time has the writer of this paper been sore distressed by the conduct and conversation of the ignorant *cicerони* who at the rate of so much a head retail romances and old women's fables to the visitors of such places as the Abbeys of Melrose and Dryburgh, and the Chapel of Roslin. But there is something worse than their trashy description. They are armed with long rods, which they insert up the hollow stone tracery, to show that it is hollow, or tap the heads of the carved figures, in order that there may be no mistake as to which is a devil and which an angel. The foregoing remarks show that ancient Scottish monuments have many enemies; but it is sad to think that the worst enemies they have are to be found among those who claim to be antiquaries and archæologists. It is not necessary to mention names. One of these acquisitive collectors of ancient things died in Scotland some twenty or thirty years ago. His collection was brought to the hammer. The sale lasted many days. Several brother collectors recognised many things which had from time to time mysteriously disappeared from their private museums, and other treasures were displayed in the auction-room which had been spirited away from the ruins of which they formed the principal attraction. In Strathfillan there is a deep Pool, called the Holy Pool, where in olden times they were wont to dip insane people. During a portion of the ceremony a bell was rung. This bell was about the size of a hand-bell, and a relic of a chapel that adjoined the pool. This bell was to be found day and night on the river side. It was stolen by an English antiquary, about the beginning of the century. A writer, in recording the theft many years afterwards, says, "Popish tradition endowed it with the power of returning to its resting-place; but it would seem England is deemed a congenial home." Strange, however, to say, the pilferer, on his death-bed, gave orders that the bell should be restored to the parish, and his wish was carried into effect about three or four years ago. The story in detail may be found in the Transactions of the Edinburgh Antiquarian Society, and a very interesting story it is.

HARDENED OR TOUGHENED GLASS.

Pliny, Petronius, and Dio Cassius tell us that flexible and malleable glass was manufactured in the reign of the Emperor Tiberius. They relate, further, how the lucky inventor—he is called by some a glassblower, by others an architect—presented to the Emperor a dish made of the new material, hoping to obtain a handsome reward. But the Emperor, apprehensive lest this flexible substance should depreciate the value of gold and silver, angrily threw the basin to the ground, when it bent like some soft metal. The inventor took a hammer and at once straightened the dish again, upon which the Emperor gave the order for his instant execution,—to prevent the secret of the manufacture being communicated to another person. He succeeded. People have racked their brains ever since to find out what kind of malleable glass that may have been, and it has been tried in modern times to explain the secret by suggesting the substance to have been aluminium or melted chloride of silver, without, however, satisfying others with this explanation. It is only lately that we hear from different quarters of the invention of a kind of glass resisting concussion and being proof against the effects of fire.

Though this idea to manufacture a kind of hardened or toughened glass is not new, it seems, nevertheless, that the older experiments in this respect were not at all so perfect as those of the present day. In the last century, Réaumur tried to make porcelain from glass, but he only succeeded in producing what is still called Réaumur's porcelain. Lately, M. de la Bastie, a French engineer, possessing ample means, has tried to improve on Réaumur's process, and, after long and patient investigation, succeeded in producing a glass which is unbrittle, and which, at the same time, preserves a perfect transparency. Last autumn a company was started in Bourg, France, under the title of A. de la Bastie & Co., with a capital of 48,000*l.*, having for its object the utilisation of M. de la Bastie's valuable discovery. Prof. Alex. Bauer, in Germany, has also pursued the manufacture of this glass for some time, by following a course analogous to the method of the French inventor. The Association of German Glass Manufacturers entered into negotiations with M. de la Bastie for the sale of his secret, but without success, his terms being too high. It has, however, been since ascertained that his process is a very simple one. It consists in heating glass to a certain temperature, and then plunging it into a hermetically closed bath of oleaginous substances, which melt at a temperature much below the boiling point of water. There are many niceties in connexion with the process which must be carefully studied, to prevent failures. The glass may be underheated or overheated, or it may, though heated to the proper degree, be spoiled in its transport to the bath. The constituents and the temperature of the bath must also be properly measured. M. de la Bastie has now constructed furnaces and baths overcoming all these difficulties, an answering the conditions required for carryin out the process successfully. The time occupie in the process is merely nominal, and the cost c production is very small.

Professor Bauer prepares the glass by heatin a plate until it may be bent, and then immerse it in a paraffine bath heated up to 200°. H then cools the plate, not gradually, but quickly to a certain point, and then more slowly.

In Silesia, where repeated experiments hav been made with M. de la Bastie's glass, a ne glass, called "metal glass," has lately bee produced at the glass-works of Count Soln near Klitschdorf, which has properties similar t the two descriptions of glass already mentione

The most valuable properties possessed by th different descriptions of the new glass are thei great strength and solidity, and consequen resistance to concussion. The articles manu factured from it may be thrown against a wal across a room, without breaking. When throw down, the object emits a singular sound witho breaking, but if violently thrown to the groun it is smashed into innumerable fragment Water may be boiled in a glass saucer over fire, and the latter suddenly removed to a com paratively cold place without affecting th saucer. If a corner of a piece of glass is hel by the hand in a gas-flame until it becomes ver hot, the heat is not transmitted to the othe portion of the glass, nor does the glass crac from unequal expansion. While a 2-oz. weigh falling on a piece of common plate-glass fro a height of 24 in. will break it into several frag ments, the same weight falling on a thinne piece of hardened glass from heights rangin from 2 ft. to 10 ft. produces no impression, th weight simply rebounding from off the glas An 8-oz. weight, tried at 2 ft. and 4 ft. respec tively, does not injure the glass, but upon th height being increased to 6 ft., the glass break Instead of breaking into about a dozen pieces, how ever, like ordinary glass, it is literally smashe to atoms, as happens in the case of its bein violently thrown to the ground. It would thu seem that hardened glass possesses enormou cohesive power, but that if its equilibrium i too violently disturbed at any one point, the dis integration extends throughout the whole piece the atoms no longer possessing the power t cohesion.

But the new glass has one fault: it cannot b cut with the diamond, as it is much harder tha the common kind. With its hardness its densit has also considerably increased. In appearance however, the new glass does not differ muc from the common sort.

There can be no question as to the practica importance of the new discovery, nor can ther be any doubt of its value in the arts, sciences, an industry. The applications which suggest them selves are innumerable; at present the articles manufactured comprise only watch-glasses, plates dishes, and sheet glass, but beyond the useful ness of the process with regard to objects o domestic use, its practical value in connexion with the applied sciences cannot be denied. I will be found useful for vitriol chambers in th manufacture of sulphuric acid, and for piping it chemical works. As the hardened glass cannot however, be cut with the diamond, it can onl be used in the sizes into which it is cut before toughening. It may be easily polished, and it can also be cut by the wheel, as for lustre work and the like, and can also be engraved by means of fluoric acid, or by the sand-blast process.

Up to the present time, no satisfactory explanation has been given as to the causes of hardening. The phenomenon of the breaking of toughened glass into atoms recalls the well-known glass-tears or Rupert's drops and the Bologna phials. On breaking off their points they burst; but if they are removed by corrosion, no effect is produced. The process of hardening reminds us that in slowly cooling glass a separation of molecules takes place to a certain degree which is prevented by rapid cooling. Formerly it was believed that glass was a perfectly equal and amorphous substance. But already in 1852, Professor Leydolt (by corrosion with hydrofluoric acid) proved that all our glasses, showing no trace of crystallisation, are nevertheless of a partly crystallised nature. If glass is heated to melting, or even only to softness, and then cooled very slowly, it frequently happens that a separation of the molecules takes place, and crystallised groups are formed. Réaumur's porcelain is produced in this manner, and experiments have been made since his time, by different persons, having the same ob-

ject in view. However, all these experiments have confirmed the separation of molecules; when the latter takes place, the glass is called "devitrified." It may be gathered from the latest experiments that glass, in its melted state, is a pretty homogeneous mass, the molecules of which are separated more or less in cooling. If the cooling up to a certain point is rapid, separation does not take place to such a degree, and the glass retains more of its homogeneity, and this may be the reason, on the one hand, of the toughness of hardened glass, and, on the other hand, of its peculiarity of breaking.

FRENCH REPORTS ON PUBLIC WORKS.

SEVERAL Reports have been drawn up, by French hands, on the system of public works developed in different countries of Europe. One only has hitherto been put in general circulation, and it relates to the principles upon which great undertakings, of a national or municipal character, are carried out in England. Of this we have already given an account, but others have been prepared, on the United States, on Germany, on Greece, and on France itself, the last being, perhaps, the most interesting. That on America we have not seen, but of the others an examination has been allowed us, especially with reference to the working of the principle generally obtaining in French cities. The statement, so far as it refers to this country, is principally directed to the relations existent between public works and the Legislature. At the outset, we are confronted by two distinct and different principles of action. With the French, the original impetus is, as a rule, given by Government; with the English, it is the result of private enterprise, which, after arranging all details, appeals to the Legislature for a general, and also a specific, sanction. With the French, an entire programme is laid down at once; with the English, according to our critic, there is no telling in what direction it may ramify. With the English, scarcely any Imperial power of administrative intervention exists. With the French, the Executive is the practical substitute for Parliamentary authority. Not altogether, however, as may witness the Mont Cenis and Channel Tunnel projects. The French writer, however, finds the usual difficulty of his countrymen in understanding our term "Royal Engineers," since he asks whether they could be trusted to construct a bridge, plan a railway, survey a road, or do anything beyond the advancing of military parallels, or the erecting of a fortress. He points out that no public grant in the United Kingdom ever assists a Joint Stock Company, unless in the case of mails, and that our insular independence is very much in contrast with the parental fashions adopted abroad; but, upon the whole, he is fair enough in his purview of our railroads, highways, tramways, canals, and other internal navigation, ferries and bridges, docks, harbours, lighthouses, and beacons, although there may be matter left for another series of volumes in the subjects of drainage, street improvements, lighting, and sanitary provisions generally. M. de Blerzy, in one of the supplementary Reports referred to, and which will, in all likelihood, be given to the world shortly, sets out, with less reference to the politics, so to speak, and more to the practicalities, of the question, by saying that the climate, customs, and population of every city or town to be dealt with should, in the first instance, be taken into account; whether, for example, the inhabitants are multiplying, or stationary in point of numbers; whether their reliance for water is upon natural currents, or sources artificially opened; and so forth. But, unlike M. de Franqueville, he looks for very little assistance from the State. The community, he asserts, should construct its own aqueducts, as did the citizens of ancient Rome; but the parallel, considered in the historical light, is hardly justified. In many parts of France, he adds, where water is abundant, it is also scattered, and the necessity arises of collecting the flow of various rivulets and streams, and accumulating them, either in the channels of great aqueducts, or in permanent reservoirs, fitted with every aid for dispersion. It is a popular axiom in France that, next to the air we breathe, the water, which is a thousand ways essential to us, is the most important element of nature: it constitutes half our food, it is the chief agent of health, and yet may be, as in the fens of Lincolnshire, or the marshes of the Agro Romano, ruinous to human life. We cannot follow the French Report through its abstruse speculations upon the qualities of the universal fluid, or into its estimate of the amount which London would save in the cost of soap were its water-supply improved (the estimate is 400,000*l.* annually); but his evidence with respect to the hydrometer, as applied to the yield of rivers and wells, is of the utmost value. There is a fountain at Cannes, known as the Bleaching Well, which, through the assistance of a slight apparatus, runs as pure and clear as though from a still. There is another in Paris, nicknamed "The Ocille," which the simplest experiment has converted into a state of complete limpidity; but, taken for all in all, the natural supply of the French capital, issuing from beds of gypsum, is bad, as the report candidly allows, the Seine being far more impure than the Loire, Garonne, Saône, and Rhone, though by no means so abominable as the Tiber, which, for drinking or bathing purposes, was repudiated by the ancient Romans. With the hydrometer the Parisian can distinguish between the current of the Seine and that of the Marne, even after they have apparently mingled. The Report does not, to employ a familiar phrase, mince matters in any way. It declares that Paris is ill-supplied, and must be supplied from a distance. "If there be a mountain on the line, let it be tunnelled; if there be a valley, let it be bridged"; or resort might be had to syphons of a gigantic scale, such as are said to have been used in Spain, Sicily, and the provinces of Alsace and Lorraine, as well as in French Algeria, and, in modern days, at Dijon, Bordeaux, Toulouse, and Marseilles, which last city is saved from total drought by its magnificent system of conduits There a river has been changed into a canal, actually carried from hill to hill on stupendous arches, and it is not too much to say that, but for this grand undertaking, Marseilles would have run the risk of perishing from off the face of the earth. M. de Blerzy does not think that Paris is in any similar danger; nevertheless, he urges that a partial failure may at any time occur, and that the increase of population threatens serious embarrassments for the future. It may not be generally known that few houses,—except new hotels,—in the metropolis of France are served above the first, or at most the second, floors; and the latest scheme is that of an enormous reservoir on the heights of Montmartre, 150 ft. above the general level, fed from artesian wells, emptied every day, filled every night, to double the municipal supply at once. At present, the mains are principally charged from the Canal de l'Ourcq; the semi-artificial cisterns of Grenelle, the Seine, and the aqueduct of Arcueil; and in the hot seasons there is often, after the thoroughfares have been even lightly sprinkled, an absolute dearth. The river shrinks in its bed; the pumping-machines, however colossal their power, draw only insufficient quantities; and yet it is believed that, at a depth of about 1,500 ft., exists a subterranean lake, perfectly fresh and practically inexhaustible. But Paris, not relying upon this doubtful treasure, is already engaged in bringing water from the reservoirs of Dhuis and Surmelin, which, however, are fed from the same sources as the Marne. Indeed, a large number of similar works are in process of completion to accomplish the same object; great lifting engines at Bibly; artesian wells at Passy; a reservoir at Montrouge; an aqueduct over the hollow of the Vanne; and still the poorer quarters have the strongest reasons for complaint. "London," it is suggested in the Report, "will one day drink from the lakes of Wales; Paris, then, might at least bathe in the waters of Champagne. From another point of view,—that of sanitary improvements,—the statements laid before the Minister are exceedingly interesting. The Sanitary Police of France, as it is termed, cannot be described as otherwise than extremely defective. So much is admitted in the Reports themselves. There are no adequate provisions for preventing infection of the atmosphere or the water, whether by noxious manufactures, noisome dwellings, bad drains, or the influence of corrupt social customs. In England, in Belgium, and in Germany, it is urged, authority interferes, whereas in France no such jurisdiction exists; but, on the other hand, we are told, French manufacturers, of their own accord, are running up chimney-stalks loftier than the Vendôme Column, in emulation of Manchester and even Glasgow. One, at Rouen, it is said, would surmount the Great Pyramid, and stand comparison with the spire of Cologne. Moreover, they have begun to appreciate the advantage of smoke-consuming furnaces, and are working out a considerable reform, voluntarily though, in many parts of the country. The running streams are no better than foetid sewers,—as the Bierre, at Paris, and the Ill, at Mulhouse, which resemble, in this respect, the waters of Ghent, Mons, and Verviers, in Belgium,—all black, poisoned, and poisonous. The French confession is to this effect: — "The smallest neighbourhoods in England, as a rule, compare favourably with the largest centres of population in France,"—not merely towns with peculiar facilities, broad, open suburbs, and wealthy corporations, but humble places, which have to consult their own interests, with smaller means and less ostentation. Possibly this criticism is a little too generous; at any rate, the contrast between France as represented by her public buildings, and as represented by her public works of a more utilitarian character, is hardly capable of exaggeration. As for Paris, its history very much resembles, so far as this topic is involved, that of London. Seated on both sides of a river, the river received all its impurities; the drains were originally open, and afterwards covered ditches running at right angles to the stream; but the irregularities of the surface are so great that at no time could a direct and general flow in the same direction be expected. It was not, however, until after a long experience of evil that a project was formed of constructing underground galleries, built of stone, and lined with cement, upon a scale of magnitude approaching to the Roman type. The cost was immense, and yet the result is no more than fragmentary, and a further proposal is now made for works of purification and irrigation, the latter designed to enrich the generally sterile valley of the Seine, which, according to French agriculturists, might be made to rival the famous plains of Brie and Beauce. In prospect of this enterprise, designs of barrages, basins, and artificial channels of the boldest sort are recommended to the attention both of the central Government and the metropolitan municipality. If we would form an idea of the extent to which these purposes may be carried out by the independent action of a rich commonality, it is not necessary to look in the Reports beyond the City of Lyons, historically surnamed the second capital of France. This is, indeed, a city of public works,—the French Rome it has been called. There is no cessation in the labour of improvement,—new bridges, quays, slaughter-houses, museums, libraries, fine-art galleries, streets, monuments, and fountains; new markets, railways, canal junctions, warehouses, and factories; and, so anxious are the inhabitants to hold together, as it were, that the buildings are continually being carried up to a greater height. At the same time, space is not stinted in the new city, properly so-called. The Municipality made a splendid grant towards the piercing of the Rue Impériale, which strikes straight through from one surburb to another; in fact, it has invested, within the last twelve years, sums that would appear exorbitant, were it not for the magnificent results obtained; as in the restoration of the Hôtel de Ville,—a perfect palace; the Museum of Art; the Exchange; the pulling down of the local St. Giles; the opening of a noble park; the canal connecting the two rivers, and bringing in an abundance of sweet and wholesome water; and the network of sewers, such as any capital in Europe might be proud of. These Reports, however, are full of similar testimony to the wonderful progress of public works in the Old World as in the New, and they are solid contributions to the chronicles of the time.

NEW POST-OFFICE BUILDINGS AT PECKHAM.

THE Government have just completed and opened a block of new Post-office buildings for the Peckham sub-district. The new buildings, which are situated a little beyond Rye-lane, in the direction of New-cross, contain accommodation for the transaction of the money-order and telegraph departments, in addition to offices more immediately connected with the receipt and delivery of letters. The main frontage and entrance to the building faces High-street. It is built of white Suffolk brick, with stone dressings, window-sills, and keys, the elevation being relieved by black brick bands. The building contains the ground-floor and story above, in addition to a basement. The ground-floor, as well as the upper story windows, and the principal entrance, are in three divisions, with arched heads, the space between the arches being filled in with diaper work, and the central

portion of the elevation is surmounted by a gable, with stone coping, The money-order, postage-stamp, and telegraph departments are approached from the High-street entrance, as well as a large sorting-room and other offices in the rear of the building, the sorting-room being lighted by a skylight the full dimensions of the apartment. The upper portion of the building contains the residence of the principal officer or postmaster for the district, and in the basement there are kitchens, and cooking arrangements for the letter-carriers and other *employés*, together with other apartments for their accommodation.

OXFORD MAIN DRAINAGE.

THE construction of the out-fall sewer, which has been delayed all the winter by the continual floods, is now being rigorously pushed forward by the contractor, Mr. C. Dickinson, under the direction of Mr. W. H. White, C.E., engineer to the Local Board.

The work presents considerable difficulties, the sewer having to be carried under the different branches of the Isis and Cherwell, and to be built, for the most part, in a bed of gravel of a very porous character, and at an average depth below the water level of about 10 ft., thus necessitating unusually strong and careful construction to exclude subsoil water, and heavy pumping operations while the works are in progress.

During the winter months several miles of branch sewers have been laid, and in various parts large quantities of water held up in the gravel-beds, lying in the undulations of the Oxford clay, had to be contended with.

ST. LAWRENCE'S CHURCH, NEW BRENTFORD.

THIS church has lately been much transformed in appearance, and the accommodation increased by the addition of a south aisle. Previously to the recent works, the edifice possessed little architectural character, and was encumbered by extensive galleries. The original western tower, built in the sixteenth century, was quite buried by large modern staircases leading up to the galleries. The tower, having closely adjoined houses at its west end, was therefore little seen, only the upper part (much modernised) being discernible. Formerly, the entire width of the church was spanned by a queen-post roof, ceiled in lath and plaster under the tie-beam, and quite flat. A considerable portion of this roof has been preserved,—a panelled wood ceiling made under the collars, and ornamental features introduced in the towers. The width of the church has been subdivided, and aisles formed by lofty shafts of pitch pine. The flat ceiling over the aisles is retained for the present (it is intended to panel it), while an arcade over the main nave arches has been constructed, opening out over the aisle ceilings, thus giving somewhat the effect of a triforium. As no constructional chancel previously existed (but only a mere recess at the east end), the choir has been flanked by perforated wood screens. The ground floor of the tower was formerly blocked out by a wall from the rest of the church, and the tower arch completely concealed; it is now opened out and otherwise improved. The whole of the high pewing has been replaced by low open benches of stained deal, those of the choir being of richer design, and of wainscot. Tiles form the paving. The pulpit is of Painswick stone, in open arcade work, the shafts being of Forest of Dean stone. The church is warmed by one of Porritt's underground stoves. The old organ was rebuilt by Messrs. Gray & Davison. The wide windows have been subdivided into two lights, with circles over, and glazed with cathedral glass contrasted with clear white glass, except two of them, which have been filled with painted glass of Mr. Pepper's design. The exterior of the church, with the exception of the repairs to the tower, has undergone little alteration, as, except by complete rebuilding, its ugliness could not be relieved.

Mr. Ferrey, F.S.A., and Mr. Edmund B. Ferrey, were the architects; and Mr. T. Nye, of Ealing, was the builder. The total cost will amount to about 2,800*l*. Colonel and Mrs. Clitherow, of Boston House, Brentford, have been among the most liberal contributors to these works.

Society of Engineers.—On Monday, the 3rd of May, a paper will be read on "The Use of Paint as an Engineering Material," by Mr. Ernest Spon.

THE NEW ROYAL AQUARIUM AND SUMMER AND WINTER GARDEN, WESTMINSTER.

THE building now in course of erection in Westminster will afford Londoners a chance of obtaining for themselves a cheerful and pleasant resort in the cold winter months and in the rainy season, without the expense and inconvenience of a railway journey, as is necessitated by a visit to the Crystal Palace. There can be but little doubt that a winter garden, in a climate such as ours, is equally desirable as a summer one. The Royal Aquarium combines both. The committee, whilst keeping in view, as they promise, the advancement of science, art, and literature, in all its branches, have endeavoured to provide for the healthy amusement of the masses as well.

From the prospectus we gather that the Aquarium will be a special feature and novelty, being the first of its kind established in London, and in connexion therewith it appears there are to be rooms for private concerts and popular lectures relating to science and art, and other objects of public interest. We also learn that the committee have made arangements for some of the most exclusives *fêtes* of the season,—flower-shows, and so on. The ceremony of fixing the corner-stone will shortly take place. The list of the council of fellows includes the names of the Prince of Leiningen, Prince Soltykoff, Lords Clarendon, Mayo, Ranfurly, Talbot de Malahide, March, Clonmel, Dupplin, De Lisle, Carington, and Kilmarnock; the Barons Ferdinand and Alfred de Rothschild, Sir Jules Benedict, Sir Charles Legard, Sir Frederick Johnstone, Lord Londesborough; Messrs. Santley, Irving, Sullivan, Colonel Farquharson (Invercauld), Major-General F. C. Cotton, C.S.I.

The new buildings, of which we give an illustration in our present number, are being erected by Messrs. Lucas, the contractors, and are situated between Broad Sanctuary, Westminster, and St. James's Park Station, having a frontage of nearly 600 ft. in Tothill-street. The materials of the principal fronts are red (Farnham) bricks, with Portland and Bath stone dressings. The front building, and being that situated at the east end of the land, is 140 ft. long by 85 ft. wide, having towers at the north-east and south-east corners. The top stage will be open, and divided by Aberdeen red granite columns. The angle-piers, caps to columns, voussoirs, dressings, and spandrels will be executed in Portland stone. The roofs of the towers, in two stages, will be covered with fancy cut zinc tiles, completed with ornamental hips, and surmounted by vane-rods.

Round the walls of this "Front Hall" will be placed the shallow (or table) marine and fresh water-tanks, which will be about twenty in number, the longest being 50 ft. The flooring will be of encaustic tiles laid to a pattern. The hall is divided into bays or compartments by cast-iron columns and lattice girders, the outer bay all round being floored over for a gallery in which will be dining-rooms arranged so as to be suitable for large or small parties; adjoining these will be kitchens, with a lift, service and still-room.

Through wide openings both on the ground and gallery floors at the west end of the front hall, the promenade or winter and summer garden is reached (with external entrances from Tothill-street). This, the main feature of the whole, will be about 350 ft. long by 160 ft. wide, the central portion or avenue (the roof over it being semicircular in form and of iron), although at first sight resembling in character the roof of the Crystal Palace, will be totally different in design, and glazed on the principle of Rendle's patent, of which we may remark that by the adoption of this invention all woodwork is covered by the metal and glass, that no putty is used in glazing, that bent glass is entirely dispensed with, and consequently it is more economical than the old system. The width of the main avenue or promenade is 80 ft., or 8 ft. wider than that of the Crystal Palace. The height of the gallery from the floor of the promenade will be 16 ft., and from this level to the springing of the vaulted roof is about 16 ft. The whole height from floor level to top of roof is 72 ft. The roof is entirely of wrought-iron, the principals (of which there are four pairs in the length), each 20 ft. wide and 6 ft. 6 in. deep, are formed of double lattice work. The purlins to principles are 5 ft. deep, between these principles and varying in length from 40 ft. to 60 ft. The purlins (of lattice pattern) are 2 ft. 6 in. deep and 15 ft. apart, on these the intermediates rest. These are constructed of T irons and cross lattice bars. The capitals of the cast-iron columns are enriched; shells, sea-horses, &c., being introduced. The gable-ends will be entirely of iron and glass.

Galleries will extend all round the building, and will be 40 ft. in width, a large portion at the east end and adjoining the dining-rooms being devoted to refreshments. A picture and fine-art gallery will be opened here, and to this department offers on loan from influential quarters, it is stated, have already been made.

In this portion of the buildings, the aquarium will be a special feature under the galleries. Show tanks, varying in size, are being constructed on each side of the promenade. On the south side there will be thirteen marine tanks occupying the whole length of the building, excepting so much as is appropriated to the entrances. On the north side there will be five marine and fresh-water tanks, the largest being 60 ft. by 20 ft., with a sight depth of 5 ft. The superficial surface of glass to these tanks will be 1,834 ft., and the water contents in them about 140,000 gallons.

On the north side in the centre there is to be a large orchestra 60 ft. by 40 ft., and so arranged that extra depth can be obtained at any time, if required. Attached to and connected with it are retiring-rooms, dressing-rooms, green-room, band and chorus room, &c. On the same side and to the west will be found a reading-room, 48 ft. by 45 ft., writing-room, library, &c. At the north side of the reading-room is arranged a large building, roofed over with iron and glass, in which will be placed the reserve tanks.

In order to supply water (both salt and fresh), to the show and reserve tanks, a huge reservoir is being constructed under the promenade, the length of which will be 260 ft. by a width of 53 ft., and will be capable of containing over 600,000 gallons, one-fourth part of which will be fresh water. We shall give a plan on another occasion.

There will also be, in various parts of the building, the requisite cloak-rooms, retiring and dressing rooms, telegraph office, &c.

At the west end of the site is placed a concert-hall, 106 ft. long by a width of 66 ft. The roof will be of iron, the ceiling being boarded, panelled, and moulded, with ventilating flowers in the centre. An enriched cove is carried all round at the springing level of the roof, into which the circular moulded hoods of the windows will mitre. The proscenium, enrichments in coves, and the gallery fronts, will be done in Jackson & Son's composition. The stage will have a depth of 29 ft. There will also be two galleries, in which, together with the ground-floor space, there will be accommodation for about 2,000 persons. This hall will be so arranged that artistic, literary, and private societies can engage it for the purposes of meetings, *conversazioni*, and so on; and here again are provided a band-room, room for the chorus, dressing and retiring rooms.

In addition to the above there are a board-room, secretary's room, clerks' offices, waiting-room, &c. It is confidently anticipated by the directors that the enterprise, favoured as it is by its central and unrivalled position in the metropolis, will prove the medium of a safe and profitable investment. The society will always possess a substantial security in the freehold land, a property that will materially increase in value every year.

The building has been designed by, and is being erected under, the superintendence of Mr. Bedborough, architect; and we understand that Messrs. Lucas Brothers have undertaken to hand over the building before Christmas.

We should add that the machinery for the continuous circulating system for the tanks is being prepared, and will be erected by Messrs. Leete, Edwards, & Norman, engineers, of the Euston-road.

The Water-Mains of the London Companies.—The monthly report of Major Bolton states that the number of miles of streets which contain water-mains constantly charged, and upon which hydrants could at once be fixed, in each district, are as follows:—Kent, 80 miles; New River, 168; East London, 70; Southwark and Vauxhall, 100; West Middlesex, 67; Grand Junction, 41½; Lambeth, 90; Chelsea, 50,—making a total of 665½ miles. The water companies are ready to affix hydrants thereon when required by the authorities.



THE NEW ROYAL AQUARIUM AND SUMMER AND W



EN, WESTMINSTER.—Mr. A. Bedborough, Architect.

A THEATRE TO THE MEMORY OF SHAKSPEARE.

If a theatre is to be erected to the memory of Shakspeare, wherever the site may be, the character of it should be distinct from that generally adopted in such structures. A building such as Drury Lane, or Covent Garden, or any other theatre in the United Kingdom, would be liable to become shabby in a few years, and at no very distant time would begin to exhibit symptoms of actual decay. The materials of which our theatres are generally constructed are also of such an inflammable character, that an accidental fire never fails to make a clean sweep of the entire structure. A building, destined to be both a theatre and a perennial monument, should be constructed, as all important national monuments are, of such materials as are not liable to decay, nor to be destroyed by fire. It should be a structure of such monumental fashion as the noble Mausoleum on the great Roman Way, destined to perpetuate the memory of Cecilia Metella; and should be executed in a style of masonry as artistically perfect; and with material as enduring as that of snowy marble which is still as perfect and beautiful in many parts as when first erected, and but for violence would have been still entire, after more than 1,800 years. A monumental theatre dedicated to Shakspeare should be as imperishable as that Roman monument. Both within and without all should be of such enduring materials as are fitted to endure for centuries. Granite, marble, bronze, should form the staples of the entire erection in every part. An elevation of imposing aspect and beautifully-varied effect might be designed, in which the grandly-harmonious tones of rose and of gray granite might be massed with strikingly-fine effect; especially if varied by columns of white Sicilian marble, which has been found to endure our winters quite as well as polished granite; while great vigour of line might be effected by occasional inlays of some dark material equally imperishable, either natural or artificial. The masonry of this elevation should be as perfect as that of the Roman monument above alluded to, in which the joints are all but invisible. With such materials, with joints impervious to the infiltration of moisture, would endure the worst assaults of our treacherous climate for centuries on centuries. As regards the size of the structure, it should be moderate, and need not be made to seat more than 500 spectators. The form of the central portion might well be circular, and roofed with a flattened dome, with an opening in the centre, like that of the Pantheon. The flat dome should be entirely composed of blocks of Sicilian marble, smooth and polished externally, and within either soffited or fluted towards the centre, and so forming the most elegant of ceilings, while it would be indestructible as well as beautiful. The form of this circular building might be accentuated and varied externally by four projections, producing the general figure of a Greek cross. The central portion or core of the building might rise considerably above the four projections, and be crowned by a noble entablature, the frieze of which should consist of a group band of Sicilian marble, highly sculptured with a procession of Shakspearian characters; while the open centre of the raised roof might be canopied with a pierced turret or lantern, of light and elegant design, in which both Gothic and Classical details should be systematically avoided. The Cruisitely symmetrical churches of the Romanesque and Byzantine churches, in the manner developed in Greece and Asia Minor, might afford valuable hints as to style; the more so as the treatment of these exquisite specimens of architectural art had not culminated into any fixed style, the kind of art of which they are examples having been as yet in a state of development when it was superseded, so that it does not present any systematic and fixed forms or details to tempt a slavish imitation, but only generalised features, highly valuable as guides for such a structure as the one under description. All the external decorations of such a monument should be large and decisive in character, and of a nature not to injure by time. In this need not preclude great richness and piety. In the front of deep niches, deep enough to form a dark background, statues of Parian marble might be placed, of dimensions that should appear somewhat more than life-size even at some distance; and such objects, placed, would have a grand and sober effect. The figures might be those of Shakspeare's best-known contemporaries, such as Greene, Marlow, Ben Jonson, Spencer, Sir Philip Sydney, Chapman, and others. His own statue, of colossal size, should appear under a canopy of granite, immediately above the great entrance portal, which should be spacious and magnificent, and the granite canopy over the statue should be elaborately wrought in open work, though massive. The great portal itself should be flanked by colossal figures of Tragedy and Comedy, wrought with Buonarottian grandeur, perhaps in the fashion of Caryatides.

Looking far back for examples of similar works, the noble Carian monument of Mausolus, with its gigantic portrait statues, and the magnificent quadriga, which, but for barbarian violence or terrestrial convulsions, might evidently have been as perfect to-day as it was the hour it was completed by the chisels of those inspired artists of Greece who conceived the general design, and wrought it out with such magnificence; and, seeing how perfect the fragments of the horses are which now lie in the British Museum, one is tempted to fancy that the statue of our great poet might stand, crowned by Fame, in a grand triumphal car drawn by four horses, on the roof of the portico, which should form, as it were, its pedestal. The car should be in the position of coming towards the spectator as he approaches the building, and should be made one of the most magnificent works ever wrought by British chisel. The projection of the part of the building devoted to the grand entrance being made to form the pedestal of such a composition without losing its harmony with the other three projections, would become a fine and characteristic feature in the building. The large sculptured mouldings of the arched portal should be of red, white, and grey material, with one or two narrow hollows of black, to give vigour. The fitting characteristics of the vestibules and entrance-hall would take too long to describe, as the character of the interim has not yet been hinted at, and must now be briefly described:—The floor might be of red and grey granite, in some simple pattern; carpets being laid down, at times of periodical performances, in the general path round the auditorium, and also in front of each seat. The seats of the pit should be of red polished granite, with backs and arms; the arms next the central passage being enriched with grandly carved bosses; and, at the time of performances, cushions should be provided (kept in a permanent wardrobe) for the seats and backs of these granite chairs. The front of the lower tier of boxes should be red granite, with massive mouldings, one or two of the smaller lines of which might be gilt, in such positions where the wear and tear of rubbing could not take effect. Along the front of this massive marble "balcony" should be white marble panels, enclosed in very massive mouldings, in which should be inlaid in mosaic, leaving a white margin, scenes from some of the best known of Shakspeare's plays. These should be of highly-finished style, and correctly drawn, eschewing Mediæval monstrosity. The second tier of "boxes" should be also of red granite, but with mouldings of gray to lighten it, and to enclose panels of white marble, enriched with scenes from the plays in high relief, of elaborate character, in order to contrast with the stern, broad simplicity of the general mouldings. The next tier should be of white marble, with mouldings of grey granite, the white marble having an inlaid ornament. The vaulted roof or ceiling mould, as described, should be of white marble, perhaps enriched with mosaics of delicate and highly finished design, in which, of course, all attempts at imitating the grotesqueness of Mediæval mosaics should be strictly avoided. It is scarcely necessary to add, after what has been said of the permanence and indestructibility of materials employed, that the floors of the boxes and all the corridors, and even the stage,—indeed, every detail of the main structure,—should be of granite. In point of durability of material, the great Roman amphitheatres should be taken as a general model, such as the Colosseum and the Amphitheatres at Verona and other places, the Stratford Memorial Theatre necessarily differing from them in being a covered instead of an open arena. The aperture in the centre of the roof might be closed when required by means of a slab of glass, as thick and as strong as marble, working on bronze pivots, like the massive marble doors of the Macedonian tomb now in the Louvre. Thus constructed, a theatre-monument might remain sound and perfect after the wear and tear of time and tempest for 2,000 years. The style of all the details should be, as far as possible, characteristic of this age, avoiding any imitation of Gothic forms and details, or of Greek or Roman detail of any well-known kind. In a monument to the memory of Shakspeare, whose style was his own, and which he stamped indelibly upon the age in which he lived, there must be no imitations, no slavish reproductions,—the work erected in the nineteenth century to his memory must be as pure an outcome of the highest civilization of this age as his genius was of that of the sixteenth. He left the styles of his predecessors alone,—both the form and spirit of his productions are his own, and if he took a story or legend from a chronicler, or a writer of romance, he cast aside the style and manner of the author whose work he appropriated, moulding and modelling it afresh after his own immortal fashion, and so deeply impressed the seal of his genius upon it, as to mark it as his own for ever.

The time for erecting some grand national monument is surely arrived at last. There will come a time when memorials of our great Shakspeare will form the leading embellishments, not only in the metropolis, but in all our great towns, but at present a solitary, and yet worthy monument, in the form of such a theatre as that described, will not form a bad beginning, and the sooner that beginning takes place the better. It is always with something nearly akin to a sense of shame that we at present acknowledge our shortcomings in regard to public memorials of our greatest men in the form of enduring monuments of marble, bronze, or granite; more especially when we compare our almost absolute neglect with what Continental nations have done in honour of those who have shed the glory of their genius upon a national history. The memory of Molière, and other great French dramatists, has been honoured by many monuments of comparatively indestructible character, and in the highest school of French art, which, in their elaborate richness, form such magnificent public ornaments to Paris and other cities in various parts of France, as our artistic neighbours are naturally and justly proud of. We, on the other hand, have no worthy monument to boast of,—certainly none erected with such lavish display of art,—to our far greater Shakspeare, whose vast superiority is acknowledged by all the world, and whose works are for all time. Strasbourg, Mayence, Frankfort, have vied with each other in glorifying the memory of Gutenberg, the inventor of that art,—printing with movable types,—which has given a more powerful impetus to the general progress of civilisation than any other of the fine or mechanical arts, and they have honoured themselves in honouring their great countryman; while Haarlem, believing that one of her own citizens, Koster, actually preceded Gutenberg in establishing the first rudiments of that art, has erected a colossal statue of noble design in his memory, on the principal open space in the city, on one side of which was situated the house in which he lived, and in which he is supposed to have invented movable types for the printing of his second edition of "The Speculum Humani Salvationis," before Gutenberg had brought his nearly simultaneous invention into a practical form. But the examples of these Continental cities have incited us to honour in a similar manner our own William Caxton,—our enterprising Englishman who first established the new art in our country.

THE "QUEEN ANNE" REVIVAL IN IRELAND.

ARCHITECTURAL ASSOCIATION OF IRELAND.

At the ordinary general meeting held on Thursday evening, April 22nd (the president, Mr. W. M. Mitchell, in the chair), a discussion on "The Queen Anne Revival" was opened by Mr. John L. Robinson (hon. sec.), in the following brief paper:—Since the days when Stuart & Revett measured and published drawings of the remains of ancient Greek temples, architecture in this country has become as changeable as the winds and as extravagant in some respects as ladies' fashions. Before considering the latest craze, let us pause and recall the different styles that have attracted the attention of architects, for since the days of Elizabeth our art has been endued with no healthy vitality, just owing its existence to the fleeting fancy of the hour. First we had Stuart & Revett, and consequently a mania in the direction of Greece. Greek temples and Choraic monuments studded the land until

the fashion changed to Roman Classic; then Sir Charles Barry introduced Italian in his Travellers' Club, and paralysed the architectural profession by his daring to design a club-house without an order of columns tacked to the outside walls. Architects in those days could not understand how a window could be made an architectural feature without columns, so this building was bepraised, measured, and published, and helped to make a man of Sir Charles. Such success begat imitators, so that we were treated to Italian Pallazzi in all shapes and forms for some years. Then Pugin came on the scene, and succeeded after a great struggle in turning the fashion to sixteenth century or Tudor Gothic. Then we had a trial of Decorated, Norman and Thirteenth-Century Gothic. After a due course of these, Mr. Nesfield and Mr. Shaw published their well-known Continental sketch-books, and straightway Continental Gothic became fashionable. Mr. Ruskin also influenced some men to try Venetian. Two or three years ago we had a Japanese craze, then half-timber houses, and now every one is going mad about the so-called Queen Anne revival, or Free Classic. So that I should not be in the least astonished if Mr. Fergusson's exertions would at last succeed in converting us to the beauties of the Indian styles; and Egyptian and Chinese remain to be tried when others fail. The Queen Anne revival, as it is called, arises from the humiliating fact that a few men lead the profession in England, all others following at a respectful distance; and no sooner has one of those leaders adopted any peculiarity of style than he has scores of followers. Hence, when Mr. Norman Shaw (who has distinguished himself by some beautiful Gothic designs) designed the New Zealand Chambers in London,—a building with which I have no doubt you are well acquainted,—several of the smaller fry followed his example, and designed in Queen Anne with the same facility as they had heretofore done in Gothic. The principal merits claimed for the style by its admirers are,—that by its means architects are enabled to throw some art and picturesqueness into their works at a moderate expense, and that truthfulness of construction can be obtained in it as in Gothic,—an argument scarcely tenable in the face of mock windows and shaped gables. The London School Board has served to give this movement an impetus it would never otherwise have obtained, and the city is now being covered with Queen Anne schools. In the course of my rambles through Dublin, I have come across some curious old houses, whether of the Queen Anne period I cannot say. I am more inclined to assign them to the reign of George I. I have taken a few photographs of them that will give you some idea of how picturesque a street of such houses would be. The bricks in the strings and cornices are richly moulded. The gables are curved, and topped with a moulded brick pediment. The interiors of those houses were often elaborately finished, the walls of the halls and rooms being sheeted with oak wainscot, and the staircases have carved and twisted balusters. Almost all the chimney pieces have disappeared, and the houses are let in tenements, yet withal those houses have an air of dignity and comfort, and recall the days when the weavers of the liberty were a wealthy and important body, and many a merchant prince resided in Blackpitts or The Coombe. I had some time ago, when taking down several of those houses, an opportunity of studying their construction. The walls were only 9 in. thick, and the fireplaces in corners of the rooms. The roofs had gables to the four walls, hence all the thrust was thrown on the four corners by means of the valley pieces. This mode of construction was adopted to obtain as much space as possible in the roof, and saved the expense of gutters. The window-frames were not revealed, the outside casing being exposed to view. The sash-bars were very strong, and the panes small. I am of opinion that where we cannot indulge our Gothic proclivities, such as in town houses, we might learn a lesson from the humble houses in The Liberties of Dublin.

Mr. J. J. O'Callaghan said that the "Queen Anne" had all the faults of Classic, and its merits were derived from Gothic, and that Mr. Shaw threw the spirit of Gothic into his Queen Anne buildings. The "New Zealand Chambers" were Gothic in spirit. He did not think this fashion would last long. He thought that architects should adopt either round arches or pointed, and treat them truthfully. This constant craving for something new is deceptive, and will lead us into difficulties. There are now things done every day for which no precedent can be found in ancient work. He did not care what style a man adopted; so long as he worked truthfully in it, he must produce a beautiful building.

Mr. R. S. Swan said that a craving after novelty is seen in London, which is studded with the ugliest modern buildings in the world, and that the Queen Anne style is a mere passing fancy, merely attractive from its novelty.

The President said that some four years ago, when in London, he saw some designs at the Royal Academy Exhibition in this style, and was much surprised. Since then the movement had spread considerably. Any leader will have followers who will produce a number of inferior designs. He thought that, as it so nearly approaches our vernacular architecture, and has some art to recommend it, it might be adopted where clients will not consent to Mediævalise their houses; but where Gothic architects are left free to follow their fancy, and adopt Queen Anne, it can be only looked on as a retrograde movement. He also thought that the expense of specially-moulded bricks would be so great in Dublin as to prohibit any elaborate Queen Anne designs.

COLOUR AND DECORATION.

ARTISANS' INSTITUTE.

MR. J. G. CRACE lectured, on Saturday evening last, the 24th ult., at the Artisans' Institute, Castle-street, St. Martin's-lane, on "Colour and Decoration." One of the great questions of the day, he said, was how to educate, how to train the art-workman, so that each might take such a place in the trade or handicraft that he was to follow, as workmen of the same class in a foreign country. Now, what was decoration? It was the art of adorning the objects that they used and the houses they occupied. To accomplish this successfully the art should ever be accompanied by its handmaidens, knowledge and taste,—the knowledge of the principles which should guide them in the application of art to industry; and taste, that cultivation of the mind which enabled them to appreciate true beauty in the elements of form and colour. In the study of any art it was necessary to understand thoroughly the rudiments of first principles of that art, and to teach these was one of the great objects of technical education. To decorate an object appropriately, it was necessary to consider the material of which it was made. In weaving matting, or articles of very coarse texture, scrolls of any intricacy would be out of place, and the process necessitated simple forms appropriate to the fabric. In Turkey carpets very beautiful forms had been invented, as it were, by the very difficulties of the coarseness of the stitch. The true genius of an artist designer was displayed in contriving ornamental designs congenial to the fabric, suitability being an important element in decoration. When working in a finer material, in silk and wool, for instance, good, well-defined ornamental forms were desirable, and in richer fabrics, such as satin damask, the lustre and beauty of the material had to be displayed to the best advantage, by ornament with good breadth of space, so as to show off the rich lustre of the stain in contrast with the quieter tone of the silk. There were certain fabrics which owed all their value to the industrial art bestowed upon them, such, for instance, as pottery. They had all, doubtless seen the Etruscan vases in the British Museum, which were truly triumphs of skilled art, both for the elegant proportion of their forms and the beauty of the ornament and figures that decorated them. The Majolica ware, so esteemed at the present day, was made of coarse clay, and owed its value to the artistic work displayed upon it. How beautiful were some of the productions of the Venetian glass-blowers, the coloured spirals so delicately and elaborately wrought, and yet the operation in the hands of the skilled workman seemed wonderfully simple. Take a piece of furniture. The wood it was made of might be ordinary enough, but the mind of the designer and the skill of the workman were to make it "a thing of beauty." From the beginning, however, they must work on certain principles. Let the construction be evident, and if carving or inlay ornament be introduced, let it form a feature with the construction, and not overlay or disguise it. A proper disposition of well-proportioned forms was the first consideration. The perfection of art-manufacture consisted in combining with the greatest possible effect the useful with the pleasing; and the execution of this could generally be most successfully carried out by adopting the simplest forms. With regard to colour decoration, as applied to the adornment of their dwellings, it should be the ambition of every man to have his home clean, comfortable, and tasteful; and a knowledge of the rudiments of the science of colour,—for it was a science,—might be useful to every man. Colour gave life to form; its variations, properly harmonised, delighted the eye, and had a powerful influence on the mind, when treated with that skill which a careful and well-trained study of the art would enable them to exercise. To study properly the subject of colour, they must begin with the consideration of light. When the rays of white light were intercepted or dispersed, colour was produced. Familiar to all of them was the glorious rainbow,—

> "Born of the shower, and coloured by the sun;"

and, as Scott had told them,—

> "What skilful limner e'er could choose
> To paint the rainbow's various hues,
> Unless to mortal were it given,
> To dip his brush in dyes of heaven?"

The rays of light emitted through a prism gave out a series of brilliant colours, known as the solar spectrum; and the relations of the colours thus produced formed the fundamental principles which regulated the science of colour. After briefly explaining the theory of the law of contrast in colouring, Mr. Crace went on to consider the subject of harmony,—that was, he said, how to bring together various colours in such proportions as to produce an agreeable effect. Bright red and bright green, bright blue and bright orange, could not be used together in masses without much modification. He spoke the more earnestly because he believed that it was a popular delusion that these contrasts were quite correct. To combine various modulations of colour, so that they might mingle together and form a harmonious whole, demanded careful study, practice, and taste. It was delightful to find how charmingly the laws of harmony were expressed in the colouring of flowers. Whether it be the rose, with its soft gradations of red; the iris, with its rich modulations of violet; the fuschia, with its scarlet petals surrounding its purple corolla; the red passion-flower, with its purple and white fringe and blue stamen; the purple pansy, with its bright centre of yellow,—all so beautifully modulated by tender streaks of complementary colours, and all having leaves of which the tone was that best suited to the flowers. However violent might be the contrasts of the colouring, there were always certain combinations which perfected the harmony and delighted the eye. The hand of Nature never erred. He could not too strongly urge upon those who sought to improve themselves in decorative art, to study carefully from natural flowers and foliage, both for gracefulness of form and for harmony and richness of colour. In considering the question of harmony of colour, as applied to decoration, the tertiaries became essentially valuable. They had the same relation to the secondary colours as to shade that the primary colours had to light. Citrine was to dark violet as yellow was to light violet; russet was to dark green as red was to light green; olive was to dark orange as blue was to bright orange. Thus, each of the secondaries was neutralised by that tertiary in which the remaining primary predominated. By a proportionate adjustment of the primaries with the secondaries, or tertiaries, harmony of colour was produced. In decoration, it might be laid down as a principle that one colour should dominate; that this dominant should be a primary or secondary; and that the other colours must be subsidiary to it. In the majority of cases, the most perfect and beautiful harmony was produced by employing neutralised hues of colour for the larger masses, and then giving freshness, cheerfulness, and beauty to the whole by the introduction in small masses of the primary or secondary colours that might form the proper equivalents to the prevailing colour. It should always be remembered that the eye was never satisfied with any arrangement of colour unless all the primaries were present in some shape or other. In carrying out decorations, it would be found that all colours had two kinds of harmony —that of analogy or sympathy, and that of contrast. For instance, they would suppose the walls of a room to be of a soft green colour, and that curtains were required. Two colours were open to them: on the one hand, a rich yellow

brown, which was the softer or more sympathetic harmony; on the other hand, a warm morone, which was the harmony of contrast. The principal colourings of a room being decided, the decorator would have to consider how best to relieve with colour his cornice and frieze, the ceilings, and the woodwork. The cornice was a very important feature in a room; it acted as a kind of frame to the walls, between these and the ceiling; but it should always be borne in mind that, except in peculiar cases, it should be made to belong to the walls; and with that view, particular care must be taken in the colouring of it, either by a soft contrast to the wall colour, or by a colour referring to the curtains or other harmonising hue. There were three masses of colour to be considered in living-rooms,—the walls, the curtains, and the carpets; but it was by no means necessary that these should be all of different colours. Two of them might accord, either the walls and curtains, or the curtains and carpet. If the walls of a room were highly ornamented in colour, either by arabesque painting or otherwise, it was desirable that the curtains be quiet in tone, and not of contrasted colours; also, that the carpet preserved a subdued effect that did not interfere with the decoration of the walls. On the other hand, if the walls of a room were of a quiet tone, or were white and ornamented with gilding, various colours in ornament or flowers might be introduced with propriety in the carpet. When rooms were papered or painted in tints of colour, the combination necessary to carry out a pleasing effect was sufficiently simple and easy; but even in these great care should be taken to have those tints of a soft, agreeable tone. There were greens and greens, buffs and buffs, and greys and greys, in the one case as ugly, raw, discordant, offensive, and displeasing, as in the other they might be soft, harmonious, agreeable, and refreshing to the sight. What could be more incompatible than a crude emerald green? Soften it, however, with a little sienna, or other moderating colour, and make it suitable in depth of tone to the size of the room, and their skill and taste would make it as agreeable as it would be otherwise repulsive. These tinted colours might be made considerably more effective by a harmonious combination with a contrasting tone of colour in the stiles or margins. In the woodwork of their rooms it seemed to be too generally considered that it must be either painted white, or grained in imitation of some wood. Now, he did not proscribe graining; on the contrary, he liked it occasionally; but he thought it was used far too frequently. Why not employ a good brown, or morone, or black, well relieved with light-coloured lines, taking care to face up the work to a very smooth surface, and to varnish it? Above all, however, he liked the real wood, even if it be plain deal, or pitch pine, for this, if well finished by the joiner, and kept clean, would, when varnished, have a very handsome effect, and could be readily ornamented to any degree by painting dark lines and ornament as if inlaid upon it. The wear of this kind of work was far beyond any painting. Again, on walls of staircases or entrance vestibules, or dados of rooms, imitations of marbles were often painted, and very beautifully painted too, for many English artists excelled in this kind of work; but these imitations were adopted not always because they were appropriate to the place, or particularly required, but because being varnished they were well, and nothing else was suggested. He thought, however, that in a moderately-sized house, where quiet taste was appreciated, stencilling in geometric patterns in two shades of one colour was preferable to marbling, which, if done in an inferior manner, was a most unsightly sham. In determining the colours for rooms regard should be had to their aspect, giving cool and refreshing shades to the south, and warm comfortable colours to the north. Then, also, pictures required particular attention. If there were many in the room, and they were truly works of art, the colour of the walls must be subservient to them. If the pictures were not very large, and the colouring of them not dark or heavy, sage green was a good tone. In this case the windows and doors might be cinnamon colour, if not real wood; the cornice of the room might be vellum colour, relieved with the cinnamon and dull violet in suitable parts of it; the ceiling might be pale grey. If, however, the room be large, and the pictures boldly painted, red was an excellent colour for the walls; it gave freshness and vigour to the paintings; and if the room was lighted from above, it rendered it bright and cheerful, not undesirable qualities where there was no external prospect. The woodwork, if already painted, might be black or vellum colour, properly relieved on the mouldings. The cornice and ceiling of the room should be carefully toned, so that nothing be too obtrusive; but no special colours could be proposed, as they would depend on the design of the architecture. Only he would warn his audience not to follow the advice of a clever writer in a popular magazine, saying that "a red room with a black ceiling, starred with dull sea-green or yellow, was very bright and good." Mr. Crace doubted it. Considerable discussion had occurred in late years as to the proper background for statues,—whether it should be a quiet neutral tone of grey, or a more decided colour, such as morone red. He was strongly in favour of the decided colour. They could not lay down precise laws as to what colours should be brought together; careful modulation would enable an experienced artist to bring *any* colours together. Discord could always be made to modulate if they but knew how to do it. Hitherto he had been considering the principles of contrast and harmony, or their application to simple forms under ordinary circumstances; but in churches, large halls, or public buildings of importance, it was necessary to consider very carefully the peculiar circumstances of each of them before designing the decorations or arranging the colours. He was not surprised at architects dreading the indiscriminate use of colour in a building on which they had bestowed so much careful study and labour. Judicious and well-designed arrangements of colour should add to the architectural effect. By these the principal constructive features of a building should be emphasised or clearly expressed; and the whole, avoiding confusion, should present a combination and symmetry of form and harmony of colour. As for himself, he abominated white-wash. He saw not the beauty of interior stone walls unrelieved, nor did he see the impropriety of covering these real stone walls with glowing colour. With regard to colour, as employed by the ancients, in Egypt examples of decorative colouring done nearly three thousand years ago were still in fine preservation, and excited the warmest admiration. The interior walls of the temples were often covered with historical representations brought out in colour; the main architectural features were also painted. In the British Museum and at the Crystal Palace might be seen reproductions of some of these well worthy of their attention. The Greeks, he had no doubt, carried the art of coloured decoration to the same perfection as the other arts in which they so excelled. Their descendants showed by their decorative works, executed in a provincial Roman city 1,800 years ago, how beautifully the art was still practised in their day. Mr. Crace said their descendants, because it was generally understood that the art works of Rome were carried on by Etruscans and Greeks. The Romans were soldiers. The city of Pompeii, submerged, almost forgotten, during 1,800 years, and now brought to light again, showed all the details of Roman life as it existed at that distant period. The walls of the houses and public buildings, though roofless, were still glowing with colours fresh as the day on which the awful calamity overtook the city. It was, indeed, a mine of wealth to the art student. Here he would find wonderful combinations of colour, and the utmost elegance, fancy, and beauty of ornament. He had endeavoured, Mr. Crace went on to say, to explain to them the principles which should guide them in the employment of colour. The subject was so various and so extensive that it was impossible in a lecture to do more than point out some of the main features of the art. Much must always depend on the industry and intelligence of those who followed an art, and it was certain that those who would resolutely study to improve themselves would open a road to advancement which, followed with perseverance, steadiness, and sobriety, must lead to success. *Persevere* was the grand motto to be borne in mind in all struggles towards a certain goal. Work, steady work, was the element of success. Let every young man be encouraged to learn to draw, whatever the trade or occupation he might be likely to follow. It was sure to be a great amusement,—it must be of the utmost value to him in after-life. A carpenter who could make good working drawings was sure to advance himself before those who could not. One of the best sources of art education was to visit frequently the glorious works collected in the Kensington Museum. This museum was to the art-workman the most valuable and the most useful institution in the country; and the country owed a debt of gratitude to the man whose untiring energy, perseverance, and ability had enabled him, in spite of most stupid opposition, very niggardly support, and unjustifiable ridicule, to accumulate these interesting productions of the art-workmen of all countries and all times. Sir Henry Cole had done for the British workman a great service; for in this museum artisans might see, each in his own special handicraft, examples of what might be accomplished by skilled art-workmen. Let the art-student study the works carefully, then would he realise how art could ennoble even the most common objects, how the power of a true artist gave a charm to all that it was applied to, how art humanised, elevated, and purified the soul of those who would lend themselves to its influence, and how that influence would guide them in their labours, and help to lead them towards that excellence which it was to be hoped they eagerly desired to obtain.

Mr. Blyth proposed, Mr. Snell seconded, and the Rev. H. Solly supported, a vote of thanks to the lecturer, which was acknowledged.

THE DRAINAGE OF PORTSMOUTH.

A REMARKABLY flat district, and one to which on this account was given prominence in the report delivered to the local authorities by Mr. Lewis Angell, C.E., and then Borough Engineer, is not the most favourable for drainage operations. In support of this opinion the following remarks opened the subject, penned by Mr. Angell, when called upon to report thereon:—"The Borough of Portsmouth is most unfavourably situated for the application of a natural system of drainage, because *no part* is much above and a portion of it even below the range of ordinary Spring tides, while such variations of altitude as do occur, impede rather than assist the engineer in the determination of the direction and gradients of his main lines of sewers. The most densely populated part of the borough is only elevated about 12 ft. above the tidal range, while a large extent is by nature a marsh, varying from 2 ft. below to 5 ft. above high-water mark." This report was made in March, 1864. The extensive works which have been carried out and now thoroughly completed under the superintendence and direction of Mr. J. E. Greatorex, C.E., the present Borough Engineer, have fully borne out these original views of the scheme, and justifies the writer in affirming that no provincial district has offered so many obstacles and of so serious a nature as those presented in the course of this undertaking. Of course, the expense, too, has been considerable. The system consists of upper and lower levels. The first-named traverses Kingston, Fratton, Milton, and Landport; and the lower,—Portsea, Portsmouth *proper*, and Southsea. Commencing at the outer boundaries of these portions of the town of Portsmouth, and ultimately uniting near Southsea, and running together to the outfall at the West Wrimer sand at Langstone Harbour, great and unexpected difficulties were encountered there, owing to the tides, work having to be executed between them; and there, as throughout the entire work, running sands were met with. To commence with the low-level drainage, we may state that it travels in a south-westerly direction, skirting the coast, and passing through Portsea, receiving drainage from East Southsea, which used to run direct to the sea. The brick barrel sewer at this point is 1,300 yards in length, and 4 ft. 2 in. by 2 ft. 3 in. in diameter, and the inclination is 2 ft. per mile. It passes across Southsea Common in a north-westerly direction, and at the Pier Hotel receives the branch sewers from terraces. The size of the sewer is here 1,997 yards in length, and 4 ft. by 2 ft. 8 in. in diameter, and the inclination is 3 ft. per mile. Across the moats and fortifications, and over the site of Mill Dam, it enters Portsea, intersecting three branches, two terminating in Queen-street, and one in her Majesty's Dockyard. The length is here 1,550 yards, and the inclination is 5 ft. per mile. The high-level meanwhile traverses the whole of the Landport district, and joins the low-level, as before stated. At the junction the barrel is 4 ft. in diameter, while the inclination is 2½ ft. per mile. From this point, Grove-road South, crossing Elm-grove, is covered in a northerly direction, the length being 3,220 yards, and the barrel being 4 ft. by 2 ft. 8 in., and the inclination 3 ft. per mile. The Somers-road branch is 1,120 yards long, and 4 ft. by 2 ft. 8 in., and inclines 4 ft. per mile. The termination is in Kingston.

crescent, where the length is 423 yards, and the dimensions of the barrel are 3 ft. by 2 ft., and the inclination is 6 ft. per mile. There are about 8 miles of main and 54 miles of lateral and branch sewers, ranging from different sizes, and at different inclinations. The branch culverts are of brick, from 3 ft. by 2 ft. to 2 ft. by 1 ft. 4 in., with 12-in. and 15-in. pipes. The stratum pierced is a formation of gravel and brick earth, interspersed with veins of clay, and mixed up with shingle. At the outfall in Langstone Harbour, are two iron pipes, 1,200 ft. in length, and having a diameter of 3 ft., and an inclination of 6 ft. per mile, the combined levels being emptied by means of these into the sea, the sewage in them being pent up during the flow, and released during the ebb tides. We may state that the combined levels are carried from the junction near Eastney, to the junction with the iron pipes, by a 4 ft. double-barrel sewer. The pumping-station which lifts the low into the high level, is provided with a pair of 25-h.p. rotary beam-engines, which fulfil admirably the purpose for which they are intended. The urban portions of the borough are thoroughly sewered, every house being brought within the required distance, *i.e.*, 100 ft. from each residence. Six or seven pumps are required to keep down the influx of water, and although the ground through which the drainage has to percolate is so flat, it amply effects the intention. Four hundred and fifty manholes, ventilating and flushing-shafts, receive continual and regular attention. The storm drainage it was found necessary to carry out, on account of the filling up of the Mill-dam Great Moat, which was the natural outfall of the storm water. This was effected at an additional cost of 6,000*l.*, the main-drainage reaching the large figure of 160,000*l.* The dimensions of storm drainage (in length about a mile and a quarter) are from 4 ft. 6 in. by 3 ft. to 3 ft. by 2 ft., and commencing at the monument near the Bedford Hotel, Landport, and terminating at the Camber Dock. Ten thousand houses are connected with the drainage generally. The whole of the works have been executed by Mr. J. E. Greatorex, C.E., assisted by an efficient staff. The contract for the main drainage was undertaken and completed by Mr. Frederick Furniss; the branch sewers by Messrs. Neave & Fry; the iron piping by Mr. George Jennings, of Poole, Dorset; the engine-houses, cottages, &c., by Messrs. W. R. & C. Light, of Portsmouth; and the engines and pumps by Mr. Joseph Clayton, of Preston.

THE CHAPEL AT CASTLE HOWARD.

RECENTLY the chapel attached to the palatial residence of the Earl of Carlisle, at Castle Howard, was opened for divine service. The event was celebrated with becoming rejoicing, marking, as it does, the consummation of an important work, the execution of which has involved lavish expenditure, and occupied nearly five years.

The chapel at Castle Howard is situated at the north-west extremity of the whole building, and its windows are passed on the right by all proceeding to the principal entrance to the castle. It is not the work of Sir John Vanbrugh, who first planned the castle, but with the remainder of the western wing, including the great gallery, it was designed by Sir George Robinson.

Before the recent works were undertaken, the chapel was simply a fine apartment, about 70 ft. by 24 ft., and 30 ft. high, on the same level as the state-rooms, and with a very handsome screen of Corinthian columns near each end.

The reredos is of marble and alabaster, there being first a plain alabaster wall, against which the altar stands, and above that a composition of five compartments having a pediment supported by pillars of red jasper. The panels are filled with rich red and green marbles, and the centre with a remarkably handsome piece of brownish marble, from the antique collection in the castle.

Above this, four large columns of red Devonshire marble support the main pediment, which reaches to the top of the chapel, and framed in this composition is a very beautiful picture, "The Man of Sorrows," designed and painted for this position. About a third of the main floor is set apart as a "chorus cantorum," and with the sacrarium and the outer compartment, or ante-chapel, is laid with handsome marble pavement, the design based on some examples of the ancient "opus Alexandrinum." The rest of the floor is laid with oak parquetry.

The lower parts of the great pillars (which are of white stone from Hildenly, on the estate) are green and gold, the pedestals being covered with slabs of alabaster.

The whole of the architectural works have been designed by and carried out under the personal direction of Mr. Robert J. Johnson, of Newcastle, architect; principally by the workmen of the estate, under the supervision of Mr. Ware, the clerk of the works. All the colour decoration and the altar-cloths, &c., have been designed by Mr. C. E. Kempe, of London, and executed by him and his assistants. The marble work has been done by Messrs. Field, Poole, & Son, of London, and the parquetry by Mr. Howard, of London. Mr. Councillor Rawling, of York, has executed all the plastering work. The brass work of the screen has been done by Messrs. Longden & Co., of Sheffield, from the architect's drawings. The altar cross has been made from the architect's drawings by the firm of Barkintin & Krall, of Regent-street, London.

The whole expense (which, of course, has been very considerable) has been defrayed by Lord Lanerton, except the font, which is a special gift.

THE GROWTH OF OUR TOWNS.

IN a pamphlet just now published, entitled "Sheffield as it was; Sheffield as it is; Sheffield as it should be," by an Old Grammar-school Boy of 1808,* the writer gives a very brief sketch of the progress of our leading provincial towns, since the end of the long war between this country and France, which will interest some of our readers:—

"Liverpool, the first in commercial importance, and the largest seaport next to the metropolis in size as in population, was not slow to move. Her first work was the Exchange Building and Mansion House or Town-hall, built during the first years of the present century. This was followed by the construction of St. George's Hall, containing the Assize Courts, Music-hall, and other large rooms for public purposes. Soon followed the erection of the Brown Free Library, the widening of Dale-street, Raneleigh-street, Church-street, Castle-street; and now there is in progress the opening of a fine thoroughfare, running from Castle-street through the centre of the town, to be named Victoria-street, whose buildings are to equal in style and magnitude anything in the provinces. The new Central Station and Lime-street new Station, to say nothing of the docks and quays, extending nearly five miles along the Mersey, place the town amongst the foremost in magnitude and wealth in the kingdom.

Manchester is not behind her contemporary in letting the world know that her wealth shall not be hidden under a bushel. Though from her geographical position her streets are tolerably level and straight, yet her buildings have been invariably low and mean, with uniform tastelessness, and, being built of brick, have a dingy appearance. Mosley-street was the only one of any decent architectural construction until the widening and rebuilding of Market-street, a narrow over-crowded lane, as its name implied, that would scarcely permit two wagons to pass into the area where the then newly-built Exchange stood. The increase of the town and its immensely-expanding trade soon brought into existence the present Market-street. That was quickly followed by the enlargement of the Infirmary, the filling up of the black-looking pool of water in the front, and the conversion of the ground into a fine area now occupied by a fountain, and the erection of an artistic statue with ornamental pedestals to the honoured memory of Sir Robert Peel.

Equally noteworthy are the Assize Courts in Salford, a splendid Gothic pile of buildings; the new Town-hall and its offices, which will, when finished, be a most elaborate and magnificent work, in Albert-square, where a statue in marble of the late Prince Consort is placed under a beautiful florid Gothic canopy that cost 1,000*l.*, presented by the late Mr. Thomas Gadsby, mayor of Manchester, in 1858. A new Exchange has been erected as the result of immensely increased business transactions arising during the past fifty years of increasing prosperity, which, in its magnitude of proportions, science in construction, and great utility, has excelled all its contemporaries, not excepting Liverpool, Bristol, Glasgow, or even London. Streets have been formed to meet the ever-increasing wants of the growing population. One now in construction, from the Cathedral-square, called Deansgate, bids fair to rival, by street architecture of the most elaborate and elegant character, anything now in existence. Not less striking the addition from thence to St. Ann's-square of two arcades, wide and spacious, where shops of a high class in jewelry attract the passenger. In fact, the city bids fair to compete, if not excel, all its provincial contemporaries in public buildings and streets, as it does in wealth, manufactures, and population, making it, as it deserves to be, the second town of the country.

Now let us turn to the town of Leeds, one of the principal towns of the West Riding of the county of York, that has also participated largely in the increase of wealth by its textile manufactures, as also by the manufacture of machinery and locomotive engines, incident to the development of the great portion of the trade that has within the last thirty years spread over the whole country, bringing the most remote places within twenty-four hours' distance of the metropolis, and which has every prospect of being the chief mode of conveyance throughout the world.

Leeds had an advantage over most other towns in having a good wide street from the bridge over the river Aire to Upperhead-row. The march of improvement has removed a large block of unsightly buildings, and opened up a considerable extension to the previous length of Briggate. In addition, the narrow, crowded street called Boar-lane has been entirely swept away, giving place to a wider and splendidly-constructed street, extending to the Central Railway Station, and leading to the new Town-hall, one of the most convenient and best improvements that could have been suggested. The Town-hall, containing the Assize Courts, is a noble building, which was constructed before the West Riding was separated into divisions. The erection of that structure secured to Leeds the advantage of being the Assize town of the West Riding, to the disparagement of the town of Sheffield, which was, and still is, destitute of any accommodation for that purpose,—a disadvantage which no doubt entailed considerable loss and expense upon the ratepayers.

The town of Bradford, eight miles from Leeds, thirty years ago had barely twenty thousand inhabitants, but owing to the adoption of the textile fabric of alpaca, kerseys, and stuff fabrics, has a colony of German and other foreign merchants, and by the increased trade has brought together a population exceeding one hundred thousand people, and transformed what was a small place into a town of stately architectural buildings, consisting of Town-hall, Exchange, and streets equal in architecture and not unlike the Belgian towns of Ghent, Bruges, &c.

The town of Halifax, only seven miles distant from Bradford, engaged in the same trade, has also been equally successful in her manufactures, but still more fortunate in having a man who to a princely fortune added a liberality not frequently met with. The late Sir Francis Crossley, gave a splendid park, close to the town, founded charities, built churches, and was chief mover, in conjunction with the Corporation, in opening up new streets and otherwise embellishing the town, making what was a narrow, crooked, stunted town, one which all who see it must admire. The style of its construction is only equalled by the beauty of the material of which it is built, being of stone from the neighbouring hills.

Huddersfield might be adduced as an instance in the same neighbourhood also partaking of the general success attending the textile and woollen fabrics. Nor has Huddersfield been backward in providing public halls and convenient and spacious streets, showing appreciation and enjoyment of the wealth acquired by the inhabitants.

Not only in the West Riding of Yorkshire, but in all parts of the north, have the large towns benefited either in the production of minerals or by the extension of manufactures. The results are shown in improved public buildings and streets and in the reconstruction or opening out of new routes. The convenience of the public and the health of the inhabitants have been consulted regardless of present cost, seeing that posterity will have to bear its proportion of the outlay, while those who are living desire to participate in the benefit. The facilities which the Government has placed within the power of corporate bodies enable them to raise money on their rates, extending over a considerable period if required, so that only a decimal amount is required for

* Pawson & Brailsford, Sheffield. 1875.

many years, while all the advantages are almost immediately obtained. A number of instances could be cited of actual profit being realised by the alterations."

The writer then goes on to urge, and with justice, that the time has come for Sheffield to improve the thoroughfares of the town, and provide proper municipal buildings, and he makes suggestions with these ends in view, which those who are locally interested and are conversant with the various *pros* and *cons.* that can be advanced should carefully consider.

THE INDIA MUSEUM QUESTION.

ON this subject Dr. Forbes Watson read a paper at the Society of Arts last week. In closing it, the reader said, the main difficulty in the management of a museum is to combine scientific thoroughness with that condensation of information, and that simplicity of the results which are indispensable if the influence of museums is ever to be felt beyond a small circle of connoisseurs. The solution of the difficulty lies in a division of functions between the central museums and local museums. The first would serve mainly for the preservation and elaboration of information, and for the general advancement of science and art, whilst local museums would fulfil the functions of making that information practically useful in rendering it accessible to the practical classes throughout the country. The central museum would not only be a store or reservoir of the accumulated knowledge of generations, but would likely be a laboratory or workshop, in which the typical collections would be prepared; it would epitomise the leading features of every one of the different groups of the museum, in the same manner in which the trade collections, already described, epitomise all the practically important conclusions which can be derived from a study of the whole of the collections of raw produce and manufactures contained in the India Museum. The local museums would consist mainly of copies and reproductions of these typical collections. It must not, however, be inferred that the usefulness of the original collections of the central museum will be exhausted by the preparation of typical collections, and that all the information which the central museum is capable of affording would be embraced within their compass. The central museum, from its systematic completeness and rich stores of information, will always remain the place for final reference, and will afford an inexhaustible field for new investigations, for the working up and the digestion of crude material, and for its elaboration into the clear and methodic shape in which it is capable of being made accessible to the public. It will contain the original documents, as it were, of the inquiry, and remain the workshop in which new results will be constantly produced,—the typical collections will exhibit only its final conclusions, and bring them into circulation, thus increasing its usefulness in about the same manner that printing multiplies the usefulness of a manuscript, and thus the central museum will be more especially an institution for increasing the number of people who will possess that knowledge. Thus the function of the central museum, as a store of information, as a source of official reference, and as a scientific institution promoting original inquiry, is independent of the typical collections; but the latter will extend the area of its influence from the scientific and literary class to the whole commercial and manufacturing community, and to the public at large.

The advantages of typical collections are the same as those already pointed out with regard to trade collections, viz., cheapness, compactness, simplicity, and clearness. It is not difficult to prove, moreover, that for the purpose of influencing and instructing the public at large, the small typical collection will be in every way superior to the complete original collection. Take any of the collections belonging to the British Museum, or to any scientific museum. It stands to reason that in representing the natural history of plants, or of fishes, or of birds, or of minerals, the untutored public will more easily assimilate the principles of scientific classification, and gather the structural progress apparent in the hierarchy of organic beings, if the collection contains only the number of specimens strictly required to bring out those main ideas in strong relief, the specimens being selected on account of their marked characteristics and typical significance. By increasing the number of specimens, the meaning is diluted, and finally obscured altogether, in the crowd of confused and unconnected details. Take the example of palæontology. A full palæontological series of the globe, which, if it could be compiled, would be invaluable to scientific geologists, would have to consist, at a guess, of, say, 50,000 specimens. But who will deny that a small collection of, say, 200 typical forms, will be far more suitable for rendering apparent to an unskilled visitor the few rudimentary notions which explain the bearing of the palæontological remains on geological science, and, which are all he can be expected to be interested in. Or take the rooms upon rooms filled at the British Museum with Greek vases, looking to the profane so very like each other. A dozen or a score of such productions would be ample for typifying to the general public the position which the Greek vases occupy in relation to ceramic art generally. Indeed, we may state as an undoubted fact, what at first sight looks like a paradox, *i.e.*, that the larger a collection the smaller the number of people who can visit it with any advantage, that is, of people who can derive from the inspection any useful ideas or conclusions.

The subject of typical collections also naturally offers itself as an illustration of another leading principle, without the systematic adoption of which it is idle to expect great and national results from the existence of museums. This principle consists in securing an organised public co-operation in carrying out the objects of the museum. It is evident that the preparation of typical collections is a very difficult undertaking. Nothing is so easy as a show of erudition, but nothing so repulsive to the general public. But to bring order and clearness to the exposition of a complex subject is a task for which only a few master-minds are qualified. The principal but most rare characteristics of our modern scientific men is the endeavour to fix certain leading types, and then to follow the variations of these types in accordance with the changes of the determining conditions. If these ideas are to be embodied in the typical collections like those here described, it is evident that this must be beyond the grasp of even the best staff which a museum can possess, and that it can only be done with the co-operation of the most eminent men of the day, each taking the group which most nearly corresponds with the subject of his particular study. Thus, as regards the India Museum, though it may be said that it is fortunate in having, in Dr. Birdwood, a man whose successful experience in dealing with similar matters in India is a tangible guarantee for entertaining hopes of a similar success in the case of the present museum, and, though on its staff there are several who have already made their mark in Indian subjects, yet it would be impossible, by their unaided efforts, to attempt the full execution of more than a few of those typical collections. Luckily, however, amongst those prominent on the field of Indian research men are not wanting who will devote time and trouble to a task of such manifest public advantage. I may mention the names of Mr. James Fergusson, of Mr. Edward Thomas, of Sir George Campbell, of the Hon. W. Egerton, and of Mr. Arthur Grote, and there are other members of the Asiatic Society, who are willing to help in this work.

There is also another direction in which public co-operation is no less urgently required, *i.e.*, co-operation for the purpose of securing a full dissemination of the information obtained through the instrumentality of museums. The support of the Indian Institute, and the foundation of local museums, belong to this part of the subject. I have no time to enter into this matter, beyond mentioning the fact that the formation of an influential committee is now under consideration, for the purpose of deciding what steps should be taken in order to secure the establishment of the Indian Institute.

Allow me to wind up by a brief reference to the present location of the India Museum, and to the question of its future and permanent location. The galleries at South Kensington containing the collections of this museum will be first opened on the 25th of May, for a *conversazione* given by the President of the Society of Civil Engineers, and no long delay will elapse before they are opened to the public likewise. It is out of question to expect that by that time anything like the full programme here indicated can be carried out. Only rough divisions between the main groups can be attempted at first. The special and typical collections must be the growth of years of labour, though probably the most interesting of them will be completed before the expiry of the three years' lease at South Kensington.

As regards the question of the future building, the first point is the expenditure required for it. On the subject of sharing the expenditure between England and India, I cannot add a single word to the convincing memorials presented to the Prime Minister, by the Chambers of Commerce of Manchester and Glasgow, as also by the Association of the Chambers of Commerce of the United Kingdom, which association has, in addition to a memorial already presented, adopted, at their late meeting, a resolution of following up their representations by a deputation. It is gratifying to find that the reasons which show that England should participate in the expenditure, have been sufficiently convincing to make some people inclined to think that not only a share but the whole of the expenditure should be borne by this country. Remembering the observations of John Stuart Mill in his autobiography about the advantages which accrue to an intermediate plan, from the existence of any distinct proposition of an extreme character, I am led to believe that the memorial presented by the Council of this Society in favour of paying for the whole establishment of the India Museum with English money will prove of no small assistance in securing the adoption of the intermediate course, of that recommending the sharing of the expenditure between the two countries.

As regards the amount of expenditure, it has been roughly estimated at about 100,000*l.*, which, however, would have to be spread over several years. As a certain time would have likewise to elapse before the plans could be prepared, the sum required in the current year would be but small.

Lastly, as regards the size, character, and location of the building. On all grounds of public expediency it would be of undoubted advantage to make use of the site in Charles-street already in possession of the India Office. An India Museum then would be not only in close proximity to the office, and easily available for official reference, but it would be in the very centre of public life, and not far removed from the centre of business. The only objection ever brought forward is the want of space. Apart from the fact that the condition of the surrounding property in nowise excludes the idea of future extension, there is abundant evidence that the space already in the hands of her Majesty's Government would be ample, not only for the purposes of an India Museum and Library, but also for the location of a Colonial Museum. I may mention several facts bearing on this point. There is no difficulty in erecting a building with a net floor space of double, or even treble, that now about to be occupied by the India Museum at South Kensington, and it must be remembered that the space will be far more convenient for arrangement than the wasteful and inconveniently narrow galleries at South Kensington. There is likewise to be kept in mind that the preparation of typical collections is sure to relieve the museum of a great deal of surplus articles. Moreover, I am satisfied that, by discarding in a great measure the use of the small movable cases, and by introducing the system of permanently fixed glass cases of large extent there will result not only a great saving in money, but likewise a surprising economy of space, accompanied by increased effect. If we are satisfied on the score of space, the other advantages of South Kensington—air and light—resolve themselves into a question of a few extra dusters and a trifling increase of the gas bill. Moreover, it cannot be left out of sight that the proposed concentration of educational museums at South Kensington cannot be effected without occupying a good deal of space, as also (as I had occasion to point out in a series of letters made public some time ago), it is to be taken into consideration that the idea of exhibitions is not nearly so dead that it could not be resuscitated with a more practical programme; because, whenever the people of this country will set earnestly about the establishment of technical museums, they will discover that no such museums will be efficient unless they are constantly recruited and kept to the level of the most recent progress by an international competition at exhibitions. On all these grounds I consider that it would be bad policy to alienate permanently any buildings or ground which would render it afterwards difficult, if not impossible, to resume the exhibitions. Thus, both in the best interests of the India Museum and in those of the grand series of institutions estab-

lished at South Kensington, I hold that it is best to adopt the Charles-street site as the place for the permanent location of the India Museum.

ASKE'S NEW SCHOOLS AT HOXTON.

For some time past the Haberdashers' Company have been engaged in converting Aske's Hoxton Almshouses into spacious schools, in accordance with the new scheme of the Endowed School Commission. The buildings are now almost completed, and the schools, which will accommodate about 250 boys, and an equal number of girls, are intended to be opened about the middle of next month.

Whilst the interior of the building has been almost entirely reconstructed, in order to adapt it to the purposes to which it is in future to be exclusively applied, very extensive new buildings have been added, including the erection of an entirely new elevation at the west side, which was formerly the rear of the building, but which has now been converted into one of the main frontages of the structure. This newly-added portion is carried westward to a depth of about 50 ft., in order to admit of the construction of an unusually large school-room. It is also 52 ft. in width. It is built of yellow brick, with Portland cement dressings, the elevation containing five lofty windows, 16 ft. in height, by which, with four similar windows on the north and south sides, the large school-room is lighted. A spacious new-class-room has been erected, in addition to other rooms in the reconstructed building, which have also been converted into class-rooms. At the north-east side of the building a porter's lodge has been erected, containing six apartments, with sufficient accommodation for a porter and his wife. The whole of the almshouses on the north and south sides of the main school buildings fronting Pittfield-street have been swept away, and the entire area with a frontage of about 200 ft. in length, and upwards of 100 ft. in depth, is to be asphalted, and appropriated as a recreation-ground for the boys, with a spacious covered playground or shed at the south-east corner of the grounds. A large area on the west side, in front of the new west frontage just described, will be similarly laid out as a recreation and play-ground for the girls.

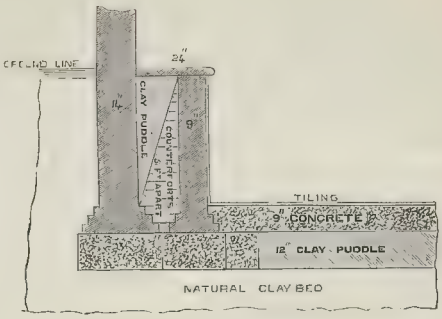
The rearrangement of the interior of the old school buildings amounts to an entire conversion. What was formerly the chapel now forms a portion of the main public schoolroom, which is 81 ft. in length and 32 ft. in width at that part which was formerly the chapel, the west end, or added portion being 50 ft. in width, and the schoolroom containing an aggregate superficial area of 3,200 ft. It is 28 ft. in height from the floor to the ceiling. The walls entirely around the apartment are wainscoted to a height of about 5 ft., and in addition to the west and north and south windows, it is lighted by a sky-light over that portion which was formerly the chapel. Corridors on each side of the school-room, 6 ft. in width, lead to the different class-rooms, which are ten in number,—five for girls, and five for boys,—the boys' class-rooms being on the south side, and those for the girls on the north side.

Instead of, as formerly, being a school with alms-houses combined, for the education of twenty boys, the sons of haberdashers, and the support of twenty inmates of the alms-houses, the establishment will now be exclusively an educational institution for about 500 children, for whom a low rate of tutors' fees is to be paid as fixed by the Endowed School Commission, a preference being given in the admission of pupils to the children of haberdashers.

Mr. W. Snooke, of Duke-street, London Bridge, the architect to the Haberdashers' Company, designed the new buildings and alterations, which have been carried out by Messrs Rider & Son, the contractors, Mr. Hobbs being foreman of the works, the estimated cost of which is about 10,000*l*.

New Congregational Schools, Stockton.—The foundation stone of new schools in connexion with the Congregational Chapel was laid on the 17th ult., by Mr. Dodds, M.P., in presence of a large number of spectators. The Rev. J. Sidebottom read a copy of the document to be placed in the stone, which gave the history of the school since its commencement in 1845 at the then newly-erected chapel.

CONSTRUCTION OF PLUNGE BATHS.



CONSTRUCTION OF PLUNGE BATHS.

The accompanying sketch shows how I propose to construct a plunge-bath, about 24 ft. by 16 ft. in the clear. I should be obliged if some of your correspondents would kindly suggest any improvements or saving. Zeta.

HOUSES FOR THE MIDDLE CLASSES.

Sir,—We hear in these days a great deal about the working classes. Among other things they are to have dwellings built with every convenience, for which they are to pay a low rent: good. If some person would do the same for those called the middle classes, who are quite as badly off for house accommodation, he would deserve their best thanks. A block of buildings not exactly like a barrack would pay well. The heaps of rubbish that are run up by builders, and called houses, with a few coloured bricks to catch the eye, walls through which you can hear your neighbours talk, and which suck in water like a sponge, doors that will not shut, locks and bolts that will not fasten, and the woodwork of which shrinks until you can peep through the chinks; these are the places for which an enormous per-centage on the value is exacted in the shape of rent, and they are the cause of half the maladies to which Londoners are subjected. Let some enterprising person build a block with the same conveniences with which the so-called industrial dwellings are furnished, and I venture to assert that he will not repent it. C. J. D.

VENTILATION OF ROOMS.

An examination of the principle of Mr. Tobin's method of ventilation, referred to by us some time ago, and, as stated in the *Times* of the 12th ult., shows some good features in it. A stream of fresh air may, no doubt, be projected from the mouth of a vertical pipe, which may stand up some few feet above the floor, with sufficient velocity to cause it to impinge against the ceiling of a room, and if the ceiling is flat, the current of air will be deflected in all directions or in any required direction where the part of the ceiling above this pipe is formed in any given manner.

One would first ask what becomes of the heavy respired air of the persons in the room, which, after ascending to some height, by reason of the rarefaction caused by its higher temperature, falls down again towards the floor when its heat has left it? It would seem that it becomes mixed with such an amount of fresh and lighter air as to enable it to rise and pass through the air-outlet, whether that be the fireplace or other flue, its place being supplied by a plenum of fresh air, to be in its turn converted and passed away. The chief point of the method is the dispersion of the air current at the ceiling, breaking it up into threads of air, which are then no longer able by combination to produce a draught in any particular part of the room. These fall,—we may presume,—through the air of the room as rain falls, or similarly; the acting force being that of gravity, for the entering particles of fresh air are less heated than the air of the room, and heavier than those of the upper part of the room. In any case where the outer air is warmer than that of the room we should expect there would be no action naturally; but a small external force would be sufficient to drive a current through the pipes. The way in which it would mix with the air of the room, however, would be different, under these circumstances; the mixture would take place by diffusion, which is the manner in which lighter air mixes itself with heavier air, the lighter in this case being the active body; whereas when the entering air is cooler than that of the room the heavier is the acting body, and falls by the force of gravity. Its rate of falling, however, is slow, the difference between the density of the one body and that of the other being small; and hence there is no "draught."

When the difference of the specific weights of the air outside and inside the room is but small, the current of air through the pipes may not be of sufficient velocity to carry it to the ceiling of a high room; in that case the action of diffusion would take place, even, though the entering air be specifically heavier than the air of the room.

THE PROPOSED NEW OPERA HOUSE ON THE EMBANKMENT.

At the last meeting of the Metropolitan Board of Works, the Works and General Purposes Committee brought up the following report in regard to the proposed New Opera House on the Victoria Embankment:—"The committee have to report that they have considered the letter from Mr. Mapleson, asking the Board whether they would make any objection to the Opera House which he proposed to erect on the Victoria Embankment at Cannon-row, being kept to the old river line from east to west, referred by the Board on the 19th of March last. It was said that a depth of 200 ft. is absolutely essential for a first-class Opera House, such as Mr. Mapleson desires to erect, and in consequence of his inability to purchase the two houses in Cannon-row, it will be necessary, in order to satisfy this requirement, to advance the entrance of the building within about 30 ft. of the pavement of the Embankment and about a mean distance of 75 ft. in advance of the restricted line of frontage. Mr. Mapleson also proposes to make a roadway on each side 15 ft. wide to be given up to the use of the public. Should the Board not agree to the advance of the building with the principal front and entrance to the Embankment, the only way of getting over the difficulty would be to place the flank to the Embankment, and make the entrance up one side, and this would, of course, render it necessary to forego the architectural effect which would be produced by an elaborate approach and entrance façade fronting the Embankment. There would also then be no side-streets at all, as all the space to be given to them would be required, and the effect would be unsatisfactory. Your committee have reason to believe that the proposed alteration in the plan will not be objected to on behalf of the Government, and provided the intended streets are increased in width from 15 ft. to 20 ft."

On a division the recommendation of the committee was adopted.

THE REPORT OF THE COUNCIL OF THE INSTITUTE OF ARCHITECTS.

THE report which is to be presented on Monday evening is singularly uninteresting to any but those who have by this time received it, and as the writers of it have the bravery to state that one of the reasons why the ordinary general meetings are but poorly attended is that the papers read are often reported *in extenso* by the press, they will doubtless be obliged to us for printing none of it. In this same report the writers have to quote as against some who object to the present mode of managing the Institute, that the latter forget that one of the broader purposes for which the Institute was founded is "to promote the advancement of a special Art." Do they not themselves forget this when they seek to restrain the publication of papers having the advancement of this special art in view? In the interest of the Institute we may not cease to speak of this as entirely mistaken policy.

THE AFFAIRS OF THE INSTITUTE OF ARCHITECTS.

SIR,—I beg to ask the favour of being permitted to say a word in your journal in order to prevent a probable misunderstanding of the notice I have given to call the attention of the annual meeting of the Institute, next Monday evening, to the way in which the secretaryship is administered. It is true that this notice was more immediately provoked by certain unprecedented official proceedings which took place at the last meeting, in the way of "putting down" a couple of members who "wanted to know"; but it must not be supposed that any passing question of a mere personal affront to those gentlemen is what I have to remark upon. I have observed with pain for years past that the affairs of the Institute are being conducted upon a peculiar principle of personal government, which, as I think, not only is unauthorised in the written regulations, but is directly subversive of the best interests of the Society and of the profession. The evil is to be remedied, as I further think, by a simple return to the true and honest intent and meaning of the charter and bye-laws; and my object is to take the opportunity which now offers for an appeal to the good sense of the members at large upon this vital point. I wish I could hope to see present on Monday evening a few of the old friends who used, in former days, to take their part in our fraternal debates with so much wisdom; but I very much fear it is too late now.

ROBERT KERR.

THE SUGGESTED UNION OF THE TWO METROPOLITAN ARCHITECTURAL SOCIETIES.

A FEW months since, the late president of the junior Society invited myself and some half-dozen others to meet at his chambers to discuss certain general propositions, which he had prepared to test the propriety or otherwise of attempting a fusion of the two societies known as the Royal Institute of British Architects and the Architectural Association.

Being unable to be present, I sent to Mr. Tarver my first impressions, and also wrote to Mr. Sharpe, of Lancaster, asking him to favour us with his judgment on the matter.

Mr. Clarkson, as secretary of the Association, made a similar appeal to Mr. Sharpe, the result of which was, that Mr. Sharpe addressed a letter to Mr. Clarkson, and at the same time enclosed a copy to me.

This letter I now forward to you for publication in its complete form, after due consultation with others and with the permission of its author, in a letter received from Mr. Sharpe on the 15th of April.

It will be understood that this contribution of Mr. Sharpe's towards a fuller discussion of the subject was written at an early stage of the negotiations, and it is the first expression of opinion systematically thought out.

As other and more detailed suggestions are now in existence, it has been thought better that his views should be stated in his own words, so that they may be contrasted with other propositions which have been formed, both with and without a knowledge of what he has written.

It is obviously necessary to the realisation of Mr. Sharpe's scheme, as to every other scheme worthy of any attention, that a reorganisation of the elder Institute must either precede or follow any such fusion of the two societies.

Mr. Sharpe thinks that the proposed amalgamation should *precede* organic changes, and thus expresses himself to me in his last letter from the Pyrenees:—

"The first thing to be done, I am confident, is to unite the two bodies, and only to discuss the basis on which this is to be done, and the powers and limits of power that are to be assigned to each in the amalgamation. The united wisdom of the whole profession, acting in a common interest, will then be brought to bear on such questions of change, reform, and progress as may be proposed, with a much greater chance of unanimity than if discussed now."

I forbear giving any personal expression of opinion at the present stage, but I trust you will find space for well-digested thoughts on the subject.

Twenty years ago, I supported Sir Digby Wyatt when a proposition was then made for the absorption of the Association by the Institute. At that time the Association was supposed to be on its last legs. The times have changed, and the two societies are now at the zenith of their strength, and each has enrolled nearly an equal number of members.

Neither society has need of the other to sustain itself, or to continue its usefulness, but the proposition is this,—May not both contribute to the prosperity of the profession as a whole, by uniting for that end, and for that end alone?

EDWARD C. ROBINS.

I entirely accept your views as expressed in your letter of the 4th inst., and I fully appreciate the difficulties in the way of an amalgamation of the Institute and the Association; and agree with you that any combination of the two which would interfere with the independence of the latter or change its representative character is not to be desired.

With this proviso, in what way can the two societies be made mutually useful to one another and to the profession generally? It is a matter to be studied and if possible to be accomplished.

On the one hand, we have, in the Association, activity, energy, zeal, self-help, a good working system, and an organisation which provides efficient and useful occupation for no less than sixty officials out of the 600 members of which it consists.

On the other hand, we have in the Institute professional status, acquired honours, mature experience, abundant means, and a magnificent library, but little enthusiasm; and, considering that the Institute numbers upwards of 600 members, but can rarely muster more than fifty even on extraordinary occasions, an almost entire and not unnatural abstention on the part of the great bulk of its members in any participation in the active work of the Institute.

To unite the professional experience, financial power, and honourable consideration of the one, with the restless activity and working freedom of the other without damage to either, or rather to provide for the harmonious combination of these not antagonistic elements in such a manner that those of each society shall dovetail in with and contribute to the enhancement of those of the other, and thus to present a union of upwards of 1,200 members as the representative Institute of the architectural profession, would be an achievement worth an effort, and one that would, I think, greatly redound to the credit of the profession and to its consideration in public opinion.

I am scarcely the fittest person to suggest by what machinery this union should be accomplished, for a more intimate knowledge of the nature of the charter of the Institute, and of the details of the working of the Association than I possess, is necessary for this purpose. But it appears to me that without any considerable sacrifice on either side, and with good will on both sides, it ought not to be a difficult matter.

Suppose, for example, starting from the present moment, and taking things as they are, we were to combine the two societies under the general denomination of the Architectural Institute, and leaving to each its freedom of action and separate organisation, we were to provide that the elder Society be regarded as comprising the "graduates" of the profession, and the younger Society the "students" or "associates," the graduates being of two classes or orders (now Fellows and Associates), to be called hereafter, Fellows and Members, and the younger to be called either Students or Associates. The students to carry on under their own President and officers, elected by themselves out of the joint body, their present excellent working system of self-instruction, their subscriptions remaining the same, but the value and number of their prizes and rewards being considerably augmented by an annual contribution from the funds of the Institute, and their means of self-instruction being greatly increased by throwing the Library of the Institute entirely open, under proper conditions, to the students even to the extent of allowing books and drawings to be taken out for home study. It would have to be considered whether the additional prizes granted by the Institute should not be awarded by examiners appointed by their own body, or whether they should be elected out of that body, or out of the joint body by the junior Society.

The mode of election or nomination of graduates, first to the lower, and afterwards to the higher degrees (equivalent to those of Bachelor and Master of Arts in the universities), wholly out of the body of the students, would also have to be considered; and whether by examination,—which would appear to be desirable, if not essential, or otherwise; and if by examination, whether proficiency in different lines of knowledge or ability, and *not in all*, should not be taken as a sufficient qualification. On this head I may remark that the establishment of the architectural examination appears to me to be not only a good precedent to follow, but the initiatory step towards the realisation of this more comprehensive project.

I would, in fact, make the junior part of the body,—*the sphere of work*; and the senior part the *sphere of honour*, to which it should become, in the natural course of things, the tendency and the ambition of the juniors to ascend.

The object, then, of the proposal being:—(1) To promote harmonious working between two essentially different bodies of men *engaged in the same pursuits*; and (2) to facilitate the gradual ascent of the more painstaking, the more able, and the more deserving of the younger body from a state of pupilage and obscurity, to a position of professional credit and honour; every proposition and suggestion should be set aside, which would offer the slightest impediment to the attainment of this result, and every means be adopted which would promote its realisation.

As regards initial letters I would confine the use of them to the *graduates*, the Fellows being privileged to add F.I.A. to their names, and the Members M.I.A. As to the reading of papers, &c., I would leave matters entirely as they are, each body retaining its own arrangements, with the difference that all members of bodies should be entitled to admission to the lectures and exhibitions of both.

Should you find anything in these very rough and incomplete ideas which may be useful in the preparation of any practical scheme having the same object in view, you are quite at liberty to make use of them as and when you think fit.

EDMUND SHARPE.

THE MASONIC MEETING IN THE ALBERT HALL.

THE Wednesday next after St. George's Day of 1875 will ever be memorable in the records of English Freemasonry as the date of the largest and most magnificent meeting of the Grand Lodge that has ever been held in England, or, in point of fact, in the world; for in no other country could such a gathering be possible, and for this assertion only one reason amongst many need be given, viz., that nowhere else in the world could such a building as the Albert Hall be obtained for the purpose. The immense area, from arena to topmost gallery, was filled with the representatives of lodges from all parts of England, supplemented by deputations from the Grand Lodges of Scotland, Ireland, and Sweden, and a representative also of that of Denmark, to assist at the installation of His Royal Highness the Prince of Wales as Most Worshipful Grand Master of England. It is no part of our province to say anything of the proceedings, to do which, as our Masonic readers are aware, would be a gross breach of etiquette, if nothing worse; and when we have said that his Royal Highness appeared in excellent health, and was the only speaker able to render every word he said perfectly audible; that another royal Mason was present in the person of H.R.H. the Duke of Connaught; that the

Lord Mayor, amongst others, received Grand Lodge rank; and that everything was arranged and managed to perfection, under the able direction of Bros. Sir Albert Woods, John Hervey, and T. Fenn; it only remains for us to record that the spectacle was such as can never be effaced from the memory of any one who was present, and when the vast assemblage arose to greet the M.W.G.M., there must have been few in the hall who were not impressed with the deep feelings of loyalty which characterise the Masonic body, and convinced that the ceremony must have the best effect in spreading the beneficent results of Freemasonry.

THE LATE MR. PICKERSGILL, R.A.

THE death is announced of Mr. H. W. Pickersgill, R.A., who died on the 22nd inst., at his residence in Blanford-square, at the advanced age of ninety-three. He was for some time assistant to Sir T. Lawrence. He was made an Academician as long ago as the year 1826, and a member of the Dutch Academy in 1848. Mr. Pickersgill began his career immediately after the death of Lawrence, when portrait-painting was much in vogue, and he painted almost all the great men of his period,—noblemen, statesmen, men of science and literature, and some of the Waterloo heroes. Many of his portraits are fine works. His valuable collection of remaining pictures, costumes, and works of art will be sold by auction before long.

THE LATE MR. BENJAMIN J. BAUD, ARCHITECT.

A FEW days since (April 17), died in his quiet home, at Richmond, Mr. Benjamin Baud, aged sixty-nine, an architect now almost forgotten in the profession. He was in his early days an assistant to Sir Jeffrey Wyattville, when he took an active part in the alterations and improvements at Windsor Castle. Subsequently, in conjunction with Mr. Gandy, he published a work describing and illustrating that royal residence.

His general ideas of Gothic detail were not quite in accordance with the accepted tastes of the present day, although his designs were often prepared in that style.

He was much employed in alterations and additions to the mansions of various noblemen and gentlemen, and numbered amongst his largest works the cemetery at West Brompton.

In his later years, since a slight attack of paralysis, which affected his health, he did little besides some private business for one client, but spent most of his days painting in oil, or preparing drawings. The promises of his early years were scarcely fulfilled.

AGITATION IN THE BUILDING TRADES.

AT Manchester the operative bricklayers, masons, and joiners have given notice for an advance of wages, to come into operation immediately. The bricklayers, it is understood, have succeeded, the employers having agreed to advance their wages one half-penny per hour, making 9½d. The stonemasons have 8d. per hour, and ask 9d. A great drawback to the masons is the fact that stone, especially in large dimensions, cannot be obtained. Several buildings in Manchester are at a stand for want of stone. The best quarries in Yorkshire, as well as many others in this neighbourhood, are full of orders which they cannot execute. Masons, therefore, are not in great request, but the employers are not unlikely to concede a small advance. The carpenters and joiners were advanced from 7½d. to 8d. per hour two years ago, and an agreement exists between them and the employers to refer all matters of difference to arbitration. They ask 9d. per hour, to commence on the 1st of May, along with a number of alterations in their working rules. The whole matter was referred about a month ago. The men, however, were not satisfied with the award of the arbitrator, and at a general meeting of joiners, held on the 13th ult., the committee were instructed to ask the employers to "make fresh arrangements with a view to a settlement." The employers have declined to have the question re-opened, and so the matter stands.

The Durham joiners, taking advantage of the briskness of trade, have asked the masters for an advance of ½d. an hour upon their present wage, which is 7½d. per hour. The men also stipulate that the numbers of hours shall be fifty per week, instead of fifty-three. The masters have offered 8d. an hour, on condition that the hours remain as at present. This offer, however, the men have refused to accept.

The painters and glaziers of Kidderminster have resolved to ask the employers for an advance of 1d. per hour, and a suspension of work is talked about if the demand is not acceded to. The present rate of wages is 5½d. per hour, and an ordinary week's work consists of 56½ hours.

The strike of Glasgow joiners may be virtually considered at an end, the majority of the masters, it is stated, having agreed to sign the bye-laws. A few employers still remain determined to resist.

The Glasgow painters memorialise their employers for an advance of ½d. per hour on their present wages, and also that after the 1st May the working hours be reduced to fifty-four per week.

At Aberdeen the master shipbuilders have acceded to the demands of the men for an increase of pay, and those of the men who did not leave town during the strike, which lasted about three weeks, have resumed work.

COMPETITIONS.

Dartford School Board.—Twenty-six designs were received in competition for these schools, to accommodate 300 children, those by Mr. W. H. Powell, of Mecklenburgh-square, obtaining the first premium.

Feltham School Board.—The same architect's designs have been selected in this competition, for schools which accommodate 300 children, and a master's house.

The designs of Messrs. Hay & Oliver have recently been chosen by the Wellington School Board, Somerset, and also by the Little Bytham School Board, Lincolnshire.

THE BRITISH MUSEUM STAIRCASE.

I SEE a note in your pages referring to the British Museum expenditure this year of 9,538*l.*, that "almost the whole of this increase is in consequence of works and repairs, and the erection of a new principal staircase." Can you afford your readers further information on these proposed works? Is it really true that the trustees are about to pull down the present magnificent staircase, perhaps the grandest staircase to any public building in England? The one at the Foreign Office may be finer, but it does not, in my opinion, surpass the one at the British Museum. I hear that the proposed staircase is to come out to the front of the building; but perhaps you can inform us of the intentions of the authorities. By the way, who is now the architect to the British Museum since the resignation of Mr. Sydney Smirke? W.

THE OVERFLOW OF THE THAMES.

PROPOSED RIVER WALL AT BANKSIDE.

THE subject of protecting the houses and property on the south banks of the Thames from injury in case of any future overflow of the river, has for some time been under the consideration of the St. Saviour's Board of Works, and at their meeting held last week the surveyor submitted a scheme for protecting the district against any such anticipated overflow. The scheme comprehends the construction of a river wall to extend from the premises of the Phœnix Gas Company, on Bankside, to the Charing-cross railway viaduct. The project is to be considered by the St. Saviour's Board at their meeting next week.

IMPROVED INDUSTRIAL DWELLINGS.

SIR,—I observe a letter signed "N. S. J." in last week's *Builder*, in which the writer finds various faults with the arrangement of the pipes forming part of the sanitary arrangements of the buildings. Had he been able to see the remainder of the details, I think he would in some respects have altered his opinion, for although I admit separate pipes for the various purposes required might be best when the expense was no object, I considered it desirable on the score of economy to simplify the arrangement as much as possible. In the first place, I intended to have the cisterns divided in two parts, the water flowing first into the portion allotted for the use of soulleries, and then filling that intended for the w.c.s. In this portion the overflow pipe would be fixed, and as this on being taken out would form the waste-pipe, there would be no fear of the trap being emptied, as I take it for granted that it would be the duty of any one placed in charge of such buildings to see that the cisterns were periodically flushed out. The writer of the letter would also not be aware that the soil and waste pipe is continued upward within the ventilating shaft from the dust-receivers, and terminates with a covered opening at about 12 ft. above the roofs: this open end would prevent suction, as feared by your correspondent; and with respect to the waste-pipe from the sink, I mentioned in particulars sent in that a short additional length of pipe would take it direct to the fall-pipe outside the buildings.

So far as my experience goes, I have no reason to fear the cracking of any pipes leading from the washhouses and bath-rooms on the roof, as the water after having been used for the purposes required would certainly not be very hot.

HENRY MACAULAY.

CARE FOR RELICS.

SIR,—I beg to send you the following anecdote, which illustrates the vandalism of Guardians of ancient relics:—

Some years ago, a gentleman of my acquaintance, riding on an omnibus, fell into conversation with the person beside him, who said, "You'd never guess what I bought to-day." "Oh, no; what was it?" "*The Traitor's Gate at the Tower.*" GEORGE SOTHEBN.

*** Where is it now?

TORQUAY MUSEUM.

THIS building is now completed. The style is a sort of Venetian Gothic. It has a frontage of about 70 ft., and is entered by a porch, the arches being carried by carved capitals, and the spandrels filled up with ornamentation. It is a two-storied building, with corbelled roof in Bath stone. Over each of the upper windows is a large tympanum, but only one of these is at present filled up. It is intended, however, at a future time to fill the others with sculpture, sketches having been prepared by the late J. Birnie Philip. As at present arranged, it is intended to fill them with *terra cotta* work, but many prefer representations in stone. The capitals of the upper windows are enriched with carving, and carving has been somewhat sparingly used in other parts of the building by Mr. Harry Hems. All the dressings are in Bath stone, the quoins are in dressed limestone, the walls being of the same material. On the ground floor is a library, 34 ft. by 28 ft., a reading-room 28 ft. by 16 ft., and a committee-room. The floors and the entrance-hall,—which is 10 ft. wide, and vestibule,—are laid with encaustic tiles, and lead to the grand staircase, 24 ft. by 21 ft. The first floor will be taken up entirely by the museum,—a room 68 ft. by 34 ft., having an open timbered roof. The height to the ridge of the lantern light is 42 ft., and around the room it is proposed eventually to carry a gallery. Portions will be added,—a large lecture-theatre, with professors' rooms, and a residence for the curator. The building, so far as at present completed, has been built for 2,900*l.* by Mr. Bovey. The architect is Mr. Harvey, of Whitehall, who gratuitously furnished designs.

PENALTY FOR BAD WORK.

DURRANT *v.* SPRINGALL.

A CASE of refusal to pay for work not properly done was tried on the 21st ult., at the Yarmouth County Court.

Plaintiff is a painter, and defendant a builder, and the claim was for 1*l.* for painting a room in a building.

Mr. J. Clowes appeared for the defendant, who admitted he employed the complainant, but contended that the work was not properly done, and took off 1*l.* in consequence.

Plaintiff admitted he was not a first-class grainer, but said defendant understood this when he employed him.

Two witnesses were called for the defendant, who stated that the work was not passable, and taking into account plaintiff's admission that he was not a "professional grainer," his Honour

gave judgment for the defendant, and advised the plaintiff not to undertake work in future which he did not understand.

Miscellanea.

Opening of a New Roman Catholic Church at Canterbury.—The ceremony of opening a Roman Catholic Church recently erected at Canterbury, took place on the 13th ult. The old Catholic chapel in Canterbury was situated in one of the streets abutting to the cathedral, and close to an old parish church—Burgate,—which has been recently pulled down. It appears, however, that no authority could be obtained to remove the tower, and there it stands as an evidence that a church was upon the spot. It is close here that the new Catholic church has been erected, and, curiously enough, the removal of the body of the Protestant church has given a front elevation to the new structure facing a main thoroughfare, of which advantage it is not likely to be deprived, since consecrated ground cannot be appreciated to secular purposes. The designs were prepared by Mr. J. G. Hall, city surveyor of Canterbury, the estimated outlay being 3,500*l*. Estimates were obtained, and that of Messrs. Gasken & Godden, of Canterbury, for 2,993*l*., accepted. The high altar reredos figure of St. Thomas and the angels to the front have been executed by Messrs. Palmer & Brindley. The subject on the epistle side of the reredos is the Martyrdom of St. Thomas à Becket; that on the gospel side is Henry II. kneeling and doing penance at the tomb of St. Thomas, exposing his shoulders to be scourged by the monks. Messrs. Gasken & Godden, the contractors, have executed the works in a satisfactory manner.

Roman Mosaics, Italica (near Seville). To those interested in the archæological remains of Southern Spain, it may not be without interest to know that Señor Demetrio de los Rios, of Chipiona, has of late years collected a considerable mass of valuable data bearing upon the history of Itálica, the birthplace of the Emperors Trajan, Hadrian, and Theodosius. The *Athenæum* says, Señor Rios is about to attempt to galvanise these grey bones into life, having completed for the press a work entitled "Itálica," containing carefully-worked drawings to scale of the mosaics, &c., which have been discovered since Laborde issued his magnificent folio (1806), and embracing an elaborate account (with coloured plates) of the mosaic discovered in 1799, by a monk of San Isidoro (a neighbouring convent), who, at his own expense, erected a wall to enclose it; wall and mosaic were both destroyed by Soult and his braves during the French occupation of the South of Spain. In 1872, the owner of the "weeds and olive groves" being interested in archæology, commenced excavations, uncovering about forty-nine square (Spanish) metros; in 1873, an atrium was discovered, and in 1874, under the auspices of his widow, and mainly at his expense, 800 square metros more were uncovered, forming, apparently, the ground-plan of some Roman building of importance.

Gift of Scholarships to the School Board.—At the weekly meeting of the School Board for London, on the 21st inst., Sir Charles Reed, the chairman, announced, amid much cheering, that the Drapers' Company, in answer to his appeal, had resolved to give the Board seven scholarships annually, of the value of 30*l*. each,—four for boys and three for girls. This gift makes thirteen scholarships at the disposal of the Board, which are open to the competition of the children in all the public elementary schools of London. The thanks of the Board were ordered to be presented to the Drapers' Company. Mr. Lucraft condemned the sending of any more children to Canada under the auspices of the Board, and moved that a resolution respecting the matter, which was passed last February, be rescinded. The proposition was, after a long discussion, negatived by a large majority. We are sorry for it.

Fatal Accident in a Timber-yard.—On the 23rd ult., a fatal accident occurred in Messrs. Walker's timber-yard, Bury. A labourer, named Duncan Reoch, residing in Back Bambury-street, was standing beneath a heavy piece of timber, which was being raised by a travelling-crane, when it swung round and knocked him down, inflicting such injuries that he died shortly afterwards. The unfortunate man leaves a widow and ten children.

Sanitary Condition of St. George's, Hanover-square.—At the usual weekly meeting of the St. George's (Hanover-square) Board of Works, Dr. Corfield reported that during the five weeks ending April 10, 232 deaths had been registered. The death rate was considerably in excess of the average, caused no doubt by the severity of the season. Mr. Barlow again called attention to the want of water in thirty houses in Garden-street, and said that if something was not speedily done some injurious consequences would arise. The surveyor informed the Board that he had written to the authorities of the Westminster district, in which the street was situated, but did not know whether any action had been taken. The clerk was instructed to obtain the inspector of nuisances' report upon the matter, and if nothing had been done to write to the Westminster District Board calling their attention to it.

The New Premises of the Leicestershire Banking Company.—The memorial stone of the new buildings of the Leicestershire Banking Company, situated at the corner of Bishop-street and Granby-street, Leicester, was laid in a semi-public manner. The style of the buildings is a modified form of Gothic, and the portion now in course of erection is of the same character as the part already occupied. The structure is being built of red brick with Portland stone dressings, and polished granite and Greenmore stone columns. The main length of the building in Bishop-street is 160 ft., while it has a frontage of 73 ft. in Granby-street. A short tower will be erected above the main entrance at the corner of Bishop-street and Granby-street, to the top of which will be 80 ft. from the ground. Messrs. Goddard & Paget are the architects, Mr. William Clifton is superintendent of the works; Messrs. T. & H. Herbert are the contractors; and Mr. H. F. Allen is the mason.

Fall of Arches at Ramsgate.—On the 21st ult. an accident occurred at the gas works of the Isle of Thanet Gas Company, situate in Hardres-street. The foreman of the yard, Mr. J. Philpott, was superintending the removal of some retort arches, which were being pulled down to be rebuilt, and another man, named Edward Crouch, was engaged in the work. There were four arches, and the "keying" of one of them gave way. The whole of the brickwork fell, and the two men were buried amongst the *débris*. Mr. W. A. Valon, the manager, was on the spot immediately after the accident occurred, and when the two unfortunate men were extricated from the heap of bricks it was found that Mr. Philpott had his leg broken. Crouch was bruised and severely shaken.

Accident at the New Law Courts.—On Monday last, a fatal accident occurred at the New Law Courts now in course of erection near Temple Bar. William Roberts, residing in Church-place, Somers-town, was engaged with a gang of other men in attending to the removal of large slabs of stone. The stones were lifted by a jib, worked by a derrick capable of lifting three tons. Whilst they were in the act of shifting one of the large slabs on to the front of the building near St. Clement's Church, and whilst the deceased and others were guiding the jib, it gave way, and fell a distance of 15 ft. upon the deceased. The man was conveyed to King's College Hospital, and was found to be dead.

Fall of a Stack of Boards.—An accident of a serious character occurred on the 26th ult in a timber-yard in Henry-street, Gray's Inn-road, belonging to Messrs. Brachin & Son, builders and contractors. Several men were engaged in forming a stack of 1 in. boards, among them two men named Thomas Brown, aged 36, of 17, Verulam-street, and James Velle, aged 45, living in Baldwin's-gardens, when a portion of the stack toppled over on to the unfortunate men, who were removed to the Royal Free Hospital, when it was found that Brown was suffering from fracture and severe internal injuries, and that Velle was suffering from severe external bruises and injuries over the body, including both arms and legs.

Cambridge Working Men's Club and Institute.—It is intended to hold the second Industrial Exhibition and Fine Art Loan Collection about Christmas of the present year. Special and other prizes will be offered to workmen and amateurs. Upwards of 23,000 persons attended the first exhibition in 1873.

Fatal Fall from a Roof at Nottingham.—On the 10th ult., a youth named Nicholson was employed on the roof of a building 60 ft. high, from which he fell and was killed. At the inquest at the Hospital, which was adjourned from last week for the jurymen to go and view the place of the accident, the following verdict was returned: "That the said George Nicholson died on the 10th of April from having accidentally fallen from a building about 60 ft. high, whilst endeavouring to cover a ridge roll, and that such fall was in a great measure due to the neglect of the contractor and others engaged as the principals in such building to take necessary precautions for the safety of the persons employed there."

The Alexandra Palace.—The Lord Mayor will attend in state with the sheriffs of London and Middlesex to open the new Alexandra Palace on, this, Saturday. His Lordship will be received at the western entrance to the palace by Sir E. Lee, the chairman and the directors of the company, and conducted to the concert-hall, the band of the Coldstream Guards heading the procession. The Lord Mayor will declare the palace to be re-opened. The concert, by members of Her Majesty's Opera Company, conducted by Sir Michael Costa, will then take place. This musical festival will be followed by a *déjeûner* given by the directors to the civic party.

Leicester Square.—On the 22nd ultimo, Leicester-square, which has for some time been closed to the public, was re-opened. Under the direction of Mr. McKenzie, chief gardener to the Metropolitan Board of Works, the flower-beds have been rearranged and planted, and the paths laid with asphalte. The fountain in the centre of the enclosure will commence playing on the 1st of May. It may be stated that the cost of supplying this fountain last year with water amounted to a sum averaging 15*s*. per hour. The offer by Mr. Grant of a band to play there has been declined.

The Late Lady Milbank.—The memorial archway erected by the parishoners of Barningham, near Barnard Castle, to the memory of the late Lady A. H. Milbank, is now completed. It stands at the entrance to the church path, opposite the hall gates. It is a substantial erection, consisting of a stonework arch, 20 ft. high, and surmounted by a foliated cross. The arch bears the following inscription:—"In loving memory of the late Lady Augusta Henrietta Milbank, who fell asleep, Sept. 13th, 1874. This woman was full of good works and almsdeeds which she did. Acts, 9th chapter, 36th verse."

Transfer of the Metropolitan Water Companies.—On Saturday last a deputation of the representatives of the metropolitan water companies had an interview with the President of the Local Government Board, to urge the Government to oppose Colonel Beresford's Bill for transferring the water companies of the metropolis to three commissioners, and to give a constant supply at high pressure. The companies proposed to be taken over, and who were all represented by their chairmen and solicitors, are the New River Company, the Lambeth, the Chelsea, the Kent, East London, West Middlesex, Grand Junction, and Southwark.

The Purchase of Stockwell Green.—A Bill, promoted by the Metropolitan Board of Works for the purchase of the ancient green at Stockwell, and to keep the same as an open space or recreation ground, came on for consideration in a Committee of the House of Commons on the 21st ult. Several witnesses said that they viewed with alarm the proposition to build on the green. The Committee on the 23rd decided that the preamble of the Bill was not proved.

Widnes Local Board.—At a meeting of this Board on the 27th ult., Mr. J. Higginson, of Manchester, was appointed surveyor in the room of Mr. Anthony Shelmerdine, resigned. There were seventy-three applicants. The Board has lately been augmented from nine to fifteen members by permission of the Local Government Board.

The Industrial School for Boys, Ashford, Kent.—The first block of buildings is now in course of erection at Kingsnorth, near Ashford, and will be completed about August. The first contractor abandoned the work, and the contract has since been taken by Mr. George Punnett, of Tonbridge. Between thirty and forty men are now busily at work.

The Hull Bricklayers.—The bricklayers of Hull and their labourers recently resolved to turn out, in the event of their demand for an increase of 4s. per week not being complied with. At the eleventh hour the masters agreed to meet the men half-way, and this arrangement being considered satisfactory, work has not been interrupted. The bricklayers are therefore now receiving 34s. per week, instead of 32s., and the labourers 26s. per week. The building trade is brisk, although there are whole blocks of houses finished, but unoccupied.

Presentation to a Young Architect.—Last week a few of the friends of Mr. Robert Goodwin presented him with a gold watch, on the occasion of his beginning practice as an architect on his own account. Mr. T. Gildard, in a few well-chosen words, presented the gift. The watch bears the following inscription:—"Presented to Mr. Robert Goodwin, by the assistants and a few friends, as a mark of esteem, on his leaving the office of Messrs. A. & G. Thomson, architects, Glasgow. 22nd April, 1875."

The Restoration of Darnall Church.—The re-opening services after the restoration of the Darnall Parish Church were held on Wednesday. The whole of the work was done under the superintendence of Mr. Marcus Flockton, architect. The Corporation have been induced to light up the new clock with gas, and it is now one of the best clocks in the district. The total cost of the alterations is about 1,200*l.*, and of that sum about 700*l.* have already been subscribed and promised.

Fatal Accident from the Fall of a Cornice.—South Dalton Hall, near Beverley, the seat of Lord Hotham, is in course of re-erection, and men are employed at the works. On Monday evening a heavy cornice gave way, and fell upon a scaffold, upon which several men were at work. One man, a mason from Pocklington, named Robert Fielding, died in a few minutes, and William Akester, bricklayer, of Bishop Burton, lies at the hall in a very precarious state. Two other men were removed to the Hull Infirmary in a mutilated state.

International Exhibition of 1876, Philadelphia.—The applications for space in the British section of this exhibition are numerous, and of a satisfactory character. In consequence, however, of arrangements recently communicated, it will be possible for the British executive to receive applications from intending exhibitors, addressed to 5, Craig's-court, Charing-cross, London, up to the 15th of May inclusive.

New System of Street Watering.—The City Commissioners of Sewers have resolved to make a trial of a new system of street watering, suggested by Mr. Rudkin, one of the members of the commission. The principle of the system consists of a watering-pipe laid along the centre of the carriage-way, below the surface. It is to be tried along one-third of the length of Newgate-street, on that thoroughfare being repaved.

Reconstruction of Hope Hall.—This building, which formerly belonged to Mr. Macfie, some time ago changed hands, and was purchased by a few gentlemen, who desired to retain it for religious meetings, lectures, and social gatherings. The alterations have been made under the superintendence of Messrs. Parslow & Clarke, architects. The contractors are Messrs. Nicholson & Ayre, of Wellington-road.

The Pollution of the Thames.—To avoid the heavy penalties threatened by the Conservators for polluting the River Thames, the Kingston Corporation have entered into an arrangement with the Native Guano Company for dealing with the sewage of the town. The necessary works are proposed to be erected on the aits below Kingston Bridge. Opposition is beginning to show itself.

Royal Institution of Great Britain.—Professor Duncan's third lecture on the grander features of physical geography, delivered on the 20th ult., gave, in a very concise form, an account of the agents of water denudation by which the earth's surface has been sculptured into its present form, and the illustrations that were selected possessed an interest in themselves.

Cæsar's Camp, Wimbledon-common.—The Wimbledon and Putney Common Conservators have not been idle, and have filed a bill in Chancery to restrain Mr. Dixon (a lessee from Mr. J. S. W. S. Erle Drax, the owner of the ground) from commencing building operations, and an injunction was granted as prayed, pending a full examination into the questions at issue.

The late Mr. R. W. Billing's Collection. This is to be sold by auction this month, at the deceased gentleman's residence, in Wandsworth-lane, Putney. The collection consists of English, Dutch, Venetian, and French goblets, old China, candelabra, shoe and waste buckles, an ancient iron chest, of Flemish work, richly decorated; curious old fire-arms and weapons of various kinds; suits of armour, together with an interesting collection of old wood carving and ancient furniture.

Accident at the Delabole Quarries.—One man was killed instantaneously, and another fearfully injured, in the Delabole Slate Quarries, North Cornwall, last week, by a large stone which was projected from a blast 300 ft. below where they were working.

Orphan Home at Aldershott.—On the 21st ult. Lieutenant-General Sir Thomas Steele, K.C.B., laid the foundation-stone of a new United Soldiers' and Civilians' Orphan Home, near the North Camp, in the presence of a large number of ladies and gentlemen.

Gloucestershire.—Mr. Edwin Crawshay is having a new mansion built at Blaisdon. Messrs. Waller & Son, of Gloucester, are the architects, and Mr. J. Clutterbuck is the contractor. The cost is estimated at 30,000*l.*

TENDERS

For alterations and decorations to the Globe, Vauxhall-walk, for Messrs. Tusten & Roope. Mr. A. J. Rouse, architect:—

Turner & Enderson	£313 6 0
Blandford & Co.	311 0 0
Green & Son	290 0 0
Lose	250 0 0
Brindle (accepted)	245 10 0

For schools for 435 children and two residences at Hednesford for the Cannock School Board. Messrs. Hay & Oliver, architects. Mr. A. Deane, surveyor:—

	Schools.	Boundaries.
Goodman	£3,175 0	£230 0
Whittome	3,028 0	260 0
Rowley & Lynex	2,969 0	232 0
Barton	2,947 0	260 0
Webber (accepted)	2,677 6	238 4
Crisp & Son	2,700 0	100 0

For the erection of a residence at Woodseaton, Sedgley, Staffordshire, for Mr. Henry Round. Messrs. Round & Beddoe, architects. Quantities supplied:—

Stockton & Son (accepted)	£907 0 0
Tranter	940 0 0

For villa residence and studio, Steele's-road, Haverstock-hill, for Mr. J. D. Linton. Messrs. Batterbury & Huxley, architects. Quantities supplied. First contract.

Grimwood & Sons	£2,141 0 0
Linsell & Son (accepted)	2,000 0 0

For alterations and repairs for Mr. A. Bertlin, 42, Park-road, Haverstock-hill. Messrs. Batterbury & Huxley, architects:—

Manley & Rogers (accepted)	£300 0 0

For the erection of buildings in Alfred-mews. Mr. Charles Fowler, architect. Quantities by Mr. Henry Lovegrove:—

Phillipson	£2,200 0 0
Bangs & Co.	1,808 0 0
Patman & Co.	1,748 0 0
Hobson	1,724 0 0
Stimpson & Co.	1,710 0 0
Scrivener & White	1,669 0 0

For additions in rear of No. 50, Foley-place, for Mr. J. Laudley:—

Blandford & Co. (accepted)	£120 0 0

For alterations and additions to Trafalgar House, Walham-green, for the Fulham Board of Works:—

Feltham	£175 11 0
Smith	437 9 7
Eyles	385 0 0
Stephenson	379 0 0
Warr	375 0 0
Blandford & Co.	375 0 0
Lose	368 0 0
Wigmore	349 0 0
Cook	325 0 0
White	300 0 0
Johnson	283 0 0

For building a villa residence at Thornton-heath, Surrey. Mr. Josiah Houle, architect:—

Abbott & Son	£3,700 0 0
High	3,650 0 0
Macey	3,154 0 0
Sewell & Son	3,136 0 0
Jarrett	3,087 0 0
Scrivener & White	3,050 0 0
Langmead & Way	2,948 0 0

For building a villa residence in Seven Sisters'-road, Finsbury Park. Mr. Josiah Houle, architect:—

G. & S. Fisher	£1,875 0 0
Kelly, Bros.	1,833 0 0
Scrivener & White	1,758 0 0
Cooke & Green	1,665 0 0
Langmead & Way	1,560 0 0

For tenement blocks for the Artisans' Progressive Dwelling-house Company, Limited. Mr. Frank C. Thicke, architect. Quantities by Mr. A. Vicars:—

Block A. Two Blocks.	Homerton. £.	East Ham. £.	Forest-hill. £.	Battersea. £.
Heath	1,600	1,650	1,600	1,430
Langmead & Way	1,545	1,560	1,543	1,500
Nixon & Son	1,512	1,512	1,512	1,346
Smith	1,498	1,498	1,498	1,498
Wagner	1,435	1,450	1,407	1,397
Sharpington & Cole	1,360	1,360	1,370	1,330
Wyatt	820	820	840	780
Block B. Two Blocks.				
Langmead & Way	1,578	1,595	1,555	1,520
Nixon & Sons	1,538	1,538	1,538	1,404
Heath	1,500	1,450	1,420	1,295
Smith	1,374	1,374	1,374	1,374
Wagner	1,348	1,363	1,402	1,312
Sharpington & Cole	1,300	1,300	1,310	1,270
Wyatt	980	980	1,000	960

For the erection of Board schools, residence, &c., at Walker, Newcastle-on-Tyne, for the Long Benton School Board, consisting of girls' and infants' school in one block, and boys' school and caretaker's house, and all boundary walling and drains, and other works connected therewith. The schools are to be heated with hot-water pipes. Mr. John Lamb, architect. Quantities by Mr. R. Carpenter:—

Ferguson	£10,970 0 0
Hudspith	10,694 0 0
Nicholson	10,400 0 0
Scott	9,750 0 0
Simpson	9,695 0 0
Angus	9,371 0 0

For building new infection wards at the Sudbury Union Workhouse, Suffolk. Mr. W. R. Firmin, architect. Quantities by Mr. R. Carpenter:—

Wanford	£628 0 0
Green (accepted)	598 0 0

For erection of boundary walls, fencing, &c., at Camberwell Cemetery, Forest-hill-road. Messrs. W. Berriman & Son, architects:—

Linfield	£2,300 0 0
Johnson	1,580 0 0
Chappin	1,570 0 0
Waterson	1,522 0 0
G. & S. Fisher	1,497 0 0
Wainwright	1,325 0 0
Dover	815 0 0

*** What does this mean?

For additions to Aged Pilgrims' Asylum, Hornsey-rise. Mr. F. Boreham, architect. Quantities by Mr. C. Brooks:—

Newman & Mann	£8,984 0 0
Scrivener & White	8,845 0 0
Hill, Higgs, & Hill	8,600 0 0
Macey	8,549 0 0
Dove, Bros.	8,450 0 0
Bayes & Ramage	8,250 0 0
Roberts	8,247 0 0
Southcott & Co.	7,959 0 0
Niblett & Son*	7,375 0 0

* Accepted conditionally.

TO CORRESPONDENTS.

Westminster.—We are requested to state that the contractors for the iron work are "The Thames Bank Iron Company," not the "Thames Iron Works."

G. R.—W. & L.—F. P.—R. K.—W. B. G. B.—R. M. F.—H. R. W.—R. T. G. & S. F. H. S.—Fellow of seven years' standing.—An Old Fellow.—An Associate.—W. H. W.—W. C.—H. St. J.—B.—W. G. S.—J. D.—J. W.—J. G. C.—W. B.—C. C. O.—F.—B. & Co.—J. L.—L. & Co.—H. B.—E. C. R.—D. L.—M. G.—A. J. R.—T. O.—W. & Co.—C. R.—B. & H.—H. L.—W. H. P.—E. C. H. (thanks; very full).—W. P. (thanks).—M. G. (shall have attention next week).—R. W. M. (next week).—J. W. (next week).—R. M. Y. (next week).—J. C. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE. The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

DAYLIGHT IN DARK ROOMS

BY MEANS OF

Chappuis' Patent Reflectors.

MANUFACTORY:

69, FLEET STREET.

The Builder.

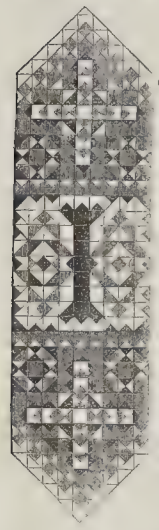
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Alfred George Stevens, Sculptor.

It is with much regret we announce the death of Mr. Alfred Stevens, who has been heard of by many of our readers, chiefly as the "Impracticable Artist," who set everybody at defiance. He was, however, much more than this. Alfred Stevens was born at Blandford, in Dorsetshire, in the year 1817, and was a relative of the Mr. Steevens who edited Shakspeare; his father having been the first to drop what he considered the superfluous letter *e* in the name. He early showed a taste for art, and was sent, when sixteen years of age, by the generosity of an individual, to Italy, where he remained for something like fourteen years, becoming, by earnest and unremitting study, so intensely imbued with Italian feeling, as to be more like one of the men we read of in "Vasari," than an ordinary Englishman; and, indeed, his conduct with regard to business transactions reads exactly like that of those intractable geniuses one meets with in that incomparable collection of biographies.

While in Rome Mr. Stevens executed various works for the Danish sculptor Thorwaldsen, but the particular works are not known. Shortly after his return he was engaged by Mr. Henry E. Hoole, of Green-lane Works, Sheffield, who had the sagacity to perceive his genius, and avail himself of it, and who has reaped a large reward in the high position since held by his firm in consequence. Mr. Stevens left Sheffield to settle in London, where he has been constantly occupied with various works, which he enriched with the wealth of his imagination and the purity of his taste. Among these we may mention the decoration of several mansions for Mr. Collmann, two spandrels under the dome of St. Paul's Cathedral, and various decorative works at Mr. R. Holford's house in Park-lane. He also assisted the late Professor C. R. Cockerell in arranging the sculpture in the tympanum of St. George's Hall, Liverpool, and with other works. He sent a very fine design in the competition for the Foreign Offices some years ago, but was unsuccessful, as our readers probably know. He will, however, be best known and remembered by his last and greatest work, the Wellington Monument for St. Paul's.

When the competition was invited for this, he sent in a model which, though not receiving the first premium, was found, on more mature consideration, to be the best adapted to the site and purpose. The general design has been described and criticised in these columns, so we will not further allude to it just now than to remark that the *motif* of it appears to have been the high altar (tomb) by Matteo Carmero (or Carnero) in the church of SS. Gio. e Paolo, at Venice, dated about 1610. He received the commission to execute the work while Lord John Manners was at the Office of Woods and Forests, which then had the direction of these matters. This monument was the darling of Stevens's life; he lavished all his money upon it, and, as to time, he considered it of no consequence whatever. He lingered over the work with the most refined fastidiousness and the most loving devotion, and never did a mistress receive more attention from her lover than this monument from poor Stevens. It is well known how at length the public grew weary of the procrastination, and how the work was taken out of his hands. The Government entered into a contract with Mr. Leonard W. Collmann to complete it, on his promising to employ Mr. Stevens in the preparation of the models for the bronze-work, and the final finishing and fixing of the whole monument. They were very old friends, having met each other while studying in the Tribune of the Uffizii, at Florence. Their acquaintance, renewed on their return to England, ripened into a friendship which endured through the usual misunderstandings common to so long a period. Mr. Collmann had often availed himself of Mr. Stevens's ability in works of architectural decoration from time to time; and when the hitch came he stepped forward as a friend of Mr. Stevens at the request of the Government, and, by undertaking the responsible business-part, he secured Mr. Stevens's continued services to the nation in the completion of this fine work.

It would have been a great misfortune, as we said at the time, if it had been then entrusted to a new and strange hand, or if it had been left unfinished now; but happily the last models required are so complete that nothing need be done with them but to send them to the bronze-foundry with the impress of the master's hand upon them. We are enabled to state that the intentions of Mr. Stevens with regard to the completion of his work are so clear and obvious, and the state of it is so perfect, that no one need interfere with it, and therefore no one will be able to filch from the dead the credit of this noble work. Nothing now remains to be done but for Mr. Collmann to carry out his contract, and to complete the casting and fixing as soon as possible; and from his long friendship and his veneration for the work of his departed friend, we feel sure every one who knows him will have confidence in his doing so in as conscientious a manner and with as little delay as possible. We propose soon to publish a view of the monument and some details of it.

Stevens's works show the influence of Michelangelo, and, like that great man, he lived almost as a hermit, shunning publicity, and hence was very little known outside the circle of his disciples. Those only who enjoyed his friendship can speak as to the kindness with which he gave advice and assistance to younger men, and the interest he took in their welfare and advancement in life. He was architect, sculptor, painter, and mechanician, like the old Italians, being a master in each, and he had also no mean taste in music.

In 1869 Mr. Stevens was appointed by the First Commissioner of Works a member of a voluntary committee to inspect and report upon the condition of the tomb of King Henry VII., with a view to its restoration and preservation. Mr. Stevens was afterwards appointed a Fellow of the "Regia Accademia Raffaello in Urbeino," receiving the medal of the Society "Onoriamo Le Arti."

He did not form a school, but his more immediate pupils were:—Messrs. William Ellis and Henry Hoyles, of Sheffield; and Messrs. Robert Eaton, James Gamble, Hugh Stannus, A.R.I.B.A., Godfrey Sykes (deceased), and Reuben Townroe, of London. Among others who have profited by the study of his works may also be mentioned Messrs. M. Elden, R. Lunn, F. W. Moody, and George Theaker. The thoroughness of his mind seems to have been infused into his pupils, most of them being to a considerable extent architect, ornamentist, and worker in the plastic arts.

We should not omit to mention that he had prepared a model and scheme for the decoration of St. Paul's, which we hope, though we are not acquainted with it, may soon be exhibited, that the world may judge how he would have done this work.

Mr. Stevens's death, though ultimately sudden, was not wholly unexpected, an attack of paralysis, a year or two ago, having considerably weakened his physical powers; but it is evident that he himself little knew his end was so near, as in the afternoon previously to his death he wrote to his friend, and now his executor, Mr. Alfred Pegler,—"I am very well to-day, better than before my illness, and working vigorously, finishing some trifles for the vaulting." He added, with respect to the work which had engaged so much of his time and energies,—"From 1865, when this monument began, till now, I have not, my illness included, been three months away from the work altogether; I have just ascertained this." This, as it proves the unconsciously dying testimony of the artist himself of his devotion to the duty he had undertaken, will doubtless be a satisfaction to friends who have seen the criticisms from time to time passed upon him consequent upon the noncompletion of the work.

He was working till half-past five on Friday afternoon of last week, and, as we have seen, thought himself better. However, he called for his servant on Saturday morning, about three, and before she could come he was dead. The cause was disease of the heart of long standing, upon which bronchitis had supervened.

Thus has passed away from us a man, quiet and unobtrusive in his ways, whose influence in Classic Art has been, and will continue to be, very strongly felt, and whose death we cannot speak of as less than a loss to the nation.

ARCHITECTURE AT THE ROYAL ACADEMY.

SECOND NOTICE.

FOREMOST among the illustrations of civil architecture of the year stands undoubtedly the design submitted by Sir Gilbert Scott, in conjunction with Mr. J. O. Scott, for the Parliament House for the German Government, and which received a premium in the competition. Four of the drawings,—the exterior perspective, the perspective section through the dome, the general section, front elevation, and interior view of the Hall of Session (Nos. 1,004, 926, 946, 954, 965),—are exhibited here "by the kind permission of the German Government." Our distinguished English architect has very ably and ingeniously adapted a German manner and feeling in his design, without sacrificing entirely his own character of detail. It is rather difficult to characterise the style of treatment which is the result; the general composition is decidedly Classic in character, entirely symmetrical in disposition, with a large central dome, and subsidiary cupolas and turrets, which recall a minaret type; a good deal of the ornamental detail, in the section through the dome especially, is Classic in type (a concession to the architectural creed of Munich and Berlin, no doubt), but the architect is faithful to the pointed arch, and introduces more or less pure Gothic manner in the treatment of capitals and shafts, and the spire terminations of some of the turrets. The central dome is circular on plan, and the problem of its junction with what may be termed the nave and transept roofs at the crossing, is hardly satisfactorily solved: in its general aspect this central feature partakes much more of Gothic (with a touch of Orientalism) than of Classic; in the perspective view its proportions have been considerably raised beyond the height shown in the elevation; too much so, the elevation showing the better balance and proportion. The central compartment internally is completely covered with decoration, carved or painted, indicated in careful pen-drawing: this is a fine drawing in every way, and surmounts a difficult task in perspective,—the delineation of the receding curves of arches built on a circular plan. We should have been glad to see the plan of the whole building, in addition to the other drawings exhibited.

Of other works in civic architecture, there are not many. Mr. Crossland sends a fine coloured view of his "Town-hall, Rochdale" (1,043), and the principal staircase from the same building (927), a vaulted apartment, lighted from windows with armorial devices. The building is in a late type of Gothic, freely and rather boldly treated in parts; the tower is the least successful portion, and the lantern appears to us disproportionately large. The building seems to have great advantages of site, according to this drawing; standing in the midst of a kind of open park, apparently. Mr. Collins's exterior and interior views of his design for the New Liberal Club in Walbrook we noticed at the time of the competition. Mr. Street's south-east view of "Cuddesdon College, Oxford" (953), showing the new chapel now being erected to the memory of Bishop Wilberforce, is one of those pen-sketches of which the authorship is at once recognisable; the design shows an irregular plain collegiate building in that very severe and solid type of Gothic which its author has for some time adopted. Passing over some designs which really present nothing for comment, though in a general way meritorious (so far as a design can be called meritorious under such a qualification), we notice Mr. Crossland's "Post-office at Huddersfield" (1,013), which looks too like a post-office, perhaps, to be really pleasing architecture, but shows considerable originality in what may be termed a Gothic manner of grouping and treating Italian detail; the dormers, which especially give this character, however, seem a little too extensively developed. The "New Front of St. James's Hall" (1,019), now building from the designs of Mr. Emden, is (as there is now evidence apart from this drawing) a red brick or terra-cotta Gothic front, with a heavy machicolated cornice, retaining, whether intentionally or not, a kind of reminiscence of the present front in its general proportion and aspect. We cannot praise Mr. Gibson's "City Bank at Exeter" (1,024); surely a picturesque historic town might have suggested something less formal and uninteresting than this cube of building. Mr. Burder's design for the Sunderland Municipal Buildings has in a quiet way a good deal of merit. It shows Queen Anne tendencies, though in a very simple way, with a generally square form, strongly-marked brick cornice, and mullioned and transomed windows: there is just enough variation from symmetrical treatment to do away with any formal appearance, and give the semi-domestic, semi-business character suitable to a municipal building on a moderate scale. Mr. Tasker's "St. Charles College, Notting-hill" (1,035), is shown in a neat but rather mechanical-looking lined drawing; the best portion of the design is the chapel, which is in a manner a little resembling Mr. Sedding's church at Newmarket, mentioned in our last article. Then we have "One of the Board Schools of London" (1,042),—at Greenwich, the label on the drawing informs us,—by Messrs. Robson & Stevenson, on which we look with mingled feelings. The present architect to the School Board is certainly leaving his mark on the London architecture of to-day in these large "Queen-Annified" schools, which are carried out with knowledge of the style, and to which a certain architectural character has been imparted at little expense, and in a practically suitable manner; and perhaps this is a good deal to say as times go. But why strive to make school-buildings which, when once stained with London smoke, will seem to have been built in a reign long previous to the present? If Messrs. Robson & Stevenson had spent the same trouble in devising a suitable architectural treatment of their own, which they have given to securing the accurate reproduction of their chosen style of the past, they might have done something better, and not so dependent on fashion. These buildings will not be permanently commended; they will look very uninviting and factory-like when once the gloss of combined newness and novelty wears off. Near this drawing we notice a small and wiry-looking Gothic elevation, which proves to be a design for the National Gallery, kindly supplied to us by Sir J. H. Ramsay, and drawn for him by Mr. E. Clark. Considering that Mr. E. M. Barry, a competent architect, has made a fine design, approved by Government, and which they may be said to be under a double obligation to carry out, the putting forward in this way of a private design which might have been made by any architectural pupil of ordinary capability, is a proceeding which seems to us little less than impudent.

If it is true that imitation is the most delicate flattery, Mr. Norman Shaw must feel much flattered. He, to a great extent, originated the revival of what we may call the old-English farmstead style for modern dwellings, and his skill as a draughtsman gave to his designs a charm which not a few younger members of the profession have evidently striven to emulate. Unfortunately, just as they are more "to the fore" than ever in this particular manner of work, their guide has left them for the newer vogue of brick pilasters and curly gables. His *pièce de résistance* in the present exhibition is a fine drawing (904), representing a house now erecting in Queen's Gate, Kensington; but it is really a pity that such beautiful drawing should be devoted to a design largely made up of mere corruptions of architectural detail, and all the best points in which—the effective grouping and treatment of the windows, and the bold recessed arches in the ground-story, with bays within them—might have been combined with detail and finish of a much higher class. Among the numerous specimens of the "picturesque" style of house just referred to, many of which are so like each other that one description would serve for all, may be mentioned "Additions to Pinewood, Witley" (922), by Mr. Neville; two houses at Mill Hill, by Mr. Collcutt (930, 948); a house, by Mr. E. F. C. Clarke (968); and one by Mr. J. Adams (992); and a house at Westgate-on-Sea, drawn by Mr. J. Deason, from the designs of Mr. Beazley (1,011): this last is a very effective drawing. All these houses look well in the drawing, but the effect is obtained at little expense of thought, we should imagine, and certainly begins to pall upon one. Mr. Auld sends a little geometrical elevation for a town-house (977), which is what may be correctly termed "free Classic," and looks as if it would work out very well. The typical Queen Anne house is shown in its completeness in the admirable realistic coloured drawing of No. 8, Palace Gate, Kensington (983), by Messrs. Stevenson & Robson. This, in the reddest of red brick, completely succeeds in imposing itself upon the spectator as a house of the period referred to. Another weakness of the new school is exemplified in it; every one knows that a great *penchant* for old china is part of the creed of the *dilettanti* of this school; and, accordingly, in a niche of the size and proportion for a whole-length statue, a piece of crockery is deposited as the centre object of the front, the shape and size of which suggests the idea that a "slop-bowl" from one of the bedrooms has been inadvertently put outside. Mr. Cockerell is in the prevalent style too, with a large mansion at Crawley, near Winchester (985), a perspective view tinted in Indian ink (a style of execution we are glad to see not entirely going out—it gives much effect with comparatively little labour), which we surmise hardly represents the detail very well; the effect is rather thin and poor, but the general grouping is effective, and the two octagon turrets are very well placed. St. Leonard's Hall, Berks, by Mr. Howell (1,003), is a purely Classic design in detail, with an unusual and effective plan of the centre block, which adds much to the appearance of the whole. If, in our Classic houses, architects would be a little bolder in varying the plan, instead of being so often content to design as if square rectangular blocks were a necessity in any house with Italian detail, we might find the way to some new combinations; always keeping in due regard the practical convenience of the plan. A building showing a great deal of merit is the new hall and warehouses in course of erection on the estate of the Carriers' Company, by Messrs. J. & J. Belcher (1,023); with details belonging to Late Gothic, there is considerable novelty of design, and the warehouse portion especially is very good as an architectural treatment of a building of this description. Mr. Waterhouse sends a drawing of the chapel and clocktower at Eaton Hall, Cheshire (945), in that heavy and sombre style of water-colour which seems to have been adopted as the medium for representing his designs, and which we cannot think is favourable to their effect on paper. Mr. W. H. White's new buildings at the Château de Bizy, near Vernon, France (996), form a symmetrical block in strictly Classic style, with a columnar order for the conservatory; very well carried out, but not presenting any architectural speciality; the author has done better than this. Among some specimens of shop architecture we may notice Mr. Collcutt's alterations to No. 109, Fleet-street (960), a good specimen of plain shop architecture, with red brick cornices and dressings to the windows, and an open iron grille over part of the front of the shop. Mr. Garling's premises about to be erected in Aldgate-street (962), form a large and effective block of brick building, wanting as it seems to us a little more grouping, either by a modification of the horizontal lines or of the windows. The rebuilding of the (late) Hanover-square Rooms as a club (987) will not, as shown here, be any addition to the street architecture of the neighbourhood.

In the class of decorative design, we refer with pleasure to the two or three drawings of ceiling and wall decorations, for Mr. F. Lehmann (1,031, 1,036, 1,037), by Mr. Aitchison, whose work of this kind is acquiring a deserved reputation, since it is always refined and harmonious in design and effect. The ceiling (1,031) and wall (1,037) depend chiefly on variations of green, in darker and lighter tones, for the ground, broken by flowing floral patterns in gilding, and occasional touches of positive colour; 1,036, a boudoir, is a "harmony in greyish blue and white," as Mr. Whistler might put it, very delicately relieved by faint tints of green and warm buff in the cornice. We like these little specimens of colour design the more since, while dealing freely in pure tints, and not with neutral and nondescript tones, they are yet so perfectly quiet in effect, and form a kind of protest against the somewhat barbarous school of "loud" and gaudy colouring of which we have seen a great deal too much. Mr. Talbert's "Entresol, Study for Decoration" (966), with its arcade of marble (apparently) relieved against the dark rich tones of the wall behind, is an excellent specimen of the work we are accustomed to from him, which we need not describe. There are several of those pen-drawings, showing schemes of internal decoration (by Mr. Moyr Smith and others) which it is the fashion to send to the Academy. We have before expressed an opinion that such drawings are of little use except to show the skill of the author in producing effect with a pen; it is absurd to suppose that a scheme of internal decoration, of which colour must be one of the most important ingredients (if not the most important) can be adequately represented in a colourless drawing.

Among drawings which are sketches only of existing architecture, and not original designs, we should have mentioned Mr. Ellis's study in the west end of the nave of St. Paul's (1,021), as a very good and thorough architectural study in water-colour; a little too hard to claim the highest merit as an artistic drawing, but an exceedingly good specimen of architectural representation. A drawing of the tombs in the south ambulatory of Westminster Abbey (967), by Mr. Crowther, and a very good and free little pen sketch of the Tower of St. Jacques, Antwerp, by Mr. Taylor (1,016), also claim recognition. The architectural room this year is also great in aquariums, or aquaria, of which we can only say that they look very like aquaria; we presume every one knows the sort of water-colour drawing in which works of this kind are generally illustrated; and that when we read "interior of new aquarium at ———," we shall see a building with a glass roof and exotic plants, intermingled with statuary in the usual manner. Why these large structures scarcely ever get into artistic hands we do not understand, unless it is that, like some other good things, they "go by favour."

In the main, the architectural room is fully up to the usual mark this year, perhaps rather beyond it; the large and fine drawings of two or three important projects giving an unusual importance to the collection, in which the standard of drawing at least is very high. We record with pleasure also that the architecture is apparently beginning to get more recognised by the public as an integral part of the exhibition, and that the room mainly devoted to it is not quite so awful a solitude as it was wont to be, nor are its productions passed over with such heartless indifference. Indeed, we heard expressions of absolute enthusiasm over some of the designs, on the part of spectators evidently moved by no special or practical interest in architecture; a fact which we record "*pour encourager les autres.*"

AMONG THE ACADEMY PICTURES.

THOUGH not following, in the ensuing remarks, any strict consecutive order, we may not unsuitably advert in the first instance to the picture which is likely to be the first point of attraction to most visitors in following the order of numbering, Mr. Alma Tadema's large work, "The Sculpture Gallery" (26), the companion to "The Picture Gallery" of last year. In force of colour, and in the interest and character of the figures, this work is scarcely equal to its predecessor,—the subject, perhaps, hardly admitted of an equally effective treatment,—in technical mastery it is superior to it. We have here the interior of the Roman nobleman's sculpture-room, where a slave is turning round a great vase of black marble, mounted on a pivot-stand, so as to bring round to the host and his friends the sculptured figure which supports it, and forms the stem. The other accessories and background consist almost entirely of white marble (statuary and pilasters), a material which Mr. Tadema has taken out a kind of patent for painting; but it was a fortunate idea to bring the black marble to the centre to break up the mass of white, and bring that and the figures into harmony. The latter are draped in costumes of low but warm tones; the host, with a most natural action of slight apprehension, puts out his hand to keep back two round-faced children, who are a little too near the turning mass, and behind whom stands their mother, a worthy matron, who is evidently the Roman prototype of the respectable mother of modern times, to whom "the exhibition" is simply a place of amusement for the children. The figures are admirable in their way, but there is nothing to compare in individuality with the two young seated connoisseurs of "the picture-gallery." The painting of the carved griffins and interlacing scrolls in the pedestal in the foreground is a perfect triumph of imitative work.

Opposite to the above hangs Mr. Millais's principal landscape "The Fringe of the Moor" (74), less palpably a study of foreground than other landscapes of the artist; though here it is perhaps the successful realism of the foreground, its palings and bare shrubs and the dry stone wall skirting the slope and casting shadows down it, that attracts the eye most; the purple shadows over the distance are so heated in tone as to excite scepticism, perhaps, as to the strict truth of colour here; but we are willing to believe in it. This is unquestionably a fine landscape of the realistic school. The "Deserted Garden" (265) is very atmospheric and light in the distant sky, but the foreground has by no means the same power as that of the other. For the group entitled "The Crown of Love" we have no special admiration to express. But in the portrait of Miss Tennant (222) Mr. Millais is himself again. He has had a good subject; and the effect of the deep crimson dress, combined with the luxuriant dark hair of his charming sitter, and the delicate light blue of the necklace, is to realise one of the richest and most harmonious combinations we have ever seen in portraiture; what one may call the luscious effect of the whole is further heightened by the rich full manner of execution; it is a work which must arrest the most careless as well as the most critical spectator. As a contrast to this take "No!" (262), a companion picture apparently, to the now well-known "Yes or No?". The only relation of style between this and the last-named is that no one but Mr. Millais could be the author of either. The latter work is as quiet and placid in tone and feeling as the former is vivacious and piquant; the half-sad, half-firm expression in the countenance of this rather stately and self-possessed young lady, who has decided against the hopes expressed in the letter she holds, is very successfully defined; the hands may have been a little hurried in execution. The picture of the round-cheeked little girl (289) sitting with bare feet by the brink of a pond, is a very real child portrait; but we should think the very solemn expression of the child was aroused only by the awful fact of sitting for her portrait, and it seems out of keeping with the freedom of her open-air situation here. If we were to compare these with the portraits which were in the galleries in winter, we should perhaps be struck with the immobility of most of Mr. Millais's portraits as compared with the free movement of his greatest English predecessor in this branch of art. Not that we complain of Mr. Millais for not being Reynolds; but to a certain extent his comparative stiffness of pose seems to indicate a limit in the more modern painter's art; though an artist of his calibre may choose to prove the contrary next year.

Passing for the present other portraits (and there are some fine ones), we may step a little out of the way to notice a remarkable contribution by an "outsider,"—Mr. Long's "Babylonish Marriage Market" (482), suggested by a custom detailed by Herodotus, whereby husbands were found for all the young women at an annual auction, where the damsels possessed of natural attractions were knocked down to the highest bidder, and, inversely, the plain ones were got rid of by the offer of dowries proportioned to their ugliness. This very heathen institution, it will be at once perceived, offers so good a subject to the painter that it is surprising it has not before been illustrated. In front of the picture, which is crowded with figures, are ranged the damsels in waiting for their turn, commencing with the handsomest one, on the left, just divesting herself of her veil, while her next neighbour studies herself anxiously in a hand-mirror, and then we run down the gamut of beauty, through the neutral ground, where the more and less plain are vivaciously "chaffing" each other, to where the lowest note of the scale is represented in the luckless girl who covers her unfortunate visage with her hands. Above, on a platform, the *prima donna assoluta* is already on approval, her back to the spectator (so that the artist has cunningly evaded depicting the extreme either of beauty or ugliness), and her charms only to be surmised by their effect on the richly-robed young man who gazes up at her in intense admiration, evidently able and willing to pay the consideration demanded. On the left a handsome youth, whose purse apparently is not equal to his ambition, looks on enviously; and the contrast is well given between the interest of these foreground figures and the merely idle amusement of the soldiers and negroes in the rear, to whom it is nothing more than a raree-show, which does not concern them. The colouring is very brilliant, and yet partially fails in effect from want of massing and contrast; and the whole grouping is a little theatrical; nor can we believe (*pace* Herodotus) that such a scene ever really took place. But the humour and technical excellence of the picture are beyond question, and the artist has made his mark by it.

Opposite to this Mr. Armitage's large picture (518), representing "Julian the Apostate presiding at a Conference of Sectarian Christians" (illustrated by a quotation from Gibbon), claims notice as a work original in conception, and very spirited and pointed in execution. At one end of a table the representatives of various sects are wrangling and citing authorities from big books (by the way, are not the bound books, in modern form, an anachronism?), in all the bitterness of religious controversy; the intensity of the *odium theologicum* in the countenance of the figure by the column in the rear is something rather awful, increased as the effect is by contrast with the calm demeanour of the polite and refined imperial ritualist, who is the only gentleman of the party. The subject is a capital one; with all the spirit in its treatment, we cannot but feel how provokingly this artist, with perfect technical mastery, just falls short again of that *je ne sais quoi* which gives the highest interest to a picture. Of Mr. Leighton's contributions we have mentioned the "Eastern Slinger" (398), a work which no one can help noticing, yet which few, we fear, can admire as a whole. The man stands, nearly naked, on a platform raised above the corn, shouting and slinging a stone round his head to scare the birds away; his bronzed figure, admirably drawn and shadowed, is relieved against an evening sky, with a very luminous moon just rising over the corn: the manner in which the detail of the figure is made out, without losing the effect of its being in shadow against a light sky, is admirable; but surely the subject was not worth all this technical ability. The fact might, as it seems to us, have suggested an ideal composition very well, but was not worth working out in its plain prose. We have that opinion of Mr. Leighton's powers that we would wish to see them expended only on subjects of the highest intellectual character and interest. The noble "Portrait of Mrs. Gordon" (307), however, is worthy of the artist: the lady, in a dress of warm crimson, leans back with head turned, in a very fine but perfectly unconstrained and natural attitude; the purity of colour in every part of the picture, and the beautiful drawing of the hands may be noticed; the whole spirit of the work is completely above the common-places of portraiture, and looks like Greek art in an English dress. The head of a "Venetian Girl" (354) should be looked at also. Among the few productions, in this exhibition, of that ideal type of art with which Mr. Leighton's name has been so much associated, are Mr. Poynter's two groups of figures of "The Festival" and the "Golden Age" (233, 236), the first, two fully-draped female figures, one on a ladder, the other stooping at the foot, engaged in putting up garlands for decoration; a work which does not give one entire satisfaction, partly on account of the rather constrained attitude of the lower figure, in which the folds of the robe, too, seem a little to confuse instead of assisting the indication of the figure, in the lower limbs at least. The other work is in the artist's very best manner: it is purely ideal,—art for art's sake,—representing two figures of youths, one on a ladder handing down fruit to the other; the harmony of line into which the two figures fall, and the masterly drawing and finish, especially of the upper figure, are in a very high style of art, both ideally and technically: the figures are nearly nude, a little warm-tinted drapery aids the colour effect, and adds breadth to the composition. It is refreshing to come on such a bit of real art amidst the quantities of "namby-pamby" which stare one in the face in all English exhibitions.

Among works of this latter class do we count the various shaving subjects which seem to be rather rife this year, and form rather poor jokes not worth the canvas. In another line of subject rather predominant, however, we find unusual excellence. Battle-pieces are generally common-place affairs; there are two exceptions this year; one of which, the attack on the square of the 28th Regiment at Quatre Bras (258), by Miss Thompson, is a rallying-point for spectators, and perhaps goes further to justify the greatness which has been a little too suddenly and inconsiderately thrust upon the artist than did her last year's work. It is on record that the younger soldiers on this occasion were highly amused, in the midst of the desperate struggle, at the repeated failures of the enemy's cavalry to break their formation. This incident gives the point to the picture, where these raw but brave-spirited lads, laughing like school-boys, are contrasted with the calm determination of the veteran, who, with the butt of his musket dug into the earth, occupies the salient angle of the square in the centre of the picture. Nearly over him the figure of the officer, who points with his drawn sword, is remarkable for energy

of action and expression. It is astonishing that a young lady-artist should have been able to throw herself into the spirit of such a scene so well; but a calm judgment must, we think, pronounce the work artistically somewhat sensational, and the colour crude. A French painter, M. Philippoteau, has put before us the "Charge of the French Cuirassiers at Waterloo" (613),—a subject which Mr. Cooper painted with considerable power a good many years ago. The defect of this picture is that the interest is too exclusively concentrated on the point of attack on the left, and the rest of the canvas seems inadequately occupied; the brilliancy of colour and execution is totally devoid of hardness, the separate figures and expressions of the combatants, the English especially, are admirably studied and individualised: the figure of the general officer on horseback within the square, whose shout we can fancy we hear above the noise of the firing, and the young officer standing on tiptoe to look over the heads of his men, are especially good. Then, in the lecture-room, opposite to Miss Thompson's picture, Mr. Herkomer gives us the veteran survivors of war assembled in Chelsea Hospital Chapel, listening apparently to a sermon on "The Last Master" (898): a work of a high order in feeling and execution; there is no attempt to excite an artificial interest in the men, who are painted with prosaic truth, some with faces of much natural dignity, others common-looking old fellows enough, but all apparently moved, each in his way, by a kindred sentiment. The dark reddish-toned wainscot and the gallery front are skilfully made use of to reduce what would otherwise be the too pronounced effect of the mass of red uniforms; the result is quite satisfactory to the eye, and the whole highly creditable to the artist, and the best work he has yet sent to the Academy. We must adjourn further remarks; but may just point to Mr. Stock's picture, close by, of "Our Soldiers, Past and Future" (911), a little boy reading some annals of warfare to an old soldier, as further illustrating the military painting of the year. Whether all this indicates a corresponding military ardour, or whether when people take to painting a thing it is a sign that the reality is becoming out of date, we will not attempt to pronounce.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the annual meeting on Monday last, the report of the Council was passed, after considerable discussion, we believe, on objections made to one or two paragraphs, but eventually over-ruled or withdrawn. The meeting being, formally, a private one as usual, we do not feel at liberty to report the discussions, but as two notices of motion in regard to the conduct of the affairs of the Institute, by Professor Kerr and Mr. W. H. White, had been openly announced and forwarded to us, we may remark that the first-named gentleman stated his case in a very clear and able manner; the object of the motion being to inquire whether the removal of one of the honorary secretaries and the elevation of the paid secretary to practically the same position, as a colleague of the remaining hon. secretary, were in accordance with the conditions of the Institute charter. The motion, however, collapsed, the feeling of the meeting seeming to be that if the present arrangement were not quite in conformity with the letter or spirit of the charter (and it did not appear that Professor Kerr's arguments to this effect received any conclusive answer), it had worked well enough; and, in short, that they were very well as they are. The President supported this view, and spoke warmly in praise of the ability and attention given to the duties of his office by the present secretary; an opinion which the majority, at least, of those present endorsed by acclamation. Mr. White withdrew his motion on account of the lateness of the hour. We are at liberty to conclude, however, that the result of the evening's work may not have been considered satisfactory by all who have the interests of the Institute at heart.

Deaf and Dumb Asylum, Margate.—At a meeting of the Margate corporation on the the 27th ult., it was stated that the Prince of Wales has promised to open the branch building of the Deaf and Dumb Asylum, now being erected in that town, and which, it is supposed, will be completed in July.

STOCKTON AND MIDDLESBROUGH WATERWORKS BILL.

At the House of Commons, on the 16th ult., in the course of the examination by the Select Committee on this Bill, Mr. George Edwards, borough surveyor of Stockton, said he had inspected the towns and villages on the Tees and its tributaries to ascertain the extent of pollution by sewage. The population of Middleton-in-Teesdale was 2,240, and it drained into a beck which ran into the Tees. Barnard Castle had five woollen-mills, flax-mills, a tanyard, a carpet manufactory, and dye-works. He had seen the outfall of the main sewer, which discharged not less than 100,000 gallons daily, and it left a thick scum on the water. Staindrop was a town of 1,100 inhabitants, with a sewer up the main street, and it discharged into a beck, together with the contents of piggeries, cow-houses, &c. Gainford contained about 800 people, and there was an academy with about 120 pupils which drained into the river. About 6,000 gallons flowed daily into the river by that sewer alone, and there was another sewer which ran into the river below the town. There were other small places which drained into the river above the intake. In summer he had frequently seen the river so low that people could walk across dry shod on stepping-stones.

THE SOUTH-EASTERN RAILWAY COMPANY'S NEW BRANCH TO BLACKFRIARS.

The South-Eastern Railway Company have commenced the preliminary works preparatory to the construction of their branch line from the Charing-cross and London Bridge sections of their undertaking, with the view to give the company access to the Ludgate-hill Station of the London, Chatham, and Dover Company. This involves the demolition of a large number of tenements and other buildings in the district intersected by the intended line, and within the last two or three weeks this has been effected. The works in connexion with the actual construction of the line, will, we understand, be entered upon next week. They comprise the erection of several bridges over Ewer-street, Gravel-lane, Swan and Dyer courts, George-street, and Union-place, Southwark. Taking advantage of their experience of the inconvenience and annoyance which have been caused by the imperfect construction of the bridges of the several lines of railway within the metropolis, the local authorities have secured provisions in the company's Act, under which the bridges are not only to range with existing frontages, but precautions are also to be taken to render them water-tight; and a ceiling is to be formed over the roads to be traversed. This ceiling is to consist of 3-in. planks resting on the bottom flanges of cross-girders, and having the joints either caulked or tongued; and the spaces between the planking and the wrought-iron cambered plates are to be filled in with tan or other similar material.

SCHOOL-BOARD FOR LONDON.

Two new schools have been opened recently. One situate in William-street, Kensington, about five minutes' walk from Addison-road Station, and adjoining the old Church Schools of St. Mary, Fulham, which have been used as a temporary school, and will now be utilised for the infants' and for caretakers' rooms, &c. The new building, which is of Gothic design, to match the old, accommodates 304 children, making a total number (including infants) of 454, the girls being placed on the ground and boys on the first floor. The playgrounds are good, and the situation very open. The contractors were Messrs. Hook & Oldrey, whose contract for the works was 3,359*l.*

The other school is situate in the rear of Albany-road, Camberwell, and is approached by Neate-street and Albany-row. It is set back some distance from the street, and forms a considerable block of buildings in the style of "Queen Anne," having ample play-space both in front and rear for the children. There are three stories, with a drawing-class room in addition; each story containing school and four class-rooms for infants, boys, and girls respectively, with masters' and mistresses' rooms, and ample lavatory and cloak-room. The total number of children is 785, and the amount of the contract 6,394*l.* The total cost, including purchase of site, &c., amounted only to the sum of 9*l.* 10s. 9d. per head. The builder was Mr. G. Stephenson, of Chelsea, and the architect, in both cases, Mr. E. R. Robson. Mr. Jefferson was clerk of works for the first-mentioned, and Mr. J. Jackson for the last.

The following report from the Works Committee has been adopted:—

1. The Committee have invited tenders for the erection of a school to provide accommodation for 552 children on the site in Sydenham-hill-road. It was considered desirable in the case of this, and also a second school, to throw open the tendering (under certain restrictions) to unlimited competition, in order to test whether by this plan any reduction would be effected in the cost of the buildings. Only eight firms tendered for the erection of the school, the amounts of the tenders being as follow:—

Robbins & Co.	£8,545	0	0
Braid, Jopling, & Co.	8,543	6	0
Gammon & Sons	7,753	0	0
Crossley	7,653	0	0
Longley	7,548	19	0
Nightingale	7,480	0	0
Crabb	7,285	0	0
Lonergan	6,671	0	0

As these tenders were unusually high, the committee were unable to recommend any one for acceptance without reduction. They have since conferred with Mr. R. Lonergan, of Herbert-road, Plumstead, whose tender was lowest, and have arranged with him to make certain modifications and omissions in the plan (including the substitution of gravel for tar paving), which will lessen the cost by 1,107*l.* 2s. 2d., thus reducing his tender to 5,963*l.* 17s. 10d., details of which are as follow:—School building, 4,546*l.* 17s. 10d.; playgrounds, 368*l.*; boundary-walls and gates, 416*l.*; caretaker's house, 373*l.*; making a total of 5,703*l.* 17s. 10d. The committee recommend the acceptance of this amended tender. It should be stated that the walls of the school have been made of such thickness as to allow of an extension of the building, if necessary, a floor having been formed over two class-rooms, and a temporary roof placed on it in order that an additional story may be added hereafter, if necessary, without disturbing the school. Cost of site, 3,500*l.* Cost of building per child, 10*l.* 6s. 7d.

2. On the 17th of March the Board postponed the consideration of the recommendation of the committee for the acceptance of the tender of Mr. S. J. Jerrard, of Homesdale, Lewisham, amounting to 3,183*l.*, for the erection of a school for 250 infants on the site in Queen's-gardens, Brompton. The committee now propose to omit the provision of a caretaker's house, and also a fence in the front of the school, to reduce the height of the class-rooms, and to provide less w.c. accommodation. These omissions and alterations will reduce the cost of the school to 2,500*l.*, or 10*l.* per child. The committee recommend that this amended tender be accepted. Cost of site, as far as purchased, 1,074*l.* 3s. Cost of building per head, 10*l.*

SCHOOL BOARD SCHOOLS.

East Dereham.—The East Dereham School Board having received an order from the Educational Department to provide accommodation for eighty children, including twelve from Shipdham, in the parish of Toftwood, purchased a piece of land, and has just completed the building of a school to meet the requirement of the Department. Mr. William Larner, of this town, was the contractor, and Mr. Lee, of London, the architect.

Walsall.—On the 5th ult. the Bath-street schools, a block of buildings in the Early English style, and being the fourth set erected by the School Board, were opened for the reception of scholars. The materials used are red pressed bricks, with Bath stone dressings. There is a bell-turret of stone, over the principal entrance, surmounted by a spire which rises to a height of 100 ft. from the ground. The schools afford accommodation for over 600 children—the girls and infants being located on the ground-floor, and the boys on the floor above,—and their cost is somewhere about 3,000*l.* The architect is Mr. T. R. Lysaght, Wolverhampton, and the builder Mr. T. Taylor, Walsall.

Carlisle.—On the 5th ult., the large new schools in this city, belonging to the School Board, were opened with some ceremony. The schools are a plain, substantial erection, free from all attempts at decoration, though black bricks have been extensively used to face the

exterior walls, and so give them some relief of varied colour. There are three schools, one for boys, one for girls, and one for infants. The principal schoolroom is 60 ft. in length by 25 ft. in breadth, though it had been originally intended to be only 20 ft. in breadth. The roof is high pitched and vaulted, and, though ceiled, the main timbers, which have been varnished, are allowed to be visible, and this arrangement has a good effect in relief. The extent of the site is about three-quarters of an acre, which cost over 1,000*l.*, the price paid being at the rate of 5*s.* per square yard. The total cost of the erection has been about 5,500*l.*, which was borrowed from the Public Works Commissioners, and is repayable in fifty years, in annual instalments of 231*l.*

Brighton.—The following were the tenders for the erection of the Lewes-road schools:—

Barnes	£5,598	0	0
Cheesman	5,585	0	0
Lockyer	5,393	0	0
Reynolds	5,199	0	0
Newnham	5,015	0	0
Sawyer	5,024	0	0
Bruton	4,885	0	0
Colwell	4,757	0	0
Spreadborough & Feldwick	4,681	0	0
Kemp	4,690	0	0
Wells & Miles	4,658	0	0
J. & A. Stenning (accepted)	4,530	0	0

Axminster.—Messrs. Parsons & Perryman's tender for 2,151*l.* 18*s.* has been accepted by the School Board, for the building of the new schools.

Liverpool.—The Liverpool School Board have sanctioned the plans for the erection of a large school in Walton-lane, near Liverpool, and also agreed to purchase ground in Kirkdale, at a cost of about 3,000*l.*, for the erection of another school.

Ancoats (Manchester).—The memorial-stone of the Every-street School was laid on the 15th ult., by Mr. T. Dale, the vice-chairman of the Board. This school is the largest of three schools which the Board have now in course of erection. It will accommodate 1,800 children. The ground-floor is divided in the centre by the principal entrance-hall, 10 ft. wide; staircase, 4 ft. 6 in. wide; and infants' cloak-room, 10 ft. by 18 ft. On the right of this central arrangement there is the school-room for 250 male infants, 30 ft. by 59 ft. 6 in., with a class-room adjoining, 18 ft. by 21 ft. 9 in., and on the left a second school-room, for 250 female infants, also 30 ft. by 59 ft. 6 in., and a class-room adjoining, 16 ft. by 24 ft. The rooms on the upper floor are very similar, both in size and arrangement. The staircase to the girls' school rises from the central entrance-hall; while that to the boys' school is placed at the end of the building, to the right. The ground-floor rooms are 14 ft. high, and the first-floor rooms 11 ft. high to the wall-plate, and 17 ft. high to the ceiling at the collar-line. The basement extends under the whole of the building. The large areas under the infants' school-room and under the female infants' class-room are arranged as covered playgrounds, opening out into the sunk playgrounds in the rear of the building. The school-rooms will be heated by Shillito & Shorland's Manchester grates, and the ventilation has been specially provided for. The building will be constructed of common white-ended bricks, jointed in black mortar. The arches, bands, strings, and other ornamental features will be formed in black bricks and red stocks, with specially-made bricks introduced in various parts. A central tower, together with the buttresses and slightly-projecting wings, will give a variety to the principal front. The cost will be about 10,000*l.* Mr. W. Dawes is the architect.

Tingewick. — These schools were recently opened by Sir Harry Verney, bart. The building is contructed of the local bricks, with facings and string-courses of red Thornborough brick, and Aylesbury rubbers for dressed work. Bath stone and red Mansfield have also been sparingly used, and black Staffordshire bricks in diapers and bands, the roofs being covered with reddish brown tiles. Separate room porches of half-timber work on brick plinths are provided for boys, girls, and infants. There is an oak bell-cote, covered with shingles and surmounted with wrought-iron gironette. The bell was supplied by Messrs. Vicker & Co., of Sheffield; the ridges and finials by Mr. Cooper, of Maidenhead. The building accommodates 114 boys and girls and 60 infants. The gables have framed barge-boards. The rooms are ventilated by the hollow beam system, and warmed by open-hooded fireplaces fitted with Penfold's stoves. Play-grounds, bounded either by walls or railing, have also been provided. The cost, inclusive of boundaries, offices, school furniture, and architect's commission, is 810*l.* The work has been carried out by Mr. W. Williams, builder, of Green's Norton, near Towcester, from the designs and under the superintendence of Mr. E. Swinfen Harris, architect, of London and Stony Stratford.

Bideford.—The tender of Messrs. Bowden & Son, of Barnstaple, for the new Board School at Bideford, at 360*l.*, has been accepted.

Cholsey (Wallingford). — The tender of Mr. Dodd, at 1,461*l.*, being the lowest of five for the erection of new schools and master's house, at Cholsey, for the Cholsey School Board, has been accepted.

Stoke-upon-Trent.—On the 26th ult., the Harpfield Schools, which have been erected for the Stoke School Board by Mr. Bradbury, from the designs of Mr. Lynam, were formally opened. The schools will accommodate 290 children, and have cost 1,510*l.*, or about 5*l.* 4*s.* per head.

Tenterden.—At a meeting of the School Board, the following tenders for the erection of additional school buildings on the premises of the Board, were received:—

Harnett	£802	0	0
Bunnett	749	12	4
Martin	732	19	0
Stiff	719	0	0
Bingham	675	0	0

It was proposed that Mr. Bingham's tender should be accepted, subject to the approval of the Education Department, which proposition was agreed to. Mr. W. King, of Ashford, is the architect.

SEWERAGE WORKS AT YARDLEY.

On the 22nd ult., Lieut.-Col. Ponsonby Cox, R.E., attended at the Free School, Yardley, and held an inquiry respecting the application of the Sanitary Authority of the rural sanitary district of the Solihull Union to the Local Government Board, for sanction to borrow 45,000*l.* for works of sewerage for the parish of Yardley.

Colonel Cox, in opening the proceedings, explained that application had been received by the Local Government Board from the Rural Sanitary Authority of the Union of Solihull, for sanction to borrow the sum of 45,000*l.* He understood, he said, that of the 45,000*l.*, 15,000*l.* were required for the purchase of land, and 30,000*l.* for works. Before a loan of that description could be obtained the sanction of the Local Government was required, and it was the practice of that Board, before giving sanction, to satisfy themselves, by means of inquiry in the district, upon the general advisability and merits of the scheme for which the money was required.

Evidence having been given by Mr. Pritchard, C.E., and others, Colonel Cox said he would report in due time.

BUILDERS' BENEVOLENT INSTITUTION.

A SPECIAL meeting of the subscribers and donors of this Institution was held on Thursday afternoon, the 6th inst., at Willis's Rooms, St. James's, Mr. George Dines, president, in the chair. There were also present Messrs. Dove, Kendall, Plucknett, Simpson, Bussell, Tozer, Hannen, Watson, Kelly, Norris, Waller, Hall, Trollope, Purkiss, Taylor, Williams, Patrick, Fish, Manley, Head, Todd, Morris, and J. Morris.

The Chairman, in opening the proceedings, referred in feeling terms to the loss which the Institution had sustained by the recent death of Mr. A. G. Harris, who for the last eight-and-twenty years filled the office of secretary with great ability and courtesy. Reverting to the object of the meeting, the Chairman said the subject for consideration was the desirability of transferring the sum of 3,541*l.* 8*s.* 5*d.*, now standing to the credit of the Building Fund of the Institution, to the General Relief Fund. The nucleus of this sum was subscribed many years ago with the view of erecting almshouses for the pensioners of the Institution, but, in the altered circumstances of society, it was extremely doubtful whether it was advisable to build almshouses, especially as only five of the forty-five pensioners of the Institution had expressed a desire to fill a vacancy which occurred some time ago in the Bricklayers' and Tilers' Almshouses, the old people preferring to reside with their friends. The Chairman read a letter from Sir James Clarke Lawrence, one of the patrons of the Institution, approving of the proposal to transfer the money to the Relief Fund, and expressing his opinion that almshouses were a most expensive form of charity, and that the day for erecting them had passed away.

Mr. Dove moved, Mr. Plucknett (Cubitt & Co.) seconded, and it was unanimously resolved, "That in the opinion of this meeting it is most desirable that the money standing in the name of the Building Fund be transferred to the General Relief Fund, and that the interest arising therefrom be applied to the purposes of the Institution in the same way as the interest on the Relief Fund is now applied."

Mr. Hannen then moved, Mr. Trollope seconded, and it was resolved *nem. con.*, "That the directors be empowered to take such steps as may be necessary to carry the foregoing resolution into effect." A vote of condolence with the widow of the late secretary having been passed, the meeting terminated. Mr. John Aird, jun., has consented to be the president of the Institution for the ensuing year. An election of pensioners will take place on the 20th inst.

ASSOCIATION OF SANITARY INSPECTORS.

A MEETING of the inspectors of the combined Sanitary Authorities in the counties of Northampton, Leicester, Rutland, and Bucks, was held on Monday last, at the Sun Inn, Rothwell, when there were present:—Mr. Branson (Newport Pagnel), chairman; Mr. Gardner (Northampton Urban), secretary; Mr. Killingbeck (Northampton Rural), Mr. Spencer (Northampton Rural), Mr. Abbott and Mr. Brown (Hardingstone), Mr. Spendlove (Thrapston), Mr. Packwood (Wellingborough), Mr. Harvey (Uppingham), and Mr. Wright (Market Harborough). Mr. Haviland, Medical Officer of Health, and president of the Association, was also present.

After partaking of dinner, a short discussion ensued as to the desirability of petitioning Parliament to introduce certain clauses in the present Public Health Bill, with regard to the necessity of a more summary action being taken in the removal of nuisances, and also that it should be made compulsory for medical men to give notice of the existence of any contagious diseases under their care, whether in public or private practice.

Mr. Abbott proposed and Mr. Spendlove seconded, that the Association should forward a petition in favour of a clause securing more prompt action in the removal of nuisances; and Mr. Gardner proposed, and Mr. Wright seconded, that a petition should be forwarded in favour of its being made compulsory on medical men to report any cases of contagious or infectious diseases that might occur within their practice.

Both propositions were unanimously agreed to.

Mr. Haviland again introduced the subject of the Goux system of disposing of sewage. He had submitted to the Inspectors two questions,—first, with reference to the practicability of adopting the system in the various villages of the area; and, secondly, whether the cottagers would consent to the removal of the manure, on a promise that they should receive it back again when matured? Mr. Haviland now read the answers to these questions, which were generally favourable to the adoption of the system. He was extremely anxious that something should be done speedily, and the Goux system was certainly the best he had ever seen. Since the publication of the report of his visit to Halifax, he had been sent for to Salford, into Kent, and to several parts of the country, to advise as to the best way of carrying out the Goux system; and the reason he had asked these questions was to see how it could be carried out in their own area.

The following resolution was finally agreed to: "That this Association, after very carefully testing the different systems of sewage disposal, are of opinion that it is desirable to represent to the delegates of the combined area the necessity of their determining on adopting some system of dry earth or ash privies (such as the Goux system), or any other portable system, under the entire superintendence of the Inspector of Nuisances, as the simplest system of disposing of village sewage."

The Land Clauses Amendment Bill, now before Parliament, proposes to do away with juries in all cases of compensation above 50*l.* The claims are proposed to be settled by arbitration.

CHURCH BUILDING NEWS.

Barnard Castle.—The foundation-stone of the church attached to the Bowes Museum, at Barnard Castle, was laid on the 6th ult. by Mr. John Bowes, of Streatham Castle. Mr. Watson, of Newcastle-on-Tyne, is the architect; and Mr. Kyle, the contractor.

Coventry.—Mr. Eusebius Caldicott, of Sherbourne House, has forwarded to the rector of St. John's Church, the handsome donation of 500*l.* towards the fund for the restoration of this old edifice. Sir G. Scott is engaged in forming plans and estimates for the work, the probable cost of which will be over 4,000*l.*

Heaton Moor.—On the 3rd ult. the foundation-stone of the new church of St. Paul, Heaton Moor, near Stockport, was laid by Mr. W. Romaine Callender, M.P. The church will seat 400, and will cost 5,500*l.*

Rickmansworth. — The consecration of the new church of St. Peter, Mill End, has taken place. The work of erection was commenced about eleven months ago in consequence of the munificent offering of 2,000 guineas by Mr. E. C. Walker. Its length is 100 ft., and breadth —in nave—25 ft., and in the transepts 45 ft.; from base to roof the elevation is 18 ft., but in some places 16 ft. only. The fabric is principally of flint, with Bath stone dressings, and covered in with slates, and capped with red ridge tiles, having at the extreme west end a bell-turret. The designs, excepting that for the font, were drawn by Mr. S. C. Sutton, of Bronly House. Mr. T. Holland, of Rickmansworth, was the builder; and the stonework was executed by Messrs. Clifford & Gough, of Watford. It is stated that the cost of the new edifice will exceed 3,000*l.*

Lynn.—The ancient church of St. Margaret, at Lynn, has been re-opened after repairs and renovation. The works executed, though not fairly described by the word "restoration," are yet of importance, and, perhaps, included as much as could be hoped for, considering that the greater part of the Early English and Perpendicular church had been destroyed, and rebuilt in a debased though substantial manner, and that nothing less than a similar process could effect a restoration of its original form and character. A lantern tower, after being carried up only a few feet, has had to be abruptly roofed in, owing, it is understood, to its being too severe a strain upon the substructure. The chancel-roof has been re-slated; and the lead of the nave roof has been re-cast and re-laid. The floor of the nave has been lowered 4 ft. or 5 ft., and underdrained. The chancel floor has also been excavated, the coffins and putrid remains under its pavement removed and re-interred, and a bed of asphalte and concrete laid, upon which stone and Staffordshire-tile pavement is laid. All the cumbrous pews and galleries have been cleared out; the organ removed from the west gallery, and rebuilt in the north aisle of the chancel; and low, open seats of solid oak, on a slightly raised platform, substituted for the pews in the nave of its aisles. The debased walls and meaningless piers and arches of the nave remain; but the superincumbent plaster and paint have been removed. The interior heavy plastered ceilings have also been removed, and the rough timberings of the roofs altered and panelled in. The expenditure has been about 7,000*l.* The repair of the chancel has been directed by the Mr. Ewan Christian, architect, and the general work elsewhere by Sir G. Gilbert Scott. Messrs. Bell were the contractors.

Manea.—The bishop of the diocese has consecrated the new Church of St. Nicholas, which has just been erected in this village. It is erected on the site of the old building, but with an additional area, and comprises a nave, chancel, transept, north aisle, and vestry, with a porch on the north side, and a western entrance. The style is Early Decorated. It is contemplated to erect a tower and spire at some future time, a small turret for a single bell being for the present provided. The eastern window of the chancel, and also that of the western entrance and the transept, are triple-light, with hood moulds, &c., the centre light of the chancel window having a traceried head. The windows of the nave and aisle are two-light, with painted heads. The nave arcading comprises circular columns, with moulded bases, caps, hoods, &c. The clearstory windows are alternately trefoil and quatrefoil. The walls of the chancel are plastered, prepared for decoration, and the nave and aisle walls inside are faced with brick. Bath stone from the Box-ground quarries is used for the door and window dressings, and inside the moulded work generally; and the walling stone, which harmonises well, is from the quarries of Mr. Godwin, at Eton. The roofs, which are open, are constructed of fir; and the seats are of deal, varnished. The chancel floor is laid with Maw's encaustic tiles, by Messrs. Simpson, London; the flooring in the body of the church being red and black Staffordshire. The entrances have columns, with moulded caps and bases, and moulded arches. The total cost will be about 3,700*l.* The building, which will accommodate 400 people, is carried out from designs by Mr. James Ruddle, Peterborough, and the works have been executed by Mr. W. Hutchinson, of March. The heating apparatus was supplied by Messrs. Haden, of Trowbridge.

Plumtree. — This old parish church has been re-opened. The edifice for some considerable time past had been in a most dilapidated condition. The building, with the exception of the exterior of the clearstory and the tower, has been entirely rebuilt, and the interior has undergone a complete change. The chancel is entirely new, and in addition to the building a new east window of stained glass, by Messrs. Burlison & Grylls, of London, has been placed. The north aisle is also new, composed of stone taken from the Old Trent Bridge; and the south aisle, together with the porch over the south door, has been rebuilt, the latter being erected with split flints and faced with stone. The original design has been strictly adhered to. The works have been carried out from the designs of Messrs. Bodley & Gardner, architects, of London. In the interior, the old galleries have been removed, and the ancient pews have been replaced by stained deal seats, the woodwork of which was executed by Mr. Wilson, of Plumptree. The mason's work was carried out by Mr. Hithcock, of Keyworth. The cost of the undertaking is about 4,000*l.*

North Walsham.—The old parish church of this town has had its chancel improved, and been provided with a new organ. A large window, of the Decorated style, corresponding in its proportions to the original window, filled with cathedral glass, has been inserted at the east end, and a reredos and communion-table presented to the church. The reredos, which is divided into five compartments, is of Caen stone, and the arcade is supported by sixteen polished Rosso marble shafts, the spandrels being inlaid with Devonshire green, antico, alabaster, and jewels. Carved diaper relieves the surface of the panels, and the centre one contains a cross of black polished marble, having a base of polished grey Ipplepen marble. Mrs. Martin Shepheard, at a cost of 510*l.*, has provided the chancel with a new roof of English oak, covered with lead, similar in its character to the old roof; and one bay of the nave and two bays of the north aisle have at the same time been new roofed at an expense of 290*l.* The works were entrusted to Mr. R. Cornish.

Woodbridge.—The parish church of St. Mary, Woodbridge, has been re-opened, after restoration and re-arrangement. The church, of flint and freestone, is of the date of the fourteenth century, the steeple being of a century later date. It consists of nave, with north and south aisles, between the nave and aisles being six arches, of which the full proportions are now visible, while on the north of the chancel is the Seckford Chapel, now used as an organ chamber, the organ having been moved there from the west gallery, by the demolition of which, and the throwing in of the ground-floor of the tower, the five-light west window is opened up. The roof is a hammer-beam roof with embattled mouldings. The pews have been cleared away, and the space supplied with benches, arranged in four groups. The benches are supplemented by chairs, of the ecclesiastical type, and a row is placed at the bench-ends on either side the centre passage, leaving a good wide space. In the chancel the benches have carved poppy-heads, and, with the chairs at the west end, accommodation is afforded for about 850 people. The lighting is by gas standards, and the warming by hot-air apparatus. The old rood-screen, parts of which were found doing duty behind the green baize as parts of the boards of the pews, and other parts as a portion of the reading-desks, has been replaced. The communion table or altar is raised on three steps, and the altar space paved with Minton's tiles, the sancturary or space within the communion-rails being similarly paved. The church contains a large number of stones to the memory of departed worthies of Woodbridge and neighbourhood. There are also two memorial windows in the north aisle. The restoration, which has cost about 1,700*l.*, has been carried out upon the plans and under the supervision of Mr. R. M. Phipson, architect, of Ipswich and Norwich, by Mr. John Frost and Mr. G. Thurman, carpenters; Mr. W. Stephenson, stonemason; Mr. Dove and Mr. Forsdick, builders; and Mr. G. Gall, gasfitter, &c.

Escot (Devon).—Improvements have recently been made in the church of St. Philip and St. James, for Sir John Kennaway, bart. The chancel has been improved by the removal of screens and enclosures. An arch opened in the wall on the north side with vestry beyond it. New seating of English oak is introduced, and a tile floor from Godwin's works. A reredos has been arranged, and the sill of the east window raised. The seating, generally, has been cleaned and varnished. The works have been carried out by Mr. Digby, of Ottery St. Mary, builder; the architect is Mr. Ashworth, of Exeter.

Stoke Canon (near Exeter).—This church has recently been improved in its interior. Some ancient bench-ends, which had been stilted up on blocks to match with framing, 4 ft. high, have been re-arranged, and the whole church reseated with oak, following the style of the old work. The designs of the bench-ends vary, some being adapted from seat-ends existing in the Somerset and Devon churches. The work has been done by Mr. J. Richards; the carving by Mr. Hems and Mr. Sendell; the architect is Mr. Edward Ashworth, of Exeter.

Stafford.—The parish church of St. Chad, Stafford, whose history dates from the twelfth century, has been re-opened after considerable alterations mainly in the way of restoration. In comparatively modern times the aisles and the transept or transepts were destroyed and the west front was partly taken down, the nave arches being walled up with stone which had become weathered before the exterior was cased with brick in the last century. About twenty years ago a movement for the restoration of the church to something like its original state was initiated. The work was commenced in the chancel. On the removal of the brickwork casing on the north side a Norman arcade of six arches was brought to light, and though seriously mutilated, it was found to be capable of restoration. On the south side of the chancel were the remains of a similar arcade and of Norman windows and piscina; but the arcade and windows were in far worse condition than those on the north side. The Norman windows were filled with stained glass; and a three-light east window of stained glass was inserted. The roof and floor of the chancel were reconstructed, and other improvements in this part of the building were carried out. The interior of the tower was also repaired. When relieved from the plaster by which it had been overlaid, the arch leading from the nave into the chancel was found to possess striking features. Examination showed that the north and south walls each contained four Norman arches, and one of these on the south side was restored. Clearstory windows were also discovered. The lath and plaster ceiling of the nave on being removed was found to have concealed a fine oak ceiling in excellent preservation. After some delay the works were resumed. The pillars, responds, and arches of the nave have been cleaned and repaired. The semi-headed windows of the clearstory that were bricked up have been opened out and the stonework renewed. The oak ceiling and roof, which date from the fifteenth century, have been cleaned and strengthened. The style of the nave is "late Norman." The half capitals of the arches next the western wall have carved foliage of the style known as "Transitional." As yet the south aisle only has been built. It has coupled windows in the west and south walls, and an arch at the eastern end that will communicate with the transept. The aisle roof is of plain though massive design, and covered on the outside with Westmoreland slates. The floors inside the church have been lowered, and paved with Minton Taylor's red and black tiles. At present the old seats are fitted up, and chairs provided for additional sittings. The stone used for the new work is chiefly from Weston. Messrs. Farmer & Brindley, of London, have executed the stone carving. The builder was Mr. J. J. Fast, of Melton Mowbray; Mr. G. Clark acted as clerk of the works.

Old Barnet.—The church which stood for some centuries near Barnet-common, and which was one of the oldest in the county of Herts, has been renovated, modified, and partially rebuilt. Some of the old walls and ornamental masonry remain.

ANNALS OF A FORTRESS.

THOSE who have read the section on fortifications under the heading "Architecture" in the "Dictionnaire Raisonnée," will not require to be told that M. Viollet-le-Duc is an authority on that subject as well as on civil architecture. It may not be generally known here, however, that this eminent architect's connexion with military operations has been practical as well as theoretical. "He was frequently consulted by the late Emperor respecting the permanent defences of the country; and it is not too much to assert that if his recommendations had been carried out the investment of Paris would have been rendered impossible, while the progress of the German invasion elsewhere would have been attended with greater difficulties. As colonel of engineers no officer displayed greater energy, skill, or bravery in the defence of the city; and every operation planned and directed by him during the siege was successful." On the signing of the armistice the Germans endeavoured to remove at once the evidences of their plan of investment, but were not quick enough to prevent M. Viollet-le-Duc from having accurately noted the whole scheme. His services were solicited by the Commune, unsuccessfully; but he responded subsequently to the call of Marshal MacMahon to assist in the re-occupation of Paris by the Versailles troops.

Such is the substance of the information given in the translator's preface to the English edition * of the "Histoire d'une Forteresse," in which, as in his little work "How to Build a House," which we noticed a short time since, the author has happily combined practical information with the interest of a narrative. The fortress, of which the story is here told, is an imaginary one; but the map of the site, with the plans and details of the various stages through which the place went in different ages, are given with all the minuteness of a *bonâ fide* military history. We are introduced to the district of Obet, in almost prehistoric times, when it was inhabited by a barbarous but unwarlike tribe, living in dread of the rumoured incursions of a fair-haired race of great stature, who were said to be making their way into the country in great numbers. The district is divided by a river into which a stream-let runs, making the shape of the letter Y, roughly speaking; and between the two forks of the Y is an elevated plateau, steep on three sides, but communicating on the north with open country on nearly the same level. Well, the fair-haired strangers appear, and there is a fight, followed by an amicable arrangement (since that or extermination are the only alternatives), by which the fair-hairs were to reside here and defend the original tribe. This negotiation was entered into on the summit of the plateau, whither the aborigines had fled for temporary refuge; and thus this position came at to be regarded as a kind of *point d'appui*. Two centuries pass, and the land of Obet is now the Val d'Avon, and the plateau is crowned by a regularly-planned enclosure or rampart, a mound based on and tied together by tree-trunks and logs forming headers and stretchers. For the aborigines, many of whom had fled the valley, re-appeared on a day with other spirits like themselves, and made a determined effort to regain complete possession of their old country; and hence the new comers saw the necessity of having some regular and permanent stronghold. And here the fair-haired race, the Gauls, commanded by their handsome young chief Sigild (who is a fine specimen of a born commander,—such a man as Mr. Carlyle would admire), sustained the first siege, which in one point was similar to all that succeeded it; for the natural character of the country has the same effect, broadly speaking, under every system of warfare; and throughout the history the north side, where there is no natural defence of any consequence, is the vulnerable point, and the scene of the principal struggle. Two centuries and a half later, and the curtain rises again on the Val d'Avon, the slopes of the plateau now covered with a thriving town, of wooden or dry-stone walls, and still protected by the rampart round the plateau above, now, however, much in need of repair. Here, however, under the chief Cognatus, a gallant defence was made against the attacks of some of Cæsar's legions, the efforts of the defenders being raised by the accounts which their chief circulated of the

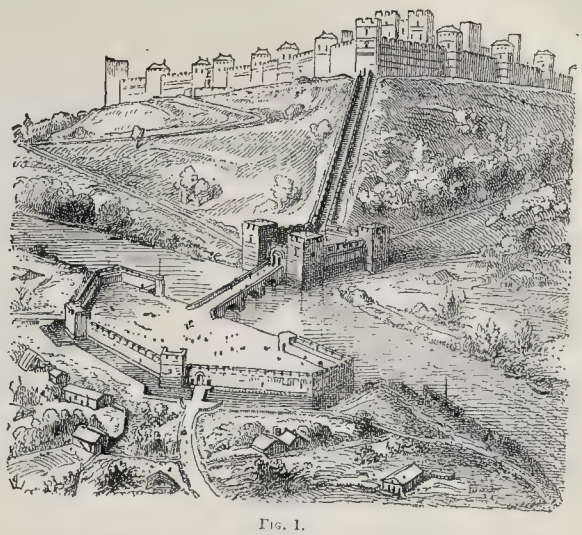


FIG. 1.

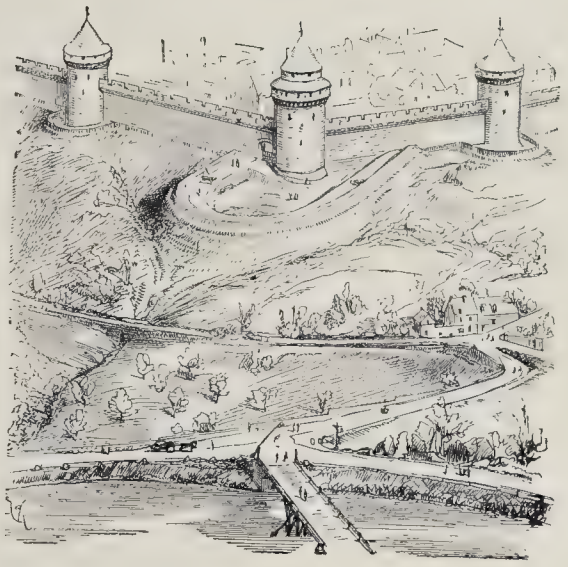


FIG. 2.

wretched, half-starved state of the Roman soldiers,—accounts readily received; for, says the author, "the Gauls have always been inclined to lend a willing ear to representations that flatter their desires, without inquiring whether they are true or false." After the taking of the fortress, Cæsar gave orders for the establishment of a permanent camp on the plateau, which now, however, was divided into two fortresses, north and south, with a *place d'armes* between. And here were first seen scientifically-constructed defences, with ditch and *glacis*, and entrances arranged so as to compel troops who would enter to present a flank to the defenders. But the Roman camp does little work, and three centuries after its ramparts have nearly disappeared, when the Emperor Julian commanded a fortification to check the incursions of the Germans, and hence arose the fortified Gallo-Roman *cité* Juliana, when the plateau was once more walled all round, this time with massive masonry ramparts and innumerable towers, and a citadel or special stronghold at the southern angle, from which a direct communication was carried down the hill to a work commanding the main bridge over the river at the angle of the Y (see fig. 1). At the opposite end, the weak north side, an advanced work was thrown out, which becomes the scene of the most violent struggles of the third siege, when the Burgundians made the place a stronghold against the Franks, and were finally defeated by the latter under the conduct of the Roman military engineer Secondinus, after a most elaborate series of attack and defence operations, by mining, countermining, &c., described in great detail and largely illustrated. The Frank kings destroyed the most important works, but the Roman towers were massive, and two centuries after presented a mass of ruins, the plateau being a waste, and

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* Annals of a Fortress. By Viollet-le-Duc. Translated by Benjamin Bucknall, Architect. London: Sampson Low & Co.

the western declivity supporting only a poor little town.

So the curtain falls on the Roman period, and in 1180 rises on "the feudal castle." Since the ninth century the Lords of Rochepont had been possessors of the vale; and an abbey had been founded on ground adjoining the plateau, and the *cité* Julians on the slope was once more in existence as the town of St. Julien. The account of the genesis of the new castle; the manner in which the ambition of the young Lord of Rochepont was stirred by his uncle's accounts of the Christian fortresses in the Holy Land; the feminine arts by which the lady of Roche-pont secured the monks of the abbey on their side, that they might raise no political difficulties against the building of the new castle; the wonder of the inhabitants of the town, mixed with consternation, when the great tower at the southern angle, risen 30 ft. from the ground, presented a circular mass of masonry 90 ft. in diameter, are all brought before us; and the subsequent siege operations by the Duke of Burgundy, with the incidents of night attacks, the employment of various engines against the walls, the tremendous struggle on the battlements when the moving tower was brought up to them by the besiegers, are described with a graphic power which reminds one of some of the scenes in "Quentin Durward." Then came, in the fifteenth century, the first defences against fire-artillery, which was at first of course regarded only as a novel substitute for the old catapult method of propelling missiles; and Rochepont and other places received additional outworks round the base of the towers, called *boulevards*, to mount cannon on, as the newest addition to the defences (fig. 2). The fifth siege was carried on by the army of Louis XI., under Messire Charles d'Amboise, against the representatives of Charles the Bold of Burgundy. "The king's army took with it a good and powerful artillery, consisting of twelve large bombards, twenty-four spiroles, veuglaires, and ribeaudequins;" and the besieged were somewhat similarly provided. The castle succumbed eventually, the defenders marching out with the honours of war after a desperate resistance. Next, in 1606, the *cité* of La Rochepont is fortified by Evrard de Bar-le-Duc, "engineer to the most Christian King of France and of Navarre"; and here we have the first commencement of the bastion system, and the illustration of the principle, since paramount in military strategy, that each part should defend and be defended by another; and the first commencement of the system of scientific investiture, and attack by earthworks pushed forward gradually, and mutually covering each other. The character of Forcia, the "red-tape" second engineer, who succeeds to the direction of the siege, and does everything by rule but can make nothing answer, is very good. Lastly, the town of La Rochepont is fortified by M. Vauban at the end of the seventeenth century, and the faces of the northern bastion with its demi-lunes so laid out as to sweep the whole face of the plateau to the north; while each face, in case of attack, was defended by the fire from another face. Here is the system of artillery attack and defence in its first complete form. The town, in 1813, is besieged by the army of Bohemia under Prince Schwartzenberg. The description of the various stages of the attack, the method of planning and constructing the parallels, the placing of the besieging batteries so as to defend each other, and to tell on the weak points of the fortress, and the means by which the attack was again and again met and frustrated, has all the interest of a game of chess on a great scale; which modern war really is. The whole account is illustrated by copious diagrams, plans, and views, and so minutely given as to read just like a veritable history.

The abdication of the Emperor suspends hostilities in this latter case, after the fortress had shown some claim to be considered impregnable except by famine. But, notwithstanding the bastioned inclosure and great outwork which was still existing in 1870, exactly as Vauban had planned it, "the town could not have held out forty-eight hours against the German artillery." And the reasons for this, which are given in some extracts from the papers of a "Captain Jean," who had been engaged as an engineer officer in the late war (and which, it is needless to observe, represent the advanced views of the author), form an interesting study. Captain Jean considers that the immense effect of the long range of modern guns, in changing the conditions of attack, has not been taken into account, or at least not sufficiently realised, in modern theories of defence. The effect is to give the besieger great freedom of choice and liberty of movement in regard to his points of attack, while the besieged are cramped into the same space as before, and cannot gain any corresponding advantage. The bastion system, in Vauban's form, is useless at distances where an enemy does not fire at particular faces of the work (since he can hardly distinguish them), but drops his explosive projectiles into the place *dans le tas*, in a general and indiscriminate manner. What, then, is to be done to meet this new power of long-range artillery? Captain Jean considers that Vauban's bastion system is to be magnified in proportion, and that instead of one great fort, separate forts are to be placed at what would be the salient and re-entering angles of Vauban's bastions, but at distances in proportion to the increased range of artillery. These forts cover each other with their fire, and curtain-walls are not needed, for while the forts are manned and served no army can occupy the ground connecting them. "In proportion to the length of the trajectory, the defence must remove its defensive arrangements from the centre of the place. If each front of Vauban's work was 400 yards, it ought to be from 13,000 to 14,000 yards now." But above all, permanent works should only be established with great caution, because they cost a great deal, and are necessarily familiar to the enemy, who studies them. Future military operations, Captain Jean thinks, should depend much on temporary fortifications. "Vauban's fortresses have had their day."

The permanent and massive fortress, therefore, is to be succeeded,—according to our author,—by the temporary field-work, everything in modern warfare moving quicker than before. The archæologists of five centuries hence will find no massive ruins to exercise their investigations upon. Not a few will be glad if the use of them be by that time a forgotten tale also. Not so feels our author; and his words are worth note, considering the quarter from which they come. Looking from the fortress of Rochepont to-day,—thinking of all the events that this little nook has witnessed, of the ruins that have been accumulated by human passion,—contrasting this with the calm of Nature, with the flowers which have clothed with a mantle of beauty the ruins that have been heaped by the fury of man,—"a feeling of deep sadness comes over us, and we say to ourselves:—'What use is it all?' 'What use!' replies a voice in the depth of our soul, 'What is the use of independence? What good is the love of our country? What use is the memory of self-sacrifice?' War makes nations, and war raises them again when they sink down under the influence of material interests. War is struggle, and we find struggle everywhere. . . . . Whenever what is called fraternity between nations shall become a reality, the reign of senile barbarism and shameful decay will not be far distant." This is outspoken at least; and we do not say that the feeling is not, on the whole, healthier, and certainly more natural than that very puling and pusillanimous view of war which has been forced into too great prominence by such philanthropic writers as Messrs. Erckmann-Chatrian. But if it is true that there is struggle everywhere in life, let us ask our distinguished French brother whether there are no better and more permanent ends of struggle than he has been contemplating,—no higher platform of strife? There will always be struggle; but when the peculiar kind of strife which shows itself in military warfare comes to be discredited, much human energy will be set free for worthier objects. In the meantime, we present to our author and his compatriots, as a kind of counterblast, an old sentiment which has something in it also,—"Better is he that ruleth his spirit than he that taketh a city."

One word more, as to the translation. It is clear and readable, and rendered into good English idiom (which translators from other languages do not always achieve); but it has been very imperfectly revised. The references to the plans are in not a few instances incomplete and misleading; and the translator seems to have got into a muddle with numbers and points of the compass several times. On p. 92 we have "south point" where it should be "north"; p. 134, "the southern ramping wall," where the author evidently must have said "to the south of," or "on the south side of," the said wall; the letters in the text referring to figure 36 are many of them wrong; p. 299, "two pieces" should be "four pieces"; p. 335, "left face of the right bastion" should be "right face," &c.; and others. A little trouble in revising such errors would have saved a good deal of trouble to the readers, who are thus left to the task of correcting the press for themselves.

OPENING OF THE ALEXANDRA PALACE.

THE very orthodox English May-day weather last Saturday did not seem appreciably to check the exodus of visitors for the opening ceremony of the pleasure-palace on Muswell-hill. At all events, the building during the afternoon was almost as full of people as it could be consistently with any possibility of moving about at all; and perhaps it was as well that no unusually fine weather tempted out a greater crowd, who might have found plenty of room in the grounds, if they once got there, but would have found the getting there very problematical; for, as it was, the direct railway service to the Palace seemed to be taxed quite beyond its resources, more than an hour being consumed over the journey from King's-cross, by a process in which the travelling, to put it in an Irish form, seemed to consist almost entirely of stopping. If the Alexandra is to be a popular holiday resort this kind of thing must be amended, for there is a limit to human patience, even on holidays. The alternative of the main line by Woodgreen Station brought the visitor from Scylla to Charybdis, the road from the Palace down to the station being in the condition of a ditch. The next thing to be done should be to "metal" this road; its state on the opening day was,—well, very bad.

The difficulties and disagreeables of transit got over, however, the crowds who jostled each other throughout the building appeared to be decidedly satisfied with the result, and to regard this "second temple" as a great advance on the first, and a place to be decidedly approved of. In regard to the objects of attraction within-doors, there was little to call for comment from us; the proposed sculpture-gallery is at present only nominally so; the picture-gallery we will look to hereafter. One thing, however, we note,—that the building is very well planned for the circulation of large crowds without confusion; no building of this size and extent could well be easier to find one's way about, the main system of the arrangement showing itself almost at once to the visitor entering the building. We must say, also, that the great concert-room, although as we have before observed, the side portions are very much cut up with columns which intervene between the audience and the orchestra, is in regard to the centre block exceedingly successful acoustically; there seems to be no perceptible echo,—at least nothing to interfere with the effect, and the clearness with which a quartett of single voices was heard at the extreme end of the room, even with the continual noise of a moving crowd, was a satisfactory test on this point. The result illustrates what has been urged in our columns and elsewhere, that a long room rather than a wide one is the shape for conveying musical sounds directly and clearly to the ears of a large audience. It would have been better, however, if the back of the room could have been raised to some extent, both for seeing and hearing.

The large attendance at the opening, in spite of the bad weather, may, we hope, be taken as giving a good augury for the future popularity of the Palace, one great attraction of which will be its beautiful and picturesque situation, from which in fine weather the country can be looked over far and wide in all directions. The transit accommodation and the approaches improved there will be every probability of the Alexandra Palace becoming one of the most acceptable resorts of London out for a holiday.

On the close of the concert the directors entertained very liberally a large number of friends to the undertaking, and tested with satisfactory results the capabilities of the great dining-room.

Monument in St. Paul's.—A memorial of the late Admiral Sir James Scott, K.C.B., has been erected in St. Paul's Cathedral. The monument is in the form of a mural tablet of large size, designed and executed by the firm of Messrs. Alexander, Macdonald, Field, & Co., of Aberdeen. Its character is in keeping with the record of services rendered to the country during the great wars that prevailed from the beginning of the century, and later in China.

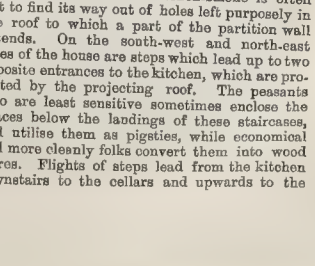
THE WOOD-CARVERS AND CHÂLET-BUILDERS OF SWITZERLAND.

THE beauty of Swiss carvings, and the picturesqueness of Swiss châlets are justly celebrated, and the Anglo-Saxon race has been rendered tolerably familiar with both. In the present days of cheap travel, an immense number of wandering Britons have extended their holiday tours as far as Geneva and Lausanne, and have seen for themselves the quaint wooden dwellings of the mountaineers nestling under the great rocks among the hills, or perched on the sunny elevations on the lake sides; and those who have so seen them have universally felt the additional charm which they lend to the magnificent landscape; and, on closer acquaintance, have admired the simplicity of their design, the usefulness of their decoration, and the comfortable look which is worn by the majority of them. But, after all, everybody has not been to Switzerland; and there are, presumably, some Englishmen, Scotchmen, and Irishmen who have not even crossed the Channel, or ever heard the Frenchman chatter, or a Belgian drawl, on his native soil. Nevertheless, the most stay-at-home Briton, unless he has persistently kept his eyes shut, can scarcely fail to have a very fair notion of a Swiss châlet, and a Swiss carving. The shop of our so-called "Importers of Foreign Goods" are filled with wooden chamois and châlet-clocks, and other pretty toys of Swiss manufacture, and English publishers and booksellers can scarcely have left a Swiss woodcut in Leipsic uncopied, or a Swiss gorge or mountain undescribed. The mass of our people are familiar with Switzerland, as far as a general impression goes, as they are with the highlands of Wales and Scotland; but it seems that, even in the Swiss cantons, it is very difficult to procure accurate information as to the extent of the wood industry, or the steps which ought to be taken to improve and develop it. Although wood-work of all kinds is so thoroughly associated with the very name of Switzerland; when Mr. Jenner, her Majesty's representative to the Swiss republic, was asked by Earl Derby for information on the subject, half a year ago, he was unable from official sources, to derive the required intelligence, and was compelled to send to the small library of semi-official works to the Foreign Office, as containing the most practical answers to the very simple queries which were addressed to him. At the same time, he enclosed with the book parcel a monograph upon several points which are of interest to the trades which we represent, and a summary of which may prove of interest to our readers. For most of his figures Mr. Jenner is dependent upon the statistics collected by M. Salvisberg, for the Vienna Exhibition of 1873; but these may be reckoned as high in this country, and also as nearly reliable. They show that in the year named in the twenty-two Cantons of Switzerland, 1,837 saws were at work in the preparation of timber for various industrial purposes; that there were twelve large establishments for turning wood, three cart and carriage factories, fifteen factories for cabinet-making purposes, and seven large establishments for wood-carving. There were also twenty-eight factories at Frutigthal, in the Canton of Berne, each employing on an average forty hands, while in Berne and Fribourg two railway-carriage factories with an out-turn of 800 carriages per annum. In addition to all this was the fireside industry of hundreds of people, and the labours of scores of little factories which could not be named or classified. M. Salvisberg is a severe critic of the handiwork of his fellow countrymen, and while he gives them credit for the excellence of many of their productions he is constrained to add:—"Nevertheless, the future of Swiss wood-carving should not lie in the direction of the would-be useful ornaments and commonplace toys which have hitherto absorbed the energies of the bulk of the trade; but the artists should endeavour to apply their skill to the production of furniture and decorative carving of a high style of art. Such articles, if executed with the care displayed in one or two specimens, would find a market in every wealthy house in Europe, whereas, in the knick-knack line too much has already been done, the stocks are increasing, and not even the never-ending stream of foreigners that sweep over Switzerland annually will prove sufficient to absorb a continually renewed supply of Swiss châlets and Swiss boxes." If the question resolves itself into one of supply and demand, of course, Swiss manufacturers must leave an overstocked market and a non-profitable sale; but those who saw the more pretentious Swiss carvings at the Vienna Exhibition will remember that there were really "only one or two specimens" of marked excellence, as stated, while almost all the little knick-knacks were good. The Swiss peasant has a most desirable capability of reproducing the objects of daily life with something like veracity, and some workers are startlingly truthful in their representations. But the Swiss seem to be deficient in inventiveness, and it is a pity to advise them so strongly to abandon an art by which they have gladdened European households to adopt a loftier profession for which they have as yet shown no special aptitude. It must be remembered whence multitudes of the pretty Swiss toys come:—"The cowherd and shepherd tending their flocks in the Alpine pasturages, the charcoal-burner watching his fires, and the peasant families sitting round their stoves during the long winter evenings, at the expense of but little physical exertion, add greatly to their store of comforts by a little skill in carving. A very large proportion of the cheaper articles are actually produced in this manner." But these men, women, and children who handle their knives so deftly, and who can so dexterously represent a goat or deer work by old household models as much as by nature, and the goat-maker does not reproduce the deer with equal facility. At best, only the most devoted and careful artisans of Switzerland can hope to excel in pure artistic carving, and even they will have hard competition with men of other races. But we fancy that most practical folks will agree in thinking that an ordinary Swiss carver had better stick to his six or eight francs per diem, and continue to do good work which pleases most eyes, than attempt nearly impossible exploits without fit training, and fail to earn a sou.

Apropos of this point, we may note the parquetrie of Switzerland. Every Swiss house with any pretension to comfort has a parquet-floor in the best room; and, says Mr. Jenner, "the diversity in the patterns is something really astonishing, when the low rates obtaining are taken into consideration." But at the same time he advises that even we Englishmen, whose artistic incompetence used to be proverbial on the Continent, should compete with the Swiss in this branch of industry; for "even if we do not care to manufacture parquets for home use, there is nothing to prevent us, with our advantages, from supplying every foreign nation possessed of a seaport. . . . It is difficult to understand why so little has hitherto been done in this direction. Might it not be worth while to try what would be the effect of the establishment of two sister workshops, under the superintendence of the authorities of the Kensington Museum, the one for wood-carving, and the other for making parquets? The object to be first sought for is not so much cheapness as the production of models superior in design and finish to anything hitherto turned out by foreign manufacturers." It is for English employers and draughtsmen, rather than for the Government, to say whether they can honestly accept the position which it is here suggested that they should assume; but Mr. Salvisberg admits that, although at Venice, Switzerland outstripped her rivals in rapidity and cheapness of production of parquetrie, she was inferior to them in the elegance of the designs exhibited. The manufacture of parquets, although of much more recent introduction, is still more profitable to Switzerland than the wood-carving industry. The trade, which is carried on in eighteen out of the twenty-two cantons, is at present in a flourishing condition, and it is estimated that the annual production of the twenty odd establishments which carry it on reaches the value of 320,000*l*. Prices vary from half a franc to four or five francs per square foot, about a franc or a franc and a half being charged for the common deal sort. The woods most generally used are oak, walnut, pear, plum, cherry, maple, lime, and fir; but fine foreign woods are finding greater favour. The largest factory in the country is that at Interlaken, which is fitted up with costly machinery, and is capable of turning out about 1,500 square feet of parquets per diem, or between five and six millions of square feet per annum.

The fondness of the Swiss for wooden houses is very remarkable, and Mr. Jenner goes so far as to say that "a quasi-religious value" is attached by the people to the châlet system of architecture. A distinguished writer on the subject also holds the opinion that some part of the love of home so characteristic of the Swiss may, perhaps, be due to the carefully-devised and cunningly-ornamented dwellings with which that feeling is so closely connected. In the French and Italian cantons, however, the people are less prejudiced in favour of wooden cottages, constructions of stone and bricks are replacing the former timber structures; and it is probable, that partly through motives of economy, and partly through the influence of their neighbours, the inhabitants of this part of the country will ultimately abandon wooden buildings; but in the German cantons châlets continue to be seen everywhere in their ancient form. There is, of course, considerable diversity in the plans of different châlets; but there are certain great principles which are rarely departed from, which demonstrate the affinity between them and the older style of German peasant's house, of which specimens may still be seen in the Black Forest. This affinity is most clearly seen in the position usually assigned to the living-room, which forms the characteristic feature of the German cottage. This apartment is almost invariably placed in the southern corner of the house, so that the sunshine, admitted by numerous contiguous windows pierced in the walls adjacent to the corner, falls in a warm reviving flood on the table which is placed there. Round this table the family gather to eat and to work, and there they have full enjoyment of the sunlight from morn till even. Benches fixed to both of the sunny walls under the windows, which have small compartments which can readily be opened, and which generally command beautiful views, enable the sitter to enjoy the landscape, while at the same time it is easy, merely by turning the head, to keep an eye on the proceedings of the other persons in the room. The windows are generally latticed, and the projecting roof shelters the interior of the apartment from the glare of the noontide sun. Not only is the symmetry of the frontage sacrificed to this arrangement, but not infrequently in the villages houses will be met with which, with a total disregard of the street line, crane out in front of their neighbours for a freer view. In the corner opposite to the windows in the living-room is the huge tiled stove, and close to it are the steps, which lead through a trap-door to the great upper room, and which serve as convenient seats during the winter. This same loft is warmed by the stove and the lowness of the apartment itself; the panelling of the walls and ceiling and the stout boarding of the floor combine to render the family-room cosy. In a third corner of this household meeting-place stands the immense dresser or sideboard, provided with open and locked compartments, and a flap which serves as a wash-table. A clock usually completes the furniture, which only differs in the poorer and richer dwellings in the lesser or greater amount of carving which adorns the panels and furniture.

The square family-room regulates the whole plan of the building. The rest of the frontage is taken up with the sleeping-apartment, which extends to the same distance rearward; and the long kitchen which runs behind both completes the ground plan.



The kitchen fire-place is placed immediately behind the stove in the family-room, and sometimes the same chimney serves for both, but in the humbler châlets the kitchen-smoke is often left to find its way out of holes left purposely in the roof to which a part of the partition wall extends. On the south-west and north-east sides of the house are steps which lead up to two opposite entrances to the kitchen, which are protected by the projecting roof. The peasants who are least sensitive sometimes enclose the spaces below the landings of these staircases, and utilise them as pigsties, while economical and more cleanly folks convert them into wood stores. Flights of steps lead from the kitchen downstairs to the cellars and upwards to the

two front rooms under the gables, and to the two covered-in balconies on the sides. The front of the house is often elaborately carved; the back part is usually left bare. Many châlets have only a ground-floor, divided as above described; those of two floors are not uncommon, and there are instances of châlets with three floors. Much naturally depends on the comparative wealth of owner and tenant, but the model châlet has only one floor. Mr. Jenner says: — "Occasional châlets are to be met with here and there, constructed on a totally different system, as, for instance, with the kitchen in the centre of the house, lighted from above; or, as in the Bernese Oberland, where, when two families live in one house, which is often the case, the châlet is divided down the middle, the partition wall subtending the point of meeting of the sloping sides of the roof. It is in such double châlets that the finest specimens of huge gabled fronts, twice the length of the sides, are to be met with, richly and fantastically decorated."

Châlets are constructed in three different styles,—two of great antiquity, the third the result of modern necessities. First is the block-house châlet, which is generally raised considerably above the ground on stone foundations. The walls, projecting one beyond the other, are constructed of stout planks of fir or larch, fastened by means of wooden pins. Of later date, apparently, are the châlets of the frame-house style, which are built of stout oaken posts, grooved to receive planking, which is secured by cross pieces and bolts. The most modern style is the trellis-work or panelled châlet, which was introduced from North-east Switzerland about the beginning of the last century, in consequence of the enhanced price of wood, and has entirely superseded frame-work houses in the Zurich district. This less attractive kind of châlet is erected on high foundations, from which a series of light beams, interlaced so as to form a sort of trellis-work, rise up vertically and diagonally to support the overhanging roof, the spaces between the beams being filled with rubble and plaster-work. Mr. Jenner's last words are well worth noting,— "I was informed that there would be no possibility, or even if there were, advantage, in introducing buildings similar to the Swiss châlets for the accommodation of agricultural labourers in England. They waste an enormous quantity of material, and in damp situations are not over-healthy. This is the opinion of one of the most competent authorities of Switzerland."

FROM ROME.

There are two ways in which the old things of Rome are becoming new; firstly, by means of the undemonstrative but ceaseless renovations carried on by the municipality and traders of the city; in which case, alas! it can be said to be renewed only after the manner of the sophisticated ship of the Greek schools and secondly, by means of the new light thrown, from time to time, upon the remains of antiquity, through the labours of resident archæologists.

It is impossible to contemplate the former of these two sources of change without pain, and yet no one can reproach the Italian people for allowing it to exist. Who would be surprised that an unhappy woman, in the tattered remnants of her former splendour the gazing-stock of all who passed, should, when her better soul returned, lay aside silken rags, that told alike of her fall and of her evil exultation, and sit contented in the homely dress her poverty afforded? Who would be so mad as to expect her to consider for one moment that she was removing an object of interest from the streets, making one less study for the artist, depriving the philanthropic palate of a piquant morsel?

The case of Italy is similar. After ages of subjection which have failed to efface the noble instincts of her people, she has newly risen to freedom, both temporal and spiritual, and she sets out, with the sympathy of all good men, to regain the height of Roman greatness, not by using its memories as a lure to the stranger, but as an example and incentive to herself; preserving them, as long as she can do so without impeding her career, and casting, of her want, much into the treasury of monumental history. Nor should the comparison be thought too harsh; for what is it that is being swept away? Not the sombre grandeur of the Pagan city, but the encrustations of the Papacy, its squalid art and strange fables.

It is proposed to give, briefly, some account of Rome, with a view, especially, to the changes material and mental which the last few years have produced, and to take first the Colosseum, the best known perhaps of Roman antiquities, leaving the agents in the work of mutation to be noticed at a more convenient time, when the archæologists have brought their season to a close, and the civic authorities are resting from their work.

It must be owned that the feelings produced in the mind of your correspondent by his first sight of the Colosseum were those of disappointment and chagrin. He was not prepared, or even inclined, to deny that it was a most stupendous mass of building; but the epithets which he had seen piled upon it, by authors ancient and modern, were so much more stupendous that they dwarfed the reality to a most unfortunate degree. Suetonius was, we hope, the first to adopt this immense style of description, when he compared the *stagnum* of Nero to "a sea surrounded by the buildings of a city"; but the writer in Murray's handbook for 1873 was not the last, though perhaps the most ingenious, when he wrote, "There is certainly no building of which the descriptions and drawing are so much surpassed by the reality."

But besides inflated accounts there is another cause at work here which detracts from the optical effect of all constructed objects, namely, the want of scale produced by the unvarying largeness of dimensions and breadth of treatment which obtain throughout. The houses are extremely lofty, and the rooms they contain are in proportion; the obelisks, which appear very little things, measure from 50 ft. to 140 ft. in height; the fountains and churches correspond, and it is only by some chance that one is now and then reminded that he is in the land of architectural giants. A man stopped in the *Via della Muratte*, unable to determine to what genus an animal belonged which was resting on the hand of one of the Tritons, who look so unhappy among the rocks of the *Fontana di Trevi*. As the sun shone upon it, it reminded him of the golden bird of his childhood, from whose decapitated trunk was wont to pour a stream of ephemeral sugar-plums. Presently it rose on the wing, and, passing close beside him, was easily recognised as one of those large pigeons which make their nests in Rome.

In like manner, when the Colosseum was illuminated a short time since, in celebration of the two millions, six thousand, two hundred and eighth anniversary of the foundation of the city, the doves, fluttering about in the lurid light, appeared like nothing else but bats of fire, and might well have been mistaken for wonderful pyrotechnic contrivances. But to return. Many on visiting Rome have known great disappointment at first, succeeded by full satisfaction, as the true sublimity of the place grew upon them; and now that Time has worked, the amphitheatre appears as an exceedingly great building, in picturesque decay, teeming with matters of interest to the archæologist and architect, to the philosopher, historian, and Christian,—"A noble wreck in ruinous perfection."

This *picturesque* decay of the building has been impaired, and—for the non-professional observer the charm of the scene very much lessened—by the removal of the cross from its centre, and the altars commemorating the *Via Crucis* from the lowest arcade; but most of all by the "weeding up" of trees and flowers for the preservation of the ruins and the carrying on of the excavations.

The cross—the municipal guards now supply its place—had stood since 1749, a dreaded sentinel preserving the ruins from spoliation. As early as 1675, Clement X. founded a chapel for the same good purpose. The destruction of the flowers is much to be lamented, as they were of even more than sentimental interest (Professor Sebastiani, in his "Flora Colisea," enumerates 260 species of plants found on the site; and Dr. Deakin, in his "Flora of the Colosseum," increased the catalogue to 420); but, with regard to the trees, we may feel that we bowed to Necessitas alone, she whom Jove himself obeys. Byron says,—

> "The trees which grew along the broken arches
> Waved dark in the blue midnight;"

but as their waving was likely to make "the broken arches" still more broken,—a fact which, of course, did not strike his lordship in those pre-scientific days, — upon consideration we shall admit with humility,

> "'Tis better thus."

It is unnecessary to do more than remind those interested in these matters of the well-known measurements and capacity of the building. "The height of the outer wall is 157 ft.; the major axis of the building, including the thickness of the walls, is 584 ft.; the minor axis, 468 ft. the length of the arena is 278 ft.; the width 177 ft. The superficial area is nearly six acres. The number of spectators who could be seated is estimated at 87,000, without including several thousands who had standing-room on the higher terrace."

The history of the Colosseum is still to some extent a matter of dispute. The very name by which it is now known is not that by which it was originally designated, and it is uncertain when the word Colosseum was first applied to it or why. Some say because it stood in proximity to the Colossus of Nero, the huge pedestal of which is still to be seen; but this did not appear quite satisfactory,—in fact, it was rather too much like the prevalent idea that the part of London known as the Adelphi is so called on account of the theatre which stands hard by,—and others have adopted the more evident explanation that the name referred to the great size of the structure, which supposition is borne out by the fact that the amphitheatre of Capua, being very large, is also called the Colosseum.

The date, too, so long received for the commencement of the Amphitheatre is now disputed and the schismatic certainly appears to have logic on his side. It is usually stated to have been *commenced* by Vespasian in A.D. 72 on the *site* of the *Stagnum Neronis*, which was hitherto thought to have been merely a lake among the pleasure-gardens of the Golden House; but this theory, founded upon most arduous research which Mr. J. H. Parker advances, and in support of which he adduces convincing evidence, that the Stagnum Neronis was the Naumachia (reservoir for naval fights), which we are told Suetonius Nero made, together with a Gymnasium, in connexion with his great palace.

It is highly improbable that this building, the Naumachia and Gymnasium,—should have left behind no remains to indicate the site on which it stood; and yet though every yard on the part of Rome around the palace of Cæsars was excavated in the seventeenth and eighteenth centuries, and more recently, nothing of the kind has been found except what is contained in the Colosseum. In that place, on the other hand, and in its inner tiers there are several arches in the well-known brickwork of the time of Nero, with unmistakable signs of the great stone arcades having been built against them; there being no bond between the brick work and stonework, and the bricks being in many places actually cut to make way for the stone piers. This fact, and the statement above quoted that the Stagnum resembled a sea surrounded by the buildings of a city, with other collateral evidence, brings Mr. Parker to the conclusion that Nero made a large oval reservoir on this spot adjoining his palace, supplied by the aqueduct, remains of which are still to be seen, that to include the Gymnasium in the same building he made a wooden floor over the reservoir, which could be removed and put back again at pleasure, and which, when covered with sand became the *arena*; that around this great circular basin galleries, chiefly faced with brick, were erected for the spectators, and were gradually increased in number; lastly, that the great stone arcades of the Flavian emperors were built *round* these older galleries, thus being on the site belonging to the Stagnum Neronis, but not upon the site where the Stagnum Neronis certainly had been.

Mr. Parker gave a lecture last week, and illustrated his opinions of that subject during the course of it, but unfortunately, owing to the compulsory handing round of photographs during the reading, and the desultory interruption of a gentleman in a white necktie, it was almost lost upon your correspondent, who, however believes he has given a right exposition of the views of the learned gentleman, having known something of them before, and which may be summed up in a very few words, to the effect that the Colosseum was not commenced by Vespasian in A.D. 72, but by Nero about A.D. 64, and that the building of Vespasian was in addition to that of Nero.

In the next letter it is proposed to continue these notes on the Colosseum with more direct reference to the architecture of the building.



PROPOSED MONUMENT TO BISHOP WILBERFORCE IN WINCHESTER CATHEDRAL.

Sir G. G. Scott, R.A., Architect.

THE PROPOSED MONUMENT TO BISHOP WILBERFORCE IN WINCHESTER CATHEDRAL.

This design is in some degree founded on that class of Mediæval monument best represented, perhaps, in this country by that of Archbishop Walter de Gray at York. It differs, however, from that type in the canopy being distinct from the altar tomb which it overshadows.

It was designed with the idea of a degree of sumptuousness of material and execution which, however justly demanded by the distinguished talents and merits of the prelate to be commemorated, has been negligently ignored by his professed admirers, each of whom seems to have flown off to some scheme of his own, and endeavoured to make the great bishop's memory a peg whereon to hang his own pet project. So much has this been the case that a jocose dweller in the diocese expressed his expectation of hearing that some admiring cleric was raising funds for decorating his own drawing-room as a memorial of the deceased prelate!

Be this, however, as it may, the true idea of a monument, pure and simple, to the bishop in his own cathedral, has to go, in vain, a begging. It was to have been of alabaster and marble, but must rest content for the most part with plain stone; its inlayings and mosaic pictures will exist only upon paper; and the architect, Sir G. G. Scott, R.A., must rest satisfied with his good intentions, unless disposed himself to pay for their realisation. The monument, thus shorn of its beauties, will be placed on the north side of the presbytery, against the screen which separates it from its aisle.

NEW SHOPS IN OXFORD-STREET.

The new buildings just completed at the corner of Oxford-street and Holles-street have been erected for Mr. Thomas Brandon; Messrs. Tolley & Dale being the architects; Messrs. Newman & Mann, contractors; and Mr. Hibbins, the clerk of the works.

There are private entrances to the upper floors of both houses, and the kitchens are in the top floors. The fronts are of Bath stone, with Portland-stone cornices, strings, and projections, and red Mansfield shafts to the columns. The cantilevers to the main cornice are in terra-cotta, and the panels between in red Mansfield stone.

The whole of the carving was carried out from the designs of the architects by Mr. Sansom, of Kennington-road; and the ornamental zinc-work by Messrs. Ewart, of Euston-road.



LONDON STREET ARCHITECTURE: SHOPS IN OXFORD STREET.—Messrs. Tolley & Dale, Architects

PUBLIC HEALTH AND PUBLIC FILTH.

The knowledge that filth and disease are inseparably connected is as old as the oldest history. The Biblical injunctions against uncleanliness, and the elaborate ceremonial ablutions enforced on the Jews, are sufficient proof that, even among a people miraculously preserved, sanitary precautions were looked upon as inseparable from a state of health. If, among a limited population, travelling in an open country, living almost entirely in the open air, and never long in one place at a time, when these ordinances were given, such minute precautions were necessary, the vast importance of cleanliness among a population in cities pent, and closely packed, as the English people are cannot be overrated.

The very nature of our mode of life, and of many of our manufactures, is such as to prove the necessity for even more stringent precautions against disease; and one of these, the most fruitful source of sickness and death, comes strictly within the province of the architect and builder.

We allude to the arrangements for the disposal of sewage and house refuse. However magnificent the exterior of a house, however comfortable its interior arrangements, and however luxurious its fittings and decorations, a slight flaw in the construction and position of an unseen pipe is sufficient to render it uninhabitable. We have lately had a marked instance of this in the fact that some of the offices in the new Government buildings in Whitehall,—that most recent addition to our fine specimens of street architecture,—cannot be occupied on account of an escape of sewer gas. But instances of this kind might be multiplied wholesale; and still we find many buildings daily erected without sufficient attention to this vital point.

In a recent report of the medical officer of the Privy Council and Local Government Board special reference is made to the evils arising from defective drainage. Mr. Simon speaks out boldly against the neglect of proper precautions and of the serious results of such neglect, and preaches a sermon on filth which ought to be read by everybody.

Many of these Government blue-books contain abundance of useful matter, which, although published at an absurdly cheap price, is not generally read, on account of the proverbial dryness of such documents. We make no apology, therefore, for referring at length to this particular Report, and that, too, notwithstanding it has all been said in our pages before.

Abundant plans and drawings of various devices for the removal of excrementitious matter and the disposal of house refuse are given, which are worthy of careful study; but the point which principally affects us at the present moment is the formation of drains and sewers within houses.

Builders and others will do well to take especial note of the following rules laid down after careful scientific research, and after full proof of the loathsome diseases which are to be met with, either openly working their way, or killing, unseen and unsuspected, hundreds and thousands of human creatures.

No premises ought, either through water-closets or in any other way, to be brought into drainage connexion with common sewers unless they can be made reasonably secure against the dangers of sewage infection. Part of such security would consist in the fact of the sewers themselves being of such a kind, and in such a state, as they should be, especially with regard to scouring and ventilation; but a further very essential part would depend upon the proper situation, construction, and keeping of the drains and drain inlets of individual premises. In this latter respect the following conditions ought to be insisted on:—

That every private drain be properly trapped and ventilated in relation to the common sewer, and be itself also properly constructed.

That every private drain having inlets within a house have ascending from its head or heads into some suitable high position in the open air, and where it cannot infect the interior, a ventilating pipe, or ventilating pipes, of sectional area amply proportionate to its own.

That all slop-water pipes from within houses be provided at their sinks or other inlets with fixed traps; but farther, that, as far as practicable, they be separated from privy pipes, and made to and open over trapped drain gratings outside the house, not direct into privy pipes or drains.

That no overflow-pipe from any cistern which furnishes domestic tap-water, nor from any cistern inside a house, be allowed to open directly into any drain or privy pipe, but be made (as above) to end open in the outer air.

That in cases where water-closets are supplied on a "constant" system, and where generally there will not be storage cisterns, the entrance of privy air into water pipes be prevented by the adaptation of special service-boxes (which also will act as waste-preventers) to all such privies as have not cisterns.

There are localities where the supply of water-closets is either impossible or undesirable, but wherever they exist they ought to be placed where they can have outside windows, and ought not, under any circumstances, to be placed in or near an ordinary room. The best position for them is near the top of the house; but, on whatever floor, they should, if possible, be built in a projection, and not in the body of the house, from which they should be divided by windowed lobbies.

A very large danger to the public health, and particularly to the better-off classes of society, has of late years consisted in the recklessness with which house-drains, receiving-pipes from water-closets, sinks, cisterns, baths, &c., in the interior of houses, and often actually within bedrooms, or the adjoining dressing-rooms, have been brought into communication with sewers. Among architects and builders there seems to have been very imperfect recognition of the danger which this arrangement must involve, in event either of unskilful first construction, or of subsequent mismanagement, or want of repair. Then, in regard to construction, an almost unlimited trust has been placed in artisans who not only could hardly be expected to understand certain of the finer conditions (as to atmospheric pressure) which they had to meet, but who also, in not a few instances, have evidently failed to apprehend that even their mechanical work requires conscientious execution.

Demerits in existing sewers can in some essential respects be judged by common observation. As the object of a sewer's existence is to prevent the stagnation of filth in and about houses, and frequented places, and to guard against the dangerous pollution of air and soil, which the filth, if not effectually conveyed away, must occasion; so, of course, any sewer which itself occasions any such stagnation and pollution is (in proportion as it does so) unsuccessful; and a sewer which stinks at its open gratings is, *pro tanto*, giving evidence of such unsuccess. The indispensable conditions of success in a sewer are, first, that the flow of sewage to its outfall shall be, as perfectly as possible, continuous and complete, and scouring, not ponded and leaking, and depositing; and, secondly, that the sewer shall have perfect ventilation.

On the question of the disposal of ordinary house refuse, Mr. Simon says:—"There are houses, there are groups of houses, there are whole villages, there are considerable sections of towns, there are even entire and not small towns, where general slovenliness in everything which relates to the removal of refuse-matter, slovenliness which in very many cases amounts to utter bestiality of neglect, is the local habit; where within, or just outside each house, or in spaces common to many houses, lies for an indefinite time, undergoing fœtid decomposition, more or less of the putrefiable refuse, which house-life, and some sorts of trade-life produce; excrement of man and brute, and garbage of all sorts, and ponded slop-waters, sometimes lying bare on the common surface, sometimes unintentionally stored out of sight and recollection in drain or sewers which cannot carry them away; sometimes held in receptacles specially provided to favour accumulation, as privy-pits, and other cesspools for excrement and slop-water, and so-called dust-bins receiving kitchen-refuse and other filth. And with this state of things, be it on large or on small scale, two chief sorts of danger to life arise; one, that volatile effluvia from the refuse pollute the surrounding air and everything which it contains; the other, that the liquid parts of the refuse pass by soakage or leakage into the surrounding soil, to mingle there, of course, in whatever water the soil yields, and in certain cases thus to occasion the deadliest pollution of wells and springs. To a really immense extent, to an extent indeed which persons unpractised in sanitary inspection could scarcely find themselves able to imagine, dangers of these two sorts are prevailing throughout the length and breadth of this country, not only in their slighter degrees, but in degrees which are gross and scandalous, and very often, I repeat, truly bestial. And I state all this in unequivocal language, because I feel that if the new sanitary organisation of the country is to fulfil its purpose, the administrators, local and central, must begin by fully recognising the real state of the case; and with consciousness that in many instances they will have to introduce for the first time, as into savage life, the rudiments of sanitary civilisation."

ARTISANS AND LABOURERS' DWELLINGS BILL.

The following petition of the Council of the Social Science Association to the House of Commons has been presented:—

"Showeth,

That the Council of the Association has observed with much satisfaction the introduction into your honourable House of 'A Bill for Facilitating the Improvement of the Dwellings of the Working Classes in large Towns," a subject which has on several occasions been discussed by the members of this Association.

That in the opinion of this council there are various portions of large towns situated in such a way and so densely inhabited as to be highly injurious to the moral and physical welfare of the inhabitants.

That in a sanitary point of view there are numbers of houses in many large towns so closely built and so ill-constructed and inadequate to the proper domestic wants and conveniences of the occupants, as also by the reason of the want of light, air, and ventilation, as to be wholly unfit for human habitation.

That the existence of such buildings in closely-confined districts tends greatly to produce fevers, diseases, and sickness, and an increased death-rate.

That such portions of large towns should be reconstructed, and buildings erected suitable for the dwellings of artisans and labourers who may be displaced in consequence of the demolition of unwholesome houses.

Your petitioners therefore urge that your honourable House will be pleased to enact into law the provisions of the said Bill, with such amendments as in the opinion of your honourable House may be thought desirable.

And your petitioners will ever pray," &c.

The following amendments, prepared by the joint Committee of Health and Economy, were forwarded with the petition:—

"That in clause 4, instead of twenty persons, a considerably less number would be sufficient.

That this committee does not consider it desirable to ignore the action of district Boards or vestries, as proposed by the amendment of Mr. Cross (clause 4, page 2, lines 39 and 40).

That clause 5 should be so amended that accommodation for the displaced working classes should be made before any demolition of buildings take place. Such accommodation shall be provided within any limits which may be considered desirable by the local authorities, and shall provide for proper sanitary arrangements.

That it is desirable to extend the application of Mr. Cross's amendment to clause 5, by incorporating that part of Mr. Shaw-Lefevre's amendment to clause 3, which relates to the increased value which would accrue to surrounding land.

That this committee is of opinion that the clauses as to arbitration are calculated to press heavily and unduly on owners of small property. They are of opinion that arbitrators should be appointed, with an umpire, in the usual manner, and the award should be final; but should either party fail to appoint an arbitrator, or the arbitrator fail to appoint an umpire, then the case should be submitted for the decision of the County-court judge of the district.

That this committee recommend the council to petition Parliament in favour of the Bill, and that the petition be forwarded to the right hon. R. A. Cross, Secretary of State for the Home Department, together with a letter, asking his consideration of accompanying amendments."

CONCRETE BUILDING AND PATENTS.

Sir,—I have been a subscriber and reader of the *Builder* for many years,—have followed your lessons and teachings closely. I have been much interested lately in the discussions relating to the construction of concrete buildings, and of fire-proof work generally.

I am a little surprised at times to read the discussions of various of your scientific bodies as to the feasibility of certain works or processes. As to concrete work, it is as old almost as "the hills," but the processes may be different at the present time. My experiences lead me to decide upon the almost universal use of concreted work in the construction of buildings, having in view the proper selection and compounding of materials, and as a matter of course relying upon the materials being properly placed in the construction. If all this "work" is done

under proper superintendence, then I claim that concreted work is reliable, can be produced with an artistic facing, and at quite economical prices.

Some seem to be undecided about this class of work. I see by January's *Builder* that a church constructed with brick facings and concrete interior is described, with the mode of producing the work. I enclose a slip circular which describes a mode I have used for some time to construct walls of brick or concrete; it is very simple and effective, and no doubt when fully explained in all its various uses it will be found worthy of general adoption.

All of these printed sketches I have patented, or have under examination for patents, in the United States. Your laws are so peculiar in relation to patents that so far I have not introduced my views into Great Britain. I believe that every person is entitled to the "fruit of his brain," and although I have not applied in Great Britain for such a protection, yet I rely on the honour of the people to give me at least credit for my work, and protection for any rights I may be justly entitled to.

I speak thus, as I understand the patent laws of Great Britain permit any applicant to receive, or rather demand, a patent, whether such party is the original inventor, attorney, or "not." This is certainly unjust, and should be changed, giving only to the original inventor or his attorney.

We can "produce" one work for two years, and rely on the protection of the Government by patent if we desire it; if not, the work is considered free to the use of the public after that time. This seems to me to be fair on all sides.

A. DERROM.

Paterson, New Jersey.

*** It may be useful to Col. Derrom if we mention that we do not find anything shown by the engravings sent which is unknown in England.

WEST-END THEATRE AND WINTER GARDENS FOR EDINBURGH.

THE vacant stance in Castle-terrace, between Cornwall-street and Cambridge-street, extending to about 300 ft. in length by 160 ft. in breadth, is fixed upon by the promoters of this undertaking. The promoters of the theatre-company, the capital of which is to be 65,000*l.*, provisionally acquired the site in Castle-terrace from the proprietor, Mr. Gowans,—it being part of the agreement that the elevations for the building should be prepared by that gentleman, while Messrs. Pilkington & Bell, architects, were to design the plans for the interior. The difficulty between the promoters and the Grindlay Trustees, the superiors of the ground, having been got over in a satisfactory way, no delay occurred in taking possession, and preliminary operations are being proceeded with apace. The style of the building is similar to that of the houses at the south end of the terrace; and while it has about it a resemblance to the Italian, it is, we believe, the result of working upon geometric lines, the whole being multiples of a given figure. The principal elevation, which faces the east and will be seen from West Princes-street, is to be two stories, or 50 ft., in height; the striking features in the design being four crown-capped towers, the two taller rising in the centre above the main entrance to the height of 150 ft., and the other two,—one at each end of the building,—to an altitude of 100 ft. The parts of the building between the towers are recessed, and in these a balcony with open balustrading is introduced with good effect. At the eaves of the roof a massive corbelled cornice is carried round the building, and this is surmounted by a pierced balustrading, upon which, at intervals of 16 ft., will be placed figures of the Muses and other allegorical characters. The range of windows on the two floors form a sort of arcading, being for the most part semicircular in style. The two towers in the centre are square to the parapet; afterwards they are carried up in octagonal form, and are each capped by a device in masonry representing a regal crown. The towers at the angles are octagonal from the base, but are finished off in a similar manner to those in the centre. A feature has been made of the entrance between the central towers. Over it will be a balcony with ornamental vases in stone at each side, and surmounting the whole a group of figures representing "Comedy," "Tragedy," and "Music." The fronts to Cambridge-street and Cornwall-street are in the same style as that to Castle-terrace,—the balustrading there being also surmounted by figures indicating the uses to which these parts of the building are to be put. The stone to be used in its construction will be from the Bannockburn quarries, which is yellowish or cream-like in colour.

The plans for the interior of the building have been prepared, as we have already indicated, by Messrs. Pilkington & Bell; and in order to make the place one of the most convenient and suitable that could be contrived, the architects have visited the principal theatres and opera-houses in England and the Continent, and endeavoured to combine what they considered the excellent features of each in their designs.

THE NEW SOUTHMINSTER THEATRE, EDINBURGH.

EXCAVATIONS were formally commenced on the 19th ult., in the presence of Mr. Levy and a number of his friends and well-wishers, for the new Southminster Theatre, which is to take the place of the one which was destroyed a few weeks ago by fire. At a social gathering held immediately afterwards, "Success to the new theatre" was proposed by Mr. Samuel Aitken, and cordially responded to. Mr. Levy, in reply, said that he had catered for the amusement of the public for a number of years, and he thought, upon the whole, he had given satisfaction. In the new building he hoped to surpass his former efforts. The new theatre will be 140 ft. long by 80 ft. wide, and will be capable of comfortably seating 3,050 persons. The interior which is to be decorated in the Greco-Italian style, will be subdivided in the usual way, the stall accommodation being for 300 persons, the pit for 1,200, the circle and boxes for 300, and the gallery for 1,200. The stage will be 45 ft. by 80 ft.; and all modern appliances will be introduced in connexion with its machinery and appointments. The roof, which rises to the height of 40 ft. from the floor, will be constructed for the most part of iron, so as to obviate as much as possible the risk of fire. The walls of the theatre will be of a substantial character—of stone, we believe, to the first floor, and above that of fire-clay brick with stone facings. The entrance will be, as formerly, by a corridor to Nicolson-street, which will be considerably shorter than the old one, as the front of the new building will be nearer the street. The drawings are being prepared by Messrs. Clunas & Sey, architects, and it is expected that the new Southminster Theatre will be ready for occupation in November. The building is estimated to cost between 8,000*l.* and 9,000*l.*

WILTSHIRE MONUMENTS.

SIR,—In the interesting article on the "Preservation of Monuments Bill," with which opens the *Builder* of Saturday, April 24th, occurs the following passage:—

"The remaining monuments named are in Wiltshire, viz., Stonehenge, Avebury; West Kennet barrow, Silbury Hill; the Devil's Den, near Marlborough (where a dolmen only is named, but where exist the remains of a city, as is also the case at the unmentioned spot in the vicinity called the Grey Wethers); and Banbury Castle."

Will you look leniently on an inquiry from a late and uninstructed recruit of the "British Archæological Association" as to the remains of cities near the "Devil's Den" and the "Grey Wethers."

From the presence at each of these places of considerable tracts of much weathered stones, I am led to hazard a conjecture that these may be regarded as having at one time had a structural purpose; or are there earthworks at either spot exhibiting traces of early habitation?

If the latter, I am sorry to say that my attention has never been directed to the excavations, while the boulders of "Sarsen" stone (as is the local name) are always regarded here as of natural origin.

I shall be very grateful if you will let me know what are the indications of ancient cities in these two dips in our Marlborough Downs.

R.

*** The common Wiltshire notion of the "native" origin of the "Sarsen" stones (which is found in a little book on Avebury) seems geologically impossible. These fine building stones have been brought from some very great distance, though the source is as yet unknown.

The possibility of ice drift exists; but even in that case the collecting, no less than the uprearing and working of the stones, is human work.

At the "Grey Wethers" exists a large group of these stones, for the collection of which, in the locality, no rational cause can be alleged, except that of a collection of dwellings.

At the "Devil's Den," not only does the same remark apply, but traces of lines of wall, and of others at right angles to them, may be seen. A careful survey, say on the scale of 1 in. to a chain, would probably make the plan of houses or of chambers quite evident. It would be quite as sound to attribute the dolmen in this spot to "natural origin" as the collection of building stones. Still we speak with all deference; for our correspondent, notwithstanding his modest tone, knows something of the subject.

LAYING OUT THE HATCHAM ESTATE.

NEW SCHOOLS, A CHURCH, AND OTHER BUILDINGS.

IN last week's *Builder* we gave a descriptive notice of the conversion of Aske's Almshouses at Hoxton into new and spacious schools for the education of some 500 children, under a scheme of the Endowed School Commission, which was some time ago sanctioned by Parliament. In addition to the Hoxton schools, which are intended mainly for the children belonging to the labouring classes in the district, the scheme of the Commissioners also provided for the erection of new middle-class schools in some part of the metropolis by the Haberdashers' Company, who are the trustees and managers of Aske's Charity, the annual income from which has now increased to a very large amount. The accumulated funds of the charity have, indeed, become so large that some time ago the Haberdashers' Company purchased what is known as the Hatcham Manor Estate, containing an area of upwards of 200 acres, and they are now engaged in laying it out for buildings and residences. It is upon this estate that large and ornamental new middle-class schools are now in course of erection, and almost completed. There are two distinct buildings, one for 300 boys, and the other for an equal number of girls. It may be stated that the site upon which the schools are being built occupies unusually high ground. The main approach to the estate is opposite Newcross-gate, at the junction of the Queen's-road and the Old Kent-road. From this point a spacious new carriage-road, 60 ft. in width, has been constructed, and carried to the extreme south boundary. From the entrance of Newcross-gate, along this road, there is an uninterrupted ascent for a distance of about half a mile, when an exceptionally high altitude is attained, with an interesting panoramic view of the metropolis, both north, east, south, and west. It is on this spot, which is the highest point of the estate, that the new schools stand.

The new buildings, which are to be called "Aske's Hatcham Schools," occupy, with the grounds, about four acres. The style of architecture adopted is the Gothic, and as the two schools are uniform both in their dimensions and architectural character, a description of one is sufficient. The girls' school is situated at the north-east side of the site, and that for the boys at the south-west angle. The principal frontage of the boys' school is that to the west facing the new road already mentioned. It contains the ground-floor and story above, and is surmounted by two gables, carried to a height of 50 ft. The length of the elevation is 78 ft., whilst, in addition, at the extreme south-west angle is a caretaker's apartments. The main face of the several elevations consists of stock-brick, with red Suffolk brick for the window-arches, and Boxground stone for window-sills, springers, copings, and general dressings. At the north-west angle of the grounds there is a porter's lodge, and within the grounds two separate buildings, containing the residences of the head-master and head-mistress, all harmonising with the school buildings. The interior of the schools, on the ground-floor, contains the general public school-room, 55 ft. long, and 28 ft. wide. This apartment is 22 ft. in height, and contains an open trussed roof, stained and varnished. The ground-floor also contains five class-rooms, two of which are 15 ft. by 12 ft.; one 20 ft. by 18 ft.; one 19 ft. by 13 ft.; and one 24 ft. by 15 ft., together with a hat and cloak room, 20 ft. by 18 ft. The first-floor also consists entirely of class-rooms,—five in number,—of similar dimensions to those just named. In the grounds attached to each school there will be a covered playground, sup-

ported on iron columns, 80 ft. long by 30 ft. wide. Mr. W. Snooke, the Haberdashers' Company's architect, furnished the designs for the schools, which are being carried out by Messrs. Perry & Co., under the superintendence of Mr. George March, as foreman of the works.

It may be added that in addition to the two schools in progress, the Haberdashers' Company are immediately about to erect a large church on the estate, on the side of the road directly opposite to the principal frontage of the boys' school, and they are also laying out several roads, diverging from the main road already formed, for the erection of residences of a high character, it being their intention not to permit any houses of an inferior character to be erected on the estate. It is calculated that the large area of the estate will admit of the erection of more than 1,000 houses. The Kent Waterworks Company have already constructed a reservoir on one of the highest points on the estate, which will contain 2,000,000 gallons of water. It is covered over with turf, and portions of the surface are ornamentally planted.

MESSRS. MOODY & SANKEY'S TABERNACLE AT CAMBERWELL.

The erection of the new "Tabernacle," as it is called, in D'Eynsford-road, near Camberwell-green, for the services of Messrs. Moody & Sankey in South London, was commenced last week. The building will be of unusually large dimensions. Its length will be 200 ft. and breadth 167 ft., but it will not be carried to a proportionate height. The side roofs will be much lower than the central portion, the latter being 30 ft. high from the ground, whereas the former will only be 19 ft. The building, which will cover a ground area of 33,400 ft., is calculated to accommodate 7,500 persons. The materials used for the walls of the structure will be corrugated iron, and it will have a slated roof in which there will be skylights, supported by wooden rafters and iron tie-rods. No flooring will be laid down, sawdust sprinkled on the earth being intended to serve this purpose. There will be no galleries, but raised tiers of seats will be covered with red baize. Inquiry-rooms will also be attached to the structure, which is to be completed and ready for opening in six weeks from the commencement of the works. Messrs. Perry & Co., of the Tredegar Works, Bow, are the contractors.

THE BELFAST ARCHITECTURAL ASSOCIATION.

Last week, the closing meeting of this Association for the session was held in the Museum, College-square North. In connexion with the proceedings, there was an exhibition of drawings and designs, a number of them the work of the students, but for the most part lent for the occasion by gentlemen of the town and neighbourhood. The walls were entirely covered by the designs, and the exhibition was altogether a very interesting one.

On the motion of Mr. W. H. Patterson, Sir Charles Lanyon was called to the chair. Mr. R. M. Young (hon. secretary) read the report of the committee and the report of the examiners, and various awards were made.

Sir Charles Lanyon, in reply to a vote of thanks, said,—It has again given me very great pleasure to preside at your annual meeting, and again to meet those younger members of the profession who are now preparing for the battle of life in that profession of which I was so long a practical member, and upon which I still look with much interest. This meeting recalls many an association connected with my younger days, and the ardour and anxieties connected with the pursuit of knowledge in one of the most pleasing professions that any young man can follow. I must congratulate your association on the improvement which I observe in the exhibition of drawings hung around these walls; and I sincerely hope that this year's success may tend not only to stimulate those who have carried away the prizes in this competition, but that it may lead those who have been unsuccessful to an honourable determination to vie with their fellow-students in the future. To this latter class I would say do not be disheartened. Remember the advice I took the liberty of giving you last year—not in my own words, but in those of a great master of his art, viz.:—"That a great part of a man's life must be spent in collecting materials for the exercise of genius; that nothing can come of nothing; and that he who has laid up no materials can produce no combinations." I fully concur in the observations made in the report of the examiners—"that it is gratifying to notice such a highly creditable show of works, many of them being of real artistic excellence"; and I also concur in the remarks made by them on some of the drawings specially referred to. If I might, however, venture to make an observation on any want there may be in the class of work exhibited, I must say that I should have been better pleased to see more sketches from ruins or buildings of well-known character. These form the materials to which I before referred, which students should be constantly collecting, from which to produce combination of design.

BOROUGH OF SUNDERLAND.

TO ARCHITECTS.

Sir,—The present anomalous position of the profession, as shown by the action taken at the last meeting of the Royal Institute of British Architects, reminds me very strongly of another affair of competition as again offered to the professional world by the Municipal Authority, deputed to a committee of the Sunderland Corporation on this occasion, not for a Town Hall, as they really ought to do, but for "plans, specifications, and estimates for the erection of a Council Chamber and Offices, Museum and Library" at the north end of the Mowbray Park; and to that is added, "only practising architects will be allowed to compete." Marvellous truly! The general conditions issued herewith are, if anything, more astonishing than the ones lately issued for the Soane Medallion, &c., with the extra of being allowed such deviation as any one architect may think best to suit his purpose, though the cost of the whole, including "all the furniture" requisite to embellish the exteriors, flank up the façades, terraces, or main approaches, certainly not the roadways, is not to exceed the large sum of 24,000*l*. Although the site is dotted out without the liberty granted, in that competitors are not bound to conform strictly to the lines of the site, when it is put into feet cubic, at the cost of ordinary street buildings such as respectable tradesmen occupy, it will cost more money by a few thousands of pounds, without the study and after-labour to produce a suite of buildings that will contain such things as are here asked for; and I would, under such peculiar conditions, say to all who may seek for the necessary information this time, consider first the improbability of such a scheme ever being carried any farther than a mere competition, as the last one was nothing more than that, and, for the present one, there really is no better prospect, not a little bit; inasmuch as a very powerful influence is working so as to effectually preserve all the rights of the ratepayers to the entire park in all its fulness of effect, and in all their integrity, as they were expressly handed over to them by her Majesty's late Home Secretary, Sir George Grey, with instructions to maintain, as it is now, and for all time to come, "the extension of the existing Sunderland Park." And I very much regret the necessity there is at this time for prompt action on behalf of the park, and to restrain the town improvement committee from such gross spoliation as is now threatened by them, in determining to cut away the best part of the park, after they have almost uselessly squandered 100,000*l*. in clearing away hotbeds of disease and other ills that life is made subject to through bad management, &c.; but they appear so very indifferent as to acquiring a reasonable site for the proposed suite of buildings that it has become now absolutely necessary to file a bill in the equity courts in order to maintain the park in its entirety, and to that end all the necessary papers are at this moment in London; and I do hope that the town will be spared such an infliction as a warfare in Chancery in order that it may not be called upon, at a not very distant day, to apply for another Improvement Bill. I trust the committee will, by the refusal of architects to compete for the buildings, reconsider their decision, withdraw the affair for the present, and leave the park as it now is; for I think that when intending competitors consider the very great uncertainty of ever seeing their efforts pass beyond the paper upon which they are set forth, however valuable they may be, they will not trouble about dealing with such conditions, or with such further indifferent prospects as to buildings. There is nothing to justify the proposed cutting up of the beautiful piece of land, the extension park; better by far would it be to purchase the public-house and stables forming the north-eastern angle, and inclose the whole as it ought to be: then the town might be pleased in having preserved to them their inheritance, as it is to very many to-day, and then pass it on to future generations as a health-giving place of enjoyment.

I would advise a little more careful digest of the whole scheme, both as to the requirements, character, and probable cost, for whatever the men leading in this scheme of building at this time may think, the time is not far distant when Sunderland must take a much more noble stand in the affairs of the country generally, and show itself worthy to be respected in every way, not only by its own commercial enterprise, but by the mind of its inhabitants, as developed by the public buildings erected, but more especially such town-hall buildings as are requisite and really necessary for protecting those whose duty it is to manage and care for the welfare of the town generally. I do not think the present sum offered a sufficient one to induce good men in full practice to give their time and ideas to assist in developing the requirements asked for; on the contrary, I should have offered the 300 guineas in one good competition carefully arranged, upon a fair prospect of being put into execution, upon a noble site, with broad way up to each façade; for nothing gives more grace and effect to a good design than good approaches; and for that purpose I would suggest that, instead of offering such as has been, and is now, offered, the terms should be,—First, the carrying out of the work at the usual commission of 5 per cent.; the second, 150*l*.; the third, 100*l*.; the fourth, 50*l*.; and a professional umpire to make the award.

This, I submit, would draw men of ability having leisure into a competition; but where there are so many disagreeable uncertainties as there are undoubtedly in this Sunderland affair, I cannot advise any reasonable practitioner to spend his time upon such an uncertainty; neither can I endorse the idea of preventing young men competing, for many first-class men of the present day owe their position entirely to fair competition,—a very rare thing indeed at this time; but much of the odium thrown on the profession, I regret, arises solely from the actions of professional men themselves.

I desire to see a noble town-hall in Sunderland, and I desire to extend the parks, not by cutting away part of the best portions to add more in another place, but by truly conserving what the people have, and adding more as occasions may require it, always observing, "What is worth doing is worth doing well."

Marchio.

THE LEGAL COMMENCEMENT AND TERMINATION OF A TENANCY.

The question whether the determination of a tenancy under agreement, the commencement of which is not defined in such agreement, dates from the date of such agreement, or from the date of payment of the rent, has just been settled by the Court of Common Pleas, in the case of Sandill *v.* Franklin.

The facts of the case are as follow:—The tenancy was under a written agreement, by which the premises were "let for a year certain, and so on from year to year, until half a year's notice to quit should be given by or to either party, at the rent of 50*l*., payable quarterly, the first payment to be made on the 25th of March next." The agreement was dated the 20th of December, 1872, and no date was specified for the commencement of the tenancy. Notice to quit was given on the 24th of June, 1874, and the tenant, holding that the notice was invalid, refused to leave and had been ejected. On appealing to the law the verdict was given against him, and he now appealed against that verdict.

The Court of Common Pleas, however, consisting of Chief Justice Coleridge, and Justices Brett, Archibald, and Huddleston, confirmed the verdict, on the ground that the provision as to payment of the first quarter's rent on the 25th of March sufficiently showed that the tenancy was to be considered as commencing from the regular quarter-day, the 25th of December, and not the 20th, the date of the agreement. The half-year's notice to quit, therefore, given on the 24th of June was quite legal.

THE PROPOSED NEW BRIDGE ACROSS THE THAMES.

Should the plan of Mr. Perrett for the construction of a new bridge across the river from the Tower to Horselydown be ultimately sanctioned and carried out, the Thames will have a bridge stretching over it at a considerably higher level above high water-mark than any of the present bridges. The project is at present under the consideration of the Bridge House Committee, but even should it be favourably received by that body, the Admiralty authorities will have to be satisfied before Parliamentary sanction to the project can be expected. Meanwhile it may be stated that the proposals and plans involve the spanning of the river by three arches, each 90 ft. above high water-mark, which, it is stated, will enable the tallest masts of vessels which ever come up to London Bridge to pass under at all times. It is further stated that one of the great advantages of Mr. Perrett's plan consists in the fact that, although the bridge is so lofty, the approaches will be level, which will save much time, as well as suffering to horses. It is likewise urged in favour of this bridge that if allowed to be constructed it would effectually relieve the streets of the eastern portion of the City and neighbourhood, by allowing the large goods traffic caused by the delivery of goods from the docks and wharfs in the locality to be conveyed to the southern district without swelling and almost choking the great stream passing over London Bridge.

ANCIENT CROSSES IN CHESHIRE.

Great antiquity is claimed for the "old crosses" at Sandbach, in Cheshire. An account of these crosses has been given by Lyson & Ormerod; they had, as the old story goes, been pulled down and used for walls and grottoes for the houses of tasteful proprietors in the neighbourhood. It is said that they were raised on the same spot where some priest from Northumberland first preached Christianity, and that they were erected in the eighth century. Have any of our readers examined them lately by the light of modern knowledge of this class of antiquities?

ENLARGEMENT OF THE LIVERPOOL FREE LIBRARY.

THE Mersey Docks and Harbour Board have just been adjudged to pay a large sum of money in rates as to which they had denied their liability. At the last meeting of the Town Council, Mr. Picton, the chairman of the Library and Museum Committee, stated that the Committee proposed to appropriate that sum in the erection of a new reading-room. He observed that the Walker Art Gallery was rapidly approaching completion, and would form a very handsome addition to the fine buildings in the locality. Between the Free Library and the Walker Art Gallery there was a piece of land which had always been viewed as a site for a new reading-room, which, at the present time, was much required. He said the Committee proposed to erect a circular reading-room, and they would shortly lay the detailed plans before the Council. The feeling of the Council appeared to be unanimously favourable to the project.

THE ANTIQUITIES OF WARWICKSHIRE.

IN connexion with the Archæological Section of the Birmingham and Midland Institute, Mr. H. M. Bloxham read an address on "Antiquities of Warwickshire. Mr. S. Timmins occupied the chair. In course of his remarks, the lecturer said that the sites of Roman fortified positions were Tottenhoe, Chesterton, Oakley Wood, Wassenbury, and Ipsley. Ancient British and Roman camps should not be confounded with those mooted areas which were scattered over the kingdom, and of which there were probably not less than 100 in Warwickshire. These areas, he was of opinion, had been formed for defensive purposes in the reigns of Stephen, John, and Henry III., when intestine wars prevailed. Sir William Dugdale spoke of Oldburie, near Atherstone, as being a place of great antiquity, and as having been the site of a British fort which was altered by the Romans. At Edgbill a sword of brass and a battle-axe had been found, and at Sawbridge, in the year 1869, some Roman urns, of gray earth, curiously polished, had been accidently brought to light. He (the lecturer) had been present at the opening of an ancient British tumulus or barrow near a fortress at Oldbury, and the result of nearly twelve hours' labour had been the discovery of the boss of a shield and a spear-head, both of iron and greatly corroded, as well as vestiges of a secondary and Anglo-Saxon interment of probably the fifth century. On getting to the bottom of the barrow, and placed on the surface of the natural soil, were more than one sepulchral urn accompanied by drinking-cups and a small bronze dagger. He had in his own possession one of the sepulchral urns, though in a very friable condition, one of the drinking-cups and a portion of another, and the bronze dagger. When the London and Birmingham Railway had been constructed in this county, about forty years ago, a tumulus had been cut through near the Brandon Station. This contained an ancient British sepulchral urn broken in pieces. There were, besides, three drinking-cups, of which he himself possessed two. At Long Itchington an ancient British urn, now in the museum at Warwick, had been found some years ago.

"OBITUARY," OR "DECEASED," 1874.

A CORRESPONDENT noticing that these headings are omitted in the index of our volume for 1874, sends the following list, in order that it may appear in the index of the present volume. We willingly comply with his request:—

V. Baltard, 66; Sir John Benson, 883; R. W. Billings, 983; John Henry Foley, R.A., 941; John Grantham, 623; George Gutch, 1003; Sir Edwin Landseer, R.A., 43, 454; Sir John Rennie, 773; John Roe, 250.

THE SHAFT AT THE PUMPING STATION, GROSVENOR ROAD.

A READER asks us to let him know the height and dimensions of the shaft of the Pumping Station, Grosvenor-road, Pimlico. According to the lithographed drawings which were issued by the Board, the height of the shaft from the ground, exclusive of railing, is 172 ft.; the bottom footing (18 ft. below ground), is 29 ft. square; on concrete, 11 ft. deep; the width at ground level is 20 ft. square, and 15 ft. square at top.

ELECTION OF DISTRICT SURVEYORS.

AT the meeting of the Board of Works last week, the following candidates were before the Board:—Messrs. A. Allom, T. Blashill, A. Bovill, J. Clarkson, H. H. Collins, B. Fletcher, J. W. Forge, C. A. Gould, J. Hebb, J. Hewitt, R. C. James, L. Karslake, G. O. Lane, G. Landsdown, W. C. Leonard, H. Lovegrove, F. R. Meeson, R. P. Notley, A. Payne, J. S. Quilter, R. Richardson, L. W. Ridge, T. Roger Smith, T. C. Sorby, A. R. Stenning, F. Todd, J. G. Turner, F. Wallen, T. W. Willis, J. Young. The following were elected:—For the district of East Newington, Mr. G. Lansdown. For the district of West Newington and part of Lambeth, Mr. B. Fletcher. For East Hackney (North), Mr. F. R. Meeson. For East Hackney (South), Mr. C. A. Gould.

MEMBERS' NIGHT:

ARCHITECTURAL ASSOCIATION.

ALL the doings at the general assembly of the members, in the character of human creatures, must not of course be chronicled. One may, however, divulge that the proceedings savoured strongly of Bohemia, intentionally more so than in the old days of this custom, and not wisely, as some think. Voices, sketches and cartoons, music out of instruments, Japanese paintings, and fragrance from many an advocate of thurification, filled in the programme at the foot of Mr. Tarver's clever allegory in pen and ink. Surely, though, the lusty Architecture is not herself quite so out of sorts as she looks there, and the Institute might have been figured with a little better taste. However, "all's fair at Fair-time." Have your laugh out and take your ease, gay spirits! Conventionality and an unappreciative world may make these more difficult by-and-by.

TOWN SURVEYOR FOR CIRENCESTER.

SIR,—I send you report of a meeting of the authorities at Cirencester for the purpose of electing a surveyor and inspector of nuisances, by which you will perceive for those offices there were sixty-seven candidates, and amongst them several professional gentlemen of excellent standing as engineers, architects, and surveyors. Notwithstanding this, a gentleman is chosen by one section of the united Board simply because he is intelligent and of business habits. As a ratepayer, I protest against the election of such a man. How on earth can he be competent to give an opinion respecting the strength of walls and timbers of buildings, which, as town surveyor, he would frequently be called upon to do, when actually he would not understand a drawing if put before him? And as to making one, or taking levels for drainage purposes, such work is entirely beyond his capacity; and yet you will perceive by the report that he is proposed and seconded by two intelligent men, simply because he possesses good business habits. Doubtless, as a relieving officer, he has filled that situation with credit; but does that qualify him to become a surveyor? If so, there are thousands of good business men quite as well qualified. I say, to make such a selection is a burlesque upon professional men, and useless to the town.

RATEPAYER.

THE TENBY COUNCIL AND THEIR ENGINEER.

MR. W. BURNS sends us an account of the treatment he has received at the hands of the Tenby Town Council. If the account be correct, Mr. Burns could certainly recover from the Town Council; if it be not correct, it would be waste of space to print it.

Improved Dwellings.—We learn from a pamphlet that Mr. John Ellis, builder, has erected in Wheatland-lane, Seacombe, a block of six houses, which are intended as dwellings for working men and their families. They are built in hexagonal form, and the object sought by the adoption of this system is to provide healthy and convenient dwellings, at the same time affording greater remuneration for a lesser outlay to those investing in this class of property than houses built on the ordinary principle. Each cottage contains one living-room, two bedrooms, scullery, pantry, coal-place, and small gardens. The rent of each cottage will be 5s. 6d. a week, which will cover the payment for water and all rates.

THE MINE UNDER THE GREAT WESTERN RAILWAY AT WEDNESBURY.

THE alarming statement that a portion of the Great Western Railway, near Wolverhampton, was so undermined by colliery workings that it had subsided to a considerable extent, and that trains, though travelling at a foot's pace, were actually inclined to a considerable angle in consequence, has been made the subject of a Parliamentary Paper, which throws full light on the facts of the case.

It appears that the workings in question are in the thick or ten-yard seam of coal, which lies at most about 80 ft. below the surface of the railway. The coal is worked on both sides of the railroad, but not actually under it, though headways and borings have been made for the purpose of ascertaining the quality and extent of the coal.

The railway passes over the locality on an embankment and a viaduct, and the fear is that either or both of these, being undermined so close to the surface, may actually give way. The top of the embankment is about 20 ft. above the level of the ground, and about 80 ft. above the top of the seam of coal, which seam may be taken at about 8 yards thick as an average thickness, in some cases attaining to 10 yards.

This seam has been worked to some extent on the western side of the railway during the last two years; but as only a horse-gin has been used for raising the coal, the progress of the work has been necessarily slow; consequently, the usual subsidences and crownings-in of the surface have come on gradually, and the surface-damage thus caused has been comparatively limited.

Besides the embankment, there is a viaduct which carries the railway over the river Tame, the foundation of the abutment wall of which actually rests on or in the seam of coal itself. The workmen exploring under the walls of the viaduct are in danger of being crushed by the structure, which is liable to be completely undermined, and to fall almost at any moment if the workings are continued. On the remonstrance of the Inspector of Mines, the works in the spot were discontinued; but the danger still exists, though in a less degree, of the railway being affected by the lateral subsidence which is likely to take place, even if no working immediately under it, or in contiguity to it, is carried on. A certain subsidence, or "crowning in," has already taken place close to the embankment, and as these sinkings of the surface occur suddenly, without warning, the danger is such that no precaution could avert in the event of the workings being carried actually under the railway.

The liability of the owner of the colliery to carry on his workings in such a way as not to injure the railway seems evident; but a responsibility would none the less attach to the railway company if any accident were to occur.

Whether or not this is the only instance where railway trains are passing over ground which is honeycombed by colliery workings is very doubtful. But it is well that public attention should be directed to the matter before any serious casualty occurs. Dr. Kenealy's volcanoes are, we venture to think, far less serious matters than the hidden dangers which lurk under our apparently secure and solid railway embankments.

TRANSMISSION OF SOUND.

SIR,—I shall be very glad if you will allow me, through your columns, to ask your numerous readers how I can stop sound from passing from one room into another or others, all on one ground-floor? The case is this:—Connected with a chapel that I attend are five or six vestry-rooms, each about 16 ft. square. They all abut on one passage, from which all the doors open into the separate rooms. The windows are at the opposite side of the rooms, and open into the outer air. The dividing walls are 9-in. brick, the walls between the rooms and passage 4½-in. brick. All the walls in rooms and passage are rendered in Portland cement up to 4 ft. from the floor; above that in lime and sand, finished with the hand float same as the cement. The building is almost new, and seems to be well done. The room floors are wood; that of passage, tiles laid on concrete. Three or four of these vestry-rooms are used on some evenings at one and the same time for separate classes. The separate singing from each of these rooms (always different tunes) may be heard simultaneously in either of the other rooms. The mixed melody produced is something really shocking, as any one may imagine.

I have no doubt whatever but that there are many other of the new places of worship suffering from the same difficulty. No doubt some of your practical readers have met with cases similar to this, and can tell me how they managed to destroy the effect complained of here. If they will give the result of their efforts, I think it will be a great advantage, and valued by many others besides.

J. C.

VENTILATION.

SIR,—Having just read your further article n Mr. Tobin's principle of ventilation, and aving also to-day received a circular from him hat his interests are about to be transferred to company, I cannot well refrain from writing much as I wish him success) that I fixed in the tock Exchange at least ten years ago, and in nother building earlier still, such pipes as he roposes. They are not in walls, but free and p through the floor, vertical, uncovered, pointing the ceiling expressly to avoid draught.

You are, of course, correct in supposing that hen the outer air is warmer than the inner (as is sure to be if drawn from the South or West summer), the current would be sluggish; nd, following your further remarks, if the emand for the fresh air and its consumption by eople and gaslights should be sudden and great, ot only is it necessary to have artificial outlet ower, but inlet also. For these purposes, in he Stock Exchange checking and settling rooms, have applied heat to the exhausting shafts, nd connected the air-tubes (including the old rtical tubes) with a steam-engine fan for use uring the busiest hours; at other times they t naturally.

JOHN J. COLE.

EFENCE OF LOCAL SELF-GOVERNMENT.

SIR,—My defence of local self-government, hich appeared in your issue of the 20th of arch last, has placed me somewhat in the posi- n of the mover of a resolution who has the right reply, but has only heard all round him the o of his own sentiments; for the numerous al press, and a portion of the daily press, have pied from your columns (some without even courtesy of an acknowledgment), and have cited from their readers favourable criticism my attempt to put the question practically fore the public; the only exceptions being a who appear unable to rise beyond local and rsonal prejudices. With such I have nothing to

Mine was the evidence of a public servant ose observations extended beyond twenty ars, and I dealt with all those practical points detail which would be appreciated by your ders, and was written only with a view to pelling incorrect notions or prejudices that e naturally arisen from the misrepresenta- ns of a few interested persons.

find that there is one point upon which there vide-spread error still existing, but which at time of my first addressing you appeared of ior importance, and that is, the obligation, or her the power of the Vestries, to cleanse foot- ys, especially in winter times. The subject grown into greater importance by reason of manner in which the Home Secretary in- ated neglect on the part of the Vestries to y out the provisions of the law, when his rist directed attention specially to the neglect he police. Sir William Fraser did not allow hatred to Local Government to override his gment in reading the provisions of the Police , the general neglect of which I pointed out, Mr. Cross diverted the attack rather than it that Central Government had been guilty ailure.

assert that the vestries are not bound to nse *every* footway, and that the evident in- ion of the Legislature was, that they should do so; for it is provided in the 117th ion of the Metropolis Local Management 1855, that they should "cause *any* footway in their district to be cleansed." Now, sir, was passed in order to give the vestries the er to cleanse any footways where the pro- ns of the Police Act could not be enforced, as in front of public buildings, vacant land, osed gardens, and intersections where it d be difficult to prove a beneficial occupa- (and such footways the vestries do cleanse); the section continues, *as if to prevent any interpretation of its meaning*, "but this tment shall not relieve any occupier of any e or building, or any company whatsoever, any liability to scrape, sweep, or cleanse, use to be scraped, swept, or cleansed, any of any such footway or from any penalty eglect so to do." What can be more clear, yet how much misrepresented have been acts?

omitted to mention in my first letter, among urther tokens of confidence reposed in the ies by the Legislature, is the power of cing the various Boards for management of teries, baths and washhouses, and for assessment, all steadily pursuing their functions in a manner that can only be realised by those who cherish the principles in defence of which I offered the evidence of

A PAROCHIAL OFFICER.

IMPROVEMENTS AT WOODSIDE FERRY, LIVERPOOL.

DRAWINGS for improvements at Woodside Ferry, have been prepared by Messrs. W. & J. Hay, architects. The first object achieved is the utilisation of the vacant land at present used by the Hoylake Tramway, and this has been skilfully effected by lifting the tramway to a higher level over a terrace of shops, or rather over the back-yards to these shops. On the land at present occupied by the terminus of the Hoylake Tramway it is proposed to erect twenty shops, each measuring 15 ft. wide, by 31 ft. in depth, with a back-yard 15 ft. by 10 ft., and a common passage running behind all 6 ft. wide. These shops will have, according to the design, a mezzanine story over them to serve as storerooms or small offices as may be required, and are further constructed so that two or more may be thrown into one. At the east end of the terrace a clock-tower is introduced, which will be seen from a considerable distance all round about. Beyond the tower, on that portion of the land which lies immediately on the north side of the Ferry pay-gates, and at present inaccessible, is shown a suite of public salt-water baths.

LIABILITY OF BUILDERS.

HIRING CARTS.

IN the Durham County Court, Mr. Patterson, a farmer, sued Mr. Rutter, contractor and builder, for compensation for damages done to three carts under the following important features as regards the hiring of carts.

In 1873-74 the defendant had an extensive contract to build houses at Beaupark Colliery, and he hired of the plaintiff three carts, which were used for leading stones, brick, lime, or anything. The carts, it was stated, were in good repair at the time of hiring, and when returned were much damaged. The bodies of the carts were completely done up, but the wheels were good. The vehicles were made eighteen years ago, and the cost of repairing was 11*l.* 7*s.* 3*d.*, which was now claimed. Mr. Marshall, solicitor for the contractor, said he could not deny that the defendant was a gratuitous bailee. His client had offered 5*l.*, but this was refused. The repairs done to the carts were more than was necessary, and the sum was excessive. The judge ruled that builders were liable, under the circumstances, to make good the damages done to carts, and found a verdict for the plaintiff, with costs.

LIABILITIES OF SURETIES.

HAWKINS *v.* ALDERSHOTT SCHOOL BOARD.

THIS case was tried in the Rolls Court before the Master of the Rolls:—

Adopting the *Times'* report, it seems that by contract in writing, dated the 24th of January, 1873, James May, a builder, agreed with the Aldershott School Board to erect a school for the sum of 2,365*l.*, in accordance with a specification which provided that the whole of the work should be completed and the building ready for occupation by the 26th of July, and, in default, that the School Board should be at liberty to deduct from the amount of the contract, and from any money due to the contractor, the sum of 2*l.* for every day during which the completion of the building might be delayed; that the contract price should be paid by instalments; that each instalment should be liable to all deductions and forfeitures named in the specification; and that such deductions should be set off against each instalment. On the same day the plaintiff, James Hawkins, signed a bond for 500*l.* as May's surety. May having fallen into difficulties, and being discharged by the architect, Hawkins proposed that Messrs. Martin, Wells, & Co., builders, should be employed to finish the job, and the School Board passed a resolution that "they saw no objection to the arrangement, provided all the rights and claims of the Board, as stated in the surety bond, be not interfered with." Accordingly, by a contract in writing, dated the 8th of August, 1873, Martin, Wells, & Co., agreed with the School Board to finish the work for 2,365*l.*, exclusive of the value of the work done and the materials left on the ground by May. As the work progressed, payments were made by the School Board to the new contractors, without any deduction, on the architect's certificates; but on the occasion of the final payment in January, 1872, a considerable reduction was made in respect of several items of expense incurred by the Board in consequence of the building not being ready for occupation by the stipulated time. Having thus settled accounts with the new contractors, the School Board, in April, 1874, claimed of Hawkins the sum of 193*l.* as penalties for the non-completion of the contract by the 26th of July previously, and on his refusal to pay brought an action on the bond. Hawkins thereupon filed the present bill, praying that it might be declared that his liability upon the bond ceased upon the School Board's settling accounts with the contractors, and that the bond might be delivered up to be cancelled, and the defendants restrained from suing thereon.

Mr. Southgate, Q.C., and Mr. Dundas Gardiner were for the plaintiff; Mr. Roxburgh, Q.C., and Mr. W. W. Cooper for the School Board.

The Master of the Rolls, in the course of his judgment, said the conduct of the defendants had been as unjust as it was inequitable. The meaning of the building contract was that at the time of paying each instalment all penalties then due were to be deducted from it. By charging the substituted contractor with a sum of money in the nature of liquidated damages for breach of contract the School Board had deprived themselves of the right of suing for the penalties. Even if they had not done so by paying the instalments without any deduction, the School Board had varied the contract to the prejudice of the surety, and thereby released him from his liability under the bond. There must be a decree for the plaintiff, and the School Board must pay all the costs of the suit.

ARCHITECTS' ACTIONS.

ON Monday last, in the second Court of Exchequer, sittings at *nisi prius*, before Mr. Baron Cleasby and a Middlesex common jury, in the case of Searle *v.* Marshall, a question of interest to architects and builders was raised as to a custom alleged to obtain in the former profession. The action was brought by the plaintiff, who is an architect and surveyor at Tottenham and Enfield, to recover amount of pecuniary compensation from the defendant for work and labour done and professional services rendered in preparing plans, &c., for proposed new warehouses in Old-street, St. Luke's. The pleas were, never indebted. Mr. William Grantham, M.P., was counsel for the plaintiff; Mr. Glyn for the defendant. The plaintiff, in examination by his counsel, stated that he had prepared the original drawings according to the usual custom, and they were submitted to the defendant, who approved of them. The defendant wished to have that part of the drawings relating to the roof to remain in abeyance until he should see how he would get on with the whole building. The defendant desired to make use of the adjoining wall, and the plaintiff advised him that it would be necessary he should first obtain the consent of the owner of that wall before he made use of it; but Mr. Marshall replied that he knew the gentleman so well that he would not have any difficulty in that respect. The difficulty with regard to the roof was, that the defendant was desirous of having a tar asphalte; but witness reminded him that the Metropolitan Building Act would interfere and prevent his carrying out this design. 1,800*l.* was the estimated cost for the proposed building. The defendant afterwards did not carry out this building, and not having paid plaintiff's charge for his professional services, he sent him in a bill for 12*l.* 12*s.* in November, 1874. The copy of this account showed that the sum named was charged for making a preliminary survey of the site of the intended building, and for several interviews with defendant at his own request. Witness applied for the drawings, but he had to wait a considerable time before he got them. Soon after he sent in his bill for the work done; but he had not received the 12*l.* 12*s.* He had charged 1½ per cent. on the estimated cost for the building, which was the usual amount charged by architects.

Baron Cleasby.—But this work was not carried out.

The witness said that 1½ per cent. was the customary charge made by architects on the approximate estimate for the work. For the work already done by him he would be entitled to 2½ per cent., but had only charged half that amount. For work of this kind architects were entitled to claim 5 per cent., apportioned in this manner:—1½ per cent. for preliminary drawings and survey of the site; 1½ per cent. for general drawings, with specification; 1½ per cent. for detail drawings; and 1½ per cent. for superintendence. In the present case the work, in respect of the first two items, had been done, and the witness considered he was justified in making his present demand, which was only half the sum he could legally charge.

Baron Cleasby.—If you had supplied the specifications, and the work had been completed, you would, I suppose, be entitled to charge the full 5 per cent.?

The witness answered that, for the survey of the site and the preliminary drawings furnished, he could claim 2½ per cent. on the proximate estimate or cost for the building proposed to be erected.

Baron Cleasby.—But the superintendence of an architect would not be required here, as there was really nothing to superintend.

Mr. Grantham.—He has not charged any item for superintending.

Baron Cleasby.—Did you give the defendant an estimate?

Witness.—I did, my lord. The amount was, 1,800*l.*, and upon this sum the per-centage is charged. The defendant directed me to make the estimate. I did not put the estimate in writing. It is customary to give it to a client sometimes verbally.

In cross-examination the plaintiff said that it did not matter whether the intended building was abandoned or not, the custom of the profession justified the architect in demanding 2½ per cent. from his client for making the survey of the site and preparing preliminary drawings; but in this instance plaintiff charged 1½ per cent. only, as he wished to retain the custom of Mr. Marshall, who, he expected, would prove a good customer, as he had a good deal of building work in contemplation. A reduction might be made on the architect's charges in cases where the estimated cost for carrying out the buildings was likely to be large.

The counsel for the defendant asked the plaintiff if he would be entitled to charge 2½ per cent. as commission in cases where he had prepared plans and sent in an estimate, say for 1,800*l.*, but that afterwards it turned out the proposed work could not be carried out for that amount?

Mr. Searle said that in that and other hypothetical instances put by counsel he would be entitled to demand the percentage named.

Mr. Glyn.—Even if you were wrong as to the estimated cost for the work?

Mr. Searle.—That might afterwards be a question of law.

Mr. Donald Campbell, architect and surveyor, gave corroborative evidence as to the existence of the custom spoken to by Mr. Searle in the architectural profession, of charging 2½ per cent. on the estimated cost of a proposed building,—half the sum for survey of site, and the other 1½ per cent. for preparing preliminary drawings,—

even in cases where the buildings were not carried out, but abandoned.

In the result, the jury found a verdict for the plaintiff, believing that the existence of the usage or custom alluded to had been established to their satisfaction.

Miscellanea.

Yorkshire Exhibition of Arts and Manufactures at Leeds.—This will be open from May to September, and will be inaugurated by H.R.H. the Duke of Edinburgh on Thursday, May 13th, 1875. It will be held on the site of the Coloured Cloth Hall and land adjoining, close to all the railway stations. The floor space of the exhibition covers an area of 1½ acre. The central hall of the exhibition is named the Edinburgh Hall, in honour of the Duke of Edinburgh's visit to Leeds. It is 186 ft. long, 98 ft. wide, and 75 ft. high, and is supported on forty pillars, with circular ribs to support the roof. These pillars and ribs are constructed on the "flitch" system, introduced by the late Colonel Fowke in the western annexe of the International Exhibition of 1862,—a form of construction which permits the use of standard shapes and lengths of timber, without destroying its value for ordinary uses afterwards, if the building be taken down. Although practically in one span, the effect of the hall is that of a nave with side aisles. It has been designed and carried out by Mr. Bakewell, architect, of Leeds. The contractors were Messrs. Whiteley & Co., builders, also of Leeds. At the west end of this hall a commodious orchestra has been erected, on the best models for giving the conductor full command of every performer. On the south side of the hall will be arranged some attractive aquaria, one being 80 ft. long, with choice fish, water-plants, &c. There will also be a large aviary with richly-plumed birds, contributed by Lieut.-Col. Child. The north side of the hall will be devoted to various musical instruments, including pianos, upon which recitals will be frequently given.

Artisans' Discussion Meetings.—On Wednesday night last week, a discussion meeting was held at the Artisans' Institute, Castle-street, Upper St. Martin's-lane, when the following question was debated:—Technical Education in its Relation to Wages and Profits. Mr. T. Brassey, M.P., presided. The discussion was opened by Mr. G. Savage, die-sinker. The technical education of the working classes he thought was emphatically a question concerning our national prosperity. He thought a Royal Commission on the subject would be very advantageous, and that little or nothing could be done in the matter till the question was taken up by working men. Mr. Conolly spoke especially of the value of drawing. Technical education was an excellent thing, but he thought that a man could not be educated out of the workshop. Mr. Broadhurst, stonemason, also spoke especially of the value of drawing, which was as necessary for the artisan as reading, writing, or arithmetic. He sincerely desired to see every child receiving instruction in technical education. Mr. Hall said, as to trade-unions, that so long as they kept up, or attempted to keep up, a standard of wages, they were bound to keep up a standard of work, which they did not do now.

Discovery of Roman Remains at Folkestone.—A discovery has taken place during the past week in the course of the excavations going on in connexion with the extension of the Cement Works. The workmen who were preparing for the foundations of the new work were surprised to find a rubble wall of about 3 ft. in height, whose top reached within 10 in. of the surface—apparently Roman workmanship. The wall was traced, when it was found to inclose a rectangular chamber, about 12 ft. in width, lying north and south, with an hexagonal one adjoining at the north end. At the point where the chambers join each other is a deep hole, and in the oblong one are a series of short piers about a score in number, each some 8 in. square, and placed about 1 ft. apart. Near was found a jar-lid of red Samian ware, a guttus, or vessel for holding oil, and one or two other small articles.

Freedom of the City to the Astronomer Royal.—At the Court of Common Council, on the 29th ult., it was unanimously agreed that the freedom of the City, in a gold box of the value of 100 guineas, be presented to Sir George Biddell Airy, K.C.B., D.C.L., LL.D., Astronomer Royal, as a recognition of his indefatigable labours in astronomy, and his eminent services in the advancement of practical science, whereby he has materially benefited the cause of commerce and civilisation.

The British Artist.—At the dinner of the Royal Academy, on Saturday last, Mr. Disraeli, in responding to the toast of "Her Majesty's Ministers," said,—"What has most distinguished of late years the English school is the faculty of imagination, and the English artist has developed that faculty under very great disadvantages. The British artist is not blessed with the inspiration of atmosphere. He is not surrounded by the splendour of nature. He does not dwell in cities glittering with symmetry beneath purple skies. He is not surrounded by human beings whose flashing forms and picturesque gestures stimulate his invention and afford him many a happy hint of expression and of grace. For him no bannered processions, parading with pomp the squares and streets of fair cities animate his fancy, amid the fall of fountains and the carolling of sacred bells. He lives in a studio often invaded by London fog. If he goes forth for relaxation he wanders in streets of hideous monotony. His studies from life are the constable and the cabman. Instead of a procession he encounters a blockade of omnibuses, and instead of bursts of melody he is welcomed by the screaming of the underground railway, and by the hideous concert of organs and hurdy-gurdies. And yet this man, by his imagination, and by that divine gift alone, can give us a canvas breathing with human passions in scenes of romantic loveliness, with every accessory of splendour and of grace."

Hydrants in the Metropolis.—Considerable discussion took place on the 23rd ult. at the meeting of the Metropolitan Board of Works, on a recommendation of the Works Committee, that the sub-committee, which had been appointed to consider the subject of the adoption of hydrants for the purpose of extinguishing fires in the metropolis, should be authorised to visit Manchester and Liverpool, with a view of obtaining more definite information as to the arrangements in force there with reference to the using of these instruments. Mr. Richardson, who moved the adoption of the foregoing, defended the action of the Board in employing fire-engines. He said that, even had they agreed upon using hydrants, it would be a question whether the pressure of water in the mains would be sufficient for their purpose. At present they were spending some 60,000*l.* or 70,000*l.* annually upon the fire brigade, and if they had to expend some 30,000*l.* or 40,000*l.* more on hydrants, the amount of cost for extinguishing fires might soon be in the proportion of 1s. to every 6d. of property destroyed. Captain Shaw had said that it would take twelve hydrants for one fire, and this would altogether involve a distance of some 2,200 ft. apart. Several members contended that an experiment with hydrants could be tried in London at the same cost as a deputation could go to the provinces on the subject. On a division, eighteen were in favour, and fifteen against the recommendation.

The Water Supply of Croydon.—At a Local Board meeting, recently, Mr. Latham, with regard to the report of the medical officer of health upon typhoid fever said to be existing in Croydon, contended that the fever arose from no injurious effects of the water, but from a local radical effect in the drainage, which should be carefully examined. He thought the report should not be made public. Dr. Carpenter contended that foul matter was introduced into the water-service by an intermittent supply of water through the screw-down taps connected with water-closets, and that so long as these were allowed they would have these outbreaks of fever. He believed there were now some seventy cases of fever within their water district, and some seven or eight deaths, and it was the fault of the people, not the Board, that this was the case, because recommendations he had moved some years since had not been adopted. There were perfectly useless dummies in the shape of cisterns set up by the plumbers of this town on purpose to deceive the public. He thought that the report should be made public.

Election of a County Surveyor for Hants.—The Public Works Committee of the County Magistracy met on Wednesday at Winchester to decide on a successor to the late Mr. T. Stopher, deceased. There were a very large number of candidates for the appointment, which is worth 230*l.* per annum. Of these candidates, four—and amongst them Mr. Stopher's son, and for a considerable time the deputy, of the late surveyor—were selected from which to make the final choice, which fell on Mr. James Robinson, of Durham.

The Pollution of the Clyde.—An interesting document, in view of the present inquiry into the pollution of the Clyde, has been issued by the Glasgow authorities, containing a report by the sanitary inspector, and various details with reference to the subject of the impurities that find their way into the river. Mr. M'Leod, in his report, states that the main sewers and natural streams within the city boundary used for drainage purposes measure nearly 100 miles, and these receive and convey in their ramifications through the city the sewage from 101,368 dwelling-houses, and from 16,218 sale shops, warehouses, manufactories, and workshops. These sewers discharge their contents into the Clyde from forty-two outlets, thirty-three of which are below the weir, with two manufactory outflows by private drains,—the one a chemical work, and the other a distillery,—and nine above the weir. In addition to the latter, twenty manufactories discharge their waste outflow by private drains directly into the Clyde.

Important to Builders.—On the 27th ult., at the Middlesbrough County Court, before Mr. E. R. Turner, judge, and a special jury, Mr. Jonathan Ward, jun., sued the Ormesby Local Board of Health for 50*l.* damage done to his property in Stephenson-street, North Ormesby, in consequence of wrong levels having been given to him by Mr. Tidman, their surveyor, while the houses were in process of erection. It was alleged that Mr. Ward got certain plans passed by the Board for six houses, and that when erecting them the levels of the street were incorrectly given to him by the surveyor, the consequence being, that after two years' parley he has been compelled to make certain alterations, for which he now claimed 50*l.* Before any evidence was given, the statute, which compels an action to be taken within six months after the offence, was pleaded. His Honour ruled that the objection was valid, and by his direction the jury gave a verdict for the defendant.

Building Prospects in Wigan.—The Wigan Land and Building Company (Limited) have now completed and thrown open to the public one of the principal new streets on their building estate at the Wigan-lane end of the town. This new thoroughfare is wide, and opens up some of the best available building land in the borough. By way of making a start, the company gave instructions to their architect, Mr. Ford Mackenzie, of King-street, Wigan, to prepare designs for a terrace of houses to be erected on the new street, and contracts have now been entered into with local tradesmen for the immediate execution of the work. A terrace of ten residences, comprising four large houses and six smaller, will be erected forthwith. The building is Italian in style, and the design is pleasing.

The Protection of Buildings from Lightning.—A paper on the above subject was read at the Society of Arts on the 28th ult. by Dr. R. J. Mann, president of the Meteorological Society. The author showed the state of science in regard to the matter, and the way in which buildings could be most effectually and conveniently secured from danger. The principle of the appliances for the conduction of the electric current were described and illustrated by various interesting experiments. In conclusion, he combated the idea that accident from lightning were of such rare occurrence as to render precaution a matter of trouble and money, by quoting statistics showing that the loss of life and property by lightning was considerable.

Parliament-street.—On the 3rd inst. Mr. Goldsmid asked the First Commissioner of Works, in the House of Commons, whether he had yet made any arrangements for widening the lower portion of Parliament-street; and if not whether he proposed to do so before next session of Parliament. Lord H. Lennox said the question of providing increased accommodation for certain Government offices in Parliament-street was still under the consideration of the Government, and he had not received their decision on the subject. Should, however, they decide in favour of such a scheme it would be a welcome arrangement to him, as First Commissioner of Works, to widen the lower portion of the street in question.

St. Martin's Church, Lewes-road, Brighton.—This church, a memorial of the late Vicar of Brighton (the Rev. H. M. Wagner) was opened on the 1st inst. As we are about to give a large view of the interior, we postpone particulars, so that they may appear together

The Competing Plans for the Annan Town-hall.—Seven designs have been mitted in competition for the proposed Town- for Annan. Three are from Glasgow architects. local *Observer* states that Mr. Daniel Birkett, lisle, sends a plan which differs from all the rs in having three floors, one of them being asement. The elevation is designed some- t after the Scotch style, and the probable is set down at 2,500*l*. A plan sent by Mr. hen Shaw, Kendal, was regarded with favour. structure is much plainer than any of the rs, and it contains the largest hall, the size being 43½ ft. by 27½ ft. The tower is 90 ft. and 14 ft. square at the base. The esti- ed cost is 2,376*l*.

Exhibition of Appliances for the nomy of Labour.—This exhibition, which ing held under the auspices of the Society he Promotion of Scientific Industry in Man- ter, will be opened on May 14 by the Earl erby, president of the Society, and the open- address will be delivered by Mr. John erson, LL.D., late the superintendent of hinery to the War Department. The exhi- on will contain a collection of engineers' s, wood-working machinery, and other ap- nces. The second division is devoted to estic contrivances. A number of gold, r, and bronze medals will be awarded.

New Church at Bishop Auckland.—The rch of St. Peter, Bishop Auckland, has been ecrated by the Bishop of Durham (the Rev. Baring). The church fronts Princes and on streets, and is built on land given by James Thompson, of Bishop Auckland. The chosen is Decorated. Internally the build- is 113 ft. in length, 37 ft. in width, and t. from the floor to the top of the ceiling, e from the flags to the ridge-stone it is 55 ft. intended to seat about 550 persons. Its cost, exclusive of the spire, will be about 0*l*. Messrs. Austin & Johnson, of New- e, are the architects.

New Wesleyan Chapel, Windsor.—The leyan Methodist body, having for some time felt that the present place of worship in ood-street scarcely meets their require- s, have resolved to erect a new chapel. have secured a site on the Vansittart te, at the corner of the Alma and New s, and have selected plans prepared by Morris, of Reading, which were selected by asting vote of the chairman of the trustees in preference to plans submitted by Mr. e, of Windsor. The building, exclusive of is estimated to cost about 4,000*l*.

The Opening of Soho-Square to the lic.—It will be remembered that an offer to the inhabitants of the square by Baron t, to lay out the square for the use of the c, provided the property was transferred e Metropolitan Board of Works, has been ned. A committee, however, has been inted, and the present dilapidated monu- to James Duke of Monmouth will be taken , new iron railings will take the place of resent worn-out ones, and the grounds will id out in ornamental flower-beds, the cost defrayed by the inhabitants.

Moriendum est Omnibus.—During the past there has been erected in the churchyard astleton, a monument to the memory of lotte, the wife of Mr. Willmott Edward. It brown Portland stone, 6 ft. 6 in. in height ft. in width, Gothic in style, the crockets inials well carved. A sunk moulded panel rite marble bears the inscription. The rment includes also black marble shafts, and is on a basement of Portland stone. It m the *atelier* of Mr. W. Dalwood, of Sher- .

Memorials of the Johnson Period.—The ckable collection made by Mr. Lewis Pocock, ., illustrating the life, works, and times of amuel Johnson, will be sold by auction next (May 10th, 11th, and 12th), by Messrs. s. Sotheby & Co., in Wellington-street. It es most interesting letters by his con- raries, and forty by Johnson himself, er with some curious MSS., and a large tion of engraved portraits from the works ynolds.

Saltaire.—The foundation-stone of Congre- al Sunday-schools to accommodate 1,600 en were laid on Saturday afternoon at re, Yorkshire. The cost, about 10,000*l*., e defrayed by Sir Titus Salt, bart., founder ltaire.

Grand Stand on Carlisle Race-course.—The committee of the Carlisle Race-stand Company are about to make improvements in the paddock. The contract for these improvements has been let to Mr. C. Armstrong, builder, for nearly 600*l*., with the stipulation for their completion by the 25th of June next. The building to be erected will stand on the breast of the bank on the south side of the Turf Hotel, adjoining the Sands.

Brickmakers' Strike in York.—The brickmakers have turned out for an advance of 6d. per 1,000. Bricks are exceedingly scarce, and the strike is creating considerable inconvenience. It is said that the men are also demanding that the masters should manufacture but one-sized brick, namely, the 60 cubic inches. Such a demand would array all common sense against the movement.

Waterworks, Stow-on-the-Wold. — The work undertaken by Mr. Teague to deepen the well, has been completed with satisfactory results, and we hear that gentleman has been paid the amount of his contract, viz., 500*l*. The well is now 140 ft. deep, and on Monday last upwards of 40,000 gallons of pure water were pumped up without showing any perceptible decrease in the supply at the bottom of the well.

Society for the Encouragement of Fine Arts.—A lecture was delivered before this society on the 29th ult., by Mr. Henry Blackburn, on "Art in America." The lecturer dwelt at length on the benefit that would accrue mutually to English and Americans by exportation of English works of art. At the same time Americans should do all in their power to revoke the prohibitive duties at present extant.

Explosion of Sewer Gas.—In the Market-place, Leicester, an alarming explosion of sewer-gas took place late on Saturday night. Several of the stalls in the market were knocked down, and the kerb and paving-stones hurled to a considerable distance by the force of the explosion, which is supposed to have been caused by a lighted match being thrown down a grating. Fortunately no person was seriously hurt, though several passers-by were knocked down.

Opening of a Temperance Hall, at the Lye, Dudley.—The new Temperance Hall, the foundation-stones of which were laid in June last, was opened on the 26th ult. The building is of brick, Romanesque in style. The hall is 66 ft. by 33 ft., and affords ample sitting-room for 500 persons. The cost of the building is 1,000*l*. The architect is Mr. J. M. Gething, of Amblecote, near Stourbridge.

A Sanitary Churchyard.—The Stocktonians will be pleased to know, says the *Darlington Times*, that there is room for 2,000 more of them in Holy Trinity Churchyard, and that with a view to their comfort, the yard is to be thoroughly repaired, and placed in "a proper sanitary condition." How many bodies are at present undergoing decomposition there?

Derby Central School of Art. — The students of this school recently presented Mrs. Cooper, the school attendant, with a purse containing eleven guineas, and a satchel with silver plate, bearing an inscription recognising Mrs. Cooper's kindness and unvarying attention in the five years during which the school has been at work.

Accident at the Festiniog Quarries.—A shocking accident occurred on Wednesday at the Welsh Slate Company's quarry at Festiniog. A portion of the roof of one of the underground chambers suddenly gave way and fell upon a number of workmen, three of whom were instantaneously killed, whilst a fourth was severely injured.

Averages.—The visitors at South Kensington Museum during the week ending May 1st numbered 14,137. The average number of visitors in the corresponding week of former years was 14,515. Who can explain this? Why do not 4,000 go one week and 40,000 another? These differences do not occur, but why do they not?

The Restoration of St. John's Church, Coventry.—A meeting has been held to make arrangements for completing the restoration of this church, and to consider the plans supplied by Sir Gilbert Scott. Sir G. Scott estimates that to thoroughly restore both exterior and interior a sum of nearly 5,000*l*. would be required.

Elsley's Patent Sash Lever.—In schools, hospitals, public offices, and other buildings where good ventilation is required, this arrangement may be usefully introduced. Several sashes may be opened with one action of the lever or handle and fixed in any desired position, so as to regulate the supply of air. The apparatus is in good use in many of the London Board schools.

The Gainer of the First Prize of the London Art Union.—Mr. William Howe, late of Durham, and who for many years was connected with the *Durham Advertiser*, but is now holding a responsible situation in the *Leeds Mercury* office, is the gainer of the first prize, valued at 250*l*., in this year's distribution of the London Art Union.

Discovery of Coal in Kent.—A farmer named Baldwin, of Cranbrook, in Kent, has discovered coal on his farm whilst boring for water. The vein was struck at a depth of 60 ft., and a little lower down a second and thicker vein was reached. The coal is described as of excellent quality.

Sawing Machine.—A special silver medal has been awarded to Messrs. Wurr & Lewis, engineers by the Ayrshire Agricultural Society, for their patent combined circular and band sawing machine, which, with a collection of other wood-working machinery, is now being exhibited at Ayr.

Danger in New Houses. — Dr. Goldie, Medical Officer of Health for Leeds, remarks upon the frequency of scarlatina cases in new houses. This is accounted for by the fact that builders use up old bricks and timber taken from condemned dwellings which have long been the home of dirt and disease.

The Embankment.—This, Saturday, the 8th inst., has been fixed by the Metropolitan Board of Works for opening to the public the new garden on the Victoria Embankment, lying between Whitehall-place and Westminster Bridge.

Lymington Church.—The work of restoring the parish church of Lymington has just been brought to a completion. The total expense incurred has been 1,077*l*. 18s. 1d.

Extension of the Margate Jetty.—The contract for this work was signed on Monday, and it will be commenced forthwith. The cost is estimated at 25,000*l*.

Michelangelo.—It is stated from Rome that a discovery has just been made of thirty-six documents connected with Michelangelo, of great interest for the history of art.

Holywell.—The School Board have appointed Mr. John Hill architect and surveyor to the Board.

TENDERS

For alterations to the Crown and Cushion, Market-place, Woolwich, for Mr. William E. Reed. Mr. Henry Roberts, architect:—

	Outside.	Bar Fittings.
Raine	£256 0 0	£210 10 0
Williams	239 0 0	210 0 0
Murrin*	237 15 0	207 10 6

*Accepted. Tender for General Repairs, £203. 7s.

For alterations and general repairs to the Wheatsheaf Tavern, Kentish-town-road. Messrs. Bird & Walters, architects. Quantities supplied:—

Thompson & Smith	£793 10 0
Harris & Sons	792 0 0
Kelly Bros.	792 0 0
Mark	780 0 0
Williams & Son	763 0 0
McLachlan & Son	745 0 0
Anley (accepted)	730 0 0

For warehouse, Alfred-mews, Tottenham-court-road. Mr. Charles Fowler, architect. Quantities supplied:—

Phillipson	£2,200 0 0
Bangs & Co.	1,803 0 0
Patman & Fotheringham	1,748 0 0
Hobson	1,724 0 0
Stimpson & Co.	1,710 0 0
Scrivener & White	1,609 0 0

For warehouse, Little Love-lane, City. Mr. Herbert Ford, architect. Quantities supplied:—

Killby	£5,536 0 0
Laurence	5,532 0 0
Scrivener & White	5,488 0 0
Hobson	5,409 0 0
Smale	5,392 0 0
Browne & Robinson	5,368 0 0
Perry & Co.	5,339 0 0
Downs & Co.	5,332 0 0
Kirk & Randall	5,279 0 0
Adamson & Son	5,110 0 0
Brass	4,965 0 0

For house at Stapleford, Cambridge. Mr. John Hill, architect:—

Drake's Concrete Building Co.	£2,051 0 0

For warehouse, Addle-street, City. Mr. Herbert Ford, architect. Quantities supplied:—

Laurence	£3,783	0	0
Scrivener & White	3,715	0	0
Browne & Robinson	3,692	0	0
Perry & Co.	3,684	0	0
Kirk & Randall	3,652	0	0
Smale	3,652	0	0
Downs & Son	3,628	0	0
Hobson	3,587	0	0
Adamson & Son	3,504	0	0
Killby	3,459	0	0
Brass	3,318	0	0

For building six almshouses at Grantham, Lincolnshire, for the trustees of the late Mrs. Bradley. Mr. Charles Pinn, architect. Quantities supplied:—

Budd & Son	£1,475	0	0
Wartnaby	1,440	0	0
Chalian	1,420	0	0
W. & G. Priest (accepted)	1,300	0	0

For dwelling-house, Southgate. Mr. Thomas J. Hill, architect:—

Field & Son	£1,200	0	0
Fairhead	1,068	0	0
Rist & Brown	1,059	0	0
Sabey & Son	1,020	0	0
Patman Bros.	998	0	0
Bentley	935	0	0

For the erection of Board Schools, residence, &c., at Arlsey, Bedfordshire. Mr. James Shilcock, architect. Quantities by Mr. Henry Lovegrove:—

Sharp & Maxwell	£4,937	0	0
Allpress	3,650	0	0
Nightengale	3,253	0	0
Boyce	3,244	0	0
Moore	3,082	0	0
Stapelton	2,792	7	6
Redhouse	2,533	0	0
Lug	2,525	0	0
Dunham	2,330	0	0
Saint	2,285	0	0
Twelvetrees	2,185	0	0
King (accepted)	1,925	0	0

For alterations and repairs to No. 19, Gracechurch-street, for Mr. S. Hay. Mr. Thacker, architect:—

Boyce	£424	0	0
Langmead & Way	355	0	0

For alterations and repairs at the Green Man Tavern, Harlesden, for Messrs. Fuller, Smith, & Turner. Messrs. Nunn & Green, architects:—

Spicer	£410	0	0
Bangs & Co.	393	0	0
Nye	385	0	0
Henning & Son	347	0	0
Wagner (accepted)	339	0	0

For two cottages at Stratford, Essex, for Mr. H. Copland. Mr. George More, architect:—

Cumbers	£715	0	0
Mansfield	635	0	0
Cheffins (accepted)	610	0	0

For works, No. 2, Hampstead-road, for Mr. B. Beach:—

Toms (accepted)	£440	0	0

For stables, No. 1, Leighton-crescent, N.W., for Mr. W. Cowen. Mr. H. R. Cotton, architect:—

Toms (accepted)	£547	0	0

For additions to Nos. 1 and 5, Park Village East, Regent's Park, for Mr. T. A. Castledene:—

Toms (accepted)	£358	0	0

For additions to Ruckley Grange, Salop, for Mr. T. E. Horton. Mr. J. Fogerty, architect:—

Nevett Brothers	£5,954	0	0
R. & J. Millington	5,284	0	0
Foster	5,248	0	0
Horsman	4,997	0	0
Marrion	4,750	0	0
Yates (accepted)	4,597	0	0

For house at Chipstead, Surrey. Mr. R. M. Shaw, architect. Quantities by Mr. C. Stanger:—

Clark & Bracey	£4,198	0	0
Newman & Mann	3,912	0	0
Keale	3,807	0	0
Cooke & Green	3,797	0	0
Nye	3,690	0	0
Batchelor	3,495	0	0
Shearburn	3,490	0	0
Tongue	3,390	0	0
Richardson (accepted)	3,315	0	0

For alterations at 22, Oxford-street, for Mr. Fase. Mr. Lewis Solomon, architect:—

Cohen	£900	0	0
Downs	837	0	0
Patman & Fotheringham*	768	0	0

* Accepted.

For the first portion of the Alexandra National Schools, Penge, Beckenham, for the Rev. W. Cator and Committee. Mr. William C. Banks, architect:—

Larke	£1,391	0	0
Merritt & Ashby	1,333	0	0
Graham	1,326	0	0
Cooper	1,300	0	0

For alterations to Lea Cottage, Malmsbury, for Mr. W. Forrester. Mr. C. J. Phipps, architect:—

Light & Smith (accepted)	£1,220	0	0

For the formation of roads and sewers on the Manor Park Cemetery Company's Estate, at Forest Gate, Essex:

Thompson & Son	£1,850	0	0
Jackson	1,700	0	0
Marshall	1,700	0	0
Bloomfield	1,599	0	0
Clarke	1,437	0	0
Richardson (accepted)	1,300	0	0

For alterations to the brewery of Mr. A. O. Crooke, Hindon. Messrs. A. E. Stenning & J. B. Tyerman, architects:—

Donne	£562	10	0

For additions to the Hargraves, Stanstead, Montfitchet, Essex, for Mrs. Pultney. Mr. G. E. Pritchett, architect. Quantities by Mr. H. S. Benson:—

		Old Work.
Battram & Hayward	£6,296	£125
Holland & Hannen	6,175	120
Grimwood & Sons	5,933	98
Macey	5,810	80
Shepherd	5,600	75
Cook & Green	5,594	95
Wagstaff	5,190	—

For the erection of St. Peter's Parsonage, Mill End, Rickmansworth, for the Rev. C. W. Neild. Messrs. Stenning & Tyerman, architects:—

Woodward	£1,780	0	0
Holland	1,549	5	0
Clifford & Gough	1,464	0	0
Brown (accepted)	1,388	10	0

For the erection of a house, at Godstone, for Mr. Fredk. Stenning and others. Messrs. Stenning & Tyerman, architects.—

Jarrett	£2,150	0	0

For the erection of a lodge to Kingswood House, Shortlands, for Mr. H. Austin. Messrs. Stenning & Tyerman, architects:—

Burrows	£456	0	0
Arnaud (accepted)	442	0	0

For alterations and additions to the warehouse of Mr. R. N. Ryass, Limehouse. Messrs. Stenning & Tyerman, architects:—

Woodward	£4,877	0	0
Macey (accepted)	4,296	0	0
Stamp & Bowtle	4,235	0	0

For taking down and rebuilding the premises of the Religious Tract Society, in St. Paul's-churchyard and Canon-alley. Mr. E. Wyndham Tarn, architect. Quantities supplied:—

Jackson & Shaw	£5,180	0	0
Woodward	5,150	0	0
Holland & Hannen	4,980	0	0
Brass	4,894	0	0
Rider & Son (accepted)	4,828	0	0

For warehouse, Jewin-crescent. Mr. J. Wimble, architect:—

Cohen	£5,680	0	0
Bayes & Ramage	4,850	0	0
Newman & Mann	4,835	0	0
Mortar	4,823	0	0
Falkner	4,735	0	0
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The Strength of Building Materials.

HOWEVER often a good treatise on this subject may be presented to our notice, we welcome it. To have buildings strong enough without waste of materials is a very important thing. Dr. S. Downing, Professor of Civil Engineering in the University of Dublin, has brought together, in his "Practical Construction,"* Part I., a large amount of useful information to architects and engineers, from some of the best sources, on the resistance of cast iron, wrought or malleable iron, and timber, to *direct compression* and *tension*. The properties of some other bodies, viewed in connexion with their existing powers more or less essential in the art of construction, such as stone, brick, &c., are also given in this work.

The force which is sufficient to overcome the cohesion of the material is the measure of its ultimate strength, and, stated in general terms, this is proportional to the sectional area of the piece tried. The method which the author has adopted is to state in each case a proposition, and to prove it by adducing a number of the best experiments. Thus, in the case of a rod or bar of malleable iron of the highest quality, the ultimate strength is 25 tons per square inch; of plates, such as boiler-plates, 20 tons; and of drawn iron wire under one-tenth of a square inch in section 36 tons per square inch. These are proved by the experiments of Mr. Telford, Captain S. Brown, Mr. Fairbairn, Mr. Edwin Clark, and Mr. Eaton Hodgkinson. Although cast iron is not in practice applied to resist a direct pull, yet its power of resistance to a tensile force is important to be known, in determining the form which beams should have. The ultimate resistance of cast iron to a tensile force is about 7 tons, or 7½ tons, per square inch of section; while wrought or malleable iron is, on the average of the strengths of various kinds, about 20 tons. We cannot always in practice ensure materials being of the highest quality, and we may therefore reckon the tensile strength of wrought iron to be about three times as much as that of cast iron.

After proving each proposition by experiments, the author gives "practical applications and examples," and says, "In applying to the actual practice of construction the knowledge of the ultimate resisting powers of any material, as obtained by experiment, the engineer must, in all his designs, keep in view the great objects of permanency, stability, and safety, and therefore assign to every part such dimensions and form that it shall be acting far within its ultimate power. But the question at once arises,—How far within? What fraction of the ultimate must be the actual resisting force called forth, and this, not only in the case of tensile, but of all other forms of resistance occurring in structures. For this no absolute rule can be set down; a careful judgment and a sagacious use of existing precedents must alone guide us here: a knowledge not only of existing successful works,—which, from being, as may often occur, stronger than strong enough, have perhaps purchased their stability at the expense of economy, and are consequently, so far, not to be followed, but also from the records of past failures, which are in truth but unintended and expensive experiments. Thus, it would appear that there is yet a knowledge required, above and beyond that given by experiment, which it cannot teach, and that is the proper application to practice of the facts established by that means."

The author says of wrought iron that we learn from the largest existing works of a permanent character that no part in tension is strained so as to call forth a resistance greater than about 5 tons per square inch of the transverse section; that is, one-fourth of the ultimate resistance. "The main chains of the Menai Suspension Bridge are resisting 5·4 tons per square inch; the bottom of the Conway tubes 4·5 tons; and of the Britannia tubes 5·62 tons per square inch. The Boyne Viaduct was so designed that 5 tons per square inch was the maximum strain from the greatest load." Considering the importance of the point to be determined, it would have been better that other examples should have been given; for it is probably not in the largest works where we shall find the greatest strain per square inch of metal, and we commend this to the notice of the author in anticipation of a second edition; the more so because he acknowledges that it is only from such examples of actual construction that we can derive the safe strain to which the material may be subjected in practice. Besides the strength of the iron itself, in the form of bars and plates, that of bolts and rivets claims attention. As a rule, bolts should be so applied as to bear a direct tensile strain, and not a cross or shearing strain; but rivets are purposely applied to resist a shearing strain. Mr. E. Clark made a number of experiments at the Britannia Bridge, on the resistance of bar and rivet iron to this form of strain, from which he deduced two simple laws, viz., that the ultimate resistance of any bar to a shearing force is proportional to the sectional area of the bar thus severed; and that the ultimate resistance of any bar to a shearing force is nearly the same as the ultimate resistance of the same bar to a direct longitudinal tensile strain.

The author fully explains the various ways in which plates are riveted together, and the strength of riveted joints, also the joints of bar links of bridges; and the proportions of the heads and nuts of bolts to the diameter of the bolt, and of the depth and pitch of the screw threads, are given in detail.

The resistance of fir timber to a tensile strain in the direction of the fibres is stated to be about 5½ tons per square inch in carefully-selected specimens. It is important to know not only the cohesive force of timber in the direction of the fibres, but across them,—its lateral cohesion; for this is very much less than its strength in the other direction. It is in fir timber but 1-20th part of the cohesion in the direction of the fibres. The practice of carpenters to leave a considerable length between the foot of a principal rafter and the end of a tie-beam, and between the foot of a strut and the end of a king or queen post, is adduced to show that they are aware of this small lateral cohesion of the fibres of timber. In the folio plates of the details of construction of works in iron and timber, fourteen in number, examples of a king-post and a queen-post roof are given (plate 5). When a new edition of these may be required it will be well to correct the drawing of the iron straps at the feet of the principal rafters. They afford no correct information to a student of the form in which such straps are made. Indeed, these examples of roofs were better omitted altogether; the dimensions of the several scantlings are not well proportioned, some being too heavy and some too light, and the straps at the heads of the king and queen posts are useless, except in quite exceptional circumstances.

The ultimate strength of cast-iron to bear a compressive force is stated at 42 tons per square inch, if the height of the specimen is from 1 or 1½ diameter high to from 3 to 5 diameters high; between these limits the strength is proportional to the sectional area. For the lesser heights, below 1½ diameter high, the material gradually increases in strength, and at last, even if an unconnected granular mass, would resist without any limit or any law. Between the heights of 3 or 5, and 25 or 30 times the diameter, the column yields by bending before its ultimate crushing strength comes into force. A table is given from Mr. E. Hodgkinson's experiments, which shows the weights producing fracture of long pillars by flexure, as leading to a practical rule for the due proportioning of columns to the duty they have to perform in actual construction. Mr. Hodgkinson's own remark is, "I have many times sought, experimentally, with great care, for the weight producing incipient flexure, according to the theory of Euler, but have hitherto been unsuccessful. So far as I can see, flexure commences with weights far below those with which pillars are usually loaded in practice. It seems to be produced by weight much smaller than are sufficient to render it capable of being measured. I am, therefore, doubtful whether such a fixed point will ever be obtained, if, indeed, it exists." Further experiments by Mr. Hodgkinson are given, and from the whole the conclusion is arrived at that the strength of pillars of the same diameter, but of different lengths, is inversely as the 1·63 power of the length. Thus bars 1 in. diameter, and 10 ft., 6½ ft., and 5 ft. in

* Elements of Practical Construction, for the Use of Students in Engineering and Architecture. London: Longmans, Green, & Co. 1875.

length are of equal strength under the following weights. Comparing the bars 10 ft. and 5 ft. long, $\frac{1}{10^{1.63}} : \frac{1}{1^{1.63}}$, or $\frac{1}{42{\cdot}658} : \frac{1}{13{\cdot}7823}$, or 1 to 3 nearly.

If the lengths 10 ft. and 6½ ft. be compared, the weights are $\frac{1}{10^{1.63}} : \frac{1}{6{\cdot}5^{1.63}}$, or $\frac{1}{42{\cdot}658} : \frac{1}{21{\cdot}137}$, which is very nearly as 1 to 2. Thus at about two-thirds of the length the strength of the pillar is doubled, and at half the length it is nearly trebled.

Comparing the strength of pillars of the same length and of different diameters, they are found to vary as the 3·5 power of the diameter.

Pillars of the same length and diameter differ in strength according to the manner in which the ends are formed. A long pillar with flat ends, turned true, perpendicular to the axis, and well bedded, is about three times as strong as a pillar of the same length and diameter with the ends rounded. It is found also that when the pillar has one end flat and one round the strength is two-thirds of that of a pillar with both ends flat. The comparison between the strengths of pillars with round and with flat ends has reference to pillars whose length is not less than thirty times the diameter. In pillars shorter than this proportion the strength of those with round to that of those with flat ends is not in a constant ratio; and it is found that it decreases when the length compared with the diameter decreases.

The cause of the different strength of pillars, according to the form of the ends, may in part be referred to their different mode of fracture. The pillar with rounded ends breaks at or near the middle, and with one fracture. The pillar with both ends flat, and perpendicular to the axis, breaks generally at three places—in the middle and near each end. The pillar with one end flat and the other rounded, breaks with one fracture, but at a point distant from the rounded end one third of the length.

A pillar with both ends flat, and with the weight firmly and evenly bedded, and another with the ends rounded, may be compared with a horizontal beam fixed at both ends, as against another only supported at both ends.

Malleable or wrought iron is frequently employed to resist compressive forces, especially in bridges, where it is used for the primary reason of its suitability to resist tensile forces, and is put under compression in other parts of the same structure because it is difficult to unite pieces of wrought and of cast iron in the same structure, and its comparative weakness to resist a compressive force is compensated by increased dimensions: thus the top flange of a wrought-iron girder is made of greater sectional area than the bottom flange. The ultimate resistance of wrought-iron to a compressive force is from 16 tons to 18 tons per square inch, stated in general terms; but when applied in thin pieces, as in plates, the compressive force tends to buckle it. This was shown for the first time on a practical scale when it was necessary to determine in detail the dimensions of the tubular bridges intended to span the Conway river and the Menai Straits. "This crumpling up of wrought-iron plates is but a modification of the phenomena of failure by compression, and one that can only occur with a ductile and tenacious material, which does not separate into fragments, or suddenly break across, as cast-iron is observed to do."

The author gives the particulars of twenty-one of the forty experiments made by Mr. Eaton Hodgkinson, to determine the law of strength of wrought-iron plates, and finds that in respect of comparative lengths, breadths, and thicknesses, the strength is inversely as the square of the length, directly as the breadth, and directly as the cube of the thickness, so that doubling the breadth of a plate simply doubles its strength, and doubling the length reduces the strength four times; but doubling the thickness increases the strength eight times; and if the thickness be increased by only the fourth part, the strength to resist destruction by flexure is very nearly doubled; but these laws hold good only for pressures not exceeding 9 tons per square inch of section, above that crushing begins to take place, causing a deviation from these laws. "When failure takes place in any wrought-iron pillar, or the top of any ordinary tube, by actual crushing, it will be found to have sustained little more than about 16 or 18 tons per square inch of transverse section, and no alteration in its manner of construction would be of any avail; but should it fail by buckling, its breaking strain would fall short of this quantity; and any contrivance or method of construction which would give it rigidity, and prevent buckling, would bring the structure nearer to this limit of crushing."

Besides a large store of information on the subjects we have mentioned, the author treats of timber in compression, stone and brickwork in compression, the manufacture of Bessemer steel, and some properties of lead and copper. The folio plates which accompany the volume show some good examples of construction in the Erith ironworks and in the corn warehouses at Liverpool and Birkenhead.

AMONG THE ACADEMY PICTURES.*

No one who visited last year's Academy will have forgotten Mr. Fildes's remarkable picture, "The Casual Ward," or fail to look what the artist has to give this year; and, probably, few would guess that the brilliantly-painted single figure, under the title "Betty" (1,221), was by the same hand. It speaks much for the real originality and power of this rising artist, that he has made no effort to repeat his success of last year, but has chosen to give a test of his talent in dealing with the most opposite subject and style. "Betty" is a three-quarter length, life-size, of a damsel in the full blow of ruddy health, coming through the long grass, with milking-pail under one arm and stool hanging in the other hand. The vigorous action of the figure is admirably given, and all the accessories add to the light and fresh impression of the whole,—the landscape in the strong sunshine behind, the pail still wet inside, and containing a bunch of field daisies, the glint of the bright sun-light through the brim of the straw-hat, all combine to give intensity to this picture of rustic health and good humour. The work has been judiciously hung in an out-of-the-way place in Gallery X., where it cannot endanger the figures of certain Academicians. A like compliment has been paid to Mr. Eyre Crowe's best picture, "The French Savants in Egypt, 1798" (831), which is to be found near the floor, in a corner of the "Lecture-room." When the Mameluke cavalry charged the French, the cry was,—"Messieurs the savants and the donkeys within the square!" and here we have them, a group of portrait-figures, their parti-coloured dresses forming a bright contrast under the hot sun; one or two prudently reclining on the ground while the firing goes on outside; Balzac (not the novelist) in green coat, squatted down in a somewhat toad-fashion, and reckoning on his fingers the points of an argument he is full of; among the group seated on their donkeys is seen the beautiful feminine profile of Berthollet, who listens with philosophic calm to some eager remarks of Geoffroi St. Hilaire. This is a work full of humour, interest, and executive ability, better than the artist's other two pictures, of which "Sheep-shearing" (202) was hardly worth the trouble evidently bestowed on it, though it is exceedingly clever in its way. The Lecture-room contains also the sole work by Israels, "Waiting for the Herring-boats" (850), not quite a fortunate specimen of the artist; his "broad" treatment of the sea is here exaggerated into roughness, and the figures have hardly the usual interest of his works.

Mr. Calderon's two principal works this year both take us to the neighbourhood of Arles; in one we have the cloisters of St. Trophyme, where a "refurbishing" (210) of the church "properties" is going on, and a very plain old priest stares in open-mouthed admiration at the renewed lustre with which the silver image of his saintship shines out, after a scrubbing from the pretty black-haired damsel, in red scarf, who holds it up. In the other work the same pretty woman, chin in air, forms the centre of a trio of "coquettes" (250), who come over a bridge laughing at the discomfiture of the swain behind who has been snubbed, but is trying to carry it off by a contemptuous manner: the humour of this latter figure is admirable. Both works show that strong and uncompromising light affected by the artist, in which every detail of figure and costume comes out with a clearness perhaps bordering on hardness, and in which, at all events, no difficulty can be evaded or slurred over. But Mr. Calderon scarcely, of late years, keeps up to his former standard in elevation of feeling and subject; "*Toujours fidèle*" (319) has a quiet pathos, but has been much surpassed by former works of a similar tone of feeling. The little bit called "Great Sport," where two children wade waist-deep through bright sunlit grass, after butterflies (1,158), is most perfect in its way; but the subject, of course, is slight.

Some author (is it Dickens?) has recorded an argument to the effect that post-boys are immortal, because "no one ever saw a dead post-boy, or the grave of one." Mr. Marks thinks they are worth immortalising, at any rate, for he has expended his best powers on the delineation of "Three jolly Post-boys" (166) in a state of beery exaltation round a table outside a tavern door, two of them listening in high enjoyment to the facetious remarks addressed by the third to the comely Hebe of the house. The artist has seldom done a cleverer thing than this; the face of the "boy" opposite, who cannot restrain his laughter, is a perfect study of grotesque facial expression; the whole of the accessories are painted with the greatest care, and certain sunflowers are introduced with marked effect as a foil to the blue jackets of the trio. The humour of the "Merrie Jeste" (242) is much more worthy of the artist's talents, and recalls the peculiar bouquet of "a chapter of Rabelais" last year,—a new turn in Mr. Marks's humour. The man telling the jest is a type frequently met with; somewhat solemn and heavy in his way of telling it, in spite of his twinkling eyes; the suppressed enjoyment in the screwed-up features of the other is quite infectious. The picture hardly needed so much back-ground. From Mr. Marks's humorous men to Mr. Leslie's lovely women is an effective contrast. We have alluded to the "School Revisited" (196) of the latter artist. A beautiful young lady just married has come back to the school, which she but lately left, and sits on a bench in the court-yard among some of her old companions, one of whom greets her through a window, another silently contemplates her with a reflection on her own possible future, and two young girls study the wedding-ring on the visitor's hand with an expression of interest and awe. The tones of the dresses make a quiet harmony delightful to the eye; the principal figure has an exquisite grace and sweetness, but she certainly belongs to a social sphere quite above her companions, who are rather unfairly treated as a foil to her. "On the Banks of the Thames, A.D. 200" (1,193), is simply "Nausicaa" over again, with another name; and on "The Path by the River" (438), sits the same young lady who a year or two ago eloped in "A.D. 1745," looking rather repentant; the sunlight effect through the trees here is very pleasant.

We may class together Mr. F. Walker (as represented this year), Mr. Boughton, and Mr. Morris, as representatives of idyllic landscape, in which figures give the predominant interest of the scenes. Mr. Walker sends only one small work, "Right of Way" (25), which is disputed by a motherly sheep against a woman and a little boy, to the discomfiture of the latter. The figure of the woman has that rather exaggerated action of the legs which the painter is apt to fall into; the landscape, with its rainy sky and grass studded with daisies and sparkling with light, shows its authorship at once; and we cannot but observe how far superior are the sheep to the production of certain well-known manufacturers in this line, who have kept the Academy in sheep any time these twenty years. Mr. Boughton's principal work this year, "The Bearers of the Burden" (101), is an advance upon previous works in tone of feeling and motive; the bearers of the burden are the women, three of whom trudge along a little way in the rear of a lord of creation, in the shape of a navvy with his coat thrown over his back and the sleeves hanging down behind, *more suo*; his face is not seen, but doggedness and obstinacy are in every line of his figure, and he can be no very pleasant head of a household. The landscape through which the figures move seems in keeping with the feeling of the subject,—grey and melancholy. Of the artist's two single-figure pictures, "The Path of Roses" and "Grey Days" (182, 198), the latter is the more successful. Mr. Morris, in "The Widow's Harvest" (37), repeats somewhat the feeling and manner of a former work, with less effect; but in "The Mowers" (1,192), he shows symptoms of departing from the groove he seemed to have fallen into; the men here, in the full swing of work, are well contrasted in character, and show much life and spirit in design. But of those who combine nature with figure

* See pp. 381 and 407, *ante*.

ubjects, Mr. Hook is for the present pre-minent, and has never been better than this ear. His finest work, and one in a style rather ifferent from what we are used to, is "The and of Cuyp" (308). Here, in place of the laty-blue sea of the South of England coast cenes, we have what Tennyson calls a brimming river," full and slow, and probably little muddy, but bright with the reflected ight of the sky; in the foreground a youth ours milk into a brass vessel, while a girl who as been milking stands by, her head in a full ight, and beautifully relieved against the sky ithout the slightest hardness or over-definition f outline. Another most original work is Wise Saws" (256), croaked by a big raven on a ail in the foreground, for the benefit of some ows which are cooling themselves in the stream, nd looking with ineffable stupidity at the loquent bird; the contrast between the tone of he water, the general aërial tone of the picture n fact, in this work and in the last named, speak nuch for the painter's diligent study and appre-iation of local character and tone in scenery. n his old manner are "Hearts of Oak" (47) and he "Samphire Gatherer" (439), of which the ormer is the best; in the latter, the painter has ot realised so strongly the look of depth, from he height of foreground down to the water, as e has in one or two previous similar composi-ions. With this class of subject (though in a nfficiently different manner from Hook) we may lace "The Votive Offering" (431) of Mr. Hennessey, who has succeeded in striking out a ine of his own, and has kept to it, and improved t. The present picture shows a scene on the oast of Normandy (on high land overlooking he sea), where it is not unusual for a sailor to ake a model of his ship as a votive offering, to e hung up in the church, and ensure the safety f the real vessel on her voyage. The worthy ailor walks slowly through the scattered trees upporting his mother on one arm, and carrying is mimic ship, followed by his wife and child; priest, the *genius loci*, sits on a bench with his ack to the spectator, and looks over the sea: here is a quiet diffused light over the whole which accords well with the feeling of the sub-ject; though by no means powerful or striking, his is a very pleasing work, of some originality.*

Of Mr. Frith's numerous life-size figures the best probably are "Polly Peachum" (*Beggars' Opera*: 614), and "St. Valentine's Day" (320), an Irish lass showing her teeth in a broad grin of delight over a gay valentine. It appears to be a kind of necessity that the quota of works of this type should be annually furnished by the artist; it is a pity that a painter of such high ability should not aim at something of more intellectual interest than these works, with what-ever technical merit, can be said to possess. Mr. E. M. Ward has been very successful in hitting off Lady Teazle before her marriage, employed, as she describes herself, in strumming her father to sleep after a day's hunting and a heavy dinner (283); she looks very like the sort of girl, and is formal, weary, and impatient in her expression and mechanical manner of playing; and the old gentleman, red faced and somnolent, with his handkerchief over his head and the wine and walnuts at his side, is a capital study. Mrs. Ward's episode in the boyish days of the Ettrick Shepherd (380), is a picture that will find many admirers, both for its sentiment and its free style of manipulation. A kind of moral lesson seems to have been aimed at in hanging Mr. Prinsep's "Minuet" (125) and Mr. Stone's "Sain et Sauf" (130), so as to balance each other—the contrast of refined luxurious amusement with love and affection in humble life; the former is a very well painted collection of rather sleepy-looking figures in satin dresses, effective in colour; the latter is a work of considerable spirit and feeling; the scene is the interior of a French soldier's cottage, in whose absence on siege duty an increase in the family has taken place, and he and his good woman, who is still confined to bed, are giving vent to their feelings of mutual con-gratulation, on his safe return; she flings her arms round his neck with an expression none the less real and touching for being displayed on plain and homely features; the little daughter tries to excite her father's attention to the new comer in the cradle. The whole of the acces-sories are most carefully studied and painted, and there is a genuine though rough pathos in the scene which is very interesting, and shows the artist in rather a new light. We should not forget, speaking of Mr. Prinsep, his other large work, "Home from Gleaning" (392), four or five girls in a kind of procession with the bundles they have collected, in which a more serious tone is aimed at than in the "Minuet"; not quite successfully, though as a composition it is very good.

Mr. Hodgson's pictures this year are not so interesting in subject as some of his previous Eastern scenes; indeed, the two principal ones, "A Barber's Shop in Tunis" and "Cockfighting" (141, 241), are rather repelling, though there is excellent humour in the professional pride of the operator and the misery of the patient in the first-named. In brilliancy and purity of colour they are an advance upon previous works. Mr. Storey has given his chief effort to portraits this year, and his "Mrs. Finch" (24) is a very charming specimen of the *au naturel* order of portrait. The lady leans over a balustrade facing the spectator, her shoulders covered with a lace scarf. The features and the hand resting on the balustrade are beautifully modelled; the latter we note because there are some very bad hands in the exhibition by those who ought to be better hands at it. The rather hard texture and cold tone, which suit very well with Mr. Storey's Dutch or Queen Anne subjects, where all is artificial, strike one as not quite pleasant in this life-size portrait. His small work, "Caught" (142), is in his best way in humour and execution both. M. Tissot, who has constituted himself the painter of London drawing-rooms, is also at his best in "Hush!" (1,233), the ejaculation being preliminary to the commencement of a violin solo by a remarkably pretty young lady amateur, who stands, with bow outstretched, in a slightly theatrical attitude. Among the company two "distinguished Orientals" are conspicuous, and sit with their hands square on the arms of their chairs, desperately uncomfort-able in their white kids, and staring at the player much as the cows in Mr. Hook's picture stare at the raven. We say the artist is at his best here, with the reservation that his best might be better; he is either too superficial or too cynical in his view of this phase of modern life. Even people "in society" have souls, if M. Tissot could find it out. Being in a humour for contrasts, we will jump from M. Tissot to Mr. Erskine Nicol, who has travelled south to see what "The New Vintage" (245) is like, and has brought a capital reminiscence of it in the figure of the fat, comfortable Spaniard (or Portu-guese?), reflecting solemnly, with an eye fixed on futurity, on the quality of the half-glass he has just swallowed; the work is a good one in every respect, and we only wish it may herald a little further variation from the "dirty Irishman" type of subject, which the artist had fairly wearied us of. His larger work, "Always Tell the Truth" (561), is clever enough, no doubt; but that a painter should spend this trouble and take up this space in portraying two of the most disagreeable types of humanity extant,—a stupid, ugly old woman, and a fat, blubbering boy,—is enough to make one absolutely angry. A pleasanter picture of humble life is Mr. Orchard-son's "Too Good to be True" (153), where an orange is offered by a good-natured old fruit-seller to a little child, who stands timidly clasp-ing his sister's hand, unable to realise the won-derful fact; the natural way in which the inci-dent is rendered gives an interest to the work, in spite of the dingy colour and blurred execu-tion which more or less mark all this painter's works, and which we find it impossible to get reconciled to. In "Moonlight on the Lagoons" (229), the artist has realised an original effect; whether it is like moonlight is another question, but the picture is the reverse of commonplace.

Mr. Riviere will not injure his reputation by his picture of the "Last of the Garrison" (626), a large dog left wounded and dying on the staircase of a house that has been evacuated after an apparently vigorous defence; but it is not equal in interest to some of his previous animal pictures, and there seems too much canvas employed merely as a setting for the dog. But we look with more interest at the artist's "War-time" (89: illustrated by a verse from Sydney Dobell), because it is an indication of an extension of his powers, in presenting us with a human figure of real interest; his men having been hitherto mostly mere accompani-ments to his animals. An old farmer, with a thin worn face, leans over the wall of a snow-covered field, holding the paper which has brought the news that "Tommy" is among the slain in some distant campaign. The old man is not strongly moved outwardly; he is simply broken in spirit. The picture is not intense, but it is perfectly genuine in its pathos, unforced and unpretentious, and will lead to a new interest in the artist's productions. As a work of some-what kindred feeling, we may turn to Miss Starr's "Hardly Earned" (527), which we notice with a double pleasure, as marking the point at which a hard-studying, persevering young lady-artist has passed from the stage of promise to that of performance. Her own position has been "hardly earned"; she has been bettering it year by year, however, and this work, we think, fixes it. The single figure is that of a poor toiling young music-teacher or governess, who has taken off her damp boots, and fallen into uneasy slumber in her chair after a weary day. Nothing is slurred over in the execution; every detail helps the subject, but without in the least weakening the predominant interest of the figure, with the pale worn face in full light; the picture is one of real pathos.

Mr. Pettie, whose aim is satire and not pathos, has an excellent work here in "Jacobites, 1745" (1,217), his "diploma picture" on election as an R.A. The group of shabby-looking highland gentlemen collected in the middle of an empty hall to hear a mysterious letter read, while one of their number keeps guard in a ridiculously ostentatious attitude of defence and defiance in the doorway, recalls just such a scene and such actors as figure in the rendezvous at Ellislaw's house (is it not?) in the "Black Dwarf." This is one of Mr. Pettie's best works in regard to character, and concentration and point in the composition.

* The fanciful superstition which gives the subject for this picture is incidentally referred to, without any explanation, in one of the best of Browning's shorter poems,—"Le Byron de nos Jours."

MASTERS AND MEN.

On the 7th inst., at the Central Criminal Court, Walter Hibbert, Adam Weiler, Richard Reed, Henry Ham, and William Alexander Matthews, charged with unlawfully conspiring together to molest and obstruct Mr. Edgar Graham and others, with the view of injuring them in their business as cabinet manufac-turers, were found guilty, and sentenced to one month's imprisonment. The Judge (Cleasby), in passing sentence, said,—

"I cannot help thinking that the course which you pur-sued in this affair was harsh and injurious; it was not a few days that this picketing went on, it was pursued for a long time; and I do not know what would become of society if parties were allowed to watch and beset a person in his business. I can imagine nothing more annoying, and calculated to prevent him from exercising his free will, and certainly nothing more injurious to a master in his business, than to have day by day, morning and night, his premises watched, and workmen going in and going out accosted and pressed, and money offered to them, and, in some instances, threats held out to them, as has been done in this case. At the same time, I cannot help thinking that you did what you did, believing that under the law as it existed you were only doing what you had a right to do."

The Dispute in the Building Trade at Stoke and Newcastle.—The trade dispute between the master builders and the operative carpenters and joiners of the Potteries and Newcastle was brought before Mr. H. C. Greenwood, the stipendiary magistrate, recently at the Town-hall, Stoke, for arbitration. On the 5th inst., Mr. Greenwood gave his decision. The first question, he states, was that of the hours of work. At the present time the hours are from six a.m. to five p.m. all the year round, with the exception of Saturday. The masters proposed to make the following alterations:—That from the 3rd of February to the 8th of November the hours should be from six a.m. to half-past five p.m., and from the 9th of November to the 2nd of February from seven a.m. to five p.m., except on Saturdays, when work is to cease at one p.m. Among the reasons given by the masters in support of these alterations the chief was the great loss they incur in winter time, when practically the men do little or no work between six and seven or half-past seven a.m. On the other hand, the operatives gave as reasons for the retention of the hours that labour was divided more fairly, that there was uniformity, and that at a time of the year when their expenditure would be greater, they would, if the masters' proposal were adopted, earn less. Mr. Greenwood said it seemed to him that the present arrangement of hours did press unfairly on the masters, and that the alteration they asked for was only reasonable, and he therefore decided that the hours of work should be from the 3rd of February to the 8th of November from six a.m. to half-past five p.m., and from the 9th of November to the 2nd of February from seven a.m. to half-past five p.m., and on Saturdays to one p.m.

Strike of Glasgow Painters.—At ten o'clock on the 3rd inst. a mass meeting of the Glasgow painters who had not had their demands conceded was held in the Moulders' Hall. A lively discussion took place as to what course of action should be taken. Ultimately a deputation was appointed to confer with a deputation of the masters, and were invested with full powers. When the two deputations met in the Trades' Hall, the matter was fully discussed, and the result was that the masters agreed to give the advance of wages, from 7d. to 7½d. per hour; while the men, who had asked for a reduction of the working hours, from fifty-seven to fifty-four per week, consented to the hours being fifty-six per week, work being stopped at one o'clock on Saturday. On this result being announced to those who had waited in the Moulders' Hall, there were great demonstrations of triumph. The men resumed work next day on the new system, terminating a strike which only lasted one day.

Edinburgh Building Trade.—At a meeting of the Edinburgh master builders, held on the 6th inst., it was resolved to maintain within the city (municipal) boundaries the present agreed-on rate of wages of 8½d. per hour, while sanctioning an increase upon the rate of ½d. per hour which has recently been paid without these boundaries. Several hundred more men than can be got could be employed at the present time within the city.

Extraordinary Manifesto.—The following is a copy of a circular just issued by the Operative Bricklayers' Society at Blackburn:—

"*To Master Joiners, Masons, Architects, &c.*

We, the operative bricklayers, wish to inform you that no member of this society shall be permitted, under any circumstances, to contract for, either in whole or in part, any kind of brickwork that may have been contracted for or sub-contracted for under the original contract, nor shall any of our members work for any master who shall contract for such work. In contracts where the whole job is let together the original contractor must (unless he intends to employ men himself, then he will have to pay 5d. per day extra to our rate of wages) get a tender from some master bricklayer, previous to sending in his tender for the job, who shall be considered as being the original contractor in such case. Nor shall any of our men work on any job where the master mason allows his men to set brick, either on the job they are working at, or any other job that the master mason may be erecting at the time, or may have recently completed, unless such master mason shall have employed a member of this society to do the work; nor shall any of our members be allowed to work for any master joiner or builder (or work on any job where such master joiner or builder may have a contract) who employs masons or others not members of this society, to set fixtures up or do any other kind of brickwork where a bricklayer is required. This law is intended to entirely do away with second-yard work, or any one setting brick except those who have served a legal apprenticeship to the trade. And by strictly adhering to these rules you will oblige yours, on behalf of the Operative Bricklayers' Society,

JAMES WORSWICK, Secretary."

THE ARTISANS' INSTITUTE.

THE meeting held at Grosvenor House the other day in aid of this Association, when his Grace the Duke of Westminster gave his powerful help, was well attended, and the position of affairs was clearly stated by Lord Lyttelton, Mr. Samuel Morley—always earnest and sensible,—Mr. H. Pratt, and others. The response, however, in the way of donations was not very large. The Rev. Mr. Solly has always found strong backers, but we are forced to confess to our impression that the resulting good to the public has been scarcely commensurate,—at least, so it strikes us: plenty of talk, plenty of printing, plenty of repetitions of Mr. Solly's name, but nothing very good, large, and tangible to show as a result. We will take our own opportunity to look at what is being done, and shall be delighted if we find ourselves able to give heartier support to the new move in Castle-street than we can just now.

WOOD WORKING MACHINERY.

WE have received from Messrs. F. W. Reynolds & Co., of Southwark-street, a copy of their new "Illustrated Catalogue of Builders' Machinery and Appliances," from which we gather that they are fully alive to the increased necessity for labour-saving machinery. This necessity, which arises from the high rates that have so long been maintained in the labour market, is such that without machinery the money expended for wages often precludes the possibility of making profits. There are, of course, thousands of cases in which steam power is not available, and it is in cases of this kind that Messrs. Reynolds's inventions will be found more particularly useful.

The catalogue sent to us contains particulars of a sawing-machine which they call the "Eureka." It consists of a strong iron table with a circular saw on the one side, and a band-saw with canting table on the other. The spindle of the circular saw is raised or lowered by a hand-screw, so that it can be adjusted to the required height with the greatest accuracy. This machine is self-feeding, and can be worked either by hand or by steam power, and professes to answer every purpose of a small "general joiner." Among a number of new mortising-machines we notice particularly those which F. W. R. & Co. call the "Monarch" and the "Premier." The great advantage of the last-mentioned appears to be in the timber-carrying bed, which, besides moving horizontally and laterally, can be shifted to any required angle,—an arrangement which must be very useful for many kinds of work, not only on account of the time which it must save, but also for the exactness which it secures in cutting mortises at an angle.

While Messrs. Reynolds & Co.'s speciality still appears to be wood-cutting machinery, we see from the catalogue that they do not by any means confine themselves to this, as it includes drawings of mortar and loam mixing mills, both for hand and steam power, stone-sawing machines, paint-grinding mills, and a very large variety of hoisting appliances. It also contains particulars of horizontal and vertical engines and boilers, but of these we are not able to say more than that the prices appear to be low. The catalogue is illustrated by about one hundred engravings, accompanied by full descriptions. It is well got up, and should be in the hands of all builders.

HAMPSTEAD CHURCH.

IN our notice of Mr. G. G. Scott's design for improving the interior of Hampstead Church, now exhibiting at the Royal Academy, we expressed ourselves as scarcely able to deduce the amount of improvement that was intended. A little inquiry enables us to say that the plan was designed to meet the two great objections which have been raised against the proposals of the trustees of the Church. These objections are,—first, that they desire to destroy the tower,—the best feature of the existing church; and, secondly, that their scheme perpetuates the one great inconvenience of the present arrangement, namely, the position of the principal entrances at the same end of the church as the communion-table, so that every one entering the church is in full view of the whole congregation. To avoid these objections, and to diminish the outlay required to restore the church, was the object of the plan. Mr. Scott proposes to place the communion-table at the end of the church opposite to the entrances, and to throw out at this end of the church the apsidal chancel, which the trustees desire. By thus reversing the church, the necessity for destroying the tower, which many are most anxious to preserve, is removed. The west end of the church is modern, so that a chancel can be added at this end without any interference with the original structure. The fall of the ground, and the direction of the principal approach to the church, which is from the east, make it impossible to alter materially the existing entrances, so that the architect thinks it perfectly reasonable to shift the communion-table to that extremity of the building which is opposite to the main entrances. The only objection to this plan is the superstition that the Table must be towards the east, but archæologists are aware, he maintains, that in the early Christian churches the Holy Table was placed at the west end, and not at the east.

THE ARTISTS' ORPHAN FUND.

ON Saturday last, his Royal Highness the Duke of Edinburgh presided at a dinner, given at the Freemasons' Tavern, in aid of the Artists' Orphan Fund, a branch of the Artists' General Benevolent Institution. It may be well to explain that the appeal which was made to the profession and the public in 1871 to raise a separate fund, in connexion with the Artists' General Benevolent Institution, for the support and education of the orphan children of artists, was most liberally responded to. After the dinner, at which his Royal Highness the Prince of Wales presided, the amount of subscriptions was found to be 12,933*l.* This sum has been increased by various donations during the past three years to 13,433*l.*, which has been invested in English railway debenture stock, producing an annual income of 570*l.* The usefulness of the fund has more than answered the expectations of its founders. The first applications for assistance were received in June, 1871, since which time fifty-two children have been either partially or entirely supported and educated by annual grants varying from 10*l.* to 40*l.*, and at the present time the fund is providing for thirty-seven children. The committee, however, are unable to entertain more applications, as the income of the fund is exhausted by grants to the children now being educated, and they therefore call on the profession and the public for an increase to the fund.

The Duke of Edinburgh's appeal on the present occasion was most successful, and the large sum of 6,634*l.* was raised, making the total amount of the fund 20,117*l.* The other speakers were Sir Henry James, M.P., Mr. Horsley, R.A., Mr. F. Leighton, R.A., Mr. Arthur Sullivan, Mr. Pope-Hennessy, Mr. Godwin, and Mr. Cunliffe Brooks, M.P. The dinner was very numerously attended.

MORTAR, UNDER THE METROPOLITAN BUILDING ACT.

THE following memorandum from the Superintending Architect of the Metropolitan Board of Works, addressed to the District Surveyors, should have the attention of builders:—

A case has occurred at Hammersmith,* in which the District Surveyor has succeeded in obtaining a conviction against a builder, who constructed a building with refuse or earth, instead of mortar properly compounded with lime and clean sand; and I beg to call your attention to the circumstances, in order that you may be enabled to adopt similar proceedings, when any builder fails to amend his work or materials, when called upon by you to do so.

A house was built with mortar, mixed with mud and horse dung; and the District Surveyor summoned the builder to show cause why the building should not be demolished.

The Magistrate asked, What is mortar, and why it was not defined?

It was shown by reference to scientific books that "mortar" was a technical term, intended to indicate a composition consisting of two essential ingredients, lime and clean sand, in the proportion of one part of lime to three, and sometimes two, of sand, mixed and worked up with water into a suitable consistency to cause the layers of brickwork to be bound together when the mortar chemically sets. A definition of such a material was not deemed requisite, as properly-qualified persons were directed by the Act to be examined by the Royal Institute of British Architects, and could only be appointed as officers by the Board after obtaining a certificate of competency to perform the duties.

A specimen of the stuff was produced, and the magistrate said it was not, in his opinion, mortar, and was unlike anything he ever saw before. He therefore accepted the scientific opinion, and ordered the demolition of the work.

It thus would appear, that if a case is well stated, and its technical bearings explained, an effectual support of the public officer in the performance of his duty may be expected; and the builder who would tamper with the law, and produce an inferior structure, through insufficient materials or careless workmanship, would be checked.

Sometimes it is also alleged that the District Surveyor cannot control the brickwork used with or without bad mortar; but if care be taken to bring specimens before the magistrate, he cannot fail to see that if soft and defective or broken bricks are used, such bricks are not fitted to form bonded work, where strength and security of construction are demanded. If such materials were attempted to be used under an architect's specification, and contrary thereto, they would certainly and properly be disallowed.

SOMETHING LIKE TYRANNY.

A WORKING scissors-grinder in Sheffield saved up his earnings for the purpose of becoming a master-man in a small way. He bought the necessary machinery, and commenced to *make* scissors as well as grind them. On the night succeeding the day on which he commenced as master-man his workshop was broken into; his wheel-band cut into shreds; four "laps" and "glazers" destroyed; three grinding-stones smashed to pieces; and his little venture was utterly ruined.

The suggestion as to the cause of this un-English and atrocious act is, that he had not consulted the Sheffield Union, or got their permission to become master. We hope to hear some other explanation.

THE DRAINAGE OF PORTSMOUTH.

SIR,—In the description of the great and difficult drainage works at Portsmouth, in the *Builder*, your informant, although quoting my report of 1864, omitted to state that the general scheme was designed by me. After much local angry discussion and opposition, my scheme received the approval of the Secretary of State, of the Admiralty and War Departments, and of Sir John Hawkshaw as referee. In 1865 I turned the first sod, and, as stated in your description, the works have recently been completed under the able superintendence of Mr. Greatorex, the borough engineer, who has also designed many of the later details of my scheme.

The drainage of Portsmouth affords an exceptional example of flat gradients. I may also add, as a collateral fact, that the death-rate of the borough, with a population of about 120,000, is conspicuously low in the weekly return of the Registrar-General; in fact, Portsmouth is usually at the bottom of the list of the eighteen large towns: therefore those who desire a specially healthy and interesting watering-place cannot do better than visit Southsea, which forms part of the borough of Portsmouth, in which 160,000*l.* have been expended on drainage, while many of our popular seaside resorts are entirely without drainage.

LEWIS ANGELL, M.Inst.C.E.,
President of the Association of Municipal and Sanitary Engineers.

* Already reported in our columns.

ETON AND ITS COLLEGE.

THE fame of Eton as a town has beenswallowed up by the renown of its college as the most distinguished public school in England; but the town existed several centuries before the college was thought of, and its existence is due to the foundation of Windsor Castle and the growth of new Windsor. When the Norman kings left the palace of old Windsor, and took up their residence at their new castle, they required a more direct route to London than the old one through Staines, and one of the results of the formation of a new road by Slough was the erection of houses from time to time along the road on the Buckinghamshire side of the river in continuation of the town of new Windsor. Thus a long street of houses gradually grew into the town of Eton. The manor originally belonged to Editha, the wife of Edward the Confessor, and was probably held by her, with all her other possessions, until her death in 1075. It was then granted by William the Conqueror to Walter Fitz-Other, and remained in his family for more than a century. There is no mention of any houses at this period in the Manor of Eton, but as there appear to have been two mills, it is probable there was some kind of village where the town has since grown up. As early as the year 1204, a charter was granted to Roger de Cauz for a market to be holden on Mondays. In the same year the manor was granted to William de Cantelupe, father of Thomas de Cantelupe, who was afterwards Chancellor to Henry III. Among the Fines of the twelfth year of King John's reign there are proceedings between William de Cantelupe and Walter, prior of Merton, relative to the advowson of the church, all right and claim to which the former relinquished to the Prior and his Church of St. Mary of Merton. The "mother church of Eton" referred to, stood on the site of King's Stable-street, but the inhabitants allowed it to fall to decay, and were contented to be allowed to attend service at the College Chapel. A chapel-of-ease was afterwards founded in High-street by William Hetherington, a Fellow of Eton College, and in 1851 a new parish church was built on its site.

On the 10th of July, 1359, William of Wykeham was constituted chief warden and surveyor of several of the king's castles and manors, and among the last was that of Eton. Near the middle of the fifteenth century, Henry VI. having from the very commencement of his riper age turned over in his mind how he could do fitting honour to "our most Holy Lady and Mother, so that He, the great Spouse of the Church, should also therein be well pleased," at last decided to found the "Kynge's College of our Blessed Lady of Etone besyde Wyndesore," which remains to this day a monument of his piety. Henry was a severe enemy of the doctrines of Lollardism, and one of his statutes required every fellow to swear that he would not favour the doctrines of John Wycliffe, Reginald Pewke, and other "heretics," under pain of perjury and expulsion. We have the king's own authority for the fact that he was long in making up his mind as to how he should carry out his object; but he lost no time when he settled the form it was to take. On the 30th of July, 1440, he visited Winchester in order to examine the plan of William of Wykeham's foundation there, and on the 11th of October, 1440, it having "become fixed in [his] heart to found a college in the parish church of Eton, near Wyndesore," he signed the charter of foundation. By this the college was made to consist of one provost and ten priests, four clerks and six chorister-boys, "who are to serve daily there in the celebration of divine worship, and of twenty-five poor and indigent scholars who are to learn grammar," also of twenty-five poor and infirm men whose duty was to pray continually for the health and welfare of the king while he lived, and for his soul when he died, and for the souls of the king's ancestors. The list of persons constituting the college ends with the master or teacher of grammar. The royal founder subsequently enlarged the members of his college to seventy scholars, and added to those already mentioned an usher, a parish clerk, and two more choristers; but he reduced the almsmen to thirteen. A Bull of Eugenius IV. sanctioned Henry's foundation, and an ample Papal Indulgence accompanied the Bull. Henry Sever was the first provost, and William of Waynflete the first master; but the latter very soon filled the office of provost, which Sever did not live to enjoy. The first stone of the chapel was laid on the 3rd of July, 1441, and the building continued slowly through several years. This beautiful piece of architecture is so well known and so highly appreciated that it is unnecessary for us to give any description of it; but as the names of those who were employed upon the works have been preserved, we set them down here in order that they may receive their mead of praise. Robert Westerly was the master-mason, who had power given him "to take as many masons wheresoever they may be founden, as may be thought necessary for the said werks"; and John Beckeley, mason, was instructed "to take cariage and al other things necessary for the same werks." John Smyth was warden of masons, and Robert Wheteley warden of carpenters; William Lynde clerk of the works, and John Hampton, surveyor. Roger Keyes, as master of the works, gave such satisfaction to Henry that he made him a grant of arms. All the accounts respecting the expenses of the building are preserved in the college archives, and are of great interest. In the first year the wages of the workmen amounted to six, seven, eight, and nine pounds per week. In the second year the whole sum for wages was 712*l.* 19*s.* 1d., and the whole expense for work and materials accounted for was 1,447*l.* 0*s.* 4d. The pay received by the workmen was as follows:—The freemasons were paid 3*s.* a week, without deductions for holidays; the stonemasons and carpenters had 2*s.* 6d. a week, if it was a week with one or more holidays in it, and 3*s.* for a week without holidays. The labourers had 4d. a day each, but were only paid for working-days. About the latter end of the second year of the building, a brick-kiln was finished at Slough, and bricklayers are then first mentioned in the accounts. They received 6d. per day each, with 2d. more to Robert Chirohe, called the *Warden layer and Brekelayer*. The labourers were well looked after, and heavily fined for any fault. The following are a few of the fines:—For chiding, 2d.; for playing, 2d.; for letting [hindering] of his fellowes, 8d.; for looking about, 2d.; for telling of tales, 2d.; for shedding lime, 6d." The record of the prices paid for the different materials is curious. The Caen stone, which was imported, cost from 8*s.* to 9*s.* per ton; the rag-stone, which was brought from Boughton, near Maidstone, cost 1*s.* per ton at the quarry, the carriage to London cost 1*s.*, and the further carriage to Eton 1*s.* 4d. a ton more. The stone for the ashlar work, which was dug at Maidstone, was wrought at the quarry by workmen at the king's expense. A hundred feet of ashlar cost 9*s.*, to which must be added 6*s.* 11d. for conveyance to London, and 6*s.* 8d. for further freight to Eton. Iron was brought from London at the price of 5*l.* and 5*l.* 8*s.* per ton, and lead from Derbyshire at 4*l.* the fodre. Many bushels of oyster-shells at 4d. the bushel were used—"they were only ye upper shells of oysters, and used where ye stones did not exactly fit, to thrust in among the mortar, and to key up ye work." The price of ale was 1½d. the gallon.

Eton College had no reason to rejoice when Edward IV. took possession of the throne, for one of his earliest acts was to divert property to the yearly value of one thousand pounds from the College of Eton to that of Windsor. In 1463 he obtained, by false pretences, a bull from Pope Pius II. for dissolving Eton College, and merging it in the College of St. George, at Windsor; but after strenuous exertions on the part of the authorities, the Pope issued a commission to inquire into the whole matter, and Eton College was saved. After this the college had few trials to pass through, for when Henry VIII. made his great ecclesiastical changes, it escaped molestation by acknowledging the royal supremacy on the 14th of July, 1534. During the Commonwealth the provost (Dr. Richard Steuart) was ejected, and the estate and profits belonging to the provost were ordered to be sequestrated. The election of scholars was suspended for some years, and several of the Royalist fellows were replaced by Parliamentarians. Prosperity soon, however, shone again upon the college, and few clouds have since passed over it. Its revenues have been continually increased by donations and bequests, and royal grants have encouraged it to acquire landed property. In Henry VIII.'s reign the college purchased certain houses and parcels of land of one Blackwell, under their real value, "it being part of the agreement that Blackwell should be prayed for *post mortem*." The list of provosts is a brilliant one, and contains the names of many eminent men. We have already mentioned William of Waynflete, the illustrious founder of Magdalen College, Oxford, and may now add Robert Aldrich, D.D., Bishop of Carlisle; Sir Thomas Smith, the first layman to hold the office, for whom Edward VI. wrote a dispensatory letter to the Fellows; Sir Henry Savile, the founder of the Savilian professorships at Oxford, who spent much money in establishing a printing-press at Eton, and Sir Henry Wotton, ambassador and statesman, who had Francis Bacon as an unsuccessful competitor. The Hon. Robert Boyle was offered the provostship, but declined it, and the poet Waller was appointed to the post, but rejected by the Chancellor because he was a layman. In 1864, when the Royal Commission, appointed in 1861, made their report, the Fellows who helped the provost in the government of the college were condemned to extinction, and the members of the new governing body have since been constituted *ex officio* Fellows.

The list of head-masters contains the names of several who have afterwards filled the office of provost. Dr. Edward Barnard, who governed by moral power, was followed in 1765 by Dr. John Foster, a strict disciplinarian, who might have been the original of the nursery-rhyme schoolmaster:—

> "Dr. Foster is a good man;
> He whips his pupils all he can,
> Out of England into France,
> With his rod he makes them dance."

Dr. John Keate, head-master from 1809 to 1834, was another great advocate for the birch, and his favourite expression was, "I'll flog you." The head-master's room is better known as the "Swishing-room," and there is placed the block where the young criminals are punished; for none but the head-master has the power to flog. When Henry VI. fixed the number of "poor and indigent scholars" at seventy, he probably little thought that four centuries afterwards there would be upwards of 900 additional boys in the school. The foundation-boys (of whom there are still only seventy) are called king's scholars or collegers, and the other pupils are oppidans (from *oppidani*,—townsmen). These latter boarded at houses in the town kept by dames or ladies authorised by the head-master to provide board and lodging. In course of time the assistant-masters, whose numbers increased with the growth of the school, began to keep boarding-houses, which are called tutors' houses, in contradistinction to dames' houses. Very few houses are now kept by ladies; but those under the control of the extra masters still go by the name of dames' houses. As Eton has received as pupils most of the scions of the best families in England, it is not remarkable that the roll of celebrated Etonians should be a long and brilliant one. The college does not forget her children, and those she is proud of are commemorated in various ways. In the upper school are eighteen busts of celebrities, among whom are Gray, who has immortalised the "antique towers" and "fields beloved in vain," Porson, Fielding, and Hallam; Chatham, Canning, Wellesley, Wellington, and others. Memorial stalls in the chapel have been dedicated to the "memorable" John Hales; Oughtred, the mathematician; Boyle, the philosopher, Lord North, Lord Grenville, the Duke of Wellington, the fourth Duke of Newcastle, who in 1829, founded the scholarship that bears his name; and others. This scholarship is the principal distinction that Eton has to give. Among the Newcastle scholars are the Hon. Sir Edward Creasy, the late Vice-Chancellor Wickens, Lord Lyttelton, and Professor Goldwin Smith. On the walls of the hall are portraits of celebrated collegers, including Sir Robert Walpole, Lord Chancellor Camden, Sir Vicary Gibbs, Archbishop Sumner, Lord Stratford de Redcliffe, Sir J. Patteson, and Sir John T. Coleridge. The Cust family have never been without a representative in the school since Sir Purey Cust was there in 1654.

In 1844 large additions were made to the old buildings, at a cost of about 20,000*l.*, nearly the whole of which sum was subscribed by old Etonians. The first stone was laid by the late Prince Consort on the 20th June, 1844, and the buildings were completed in the following year. Again in 1862-3 new schools were built, in order to accommodate the constantly increasing number of pupils.

One of the chief charms of Eton is the beauty of the neighbourhood; and the authorities of the college feared that all their quiet would be destroyed when a railway was allowed to come

near them. They therefore opposed all attempts to bring a line to Windsor, and were not satisfied with the proposal that it should come no nearer than Slough. Serjeant Merewether opposed the Bill of 1835 before the Committee of the Lords in the following terms:—"The Thames would be choked up for want of traffic, the drainage of the country destroyed, and Windsor Castle left unsupplied with water. As for Eton College, it would be absolutely and entirely ruined; London would pour forth the most abandoned of its inhabitants to come down by the railway and pollute the minds of its scholars, whilst the boys themselves would take advantage of the short interval of their play-hours to run up to town, mix in all the dissipation of London life, and return before their absence could be discovered." When the Act was passed, in 1835, clauses were inserted providing that no station should be made near Eton, and that persons should be specially employed to keep the boys off the railway. Such were the forebodings of our fathers, and we know how their prophecies have been falsified. Perhaps no school can boast such a playground as Eton possesses in her "Playing Fields," and there it is that the Etonian is seen to the best advantage. We all know the Duke of Wellington's remark, that "the Battle of Waterloo was won by the Eton Playing Fields," and in those words the Great Captain expressed that love of his old school that every true Etonian feels.

The boys are divided into wet-bobs and dry-bobs, or "boaters" *versus* cricketers. No boy is allowed to go in a boat until he has passed in swimming, and therefore the bathing-places are much frequented. One named "Italy" is used by those who are unable to swim; another,—"Acropolis," has a lofty mound for the purpose of taking "running headers" into deep water. These are for the third and fourth form boys; and the seniors have other places allotted to them. One of these is "Athens," which is the principal place for practising headers. Here the aquatic games take place, when medals are awarded for swimming, diving, and headers, the gainers of which are respectively styled the "Tachynectic," "Colymbetic," and "Cybesletic" Professors. So much for the water: we must now just notice the land sports. Cricket is of course the great game, and the captain of the eleven is an implicitly obeyed autocrat, but other games have their supporters. "Fives" or hand rackets originated in the bays formed by the chapel buttresses. The Eton game has its own peculiarities, which consist in the "pepper-box," a name given to the space between a buttress that is built out at right angles from the left side of all Eton courts, and a step that changes the level of the inner and outer parts of the court. These irregularities existed in the original court, and all the "Fives walls" since erected have been constructed in accordance with the chance model. In the Playing Fields is a long piece of wall which bounds the Slough-road, and this the boys have utilised for the purpose of playing a species of football peculiar to Eton, called the "wall game." No notice of Eton would be complete without some mention of the mound two miles out, which bears the imposing name of Salt-hill. Here for four centuries was held the "Montem,"—a time-honoured ceremony that was abolished in 1847 by Provost Hodgson. Much discussion has been spent upon the origin of the practice of going in procession to this place on St. Nicholas-day. It is generally supposed that the ancient form was a procession of the "Boy Bishop"; but why this spot was chosen is not so clear; it may have been owing to some feeling of reference, for the place was originally a tumulus. "Salt" was money exacted by the boys from the spectators to defray the expenses of the day, and to make a purse for the captain of the "Collegers" on his going up to the University. The custom had outlived its day, and few regretted its abolition. We were in the neighbourhood on its last occurrence, and have an indistinct recollection of receiving from the band of youngsters to whom we had paid tribute on the road, a card (probably a sort of acknowledgment) headed "*Mos pro Lege.*"

Those who wish to make acquaintance with the present history of Eton, and to learn how the place and its neighbourhood look now, should obtain an elegant volume published last year, and entitled "Sketches of Eton." The descriptive notes by Mr. W. Wightman Wood, ex-captain of the Oppidans, are of much interest, and we have availed ourselves of them in the description of the school of to-day. The etchings by Mr. Richard S. Chattock are excellent.

FROM ROME.

BEGINNING very far back, the antiquary has tracked the history of amphitheatres down its polluted course. "Daniel in the lions' den" has done service in some instances as a starting-post; and from Daniel to the bull-fights of Spain he has frisked about in a stream of uninterrupted gore, but apparently still unsatisfied; for the most recent historian of the Colosseum hints at "other crimes besides those of blood," which that building must have been the scene of, but which (says he) will not bear exposure. But we will not follow the "hue-and-cry" of ancient Rome. Happily our business is not with what has happened in the Colosseum, but with what has happened to it; with what it is and what it was, and more particularly with those points of historical and architectural interest which are now emerging from obscurity.

In the last letter some reasons were given for believing that the amphitheatre was commenced by Nero. This is a matter of dispute; but whichever side of the question they incline to in this particular, doctors seem to be agreed as to the subsequent history of the structure, which we give in the briefest manner possible, as follows.

The vast external arcades (if not the whole building) were commenced by Vespasian A.D. 72, soon after the conquest of Jerusalem, which has left its record on the arch of Titus, close by; they were finished and dedicated, A.D. 80, by Titus, but not raised to their full altitude, with a lofty attic above the triple-storied arches, till the time of Domitian, between the years 82 and 96 A.D. The building was struck by lightning A.D. 217, and Dion Cassius, an eye-witness, states that the upper stories or tiers of seats were totally destroyed by the fire thus kindled; all the other parts being scorched, or more or less injured, though heavy rains were falling at the time. Its restoration was commenced in the reign of Heliogabalus, and finished in that of Alexander Severus, *i.e.*, between A.D. 222 and A.D. 235. It is evident, from the effects of the fire reported, that the whole upper story must have been originally of woodwork, nor restored in masonry till after the fire of A.D. 217. An earthquake did much injury to the amphitheatre A.D. 442; and the record of repairs carried out subsequently is before us in two inscriptions, now placed near the southern entrance to the arena, giving the names of the reigning emperors, Theodosius II. and Valentinian III., with that of the Urban Prefect, Rufus Lampadius, who ordered the requisite works. The building again suffered from the effects of an earthquake, about A.D. 508; after which other repairs were undertaken by the prefect, Decius Venantius Basilius, as recorded in two epigraphs dug up in 1813. In the eleventh century it was fortified; in the year 1130 the family of the Frangipani took possession of it as part of their fortress; in 1250 Brancaleone, one of those senators who ruled with a rod of iron, decreed and probably commenced the total demolition of the structure, which he held to be a dangerous stronghold of ruffians. In 1349 it was again much damaged by an earthquake, as Petrarch relates in his letters; but any damage done at that time was not likely to have been repaired, for in 1362 the whole building was declared public property as a stone-quarry for any of the nobility or clergy to use it for new buildings, and some of the largest palaces in Rome are built of its materials. The building was made use of for some time previous to 1540 by the Archconfraternity of the Sacred Standard for the performance of miracle or mystery plays, a vestige of which is the view of Jerusalem with the Crucifixion painted on the wall over the principal entrance then in use at the north end over the arch, and seen in going out as one looks up. These plays were discontinued on account of the sinking of the earth,—a fact worth noting in connexion with the present excavations. A chapel was erected within the ruins, 1675; about 1741 Benedict XIV. ordered all the ingresses to be closed with iron gates. The following quotation from a pamphlet published last week gives the next part of the history in a readable form, and without a very great amount of superfluous matter:—"In 1703 the building was again damaged by an earthquake, to what extent it is not stated; but it is evident that the great corridors and arcades and the front were not damaged. These rested upon the solid foundation of the tufa rock, as has been said; the only manner in which *they* have been damaged having been by the great Pontifical families of Rome. It is convenient to attribute this barbarism to the Goths and the Vandals; but the real barbarians were the great families from whom the Popes were chosen for many centuries," &c.

At last the Amphitheatre was reclaimed from spoliation, when Benedict, in 1749, caused to be erected the plain wooden cross in the centre, and the fourteen shrines to commemorate the fourteen times our Lord stopped on his way to Calvary.

The work of restoration was commenced by Pope Pius VII., in 1805, with the erecting of an enormous buttress at the southern side of the outer ellipse. In 1810 when Rome was incorporated in the French Empire, the governor, Baron Daru, placed the Colosseum under the direction of the Roman architect, Valadier, to carry on regular excavations, which were continued until 1814, and although not carried deep enough, they secured some interesting discoveries. Restorations have since taken place, and can easily be distinguished. But the greatest work of all, the excavation of the whole area within the walls to a depth of 20 ft., is now in progress, and is bringing to light much that is interesting, and much that is at present incomprehensible. Of this we will speak later on.

Before describing the materials of which the Colosseum is constructed, we ought as architects to pause on our way, for the sake of considering three little points. The first is with regard to "the countless holes which riddle the surface of the stonework," by which "a great deal of speculation has been occasioned," and which "puzzled antiquaries not a little." Now some of these holes will still no doubt afford a suitable ground of difference to the members of the archæological world of Rome; but they are unanimous now in their very recently-acquired knowledge that the great majority were made at a time when iron was of great value "in extracting iron clamps that bound the stones together, not one piece of metal being left."

It really is surprising that men considering themselves investigators should have been so long in making this discovery, and that when they do make it, they should describe it in such a slipshod manner as to talk about "clamps" "binding" the stones together, and to assert that not one piece of metal is left, when the following are the facts of the case:—We knew a man, whether of stronger sight than others we cannot tell, who went to the Colosseum so profoundly ignorant that he did not so much as know that holes riddled the surface of the stonework; but he saw the holes, and took it for granted that they were made for the purpose of extracting dowels (not clamps) which had not "bound" stones together, but which had been used to prevent the blocks of travertine from moving horizontally under the thrust of the arches. Beyond this, he examined the holes, and had made out to his own satisfaction the form of which the dowels must have been, when he was rewarded for his attention by finding one of the dowels *in situ*, and on comparing it with the iron-stained holes which he had seen running upwards and downwards from the "countless holes," he found it to correspond exactly. He is now in a position to report that the majority of "the countless holes which riddle the surface of the stonework" were made for the purpose of extracting wrought-iron dowels about ¾ in. square, and rather less than 6 in. long, which were let equally into the abutting stones at a distance of 6 in., more or less, from the outer surface.

An oft-inculcated lesson is read, again, by observing that the expansion of these dowels has split some of the blocks from top to bottom.

The second point is with regard to the capitals, which are to be seen lying beneath the arcades of the building. Mr. C. J. Hemans, in his "Historic and Monumental Rome, 1874," writes referring to the restorations after the fire of 217 A.D.:—"Remains of the architecture of that period are now strewn around the arena; broken columns, cornices, &c., of marble and granite, also some of the marble tripods used for burning perfumes,—the columns for supporting the roof of a gallery carried round the highest part, and where the spectators had only standing-room. In these fragments we observe the characteristics of decline, as in the rude chiselling of Corinthian capitals, contrasted with other examples, here before us, of that order in its purity." These rudely-chiselled Corinthian capitals, however, turn out, on inspection, not to be Corinthian at all, but Composite, and as to their "rude

chiselling," the state of the case is that they have been merely blocked out, and for some reason or other never finished. If they were left in this condition because they were, as the author supposes, far from the eye of all but the plebs, they certainly show no characteristics of decline, but of great vigour of treatment. But, whether or not, it is rather hard on them to compare unfinished composite capitals with highly-wrought Corinthian capitals, and to speak lightly of them because there are points of difference; and it is even worse for Mr. Parker, not content with disparaging them before a most select audience, to photograph them as they do criminals in Newgate, and to pass them round as worthy of contempt.

There is one very curious capital lying there; but whether characteristics of decline are to be observed in it those must say who know when and under what circumstances it was designed, and the favour or disfavour with which it was received. It is very bad as a specimen of art regulated by the dictates of common sense. In general design it is a Corinthian capital, with composite and other detail introduced (at least, so it appears to have been, for it is a mere fragment at present); but its peculiarity consists in the pleats and folds of the acanthus leaves and volutes being indicated by a series of circular holes, varying in size to accord with the breadth of the recessed fold; these holes communicate with each other below the surface of the stone, so that the capital has the appearance of an ordinary piece of carving with the grooved parts bridged over with countless meshes, wider at the ends than at the centre. It was probably intended to resemble lacework, which it does to a certain extent, and who can tell under what circumstances it was made so. There is also there a blocked out Corinthian capital, which shows signs, not only of decline, but of fall, and that from a great height, for it is shattered most completely. The third point is with regard to the buttresses which have been built at different times to arrest the fall of the structure. It is the fashion among those who go to the Colosseum to see the "ruings," to hold up their hands and cry "Oh, horrible!" when they look toward these most appropriate masses of brickwork; but such people are not worth consideration from an antiquarian point of view. One deliberate old gentleman of this class, after contemplating the ruins to-day through his opera-glasses, arrived at the conclusion that it was a "nice place for the jackdaws." It is because the archæologists, a body of whom it is impossible to speak without respect,—it is because they have lent their voices in the same tune that we will say a few words in defence of these buttresses. That at the southern extremity, which abuts against the broken edge of the great travertine wall, from the top to the ground, is, to my mind, almost perfect, when considered in relation to the purpose which it serves. There it stands, looking as modest and unassuming as such great creatures often do; but still with an expression of great power, and with something of sublimity in its unbroken height. It makes no pretence to being part of the Colosseum; it has only "come to see what it can do." Those at the northern extremity are not so good; they form an oblique series, each story of the building having one, and consequently they seem to attempt to accord with the general design; but even these are inoffensive. What would people have?

From the skeleton history of the Colosseum, which has been given above, some idea may be formed of the extreme difficulty which the building presents to any architectural inquirer. So many times has it been injured and restored, as recorded by historians, and so many times besides it may have been injured and restored, that it is very hard to determine the date of some parts of the building as it now stands. The present excavations are bringing to light what some consider the channels for naval fights and the chambers in which the lifts containing the beasts of combat moved up and down, and others consider the casemates formed by the Mediæval defenders of the place. There is a wooden construction in the centre, which some speak of as the floor on which the Frangipani kept their power dry, while others term it the remains of a cradle for the ships when not in use. Your correspondent prefers to wait and watch, until he can base his opinion on satisfactory evidence, and in the meantime to turn his attention to those matters which, in their love of abstract speculation, writers have somewhat overlooked.

If any person wishing to know of what materials the Colosseum is constructed consulted the authorities nearest at hand, he would be told that the piers are of travertine, with vaults of tufa and brick, and with masses of brick and tufa built in between the piers. But if he wished to obtain more precise information as to the nature of these materials, he would find some difficulty in gaining his object, and this particularly is the case with *tufa*.

Some little research has failed to lead to the meeting with the word *tufa* in any Italian or Latin work; but whatever the history of the term may be, it is certain that what it stands for is a variety of the mineral known to Italian geologists as *tufo*, and that *travertine* is another variety of the same substance. This fact seems to explain the statement of an archæological author that "the *tophus* of Vitruvius is not the same as the *tufa* of Rome; but corresponds to the *pumex*. *Tufa* is called by Virgil and Pliny *tofus*"—for *pumex* being also another variety of *tufo*, it is plain that Vitruvius, Virgil, and Pliny all make use of the generic term corresponding to *tufo*; but whereas Virgil and Pliny happened to apply it to the species known now as *tufa*, Vitruvius applied it to the species known as *pumex*. Had the learned author continued his researches, he might have found the term *tophus* corresponding to *travertine*. Having pointed out that *tufa* is a variety of *tufo*, the next thing is to define what *tufo* is.

Tufo is the name given to certain deposits of calcareous or silicious matter precipitated from water, and also to the mineral formed by the matter ejected from volcanoes, and made compact by the action of water and its own weight. Thus, we have three classes of *tufo*, viz., calcareous, siliceous, and volcanic. Independently of the sedimentary deposits that succeed one another on the crust of the earth, there are found scattered here and there other adventitious deposits of carbonate of lime, which have been produced by calcareous springs. These deposits, some of which are known to be still forming, constitute the calcareous *tufi* that are found in many localities, and in extensive beds. They almost always contain organic remains, particularly those of plants growing in the neighbourhood, and sometimes shells both fluvial and terrestrial. Calcareous *tufo* is generally yellowish in colour, being light, and affording a good hold for cement. It is, when sufficiently compact, very suitable for building purposes; one of the most suitable varieties being *travertine*, the stone of which the great piers and arches of the amphitheatre are built. *Travertine* is more or less porous in structure, with fistular cavities, which often contain vegetable remains. In the best specimens of the stone, however, these cavities are filled with a calcareous concretion, which gives great additional strength. It abounds in the Campagna di Roma, and in other localities. The greater part of the buildings of Rome are constructed of *travertine* from the ancient quarries at Tivoli, from which name the word *travertine* is derived.

There are also more ancient travertines found in the post-cretaceous strata, and in general the name is given to all the limestones deposited in inland waters. The siliceous *tufi* are rocks deposited by siliciferous springs. As they are not met with in Rome we shall not stay to describe them, but pass on to the *volcanic tufi*. These have had their origin, as stated, in the eruptions of volcanos. They are divided into two kinds—*trachetic tufo* or pumice and the *basaltic tufo* or peperino, the former of which is composed of minute grains of pumice together with larger fragments, all united by an argillaceous coment, due, it may be, to a minute grinding of the material or to its partial decomposition. Its colour is yellow more or less dark or else deep brown. The vaults of the Colosseum are composed chiefly of this rock. Peperino is essentially composed of minute grains of basalt or *wache*. It is sometimes solid enough to be worked with the chisel, and it then owes its solidity to calcareous infiltration, its fracture is earthy, and its colour dark brown, grey, or even reddish.

These volcanic *tufi* partly form the seven hills of Rome, and are now known among us as *tufa*.

Explosion at Ironworks. — An explosion has occurred at the ironworks of Messrs. Wentworth & Co., Wandsworth-plain. It appears that several workmen were engaged in filling a casting for a pillar, when it exploded. The molten metal spread in all directions, and some of it fell upon the men.

ON ORIGINALITY AND PROGRESS IN MODERN GOTHIC ARCHITECTURE.*

THE first and warmest wish of the enlightened friend of the modern Gothic architecture, on a calm and dispassionate review of its career, must, I think, be that, no longer confining itself to the tripartite rectangle and spire, it break out into other and brighter forms, and show a greater variety of general outline and composition in its most important class of structures—churches; for most certainly those that are everywhere springing up in city and village are too much alike both in horizontal and vertical section; and this I imagine arises from architects ignoring what ought to be their constant aim,—beautiful outline; which not only gives scope for the highest architectural taste and invention; but it is where taste and invention chiefly find scope, and it is the first thing that the mind takes cognisance of, and chiefly in the parts that tower into the air above the general roof-line of a city; in which features it should be the aim of the architect to embody, if not the fairest forms wrought in fancy's loom, at least the most beautiful forms that masonry could rear up into the welkin. For the body of the building there are other shapes surely suitable for churches of the present day, which had better fall back upon some of the forms of the early church in different countries,—octagonal, square, circular,—as well as emulate those more beautiful shapes adopted by other creeds. I allude chiefly to the Mahommedan mosques, with their beautiful domes and minarets, the contemplation of which in various lands is not unworthy of the Gothic designer. They are at least calculated to excite regret that Mahommedanism should have monopolised all beautiful curved forms, and left the straight-lined ones to Christianity. Crowning such new geometrical compact forms, perhaps the most fruitful element, pregnant with fresh beauty and new combinations, is the dome, than which, covering a square compartment, nothing produces so fine an interior effect.

The grandest and most beautiful interiors and exteriors in the world are square or simple oblong or Greek cruciform spaces, as St. Stephen's Church at Walbrook, St. Sophia's Mosque, and the Imperial Mosques at Constantinople,—buildings most of them showing sympathy with and emulation of the greatest and sublimest works of God in nature. To these useful and grand forms which she could construct and decorate as consistently as any other, Gothic architecture should now occasionally betake herself if she would get into the path of true progress. The bending of the style to their embodiment would, I believe, go farther than anything else to pour new life and vigour into it. The question whether the dome would harmonise with Gothic architecture, the Mahommedans in India long ago settled; for, if it harmonise with their works, which it admirably does, it could not fail to be a welcome feature of a Gothic composition. It must be even more harmonious in an arcuated than in a trabeated style.

I have said nothing of the pendentive dome, nor of the combination of domes and semi-domes originated at St. Sophia's at Constantinople in the sixth century, and which, after slumbering for just a thousand years, were there revived by the Turks in the Mosque of Soliman in the sixteenth century. But these are forms which I believe the Gothic might appropriate with due modification, and worthily decorate, to the production of buildings that would shed as much glory on the style as any aspiring example of the Middle Ages.

But our steeples would not be so much alike if greater pains were taken to make them beautiful; which, considering their prominence—thrown up into the air only to be looked at—to be observed of all observers, and where they cannot be useful, they certainly should be more decorated by means of tracery and carved foliage, and more pleasing in outline; which reminds me how seldom the pierced lantern and lantern and spire, of which we have some beautiful examples, have been employed. But these structures are really captivating to the imagination. Such composition seem the palace-home for genii of the air and clouds, and to such the eye would be attracted ten times more than to the solid spire, and from them receive ten times the pleasure. All these would be sufficiently pyramidal and aspiring in character, or might be made so, and would point to heaven as unmis-

* By Mr. Samuel Huggins. Read at a meeting of the Liverpool Architectural Society.

takably as the simplest tower and spire; indeed, there are a thousand ways of producing this character without confinement to the tower and spire. Something is, I think, urgently called for to infuse greater variety into this class of structures; for the constant recurrence of the same unvarying forms in town and country becomes wearisome to the eye; from the monotony of which in some of our large towns, where, at least in manufacturing towns, they are, moreover, eclipsed in size and power by the tall chimneys, the ugliest of Wren's steeples, and some of them were ugly, would be a relief.

Spires and steeples of one type of form were never so numerous in Mediæval or any former time in any other country of Europe; and never did architecture run so counter to the analogy of nature as in their production. I appeal to all capable of making the observation whether it is not so. Think of the infinite variety with regard to form, colour, &c., in the natural features to which they bear the strongest analogy, that beautiful and poetic class of structures with which nature has everywhere adorned the earth, I mean trees, as well as those humbler productions, canes, reeds, corn, grasses, and you will be more likely to feel with me, that there is something wanting in modern Gothic architecture,—a style which in able hands is capable of vying with Nature herself in the production of a pleasing variety. Assuredly there are an immense variety of beautiful, curved and pointed, and aspiring forms,—far brighter forms than any that have yet appeared in Gothic architecture, Mediæval or modern,—equally appropriate, equally expressive, that could be found among the golden visions that lie mirrored in the soul's fairyland—the fancy and the imagination.

Recurring to the general form and character of modern Gothic churches, nothing would, perhaps, contribute more to give newness and improvement to exterior design than the introduction of the round or simply clustered column of the interior to play a part on the exterior,—I mean on the same full scale as the nave pillars within the building, and acting as supporting columns in arcaded porches, as seen in the Byzantine and Italian Gothic churches. I think this one of the most important improvements, one of the greatest steps in advance that could be made on the Mediævalists. It would be the acquisition of an important element of form, the column becoming as useful and effective externally as it is internally, and as it is in the Classic styles. The column so applied would have an ennobling effect upon any church, in proportion to the extent in which it was employed. It would give greater contrast and variety of form, and a brilliancy of light and shade which nothing else could give. In a cathedral the far advancing Galilee porch, composed of columns, would not only be useful, but have the finest effect on the whole composition. The angles of such porch or any porch, unlike the porches of the Italian Gothic churches, which look weak and are weak for want of abutment, should be buttressed. The introduction of this new element would give great impulse to ingenuity and artistic taste and invention; for the column is by no means a stereotyped feature, fixed for ever in one or two forms, Corinthian, Ionic or Doric, but full of life and elasticity, capable of being drawn out and adapted to any new circumstance. Indeed, in any style the column as hitherto known and used, the most elegant Corinthian column ever designed or executed, that of the remains of the Temple of Jupiter Stator, or even the best Greek examples, could be far outstripped and distanced.

In Corinthian columns, I consider, foliage decoration is too much confined to the head of the shaft. It should, I think, first appear at the base, and delicately adorn it at various stages, as preparation for its full development in the head.

I think the modern Gothic architects have not duly recognised in their works the difference between modern and Mediæval feeling on the subject of religion. Had they done so, a less measure of a vertical expression, and more of the horizontal, together with lower and broader proportions than are found in the ancient examples of the pointed Gothic, would have been exhibited. The edifices of the thirteenth and fourteenth centuries were in keeping with a religious enthusiasm, a public zeal or *furore*, in those times that no longer exists, and the style requires a lowering, a toning down, as it were, to bring it into harmony with our soberer, more rational, experience; which points to forms and proportions which, if not so significant of man's religious aspirations, are, perhaps, more symbolic of the "great and noble simplicity of the Gospel story." The same sound judgment and artistic power that so beautifully bent the Gothic to domestic purposes both in France and Italy, prior to the revival of the Classic Roman, carefully excluding all ecclesiastical character from it, is what is now wanted to be exercised on the style for its adaptation to the needs and spirit of the day.

Moller, in remarking on the Church of Bathalha, in Portugal, the roof of which is quite flat, covered with large stone slabs, complains that the whole form of the building, the pyramids and the small pointed gables with which the aspiring pillars are ornamented, are discordant with the horizontal termination of the nave of the church, and attributes it to the choice of a northern style in a southern climate. But the discordancy arises from the merely borrowing, without adapting the style to the climate and building materials of the country: a style that was as well fitted for southern as for northern climates; one, indeed, which arose in southern climates, and in its earlier states, as in Lombardy, was essentially a southern style. Even in a country so southern as Portugal, the serenity of whose skies, I believe, is not perpetual, a slight pitch, equal to what the Greeks, or even the Romans, used in their temples, might be introduced into their roofs without libelling the climate. Now, I believe Gothic could be brought down to even this low pitch of roof, and made perfectly harmonious with ideas awakened by the climate and aspect of nature in the country in which such roof-pitch was sufficient. The façades of the cathedrals of Orvieto and Sienna would have looked as well, if not better, with gables of lower pitch, which would have been more in harmony with the rest. All the smaller and ornamental features would, of course, have to sympathise in this reduction of pointedness in structural features; but there may be as many points, and as much increase of acuteness upwards, as in the Gothic of the North.

If Gothic cannot be thus adapted to a low pitch it has no business in the Peninsula or in Italy, and it must not be introduced into some parts of our colonies, as Australia or anywhere but in high northern latitudes; which to affirm would be to detract from its merits. But it can be. To the man who knows what style means, and how to handle it, nothing is easier than fully adapting it to any climate. It would go spontaneously, as it were, into the forms and modifications required by the exigencies of the climate, and gradually recognise every circumstance that, in the nature of things, is expected to exert an influence upon architecture. I believe the smallness of slates in the Middle Ages, requiring a high pitch in roofs, had something to do with the extreme verticality of the style; and, if so, the largeness and perfection of that roofing material in our day should cause a movement in the opposite direction. There would be no danger in rendering the horizontal tendency too prominent, because horizontal connexion belongs naturally to all styles, whatever degree of verticality they may affect, and because horizontal division into stages corresponds to and symbolizes the natural and proper growth of the building; though in no building, of whatever style, should the horizontal and vertical be equally poised.

Increased horizontality is the more called for in Gothic churches forming part of continuous street architecture, which is essentially horizontal, whatever the style. A Gothic church, placed between two rows of attached shops and dwelling-houses, and ignoring, as too many Gothic churches do in England, the horizontal principle of composition is utterly contradictory of the tendency and expression of all around it. To be edified or pleased by its peculiar religious character, so utterly inharmonious with its accompaniments, is absolutely impossible. So entirely is it out of its true place and element among the hills and meadows, rising above cottage gable, trees, and other kindred and analogous forms, or combined with those picturesque conventional buildings which the Mediæval architects could so skilfully group around it, that what strikes you most is its strange, disconsolate, and plaintive air. Such inconsistencies of character and association should be carefully avoided.

Gothic architecture has the advantage over the Greek in being richer, more expressive, fuller of natural life and variety, and consequently more powerful than the other to move the heart of the beholder; but if we could infuse into it some portion of the unity, pure symmetrical beauty, and intellectual repose of the Greek, it would be more perfect and satisfying architecture. It would satisfy the intellect as well as touch the heart and imagination, and commend itself better to the taste of the present day, which has been refined by Classic art and literature and various influences unknown to the Mediævalists. I believe this could be done, and I think, moreover, that the aim at this is one of the best means of progress that remains to the style, the true advancement of which requires that every purifying influence upon its detail and sculptural decoration be brought to bear upon it. Among the first of these is that of the symmetrical genius of Classic architecture and art, and the taste and feeling inspired by them and by the revived classic literature and learning, the streams of which have now mingled with those of the Gothic or Romantic for centuries, till the mind of classical antiquity has become part of the modern mind of Europe.

That the revived knowledge and study of Classic art should render our Gothic different to that Gothic whose architects had never heard of the Parthenon or Erectheium, is a position which seems to me to require little to be said in its support. The mind and taste of the unprejudiced architect,—and all architects must be unprejudiced if they would be great or truthful,—could not fail to be touched and chastened by the refined beauties of the Classic monuments, and rendered purer and more fastidious than they would otherwise have been. Such an architect, I believe, would imbue his mind with classic beauty to the same extent as a man whose sole pursuit it was; and this, if he is obeying his intuitions, and using the style with enlightened freedom, must of necessity communicate itself to his works, to the infusion into them of a tincture of classic feeling which must operate as a refining and beautifying principle, and be "like a vernal air imparting an odour of flowers," and render them more acceptable to tastes that have been purified by the study of classic poetry and literature and contemplation of classic works of art, and which has of late come to assimilate more to that of the inhabitants of the sunny South. His works would naturally retain a greater licence and wildness of composition and decoration than the classic genius would permit; but they would receive greater refinement, and would show more geometrical grace and precision, and other agreeable qualities that now distinguish Classic. Structural modes and principles would be carried out and expressed in them with the greatest consistent amount of formal beauty. I really question whether they would not exhibit an attempt at some of the optical and æsthetic corrections and refinements of the Parthenon; at least, I think their author would be inclined to try the effect of diminution and entasis on the nave-pillars of a church, or, in other words, turn the pillars into columns, as far as circumstances would permit, and keep more in view the classical proportions in these pillars.

In all countries styles of architecture have been more or less influenced by the proximity of others, which, in proportion to their fascinating power on the mind of the architects, have had an influence on their works. But not only have styles been influenced and changed by each other, but new styles, intrinsically beautiful, have resulted from the contact of two or more styles; and some of the most beautiful buildings in the world are those wherein the richer and happier fancy of the East has come to the aid of the soberer genius of the West. They are to be found in Spain, in Naples, in the Island of Sicily, and other places, where the most exquisite architecture has been generated by the mixture of that of the North, the South, and the East:—Greek and Saracenic feeling in decorative detail and colouring, with Romanesque and Gothic taste in composition and massing. With a religion sternly opposed to that professed by the people, the materials and elements of whose monuments, Roman and Byzantine, they wrought into and amalgamated with their own, the Saracens gave an entirely distinct character to their architecture in the last-named place, Sicily, and rendered it one of the most beautiful and interesting styles anywhere to be found. The very highest style of architectural beauty may be and has been produced by the felicitous combinations that arise from the junction or meeting of styles: grandeur of composition and mass from one, elegance of ornament from another, richness of colour of a third; while the union of two imperfect styles may be easily conceived to result in a third superior to either of its progenitors. What does not both the Gothic and Renaissance of Spain owe to the poetic feeling,

delicacy, and refinement that pervade it and render it so truly captivating, to the influence and infusion of the Moorish? All this will be fully recognised and profited by in the works of the sincere architect, in which, I think, would be seen a tendency of the style to what it would have been had it been developed for the same purposes, and under the same religious impulses by a refined artistic people, who, while strong in their aims at religious character and expression of the Northern races, could yet fully appreciate every beauty and grace of the Classic, such as the Lombards in Italy would have produced had they not been checked by the influence of the Classic races which remained among them. To such an architect the chief use of all styles and all things else is the perfection of his own architecture; for which purpose all the outward forms and images of things, the whole compass of nature, the entire circle of arts, will be laid under contribution.

Of all the features of a Gothic pile, the one that most loudly calls for the refining influence of the Classical style is the buttress. In the great Mediæval examples of this feature, it is considered a merit that it is of the form best calculated for successfully resisting the lateral thrust of the groined vaults; that it is formed and disposed in strict and literal obedience to the law of the resolution of forces, and, therefore, without waste of its materials, every particle of which is actively employed to the exclusion of any useless or expletive masonry from its composition. Now it appears to me that it is only in the comparatively prosaic works of the engineer, and not in every work of even that class of production, that strict economy of materials should be enjoined; and that a buttress or anything else fashioned with an eye to a material use only, and to the embodying of proof of dynamical and statical knowledge and skill, does not belong to architecture, which, as an art of the beautiful, requires a greater sacrifice to the sense of beauty than is involved in the mere carved adornment of the form arrived at by algebraic calculation. I cannot but think that the form itself should be modified by careful considerations with regard to beauty, a ray of which, says Emerson, outweighs all the utilities in the world, and made as beautiful as would consist with its fully and clearly expressing its office and purpose as a buttress.

While the law of forces should be kept fully and clearly in view, such addition of material, beyond what stability required, should, I conceive, be made, as would enable the architect to mould it into the greatest symmetry and grace of which it was susceptible, and enable him, in carrying it up from the ground, to avoid those irregularities which so frequently disfigure it, such as the one-sided set-offs, which are far less pleasing than the slope which is carried equally round the three sides, and less susceptible of effective and satisfactory decoration.

The Mediæval architects did generally go so far as to give the buttress less projection than the outward thrust of the vault required, and supplied the deficiency of lateral resistance by the perpendicular pressure of the pinnacle. This was done less for appearance, perhaps, than to prevent an inconvenient projection of buttress; but might not a further liberty be taken with it to make it more symmetrical and graceful, and consequently more a feature of fine art? Might we not further reduce the necessity for projection by giving it greater thickness or width, or by giving additional thickness to the wall? But there are examples to show that the buttress can be sufficiently lightened as it ascends, and with entire geometrical regularity, with but little sacrifice of material. There are, I doubt not, various ways of doing it; among the rest that of turning the upper stage diagonally, which gives it a piquant and pleasing effect. But whether much or little expletive matter be required for the purpose in question, as beauty is indispensable in architecture, we should be quite justified in giving it, as much so as in oratory for the sake of sound, and to satisfy the sense of hearing, in adding synonymous and unnecessary words to complete the roundness of a period. Or, as in poetry, in which similar means of effect are resorted to: even rhyme tastefully applied gives to a work an additional power of pleasing. But apart from these considerations, the love of variety,—of the new, the original, the fresh in design, of varying on what has been done before, should lead to some greater freedom than has yet been exercised by modern Gothic architects in the treatment of the buttress—a feature which, as it seems to me, must naturally purify itself as the style advances; a square buttress with one sloping set-off at a third of its height, and a second one disguised by a pediment, and finished above with a square crocketed pyramid, is a thing that, having been produced so often before, no architect should literally repeat in the present day. The turret-buttresses of Henry VII.'s Chapel, Westminster Abbey, shows the superiority with respect to beauty of the octagonal forms over the irregular square ones, which are undignified objects for their elevated and prominent position. The clustered pinnacles at the angles, as at Lincoln, are very superior to the square. I think the plan adopted by the architect of the cathedral of Amiens of putting the buttresses inside the building, or rather the window-plane outside, using the buttresses as division walls of side chapels, deserving of consideration, as one by which much that is injurious externally to high-art qualities may be avoided. While he did not waste the buttresses, he gave a greater nobleness and grace—an unbroken simplicity and breadth to the outside. As wide-spreading buttresses were all occasioned by narrowing of piers and widening of windows for the purpose of displaying stained glass, their treatment in future, and so far the course of the style, should much depend upon the reception and fate of that element amongst us,—an element which cannot, I think, be consistently introduced to the extent it was in the Mediæval churches in any but Roman Catholic and high Anglican places of worship, on account of its diminution of the light necessary for the Protestant service.

But apart from this consideration whether unstained windows, with some portion of the fair face of nature in the shape of waving trees and shrubs peering in, would not be even more beautiful than stained glass,—have more an air of cheerfulness, not unfavourable to devotion, is worthy of consideration.

I have already mentioned flying buttresses, which, if Gothic be pursued with the right notion of the relative rank of science and art—making art the supreme, and constructive science but her handmaid, the reverse of which was the practice of the Middle Ages, we should seldom see, and when we did, they would not be straight common struts, but gracefully arched and pierced like those of Henry VII.'s Chapel. You would never see them on the body of large and noble churches, destroying their breadth and grandeur, as they destroy those of most of the great French cathedrals, which, as architectural compositions, might not inaptly be dedicated to the lame deity Vulcan.

I think our churches might be fringed and outlined above against the sky with more beautiful objects,—of higher class of sculpture than they usually are,—and that there is great scope for variation and improvement on foregone examples in the matter of buttress set-offs, parapets and finials, which should be brought more into the region of art; and that, in important buildings, statues, as at Milan, might more frequently be employed upon set-offs and as finials; and, as in pictures, the painters sometimes aim at developing some one quality in particular, so I would like to see in one a fine development of beautiful buttresses; in another, of windows in thickened walls, without buttresses, giving deeper and more powerful reveals; in a third a composition in which the window is omitted and light brought from above through the roof, which would give scope for the exercise of ingenuity and invention in wall-tracery, decoration and niche-work, sculptured symbols, &c. In such works we should have a chance of getting now and then a glimpse of something new.

Start not at the idea of a Gothic church without buttresses or windows. Surely there is nothing in the nature of the style that forbids skylights, which suggest at once whatever introduced the omission of the window; and as for the unbuttressed wall resisting the thrust of a vault, it is only the sacrifice of a little more material than usual to beauty, which is a primary object of art.

The Law of Conspiracy.—At a meeting of the London Trades Council on Saturday, the 8th inst., reference was made to the conviction of five cabinetmakers at the Central Criminal Court last week for picketing. It was resolved that a delegate meeting of the whole of the London trades should be convened to consider the case of these men, and to take measures for the amendment of the law of conspiracy.

FALL OF A BUILDING IN DOVER.

A LARGE building, recently erected in Dover for Messrs. Lukey & Son, wine and spirit merchants, suddenly collapsed on Wednesday in last week. The local *Standard* says,—"The site of the building was evidently at one time a bad one, the house which formerly stood there having given some trouble to its owner, Mr. Minet, and this no doubt attracted public attention to the building. The old harbour formerly ran a considerable distance into this neighbourhood, but the subsoil is about of the usual character in Dover,—a loose shingle. This of course made both architects and builder especially careful as to the base of their structure, and not only were the whole of the foundations on concrete, but the walls were carried up a considerable distance in the same material." The building was designed as a bonded store, and Messrs. Lukey had at the time of the catastrophe a large quantity of wine and spirits in the cellars. It was erected by contract by Mr. Adcock, and the architects were Messrs. Whitley & Fry. The whole contract amounted to about 2,500*l.*, Mr. Morland, of London, being the contractor for the iron girders and columns. The building was constructed to carry 900 tons, and was built especially for a store for seed for the Dover Oil Seed Crushing Company. The Oil Seed Company receive many thousands of tons of this and other seed, such as rape and linseed, for the purpose of expressing the oil and manufacturing cake for feeding purposes. At the time the building fell out it is supposed that there were about 700 tons of seed upon the two floors. It is supposed that the seed shifted, and thus caused sudden pressure upon the walls. What was the real cause of the calamity which has occasioned so much anxiety to all concerned we are not in a position at the present moment to say.

THE ST. PANCRAS EXTENSIONS OF THE MIDLAND RAILWAY.

THE CLEARING OF HOUSES AND WIDENING OF STREETS.

THE Bill of the Midland Railway Company, which, amongst other things, seeks for powers to construct what is called the St. Pancras connecting line, was before the Committee of the House of Commons for several days, resulting in the Committee passing the Bill, after having inserted a number of highly important provisions relating to the demolition of houses, the stopping up and widening of streets, and other powers sought by the company. The undertaking is one of great magnitude, and the Bill, as now sanctioned by the Parliamentary Committee, empowers the company to close no less than twenty streets and places, and demolish upwards of 300 houses in the neighbourhood of St. Pancras. The lands, houses, and other buildings which the Bill empowers the company compulsorily to purchase, are situated on the west side of the St. Pancras Station, extending northwards to a depth of 400 yards, from the Euston-road to Phœnix-street, and westward about 200 yards from Skinner-street, Euston-road, to Ossulston-street, and covering an area of about 15 acres in extent.

The Bill was opposed by the Metropolitan Board of Works; not, however, on its merits, but with the view of securing the widening of several streets in the neighbourhood of the company's St. Pancras terminus, where it is proposed to effect a great clearance of dwelling-houses; and the committee, after hearing evidence, introduced a clause under which the company, when they have acquired possession of the houses and buildings fronting to that part of Euston-road which lies between Skinner-street and Ossulston-street, shall set back the frontage line to Euston-road, so as to allow that portion of the road to be widened to 70 ft. The St. Pancras Vestry are to execute the works necessary for widening the road within eighteen months of the company giving them possession of the land. Another clause introduced by the committee obliges the company in a similar manner to set back the frontage line of Ossulston-street, between Euston-road and Chapel-street, so as to allow of that street being widened to 50 ft. In addition to the widening of the streets above named, the works in connexion with which are to be carried out by the St. Pancras Vestry, a further clause provides that the railway company, at their own expense, are to make Skinner-street, which is now only 30 ft. wide, 60 ft. throughout its entire length; to widen Phœnix-street to 50 ft.; and

also to extend Stanmore-street so as to form a junction with Phœnix-street. The company are not to be permitted to stop up any of the streets which they will be able to appropriate under the Act until they have completed the street improvements just named. The widening of Skinner-street and Ossulston-street will thus give two important main thoroughfares from the Euston-road northwards.

With reference to the demolition of houses in the neighbourhood, for the purposes of the undertaking, the Committee have inserted a clause to the effect that before taking fifteen houses or more, occupied either wholly or partially by persons belonging to the labouring class as tenants or lodgers, the Company shall give not less than eight weeks' notice of their intention, by placards placed in view of such houses; and a special clause provides that whereas the construction of the St. Pancras connecting line will involve the removal of a large number of houses occupied by the labouring classes, and as it is expedient that accommodation should be made for them, the Company, before displacing any such persons, shall provide sufficient accommodation elsewhere, unless the Company and such persons otherwise agree; and for the purpose of enabling the Company to provide such accommodation they are to be enabled to sell or let on building leases lands in Hampden-street and Ossulston-street, and fronting Phœnix-street, in order for the erection thereon of suitable dwelling-houses or lodging-houses; and the Company are further empowered to enter into agreements and impose conditions and restrictions as to the elevation, size, and design of such houses, and the extent of accommodation to be afforded.

PROPOSED EXTENSION OF THE BATHS AND WASHHOUSES IN ST. PANCRAS.

THE proceedings of the St. Pancras Vestry at their recent meeting, when the members, as a body, agreed that it was desirable to erect new baths and washhouses in other parts of the parish, in addition to the present public baths in King-street, Camden-town, afford a striking contrast to those of the Newington Vestry, which has just resolved not to erect baths and washhouses in the parish, on the ground that they would not pay, and that the rates would be increased in order to maintain them.

The report laid before the meeting stated that during the past year there had been 199,657 bathers, of which 69,580 were first, and 129,077 second class. As compared with the previous year there had been an increase of nearly 5,000 bathers. The receipts had been 3,694*l.* 7*s.* 4*d.*; the expenditure for instalment and interest on loans, 1,941*l.* 5*s.*; and adding the washing expenses, including 150*l.* for an addition to the building, the gross expenditure was 2,514*l.* 14*s.* 4*d.*, showing a profit during the year on the working of the establishment, of 1,179*l.* 13*s.* The total cost of the baths seven years ago, including the freehold site, was 23,000*l.*, and, towards the repayment of this capital sum, 6,520*l.* had been contributed from the profits arising from the working of the institution. The report further stated that the increase was going on at such a rate that there was not sufficient accommodation for either bathers or washers.

After discussion, the report was eventually adopted, with the distinct understanding that the subject of erecting new baths must very shortly be considered by the vestry.

INDIAN ITEMS.

MR. W. CLARK, the engineer engaged by the Government, having completed his scheme for the drainage of Madras, has left for England in order to submit it for approval to the Secretary of State. The details of his scheme have not yet been made public, but it is said that he estimates the cost at about 230,000*l.* In the event of it being sanctioned by Lord Salisbury, it is believed that the Government will avail themselves of Mr. Clark's experience both in organising the agency for carrying out the work, and subsequently as consulting engineer in England for the purchase of materials, &c.

Mr. Parkes, the harbour engineer, has also sailed for this country to arrange his plan of operations in personal communication with the India Office. The Madras papers say that it is likely that the Prince of Wales, during his forthcoming visit to India, will be afforded the opportunity of inaugurating the works in connexion both with the drainage and harbour projects.

The Justices of the Peace for Calcutta are talking of spending 200,000*l.* in obtaining an increased supply of water for the city, but considerable opposition is shown to the proposal, for it is believed that the present supply is adequate to the wants of the population. The Justices, however, have refused to sanction the use of meters to show how much water is used, and how much wasted.

A memorial obelisk, ordered by Lord Northbrook at his own expense, to commemorate the gallant behaviour of the faithful natives who fell at Lucknow fighting on our side during the Mutiny, is announced to be nearly completed, and will probably be put up in the autumn. Mr. Lewhillim, a Calcutta sculptor, is now engaged upon it.

A MONUMENT TO A WORKING MAN.

THOMAS RAMSAY, a representative English working man, is the first labourer that has had his good deeds handed to posterity by a fine monument, and which has been erected over his remains in Blaydon Cemetery, in the Palatinate of Durham. In unveiling this work an immense gathering and demonstration of miners, ironworkers, and building workmen assembled on the 17th ult.

The monument stands 25 ft. high, and 5 ft. 4 in. at the base. It is divided into three parts—pedestal, column, and canopy; underneath which is placed the statue of the deceased, with a crake in his hand, and a roll of bills under his arm, as he appeared when at the miners' meeting. The style is Decorated Gothic of a florid character, the columns having carved capitals, the canopy enriched with crockets, pinnacles, finials, ball flower, &c., terminating with a spire.

The inscription beneath the statue is:—"Sacred to the Memory of Thomas Ramsay, who departed this life May 8, 1873, aged sixty-one years. Erected by the Miners of Durham, as a tribute to his long and self-sacrificing labours in the cause of human progress. He was a zealous worker, a faithful friend, and a Christian patriot."

The monument is executed from Prudham stone; the carved figure from white Howorth; and the whole was designed and executed by Mr. George Burn, sculptor, of Newcastle.

"Tommy Ramsay," in 1863, commenced the work of organising the greatest trade-union in this country, and to his unwearied and self-sacrificing exertions the miners of England owe great and needed reforms underground. He commenced at a time when it was dangerous for a man to associate himself with, much less advocate, unionism; and at the end of the establishment of the union the combination of the coal-owners said to him, "Leave the county of Durham, and go anywhere you like. Whatever the cost may be, we will bear it." After this a reorganisation of the union took place, when the pit-owners discharged him from every mine; but his discharge from the pits awoke the whole of the pitmen of Northumberland, Durham, and Yorkshire, and Ramsay was at once made independent of masters. The turn of his corn-crake at any time brought up from the mines thousands of pitmen, and his humorous and peaceable addresses were greatly admired. At the great demonstration of miners in 1872, Ramsay brought tears to the eyes of his thousands of hearers by finishing his speech in the words of old Simeon, "Lord, now lettest Thou Thy servant depart in peace, for mine eyes have seen Thy salvation."

DISAPPEARANCE OF OAK TIMBER.

FROM statistics recently published it appears that oak timber especially is rapidly disappearing from Europe, although half of the area of Sweden, one-fourth of Norway, one-sixth that of Switzerland, and 780,000 square miles in Russia, are said to be yet in forest. The consumption of oak in France has doubled during the last fifty years; she requires 15,000,000 cubic feet yearly for wine-casks alone, 750,000 for building purposes, 600,000 cubic feet for her fleet, and 150,000 cubic feet for railway carriages. 800,000*l.* worth of staves were imported in 1862; 5,000,000*l.* worth are now needed. Since losing Alsace and Lorraine, France contains 150,000,000 acres; 20,000,000 of this surface is covered with forest. Holland and Belgium are nearly denuded of timber, and are large importers. North Germany is rich in forest, but within half a century has commenced to cut down young trees. Austria has sold her forests since railways have been introduced. In Italy no forests remain. Spain and Greece are almost woodless. The southern coast of the Mediterranean is almost forestless.

MESSRS. BROOKS'S OLD BANK, ALTRINCHAM, CHESHIRE.

THE accompanying engraving illustrates the bank lately erected at Altrincham. It is in the old "black and white" style of the ancient Cheshire buildings.

The lower story is in stone; the rest is of oak, filled in with plaster, and with brick backing. The roofs are tiled. The central portion of the building is a spacious room, 40 ft. by 30 ft., and 28 ft. 6 in. high, used exclusively for banking purposes, with oak-panelled ceiling and marble dado. There are rooms for the manager and the clerks. The basement is for documents, books, &c., in the centre of which is an isolated strong-room, with duplicate entrances. To the left of the bank is the manager's house, entered from the bank porch; and to the right is the residence of the chief clerk, the windows of which, as of the bank, are of ornamented glass, in pale tints, the clear plate being only used where necessary. The bank fittings are of mahogany and pitch-pine.

Mr. George Truefitt, of Bloomsbury-square, is the architect, who has designed the whole, including the ornamental glass, ironwork, gas-fittings, pavements, &c. Mr. Watson was clerk of the works; Mr. Cardwell was carpenter and joiner; Mr. Shelberne, the bricklayer; Messrs. Smith & Calderbank were the masons; Messrs. Bellhouse did the ironwork; Mr. Owen, the plumbing; Mr. Odell, the ornamental glazing; Messrs. Johnstone, Bros., the gas-fittings, and brasswork for desks; Messrs. Patteson, the marble dados, chimney-pieces, &c.; Mr. Naylor, the desks and counter; and Messrs. Hobbs, Hart, & Co., the strong-room doors, safes, and locks.

The building is at the corner of the Market-place, and occupies one of the principal sites in the ancient town of Altrincham.

TAVERN ARCHITECTURE.

THE "HORSESHOE HOTEL," TOTTENHAM COURT ROAD.

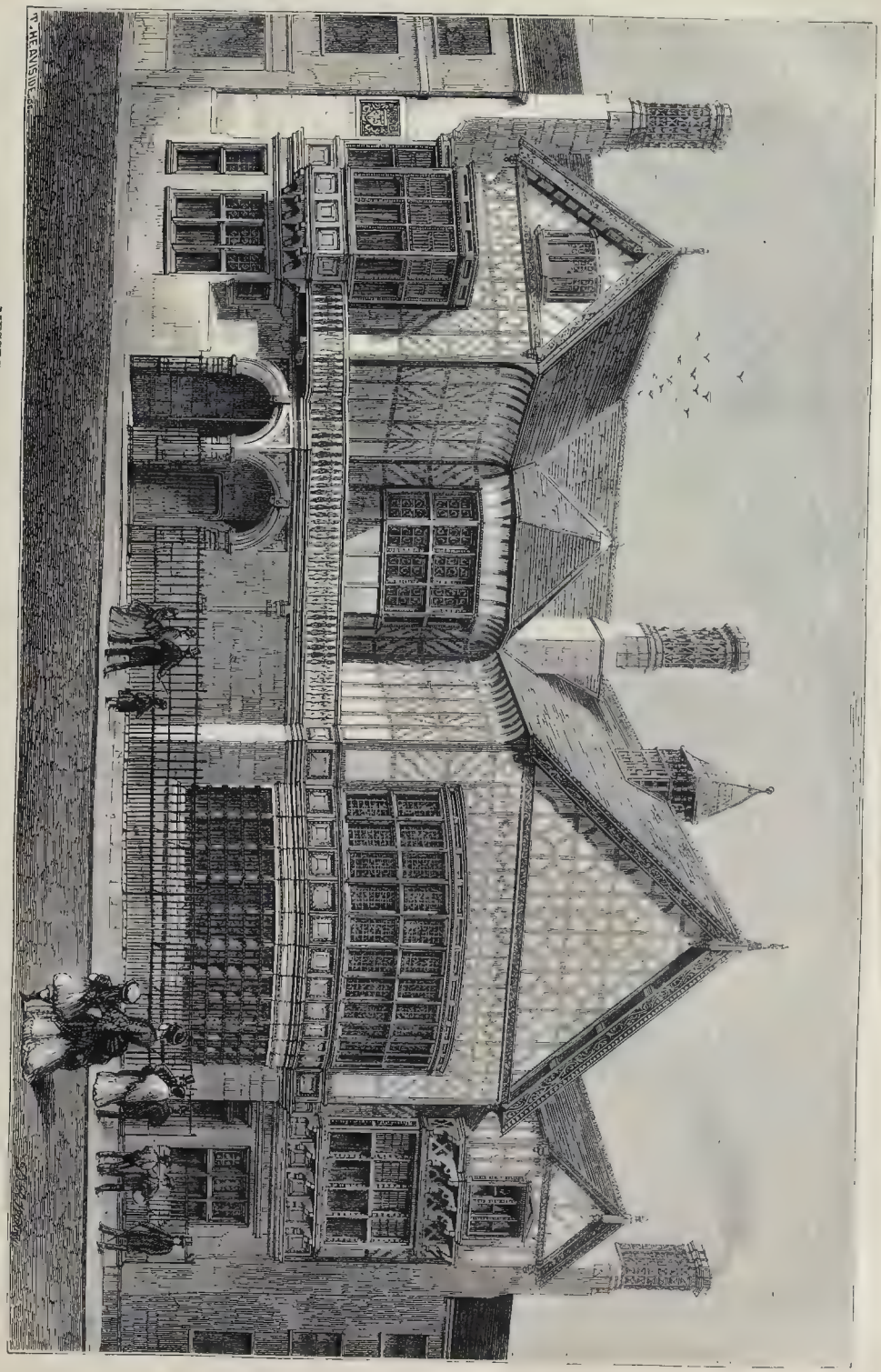
THE building is designed to afford increased accommodation for dining and refreshment, and thus become an adjunct to the adjoining tavern. For which purpose, on the ground-floor, there is provided a large grill-room, similar in its details to those to be found in the City. There is a large *café*, and also at the rear a convenient *estaminet*. The extension of the luncheon-bar, the *café*, and *estaminet* are lighted by skylights, glazed with Hartley horticultural plate-glass, on which an ornamental pattern has been burnt. This work is executed by Mr. James, of Camden-town. On the first-floor there are dining-rooms for both sexes, while the upper stories are devoted to the purposes of an hotel; and that the accommodation of the building may be complete, in the basement are provided billiard-rooms and an extensive wine-bar. One of the features of the design is an attempt to carry all the horizontal decorations throughout the building, and thus the shop-front is divided by a rail of coloured glass, to match the Mansfield stone, while the lower portion, between this band and the plinth, is to be glazed with glass with burnt oak and dapha pattern; and the upper part is glazed with plate-glass, which is embossed, to match the sculptured ornaments on the pilasters. The front is of Portland stone, red brick, and Mansfield stone. There are zinc ornaments and dormer windows.

The builders are Messrs. Patrick & Son, who have carried out the works from the designs of the architect, Mr. Edward L. Paraire; the clerk of the works being Mr. Gladwell.

Failure of a Contractor.—At the London Bankruptcy Court on Saturday an application was made for the appointment of a receiver to the estate of Frederick Furniss. The debtor has presented a petition for the liquidation of his affairs, describing himself as a contractor, carrying on business at Victoria-chambers, Westminster, and estimating his liabilities at 35,000*l.* The assets consist mainly of a contract for the erection of a lunatic asylum for the justices of the county of Kent, the amount being for 30,000*l.* Mr. Beckwith, accountant, Aldermanbury, was appointed.



TAVERN ARCHITECTURE: THE "HORSE SHOE HOTEL," TOTTENHAM COURT ROAD.——Mr. Paraire, Architect.



MESSRS. BROOKS'S OLD BANK, ALTRINCHAM, CHESHIRE.—MR. GEORGE TEUFEITT, ARCHITECT.

THE RIGHT WAY OF DEVELOPING ART;

OR, REASONS FOR THE REVIVAL OF THE ART-POLICY OF GREECE AND ITALY.

By W. CAVE THOMAS.

"IT will all come in time," said Foley, when we were discussing the best means of utilising the Slade Bequest, and were lamenting the want in England, of a better knowledge of the principles of art, and of a consistent art-policy.

The great sculptor was right; "it will all come in time,"—but the time would be considerably delayed if it were not for those restless beings, those pioneers, who are before their time, and who, having a clearer perception, a foresight of things to come, would clear all obstacles, at once and for ever, from the right and direct path. These obstacles, however, do not yield so readily to the axe of reform, and the ardent pioneer, not unfrequently perishes before he can clear the way through the tangled brushwood, and still more obstructive logs, which in seeming endless succession, thwart his daring labour. "It will come," we may rest assured,—the good time in art, as in everything else. But there is the becoming, there is the progressive development. It behoves us, therefore, to learn what is the essential characteristic of this becoming, this evolution, this progress. It is this that progress moves from narrow to broader views,—in science from facts to general principles,—in policy, from individual interests to class interests, from class interests to national interests, and from national interest to cosmopolitan or world-wide interests,—progress obeys a precisely similar law in respect to art, it moves from the petty to the grand; from the imitation of individuality to attempts at composition and idealisation, until it finally attains to the knowledge of essential forms; to the just conception of proportion and beauty, and the full power of composition and colour. The order of progression is, in fact, similar in all departments of human attainment; and as each section of inquiry arrives at that point where it is discovered that the study cannot be prosecuted alone, and as a completely isolated study, apart from everything else, but as a part of nature's great plan and whole together. I say when the various branches of study arrive at this conclusion, there is always an advance along the whole line of the intellect,—along the whole line of human thought,—to wider views, grander conceptions, and the consideration of vaster interests. Now it would appear to me that we have just reached that point in England both in art and in science; and when, in respect to art, we should take a broader view of its policy than to suppose that it is the duty of English painters now and for ever to confine themselves to the painting of detached easel pictures, and the cultivation of individual peculiarities of style. With all those wonderful displays of individual *tours de force* which may, from year to year, be contemplated on the walls of our exhibition-rooms, we have not, in the sense in which I understand these phrases, a national art-policy, or a national art. There is no evidence in the English school of that unity of action and collective effort which made the greatness of the Grecian and the Italian schools. There is as great a difference between the painting of an easel picture and the designing and carrying out of a series of works for a grand national building, as between the leading of a regimental company and the commanding of an army. And as in the commanding of an army councils of war must be held, so, in like manner, in the designing and carrying out of a series of monumental paintings councils of art must be convened, in order that any undue individual bias may be toned down, for the sake of a broader treatment and the general effect.

If we study the progress both of Grecian and Italian art, we shall not only find that there is a parallel development, whose stages exhibit similar characteristics, but that the art-genius of the two great epochs was developed by precisely similar means, viz., by the employment of the artist on the decoration of great public buildings. The only true way of developing any special study is, by making it worth men's while to give their attention to that study. All the finest remains of Grecian art in our possession were torn from the ruins of public buildings, and the greatest works of Italian art are for the most part incorporated with the walls of the great Italian monumental edifices. The greatest painters and sculptors were decorators,—remember this,—were decorators in the highest sense of that word; and beware of attaching any ignoble value, such as in the decadence of art, and the misapplication of the word in recent times, has come to be attached to the term "decorator." Let it also be borne in mind that it was through decorative art that Greece and Italy attained to the highest pinnacle of excellence. The value of the term "decorative art" has become, indeed, so depreciated, that architects, and a large portion of the public, really seem to think that "decorative art" ought to be an inferior kind of art; in connexion with architecture, therefore, both painting and sculpture are thus estimated, and paid for accordingly.

Seeing, then, that the history of art most clearly and unmistakably points the highway for the true encouragement and development of art, is it not time that we should forsake the byeways, and turn into the direct, main road? Instead of endowing art-schools and national galleries of the old masters, take the same highway to excellence as they did in times past, and endow painters and sculptors by commissioning them to execute public works? Compel our painters and sculptors to aim at the highest mark, and all branches of art would benefit by the new policy. Men would be made great painters and sculptors without huge national galleries, and designers for the manufactures without schools of design, as painters, sculptors, and designers were made of old time. We begin at the wrong end, and appear to be trying how not to do what we say we most earnestly desire to do.

It may be quite true that in modern times we must take cognisance of and cater for the sight-seers, and that a national gallery of the old masters is one object of attraction; but might we not have a national gallery of a different kind, equally attractive, far more instructive, and one which would exercise far greater influence on national art—a national history gallery? But on this point we will presently enlarge.

In considering the question of national galleries we are again led up to the truth, the great and important truth, that it was by means of employing Italian artists on great public works that the fine arts were developed in Italy to their highest pitch of excellence, and that the national encouragement of monumental art is the true art policy.

By a little effort of the imagination, too, we shall perceive that every public edifice of mark in Italy became of old time a living school of art in which the master revealed his experience to his scholars, the principles on which he worked, as well as his technical knowledge. Thus the experiences of many great minds were disseminated, traditionally handed down and improved upon from age to age; but in England every eminent man's experience dies with him, so that English painters waste half their lives in working out for themselves what might, under a different and better state of things, be imparted to them by others. The kind of art school just described is, I think it will be admitted, the true thing, and I will venture to affirm a far less costly means of developing art than planting expensive schools and galleries here, there, and everywhere, perfect in their appliances, but lifeless and inadequate for the purpose we have before us. Artists and designers of real, first-rate excellence were never, and never will be, made by these means; whereas everything artistic, upon the true system, assumes, in every phase of art, its right order of interdependence and gradation.

In the preceding remarks I have had occasion to use the phrase "monumental art." I once used the same in a title to a work which I called "Mural or Monumental Painting: its Aims and Methods;" but, to my dismay, I afterwards found that there was a very general impression that I had been writing upon the methods of colouring monuments and tombs, and that my work was devoted to that subject and not to the greater theme of the decoration of great public buildings,—to that kind of art which, by its elevation of style and its association with the natural architecture, becomes monumental, the best record of its existence and aspirations. A French writer, commenting on the great picture painted by Paul de la Roche in the "Beaux Arts," at Paris, says, "When first the architect opened to the painter the doors of a recently-finished edifice, and showed him the walls which were to be adorned by his skill, an elevated art arose, the essential principles of which were at once defined by the conditions of this union. This art may be called mural, or monumental painting. The characteristics are so pronounced, and so distinct from easel-painting, that perhaps the relation between the two might be aptly expressed by the circumstances attending their respective modes of execution, by comparing the durable walls of a temple with the fragile stretching frame under which the easel trembles."

Monumental painting, then, being employed to decorate large and solid surfaces, the artist is no longer intent on the reproduction, however ingenious, of reality in its most limited sense. A dignified subject is essential; and to this genius is required to add ideality or elevation of treatment. Lastly, simplicity, the indispensable characteristic of great works, must be apparent in the composition and the execution. Hence arises the especial condition of excluding from mural or monumental painting all that may interfere with grandeur of effect,—all that aims at literal imitation and illusion. It is to be remembered that the painter is, in this case, not alone; his art is employed, together with the work of the architect, in decorating the same interior. There ought, therefore, to be no difference of purpose between those two exponents of one and the same thought. Although it may suit modern requirement to sever art into specialities, art itself is one and indivisible. It is further to be remembered that the walls must always be felt to exist under the decorations that cover them, and the skilful and magical effects by which the painter of cabinet pictures gets rid of the surface would here be out of place.

Thus, under whatever point of view this question is considered, monumental painting must still be limited to an elevated region, where all is grand, simple, and unaffected. It was thus that its style was defined by the great masters who, from Giotto to Michelangelo, covered the walls of the palaces and temples of Italy with their works. They painted in fresco; and Michelangelo, foreseeing the decline of the grandest style, and the superior energy and self-denial required of its votaries, had reason to call easel-painting an occupation for women. From this period (the middle of the sixteenth century), the tradition of elevated art was unstable. Succeeding painters, down to Pietro da Cortona, poured over vast surfaces their crowded compositions, in which the qualities of fresco became useless. To complete the decline of monumental art, it remained only to neglect the process itself. Accordingly, from the beginning of the seventeenth century oil painting was introduced, commonly on walls, particularly in France; and the artists looking on this mode of painting as an opportunity for displaying the effects of foreshortening, perspective, and colour, produced what the Italians called vast "machine," differing only from the decoration of the theatre by better studied forms and a more finished execution. We have no right to consider modern artists responsible for this practice: it is to be dated from those painters who first lost sight of the conditions which regulate the style of painting when that art is applied to architecture. It is from the point of view which has just been indicated, viz., the union of painting with architecture, that the genius and labours of the band of painters who revived mural or monumental painting in Munich ought to be estimated. They were great artists in the best sense of those words, for they identified their art revival with a newly-awakened yearning after a united national existence; and thus, being far-sighted patriots, they contributed more than even their own countrymen are aware to the realisation of United Germany. There may be a clever display of individual effort, but never a grand manifestation of art, till a people is moved by one desire, and all talent is concentric to a common purpose. Do Englishmen ever ask themselves, whither bound,—to what end—are art, literature, and politics tending? Have they any part to play in the world's history, and what? If we cannot answer these questions satisfactorily, may it not be said that we are merely beating the wind, and that, like all aimless trifling, it will bring us either into mischief or contempt? It is unity of purpose which gives strength to a nation in literature and art, as well as in policy, which makes it great, and leads it to raise an enduring monument of art.

The numerous public edifices which have of late been completed in France and Germany, have almost in every case been embellished with the productions of painting and sculpture. This application of the imitative arts has prompted inquiries into the principles which may regulate the adaptation of those arts (especially of historical painting) to architecture; not without reference to the examples of success and failure which the decorated buildings of former ages present. The same question which is now pro-

posed for solution has been considered and practically answered, with various results, in Munich and Paris. The experiments which have been made in those cities by artists of eminence, and the opinions that have been expressed thereupon by competent judges, form, therefore, an important addition to the evidence of older works of art, and may assist in the examination of the subject.

The union of painting with architecture supposes a principle of adaptation or selection in the style of one or both. The architect, in arranging his spaces, might find it advisable to adapt their size to the distance to which the spectator could conveniently retire to contemplate the paintings; or might be induced to vary the form of such spaces, with a view to certain subjects. The principle of adaptation is most indispensable for the painter, for if, in such a combination, the production of painting should appear as adventitious ornaments, varying according to the taste or caprice of each artist employed, the result might be a mere gallery of pictures. This mistake, to a certain extent, seems to have been committed in the Church of the Madeleine in Paris. The defect is said to be the more striking, as the subjects of several of the paintings relate to the life of the Saint, who, according to the conception of each painter, is represented very differently. In such an assemblage of pictures, whatever might be their degrees of merit, the spectators would look in vain for any evidence of a similarity of aim.

In comparing the treatment of a cabinet picture with that of a work of the largest size,—for example where the figures are colossal,—it may be observed that the small picture, besides being executed with delicacy, generally exhibits a certain fulness of detail, while the large work is not only less elaborate, but is composed of fewer parts. Even assuming the same subject, and one requiring a variety of minute accessories, to be represented on a colossal and on a small scale, it may be safely affirmed that the degree of detail which would be admissible in the small picture would be objectionable in the larger. In a grander and more ideal subject, where such detail would be inadmissible under any circumstances, the comparison could be less fairly made, but a similar influence would be more or less apparent. Thus, assuming these conditions to be common, the greater space never allows the introduction of *more* detail than the smaller, but generally, if not always, requires *less*.

Without entering into the examination of this question as connected with the laws of vision, it may be remarked that, although the indistinctness arising from distance may be counteracted, as regards the most important qualities in art, by increased dimensions and by appropriate style and treatment, it must still tend to exclude certain refinements of imitation which are appreciable in pictures requiring to be seen near,—refinements capable of conferring an interest on details that may be unimportant in themselves. The inference is at once applicable to the question proposed. The familar subject, being fullest of accidental circumstance, must be displayed in dimensions fitter for near inspection; and with respect to an advanced state of art as regards imitation, excellence must be a consequence of the habitual adoption of such dimensions; on the other hand, the larger the figures in a picture the greater the distance at which the work must be seen; and as the omission of detail is a consequence of that reduced scale of gradation which distance supposes,—as the absence of minute particulars is felt to be the attribute of distance without reference to the size of objects,—so the accessories in the larger work of art require to be few and unimportant. Thus again, increased dimensions, by involving the suppression of detail, suggests subjects of corresponding dignity.

Such appears to be the relation of dimensions to style and subject, considered with reference to technical results; as regards the question of taste, it may be observed that the involuntary conclusions derived from the influence of association agree with the practice of art. The analogy between grandeur and the absence of detail, and between minute circumstances and familiar incidents, is sufficiently apparent. With these analogies the impressions produced by magnitude and its attributes, and by the opposite qualities, respectively correspond.

The general relation thus defined has often been reversed in works of art, but not with equally good results, for it may be remarked that large works, when elaborate in detail and full of accidental circumstance, have the unpleasing effect of magnified cabinet pictures; on the other hand, diminutive historical works, when treated with the breadth belonging to the grandest style, must give the impression of large works diminished. The last-mentioned inconsistency can hardly be an objection; grandeur of conception and treatment must unquestionably be acceptable in any form, but, nevertheless, the abstract breadth of imitation which is indispensable in elevated subjects is, under the circumstances, supposed a kind of contradiction, inasmuch as the vague generalisation of a distant or ideal effect is submitted to close inspection, and can only be so viewed. The small pictures of Raffaelle and Corregio are of this description; but the instances of such subjects being treated on so minute a scale are not frequent.

It is unnecessary to enumerate other exceptions, or to refer to larger works in which a just adaptation of style may have tended to obviate an incongruity between subject and dimensions. It may be sufficient to have dwelt on those plainer principles which result from the technical and external conditions that have been considered, but which may afford a criterion with regard to some of the more arbitrary convention of works of art. It may be added that even extreme conclusions which might be deduced from the conditions referred to, are strictly conformable to the authority of the grandest examples of art. The loftier aim of imitation, thus defined, may seldom be literally compatible with the usual range of subjects; but in this instance again, the criterion as such may be admissible. Thus, assuming the representation to be dilated to its full measure, details of costume, illusion, and even the more delicate varieties of colour, are no longer fitted for the dimensions. But in proportion as the subordinate excellences of imitation are excluded by the nature of the existing technical conditions, the display of the nobler qualities still attainable becomes more necessary. As the resources of art become circumscribed, the artist's aim becomes elevated. In the highest style of painting as in sculpture, the representation of inanimate substances ceases to be satisfactory when they no longer assist impressions of beauty or grandeur; and the styles of art in which the living form can be least dispensed with, are precisely those which, by the abstact character of their imitation, render it least objectionable.

The foregoing considerations may warrant the conclusion that the grandest style of art is best displayed in large dimensions. It will also follow that the treatment of subjects fitted for such dimensions must tend to ennoble the style and taste of the artist.

The very necessity which exists for studying the drawing and composition of large mural paintings, separately in cartoons, is in itself a highly beneficial training, as the mind of the painter being freed from the blandishments of colour and effect is the better able to concentrate its attention on the perfections of form. Monumental painting has thus earned for itself the title to be included amongst the plastic arts. In the cartoon the artist determines his composition, studies every portion of it from models; in fact, makes a work complete in every respect but that of colour, an exact working drawing. But although monumental painting admits of the design being studied to any extent in cartoons, yet in its ultimate execution it is not an art for the hesitating and timid. It requires a grand style of drawing, a broad and simple treatment of colour, an eye steadily fixed on the whole effect and an energetic and rapid hand, all qualities which it must be confessed, are rare in these days. Palomino, in his work on fresco-painting, referring to the methods taken by the painters of the "Decadence" to evade the study and care which it demands, observes, in speaking of Michelangelo and Raffaelle, that since their time artists had become impatient of so much toil, having found that their enthusiasm evaporated before the period arrived for the execution of their work. The best Italian mural painters were always fully impressed with the necessity of adapting their works to the architecture, so as to make one harmonious whole. The nature of fresco fits it for such a purpose. It is indeed impossible to produce that illusion which is considered so desirable in oil pictures. The same depth of shade is not in the artist's power, but this very circumstance, while it compels attention to composition and form, indicates the proximate limits of colour and effect, renders fresco more directly appropriate for strictly decorative purposes.

The absurdity of painting in oil upon walls into the composition of which lime has entered is so evident that it can never be attempted again. The lime and its salts are certain to cause the rapid decomposition of such works, which usually end in turning perfectly black. The inclination of oil colour on plaster is always towards the dark and heavy, whereas fresco has the reverse tendency, or to become lighter, and though this is also a defect, it must be admitted that it is the lesser evil of the two; for the gloomy depth of the changed oil colour breaks up the architecture by producing the effect of deep recesses in the wall, whereas fresco, though it becomes lighter, never destroys the breadth of the wall surfaces.

As, therefore, works upon the scale we have been describing cannot be often in demand for ordinary dwelling-houses, it is important that mural painting should be encouraged in churches and national municipal public buildings. On ordinary occasions the imitative arts may be considered as adventitious embellishments; but in proposing to adorn an important national edifice, where it is essential that a characteristic unity of design should be maintained throughout, painting should appear as the auxiliary of architecture. It was thus that it was employed in the best ages of Greece and Italy, and it was thus that its highest development was insured.

Having now briefly scanned the objects, the principles, and even trenched upon the pitfalls, of monumental painting, we may proceed to glance at the causes which have so long prevented its development in England. It was enough for the Spirit of the Reformation to know that the Roman Church had been the foster-nurse of art. It was, therefore, in the bigotry of its reactionary violence opposed to art, and the Church in England, true in the main to her traditions, although she no longer proceeds to overt acts, is, even unto this day, iconoclastic in spirit. The march of intellect, however, has doubtless convinced many in this country that the Reformation, in its antipathy against and raid upon art, ran into absurd extremes. There are not wanting, indeed, unmistakable signs that the pendulum of opinion is on the turn of oscillation towards art in our churches; and when we shall have succeeded in showing, as undoubtedly we shall do, that this may be done without reverting to discarded doctrine, the rate of this reactionary beat toward monumental art will be accelerated.

But sectarian rancour can frame no kind of excuse for excluding mural painting from our great secular edifices. The causes militating against the adoption of the new art-policy are the utter ignorance of the English people of the vast superiority of that policy, and their niggardliness in respect to grants for artistic purposes. There is at present an almost utter ignorance in this country regarding all that concerns monumental painting, and of the mode of properly carrying out a great work of mural decoration. Of this we have recently had painful evidence in the case of the recent proposal to decorate St. Paul's. If we only understood the true art-policy and the economy of that policy, all our great public buildings would soon be transformed into national galleries of the right kind; galleries in which the people would take far greater interest than in old pictures, with which the thought and feeling of modern times are no longer *en rapport*. The painter and the thoughts painted would be living,—of the people's own time. We should then soon have to remark a change, and that these new national galleries would not be frequented with listless loungers. We should note the attitude of attention and observation, the eager eye, the animated converse. Then, indeed, there would possibly be instruction if, in the commencement of the movement, there were but little art.

But it would not be very long before there would be art as well as instruction. We, in our stupid way, wait for Michelangelos and Raffaelles to spring out of the schools of the Royal Academy, or the Science and Art Department, or our National Gallery; whereas Italians were content to take the Cimabues, Giottos, and Perugines which they had, and the Michelangelo and Raffaelle came in the natural course of progressive development. There is no single historical instance of a nation arriving at one bound to the zenith of artistic power. Considerations of this kind, together with a full conviction of the importance of a change in our art policy induced me some time since to put forward a project for a Natural History Gallery, whose walls should afford ample space for the display of mural or

monumental painting. I proposed that this gallery should be formed of a succession of spacious halls, each of which should be devoted to a series of pictures illustrative of a period of English history, the antechambers to each hall or gallery to contain a collection of the antiquities of that period. Between the paintings I proposed that there should be statues of the most remarkable men of that particular epoch, and that the whole series of pictures, sculptures, and galleries should be linked together with architectural skill. The mural paintings and sculptures in this National History Gallery would, in fact, form a complete series of illustrations of English history.

Our object should now be to find opportunities fit for the display of historical painting on a large scale; for this is precisely the class of painting which, more than any other, requires encouragement beyond the means of private patronage. The want of such encouragement has long been regretted, not by professors only, but the few who have turned their attention to the state of painting in England,—a proof that the promotion of historic art is an object of interest with at least some portion of the public. The decoration of public buildings with a view to moral or religious purposes has always been necessary for the formation of a school of historical painting. A national history gallery such as that described would supply some of the space so much needed, and would be admirably adapted to initiate the new and important art policy now advocated. Churches and public buildings have still their gates closed against monumental art. This project of a national history gallery affords the opportunity for making a flank movement on old notions, which would, I firmly believe, have the effect of "opening up" not only our secular but ecclesiastical edifices to monumental art.

In all periods of national, and consequently of architectural magnificence, mural painting and sculpture have, in a greater or less degree, played a conspicuous part in monumental art; and we may learn from the architectural remains of past civilisations the reasons for encouraging monumental art,—1st. As a memorial of national existence; 2nd. As the record of the aspirations of that existence. It should steadfastly be borne in mind that monumental art, in its highest development, exercises a dominant influence over all the subordinate arts of design, binds all the fine arts together, and gives them a certain unity of purpose which spasmodic art, originating in individual and isolated culture, never can. It is not from any prejudiced spirit which would banish all forms of art but that of the highest, that these remarks are made, but in the firm conviction that the cultivation and encouragement of the most elevated style of art favourably influences and exalts the subordinate, and raises the art manufactures of a country to a greater perfection than by any other means they can attain. Thus, we find that some of the most esteemed and beautiful productions of ornamental art were not designed by men educated for that speciality, but by minds of the highest order stooping from loftier work to endow common things with grace and beauty. The object of a national school of art should, therefore, be like that of a national college, to aim at the loftiest idea, and not at specialities and technical skill. That is the best policy and truest economy for developing the national genius for fine art; the best means for raising an enduring national monument. In conclusion, it now only remains to me to hope that I may have succeeded in convincing the reader of the national importance of encouraging monumental painting.

A HINT.

IT has been remarked, and we think there is truth in the remark, that a style which displays itself only in a certain direction, and which does not permeate the whole range of art, can only be considered a mere fashion. In the matter of costume, a few individuals, or a limited class or community, may adopt a peculiar garb (*e.g.*, the Society of Friends); but they cannot be taken as a criterion of the national taste. So, when a clique of architects adopt a style which has had an exceedingly limited range, the peculiarities of which are only tolerable when produced in one material, and which consists of fragmentary gatherings from past styles patched together so as to produce an effect of quaintness, we necessarily arrive at the conclusion that they start from an insufficient basis.

Originality can only be obtained by a certain amount of freedom, by breaking through the restraints of custom and precedent; but not by assuming the cast-off shackles of a bygone period when a peculiar licence prevailed. When art was really free, there was doubtless a considerable amount of licence indulged in; but it was the licence, the freedom, of the untamed colt in the wilderness, not the freedom of the tamed steed, which we justly consider a vice. The enthusiasm which leads a man to revolt against the cant, formality, and frivolity of fashion, is quite a different thing from the craving for mere novelty, resulting in the substitution of an old cant for a new one. Not to advance is bad enough; but to retrograde is still worse.

Things attained by spasmodic efforts almost invariably disappear as quickly as they have been procured, there is no permanence nor satisfaction in their attainment. It is that which has been acquired by steady sustained endeavour which gives true satisfaction, and produces permanent results. If such is the case in the ordinary commonplace affairs of life, more certainly is it so in the realm of art. A new style, a new era in art, is of second growth, and no spasmodic effort of a coterie will make it otherwise. No permanency can be secured unless under the guidance of true principles; but under such guidance much may be attained by steady perseverance.

All true works of art exhibit certain leading characteristics, and here is one which, at first sight, must strike every thoughtful observer as the chief source of beauty and grandeur, and that is *chiaroscuro*, light and shade. In architecture it is an essential element towards the production of a really good effect, and in every building which has been considered worthy of admiration it will be found that this is the chief source of its beauty. The greater the depth and breadth of the light and shade the grander is the effect. A great mass of light strongly contrasted to a patch of intense shade, produces a remarkable effect, but grandeur is best secured by reversing the process, and making the mass of shade to predominate. Equally distributed patches of light and shade, where there is neither grouping, variety, nor depth, are certain concomitants of a puerile design. Depth of shade should be produced so as to give the greatest effect, to enhance the value of the leading feature of the edifice, a feature which should, as far as possible, speak of and express the purpose for which the building is intended, and to this all other features should be subordinate. It is the effort to make every part of a building equally effective which is the cause of failure in many modern buildings, which produces that restless fussiness which is so antagonistic to the feeling of serenity and repose produced by the contemplation of every great work.

Light and shade can be more effectually produced in an arcuated than in a trabeated style. To span a large opening with a lintel is an expensive matter, and it invariably suggests a feeling of weakness, even when iron is the material employed. But a void may be spanned by means of an arch with any material fit for building purposes, with both the appearance and the reality of strength and stability. The arch may be of any contour to suit the circumstances, but that most generally applicable to all positions and requirements is the round arch.

Now, if those who are attempting to resuscitate the jejune fashions of the time of Queen Anne would concentrate their efforts towards the developing of this feature, were they to resolve to use no other in spanning voids, the effect would soon be discernible in our ordinary street architecture, as well as in more important works. Let them also resolve to eschew projecting key-stones, and all details which tend to destroy the graceful sweep of the semicircle; in short, to copy none of the latter details, but to study those of the Byzantine and Romanesque styles,—styles which never attained the fullest development of which they are capable, and we have no hesitation in saying they they will be in a more likely way towards the attainment of a worthy goal than they are at present.

The Artisans' Dwellings Bill.—This Bill was read a third time in the Commons on the 30th ult., after a brief discussion initiated by Colonel W. Holms, who recommended the Government to improve the measure by making it compulsory, and not leaving it to be put in operation by the medical officer of a district, upon whom such a responsibility ought not to be thrown. It is now going through the Lords.

NEW EMERY STONES.

A NEW kind of polishing-stones is manufactured by Van Baerle & Co., of Worms (Germany), consisting of emery, soluble glass, and petroleum. The emery-stones in general use consist of gum, shellac, and emery. When stones of this description are turned rapidly, either dry or with oil, they get heated to such an extent that the gum or shellac becomes soft, the stone turns greasy, and does not act any longer. The new stones are said to be free from these evils. Their speed may be increased from 1,000 to 2,000 revolutions per minute, according to the size of the stone. When the stones are used for polishing steel, the latter does not get heated to such an extent as with other stones, the steel does not become annealed, and preserves its hardness. The new stones are damped by means of a rag soaked in petroleum. They are made in three shades of fineness,—fine, medium, and coarse.—*Gewerbeblatt für Hessen.*

TIMBER TRADE OF WURTEMBERG.

THE Kingdom of Wurtemburg has a superficial area of 1,950,369 hectares, or 4,819,675 English acres, and, of this area, 596,616 hectares, or 30 6 per cent., are forest lands. Mr. Petre, the British representative at Stuttgardt, states, according to the Society of Arts' *Journal*, that, to prevent waste and deterioration, and to secure the replanting of cleared places, all forests in Wurtemburg are placed under the supervision of the Government forest officials, and the latter exercise their police authority and control with more or less stringency, as circumstances require. In the pinewood district of the Black Forest the wood of the spruce, silver fir, and Scotch fir, from its superior qualities, external and internal, is preferred to all others for building and general purposes. The young trees of weaker growth, derived from the thinnings of the forests, are sold extensively for beansticks, stakes, raft-withes, props for young trees, hop and telegraph poles. The larger trees are chiefly used for building purposes, or for conversion into sawn timber, supplying materials for a very large home industry, and a highly flourishing timber trade. A considerable quantity of the pinewood is made into shingles, boxes, casks, pails, &c. Altogether about 60 per cent. of the pinewood felled is available for timber. The tops and chips are used as fuel, and are largely converted into charcoal, for consumption in the Government foundries. With regard to the hardwood trees, the timber derived from them is applied to more various uses than that from the firs, but as this class of wood, with the exception of oak, is employed chiefly for home consumption, the quantity used as timber is relatively small. The greater part of the hardwood timber felled is sold for fuel.

The cultivation and preservation of the oak, on account of the demand for it in foreign markets, is an object of special care. The larger stems, especially the crooked ones, are much in demand for shipbuilding purposes, and are exported principally to Holland. They are floated down to the Rhine along with the pine rafts, and from thence to the Dutch shipbuilding yards. Oak timber is also used in considerable quantities for mills, in the construction of waterworks and bridges, and for mining purposes; likewise for railway sleepers, staves, lathwood, &c. The wood of the younger trees, owing to its toughness, is much in request for carriage-building. It is not so suitable, and is less in use for fuel. If the oak mainly supplies timber for general purposes, the beech furnishes the greater portion of the fuel consumed in the country. The ash, maple, elm, and small beech supply useful and valuable wood for carriage-building, joinery, turnery, and for instrument-makers and carvers. The birch, even in its earlier growth, is valuable for making brooms, withes, props for casks and tubs, bars for carriages and carts, &c. It is from 10 per cent. to 15 per. cent. below beech in heating power, but as it burns with more flame, and heats more quickly, it is used in preference as fuel by certain manufacturers,—varnishers, for instance. The alder, the wood of which is chiefly used as fuel, has a similar advantage. Its heating power is about 75 per cent. of that of the beech. Joiners, shoe-cutters, turners, &c., also employ this wood. When grown in water the alder has remarkable durability. The lime-tree yields a soft and light wood, and is much in use as panelwood, in joinery, and for packing-cases, boot-trees, kitchen utensils, and various sorts of carving. The same may be said of the

aspen, the wood of which is sold extensively, at high prices, for paper manufacture and lucifer matches. The heating power of the lime and aspen is about 50 per cent. below that of the beech.

No statistical information exists showing either what proportion of the timber annually cut is exported, or what value it represents. One thing, however, is certain, viz., that the exportations, especially of pinewood, either in its raw state, or in the form of manufactured articles, facilitated as it is by the numerous water-courses and railways, is very considerable indeed.

IMPROVEMENT OF THE WORKMAN.

SIR,—I quite agree with a recent correspondent of yours in what he says of the apathy shown by a great many bricklayers on the subject of education, &c.; but I cannot accept his argument that it is owing to their getting no credit for what they do,—that the foreman, who is generally a carpenter, gets the credit. Surely, they would get the credit if they did anything deserving it. Moreover, have they not the opportunity of honourably competing with the carpenter? Instead of being sulky, would it not be more to their interest, and more pleasant, were they to educate themselves the same as the carpenter, and be his rival in courting the favour and good opinion of the architect? I would say to them, "Make yourselves worthy of his notice, and the architect will not fail to appreciate it when the opportunity presents itself." How is it that there are at this present time (in spite of his assertion that the foreman is generally a carpenter), a number of bricklayers general foremen, and some clerks of works too? Simply because architects are always ready to appreciate ability and good conduct, industry and perseverance, whatever trade may be owner of those qualities. The idea of the specification being placed convenient for perusal by the workmen may not be bad in its way; but when are they to peruse it? Not in their working hours, for that time is the property of their employer, the builder, who takes the contract as a commercial speculation, and he cannot afford it in these days of keen competition; he employs a foreman to study the specification and to carry out its meaning by giving instructions to the workman, whose duty is to do as he is told. But suppose he were allowed time, can he expect to improve himself in the art of his particular branch by studying the specification, which merely describes the character of the work and material, on the supposition that the workman is already possessed of the necessary skill for the proper execution, under the direction of the foreman? If each individual workman is to learn the specification and act upon his own construction of it, we should have in building construction as much confusion as would be experienced in war if every private soldier had a plan of the campaign, and liberty to act according to his individual opinion.

More good might arise from the drawings, plans, and details being hung in a convenient position that any workman so disposed might have an opportunity of seeing them in his mealtimes, because it might stimulate him to endeavour to improve his knowledge sufficiently to understand them.

But, I say it with shame, it is not the want of knowledge of plans alone that makes an architect think but little of some bricklayers: it is their lamentable ignorance or utter carelessness of the technical details of their craft, particularly in the bonding of their work, construction of flues, mastery of the plumb-rule and level, regularity of joints, and neatness of finish, &c.; or, to go higher in the branch, what percentage are able to properly strike out, cut, and set in gauge work even an ordinary arch, or how many out of a thousand are able to strike out a three-centre arch filled in to the radius? Surely they do not expect the architect to teach them. They must teach themselves, by personal practical application of the means within the reach of every workman who will take the pains to seek them.

I believe some good would come out of an association of the kind proposed by Mr. Thicke: it would be the means of bringing men who are thirsting after knowledge into contact and communion with those who have drunk more or less of the precious draught, which would inspire them with a feeling of determination to obtain a drink themselves; and, having obtained it, they may then hope some day to be on speaking terms with the architect. Should the association become established I should be only too glad to render my humble services, gratuitously of course, by attending its meetings and assisting to impart instruction to those bricklayers who are anxious and willing to receive it.

A BRICKLAYER CLERK OF WORKS.

CONSTANT AND INTERMITTENT WATER SUPPLY.

INSTITUTION OF CIVIL ENGINEERS.

AT a recent meeting, Mr. Thos. E. Harrison, the president, in the chair, a paper, on "The Systems of Constant and Intermittent Water Supply, and the Prevention of Waste, with special reference to the Restoration of Constant Service in Liverpool," by Mr. G. F. Deacon, C.E., was read.

After explaining the general sources of waste, and the effect of intermittent service on the supply, and entering fully into the objections on sanitary grounds to intermittent service and waste of water, the author described the Parliamentary powers, in reference to pipes and fittings, which until recently had been found necessary, before any corporation or company could give a constant service of water with no greater consumption per head than under the intermittent system. The Acts of Parliament in question had in effect empowered the authorities to prescribe the nature in detail of all fittings and pipes, and the works in connexion therewith, and to interdict the use of any existing fittings and pipes which in their judgment might tend to waste. The Liverpool Corporation had no such powers, and they had never been enabled to order the alteration or removal of any fitting or pipe, however defective, until seen by the inspector to be actually causing waste of water.

The author proceeded to state that ordinary house-to-house inspections had been regularly made from the year 1863 to 1873. In cases of actual waste arising from defects, notices to repair were served upon the persons responsible for the water-rates, and such other steps were taken as the legal powers rendered available. The columns of Table A showed that though the waste-water inspectors had no doubt produced useful results, there was nothing to indicate that, by increasing their number, much further saving would be effected. Indeed, experience was adverse to the possibility of success in the endeavour to reduce the consumption materially even while maintaining intermittent service; and the idea of restoring constant service, with the existing Parliamentary powers, was generally regarded as chimerical.

It was under these circumstances that the Corporation authorised the making of a series of experiments, with a view to discover the locality of a larger proportion of the waste than the house-to-house inspectors were enabled to trace. In carrying out those investigations, the mains supplying fourteen districts in the most densely populated part of the town, containing, in the aggregate, about 31,080 persons, were provided with ordinary piston meters.

The experiments conducted in these districts were then explained in detail. The house service-pipes had been provided with stop-cocks under the footway, and the inspectors, by applying the turning key to the stop-cocks during the night, and placing the ear upon it, were enabled to ascertain in which of the house service-pipes or fittings water was passing to waste. The results were eminently satisfactory; for the consumption of water, which under nine hours' service had been 19·5 gallons, and under constant service 33·5 gallons per head per day, was reduced under constant service to 13·3 gallons, and subsequently to about 12 gallons; while in one district of 2,134 persons it was brought down to 6·6 gallons, without altering a single fitting which had not been found to be actually wasting water.

But in order to obtain such results over the whole district of supply, including a population of 630,000, in a sufficiently short time to ward off the expected dearth of water and to restore constant service, it would have been necessary to inspect several districts every night, and it would have been impossible to ascertain how far the closing of the stop-cocks commanding wasteful property had been faithfully performed, as no record was preserved of the change in the rate of movement of the piston-meter, except that returned by the inspectors themselves. The cost, too, of reliable piston-meters, and of the necessary chambers, was very great, while the expense of maintenance was considerable.

The author then devised an automatic check upon the motions, at once, of the night inspectors and of the water, the cost of which was comparatively small. The instrument, known as the "Waste-water Meter," recorded the two elements of time and rate of flow through the main, after the manner in which an indicator diagram recorded space and pressure. Thus, not only was the change of velocity, induced by the closing of any stopcock during the night, registered, but the time at which the men commenced their work, and the time at which they ceased to work, was recorded with fidelity.

In the establishment of waste-water districts, the existing arrangement of services for distribution was, as far as possible, adopted. The number of meter districts on the 10th of April, 1875, was 120, and the population under control, 306,912. A district having been selected, a sketch was prepared showing the place the meter was to occupy. A length of pipe was removed from the outlet side of the service-valve, and connecting-pipes were laid to beneath the nearest point of the footway, and conveyed the water through the meter. The cast-iron meter cover was placed in the footway next to the kerb. After a meter had been fixed, readings were taken to ascertain the consumption of water in the district under the ordinary intermittent supply. The district was next placed under constant service, and the consumption ascertained under that system, before measures for the prevention of waste were commenced. Stopcocks were attached to the lead-service pipes of all premises, or blocks of premises, which were not already capable of being controlled from the exterior. All new stoptaps were on the screw-down principle, and the loose valve was so arranged that it could not fall out when the stuffing-box was removed. The surface-cover was fixed into the upper side of the flag with Portland cement. The hinged lid was round, and large enough for a man to pass his arm down. Though all new pipes were laid 2 ft. 6 in. deep, they were brought up at the stopcocks to within arm's length, that a washer might be replaced without opening the ground.

The method of night inspection was also described.

It was stated that the experiments in the fourteen districts commanded by piston-meters were commenced in January, 1873; but it was not until October in the same year that the first waste-water meters were fixed. In its earlier stages the system progressed slowly, but recently it had gained in speed. For some time past twelve meters, controlling about 25,300 persons, had been fixed each month; and it was found that, with one chief inspector, twelve ordinary inspectors, six labourers, and one waste-water meter inspector, and two inspectors to attend to special reports in other districts, it was easy to restore constant service to 5,000 persons per week, to sustain it in the old meter districts, and to maintain the average consumption over the whole area supplied at a constantly diminishing rate.

In March, 1874, about 170,996 persons, and in March, 1875, 373,500 persons in the borough were receiving constant supply. During 1873 the maximum number of hours' service to the intermittent districts in the borough was 10½; the minimum, 7½; and the average, 10. Since then the average had been maintained at 10½ hours. In 1873 the out township supply to 91,835 persons was reduced for an average of fourteen weeks to 12 hours per day. Since 1874 constant service had been maintained in the out townships throughout the year. At the beginning of 1874 the total population supplied was about 621,000. At the beginning of 1875 it had increased to about 632,000. During 1873 the amount of water taken for all purposes excepting manufacturers' supplies, measured by meter, was 5,437 million gallons, or 24·42 gallons per head per day. During 1874 the corresponding quantity, measured by meter, was 5,487 million gallons, or 23·8 gallons per head per day. In March, 1874, the rate of supply was about 24·21 gallons per head per day. In March, 1875, it was about 22·26 gallons per head per day.

The number of persons to whose service the waste-water meter system had been applied in Liverpool was 234,000. Taking that moiety of the districts to which attention had been chiefly given, the supply to 117,425 persons, which, under constant service, averaged 32·12 gallons, had been reduced to 15·97 gallons per head per day. If the whole population under treatment was considered, the rate per head per day to 234,000 persons had been reduced from 28·89 gallons to 16·47 gallons, which was equivalent

to a total saving of 1,060,792,200 gallons per annum; and the saving thus far would have been 12·42 gallons per head per day. In Liverpool, the term "domestic consumption" had a much wider signification than in most other towns. It included all supplies for sanitary purposes, and a large proportion for business purposes, excepting only those to the larger manufactories, which were measured by meter. In other towns it was usual to confine the term to the use of water in private dwellings; and this difference would be equivalent, in most cases, to several gallons per head per day.

There could be no doubt that in low-class districts of the metropolis the waste of water was, on the average, much greater than in Liverpool; but if constant service were restored to any single district, that very fact would in a great measure create its own cure. Many of the outlets for water, which, under a few hours' supply, were left continuously open, would, under constant supply, become such intolerable nuisances that the flow must inevitably be checked; and if the owners of property became aware that all cases of waste would be discovered by the night inspectors, and be watched by the authorities until the cause was removed, in the manner which they might prescribe, the district would soon show a lower consumption than under the intermittent system.

WOODEN FLOORS ON ASPHALTE.

A NOVEL method of laying down wooden floors was introduced in France about twenty years ago, and has since then obtained a wide application. It consists in patting down flooring not, as hitherto, on sleepers, but in imbedding the boarding in asphalte. The new floors are used mostly for ground stories of barracks and hospitals, as well as for churches and courts of law. M. Schott, in the *Deutsche Bauzeitung*, draws the attention of architects to this new mode of construction, very little known out of France, and urges that its wider application is desirable on account of its evident usefulness.

For the floors in question, pieces of oak, usually 2½ in. to 4 in. broad, 12 in. to 30 in. long, and 1 in. thick, are pressed down into a layer of hot asphalte not quite ¾ in. thick, in the well-known herring-bone pattern. To ensure a complete adhesion of the wood to the asphalte and obtain the smallest possible joints, the edges of the pieces of wood are planed down slanting towards the bottom, so that their cross section becomes wedgelike. Nails, of course, are not necessary, and a perfectly level surface may be given to the flooring by planing after the laying down.

The advantages of this flooring, which only requires an even bed on which it rests, are said to be the following:—

1. Damp from below and its consequence, rot, are prevented.

2. Floors may be cleaned quickly and with the least amount of water, ensuring rapid drying.

3. Vermin cannot accumulate in the joints.

4. Unhealthy exhalations from the soil cannot penetrate into living-rooms. Asphalte being impermeable to damp, rooms become perfectly healthy even if they are not vaulted underneath. In buildings with several stories, as in hospitals, the vitiated air of the lower rooms cannot ascend, an object which it has hitherto not been possible to attain by any other means.

5. The layer of asphalte will also prevent the spreading of fire from one floor to another in case of conflagration.

The flooring here described has been laid in the numerous casemates of the newly constructed forts round Metz, to the satisfaction of the authorities.

The cost is about 1s. per square foot. This estimate, somewhat high, would be much lower in districts where oak and labour are cheaper, and the distance from the places of construction less, and especially where there is more competition amongst contractors than at Metz; and the cost for larger undertakings may be reduced to 8 German mark (8s. English) and under per square metre.

The "Laird Memorial," Birkenhead.—Mr. S. Horner, sculptor, late of Wellingborough, has received instructions from the committee of the "Laird Memorial," Liverpool, to send in a model for a statue to be erected at Birkenhead, to the memory of the deceased M.P. for that borough.

ART AND LITERATURE.*

THE visitor who at the recent dinner in aid of the Artists' Orphan Fund, was called on to respond for "Literature," said,—Many years have passed since I first began to attend the dinners in aid of the Artists' Fund, and it is impossible to look round without remembering genial faces, constant attendants, that will be seen no more. Fortunately, there are others to fill their places, and I venture to say that the fund has never been more efficiently served than it is by the present treasurer, and honorary secretary, Mr. Hardwick and Mr. Millais. I have no pretensions to stand here as a representative of the great stream of literature (the power which moulds the peoples and sways the world), but living all my life on the banks of one of its streamlets, the Literature of Art, that has been deemed a reason why, at a meeting of artists, I should be called on to respond. The ranks of literature have been greatly thinned of late, and many here will grieve with me for the loss of Charles Kingsley and Arthur Helps. While, however, the Roll Call includes such names in the several departments as Carlisle and Gladstone; Herbert Spencer and Huxley; Arnold and Dean Stanley; Tennyson and Browning amongst the poets; and Trollope, Disraeli, and George Elliott, as novelists; the prestige of English literature will be fully maintained, and its power for good increased. The periodical press of England is a marvel and a glory,—its purity not its least remarkable quality; never is seen in it a word to offend the most fastidious; never is there a defender of what is really bad. It is right for artists to recognise their indebtedness to literature, as it is for literary men to acknowledge their obligations to art. Art came before literature; indeed, produced the first form of literature; now art illustrates letters; and literature in turn gives subjects to art. In the present Exhibition of the Royal Academy, for example, Mr. Frith has gone to Smollett; Mr. Dobson to the Book of Books; Mr. Poole to Spenser; Mr. Elmore to Froude; Mr. Ward to the History of Louis XVII.; Mr. Millais to George Meredith; and Mr. Long, for his admirable work, to Herodotus, the father of history. Thus, art and literature are mutually assistant, and ever may they be found hand in hand on the side of right and goodness, elevating and brightening the dull realities of life, and giving to the everyday world the grace of a higher ideal.

* "A Reporter" sends the following note of a little speech made at the Artists' Orphan Fund dinner, which occurred too late in the evening to receive any notice in the general account of the proceedings given by the newspapers.

THE HOT-WATER APPARATUS AT THE ALEXANDRA PALACE.

THE whole of the heating arrangements here have been planned and carried out by Mr. Wilson W. Phipson, of London, and have been at work since the beginning of the year.

The complete apparatus is on a very extensive scale, having an aggregate heating surface of over 55,400 ft.; it is subdivided into five distinct arrangements, viz.:—No. 1, for Central Hall and Picture Galleries, East and West; No. 2, for the East Covered Court; No. 3, for East Conservatory and Glazed Corridor; No. 4, for West Conservatory and Glazed Corridor, West; and No. 5, for the Concert Hall.

The apparatus, 3, 4, and 5, are worked in the ordinary way by means of hot-water boilers, fixed in the basement of angle-towers, east and west, and are on the Cornish type, 20 ft. long, and 5 ft. in diameter.

The apparatus, 1 and 2, are worked by means of steam heaters placed in the hot-water channels in close proximity to their work, each heater circulating its distinct number of feet of heating surface.

The steam is supplied to them from three multitubular boilers, 16 ft. long and 6 ft. in diameter, fixed in the central portion of the building looking north. These boilers are also used for supplying steam to the engines working the organ.

The pipes in the heating channels are generally 4 in. in diameter; 5 in. wide and 3 in. deep for conservatories; 6 in. wide and 3 in. deep for Central Hall; and are covered over with continuous cast-iron gratings, with bearers under each where they exceed 2 ft. 6 in. width.

The flow and return pipes from boiler are 6 in. in diameter, no larger pipe being used in the whole apparatus.

THE ELECTION OF DISTRICT SURVEYORS.

SIR,—Within the memory of the oldest inhabitant (and also of that of the younger ones) of the metropolis, the Board of Works have treated the district surveyors who were elected by the magistrates with great disrespect, for reasons best known to the Board. The old surveyors were, at any rate, gentlemen well known and respected in their position as architects, and might have expected the assistance and confidence of the Board. As the old surveyors died off, or retired, others were elected by the Board who were mostly inexperienced in the duties; while men, and there were several, who had had many years' experience as assistants to the old surveyors, were and are entirely overlooked. If the Board are trying to bring the office into disrepute they are proceeding in the right direction by not appointing the most competent candidates to carry out a very awkward and harassing law. To substantiate what I say, it is only necessary to state that lately one or two of the Board's choice have been dismissed, and that the other day when passing an alteration made to a building under the supervision of a very lately elected officer, I observed no fewer than three points contrary to the Act, and which may hereafter bring trouble and annoyance to those concerned. My object in writing is to suggest that some better mode of election should be instituted rather than to leave it to what may be considered by some as mere patronage. A return even to the old system of election by the magistrates would be more satisfactory.

Y.

DRAUGHTSMAN AND CLERK OF WORKS.

SIR,—At the present important period of the history of architecture, and especially of the proposed discussion as to the amalgamation of the two leading societies, will it be out of place to notice the fact that there exists no combination of Assistants—as such—in the profession as there is in almost every other? The Institute of British Architects consists of the highest members, acting as architects, and the Junior Society is avowedly a body of students, led by men of acknowledged reputation; but for the assistant, either as draughtsman or clerk of works, there is no society which certifies him to be what he represents himself, or being such, assists him to dispose of his talents to the best advantage. It may be urged that such a society is not required; that draughtsmen, are, as a rule, architects in *embryo*, and that clerks of works are,—well, not exactly *that*. A little reflection will show, however, that many things are required to make an "architect" in addition to brains, and of the thousands who sign articles, how many must there be obliged to remain as assistants?

And again, why should a clerk of works not be recognised as a professional assistant? Every architect of experience knows how much anxiety he is saved by having a good man under him; but it must be admitted that the opportunity of detecting a mere pretender is not easily provided for. The fact of having been foreman, or leading "hand," should *not* be a sufficient qualification. There is no reason why he should not be a practical man, yet a gentleman, in the same way as a draughtsman should be an artist, yet a practical man. If an association of architectural assistants could be established (not as a union, but for mutual improvement), a considerable amount of good would accrue; and as almost every good, nowadays, comes to us by means of the Press, I venture to trouble you, sir, with what I humbly think is not altogether an unimportant matter.

S. E.

ECCLESIASTICAL DECORATIONS.

THE pulpit and screen to the apse of the Congregational Church, Caterham, lately opened, have been decorated from the designs of Mr. John Salman, architect. The pulpit, constructed of white deal and pine, is of a platform nature, with projecting bay in the centre.

The panels of the latter are laid in with a deep blue ground, with floral studies executed upon the same, in the flat, in lighter hues, and outlined in a deeper tone of the ground-colour. The panels to the faces of the platform on either side of the projecting bay are decorated upon the wood itself in bands of brown, with suitable centre feature to each panel, slightly relieved, in gold. The screen in the rear of the pulpit,

which is of wood also, consisting of trefoil-headed vertical panels, with cornice and circular projecting cove above, has the panels of the cove treated in floral studies, executed in the flat, and outlined, upon a gold background. The panels beneath are grounded a deep sage-grey, and have a conventional ornamentation, of a vertical form, executed in gold, in the flat, and outlined, in the centre of each panel. The mouldings to the cornice and the structural part of the screen are the natural wood, stained and partially relieved with deep brown bands and gold.

The work was executed by Messrs. Phillips & Son, of Baker-street, Portman-square.

"TRAITORS' GATE," TOWER OF LONDON.

SIR,—Seeing in your paper of the 1st inst. a statement from a correspondent that the "Old Traitors' Gates" had some years since been sold, and having often in conversation had to contradict some of the most curiously foolish statements imaginable on this same subject, I trust you will pardon me for assuring you that these gates are still in the Tower, and in the Traitors' Dock; that the gates sold some years since, and said to be in Barnum's Museum, were modern deal gates, and that our Yankee friend, if this be true, has for once been fairly "sold." Proof of this I am willing to afford any one sufficiently interested in this matter who will call at my office any day between the hours of 10 a.m. and 4 p.m. JNO. W. PHILLIPS.

R. E. Office, Tower.

STAINED GLASS.

Walworth. — Two more memorial windows have just been fixed in St. John's Church. The figures illustrated are St. Peter and St. James. The latter is erected by members of the congregation to the memory of the Rev. C. E. Hill, a late curate of this church, as a token of their esteem for him. These windows have been supplied by Messrs. Gibbs & Moore.

Chipping Norton (*Oxon.*).—A stained-glass window has just been completed and fixed in the chancel of the parish church. It consists of five lights and tracery. In the three centre lights is illustrated the Crucifixion, composed of the figure representing our Lord upon the Cross, and Mary Magdalene at the foot of the same, in the centre; and the two Marys and St. John on one side, and St. Peter and two Roman soldiers on the other; beneath these is represented the Angel at the Sepulchre announcing unto the Marys that the Lord is risen. In the two outer lights are the four Evangelists. This window has been erected by Messrs. Gibbs & Moore.

Edinburgh.—A memorial window in mosaic style of stained glass has been erected to the late Dean Ramsay in St. John's Church, Edinburgh, by members of his family. Subjects of Nehemiah rebuilding the walls of Jerusalem, "the Good Shepherd," and the miraculous draught of fishes occupy the three lights of the window. The inscription is:—"To the glory of God and in memory of Edward Bannerman Ramsay, Pastor of this Church 1827 to 1872." The whole is composed of more than 4,000 pieces of glass, each square foot containing about 60 separate pieces. It was executed by Messrs. Ballantine.

Wick.—A stained glass memorial to Major James Horne, of Stirkoke, has been placed in the west window of St. John's Episcopal Church, designed and executed by Messrs. Ballantine & Son, Edinburgh. The window is composed of three main lights, with tracery, and is illustrative of the Nativity. In the centre compartment is Mary with the infant Saviour; beside them is Joseph, and behind is the stable, over which is seen the star of Bethelehem. The side lights contain on the one hand the adoring shepherds laying their humble offerings of a young lamb and doves, while on the other are the Magi bearing their gold, frankincense, and myrrh. Underneath is the inscription:—"In memory of Major James Horne, of Stirkoke, who died there 21st Dec., 1874. Erected by his widow."

Banff.—A memorial to Mr. Alexander Morison, of Bognie and Mountblairy, has been completed by Messrs. Ballantine in the south window of St. Andrew's Episcopal Church. A large venerable figure of St. Andrew, the patron saint, resting upon his cross, occupies the principal portion of the design. The drapery of rich green over a deep-brown skirt is effectively relieved from a grey groundwork diapered with the thistle and St. Andrew's Cross alternately.

Liverpool.—Two large twin light traceried windows have been placed in St. Paul's Church, Prince's Park. One in the north aisle, illustrative of the Ascension, is inscribed, "In loving memory of Charles Cotesworth. Born August 11th, 1792. Died October 20th, 1857, by his Wife, Mary Ann Cotesworth;" and the other in the south aisle contains figures of our Lord and St. John, and is "to the memory of Kenneth Dowie, born 13th December, 1797. Died 3rd March, 1866. By his affectionate Wife, Mary Dowie." Both windows are by Messrs. Ballantine.

Newcastle.—A memorial window has been erected in the chancel of St. Andrew's Church. It comprises four compartments or bays of considerable height, separated from each other by stone mullions. The window has been executed by Messrs. Wailes. The principal subject is that of Lois and Eunice teaching Timothy the Scriptures. The side-lights have for subjects "Dorcas making and distributing clothing to the poor," and on the panels at the base of each light are Scriptural texts. The upper and lower portions of the window are filled with architectural canopy work, in niches of which are represented statuettes of the four Evangelists and four other Apostles, writers of the Epistles. At the side, on a simple band, is the inscription, "Erected by Archdeacon Waters and Thomas W. Waters, in memory of their Mother and Sister. Anno Domini, 1875."——A three-light decorated Gothic window, in stained glass, has been placed in St. Peter's Church. It was erected by Mr. W. Wailes, to the order of a firm of solicitors, in memory of Mr. Wm. Moneyhill, and is the third of a series of five which will ultimately be erected in that church representing the Twelve Apostles and three other personages of Scriptural fame. The central light represents the figure of St. John the Evangelist, the left represents St. James, and the right St. Jude. The window is about 9 ft. high, and 6 ft. wide.

Ripple.—A memorial stained-glass window has been erected in this church, presented by Mr. Joseph Hall, in memory of his late wife, the subject being the Ascension of our Lord. The window was executed by Mr. George Rogers, of Worcester.

Leicester.—A stained-glass window has been placed in the chancel of St. Peter's Church by the Freemasons belonging to the Leicestershire and Rutland lodges, as a memorial of Earl Howe. Its cost was 130*l.*, and it was executed by Messrs. Clayton & Bell, of London. The window contains in the head the emblems of the four Evangelists. The subjects treated are:—The Agony, the Delivery of the Keys to St. Peter, the Denial of Christ, and the Martyrdom of St. Peter. There are several Masonic emblems denoting the various offices held by the late Earl.

CHURCH BUILDING NEWS.

Dawlish.—The parish church has been re-opened. The church has been restored, and a new chancel built, at a cost exceeding 6,000*l.* The new pulpit is the gift of Mrs. Rashdale, widow of the late vicar; and the stained-glass windows have been presented by Mrs. Strickland, Miss Hoare, and Mrs. Ware. The architect of the restoration and chancel is Mr. J. P. St. Aubyn, and Messrs. Diment & Stevens, of Bristol, are the contractors.

Dereham.—The repair, or rather reconstruction, by the Ecclesiastical Commissioners, of the chancel of the parish church having involved a like reconstruction of the continuous roof between the chancel and the central or lantern tower, this has been recently completed by the churchwardens. The work has been performed by Mr. Hubbard, builder, of this town, under the superintendence of Mr. Phipson, architect.

Bradford. — On the 8th ult. the Bishop of Ripon laid the foundation-stone of St. Augustine's Church. When fully completed, it will accommodate 1,000 worshippers, but from want of funds, it is intended in the first instance to build only a portion, to accommodate 750 people. Messrs. Healey are the architects.

Welland.—The new church of St. James, Welland, has been consecrated. The corner-stone of the church was laid in July, 1873. The length of the church is 103 ft. There are a nave, tower, south aisle, chancel, with organ-chamber on the south side of the chancel. The style of architecture is Early English. As the edifice is built on a slope from west to east, sufficient room was found for the vestry underneath the chancel. The nave is 24 ft. wide, and the aisle 9 ft. 10 in. The tower is on the south west, and there is only one entrance, which is on the south side of the tower, and which also forms a porch. The tower is a square one, consisting of 30 ft. of masonry, and upon this comes a portion of the oak tower from the old church 34 ft. in height, the whole being surmounted by a spire 51 ft. high, making a total altitude of 115 ft., the vane being 6 ft. higher. The edifice is built in Malvern Hill stone with Bath stone dressings, the columns of the arcade having an admixture of marble. The roof is open timbered, of stained and varnished deal, and the roofing is of green slates from Whitland Abbey. At the east end there is a three-light window, besides a window on the north side of the chancel and one on the south, with credence-tables underneath. On the south side of the nave are four windows. The arcade on the north side is filled in with masonry, with temporary windows between the columns, so that at any future time the edifice can be enlarged by the masonry being taken out, and a north aisle added thereto. The chancel is provided with choir stalls, and in the nave there are 394 sittings. The east window is filled with stained glass by Mr. Hardman. The material for the erection of the church was brought to the spot by the farmers in the neighbourhood, and the cost, including a new peal of bells, will amount to nearly 4,400*l.* The architect was Mr. J. West Hugall, Oxford, and the contractors, were Messrs. Wall & Hook, of Brinscombe, near Stroud.

Earl Stonham (*Suffolk*).—The parish church has been re-opened after restoration. New roofs have been put on the chancel and on the north and south transepts, in the place of the old ones erected in the seventeenth century, these in their turn having taken the place of the original ones erected in 1450. The chancel roof has been remodelled, and perforated tracery has been added above the hammer-beams. The stalls, which originally numbered eight or ten, had been reduced to two, to make room for the unsightly pews 6 ft. high. These stalls have been restored, and placed parallel with the walls; at the angles are carved the emblems of the Evangelist,—the lion, the ox, the man, and the eagle. The fenestella and sedilia have been restored, the former containing two piscinæ. A small inverted trefoil-shaped light above the chancel wiudow has been filled in with stained glass. The floor of the chancel has been raised three steps, and a new rail of Perpendicular workmanship, with carved spandrels, has been added. Of the nave, the hammer-beam roofing needed nothing to be done, and has formed the model upon which the new roofs in the chancel and transepts have been erected. The stalls have been executed on the same plan as the original ones, of which a few remain. The windows are now glazed with cathedral glass, the mutilated stonework being renewed. There having hitherto been no vestry the space beneath the tower has been appropriated for that purpose. The church has been paved with encaustic tiles by Messrs. Maw & Co., of Broseley, Staffordshire, several of the old tiles having been discovered. The architects were Messrs. Cory & Ferguson, of Carlisle. The stonework has been carried out by Mr. W. Wells of Dickleburgh; the carving by Mr. Robert Godbold, of Harleston; and Mr. James Gibbon was the builder. The hot-water system was supplied by Messrs. Page & Girling, of Melton. The cost is about 1,900*l.*

Wakefield. — The foundation-stone of St. Catherine's Church, Bellevue, has been laid. The small school-church at this suburb having been found inadequate, it was resolved to build a new church; the Governors of the Wakefield Charities having made a gift of the site, and the parishioners liberally contributed towards the building fund. The edifice is to stand on a plot of land on the Doncaster-road side, a little nearer to Wakefield than the present school and school-house. It is to be in the Early English style of architecture, built of stone, pitchfaced with boasted dressings outside, and boasted work inside; roofs open, high-pitched, covered with boards, and slated; stalls and fittings of red deal. Size of church,—nave, 78 ft. by 25 ft; chancel, 33 ft. by 23 ft.; aisle, 78 ft. by 21 ft; organ-chamber, 20 ft. by 13 ft.; vestry, 13 ft. by 11 ft.; north porch, 10 ft. by 10 ft. The portion to be erected at present is the nave, chancel, north porch, the arcade dividing the nave and aisle, and a temporary vestry. A temporary wall will be built on the south side of the piers and

arches, to form the south side of the building for the present. A bell-turret will surmount the west gable. The present accommodation will provide for about 350,—for the entire church about 600. The contractor for the mason-work is Mr. Edward Fawcett, and for the wood-work Messrs. Craven & Lloyd, all of Wakefield. The present outlay will be about 2,800*l*. The architect is Mr. Wm. Watson, of Wakefield.

THE AMALGAMATED SOCIETY OF CARPENTERS AND JOINERS.

MR. J. D. PRIOR, general secretary of the above-named society, has issued the fifteenth annual report of the executive council, from which we extract the following:—

"We are desirous of offering every possible facility to those who desire to develop their ability as workmen, and in the hope that a stimulus may be given to those who are desirous of self-improvement, our executive council have decided to ask the members by their votes to sanction the establishment of an annual scholarship of one hundred guineas in connexion with the technological examinations instituted by the Society of Arts in conjunction with the Science and Art Department; the scholarship to be awarded to the member of our society most proficient in architectural drawing, building construction, and the practical application of scientific principles to the trade of a carpenter and joiner; subject to conditions to be approved of by the Council of the Society of Arts and the executive council of this society. It has been suggested to the council that the amount could be more advantageously divided into three or more smaller prizes, so as to create a more lively interest and closer competition. Any other suggestion which may be received will be most carefully considered. The council are not desirous of enforcing their own particular suggestion; they desire, with your consent, to devote the amount which has been named in such a way as shall, after mature deliberation, be found best calculated to develop the latent talent possessed by our members, and to increase the attractions of our society by encouraging those who desire to acquire information, and to raise themselves by their own industry and ability.

NON-FULFILMEMT OF CONTRACT.

APPLETON *v.* HARTON.

THE plaintiff in this case, in the York County Court on the 4th inst., was George Appleton, joiner, and the defendant, Henry Harton, joiner. The action was brought to recover 10*l*. 15s. 3d., being 6*l*. 5s. 3d. damages alleged by the plaintiff to have been sustained by him in consequence of a non-fulfilment of contract entered into by the defendant to make, fix, and finish, a glass house, and 4*l*. 10s. the value of certain wood, and locks, delivered to the defendant. The contract for the building of the glass house was entered into on the 18th of January last, defendant agreeing to do the work for 22*l*., the money to be paid as the work progressed. Defendant commenced his work, and on a certain date (not named) received 6*l*. 10s. on account. The following Monday or Tuesday he refused to continue his work, and the glass-house being only partly done, plaintiff had to employ some one else to finish it, and had to pay 19*l*. 15s. 3d. Adding to the latter sum the amount paid to the defendant, and deducting from it the amount of contract, produced 6*l*. 5s. 3d., whilst the remainder of the claim was made up in the value of a quantity of "wood feet" and locks, which the plaintiff stated he supplied to the defendant for the purpose of making chests of drawers.

Mr. Watson, for the defendant, objected that the specifications accompanying the agreement or contract were not stamped, and, therefore, not admissible as evidence.

The Judge ruled in Mr. Watson's favour, and, therefore, with respect to the first part of the claim, the plaintiff was nonsuited.

With reference to the second part, Mr. Watson stated that his client had not had a single demand for the work he had in his possession, nor was there any time specified as to when he should have the work completed.

This statement having been corroborated, a verdict was given for the defendant.

BUILDERS' AND ARCHITECTS' ACCOUNTS.

AT Ipswich, Mr. J. Worlledge, judge, heard the case of Alfred Trew, builder, *v.* James Butterworth, architect, which was commenced at the last county court. The action was for 49*l*. 16s. 2d. for builders' work done, and a set-off for 82*l*. 1s. 4d., for surveying and other work was claimed.

His Honour, in delivering judgment, said it was much to be regretted that a settlement was not made before, the accounts extending from 1868. The first item in the plaintiff's bill was 17*l*. 7s. 9d. for work done to defendant's property in Globe-lane. Defendant pleaded that that was a great deal too much, and called builders to support that plea, and as one of them had put the price at 9*l*. 3s. 2d., he should split the difference between the amounts, and allow 14*l*. 15s. 6d. for the work. The next item in plaintiff's bill was 1*l*. 11s. for scaffolding, &c., but as that should be charged to Lord Gwydyr, upon whose property it was used, the item must be struck out. The Judge then came back to the Willoughby Villa transaction. In the specification there was a clause making it necessary that the builder should have a written order for extra work, and as a Dutch oven, &c., came under that head a further reduction of 2*l*. 10s. must be made. Then as to the vaults, for which 15*l*. was charged, it was clear that that was an extra, and, much as he disliked such objections, that item must also come off, making a total reduction of 21*l*. 13s. 2d., leaving a balance of 28*l*. 3s. The Judge then turned his attention to Mr. Butterworth's set-off. Against the first part of that the Statute of Limitations had been pleaded, and the Judge held that the defendant could not claim in a set-off for the sand excavated, which necessitated the vaults being made, and having made large reductions in the other items he allowed 8*l*. 16s. of the set-off, and gave judgment for plaintiff, for 19*l*. 7s.

VARIORUM.

Concordia, a new weekly journal of music and the sister arts, promises the loftiest criticism "possible."——The *South London Chronicle*, speaking of the insufficiency of ordinary sink-traps, says,—

"We have a suggestion to make. We know that a strong current through a funnel may be stopped by a slight pressure over the narrow hole, and, acting upon this knowledge, we suggest that a trial be made of an iron lid fixed to one side of the metal of the sink-trap by a hinge. Such a lid, when shut down, would surely be enough to stop most of the back pressure, and would oppose an effectual barrier to the suction of the atmosphere from within doors."

——The Council of the Society of Medical Officers of Health had the Public Health Bill under their consideration, with the object of suggesting some amendments which are necessary in order to render the Bill fitted to deal with the requirements of the country. According to the *Sanitary Record*, a general feeling was expressed, that, looking at the measure in its present imperfect form the Bill had so many advantages as a consolidation of existing laws, that it would not be wise to delay its progress through the House during the present session by introducing amendments which involved much discussion. It was considered undesirable to press such amendments, provided the Government could be induced to institute a comprehensive inquiry at an early opportunity. The urgent need for such inquiry and legislation in rural districts was strongly dwelt on, and a hope expressed that the President of the Local Government Board, who has hitherto shown every willingness to consider suggestions which have been placed before him, would adopt this course, which would strengthen the hands of Government, not only by facilitating the passage of the present measure through the House, but also by preparing the way for future legislation.——Laxton's "Builder's Price Book for 1875" maintains its character, and that is saying enough. This is the 58th edition.

Miscellanea.

Queen Anne's Statue.—Mr. Davenport asked the First Commissioner of Works, in the House of Commons on the 3rd instant, whether he was aware of the dilapidated condition of Queen Anne's statue, in Queen Anne's Gate, Westminster, and whether, as the said statue appeared to possess more artistic merit than was usually to be found in our public monuments of this nature, he would consider the propriety of removing it to some position where it would be seen to greater advantage.—Lord H. Lennox: I quite agree with my hon. friend that this statue of Queen Anne possesses more merit than the average of those which adorn our public places. In 1860 it was taken over by a distinguished predecessor of mine, the right hon. gentleman the member for South Hants (Mr. Cowper-Temple), and it has been from time to time repaired by the Office of Works; but I am glad to assure my hon. friend that the condition of the statue generally is not so dilapidated as he appears to think. It is true that at the present time her Majesty is *minus* two fingers, as well as the upper part of the orb. This damage is not due to the effects of our climate, however, but to the great pleasure which street-boys appear to take in pelting this illustrious lady with stones between school-hours. I will see whether this mischief cannot be averted by instructions to the police to watch the statue during the hours when the boys are at play. Considering that the statue is a mural one, and also that its historical associations are with the neighbourhood in which it is placed, I fear I do not see my way to meeting the views of my hon. friend as to the removal of the statue to another site.

Fresh Air.—A few days ago a party of gentlemen attended at St. George's Hospital to witness the working of a new system of ventilation which has been introduced into the Ophthalmic Ward of that institution, by Mr. Martin Tobin, of Leeds, wholly comprised in the fact that a column of air introduced into a room by a vertical current will ascend to the ceiling, and then agreeably to the law of the diffusion of gases spread itself uniformly throughout the enclosed space without producing a perceptible draught in any direction. They visited first the male eye ward, which is not yet ventilated on Mr. Tobin's system, and then the female ward, which is so ventilated, the two being in other respects similar in size and in the number of occupants. The contrast was very striking. Four upright zinc tubes, semi-circular in form about 3 in. diameter, 4 ft. high, and attached to the walls, were found to be delivering rather strong vertical currents, which were traceable by a lighted taper to the top of the apartment, but not an indication of lateral draught was discernible in any part of the ward. A suggestion was made that in order to test the principle more fully, the Bow-street police-court should be ventilated on this plan; and at the instance of the Duke of Westminster a committee was formed, including the Duke of Sutherland, the Duke of Westminster, Dr. Paul, General Scott, General Cotton, and Mr. A. B. Mitford, to investigate and report upon its efficiency generally.

The Surveyor of Works at the Office of Works.—Mr. Dillwyn, in the House of Commons, asked the First Commissioner of Works, whether the Surveyor of Works was or had recently been in the employment of the Metropolitan District Railway Company, and whether the Office of Works had had dealings for land with that company. Lord H. Lennox said the first part of the hon. member's question refers to matters of which I have no official cognisance, and to that he will therefore not expect me to give a reply. With regard to the second part of the question, I can inform the hon. member that in 1868 the Government had dealings with the Metropolitan District Railway in the sale of some land to that company, but the present Surveyor of Works was not engaged in determining or suggesting the price that should be given for that land. Perhaps the hon. member will forgive me for suggesting to him that if he has any charges to bring against the Surveyor of Works (Mr. Hunt), I should be obliged to the hon. member if he would have the goodness to put down on the paper a substantive motion, which would give me, as head of the office, an opportunity of meeting those charges, and of vindicating the character of a public servant.

The Gardens on the Thames Embankment.—On Saturday last without, any formalities, Mr. W. H. Smith, M.P., on the part of the Metropolitan Board of Works, opened another large portion of ground on the northern side of the Embankment, laid out in winding walks, shrubberies, and choice flowers, and dotted over at intervals with resting-places. The garden extends from the Outram Monument, near the Hungerford Viaduct, westward, as far as the boundary line of the private grounds of Whitehall-place fronting the Thames, — in other words, far towards Westminster Bridge; thus making three public gardens, all laid out with taste, between the Temple and the Victoria Tower. The expense of fencing and laying out the latest addition to these ornamental grounds is understood to have been about 3,000*l*., and the total cost, including the purchase-money, between 6,000*l*. and 7,000*l*. At the ceremony of Saturday, there were present, among others, Colonel Hogg, M.P., Chairman of the Metropolitan Board of Works, and several of its members, Lord Henry Lennox, Sir Charles Russell, and Mr. Solater-Booth, M.P.

Stockwell-green.—The Bill promoted by the Metropolitan Board of Works for the compulsory purchase of Stockwell-green having been rejected by the Committee of the House of Commons, the only hope which the inhabitants have is that the Chancery suit now pending may result in its being declared that the green cannot be built upon.

The "Bessemer" at Calais.—A trial trip was made by the *Bessemer* saloon steamship on Saturday. Unfortunately, as the vessel was entering Calais harbour, she carried away a portion of the pier, for which the local authorities claim 70,000 francs (2,800*l*.).

Memorial of the late Rev. J. Hughes.—On the 3rd inst. there was, in Bunhill Fields Cemetery, an assemblage of ministers and others, friends of the British and Foreign Bible Society, and of the Religious Tract Society, on the occasion of uncovering a monument recently erected to the late Rev. Joseph Hughes, M.A., one of the founders of both those societies, and for many years the secretary of each. He was born in 1769, and died in 1833, and was buried in Bunhill Fields, his name being inscribed at the bottom of an upright stone, which contains the names of several other persons, but the inscription is almost illegible. The monument is close by this grave-stone. Dr. Angus read a statement of the life and career of the deceased; and various other addresses were given. The monument is an obelisk, of grey and red polished granite, and bears two inscriptions, one recording the name of the deceased and the offices he filled, and the date of his death, and on the other are the following words:—"This memorial was raised by friends who venerate his excellence and honour him as one of the founders of societies which have sent the blessed Gospel of Christ to millions abroad and at home."

Demolition of a House Unlawfully Built. A singular case was witnessed at Bagley Fields, Woodhouse-lane, Leeds, on Saturday and Monday last,—the demolition of a house whilst its owner held possession as occupant. It seems that a Mr. Robshaw had built a house in contravention of the provisions of the Leeds Local Improvement Act. He had been repeatedly remonstrated with by the borough officials, and the folly of his conduct pointed out, but he still refused to make any effort to meet the requirements of the law. The question was taken into the law courts, and the decision was adverse to Mr. Robshaw, who, however, ignored it, and on his tenant leaving himself took possession of the house, barricading doors and windows. On Saturday, however, a number of workmen, under the direction of the borough authorities, effected an entrance by removing the tiles, and demolished the house downwards, the tenant retreating from story to story until, on Monday, he was driven into the kitchen, where he held his ground for some time, until persuaded by his friends to give up the contest. The materials of the demolished building are to be sold by public auction, and the costs deducted from the proceeds,—any balance which may be left being payable to Mr. Robshaw.

The Bishop of Lincoln on "Art."—On Sunday last the Bishop of Lincoln brought to a close a series of lecture-sermons which have been in course of delivery at St. James's, Piccadilly, by eminent clergymen on "The Use and Abuse of the World." The bishop's special subject was "Art," and he spoke in enthusiastic terms of painting, architecture, and sculpture. He held to the opinion that a true artist must be a good man, and, on the contrary, if he dealt with sensuality and voluptuousness he degraded himself and demoralised society. He should like to see more facilities given to students for travelling, attending museums, and hearing such lectures as those of Sir Joshua Reynolds, when president of the Royal Academy. He thought no man could carefully inspect such buildings as Westminster Abbey, Lincoln Cathedral, and St. Paul's Cathedral, without being greatly improved. He firmly denounced the hideous and demoralising illustrations which appeared in many of our much-used school-books. All study of art should be connected with religion, for art came down from heaven to earth, and aspired from earth to heaven.

Building Societies.—The Act, which has received the Royal Assent, to repeal section 8 of the statute passed last year on building societies, has been printed. The section was, as now stated, inserted "through inadvertence," and now it is provided that from and after the passing of this Act every society, the rules of which have been certified under the Act 6 & 7 Wm. 4, cap. 32, may obtain a certificate of incorporation under the Act of 1874, and thereupon shall be deemed a society under that Act, and its rules, so far as the same are not contrary to any express provisions of that Act, continue in force until altered or rescinded as in that statute mentioned.

An Architect killed by a Cab.—Mr. T. H. Faulkner, an architect, aged seventy-eight years, of Manchester, was knocked down, the other day, by a cab, and died from the effects of the shock received.

Opening of a Temperance Hall at Norley, Cheshire.—The Norley teetotallers having felt the need of a suitable room in which to hold public and other meetings, a few months ago a suggestion was made that a temperance hall should be erected. Mr. S. Wright, offered, free of cost, a plot of land for the purpose, and the result has been the erection of a hall capable of seating over 300 persons, which was opened on the 27th ult. The building is constructed of plain and ornamental bricks, with Gothic pointed windows and door. Over the entrance is a stone bearing the inscription "Temperance Hall, 1874," and on either side is inserted in the wall a stone with verses inscribed thereon. The interior of the hall is furnished with benches with backs, and there is an elevated platform. The cost of the building was about 400*l*. Mr. James Kirkham, of Runcorn, was the contractor. The excavation was done free of charge by a number of men connected with the movement; nearly all the plastering by Mr. R. Hardman; and the painting by Mr. James Chrimes; the joinery by Messrs. Abraham Faulkner and James Gaskin; and the carting by neighbouring farmers.

A German Church.—The foundation-stone of a new Hamburger Lutheran Church, adjoining the German Hospital, Dalston, has been laid. The church is to supersede the old building formerly in Great Trinity-lane, and will be paid for out of the compensation received from the railway company. The building is in the German Gothic style, cruciform in plan, consisting of a nave without side aisles, and will be covered by an open timber roof in one span. The chancel will have an arched and boarded roof, for the better distribution of sound, while the ancient reredos from the old building will fill the whole space of the end wall. The principal front is to the Alma-road, which leads direct to the German Hospital, with which there will be direct and easy communication for the use of some of the patients. The interior will have accommodation for about 280 worshippers, and the organ from the old building will be erected above the entrance. The cost is estimated at about 10,000*l*.

Tower to the Leicester Municipal Buildings.—At the meeting of the Town Council last week, the Municipal Buildings Committee reported that the architect had, at their request, prepared a design of a proposed amended tower to the municipal buildings, which had been carefully considered by the committee, and an estimate procured from the contractor. The alteration proposed will entail an additional cost of 1,785*l*., but the committee are of opinion that the improvement which it will effect in the appearance of the building will justify the expense, and recommend that Mr. Brass's tender, at the sum above mentioned, be accepted; and the work carried out as shown by the design now submitted to the Council. The report, after some discussion, was adopted.

The Iron and Steel Institute.—The annual general meeting of the Iron and Steel Institute commenced in London on Wednesday last week, Mr. I. Lowthian Bell, presiding. The report stated that this year the autumn meeting would be held in Manchester, in September. The Bessemer medal for 1875 was presented to Dr. Siemens. Mr. W. Menelaus was installed chairman for the ensuing year, and delivered his inaugural address. The conference continued on Thursday, when Mr. I. L. Bell, the ex-president, read a paper of great interest respecting his visit to the mines and ironworks in the United States. Mr. Palmer, M.P., and Mr. Dodds, M.P., were present on the occasion. In the evening, the Institute dinner was held at Willis's Rooms.

Removal of Buildings in Tottenham-court-road.—The Marylebone Vestry, at their meeting on the 6th inst., considered a memorial from the inhabitants of Tottenham-court-road and vicinity, asking the Metropolitan Board of Works, who had forwarded a copy of the memorial to the vestry, to take the present opportunity of removing a block of buildings at the south-west corner of Tottenham-court-road. After some discussion, the memorial was referred to a special committee for consideration and report.

How Art Pays.—The Earl of Dudley has added to his art gallery Turner's picture of the Grand Canal at Venice, it having been resold to him on the day of the auction at an advance of 1,000*l*. If we remember rightly, it was knocked down for 7,000*l*.

Gas-making.—Last week some experiments were made in the gardens of Sutherland House to illustrate an apparatus for producing gas for lighting and heating purposes. Water is supplied to the bottom of a small tubular boiler surrounding a furnace. The steam thus produced is driven, together with a proportion of atmospheric air, through a second fire-box over incandescent coke, and is thus decomposed. The resulting gas is then conducted to the place where it is required for use for heating. When it is wanted far illuminating purposes it is passed first through a carburetter. The water-supply is constant. The fuel employed was charred peat.

The St. Pancras Burial Ground.—The vestry clerk reported last week to the St. Pancras Vestry that the Bill for laying out and using as an open space and place of recreation the burial-ground in St. Pancras-road, had passed the Committee of the House of Lords, with some amendments, and that the grounds were to be kept as an open space for ever, and that the parishioners were to have a perpetual easement over the land. In the event of the Midland Railway Company at any future time being authorised to purchase the land, the vestry were to be reimbursed the amount of their expenditure in laying out the grounds.

Memorial of Dr. Watts.—On the 6th inst. the foundation-stone of a memorial hall to Dr. Isaac Watts, to be erected at the rear of Above Bar, Southampton, was laid by Mr. Samuel Morley, M.P., on a spot abounding with associations of the poet. Dr. Watts was born in French-street, in this town, in 1674, the room in which it is believed he first saw the light being still in existence. The structure will be in free Italian style, and though primarily designed for increased school accommodation, will contain a hall capable of seating 1,000 persons. The whole cost will be about 6,000*l*., of which more than half has been raised.

Music for Leicester-square.—At the meeting of the Metropolitan Board of Works on the 7th inst., the Parks and Open Spaces Committee brought up a report on the application of Mr. Albert Grant, to be allowed to provide a military band to play in Leicester-square-gardens from three to five each Saturday afternoon from May to October, and recommended that it be granted as an experiment for one month, which was adopted by the Board.

Sculpture on the Victoria Embankment. At the meeting of the Metropolitan Board of Works on the 30th ult. the Works Committee submitted a report on the letter from Mr. Charles Lawes, asking the Board to afford him a site on the Victoria Embankment on which to place a model of a group of sculpture, recommending that he be informed that, considering all the circumstances, the Board felt they were unable to comply with his request. On the motion of Mr. Richardson, the report was adopted.

Addenbrooke's Hospital, Cambridge.—At a special meeting of the governors of Addenbrooke's Hospital, Cambridge, on the 3rd inst., a resolution was passed by a small majority affirming the desirability of erecting new buildings for increasing the accommodation of the hospital, at a probable cost of 3,000*l*. A committee is to report at Midsummer upon the best method of providing the required means; meanwhile no actual steps are to be taken with the building itself.

The Cave of Adullam.—Lieutenant Conder, R.E., the officer in charge of the survey of Palestine, reports the recent discovery of the city and cave of Adullam. M. Clermont Ganneau found last year the name of Ayd-el-Mieh attached to a ruin in the "Shepheiah," a low country of Judah. The spot has now been visited and thoroughly examined by the survey party, the conclusion arrived at being that it is the veritable site of Adullam. If this be agreed upon, fresh light will be thrown on the principal scenes of David's early life.

Scaffold Accident, Derby.—On the 3rd inst. about five o'clock, a serious accident occurred in Twyford-street, at the back of the Arboretum. A bricklayer named Johnson was at work on a scaffold in front of some new houses in course of erection, and a Midland engine-driver, named Smithard, went on to the planks to speak to him when the scaffolding gave way and both were precipitated with great violence to the ground, timber and bricks falling upon them. Both were badly hurt.

Remonstrance of Workmen against Middlemen. — The ironworkers throughout England have met, by their delegates, to complain of the system that has sprung up in the trade of masters employing middlemen or subcontractors, and leaving them to engage the men and pay them their wages. This is regarded as a great grievance, as it relieves the masters from all responsibility over the men, and they are generally in ignorance as to the men's treatment and wages paid.

Local Government Act.—Mr. S. J. Smith, who has been secretary to the Royal Commissioners for inquiring into the pollution of rivers in Great Britain (who have recently completed their labours), has been appointed Assistant Inspector to the Engineering Department of the Local Government Board. Mr. Smith is a civil engineer, and has had considerable practice, we understand, in works of sewering and draining, both as town surveyor and under the War Department at military stations and barracks.

Gas.—At the last meeting of the Metropolitan Board of Works, Mr. Newton, in the course of a lengthened speech, showed from the report of the Gas Light and Coke Company, and from the public transactions of that body, that instead of their not being able to pay the working expenses and what they called a "statutory dividend" of 10 per cent., if their rate were lowered from 3s. 2d. to 5s. they would be able to do all that and leave a surplus of 80,000*l.*

Annan Town-hall Competition. — Seven sets of competing plans were sent in by Scotch and English architects for the proposed new town-hall, police-court, and offices, to be built at Annan, county of Dumfries, and these have been on exhibition for the last fortnight in the old hall. After selection, a plan by a Glasgow architect, whose name has not reached us, was placed first, and one by Mr. Stephen Shaw, of Kendal, placed second in order of merit.

A New Public Garden in Bethnal-green.—At the meeting of the Bethnal-green Board of Guardians, on the 4th inst., the chairman stated that the space of ground between the East London Museum and St. John's Church, Bethnal-green, which has recently been laid out as a garden and recreation-ground for the public, would be formally opened on the 19th inst., by Lord Henry Lennox, First Commissioner of Works.

Free Library and Art Gallery for Southport.—Southport is to have a free library and one art gallery, Mr. W. Atkinson having offered the sum of 6,000*l.* for the erection of the building. That the young borough is making progress is proved by two facts reported to a recent meeting of the Town Council. One was that there had been over 600 houses built during the past year, and the other that increased lock-up accommodation had become necessary.

Hinckley.—A vestry meeting has been held at the parish church, to take into consideration the enlargement and restoration of the church, the removal of the galleries and pews and stalls, and the re-pewing or re-seating of the same, &c. Mr. Foxwell proposed a resolution which combined in it all the alterations contemplated in the church. The motion was seconded by Mr. Clarke and carried.

Insecure Scaffolding.—An accident, which might have been of a serious character, happened at Buttershaw, near Shelf. Owing to the slipping of an iron support, the scaffolding of a house now building for Mr. S. Barraclough gave way, and two men named John Sharp, Mason, and Thomas Gibson, labourer, were precipitated to the ground, followed by a barrowful of stones.

North Stanley Church, Ripon.—Certain alterations embracing the entire re-seating, new pulpit, &c., are about to be made in the Church of St. Mary, North Stanley. The cost will be defrayed by Mrs. Staveley, of Old Gleningford Hall. The church, which was erected in 1842, is remarkable for the quantity of its stained glass. The alterations will be carried out from the designs of Mr. G. G. Hoskins, architect, Darlington.

Leaving Work without Notice.—Twelve saddlers, in the employment of the Albion Steel and Wire Company, were, on the 10th inst., each fined 3*l.* and costs by the Sheffield stipendiary magistrate, for leaving their work, on April 29th, without proper notice. The company claimed 5*l.* as compensation, but it was not allowed.

St. George's Church, Barnsley.—On the 3rd inst. the corner-stone of a new chancel about to be added to St. George's Church was laid in the presence of a goodly company. The cost of the alterations is estimated at 2,000*l.*, and up to the present time 1,450*l.* have been subscribed. Messrs. Healey Brothers, of Bradford, are the architects, and Messrs. Robinson & Sons, Barnsley the contractors.

Science and Art Classes.—An examination in building construction took place at the Mechanics' Institute, Slough, on Saturday last, when three candidates presented themselves. There were present to superintend it, Major Courtney (Government Inspector), Mr. J. Rowland Williams, and Mr. E. Brown (hon. secretary).

Art-Union of London.—The county of Kent, according to Kent papers, has been more fortunate than any other county in England in the number of prizeholders this year, and they give a list of thirty-four names. Cheltenham has also been very successful, no less than ten principal prizes falling to that town.

Greenham New Church.—The contract for the erection of this church has been taken by Mr. Samuel Elliott, of West-street, and it is expected that the work will commence in about a fortnight. Mr. Woodyear, of Grafham, Guildford, is the architect.

West Ardsley School Board.—The competition for new schools in this district has been decided in favour of those submitted by Messrs. Holtom & Connon, of Dewsbury; fourteen sets of designs were submitted to the Board.

Cause and Effect. — Because two little children who were left to play by themselves in a barn in Poignant, Savoy, happened to have two or three lucifer matches in their possession, the whole village was destroyed and fifty-two people were rendered homeless.

"Eve at the Fountain." — The South Kensington Museum has just received as a gift the well-known marble statue "Eve at the Fountain," by E. H. Baily, R.A.

River Pollution.—On Wednesday evening last a paper "On River Pollution and the Impurities of the Water supplied to our Towns," by Mr. Jabez Hogg, was read at the Society of Arts.

Society for the Encouragement of the Fine Arts. — The next *conversazione* will be held on Thursday, 20th, in the Suffolk-street Galleries.

Norwich Cathedral.—The Dean and Chapter of Norwich Cathedral are about to expend between 2,000*l.* and 3,000*l.* in the restoration of the west front of that cathedral.

TENDERS

For additions and alterations to the residence of Mr. E. Clark, Sydenham-hill. Mr. Thomas Porter, architect. Quantities by Mr. C. F. Selby:—

Peto, Brothers	£3,333	0	0
Nixon & Son	3,255	0	0
Holland & Hannen	3,225	0	0
Browne & Robinson	3,186	0	0
Patrick & Son (accepted)	3,110	0	0

For enlarging the Imperial Wharf, Wharfdale-road, King's-cross. Messrs. Lander & Bedells, architects:—

Webber	£647	0	0
Moreland & Nixon	640	0	0
Ward	639	0	0
Grover	637	0	0
Williams & Son	637	0	0

(Close estimating.)

For alterations, &c., to Lower Clapton Congregational church and schools. Messrs. Chas. G. Searle & Sons, architects. Quantities supplied by Mr. C. H. Searle:—

Perry & Co.	£3,545	0	0
Brass	3,445	0	0
Newman & Mann	3,336	0	0
Browne & Robinson	3,323	0	0
Dove, Brothers	3,275	0	0
Sewell & Son	3,231	0	0
Chessum (accepted)	2,975	0	0

For erecting houses and shops on plots A and B, Holborn Viaduct, for the Holborn Viaduct Land Company, Limited. Mr. E. N. Clifton, architect:—

Plot A.

Ashby & Horner	£23,950	0	0
Conder	23,417	0	0
Smith & Co.	23,200	0	0
Ashby, Brothers	22,920	0	0
Patrick	22,750	0	0
Holland & Hannen	22,527	0	0
Peto, Brothers	22,166	0	0
Brass	21,288	0	0

Plot B.

Ashby, Brothers	31,132	0	0
Smith & Co.	30,660	0	0
Patrick	30,464	0	0
Ashby & Horner	29,870	0	0
Holland & Hannen	29,393	0	0
Conder	29,319	0	0
Peto, Brothers	29,288	0	0
Brass	27,630	0	0

For finishing houses and shops, Holborn Viaduct, for the Holborn Viaduct Land Company, Limited. Mr. E. N. Clifton, architect:—

Ashby & Horner	£17,992	0	0
Jackson & Shaw	17,846	0	0
Holland & Hannen	17,810	0	0
Macey	17,776	0	0
Brass	17,735	0	0
Peto, Brothers	17,687	0	0
Conder	17,599	0	0

For erecting houses and shops on plot E, Holborn Viaduct, for the Holborn Viaduct Land Company, Limited. Mr. E. N. Clifton, architect:—

Patrick	£27,800	0	0
Holland & Hannen	27,435	0	0
Conder	26,649	0	0
Brass	26,469	0	0
Macey	25,879	0	0
Peto, Brothers	25,838	0	0

For works in Vauxhall Bridge-road and Carlisle-place, Westminster, for Mr. Carlo Brunetti. Mr. A. Bridgman, architect:—

Crossley	£36,970	0	0
Brass	35,683	0	0
Cooke & Green	35,495	0	0
Perry	34,494	0	0
Macey	34,400	0	0
Niblett	34,000	0	0
Peto, Brothers	33,736	0	0
Bracher & Sons	28,975	0	0

For fittings National Safe Deposit Company's premises, Queen Victoria-street. Mr. J. Whichcord, architect:—

	Mahogany.	Wainscot.
Sage	£4,170	£4,442
Sommerville & Smith	3,866	4,050
Drew	2,706	2,987
Peto, Brothers	2,784	2,911

For additions and alterations to house, Sydenham-hill for Mr. Edward Clarke. Mr. T. Porter, architect:—

Peto, Brothers	£3,332	0	0
Nixon & Sons	3,255	0	0
Holland & Hannen	3,225	0	0
Browne & Robinson	3,186	0	0
Patrick	3,110	0	0

For alterations and repairs to warehouse, No. 15, Great Garden-street, for Messrs. A. Allan & Son. Mr. H. Ough, architect:—

		Extra for asphalte floor.	
Palmer	£268	0 0	£30 0 0
Martin	205	0 0	20 0 0

For erecting new farm buildings at Compton Fieldplace, near Godalming, Surrey, for Mr. John King. Messrs. John Giles & Gough, architects. Quantities by Mr. C. H. Goode:—

Nye	£1,434	0	0
Goddard & Sons	1,301	0	0
Pink	1,274	0	0
Moon	1,259	0	0
Mitchell	1,225	0	0

Additions to chemical works, Millwall, London, for Messrs. David Stour & Sons. Messrs. J. Hamilton & J. Fogerty, architects:—

Foster	£2,790	0	0
Ennor (accepted)	2,669	13	0

For St. Stephen's Church, Ealing. Mr. John Ashdown architect. Quantities supplied by Mr. J. S. Lee:—

McLachlan & Son	£6,180	0	0
Jackson & Shaw	6,005	0	0
Dove, Brothers	5,875	0	0
Adamson	5,719	0	0
Nye (accepted)	5,274	0	0

For factory at Kettering, Northants. Mr. R. W. Johnson, architect:—

Margetts & Manby	£2,661	0	0
Bellamy	2,538	0	0
Henson	2,422	0	0
Shurmur	2,389	0	0
Barlow	2,320	0	0
Ironwork.			
Mather	£204	0	0
Wright	194	4	0
Mobbs	192	0	0
Salmon	183	16	0
Richards & Co.	181	10	0

For the erection of the Grand Hotel, Eastbourne, for Mr. William Earp. Mr. R. K. Blessley, architect:—

Chessman & Co.	£26,200	0	0
Chappell & Co.	23,874	0	0
Stenning & Co.	23,242	0	0
Bruton & Co.	22,780	0	0
Howell & Son	21,674	0	0
Peerless	20,555	0	0

For Congregational Church at Hatfield Heath, Essex. Mr. T. Lewis Banks, architect. Quantities supplied by Mr. A. J. Gate:—

	With Bath stone dressings.	With brick dressings.	Allow for old materials.
Glasscock	£3,395	£3,354	£40
Burton	3,350	3,300	30
Toms	3,272	3,222	20
Cornwell*	3,000	2,955	45
Gibbons	2,997	2,963	20

* Accepted for Bath stone dressings.

For the erection of a shed at Tipton, for Mr. Edmund Hodgkinson. Messrs. Round & Beddoe, architects:—

Stockton & Son	£159	0	0
Nicklin	140	0	0
Adams	135	0	0
Grosvenor	130	0	0
Trauter (accepted)	115	17	0
Ditto (extra width)	36	0	0

For road-making and drainage works, for the British Land Company, Limited, on their estate at West Ham, Essex:—

Dunmore	£3,361 0 0
Thompson & Son	2,944 0 0
Johnson	2,900 0 0
Keeble	2,691 0 0
Harris	2,460 0 0
Clarke	2,400 0 0
Bloomfield	2,380 0 0
Pizzey	2,235 10 0
Jackson	2,225 0 0
Marney	2,156 14 0
Richardson (accepted)	2,125 0 0

For the erection of a warehouse at London Fields, Hackney. Mr. E. C. Homer, architect:—

High	£1,187 0 0
Kirk & Randall	1,165 0 0
Jarvis & Sons	1,156 0 0
Watts	1,154 0 0
Tibbitt	1,112 0 0
Williamson	1,095 0 0
Bangs & Co. (accepted)	1,090 0 0

For enlargement of the chancel of St. Paul's Church, Carlisle, for the Rev. F. Richardson. Messrs. E. Habershon & Brock, architects:—

Armstrong (accepted)	£430 0 0

For new church at Rowfant, Sussex, for Lady Lampson. Messrs. E. Habershon & Brock, architects. Quantities supplied:—

Howe & White	£3,370 16 0
Newman & Mann	3,100 0 0
Rowland	2,884 0 0
Steer	2,755 0 0
Shearburn	2,742 0 0

For the new vagrants' wards at the Hackney Union Workhouse. Messrs. Lee & Smith, architects. Quantities supplied by Messrs. Linsdell & Gifford:—

Bangs	£4,149 0 0
High	4,268 0 0
Thompson	4,246 0 0
Waldram	4,197 0 0
Shurmur	4,140 0 0
Smith	4,103 0 0
Forrest	3,787 0 0

For additions to Messrs. J. Lovibond & Son's Brewery, at Greenwich. Mr. J. Riddle, architect:—

Newman & Mann (accepted)	£3,220 0 0

For alterations to premises, Hoxton, for the Tower Hamlets Rifle Brigade. Mr. B. Fletcher, architect:—

Newman & Mann	£750 0 0
Curtis	692 0 0
Palmer	645 0 0
Kenor	638 0 0
Brevitter	547 0 0

For alterations at Charlton House, Charlton, Surrey. Mr. G. Cuthbert, architect. Quantities not supplied:—

	House.	Bay window.
Newman & Mann	£765	£56
Faulkner	746	50

For taking down and rebuilding the premises, Nos. 92 and 93, Leadenhall-street, for Mr. W. Connolly. Mr. R. P. Notley, architect. Quantities supplied by Messrs. Linsdill & Gifford:—

McLachlan	£2,867 0 0
Oliver	2,439 0 0
Rudkin	2,438 0 0
Faulkner	2,375 0 0
Greenwood & Sons	2,349 0 0
Hart	2,344 0 0
Kelly	2,332 0 0
Scrivener & White	2,262 0 0
Killby	2,237 0 0
Newman & Mann	2,220 0 0
Browne & Robinson	2,160 0 0

For works, No. 88, Borough, for Messrs. C. Woollotton & Co. Mr. R. J. T'Anson, architect. Quantities not supplied:—

Newman & Mann	£680 0 0
Rider & Son	618 0 0

For new schools and offices at Thomas-street, Limehouse, for the School Board for London. Mr. E. R. Robson, architect. Quantities supplied by Mr. W. H. Barber:—

Thompson	£8,780 0 0
Newman & Mann	8,665 0 0
Wood	8,547 0 0
Killby	8,410 0 0
Hill, Higgs, & Hill	8,424 0 0
Atherton & Latta	8,375 0 0
Sheffield	7,947 0 0

For offices at Railway-place, Fenchurch-street. Mr. Albert Bridgman, architect. Quantities supplied by Mr. James Barnett:—

Lacey	£9,400 0 0
Newman & Mann	8,630 0 0
Killby	8,583 0 0
Crossley	8,395 0 0
Cooke & Green	8,167 0 0
Niblett & Son	8,160 0 0
Sharpington & Cole	7,997 0 0
High	7,982 0 0
Scrivener & White	7,882 0 0
Carter	7,840 0 0
Tongue	7,700 0 0
Elkington	6,749 0 0
Bracher & Son	6,590 0 0

For additions and sub-basement at Gordon House, Highgate. Messrs. Tress & Innes, architects. Quantities not supplied:—

Newman & Mann	£626 0 0
Sewell & Sons	394 0 0

For alterations and additions to shop, 26, Hampstead-road, for Mr. J. Rickards. Mr. W. Croucher, architect:—

Blandford & Co.	£135 0 0
Langsford (accepted)	110 0 0

For warehouse at Bromley, Middlesex. Mr. Herbert Winstanley, architect. Quantities supplied:—

Thomas	£7,461 0 0
Webster	7,265 0 0
Thompson	7,174 0 0
Perry & Co.	7,007 0 0
Patman & Fotheringham	6,455 0 0
Hill, Higgs, & Hill	6,430 0 0
Bangs & Co. (accepted)	6,145 0 0

For school, Mantua-street, Lambeth, for the London School Board. Mr. E. R. Robson, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

Tverman	£12,195 11 0
Williams & Son	12,330 0 0
Ennor	12,243 0 0
Cooper	11,945 0 0
Kirk & Randall	11,854 0 0
Wall, Brothers	11,841 0 0
Hobson	11,817 0 0
Sheffield	11,803 0 0
Nightingale	11,793 0 0
Hill, Higgs, & Hill	11,784 0 0

For alterations and additions, Mill Lodge, Barnes, for Mr. S. W. Keene. Mr. Edgar Leuchars, architect. Quantities supplied:—

		Additional for fittings.
Nixon & Son	£1,688	£59 0 0
Allen	1,586	51 12 6
Macey	1,520	51 0 0
Adamson	1,483	54 0 0
Hobson	1,436	52 0 0

For erecting eight houses and shops, Camden-town, allowing for old materials. Mr. H. H. Bridgman, architect. Quantities by Mr. Walter Barnett:—

	With basement.	Without basement.
Crockett	£6,125	5,915
Willson, Brothers	6,074	5,164
Manley & Rogers	5,900	5,310
Elkington	5,820	5,539
Scrivener & White	5,681	5,219
Kelly, Brothers	5,440	4,983
Attchison & Walker	5,330	4,930
Bracher & Son	5,262	4,938

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What the Local Government Board Inspectors Say as to the Working of the Public Health Act of 1872.

RETURN has just been printed to an order of the House of Commons, dated August 5th, 1874, for copy of reports of Local Government Board inspectors, on the working of the Public Health Act, 1872. As the name of the late President of the Local Government Board on the back of the return, we are justified in ...nsidering it to have been moved for as the ...st method of defending, before the House and ...e country, both the policy which directed the ...aming of the Bill, and the administrative vigour ...d capacity with which the machinery, so ...eated, was guided, and set in motion. The ...der for the return was dated, as we have seen, ... the month of August last. The ten reports ...rinted date from April 27th, 1874, for the ...rliest, to June 23rd, 1874, for the latest. The ...der of the House for printing them dates on ...e 7th of April, 1875. The circular letter of ...r. Fleming, the secretary to the Local Govern...ent Board, calling on the inspectors for reports, ... referred to as written on April 22nd, 1874.

As regards the outcome of the reports in ...uestion there is one point, and one alone, on ...hich the reporters are unanimous. Differing in ...ne, from an optimist admiration of the wisdom ... the measure, to blunt indication of its utter ...efficiency, these documents agree in exhibiting ...e most complete want of system, purpose, or ...ganisation that it is possible to conceive. ...fter the passing of the Public Health Bill of ...72 certain "conferences" took place between ...e Board and their inspectors, in which the ...tter "were especially warned against hasty ...tion. They were to consider the circumstances ... each district and locality, and advise the ...thorities in making the appointments required ... the Act to secure the services of efficient ...ficers, from whatever source they could be ...tained, but they received no instructions ...thorising them in any way to force the hand ... the local authorities, or to control or fetter ...em in the exercise of the discretionary powers ...nferred by the Act." "These verbal in...uctions were followed by the circular letter ... the 17th August, 1872, addressed to the ...spectors, and conceived in the same spirit. ...o other specific instructions with regard to the carrying out of the Act have been issued to the inspectors by the Board."

The subject is too serious for a joke. But the above simple statement, in the language of an inspector who speaks of the "credit" of different courses of action under the Act prevailing in different districts, or at different times in the same district, as due to the policy embodied by the legislation in the Act itself, can only be compared to the celebrated advice to persons about to marry, — "Don't." To encourage "the experimental policy," "a policy of local self-government," is considered by the inspector in question to be the gist of the Act. To wait, to do nothing but advise people to procure efficient officers "from whatever source they could be obtained," and carefully to avoid any useful interference with local inaction, is the duty which, on the face of this return, the Local Government Board prescribed to officers from whom the country fondly expected something in the way of sanitary reform. Having been officially ordered, on the 17th of August, 1872, not to be in a hurry, and having then been left without "other specific instructions," and undisturbed by a single question as to the result of their "consideration of the circumstances of each district," so long as the administration which called them into being as sanitary authorities continued in existence, it certainly seems to be much to the credit of the inspectors that they took any trouble whatever in the matter. Certainly nothing that has appeared in our own pages, from the first welcome which we gave to the proposed measure of 1872, down to the present time, has equalled the scathing satire of the present reports.

The return now before us follows the prescriptive usage of the Local Government Board in giving to the public no information that it is possible to withhold. Thus the "Contents" simply begin "No. 2 District. Report of J. J. Henley, esq.," and so on to No. 12 district; Nos. 1 and 5 being omitted. There is no hint as to how many districts exist, or as to the duties or position of the inspectors; none as to the limits of the districts. Nor is the letter calling on the inspectors for the reports published. One inspector, Mr. A. Doyle, has transmitted a report from "Mr. Dyke, the very able officer of health of Merthyr Tydfil, accompanied by a good sketch map, showing the area of a proposed divisional district," which serves more distinctly than any words we can frame, to make conspicuous the absence of any such practical and necessary information in ninety-nine other cases out of the hundred. But in order that the sole bit of professional light shed on the waste of rural and urban district-making should not be too highly valued, it is prefaced by the remark that 'to those who attach importance to the physical, peculiarities of a district . . . . the proposed combination would appear to be recommended by unusual advantages." Men who have given years of anxious thought to the subject of sanitary reform may well be pardoned expressions of annoyance, irritation, and dismay at expressions such as these. The idea that, at the present time of day, a Government inspector should write to his chief about "attaching importance to the physical peculiarities of a district," as if it was a trifling matter of taste; a mere shade of opinion, which one man might, very plausibly, entertain; and another, no less plausibly, disapprove! Is not this enough to dishearten the most courageous? We call especial attention to the fact that Mr. Dyke's able report, which is a practical exemplar of that method of approaching the subject which has all along been advocated in our columns, was sent to the Local Government Board Inspector on the 22nd of October, 1872. We only wonder that the inspector who had the courage to forward, even under the deprecating preface that we have quoted, any document bearing the stamp of professional knowledge of the subject, was not summarily rebuked or dismissed. At all events, a suggestion that might have been of valuable service to the whole country has been shelved for a couple of years.

Passing to the results reported from the various districts, we are unable to present them with the brevity that might be desired, from the fact that each of the ten inspectors has been left to take his own course as to the information he thought fit to supply. The limits of No. 2 district, the first from which a report is published, are nowhere stated in the Blue-book before us. "Four Union counties," it is casually mentioned, are wholly comprised within it. In three of these, viz., Warwickshire, Oxfordshire, and Berkshire (to which must be added a large part of Surrey), Mr. Henley reports that, with the exception of a few isolated spots, they are under the supervision of well-qualified medical officers: the number of these, for the entire area, being six. Forty-five of the authorities appointed under the Act of 1872 (twenty-seven rural, and eighteen urban), appear to contribute to the support of these six medical officers. The latter can hardly complain of too restricted a field of operations. A total number of 114 authorities, fifty-six being rural, and fifty-eight urban, in this No. 2 district, have been thus tabulated in the report:—Forty-eight have entered into combinations for the appointment of a specially qualified medical officer, who shall devote his whole time to sanitary work, and shall not practise privately. Seven have joined with one other authority; forty-three have appointed a single officer independently for the respective districts; seven have appointed the district medical officers, each in his own district; nine have made no appointments. The seven districts last cited have made thirty distinct individual appointments under the Act. Had all the unions in the district acted on the same principle, the number of individuals appointed would have been about 260.

The number of Inspectors of Nuisances through No. 2 district, prior to the passing of the Act of 1872, was 117, of whom 81 were relieving officers. Under that Act the Rural Sanitary Authorities have appointed two inspectors jointly with the adjacent Urban Authorities, at salaries of 100*l.* and 120*l.* per annum. Thirty-

six unions have each appointed one inspector, at an average salary of nearly 100*l.* per annum; and twelve unions have made appointments in aid of which no contribution is sought from the Local Government Board.

Mr. Henley remarks, "It is abundantly clear that the bulk of the sanitary work needed in the country is a question for builders and scavengers." Thus the function of the sanitary engineer is entirely ignored so far as No. 2 district is concerned.

The report of the inspector of No. 3 district is disposed of in a page and a quarter. Fifty-six rural sanitary authorities in this district have appointed inspectors of nuisances, and all, with the exception of St. Alban's and Oakham, officers of health. Out of fifty-five urban authorities, fifty have appointed medical officers and inspectors of nuisances. "There are also three port sanitary authorities," as to whom nothing further is said. Mr. Peel echoes the language of the Local Government Board with much fidelity. He finds that "districts vary so much in population, area, and local circumstances," that "no uniform scheme could have been successfully acted upon." Thus it is intelligible that he should add,—"It seems to me premature to express any opinion on the working of the Act." No hint that any engineering advice might be of use is given in this report.

Mr. Farnall's report, for No. 4 district, is systematic and business-like. He confines himself to the statement of facts, and adopts a definite form, which might be advantageously followed by his brother inspectors. We are thus able to give the results of the Act, in this district, in few words. In the counties of Kent, Norfolk, Suffolk, Cambridge, and Essex, 126 sanitary authorities, with only seven exceptions, have appointed medical officers of health and inspectors of nuisances. The thorough character of Mr. Farnall's inspection is vouched by his calling attention to the appointment, in two districts, of relieving officers as inspectors of nuisances. 18,859 nuisances have been reported to the several sanitary authorities, of which 17,188 have been removed by those authorities, leaving only 8·8 per cent. pending at the date of the report.

Mr. Wodehouse's report, for No. 6 district, enters with considerable detail into his correspondence with the sanitary authorities. The results of his two years' experience are less easy to take in at a glance than is the case under the methodical report of Mr. Farnall. Thirteen Cornish unions have appointed medical officers, but have generally resisted the introduction of inspectors of nuisances. Five Dorsetshire unions, out of six, have appointed medical officers for one year, and also inspectors of nuisances, while in the sixth the relieving officers are said to act in the latter capacity. Nineteen out of twenty Devonshire unions have medical officers, five of whom are debarred from private practice. In only one of these unions is there no inspector of nuisances. Fourteen unions in Somersetshire have made medical appointments varying from one year to five years in duration,—and the inspection of nuisances is also provided for. In the Bristol and Clifton unions, in Gloucestershire, a medical officer has been appointed for a year, and inspectors of nuisances are also provided.

Mr. Wodehouse considers that the appointment of separate and distinct officers as inspectors of nuisances is a great step in advance, as bringing to the notice of the guardians matters of which they had no previous suspicion. He admits that he has had very small success in inducing the authorities to follow the advice which he gave with respect to the medical appointments. He gives no account of nuisances abated; nor does he seem to have any more lofty idea of sanitary reform than that expressed in the other reports, to the effect that it is a mere matter of building and scavenging.

Mr. Corbett's report, for No. 7 district, may be described as going a step further into detail than that of Mr. Farnall. It is a valuable official document; less apt for the immediate use of the analyst than the former, but fuller in its details of information. Copies of correspondence and reports of meetings are appended to the report, and even the names of the medical officers and inspectors of nuisances are given. If compared to engineering reports, that of Mr. Corbett is a good model for that of a resident engineer, that of Mr. Farnall for that of an engineer-in-chief. Thus as regards the ultimate presentation of results to the public, while it is possible, by the collation of some six paragraphs, and the performance of a few slight operations in addition, to arrive at such an abstract as we have already laid before our readers in the former instance, it would consume two or three hours, at least, to extract the same kind of summary from the twenty-five pages supplied by Mr. Corbett. Nor, after all, is the result worth the labour. It may be simply indicated in the words of the reporter. "It would be tedious to relate all the difficulties and disappointments I have had to contend with in almost every part of my district before attaining even the small modicum of success in this direction which I have hitherto been enabled to accomplish."

In No. 8 district, Mr. Doyle reports,—"The proposal to form sanitary districts, to which the Board attaches so much importance, can never be carried into effect in this part of the country without compulsory process." The Appendix to Mr. Doyle's report contains that enlightened and intelligent report from Mr. Dyke, illustrated by a sketch map, to which we have before referred. It was sent in to the President of the Local Government Board in January, 1873.

The report of Mr. F. D. Longe, for No. 9 district, is less discursive and conversational than that of some of the other inspectors; although from the absence of summary or of tabulation it demands a considerable degree of labour on the part of a statistician to arrive at results of remarkably little value, a fact of which we before complained. We content ourselves with citing the remark,—"My information as to the actual work done by the several authorities in my district is not sufficient to enable me to express any certain judgment on the efficiency of their administration, or of their officers." This sentence, in fact, may be taken, with much propriety, as an abstract of the 108 pages which make up the whole blue book before us.

In No. 10 district, Mr. Basil Cane "presumes it is not necessary to set forth in minute detail the actual appointments that have been made, since all the particulars have from time to time been reported to the Board." The contrast presented by this very easy-going view to the elaborate details contributed in districts Nos. 4 and 7, affords a pregnant comment on the absence of systematic direction, which has allowed each inspector to take his own course, however widely it might diverge from that of each of his brother officers. Mr. Cane stands alone in assuring the Board of his "conviction that enormous good has already been done,"—a statement in which we should heartily rejoice, if we had any other evidence than the expression of the conviction in question.

Mr. Hedley, in No. 11 district, "has not as yet had sufficient experience to justify his expressing any decided opinion as to whether 'parochial committees' will be formed to work successfully or not." He has "suggested other combinations of authorities; but in no case was able to bring such an arrangement to a successful issue." He breaks ground untouched by the preceding inspectors, mentioning several points on which he is "in doubt as to the actual state of the law, and on which he should be glad to have the direction of the Board." These points relate to the regulations binding on rural sanitary authorities, their power to order sanitary requisites for old houses, and the classification of the maintenance, repair, lengthening, of an existing sewer" as a special or a general expense. In conclusion, Mr. Hedley expresses his opinion that the returns to be obtained under a circular of March, 1874, will be of very little value, as referring only to paupers, and not likely to be accurate even as regards paupers. The general dislocation of the entire field of inspection is more graphically illustrated by the report of Mr. Hedley than by either of the others, taken by itself. A clear and concise table of appointments, defective only in the absence of summary, is appended to Mr. Hedley's report.

In our copy of the reports in question, pages 106 and 107 are, by some error in printing, blank. We are, therefore, unable to give the outcome of the experience of the forty-four unions, covering 3,401,762 acres, which constitute No. 12 district, on which Mr. B. Fleming reports. He remarks that in comparatively few instances urban authorities have combined for satisfactory appointments. Rural sanitary authorities are, for the most part, more willing to make appointments subject to the Board's regulations. No serious opposition to the Act has arisen in Mr. Fleming's district; although he adds that "it would be too much to hope that all the authorities are working zealously and loyally for the well-being of their dis tricts,"—an apprehension by no means to b confined to district No. 12.

If any person who takes an intelligent inte rest in sanitary reform can entertain the idea after the perusal of these reports, that the Ac of 1872 is very different from a mockery and delusion, his views of cause and effect must b different from our own. There is one point however, which does not come to the surfac on these reports (at least otherwise than in negative form) that is far more vital than a all the indications of want of plan, want o purpose, want of system, and want of organisa tion that crop out between every paragrap We are not criticising, let it be remembere the individual reports. It may well be the cas that each of them is the work of an able an educated man, anxious fully to do his duty t his country,—but left altogether at sea so far a instructions as to that duty are concerned. Gre research, patience, and skill are manifested i several of the reports; although these qualitie as being unguided by any central principle, a to a great extent misdirected. It would hav been more instructive to adopt the worst for of report out of the ten as the model for al than to invite this perplexing variation method.

But what is cardinal in the whole matter i this. The ten inspectors all appear to consid that the sanitary officer required is merely scavenger. A doctor to indicate disease. A inspector of nuisance, at 30*s.* or 40*s.* a week, detect nuisances, and a scavenger to cart the away! "Make a drain," is the advice. "Whe is it to go?" inquires the local authorit "Wherever you like," is the tacit reply. "Som where or other—make the drain from the hous and the outlet will take care of itself."

Now, while it is true that the polluting an infecting power of the population of the countr is as yet but small if distributed per acre, it very large when concentrated in any given di trict, ultimately to be drained by a river outfa On the one hand we are protesting, very pr perly, against the wasteful and wicked pollutio of rivers. On the other hand, we are calling all urban authorities to drain their district While we insist on these two objects, each exce lent in itself, without even contemplating th third part of the problem—the operations to b interposed between taking the sewage from th towns, and conveying, or not conveying it, in the river,—we are really using two Acts of Pa liament in order to enforce the construction enormous cesspools all over the country. Fro this view of the case there is no escape. Mak the drain as long as you like, but stop it up the end, and you are doing more harm than goo by the concentration of venom.

It is on this view that we have always urge that it is necessary, in the first instance, to ha the counsel and aid of the engineer. We cann recall a single word in the Blue Book, whic intimates that either Inspector or Local Gover ment Board has ever thought that any eng neering questions were involved in sanita reform. So long as this is the case it will be a open question whether much of our outlay is n doing more harm than good.

STILL AMONGST THE ACADEMY PICTURES.

MR. FAED in his illustration of Southey' ballad (147) has certainly forgotten that th battle of Blenheim was not fought in England his "Old Caspar" and the children may b Engliab, or Scotch possibly; they are certainl not Dutch. Of Sir John Gilbert's works "Do Quixote" (540) is very unequal; the knight very good in his attitude and expression of hero elevation of sentiment as he finds himself waite upon by the bevy of fair ladies before him; bu the spectator rather needs the Don's pre-posse sion of spirit to enable him to find any interes in the ladies. The portrait, "Mrs. Gilbert" (365 is a kind of "harmony in black and grey," and well worth attention as an interesting work in far more delicate style of execution than is usu with the artist. Close to this Mr. A. Moore represented by three very little works, sligh enough; two of which at least, however, show hi best qualities, "A Palm Fan" and "Pansies (353-7); the delicate colour harmony of th former is delightful, and the execution of th latter bright and sparkling to a degree; the title are of course merely distinguishing names fo ideal figure studies. If we pass over lightly th

works of Mr. Cope, which are important as well in subject as in position, it is from no unkind feeling. There is brilliant if rather hard colour in "Anne Page and Slender" (56), and humour, though not of the most delicate order, in the figure of Slender. Mr. Cope is the best,—a good deal the best,—among certain artists whose works are practically an assertion that English painting has stood still for the last twenty years; that all the new and wider aims and desires which the modern spirit has called up are an illusion; that what satisfied us then should satisfy us now. That is simply impossible. Mr. Cope's merits remain what they were; it is the point of view that has changed.

We mentioned Mr. Sant's trio-portrait under the title of "The Early Post" (191). The three young ladies are reading and hearing the letters before sitting down to breakfast; the two younger in white, the eldest in a slightly tinted buff dress which is of use in blending the white dresses of the other two with the rest of the picture. This latter figure is in a rather too stiff and upright attitude; the one seated on the right, leaning forward with slightly abstracted air, is about as charming a figure as Mr. Sant has ever given us: there is what may be called a moral beauty in the whole, too, as illustrating that most pleasing type of girlhood which, in spite of "girls of the period" on the one hand and "women's rights" on the other, is still we trust to be found in many an English home. Of the portraits by Mr. Millais and Mr. Leighton we have already spoken. Mr. Watts is hardly in "first force" this year in portraits; the "Master of the Manchester Grammar School" (193) is a good specimen of his powerful straightforward treatment of a matter-of-fact subject; it has a very "old master" look about it. The portrait of the late Marquis of Lothian, also (420), has the same sort of excellence; the shaggy, unkempt look of the head with its straggling hair and beard, is quite un-English; it may be "Highland," perhaps. As to Mr. Watts's large work, "dedicated to all the churches" (584), we have not yet been able to find out what it means, and every one else seems to be in the same difficulty. Of other portraits of the year there can be no question that those of Mr. Ouless claim the next place. His likeness of his brother artist, Mr. Marks (29), is an excellent specimen of unpretentious yet powerful portrait-painting; easy and effective in attitude, and painted with that happy compromise of manner which suffices to give all the necessary realism to dress and accessories without losing breadth and freedom of touch. The head of Mr. Darwin (155) by the same artist, is one of the finest heads in the galleries, and certainly we should say the most striking work of this class which the artist has produced, and which will thoroughly confirm his rising reputation as a high-class portrait-painter. Mr. Lehmann's "Robert Browning" (90) is very hard, and, as a painting, is quite inferior to the works just named; but the attitude is fine and characteristic, and the alert upward glance of the countenance very well given. The big "Testimonial Hunt-picture," by Mr. Wells, "A November Morning at Birdsall House" (112), with portraits of Lord and Lady ———, and the Hons. This and That, is a sort of thing one cannot see here with equanimity. Not that the picture is entirely bad of its kind—at least, we have seen worse,—but why hang it at the Academy, to cover yards of wall-space with what is (as the advertisements say) "of no value to any one but the owner"? Mr. Archer's name is appended to a portrait of Professor Blackie, enveloped in a cloak, and masterically posed for the occasion with his foot upon his native heath. A more theatrical portrait has seldom been seen, but the artist is possibly not the person to "bear the wyte" of that. His portrait of "Mrs. Boughton" (194), a quarter length, is a very good painting of a very interesting and expressive head; and there is a good deal of character and individuality in the portrait of "Mr. Barton Scobell" (213). Mr. Richardson sends two portraits, remarkably original in treatment (70 and 559), in which his scrambling style of manipulation is much less objectionable than in the case of smaller figures, and, in fact, contributes a good deal to the effect of these two works, which are quite out of the beaten track of portraiture. Mr. Pettie's "Portrait in the Costume of the Sixteenth Century" (318), a half-length of a man in a dark-velvet dress, with a rather overstrong light on the face, should be looked at; as also a portrait (418) by Signor Perugini,—a head of a lady, in a rather antique style, and very agreeable in colour.

The finest landscapes this year are sea-pieces, which is perhaps a rather Irish way of putting it; but there can be no doubt that the most powerful and successful work of this class is Mr. Brett's "Spires and Steeples of the Channel Islands,"—a repetition of, or rather improvement upon, the "Scilly Isles" of last year; an expanse of "wrinkled sea," calm, bright, and sparkling under a summer sky flecked with light clouds, the half-reflections of which serve to aid the perspective of the surface, which, seen from a height and with a high horizon, is at last lost in a hot hazy distance where sky and sea blend. The rocks in the foreground and middle distance (the "spires and steeples") are painted with wonderful force and solidity, and the whole effect is so luminous that on a bright day it seems full of positive light rather than pigments. Astonishing as it is, however, this is a type of art which has its limitations, and we do not think the artist can go further with it, and should rather prefer to see him turning his attention to another phase of marine effect next year. Mr. H. Moore, who paints the movement of sea-water this year, as Mr. Brett paints its lights and reflections, has two works in his best style, and which indeed he has seldom equalled. "Outside the Harbour" (1176) the coaster "Fortune" has been stranded and abandoned, and rolls about half aground amid the breakers, one of which comes down in a seething mass of foam on the right; the movement of the water which swirls off over the shoal to the left is given in a masterly manner. But the quieter and smaller work, "Summer Moonlight in the Downs" (429), though less striking at first sight, is perhaps the finer of the two; the soft sway and curve of the nearly calm sea under the moonlight, in the foreground, is given with a perfection which implies the closest study; one can almost see the water rise and fall. After these, perhaps one of the most successful landscapes of the year is the tumultuous scene painted by Mr. Macwhirter (503), with the line,—

"Land of the mountain and the flood,"

by way of title; this, which represents an autumn torrent in Scotland in full roar, with a wet distance of rain-enveloped hills, is a very fine free painting, conveying thoroughly the feeling of the scene; it has been effectively hung to balance Mr. Brett's picture; the two make a fine contrast, though we will not say the balance is even. Mr. P. Graham shows a little too much of picture-making in his "Crossing the Moor" (81) with its foreground of rough cattle; there is fine work in his best manner in the distant effect, but we incline to prefer "Twilight" (566), a moor with a horseman in the foreground endeavouring to extract meaning from a very dilapidated finger-post; the ragged driving clouds, their lower surfaces touched with a heavy dull red from the last ray of the sun, give the prevailing sentiment to the picture. Mr. Poole's "Vision of Ezekiel" (129) we must consider a mistake; it is neither vision nor landscape, but an inextricable entanglement of both. In "the Entrance to the Cave of Mammon" (261: see the *Faerie Queene*) his genius for weird and romantic landscape is shown with characteristic power; a deep rockwalled lake is the scene, with a sitting figure in the foreground; the whole in that mysteriously toned half-light in which the artist excels. Then we come to some landscapes to which the smell of paint still clings, more or less. Mr. Smart, in his large scene called "The Gloom of Glen Ogle" (517) has made great efforts to escape from paint, but has scarcely succeeded; it is a fine study of a portentously gloomy scene, however. Mr. Vicat Cole is one of those artists who prefer paint deliberately; he lets you see "how it is done"; his "Richmond Hill" (237) as a portrait landscape is most successful; it is, as Thorncliff Osbaldistone would have phrased it, "woundily like" the place, and effective at the same time. His "Loch Scavaig" (513) is one of those works before which the unthinking public invariably exclaim "Oh! this *is* fine!" but the more cautious judgment of "the critic" will not be so readily floored by it. We were quite forgetting, by the way, Mr. Alfred Hunt, who says "Summer Days for Me" (1,199), in a large view of a pasture half shadowed by a purple hill, with the bed of a brook in the foreground; a respectful consideration of its effect and manner of treatment suggests, however, the conclusion that Providence intended Mr. Hunt for what he is,—a great water-colour artist; his oil-paintings tend too much to the effect of water-colour on a large scale; and though never without remarkable qualities, do not show him at his best. We notice a good landscape by Mr. Macbeth, the rather as we have had frequent occasion to quarrel with him in these columns; but "Ca' the Yowes to the Knowes" (286) is a fine, broadly-painted piece of undulating common, rising from the foreground, with a powerful little bit of distance behind. Nearly opposite this is "A Lone Shore" (350), by Mr. A. D. Reid, an expanse of marshy shore, with a strip of very dark sea beyond; it is not a picture that attracts, but there is something in it,—a kind of power akin to that of the Belgian painter, Ducker, in quality at least. Mr. Raven is provoking; he has contributed very beautiful landscapes of a quiet idyllic character, in previous years, and with a manner and feeling of his own; his more ambitious work, "The Heavens declare the Glory of God" (128), cannot be called a success, and is far too large for the subject. "The Quarries of Holme Ground" (231) is a much more successful picture, but not very interesting in subject. We should be glad to welcome the artist again on his old ground.

Mr. E. W. Cooke, besides a charming specimen of his well-known style of coast scene, "Sandy Cove: Tide flowing" (369), very bright and clear in tone, sends two works of exceptional character (for him), one a picture of that useful but not ornamental ship (if such a thing can be called a "ship") the "Devastation," as she appeared on the occasion of the naval review in honour of the Shah; the masses of smoke from her guns are made use of to secure an effect, and Mr. Cooke has shown his power in producing a fine work under difficulties. The other work is a remarkably glowing Nile picture, "The Mountains and Plains of Denderah" (443), the river in the foreground, the trees on the opposite bank looking like bronze against the western sky, the tone of which is repeated in the water; the effect recals some of those in which Mr. F. Dillon used to delight, but more intense; northern spectators would say it was exaggerated, but tropical people know that it is not. Mr. Linnell also contributes a landscape, "Woods and Forests" (314), as good as any which he painted at the commencement of the present century; and perhaps there are few instances of a style persevered in for so long, with little or no modification, still holding its ground so well in the estimation of artists, as well as the public. Mr. Oakes's "Fallow Field" (481), though a little hard and metallic in its glitter in parts, shows fine feeling and execution. A very carefully composed and executed work is "The Horse Dealer" (69), by Mr. C. E. Johnson, which balances Mr. Graham's "Crossing the Moor"; a train of horses move from the foreground towards a village in the distance, along a road half hardened by a light frost on an autumn evening. This appearance has been very carefully studied; a mass of trees fills up the composition to the right; in a quiet way this is a very thorough bit of work. In the same room, too, we notice an original thought in Mr. C. Hunter's "Hours of Rest" (30), where three empty fishing-boats rock lazily about near the beach, on a sea painted with considerable breadth of manner, though a little uncertain in tone. Mr. Knight's "Sandy Slope" (20), and "The End of the Wood" (152), by Mr. Farquharson, are also noticeable, in very opposite ways, for that unity of treatment in which everything is subordinated to a predominant effect, which does so much to give interest to many an otherwise apparently unpromising or slight subject.

Giving a final look round, we find we have omitted to mention Mr. Wallis's very good work, "Fugitives from Constantinople, 1453" (386), the scene being laid, as in his works of the last two years, in Venice, the picture being again a study of two figures, in the costume of the period, against a background of architectural detail, carefully and brilliantly painted. The artist has contributed a new item and a new manner to the annual exhibitions, but it seems in danger of becoming too much like a receipt, repeated in a slightly varying form. We must do to Mdlle. Henriette Browne the justice which others have not done her, in hanging aloft in a corner her admirable though simple work, "The pet Goldfinch" (239), a figure of a young, plain, but interesting French girl, busy over her studies at a table, with the bird perched by her, the whole remarkable for quiet force of colour and breadth of style. Its position is a pretty specimen of the sort of compliment an able foreign artist may expect from the Academy: the contrast between this and some of the works on the

line near it would be ludicrous if it were not discreditable. What must French artists who visit the exhibition think of us? Mr. Le Jeune's "My little Model" (355), is one of the nicest of his nice little children. Mr. J. D. Watson's "Gleaner's Harvest" (19) is not a picture that strikes one, and yet it is quite worthy of the author,—a single figure of a woman, shaking out the proceeds of her work from her uplifted hands; there is a quiet pathos in the expression of the face; it will repay more attention than it excites at first. In "From his Flocks strayed Corydon" (490), Mr. T. Graham shows a scene of rustic love-making, in which the two figures are marked by a simple and natural elegance of design which removes the work entirely from the commonplaces of "rustic courtship" scenes, and yet is quite unpretentious and unexaggerated: the execution is very broad and free. Something rather new, too, there is in Mr. Sadler's "Steady, Brother!" (450), two piscatorial monks, one of whom is going to gaff a salmon which the other is with some difficulty holding in from the bridge. A rather large picture by Mr. F. Morgan, "The Emigrants' Departure" (1,168), though a little too extended and straggling in composition, shows much feeling and fine drawing; a group of villagers on the road who have accompanied their departing friends partway, watch the receding wagons with various shades of sadness: some of the figures show considerable beauty of design, and recall a little the feeling of that gifted and lamented artist, H. Mason. Mr. Aumonier, whose artistic position seems to be on the rise, sends a very good work under the title "Spring: Peeling Osiers" (598); a flat quiet landscape, a little suggesting Constable in his quieter manner, with a row of girls near the foreground peeling the osiers along the line of a post-and-rail fence, which they lean against in different attitudes; the figures are designed with much variety and spirit, and the whole is very complete and harmonious, in a low key. Though we expressed a dislike to the prevalent "shaving" pictures of the year, we must compliment Mr. Burgess, who for some years has perseveringly repeated Spanish subjects of very mediocre interest and treatment, on having achieved real humour and point in "The Barber's Prodigy" (107), with a freer and more effective style of execution than before. Mr. Barrable contributes two small works of merit, "April Showers" (137), a half-length of a pretty little girl seated under the shade of foliage, and "The Prelude" (435) played on the piano by one young lady to another standing by: the colour is effective and the figures very pleasing. Mr. R. N. Waterhouse shows some novelty of manner and feeling in his ideal figures "Miranda" (76) and a group entitled "Whispered Words" (260); with, however, a tendency to a rather disagreeable yellow tone in the draperies. Talking of colour, there is Mr. W. V. Herbert, who has not startled us by such an array of prismatic colours as he did a year or two ago, but whose "Misery and Joy before the Altar of the unknown God" (387) shows similar characteristics,—a desire for a striking and telling subject, and a tendency to theatrical contrast of colour. In this case there are two worshippers before the altar, a wretched cripple in rags, and a young bride (probably) in pink and white: there is nothing in the architectural background to indicate ancient Athens. Still, we are disposed to welcome all attempts to rise above the commonplace level in regard to the subject matter of pictures; and if Mr. Herbert can control and restrain his prismatic and theatrical tendencies, we expect he will do something. In a small picture by Mr. J. Grey, "The First Touch" (919), there is a genuine humour; an Irishman of the most pronounced "Paddy" type has given the first dash of whitewash to the outside wall of his cabin, and stands back to judge of the effect, with the air of an anxious and critical connoisseur. This work reminds us of the sort of thing Mr. Erskine Nicol used to do before he took to painting in so much larger and (in every way) coarser a style. Near this Mr. V. W. Bromley has been considerably ill-treated; his clever and curious little work, "Midday Rest,—Sioux Indians" (914), having been hung where it could only have been noticed by accident, in a corner of the "lecture-room." In another corner Mr. Hemy has a good study of river craft, "Herring-boats towed into Shields Harbour" (874). A head of an old man, called simply, "Study from Nature" (419), by Mr. G. E. Hicks, is very good; and in a very different way there is good art in Mr. Wirgman's sitting half-length of a lady embowered in foliage, with the title (from Andrew Marvell) "A Green Thought in a Green Shade." Among some small works of considerable interest and excellence, we may mention Mr. Gale's "Going in for the Competitive" (628), but too true to fact in the figure of the poor jaded youth trying to keep awake over his "cramming," with the litter of study books about; the details are very carefully finished: Mr. E. A. Mulready's "Little Creditor" (599), trying to reach up to the knocker with the account-book which she brings,—an eye should be kept on Mr. Mulready, who is doing credit to a good name: "Private and Confidential" (375), by Mr. J. Clark, representing two little schoolgirls, perched on a seat with their slates, exchanging some important secret; a charming study of child nature. Mr. A. Dixon's "To be Left till Called for" (83), a little girl in the waiting-room of a station surrounded by boxes, and discussing a bun with a most amusingly demure and philosophical expression: and "Oxford, 1650" (93), by Mr. G. Lucas, a small interior of a college-room, with a student of the period indicated,—a very effective little work.

Subsequent inspection has quite confirmed us in the opinion we expressed in our first notice, that, without any decidedly great pictures, the general interest of the exhibition, in regard to variety of subject especially, is rather above than below the average.

"LOHENGRIN" AT COVENT GARDEN.

THOSE of our readers who pay any attention to matters in the operatic world are aware that a work is being introduced in London this season by a composer who claims to be a revolutionary reformer in opera, and to put its philosophy on a new footing. The charge of Wagner against nearly all existing opera is that it is a mere peg to hang music and scenic effect upon; that the story and situations, which should be the basis of the whole, are made subservient merely to the display of musical ability on the part of the composer and the executants, and that elaborate compositions are introduced by which the action of the piece is illogically delayed where it should proceed without let or hindrance. He aims, in fact, at bringing opera nearer to the condition of musical drama, in which the action and words go on almost continuously, as in an ordinary play, with a musical setting running parallel to and illustrating, but not interfering with, the progress of the story. He is author of his own *libretto*, and by his theory words and music, situation and stage effect, are to be blended into a homogeneous whole, no one element predominating over the rest, but all contributing in an equal degree to the total effect.

This, of course, puts opera on a very different footing from its ordinary one as a professedly musical performance. There are no great airs in which a *prima donna* can exhibit her powers of vocal gymnastics, and no great musical scenes which can pass without deterioration from the stage to the concert-room. The true significance of the music (though it has its positive beauties in not a few places) lies entirely in its relation to the stage action and the characters. An opera so constructed necessarily demands great attention to *ensemble*, and the romantic legend on which "Lohengrin" is founded, placed as it is at a date (the tenth century) which gives opportunity for any possible amount of display of semi-barbaric Mediæval splendour in dress and pageantry, is well calculated to bring out the resources of such a house as Covent Garden, always noted for the lavish manner in which scenic effect has been provided for when the nature of the opera demanded it. In this particular case, the splendour and picturesque character of the dresses, in the scenes where the stage is full, realise an effect not to be forgotten, and worth the attention of artists whose sympathies are with strong and brilliant combinations; the manner in which the masses of performers enter upon the scene heightens the effect, for Wagner, whatever else he is not, is a master of scenic effect and climax; and the scene of the procession to the church before the wedding, when the stage gradually fills with one splendidly-attired group after another, to an accompaniment of very charming processional music, till the square and the steps and the balconies are crowded with figures in glistening armour and bright colouring, is something to remember. Stage architecture is slow to improve, we admit, and things appear among the buildings in this scene which are certainly "not of the tenth century," if of any; and some which are decidedly of the thirteenth. The first approach of *Lohengrin*, in the chariot drawn by the magic swan, is a remarkable piece of effect, the chorus exclaiming in a more and more tumultuous and excited manner, the tones of the band rising into a tempest of sound, till the dullest spectator is fairly carried off his feet by the tide of enthusiasm.

The part of *Elsa*, the heroine, was beautifully taken by Mdlle. Albani, whose clear and pure voice went through all the difficulties of the music with entire ease and smoothness; among other points, her meditative soliloquy and prayer on the balcony in the second act delighted the audience; and the long duet between the hero and heroine in the last act is very beautiful, and was given with much feeling, but we fear it cannot be said that the part of *Lohengrin* (Signor Nicolini) is in over-fit hands. Mdlle. d'Angeri distinguished herself as *Ortrud*, the "wicked woman" of the piece, and Signor Capponi in the music of the herald; and the parts of the king and *Frederick*, the weak husband of *Ortrud* (a sort of miniature *Macbeth*) were ably sustained by Herr Seidemann and M. Maurel respectively.

It must be said, however, that the intention of the composer is not yet fully realised in the action of the chorus and "supers," who ought to be in continual and evident interest in the whole piece, whereas they mostly stand about in the old fashion and sing their parts; and many effective passages in the music which are intended to accompany the action and expressions of the mass of the spectators on the stage lose some of their effect in consequence. Of course this kind of perfection is incompatible with the demands of an English opera season, where a different work is expected night after night, and there is no time for devoting such an amount of rehearsal as Wagner's scheme really demands; but until this is done, the composer's intention will not have been fully realised.

Signor Vianesi deserves the highest praise for his painstaking and careful conducting,—and conducting a Wagner opera is no joke. There was a tremendous and a very enthusiastic audience; but the system of applauding the principal singers on their entrance seems to have been quite put down by the Teutonic contingent. If English audiences are thus taught to think more of the composer, and less of the executants a point will have been gained; and whatever the ultimate verdict on Wagnerian opera, we suspect its immediate influence will, on the whole, be a healthy one. The work is to be repeated on the 28th. Musical London owes thanks to Mr. Gye.

SCULPTURE.

MR. LOUGH is executing some large and important groups for piers on the terrace at Toddington, in Gloucestershire, the seat of Lord Sudeley. Each group consists of a male figure in powerful action with an animal of some kind, buck, boar, or dog, hunting and rural occupations being typified. The majority are already executed in Sicilian marble, and will soon be removed to their destination. They exhibit a sort of nobleness and grandeur not often found in works executed to-day having a similar destination. Toddington, some of our readers may not know, was built about forty years ago from the designs of the Lord Sudeley of that time. It is in the Perpendicular style, what, indeed, may be called the *very* Perpendicular style, and is illustrated in a quarto volume by the late John Britton. In this chatty book which treats of everything and everybody, as has on the title-page the date 1840, Mr. Britton mentions a niche at the bottom of the stairs containing the statue of a monk by Mr. Lough, and, in a note, mentions the difficulties under which the sculptor commenced his career as expresses well-deserved admiration for his statue of Milo, which first brought him into notice. It is interesting to find the sculptor again at work for a succeeding Lord Sudeley. In Mr. Lough's studio will be found many proofs of his continued devotion to poetical sculpture.

Proposed New Pier at Ryde, Isle of Wight.—Meetings have been held in favour of the establishment of a new pier at the eastern side of the town, for the accommodation of the railway traffic passing to and from Ryde. The probable cost of the works has been estimated by Mr. Hamilton Fulton, the engineer at 100,000*l*.

THE TEACHING OF PHYSICAL SCIENCE.

THE science of Physics is very interesting in its study and very useful in daily life, but it is difficult to teach, because of the impatience of the pupil, who, in our country and in our day, learns a science with the intention of making money by it, and he wants to grasp the results of teaching without the trouble of going through all the processes of reasoning from step to step, making sure of each before he takes the next. But it is only by this means that he can ever arrive at a sure conclusion. To suit the commercial notions of our country at present, many teachers adapt their manner to the wants of their pupils, without—as it would appear—any consideration of their responsibility to posterity. To slur over difficulties, and make the worse appear the better reason, seems to be nearly all their aim; so only that the pupil may pass through some examination into practical life. The results we see daily in wrong-doing. And it is unfortunate that this should be so with us, for what we do is propagated through nearly all the world, and it is a woeful contemplation that we promulgate error and sham ways of doing things. For "physics" we may substitute "laws of nature," and we may divide all affairs of life into two classes; those of nature and those of morals. Possibly the methods of teaching morals and physical science are essentially different, and may be opposite; but whether it be the teaching of morals or of physics it should be the teaching of a master; and the greater the master the more simple his teaching will be, in all probability.

The knowledge of science which we can acquire is of less importance to us than are the means by which we acquire it, and it is in this especially that we desire the teaching of a master. We think we discern in Weinhold's "Experimental Physics"* the method we desire. The illustrations of physical phenomena are very well made, the pupil being shown how to make the tools and implements with which the experiments themselves are made. Thus the professor does not try to force upon the mind of the pupil an abstract conception of a truth in science, but presents to him an interesting series of small truths which lead up to the knowledge which it is desired to convey.

It is shown, for instance, that not only solid bodies have the property of *cohesion*, but liquids also, in a small degree, and that liquids assume the form of a sphere when uncontrolled by other force than that of their own cohesion. Poured from a vessel, a liquid breaks up into single drops. Without cohesion water poured from a vessel would not form drops, but extremely fine particles like dust. "A small, dry needle placed horizontally upon water will not sink, because its small weight is not sufficient to overcome the cohesion of the liquid particles at the surface, and to break through them. But if the point is immersed, the needle immediately sinks; this proves that the needle was not swimming upon the water, but was prevented from sinking by the cohesion between the liquid particles."

Gaseous bodies have no cohesion, but, on the contrary, it is only by force that the separation of their particles can be prevented. Solid bodies,—or, preferably, rigid bodies,—have the property of cohesion of their particles in a high degree, and their form or shape can only be altered by considerable force. The *porosity* of bodies is an important property to be considered. Between the particles of matter of which a body consists are pores, which in some bodies are plainly to be seen, while in others they can only be seen with a magnifying glass; and many other bodies, even when thus examined, present no visible pores. Nevertheless, such interstices exist, although they are very small. Thus hard stones are often coloured for commercial purposes; this would be impossible if the colouring matter could not penetrate into their pores. Again, by using great pressure, liquids may be forced even through metals." And even in liquids, where we should least expect pores, their existence may be demonstrated. The smallest indivisible particles of a body are called molecules, and the forces of cohesion and expansion, which induce these particles to cohere or to recede from each other, are consequently termed molecular forces. If once the particles of a body be separated beyond the very minute distances within which the molecular forces act, the cohesion is destroyed, and the particles will not again manifest mutual attraction; but they may be made to stick together, by preparing their surfaces, and this kind of attraction is called *adhesion*. As a consequence of their mobility, liquids manifest strongly the force of adhesion, for they come into close contact with the solids, whatever the form of the latter bodies. A hand dipped into water and withdrawn, is covered with adhering drops. A drop of water placed between two adhesion plates causes them to adhere much more firmly. *Capillarity* is another force, with which porous bodies act upon liquids. It is from this cause that water rises in wood, sponge, sugar, blotting-paper, or oil in the wick of a lamp. *Endosmose* is a remarkable phenomenon. "When walls of certain substances, such as gypsum, unglazed and slightly burnt clay, parchment paper, animal membranes, &c., which permit the passage of liquids through them, are interposed between two liquids, they present less hindrance to their mixture than difference in the specific gravities. When two liquids are separated by such a wall, the peculiar phenomenon is observed that the liquids pass through the partitions at unequal rates, and that consequently the quantity of liquid on one side of the wall increases, while that on the other side becomes less." The same kind of diffusion takes place between gases of unequal specific gravity, and more rapidly than between liquids, if they are separated by a porous partition. It is usual to denote this kind of action between gases by the term 'diffusion,' while the analogous phenomenon in the case of liquids is commonly spoken of as "endosmose." Gaseous bodies adhere strongly to solid bodies; they are said to be attracted and held so strongly by solid surfaces, that a kind of condensation takes place. This kind of attraction is especially remarkable between carbonic acid and charcoal. A piece of charcoal absorbs a volume of carbonic acid many times larger than itself. "A similar attraction takes place between the molecules of liquids and gases; liquids are equally with solids capable of absorbing gases. The absorption of a gas by a liquid is mostly called solution. Water dissolves various gases in different quantities, but of the same gas there is always less absorbed by hot water than by cold water. Fresh spring water contains a quantity of air in solution; if it is allowed to stand in a glass, in a room, so that it gradually becomes warmer, a portion of the air separates in small bubbles which adhere to the sides of the glass. A liquid is capable of holding greater quantities of a gas in solution when under great pressure than when the pressure is diminished. Hence a diminution of pressure has the same effect as an increase of temperature.

How *mechanical work* is performed is thus explained. "A body at rest offers resistance to being set in motion. This resistance is greater the greater the mass of the body. Conversely a moving body offers resistance to being brought to rest. This resistance is also greater the greater the mass of the body; but, besides it is also greater the more rapid the motion. This property of bodies to resist changes of state is called their *inertia*. If inertia or any other resistance is overcome, mechanical work is performed." In lifting a body work is done. We overcome in this case the resistance of gravity. If other circumstances are equal, the work will be the greater the higher the body is lifted, or, in other words, the greater the space through which the resistance of gravity has to be overcome; and the work done is directly proportional to this space. The law of falling bodies is fully investigated here, and it is found that the quantity of work which a falling body contains is exactly the same as that which would be sufficient to raise it to its original height. This fact cannot well be proved in the case of bodies falling freely; but it may be demonstrated by means of bodies which are allowed to descend by the force of gravity through an arc of a circle, being held up to the point of suspension by a string,—the action of the pendulum; and it is found that the law here observed with circular arcs of various forms holds good with all kinds of spaces traversed. "The velocity acquired by a body which moves under the influence of gravity is independent of the form of the path traversed. It is solely dependent upon the vertical height of the space through which the body has passed." As we proceed with our investigations in science, providing we follow the sure and unerring path, we can from time to time cast off terms which may have served, perhaps, some useful purpose, but which do not convey the true idea of what is meant. Thus we have been taught to call the lever and other simple machines "mechanical powers"; but they possess no power,—they are only the means of changing the motion of power. As the author says, "None of these machines can generate work nor increase it: on the contrary, they all involve a certain loss of work, which is expended in overcoming the resistance which the force of friction opposes to their motion. The advantage of a machine consists in the conversion of work, which is given in an unavailable form, into an available form."

About eighty pages of the book are given to an explanation of the phenomena of sound,—those numerous actions around us which we perceive through one particular organ of sense, the ear. When these actions are examined as to their physical nature, it is found that they all consist essentially in *motion*. The propagation of sound, the conduction of sound, and the reflection of sound, are interesting subjects of study; so are the phenomena of light. Electricity also, as being an important part of physics, is widely treated by Professor Weinhold. Finally, he treats of heat. We have been accustomed to reckon degrees of heat by Fahrenheit's scale. Thus we say water freezes at 32° and boils at 212°, but for scientific purposes the scale of Celsius is better, and is now mostly used. Its zero is the freezing-point of water, and the space through which the mercury of a thermometer is expanded by the heat of boiling water is divided into 100 parts, and it is called the Centigrade scale. Degrees of heat less than the freezing-point of water are denoted in the Centigrade scale by the minus sign; thus, 5° below freezing-point is written $-5°$ C. The zero of Fahrenheit's scale is $-17{\cdot}77°$ C. To convert any number of degrees Fahrenheit into degrees Centigrade, the number 32 must first be deducted, and the remainder multiplied by $\frac{5}{9}$, thus $149°$ F. $= 117 \times \frac{5}{9} = 65°$ C. Heat expands all bodies, liquids more than solids, and gases more than liquids. Solid bodies which are heated do not increase their volume to any considerable extent, but the force exerted in expanding is very great, for it is equal to the external force required to compress the expanded body to its original volume without altering its temperature, and the expansion is therefore in many cases of great practical importance, as in drawing together parts of a structure which have bulged out, by alternately heating and cooling iron rods. Heat applied to one part of a rod of iron flows along it to neighbouring parts which are colder. In the same manner heat flows from one body to another, provided they are in contact with each other. This kind of transmission of heat is called *conduction*. Conduction takes place in different bodies with very different velocities; hence bodies are distinguished as good conductors and bad conductors of heat. Bad conductors are used for preserving the temperature of bodies; that is, either to prevent abstraction of heat by colder bodies in their neighbourhood, or accession of heat from without if the body is at a lower temperature than those in its vicinity. Liquids are bad conductors, with the single exception of the liquid metal mercury. A body of water is heated through, not by the conduction of heat through its particles, but by *convection*. Heat being applied to the lower part of a vessel containing any liquid, the particles nearest to the bottom are expanded by the heat, and become specifically lighter than those above, and rise through the mass to the top, colder, and therefore specifically heavier particles sinking and becoming in their turn heated, so that by a series of ascending and descending currents the whole mass becomes heated. "Air and all other gases, without exception, are bad conductors, and a flow of heat can only take place through them by an actual movement of their molecules, which must be produced by heating that portion of a gas which is lower than the remainder; the heated molecules thus become less dense, and rise, while the heavier portion gradually descends and becomes heated in turn. A space filled with air cannot be heated from above, for the heated molecules in the upper portion of the mass remain where they are, while those below them remain at rest, and become heated only very slowly. When the motion of gaseous molecules is restrained, they do not convey much heat, even if they are heated from the side or from below. The free motion of the air in a given space may be prevented by dividing the whole space, by partitions, into numerous smaller spaces. A free current is no longer possible

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* Introduction to Experimental Physics, by Adolf F. Weinhold; translated and edited by Benjamin Loewy, F.R.A.S.; with a Preface by G. C. Foster, F.R.S. London: Longmans, Green, & Co. 1875.

under these circumstances, and such a space could no longer be heated even by convection. It is in this way that substances like fur, feathers, ashes, fabrics, straw, &c., become bad conductors; the air remains stationary between their particles, and offers thus great resistance to the propagation of heat by preventing a free circulation of heated molecules."

POLLUTION OF RIVERS BILL.

THE Bill presented by the Marquis of Salisbury, intituled an Act for amending the Law relating to the Pollution of Rivers, is a much more important measure than a cursory glance at its seven pages might lead the reader to imagine. It goes straight to the point, in the manner of the foreign codes, rather than by the cumbrous and time-honoured circumlocution dear to English lawyers. Whether people admire the measure, or whether they oppose it, there can be no pretext for misunderstanding it. It is a genuine and nervous specimen of what we have so often desired, a chapter of English law, expressed in vernacular English, in such wise that no man of ordinary intelligence and education can have any doubt as to its meaning. If it pass without being complicated and made ridiculous in committee, it will be a measure of law reform of signal promise.

Thus much as to the form of the Bill. As to its essence, it is as follows. It is divided into the declaration of law, the provisions for administration of law, and the technical directions as to legal proceedings, saving clauses, and definitions. It applies to Great Britain, but not to Ireland.

The declaration of law is this. The putting into any stream solid refuse, rubbish, cinders, or any other waste or putrid matter, so as to interfere with its flow, or to pollute its waters, is an offence against the Act. So is the drainage of sewage into any stream by any channel constructed later than Jan. 1, 1875. So is the drainage of any polluting liquid from any manufacture or mine which has not been in operation for twelve years before the passing of the Act.

In cases of existing drains, conveying sewage, the parties responsible are bound "to use the best practicable means to detain or render harmless the flow." Any noxious liquids from manufactures now in existence, but erected within the last twelve years, have a grace of two years, if such practicable means are adopted. All drainage from works of more than twelve years' standing is to be subjected to the same provision, that of the use of the best practicable means. The Bill might be further simplified and shortened by consolidating clause 4, relating to manufactures, with clause 5, relating to mines. The provisions are identical; and the clauses can only have been inserted in duplicate in anticipation of opposition from separate interests.

No doubt such opposition will be raised, on the pretext that it was the duty of the legislation to define such best practicable means. This, of course, can only mean that the Bill should be shelved for another quarter of a century. In defining clearly what can be defined, and in leaving fully open to the discussion of the tribunals the practical question of what can be done in each case, the framers of the measure have taken a course which is not only sound, prompt, and practical, but is inspired by the very genius of the common law of England.

Under the head of Administration of Law, it is provided that local authorities shall give facilities for manufactories draining into sewers; compensation, if any, to be settled by arbitration. Sanitary authorities are empowered to enforce the Act in their respective districts. The Local Government Board is empowered to enforce the Act, in case of need.

A provision which has been long demanded for the satisfactory discharge of the duties of Sanitary Authorities is contained in the ninth clause. In a modest form it is really a substantial enactment, the due observance of which would remove much of the anomaly that now impedes the course of sanitary improvement. It is, in fact, a provision for establishing our own scheme of water-shed districts.

The Local Government Board is empowered by this clause to constitute, by provisional order, a conservancy authority for the whole of the catchment area of any river and its affluents, and any conservancy authority shall have the like powers for enforcing the provisions of this Act as sanitary authorities have, as before provided. The conservancy authority is to be constituted of representatives of the several sanitary authorities having jurisdiction within their area, the constitution of the new authority being regulated by the Local Government Board.

In this simple clause is contained, in effect, the most important amendment to the Public Health Bill that it is practicable to frame. The wisdom and propriety of making that measure, which is necessarily so voluminous, merely consolidatory, is thus amply vindicated. The conservancy authorities, if the country be parcelled out among them, would be the natural and proper authorities to decide on the general plan for each district, in harmony with which every subordinate sanitary work within its area should be conducted. It is only necessary to add that each conservancy authority should have a responsible engineer, and that the Local Government Board should provide for the co-ordination of the reports, plans, and proceedings of the various conservancy authorities.

Either in the present measure, or in a subsequent enactment, it might be necessary to give further powers to these conservancy authorities as to authorising irrigation; and as to dealing with mills, weirs, and other obstacles to the healthful drainage of our great river valley.

Offences against the Act are to be restrained and punished by summary order of County Court. The powers given by the Act are cumulative, that is to say, that they are given in addition to, and not in derogation of, those conferred by any other Acts of Parliament. The Thames and Lea Conservancies, and the Metropolitan Board of Works, are not to be prejudicially affected by the Acts.

A CITY OF THE FUTURE.*

LETTERS FROM SHAKSPEARIA BY SCAMOZZI SMITH, ESQ., ARCHITECT.

Written to his Friends in London during the Summer and Autumn of 1915-16.

MY DEAR ——,—We went yesterday to see the docks of Shakspearia, which are built round a small gulf running deep into land at the mouth of the Jasper, of about eight miles circumference, and forming with their various accompaniments a fine natural and artificial harbour. They are planned with the utmost ingenuity of contrivance with respect to all needful classification of vessels, and many of them are surrounded by lofty warehouses coming down close to the water's edge; and the rest are enclosed along with their quays and sheds by lofty and strong fence walls to defend them from the winds. They have underground or overground communication with all the railways.

No sooner were we within sight of the works than we were charmed with their appearance, for nothing can be more picturesque or pleasing than the skyline of the whole semicircular range formed by the rising and falling of warehouses, enclosing walls, towers, masts, &c., from whatever point viewed. But this pleasure was nothing to what awaited us on a near inspection of them, which showed that both science and art had invested them with their charms.

This is due, I am told, to the taste and munificence of the great shipowners, who were solicitous that the entire dock-works should not only be equal to the material purpose for which they were built, but that they should be invested with the utmost amount of architectural beauty for the sake of its elevating and refining influence and effect on the mind of the seafaring man. Nowhere do you see anything resembling the long dreary dead fence walls and monotonous unadorned warehouses of English seaports, disfiguring alike to the river and city. Strength not only exists in these great fence walls and buildings, but it is vividly expressed, as in the organic structures of nature, by every means, as boldly projecting plinths and pedestals, buttresses, bold set-offs, and horizontal rustication,—elements displaying the principle of an inner life that gives relation to the different parts of a construction, and raises it from the condition of inert matter to affinity with the higher works of the Creator. They exhibit not only dynamical skill but many of the beauties and graces of architecture, which render the whole a most charming sight. The colossal scale and strength required in them has naturally led to a style of composition and decoration something like the Egyptian, a style in which the loftier conception and imaginings of the architect have found employment, and enabled him to exhibit that natural and just perfection,—that Herculean grandeur which arises from the union of strength and beauty.

It is only, however, in artistic beauty that these docks excel your celebrated works at Liverpool and Birkenhead, which in engineering skill are quite equal to the Australian. But in this the difference is immense, for they are almost as beautiful in Australia as if beauty was their sole object. It gives a great charm to these marine works. Here art lifts up her voice and cries as loudly in the docks as in the streets, and is as eloquent among the ships as among the shops, while everywhere is architecture proper blended with constructive science, and outward beauty goes hand in hand with innate strength; cultivation of the sense of beauty in seamen and mercantile persons frequenting these docks being considered as important as in any other class of persons; on the principle that he who wishes to penetrate the recesses of the vulgar soul must do so by securing the co-operation of the eyes or other of the senses, as the media of communication with the mind.

Another advantage they have over the Liverpool docks,—by being detached from the city they do not interfere in any respect with either beauty or convenience in the city as they do in Liverpool. Docks and warehouses being outside the city, the pleasures and sanitary advantages of the river are reaped by every class of the community; the more so as everywhere towards them the streets and houses put on their best and fairest aspect. Traverse the city by water as far as you will, you nowhere see the banks disfigured with warehouses, coal-wharfs, or ugly buildings of any kind. But everywhere stately palaces and mansions of the nobility and gentry, halls, galleries, churches, or their accessories greet the eye, and remind you of the grand canal at Venice; and the scenes afforded from the bridges along these ever-winding streams, animated as they are by gaily-painted and rigged boats, are not to be equalled for beauty in any city of Europe. Distant prospect is a thing greatly cultivated, I may say, in this city; and for its sake regulations exist as to the heights of houses, in order that nothing should interfere with the view.

But in alluding to Liverpool, I am forgetting that that city has been greatly improved of late in this respect, and that much has been done to repair the original mistake of treating the town and river as if they did not belong to each other,—as the filling up of the George's Basin, which, though some little sacrifice of dock convenience, was an immense improvement,—from the broad highway it opened to the river from the town, which no Dock Board had any right to disconnect. Liverpool, I am happy to hear, is also improving its architectural aspect towards the river. Many graceful buildings now immediately abut upon it, and sculptural decorations occur in different parts of the long line of sea-wall.

What raises your estimation of the architects here is that they do not claim any merit for their artistic treatment of the dock works in question. They have merely followed the ancients and Mediævalists, they say. The Romans had done the same before them. The ancient aqueducts, by which Rome was supplied with water, were so contrived that even in their passage over the gates of the city they were made to add to its beauty. In the Middle Ages even military architecture intended to receive the shocks of besieging armies, and to become objects of rude assault by battering-rams, are objects of beauty, and had grace of form and outline.

MY DEAR ——,—Among the minor causes of the high condition of the art of architecture in this country is that the architect has nothing at all to do with the execution of his designs, which is entirely in the hands of another professional, the building surveyor (so called to distinguish him from the land surveyor), and is devoted exclusively to his profession of fine-art architecture, just as a sculptor or painter is to his,—devoted to planning and designing edifices, though of course he thoroughly understands construction, and all its requirements, as well as the surveyor. He gives at the outset of the execution every needful drawing and instruction,—plans, elevations, sections, detail drawings, and specifications,—but is not required to superintend the erection, for the proper accomplishment of which the surveyor, in whose office merges that of the clerk of works, is alone responsible,—responsible for solidity, quality of material, and everything essential to the perfect and complete execution of the whole.

In harmony with this arrangement is the fact that the architect is not to be found by his

* See pp. 327, 344, and 373, *ante*, with letter from Mr. S. Huggins.

clients in the commercial or business quarters of the city, among merchants and brokers; but in the scholastic or collegiate, among painters and poets, historians and philosophers. There he has his studio, or rather his study (for they name everything in English), not his office, and is looked upon with the more consideration and respect in consequence.

The defence set up for this arrangement is, that the artist wastes his time, and dissipates his energies, in being occupied in what a man of lower faculties,—any man, in fact, of good plain understanding, whose mind had been given to such kind of work,—could perform as well as he, if not better than he, from being exclusively devoted to it. It is believed that the architect would otherwise waste time and energies that might be employed in further and higher pursuit of his own fine art, which is a jealous art, and no less than painting and sculpture, poetry and music, calls for the entire devotion of a life; an art which is rendered the more arduous and difficult from being encumbered with considerations about warming and ventilating, lighting and watering, draining and sewering, and all the thousand and one exigencies that the architect is bound to provide for, and which he cannot for a moment lose sight of. For my own part, I must say I heartily approve of all this, having always had a lively sense of the absurdity of our way of managing these matters. I always thought it ridiculous work for men, expected to be full charged with the "*divine afflatus*," to be examining mortar or testing foundations. Fancy the divine Raffaelle, whilst engaged on St. Peter's, leaving some beautiful Madonna, or sublime Transfiguration or Ascension, to examine an abutment, or certify the stability of a pier!

This relieving of the architect from the toils and drudgeries of execution has had the happiest effect upon him as an architect. With time and inclination for the study of those kindred branches, sculpture and painting, that rightly claim his attention, he has become a better, a completer, a broader architect, with more ability to guide the ministrations of those handmaids of architecture to their principal. Many architects give not only the subject of their bas-reliefs or other sculptural adornment, but the general design and composition, which, indeed, in a true work, is part and parcel of the architectural conception. Immunity from the harassing cares and anxieties of execution has left his mind more free to revel where, indeed, it ought constantly to dwell, in the realm of imagination, much to the advantage of his architectural productions. Set free from the prosaic part, the more earthly element that weighs down the profession amongst us, he sometimes finds his wings strong enough to bear him into even higher regions than architecture. It is no very uncommon thing for architects of fine sensibility to discover equal talent for poetry. Several I could name have courted the muses, and been crowned by them with their richest bays. These, it will perhaps, be said, are necessarily but few. But, take the profession as a whole, it is really superior in education and acquired talents, and, I may add, manners also, to what it is in England, though the English architect is evidently improving. Indeed, in no order are there to be found individuals better informed, more polite, humane, and ingenious than among the architects.

As the architect generally devotes his life to design, so the surveyor, whose social status is very different from that of the clerk of the works in England, devotes his to execution,—neither intrudes on the province of the other; and this arrangement is to the advantage of the execution of a building as well as of the design, for it is in the hands of a man of science, whose life is devoted to execution, and who is expected to be thoroughly acquainted with all constructive principles and operations, and to whom any cracking or sinking, owing to insufficiency of foundation, or bad materials or workmanship, would be a foul disgrace, causing the building to be taken down, to the utter ruin of his reputation.

Nor has the architect, I should add, anything to do with measuring work, or taking out quantities, as it is called, for the builders, or measuring and; but confines himself exclusively to design, as embodied in plans, elevations, sections, perspective views, models and specifications, and detail drawings, the completion of which completes his task.

Taking out quantities, I need not have mentioned, for the contract system has been entirely exploded in Australia, it being universally believed that no man can tell before-hand the cost of a work depending for its speed of execution on the ability and honesty of a host of workmen of every grade of intellect, capacity, and moral character; and that competition in such matters cannot go on consistently either with justice to the contractor or credit to the architect. It is said, moreover, that during the short period in which the contract system was tolerated here, no committee or proprietors disgraced themselves by accepting, out of a host of others, the *lowest* tender. It was generally (not always) the *middle* tender that was chosen. Sometimes the *highest*, if deemed a reasonable amount, was the adopted one. This principle, however, was soon abused, which led to the more speedy downfall of the system.

The mention of builders awhile ago reminds me that there are no such men here. Master *builders* are things unknown. There are master *bricklayers*, master *masons*, master *joiners*, &c., but no joiners and builders, or masons and builders, much less plumbers and builders. Each branch of building has its own professor, who does not trespass on the demesnes of any other, much less usurp the whole cycle of building trades, and call himself a *builder*. Builder, forsooth! no man would *dream* of calling himself a builder, or, if he did dream, would dare to do it. A builder is considered an impossibility; that is, it is held that no man is capable to perform, as the chief workman, all the ten or a dozen different branches of a building, as the words imply.

The result of this is that each man understands his own branch fully, and that the whole is better executed, and with less trouble to the surveyor, than it ever was under the old system.

MY DEAR ——,—Among consequences of the detachment of fine-art architecture from the mechanical art of building, with all its commercial or business elements, and keeping the profession a pure art and science, is that it has enabled the fair sex, whose minds are here very intellectually disposed and richly cultivated, to enter the profession. This will seem strange to many in England, and astonish not a few. But how could it be doubted that the female mind was fitted for fine-art architecture, as well as for painting and sculpture? Women have succeeded eminently in the latter arts, as well as in poetry and fiction, and other branches of literature: why should they not in architecture? Genius, it has been well said, is of no gender, and this the ladies here have well proved.

They especially shine in domestic, villa, and cottage architecture, into which they seem to enter *con amore*, and show an exquisite feeling and judgment that men cannot always reach; which might indeed have been predicted. Who was likely to tell so well about the arrangement of domestic offices, for instance, as she who precides over them? Whoever should fancy from this that there is any wish here to take woman out of her proper sphere, and make a man of her, would do great injustice to the taste and judgment of the Australians, who are as fully aware as we are that she differs from man in the intellectual faculties of the soul, as well as in the strength and character of bodily form. Everything is done to put her in her proper place, in her true relation to man, which is best accomplished by cultivating her best faculties, urging her to intellectual pursuits, and giving her every opportunity to raise herself to her real and destined dignity. In her girlhood she is taught that she has not only a rational mind and imagination, but a heart capable of sympathy with everything that is good and true in the universe, and that it is hers to develop and expand it; to cultivate her love for all that is beautiful, and increase her sense of the sublime and the infinite.

The result of such training is, that among the followers of art and science generally a far greater number of the fair sex is found in Australia than in all the countries of Europe put together, and the number will increase. The only militating principle I can see against it is the deficiency of the sex in the desire of fame or glory, their master-passion being, in every period of life, not ambition, that last infirmity of noble minds, but love. Cultivation, however, will probably remedy this. I need not add that single women who are independent householders have long ago been admitted to the suffrage, and allowed to vote at elections both for councillors and members of Parliament. Quite in keeping with this is the fact that women on their marriage do not change their name, or rather, do not throw away the name of their fathers, but simply add their husband's patronymic after their own Christian and surname.

Before quitting the subject of professions, I may as well remark that there is a branch of architecture here which scarcely exists in England, viz., naval architecture. Military architecture, for obvious reasons, is scarcely recognised; but naval is in great repute, and the professor of it is distinct from the practical shipbuilder, he, like the civil architect, having nothing to do with execution. This branch is, as I said, in great repute here, and great honour and emoluments are bestowed on its successful followers, it being considered that there is the widest scope for genius and talent in combining beauty, speed, and safety in the design and construction of a ship.

P.S.—I have but this moment recollected the particular inquiry of your last. As no clergyman here would venture to read a sermon he had not penned for his own, so no architect would dare to claim the merit of a design of which he was not the real actual author.

Partnership in painting is allowed, and the authorship of a work may be joint; but if partnerships among architects for good reasons are allowed, yet every work of any importance is expected to come out with the single author's name to it, or the two authors' names to it, if such be the case.

MY DEAR ——,—You wish to know something of the state of criticism in Australia: I will devote this letter to the subject. As soon as a public or important building, or a private one, is fairly finished the architectural journals set about to criticise it, which they do very freely, for it is considered that no man is more amenable to the bar of criticism than the architect. No matter whether it is a public or a private building,—as it meets the public gaze it must not outrage the sense of beauty, but be erected according to the laws of architectural grace. It need not be expensive nor very decorative, but what decoration it has must be good. It is established that nobody has a right to build his house ugly or ignore the laws and conditions of beauty, but must make it as beautiful as circumstances will permit, and both architect and his employer are liable to be rebuked for an ugly erection. But it is done dispassionately. If anything like personal animosity betrays itself,—if the object of the writer is evidently more to wound the feelings of the author than to weigh the artistic merits of his work, it would degrade the character both of journal and journalist in the eyes of the public, who go upon the principle that truth and candour are the brightest gems of criticism, and expect to have in each case the defects of the work pointed out to them, and its beauties held up to the admiration they deserve. Generally speaking, a pretty uniform opinion is expressed, which is the case also in literary reviews; for there is little of the disgraceful discordance of opinion here on the productions of the intellect which so much degrades criticism amongst us. This does not arise from honesty alone, but from greater ability and fitness for their task on the part of reviewers,—as to whose proper qualification there is a strong feeling here. In the case of the architectural reviewer, he is expected to be, if not a professor of architecture himself, at least possessed of all the high qualities of an eminent professor. It is not sufficient that he be a man of exquisite taste in architecture; he must prove that he is thoroughly acquainted with its principles, and has a mind at once artistic or poetical, and philosophical. He must have powers analytical and imaginative, without which latter he cannot even sympathise with works of imagination or invention. He should be able to form artistic conceptions and to realise those conceptions. He must be also thoroughly acquainted with the history of architecture, and know all that exists of its chief examples, of all times and nations, that he may pronounce true judgment on the claims of any work to originality, and be able to detect plagiarism. He cannot gain confidence and respect but by invariably showing that he sees and feels the shortcomings or blunders of what he condemns.

Such criticism as this advances the interest of art, and forms and purifies the taste of the public, instead of debasing it. I have been much pleased by the tone of criticism generally in this country, which has cheered me with the hope that detraction is not destined everywhere and for ever to pour the "waters of bitterness" upon the artist who dares to consult his genius and his conscience alone, or on unacknowledged or obscure merit.

The literary reviews are characterised by much force. They notice the chief publications with great animation of sentiment and elegance of diction, and many of them exhibit both the delicacy of taste and ardour of genius. They give, in short extracts, the truest idea of a work without adding aught irrelevant or impertinent.

MY DEAR, ——.—The clergy here are a very pious as well as a learned body, totally absorbed in the duties of their sacred profession, and never dictate as do the clergy in England in matters architectural. They make it, I am told, a point of honour not to interfere in the affairs of another profession. "I should not like," said an eminent member of that body to me a few days since, "to have architects dictating to me the literary style of my sermons; and as I must observe the Christian rule which requires me to do to others as I would they should do unto me, I abstain from dictating to architects the style of their works. In a church for my own use, I should feel anxious," he continued, "to have the plan a convenient one for the seeing and hearing of the congregation, and that it should wear an appropriate solemnity of air and character; but I presume the architect is aware of the importance of these, and knows how to obtain them better than I do. Our Divine Master," added he, "never troubled himself about the plans or style of the synagogues in which he taught; and there is nothing in which we should do amiss by imitating his example. It would be better for national piety, I am quite sure, if your English clergy would confine themselves to their preaching, and leave architecture to its professors; and I have little doubt it would be better for national art too."

Some twenty years ago, I am told, a high dignitary of the church made an attempt to impose his commands regarding style upon his architect. But there was so firm a resistance made by the architect immediately concerned, and so stern a rebuke administered by the president of the Architectural Section of the Royal Society of Art, who is the Minister of Architecture, that it has not been repeated.

"The learned education and great influence of the clerical profession," said the President of the Society, on the occasion referred to, "must enable them greatly to aid the study and appreciation of architecture, by creating or disseminating an interest and taste for it among the upper classes, and, indeed, all classes of society. But we have to guard against anything like interference on their part in reference to the style or plans of ecclesiastical edifices, which common sense might have informed them are safest left to the educated taste and judgment of those who have devoted themselves to architecture,—on which we should bear in mind that clergymen as a body are just as liable to fall into grievous errors as any other persons; and that to render their labours in the field of architectural criticism really valuable to the cause of art, it is important that their works be taken at their real value, which must be just in proportion to the education, general intelligence, and judgment of their authors.

I am the more anxious," he continued, "on this point, because I happen to know that much mischief to the cause of art has been done, and is still doing, in our mother country and other countries of Europe by such interference, as well as by the dictation of non-professional writers on architecture generally, some of whom it is to be feared, never held a pencil, and have no other qualification for the task than the power of literary composition, except what knowledge they may have attained to by what is called cramming. Such can only confuse, perplex, and mislead their readers. How can men know anything about the capabilities or susceptibilities of styles who, having never drawn an architectural line, are incapable of testing them?"

There are many architectural amateurs, however, among the clergy, who seem to have a fondness for the pursuit of our art, and some who have made important researches into its history and principles, which they have modestly submitted to the consideration of the profession, by whom, of course, their labours have been gratefully received.

The subject with which I shall conclude this letter would to many seem trifling. To me it appears by no means unimportant. It is at least necessary to give you a finished idea of the aspect of this city.

There is an enclosed place in each district of the city for the reception of rubbish from buildings taken down, or from excavations, or what not; and there being therefore no excuse for laying rubbish in exposed situations, and so disfiguring the place, very heavy penalties are inflicted on such violations of public decency.

Another law very worthy of imitation here, is that all unbuilt land within the city or its suburbs must be enclosed by a respectable wall or balustrade, which operates to the city wearing always a finished holiday look, the more so, as such enclosing wall is not allowed to be disfigured by advertising bills or placards, such things nowhere offending the public eye. Moreover, during the erection of a new edifice no building materials are allowed to be exposed. All must be brought straight within a sightly enclosure, high enough to hide all building operations from the public gaze. Moreover, no house is allowed to fall into decay, and by broken windows, omission of painting, or other repairs, present a dilapidated or miserable appearance to the public eye. Every owner is obliged to keep his house in some decent order externally. If he does not, after being duly warned, it is restored, at his own cost, by the authorities.

My wife, who is a great stickler for cleanliness and tidiness, is loud in her approbation of this, which has brought her into some rather sharp disputes with her friends and others; in which it is contended against her that it is inimical to the liberty of the subject; a position to which my good lady replies, and I think justly, that such laws are no more inimical to the liberty of the subject than those that are enacted against theft, as both are for the protection of the public; those in question being to restrain from hurting its sense of beauty, propriety, and order, which no man has a right to do.

For my own part, however oppressive the regulations may seem to individuals, something of the kind always seemed to me desirable,—for want of them what a wretched aspect many parts of our great towns exhibit. Liverpool, where building operations are for ever and in all directions going on, must at all times present a slovenly littered appearance. It is always, we may say, in *déshabillé*; or rather it can never look finished, however great its extent.

My wife says she would have a law to compel the cleaning of the woodwork in front of houses every three months, and their repainting every year, and would have people fined for allowing a single broken pane in their windows. But this is a woman's notion, which I fear there would be a difficulty in carrying out.

Of annoyance from bad designs in this city of advanced art there is little danger. It is saved from that most melancholy of all spectacles,—bad building, I mean bad construction and materials, inducing premature ruin and decay, by a very stringent Building Act. The lowest class of houses are as well and as substantially built of their kind as those of the highest. The walls, too, of small houses are not made of a thickness merely proportioned to their height and extent, but they are made of a thickness sufficient to equalise the temperature. No human dwelling, for example, must have its external walls less than a brick and a half thick to the top, with proper increase in the foundation, and no division-wall between the smallest houses less than the same thickness; if of stone, 2 ft. thick. Should this thickness of party-walls to the smallest houses seem to you excessive, bear in mind that privacy, and security from spread of fire from house to house is at least aided by it.

SCAMOZZI SMITH.

DR. SCHLIEMANN'S INVESTIGATIONS IN THE TROAD.

WE were the first to announce in England the news which took the archæological world by surprise, of the remarkable remains brought to light, through the energy and perseverance of Dr. Schliemann, on what their discoverer now unhesitatingly pronounces to be the scene of the oldest and greatest epic poem of the world. This may, perhaps, serve as an apology, if any is needed, for a comparative delay, owing to press of other matters of immediate interest, in doing justice to the record of Dr. Schliemann's work in the English translation of Miss Dora Schmitz, under the editorship of Mr. Philip Smith,* and illustrated by about 500 engravings of various classes of objects discovered on the site. The book derives an additional interest from the manner in which it is put together; not being a record in the past tense, made when the work was completed, but a series of chapters written at intervals while the excavations were in progress, and more or less in a "present tense" form; so that we get the record of the condition of the work, and the manner in which the several stages of the discovery unfolded themselves, as it proceeded. The author in the original preserved this journal form so far as to leave uncontradicted in some earlier portions the views which, after further investigation, he abandoned or modified; and the editor of the English edition has done well to retain this dramatic form (as it may be termed) of the history, merely adding now and then an explanatory note to draw the reader's attention to the subsequent repudiation of this or that theory.

Dr. Schliemann seems to have had a very early prepossession in regard to Homer, commencing in an odd way enough, as appears from his short autobiographical notice; an account which is, in itself, of no little interest, as a tale of apparently almost insuperable obstacles to position or even education, overcome by indomitable application and resolution. There is something in his account of his early misery and privation which recalls the early history of Dickens, though it is told with far more simplicity than the latter ever evinced. Dr. Schliemann's father, it appears, had early interested him in the Homeric heroes; but his reminiscences had nearly disappeared before the daily drudgery of a shopboy's life, though the love of learning did not die out of him, and was thus revived:—

"I shall never forget the evening when a drunken miller came into the shop. He was the son of a Protestant clergyman in a village near Teterow, and had almost concluded his studies at the Gymnasium, when he was expelled on account of his bad conduct. To punish him for this, his father made him learn the trade of a miller. Dissatisfied with his lot, the young man gave himself up to drink, which, however, had not made him forget his Homer, for he recited to us about one hundred lines of the poet, observing the rythmic cadence. Although I did not understand a word, the melodious speech made a deep impression upon me, and I wept bitter tears for my unhappy fate. Thrice I got him to repeat to me those godlike verses, paying him with three glasses of brandy, which I bought with the few pence that made up my fortune. From that moment I never ceased to pray God that, by His grace, I might yet have the happiness to learn Greek."

The *naïveté* of the concluding sentence is curiously characteristic of the old German pietistic mind; but the future investigator of Troy, as may be supposed, did not neglect to supplement his petitions by practical efforts of his own. For the remaining details of his chequered life, and the dogged resolution with which he set to work at acquiring languages in every interval of necessary occupation, we must refer the reader to the autobiographical sketch. But the transition from the unhappy slaving shop-boy, attracted by the sound of the Greek, to the successful discoverer of what has at least the best claim to pass for the site of Troy, is a specimen of the vicissitudes of life too curious to omit.

The main facts in regard to the recent operations on the hill of Hissarlik are pretty well known to our readers, or at least their general results. We should rather aim here at calling attention to some of the more significant points in connexion with the method employed, and the nature of the articles discovered, referring our readers to the book itself for further details. What particularly distinguishes Dr. Schliemann from former investigators of the subject is the systematic manner in which he has brought all his theories and researches to the practical test of digging for ocular evidence in the shape of relics and remains. The question as to the reality of Troy, and as to its situation, if real, has been, as we need not remark, an object of interest for many centuries. There have been writers who have merely theorised upon it from comparison of the Homeric account with maps and modern names, without so much as visiting the site. Others have visited it, and founded their speculations upon considerations of the run of the country, the natural features of the landscape, with more or less plausibility and ingenuity. Dr. Schliemann, we believe, is the first who has reduced the hunt for the supposed site of Troy to the prosaic, practical, and (we may add) expensive test of downright digging for it. This practical test, by Dr. Schliemann's account (and it seems to be admitted on all hands that his narrative is quite beyond impeachment as to facts) at once disposed of the heights of Bunarbashi, which had of late been the favourite site with Trojan critics; since

* Troy, and its Remains: a Narrative of Researches made on the Site of Ilium and on the Trojan Plain. By Dr. Henry Schliemann. Translated with the Author's sanction. Edited by Philip Smith, B.A. With maps, plans, views, and cuts illustrating 500 objects of antiquity discovered on the site. London: John Murray.

excavations here led to the undisturbed soil or rock within a very little distance of the surface. The excavations on the hill of Hissarlik led to results at least sufficiently different from this. A section of the formations pierced through gives, at a glance, a rough idea of the extent of the layers of *débris* which form the upper portion of this hill, and the accumulation of which has considerably increased its original height, from 40 ft. to 46 ft. having been pierced before the original surface was reached. Within this thickness Dr. Schliemann recognised five distinct strata, discriminated from one another by the character of the remains found in them. The upper stratum, about 6 ft. thick, contains inscriptions as late as the second century, and coins as late as Constantine and his immediate successors; and Dr. Schliemann identifies this stratum with the Greek colony whose existence is inferred in a passage which he quotes from Herodotus, as dating from at least 500 B.C., though he gives it (with scarcely sufficient reason from the evidence adduced) a probable date from two hundred years earlier. "The house walls of Hellenic architecture, consisting of large stones without cement, as well as the remains of Greek household utensils, do not, however, extend in any case to a depth of more than two mètres (6½ ft.) in the excavations on the flat surface of the hill." "Below this the immense layer of *débris*, which has been left by the four different nations that successively inhabited the hill *before* the arrival of the Greek colony, that is before 700 B.C., is an immensely rich *cornucopia* of the most remarkable terra-cottas, such as have never been seen before, and of other objects which have not the most distant resemblance to the productions of Hellenic art." The possible question whether this enormous mass might be composed of material brought from other places and piled here to increase the height of the hill for some special purpose, is answered by the fact that all the remains of masonry occurring in the various strata rest upon strong foundations, and are the ruins of real houses; and all the large urns discovered were in an upright position. Although evidently convinced at an early stage of his work that he had found his mark, Dr. Schliemann's opinion as to which of the strata was to be assumed as the Trojan one varied at different epochs of the work, and at one period he writes as if he had finally determined on the lower and thickest stratum as the one; but the verdict in the end was given decisively in favour of the one next above this (about 10 ft. in thickness), and could not be otherwise, from the extent and nature of the remains discovered in it. Not that we are saying here that there is any absolute conviction that here were the ruins of Homer's Troy (a point on which we have a word to say just now), but that here was by far the richest and most important collection of relics; here were manifest traces of destruction by fire; and here were remains of walls and masonry which Dr. Schliemann considered could be identified with parts of the city referred to in the "Iliad." Leaving this latter consideration on one side for a moment, we may notice one conclusion to be drawn from the account of the "yields" of the different strata, as to the fallacy of drawing inferences in regard to the relative age of different remains from the proportion of stone implements found in them. Whatever opinion might be formed as to the positive date of the different strata, their relative date is left beyond doubt by their position one upon another. But in the stratum immediately below the Greek remains, Dr. Schliemann found such a number of stone implements and stone idols, of a rude enough type, that he jumped at the conclusion that he was in the "stone age," and in fact anterior to any probable date of Troy. But as he went further down, contrary to all established rules and regulations, the workmanship of the articles found became better, and the stone gradually disappeared, and was replaced by iron, copper, and bronze of superior workmanship. This is not the first time that investigations of this kind have brought out results diametrically opposed to the idea of the uniform progress of civilisation, and have led instead to the conclusion that long periods of progressive deterioration had been going on. Perhaps the kind of light thus thrown upon theories of national development is not the least important of the results of Dr. Schliemann's labours.

Among the great number and variety of the terra-cotta remains found in the various strata, and especially the one particularly selected as representing the remains of Troy, the most remarkable feature by far is the constant recurrence of a face of a more or less owlish character upon the upper part of the vase, accompanied by suggestions of the female figure in a rude shape on the body of the vase; almost always *mamma* in a sufficiently recognisable form, frequently accompanied by a symbolical representation of the navel, sometimes with the representation of long hair behind, and almost invariably with a rude imitation of upraised arms or wings, at first sight looking like handles. The example shown in the plate (fig. 1) wants these arms, but is remarkable as one of the largest and finest specimens of this class of object, and also for the ornamental girdle which crosses it between the breasts, and which is a still further evidence of its intention as a rough representation of a figure. In fig. 2, which represents the largest of the vases found in "The Royal Palace of Troy" (20 in. high), the arms, or, as Dr. Schliemann here calls them, "wings" (in reference to the owl head), are seen, and in fig. 9 the wing form is more marked. The owl's head occurs in numberless examples, sometimes on the body of the vase, sometimes separate, and forming the lid; specimens of these separate lids are given in figs. 3, 4, 5, and not improbably the lid of No. 9, which is wanting, may have taken this form. That there was some important symbolical meaning attached to this constantly-recurring figure there can hardly be a doubt; and Dr. Schliemann connects it with the worship of Pallas, to whom, as every one knows, the owl was sacred in the days of classic Greece, and who is continually named in the "Iliad" as γλαυκῶπις Ἀθήνη, or, as he translates it, "The goddess Athena with the owl's face," which he contends is the real meaning of the adjective, and not "bright-eyed," or "blue-eyed," as usually translated.* This is both ingenious and startling, but no reader of Homer, we think, will be willing to imagine "the blue-eyed maid" as an owl-headed deity of the Assyrian type, though she may have degenerated into this in a more prosaic age, which is the view taken by Professor Max Muller, who is distinctly adverse to the Schliemann theory. At the very first appearance of Pallas in the "Iliad," she is mentioned as "the bright-eyed" (according to the usual translation), in the same sentence in which Heré (Juno) is described as "the white-armed," so that one may naturally suppose each epithet to refer to ordinary bodily characteristics. However, these owl-headed vases are no doubt a remarkable incident in archæology, and will probably afford some new ground for students of ancient creeds to build upon. Of the other vases of which we give illustrations, fig. 6 represents a long-spouted form frequently recurring, and which, if not very beautiful, seems practically proof against the danger of spilling in pouring out; and fig. 7 represents a two-handled form of cup, which will not stand except on its rim, and which Dr. Schliemann identifies with the Homeric δέπα ἀμφικύπελλα, commonly translated "double cups," but which seems much more rationally translated into "two-handled cups," such as a word of Greek derivation) is perhaps a descendant. No. 8 which was found not in the Trojan stratum, but in that above it, we select as a remarkably curious specimen of what may be called a bugle-shaped cup. We may mention, as bearing upon the relative purity of taste in ancient and modern times, that Dr. Schliemann found a good many specimens (of which two or three are figured) of cups and other vessels in the shape of animals, on exactly the same principle as that milk-jug in the form of a cow, with the lid in the back and the mouth forming the spout, which Mr. Ruskin has somewhere stigmatised (not unjustly) as an instance of the utterly degraded taste of the lower orders in England. Whether it be a grief or a consolation, it would seem that bad taste is at least no sin of merely modern date.

Another point for the archæologist to note among the salvage of Dr. Schliemann is the recurrence of that sign called the *fylfot* ✠ which we had occasion to allude to recently in noticing the late Mr. Waring's book on Antique Pottery. Upon some of the Hissarlik pottery the emblem of the sun is surrounded by four crosses of this shape, which again form a cross in their arrangement around it (p. 119). Among the most numerous class of objects discovered was a number of small terra-cotta whorls, mostly in the form of flattened spheroids, and engraved with signs and characters of which nothing has yet been made. A great many of these are engraved as an appendix to the present volume; but a remarkable one, perfectly circular, is given on p. 188, which is scored round in parallel lines dividing it into zones, as if it were a planetary symbol or model; two of the zones studded with dots, and the middle one, broader than the rest, ornamented by a repetition of the *fylfot* symbol. It seems certain that this object must be something more than a mere ornament.

Of the discovery of the most remarkable "find" made on the spot, and which Dr. Schliemann calls the "Treasury of Priam," we may quote the account in his own words, though we have before now referred to it:—

"I uncovered the Trojan city wall which runs out from the Scæan Gate. In excavating this wall further, and directly by the side of the palace of King Priam, I came upon a large copper article of the most remarkable form, which attracted my attention all the more as I thought I saw gold behind it. On the top of this copper article lay a stratum of red and calcined ruins, from 1½ ft. to 5½ ft. thick, as hard as stone, and above this lay the above mentioned wall of fortification (8 ft. broad and 24 ft. high), which was built of large stones and earth, and must have belonged to an early date after the destruction of Troy. In order to withdraw the treasure from the greed of my workmen, and to save it for archæology, I had to be most expeditious, and although it was not yet time for breakfast, I immediately had '*païdos*' called. (This is a word of uncertain derivation, which has passed over into Turkish, and is here employed in place of *ἀνάπαυσις*, or time of rest). While the men were eating and resting I cut out the treasure with a large knife, which it was impossible to do without the very greatest exertion, and the most fearful risk of my life, for the great fortification-wall, beneath which I had to dig, threatened every moment to fall down upon me. But the sight of so many objects, every one of which is of inestimable value to archæology, made me foolhardy, and I never thought of any danger. It would, however, have been impossible for me to have removed the treasure without the help of my dear wife, who stood by me ready to pack the things which I cut out in her shawl, and carry them away."

Out of this wonderful hole in the wall came forth a large copper shield, answering to the Homeric description of the various parts of a shield; copper plates and vases; then cups and vessels of pure gold, flat pieces of silver in the form of knife-blades, &c.; in short, the idea conveyed by the enumeration of the articles (except the shield) is, that Dr. Schliemann had got straight into the butler's pantry of the period. With these vessels were packed also (inside some of them) gold ornaments, diadems, and fillets; a large number of these are engraved with the English edition. Dr. Schliemann's opinion is, that these were articles packed together for removal in an attempt to escape from fire, and perhaps from an enemy at the same time.

"My dear wife," who is mentioned in the foregoing extract, seems to have been a helpmeet worthy of the occasion. She is, we are incidentally told, an Athenian lady, possessed by a great interest in Homer, and, which is still better, by a thorough belief in the interest and value of her husband's investigations. In several places Dr. Schliemann says that he achieved things with her assistance which he could not otherwise have accomplished. She accompanied him through the whole of his arduous labours, living on the scene of the excavations with him under no little discomfort and privation. The workmen were by no means easy to deal with. On one occasion, it will be refreshing to English architects to hear, seventy of them struck for increased pay, under the impression that as the weather was fine their employer would not lose a day, and could not get on without them. Dr. Schleimann, to their great discomfiture, employed one day in going or sending round to the nearest villages and procured hands in their place by the next morning, and these obstructives found themselves completely humbled and outwitted. His difficulties with the Turkish Government were considerable, and not creditable to the Government. Dr. Schliemann defends himself against the charge which had been made against him of having broken faith with them. After a good deal of bartering and huckstering, for the privilege of excavating, with Safvet Pacha (whose only interest in the matter was an expectation that gold would be found there), and after the Pacha had already directly broken his word once, it was at last arranged that Dr. Schliemann should have permission to excavate as much as he wished, on condition of giving over one-half what he found to the Pacha, a stipulation assented to on condition that Dr. Schliemann should have liberty to carry the other half out of Turkey. "But

* γλανξ is *an owl*, and γλαυκος *bright or gleaming*; the usual theory being that the owl was so named because of its glaring eyes. Dr. Schliemann's hypothesis, of course, requires the contrary theory,—that the adjective was derived from the name of the bird.

VESSELS FOUND BY DR. SCHLIEMANN ON THE SUPPOSED SITE OF "TROY."

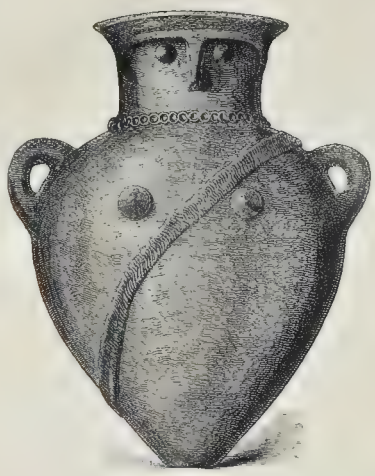


FIG. 1.



FIG. 3.



FIG. 4.



FIG. 5.



FIG. 2.



FIG. 6.

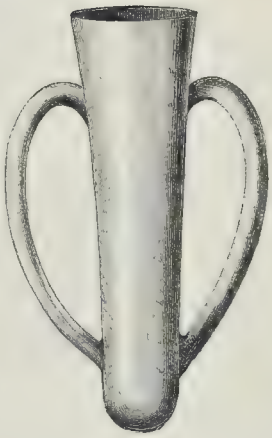


FIG. 7.



FIG. 9.

the right thus conceded to me was revoked in 1872 by a ministerial decree, in which it was said that I was not to export any part of my share of the discovered antiquities; but that I had the right to sell them in Turkey. The Turkish Government, by this new decree, broke our written contract in the fullest sense of the word, and I was released from every obligation. . . . . I kept everything valuable that I found for myself, and thus saved it for science, and I feel sure that the whole civilised world will approve of my having done so." We have no doubt of the verdict of the civilised world.

We have given but a very slight and imperfect idea of the information afforded in this interesting volume, which is written with a simplicity and directness of manner only broken through now and then by a little exaggerated, but sincere, enthusiasm over some of the objects discovered. What is the relation of this discovery to the Troy of Homer is another question. Dr. Schliemann has laid himself open to a good deal of criticism by the directness with which he has assumed the personages and places of the "Iliad" as facts; the most pointed instance being his fixing the name of "Priam's Treasury" on this remarkable collection of utensils; which is about as practical and probable as if a man were to find a collection of antique weapons of the chase somewhere in

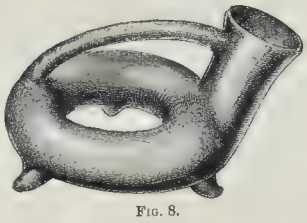


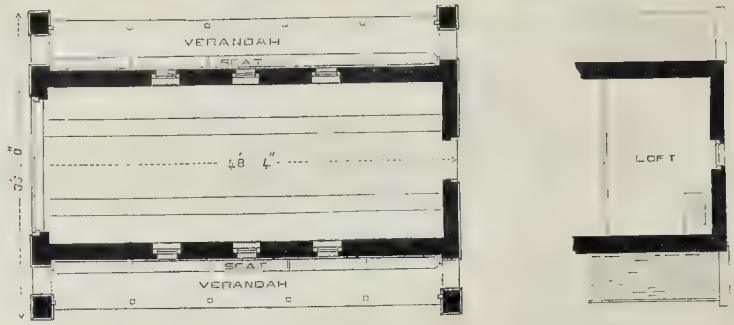
FIG. 8.

Assyria, and call it "Nimrod's Gun-room." Some of the coincidences, though not counting for much when taken apart, are certainly remarkable when added to the others; for instance, Dr. Schliemann seems to have been much struck with the violent and continued strong winds which he encountered during his work at Hissarlik, and not unnaturally compares this fact with Homer's favourite epithet for the city, familiarised to English readers by the line in one of the finest of Tennyson's earlier poems:—

"Far on the ringing plains of *windy* Troy."

But when we look at the plans of the walls as excavated, and see the cramped proportions of the little place, and compare it with the immortal "wide-built city" of Homer, all idea of the discovery as an addition to the interest of the poem seems to vanish. To have the Homeric Troy cut down to this would be a serious blow indeed. All that can be said in regard to this part of the question is that if the "Iliad" had a foundation in some real event, this is a more probable scene of that event than any other yet suggested. But the Homeric poem, whether with any substratum of fact or not, is so purely imaginative and romantic, that an attempt to fit it to topographical facts must be a failure, as well as a great injury to the effect of the poem. This is the only point of view from which any doubt can be thrown on the value of Dr. Schliemann's discovery. In any other light, it must rank among the most remarkable events in the history of archæology; and the presence of this accumulated heap of ancient remains which yields itself up to the first determined search, though lying neglected for ages, suggests the advisability of further and more systematic investigation of this kind in other quarters. Who can tell what new and unsuspected records of early human history may be lying about the globe, ready to yield up their secrets to those who will have the energy and industry to dig them out?





THE LIFE-BOAT STATION, WALMER.—Mr. Charles H. Cooke, Architect.

THE WALMER LIFE-BOAT STATION.

THE NATIONAL LIFE-BOAT INSTITUTION.

The annual meeting of the National Life-boat Institution was held last week, and H.R.H. the Duke of Edinburgh made an excellent address, describing the important work which has been done through its instrumentality. The report, which was read by Mr. R. Lewis (the secretary), showed that, since the last meeting, the Institution had placed twelve new life-boats on the coast,—five of them at new stations, and the others replacing old or inferior boats. Seven of them had been provided with transporting carriages, and six new boat-houses had been built. During the past year the society's life-boats, which are now 250 in number, had saved 543 persons, nearly all of them under perilous circumstances, when ordinary boats could not have effected their rescue, or could only have done so at extreme risk to those on board them. These invaluable services since the last annual meeting had happily been rendered without any loss of life among the brave men who had performed them. It was satisfactory to know that, as far as the operations of this institution were concerned, the violence of no storm appalled the brave men who manned the life-boats. The number of lives saved from its first establishment to the present time, either by its lifeboats or by special exer-



THE PROVIDENT INSTITUTION SAVINGS BANK.—AT THE CORNER OF ST. MARTIN'S LANE AND HEMMING'S ROW. MR. DAVID BRANDON, F.S.A., ARCHITECT.

tions, for which it had granted rewards, was 22,866. Language failed to express adequately the gratitude which every one must feel who ponders over this noble list of lives saved, and the instinctive thankfulness that rises up in the heart that such great work has been accomplished on our shores. The total amount of the receipts during the past year had been 33,500*l.* 14s. 2d., and of that sum 7,213*l.* were the result of special gifts to defray the cost of ten life-boats. The expenditure, including liabilities, had amounted to 32,363*l.* 17s. 7d. Entering on the fifty-second year of its existence, the National Life-boat Institution, in the maturity of its strength and experience, had every encouragement to pursue its career of active work with unabated vigour and undiminished confidence.

In furnishing a life-boat's equipment, the first duty is to provide her with everything than can contribute to the safety of those employed on this dangerous service; and secondly, to make her as far as possible independent of all assistance from wrecked vessels, the crews of which are often in a helpless state, perhaps lashed to the rigging, and unable to throw a rope, or even to get from the wreck to the boat without help.

A life-boat is therefore provided with life-lines, some festooned round her sides, by the aid of which any one in the water using them as stirrups can get into her; others with corks attached are thrown from within her when alongside a wreck, and float on the water all around her. She is also furnished with a cork life-buoy, which, with a line attached, can be thrown, or floated, to any one in the water, who might be too distant to reach the life-lines of the boat. She has likewise strong but light lines with grappling-irons attached, one at the bow and another at the stern, which, by being thrown into the rigging or on board a wreck, fasten themselves, so that the boat can be at once held to the wreck without the assistance of any one in her. An anchor and cable; a good lantern for nightwork; a compass; and a drogue or water-bag, which is dragged behind a boat to prevent "broaching-to" when running before a heavy sea, are also necessary to a complete life-boat's equipment.

In addition to the life-boat, transporting carriage, and equipment, a suitable *house* is indispensable to shelter them from the weather when out of use. In 1857, the Institution secured the services of Mr. C. H. Cooke as its honorary architect, and his co-operation in connexion with the erection of its life-boat houses has been very valuable. From his plans and specifications upwards of 200 substantial and well-built houses have been constructed at different life-boat stations.

In choosing sites of ground on which the life-boat houses are to be built, regard is particularly taken to their convenience, so that they may be handy for launching the life-boat, and for her easy transport on her carriage along the coast to the scene of the wreck. The house is usually 40 ft. long and 17 ft. wide; its doors are 14 ft. wide, and their height about 12 ft. There are folding-doors of the above dimensions facing the water; and if it should be deemed an advantage to be able to take the boat on her carriage to the rear of the house, doors of the same dimensions are also placed at that end, otherwise a small door at the rear end suffices. The life-boat house is usually a substantial building, built of brick or stone, and having a slated roof. A boarding or flooring, about 6 ft. in length, is placed over the joists at the rear end of the house, to keep the spare stores on; and a batten with wooden pegs for hanging up the life-belts and small lines, is fixed at a convenient height along the side wall. In some of the life-boat houses gas has been fitted.

The average expense of a complete life-boat station is 800*l.*, in addition to 70*l.* a year needed to keep the establishment in a state of efficiency. The cost is made up as follows:—

Life-boat and her equipment, including life-belts for the crew, and transporting carriage for the life-boat	£550
Boat-house (average cost)	250
Total	£800

We take the opportunity to illustrate the life-boat station which has been recently completed at

Walmer.

This house is built with Kentish rag and Bath stone dressings, the verandahs and uprights, and all exposed woodwork, being stained and varnished. There are large doors about 14 ft. wide at the end opposite to that shown in the view. There is a loft at one end of the house for tackle, and the walls are fitted with pegs for life-belts. Ventilation is secured by louvred openings in gables and sides of house by fixed louvres in casements, alternate with glazed windows.

The life-boat was christened, and the station opened, by the Lady Victoria Leveson Gower, the youthful daughter of the Right Hon. Earl Granville, who, with many distinguished guests then visiting at the castle, attended on the occasion.

The verandah, or covered ways, on each side are fitted up with seats, and afford comfort and shelter to the sailors. The work was satisfactorily carried out from Mr. Cooke's designs by Messrs. Denne, of Deal, at a total cost of 516*l.*

It is impossible to speak too strongly of the importance of the work which the Life-boat Institution is formed to do, and of the value of the results which have attended its labours.

THE PROVIDENT INSTITUTION SAVINGS BANK.

THE Provident Institution Savings Bank, St. Martin's-place, was first established in Leicester-place, in the year 1816, with the Duke of Somerset for its president. It has been carried on from that date up to the present time, during which period, as shown by last annual report, 23rd June, 1874, 329,595 accounts have been opened by depositors and by trustees of friendly and charitable societies, who have paid in (including interest credited) the sum of 19,065,177*l.* 3s. 2d., of which 17,478,649*l.* 19s. 10d. have been repaid to them, leaving a balance of 1,586,527*l.* 3s. 4d. then due to 40,285 depositors.

On the resignation of the Duke of Somerset, in May, 1838, the Lord Dynevor was elected president, and upon his lordship's resignation, on the 1st of March, 1849, his Royal Highness the Prince Consort, having intimated his willingness, was duly elected president, and took a lively interest in the institution, and wished for a thorough examination into the state and system of the accounts, by an accountant, which was made. On the receipt of the report, the following letter was received by Mr. Wray, one of the managers of the Provident Institution:—

"Buckingham Palace, 6th April, 1850.

"I have received the commands of his Royal Highness the Prince Albert, to forward to you the report of the examination of the accounts and system of the Provident Institution, St. Martin's-place. I likewise send you the voluminous documents which accompany this report, which fully prove the care and attention which have been employed by the accountant who has conducted the inquiry. It is exceedingly gratifying to his Royal Highness to find the full confidence which he had reposed in the excellence of this Institution fully justified by the result of this searching examination.

C. B. PHIPPS."

After the lamented death of his Royal Highness the Prince Consort, the Marquis of Westminster filled the office of president, which is now held by the Right Honourable the Earl of Harrowby, who was elected in July, 1870.

This Institution increased so rapidly that its original site was not sufficiently large, so that a building was erected, No. 5, St. Martin's-place, in the year 1830, where its business was carried on for forty-three years. That site, however, being required under the National Gallery Enlargement Act, the present handsome building has been erected by Messrs. Myers, according to the plans, and under the supervision of Mr. David Brandon, architect.

The entire building includes a number of vaults in the basement story, to receive papers relating to the transactions of the bank since its establishment in 1816, also lavatories, and a luncheon-room for the clerks. On the ground-floor is the banking-room, which measures 47 ft. by 32 ft., the public entrance, secretary's room, strong-room, and a private entrance leading to a residence on the upper floors, and in the basement story for the secretary. On the first floor are the Board-room and auditor's room, lavatories, &c. There is also a separate entrance in Hemming's-row, leading to a set of offices at present unappropriated.

The principal fronts in St. Martin's-lane and Hemming's-row are of Portland stone, and measure respectively 44 ft. by 60 ft. in length, by 45 ft. in height to the top of the balustrade.

The total cost of the works, including the builder's contract, and the various interests in the properties, was about 21,000*l.*, subject to a ground-rent of 258*l.* per annum: this outlay having been increased in consequence of the requirement of the Metropolitan Board of Works to widen the entrance to St. Martin's-lane by 8 ft., involving the purchase of additional property in Hemming's-row.

MODELS BY FOLEY AT THE BURLINGTON ARTS CLUB.

IN one of the rooms of this club are now collected the original models and casts (small size), made as studies for a good many of our late gifted sculptor's works, chiefly consisting of his portrait statues. The opportunity thus afforded of comparing these, in immediate juxtaposition, brings out strikingly the power of the artist in individualising these works, and giving to each subject the attitude and manner which seem most appropriate to his physiognomy and character. In the statue of "Lord Clyde" the sturdy attitude, almost destitute of outward grace, assimilates remarkably with the stern, rugged features of this born soldier. The figure of "Lord Herbert," designed for the War Office, is remarkably grand in its thoughtful and wrapt expression and action; and that of "Stonewall Jackson" may be classed with it as a figure in which heavy drapery is made use of to intensify the expression of grandeur which is aimed at: these two figures might well stand as excellent expressions of the theoretic and the active forces of war; the one deeply contemplative, the other prepared to fight his way through all obstacles. Of statues of figures in civil and professional life, those of Lord Dunkellin, Mr. Fielden, and the sitting figure of Sir Chas. Barry, are admirable examples of quiet but expressive pose. It is rather curious to compare the model of the equestrian portrait of "Lord Canning," dating from some time back, with that recent magnificent work "Sir James Outram": between the quiet and inobtrusive treatment of the former, and the extraordinary energy of the latter, there is evidence of half a lifetime of endeavour and progress in the art. It is not every artist who, after a tolerably long career, could point to his last work as his best, which the Outram statue may be said to be; as a portrait-statue, at least, of the equestrian type, we should doubt whether it has ever been equalled for intense yet unexaggerated force in action and expression.

We shall take another opportunity of noticing, more at leisure, the important collection of works by Girtin now on view at the club.

THE UNION OF THE ARCHITECTURAL SOCIETIES.

ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the Society was held last Friday evening, the 14th inst., under the presidency of Mr. Birch, when Mr. Henry Skelmerdine was elected member.

A vote of thanks was passed to the churchwardens of St. Helen's, Bishopsgate, for the facilities afforded to the members on the occasion of their recent visit.

A letter was read as to the approaching Exhibition in Philadelphia.

Mr. S. Flint Clarkson (secretary) said that it had been thought desirable that the following correspondence should be submitted to the meeting:—

"Royal Institute of Architects of Ireland,
December 10th, 1874.

My dear Sir,—The question of certain reforms in the constitution of our Institute having been lately before the Council, I am directed by it to open communications with you, in respect to the most important of the desirable changes urged on us by some active members of our Society, and which have been received with favour. The Council are of opinion that it would strengthen the position and weight of our local society, and perhaps add some accession of influence to the Royal Institute of British Architects, if an arrangement could be effected by which, in the main, our body would be affiliated to it, recognising it as the parent and central society, and acting in conformity with your laws, professional code and practice, scale of charges, &c., by which we would be guided, and which, we believe, are now almost identical. (I enclose copies of our Bye-laws and the Scale of Professional Charges for your information.) The feasibility of such a suggestion being put in practice, is brought before us by the 'Chapter' system of the American Institute.

Our ideas are that, without any violent change in the constitutions of our body, or even in its designation, or without ceasing to exercise any of its local functions, it might be so merged into

the parent Institute as to become practically one; this process we would propose to effect by presenting for admission to the Royal Institute of British Architects all members of our local society desirous of joining it, leaving your Institute, under its existing bye-laws, or such relaxation of them as may be considered desirable, to elect into the different classes such applicants as may appear eligible for each; and our expectation is, that if a satisfactory arrangement could be effected, the main body of the fellows and associates of our Institute would be desirous of admission to the senior society, and would be admissible, and that a fusion would be practically accomplished in course of time, which would go to solve a problem, now, we have reason to believe, occupying the attention of your Institute in regard to all local and isolated societies.

The question of most practical importance to be discussed between us, should our proposition be entertained, will be a financial one, viz.,—To fix a rate of subscription to cover the fees to both the central and local societies, without being so high as to be a bar to the success of a scheme in which we all are so interested; but we submit that this may be accomplished somewhere after the manner in which clubs regulate the subscriptions of their foreign and military members. The Council are, however, of opinion that this is a detail for future discussion, and they cannot but feel confidence that your Institute, should it heartily take up the question of 'affiliated members,' if I may so call them, would not hesitate to vary its bye-laws in such respects as may appear necessary.

I have authority to lay our proposal before Council in this general form, and to invite further discussion on it. Could any practicable scheme be defined satisfactory to our respective Councils, we think we can assure you it would be accepted by our Institute. The present members on our list are 36 Fellows, 20 Associates, and 10 students.

GEO. C. HENDERSON,
Fellow and Hon. Secretary.

The Secretary,
Royal Institute of British Architects."

"10, Cloak-lane, London,
March 15th, 1875.

ARCHITECTURAL ALLIANCE.

Dear Sir,—You are probably aware that a short time since a committee was appointed by the Royal Institute of British Architects to consider the best means of extending the usefulness of that body.

A few days ago a letter, of which the following is a copy, was received from Mr. Eastlake, the Secretary of the Royal Institute of British Architects, enclosing a letter from the Royal Institute of Ireland, a copy of which is herewith sent:—

"'Royal Institute of British Architects,
Incorporated 7th William III.,
9, Conduit-street, Hanover-square, W.,
22nd February, 1875.

Dear Sir,—I send you enclosed the printed copy of a letter recently received by the Council of this Institute from the Royal Institute of the Architects of Ireland.

I am requested to beg that you will kindly bring the same under the notice of the Architectural Alliance, and obtain their official opinion on the proposed scheme of affiliation to this Institute, and the possibility of extending it to the leading architectural societies in the kingdom.

Awaiting the favour of your reply,

CHARLES L. EASTLAKE,
Secretary.

The Hon. Sec. of the Architectural Alliance.'

The question of the practicability of merging the local architectural societies into the Institute has repeatedly occupied the attention of the Alliance; and, in accordance with a resolution, a sub-committee of the latter held a conference with a sub-committee of the Institute in the year 1871; but, by the present constitution of that body, no satisfactory course could be arrived at.

There can be no doubt that it would greatly strengthen the profession if the Institute comprised the whole, or at any rate a large majority, of the practising architects in the United Kingdom; but it appears impracticable, if even it were desirable, that this should be accomplished by the dissolution of the several local architectural societies.

It would, therefore, seem that the most advisable plan would be, as suggested in Mr. Henderson's letter, to recognise the Institute as "the parent and centre society;" but before this could command the support of architects generally, and especially those practising in the provinces, there *must be such an alteration in the working of the Institute as would render it of real practical benefit to the profession.*

In order the better to illustrate some of the means whereby this must be accomplished, the following ideas have occurred to me, which I venture to submit for consideration:—

Facilities of membership by the recommendation of the president and council of the local societies.

The representation in the council of the Royal Institute of British Architects of architectural societies possessing a certain number of architect members.

The establishment of a board of arbitration of all matters affecting an architect's practice, at which the country members should be represented, and in cases of local custom the societies should be consulted.

The establishment of a committee, or some properly constituted authority, to examine and experimentalise upon new materials and inventions, with power to consult authorities thereon.

The establishment of a committee to watch all proceedings connected with the profession, and to publish and circulate reports to all the societies.

A reading-room at the rooms of the Institute, and means afforded to country members of writing and receiving letters, and interviews when in London.

The publication, as far as possible, of all papers read at the several societies, the editorship of which should be undertaken by the Institute.

The organisation of examinations at certain towns, as centres in the United Kingdom, under the supervision of local moderators, who would forward the examination papers to the examiners in London, under seal.

The interchange of visits from members of the several societies, and contributions of papers from the local societies to the Institute.

The establishment of some means whereby all respectable practising architects should be at once admitted members on payment of the usual fees, and in future admission should be obtained by passing a written examination, which, without being difficult, would show that the applicant was in a position to practise as an architect, except in cases of undoubted professional knowledge, as evidenced by executed works, or other cause satisfactory to the examiners.

You will please consider that the foregoing are not put forward in a cut-and-dried form, but are merely ideas, and submitted in order that they may be the means of eliciting the general opinion, and of producing other suggestions; and, although difficulties may appear at the outset, if the general principles are established, the details will doubtless follow in due course.

I shall feel obliged if you will take an early opportunity of bringing the subject of this letter under the notice of your society, and reporting to me thereon by the end of April (this, Mr. Clarkson said, was found to be impracticable), after which time the sub-committee of the Alliance will meet to receive the opinions of the several societies, and probably confer with the before-mentioned committee of the Institute.

J. DOUGLASS MATHEWS,
Hon. Secretary."

Mr. Mathews said that they were probably aware that about this time last year delegates were appointed with reference to the architectural alliance, and the letter just read, bearing his signature, had been the only action taken in the matter since the last conference, and he would be glad to hear of any suggestions that might be made with regard to the question. The Royal Institute of British Architects had sent to this Association suggesting that a conference might be held to determine the matter of the affiliation of the two societies.

The President explained that the reason the question had been raised in the professional papers before being discussed at the meeting of the Association was, that it had not previously been put forward in any definite form. As soon as anything material had been agreed upon by the sub-committees who had been appointed to discuss the matter, it would be submitted to the members.

Mr. Phené Spiers said that the letter of Mr. Robins's was published on that gentleman's own responsibility, and must therefore be looked upon as emanating from a private individual, and not as containing the views of the Association.

Mr. Payne deprecated the idea of the proposed fusion of the two societies, and thought that if such a step were taken on the part of the Association, it would be suicidal.

Mr. Todd considered that union was strength, and thought that if some scheme could be devised whereby the whole of the architectural societies could be conjoined, it would be well, and would generally impart strength.

Mr. Quilter then moved:—"That the subject of affiliation or fusion with the Royal Institute of British Architects should not be discussed at a general meeting until it has been before the committee for consideration."

Mr. Robertson having seconded this motion, it was agreed upon without being put from the chair.

A vote of thanks was then accorded to the delegates who had represented the Association in connexion with the Architectural Alliance, which was carried by acclamation.

This having concluded the "business" part of the meeting, Mr. Banister Fletcher read a paper on "Valuations of Property," a report of which we give under its own heading.

THE VALUATION OF PROPERTY.*

It might be said with safety, the reader said, that no branch of the profession was so open to fluctuation, was so little guided by set rules, or was so disheartening to the beginner, and to the inexperienced, as that of the valuation of property. The tyro having to give his opinion of the value of certain premises, would make a careful survey, minutely estimate the dilapidations, work out an elaborate calculation by the aid of the tables, and confidently declare the result, only to find to his confusion and dismay that that result differed to a very alarming extent from the estimate of old and experienced practitioners, to whose superior judgment he felt himself bound to defer without reservation. And this would probably be, because he had omitted from his consideration some latent but important element of which the experience of years and the keenness of insight which was attendant thereupon, had enabled his more practised colleagues to appreciate the due significance. And this in turn was because valuing was *par excellence* the branch of their calling in which lengthened observation and experience, *and these alone*, could impart the knowledge necessary to successful practice. The quantity surveyor having once acquired a thorough knowledge of his branch of the profession, knew that he was going through the same process as sufficed for his predecessor of several generations back, and that he might rely upon those same processes twenty or thirty years hence with the same confidence as to-day. Arbitrations, again, were governed by set laws, which, once known, might be taken as permanent guides. The same was true in perhaps a somewhat less degree of the practice of dilapidations. It was true that the feeling—if he might use the term—of the courts in course of years underwent certain slight changes, leaning now somewhat towards the lessor, and sometimes more towards the lessee (at the present time the latter was certainly the case), but still what was considered a dilapidation 100 years ago, in all human probability would be so considered 100 years hence. The land surveyor, too, availed himself of precisely the same operations and processes of applied mathematics, as served for their ancestors, and which, saving perhaps certain slight alterations caused by the increased facilities which the progress of science might afford, would continue to be practised long after every one in that room had been gathered to his fathers. But with valuations the case was very different. The valuer had no such set rules to which he might persistently and unswervingly adhere, with the glad consciousness that the more unswerving his adherence, the more unimpeachable would be the result of his labours. He might know that it was usual to value a certain class of property upon such a table, after making such and such deductions and allowances, and that it was usual to deduct from the result so arrived at the value of the dilapidations, and he might make this calculation with scrupulous exactness, and then be uncommonly wide of the mark. A successful valuer must expect no honour in his own house, for he must be a bit of a prophet, and calculate to a nicety the consequences of some alteration or improvement in the circumstances of a property, which, perhaps, at the time of his survey

* From a paper by Mr. B. Fletcher already referred to.

might be looming only very dimly in the horizon. A gift of prophecy could only be acquired by cultivating habits of patient observation, whereby alone could be gained that experience which was the indispensable qualification for a successful valuer. The following were the causes which might tend to the improvement of property,—construction of railways, new stations, tramways, new streets, canals, harbours, and piers, establishments of lines of steamers, of cemeteries, and of markets, widening of streets, enclosure and laying out of commons, erections of public buildings, theatres, mansions, good class of houses, improvement of drainage, fashion, and residences by titled people. On the other hand, the causes which tended to depreciate property were the following,—construction of railways, removal of railway stations, establishments of railways, works, coal depôts, gasworks, factories, hospitals, barracks, prisons, schools, and music-halls, brickmaking, erections of shops near a private neighbourhood, and of small class of houses, occupation of inferior class of tenant of good houses, and bad buildings. As a general rule, the construction of a railway would beneficially affect the value of the country and neighbourhood through which it passed by improving the facilities for access, and opening up the localities for commercial and residential purposes. This was particularly the case at the points in the line which were selected for the establishment of stations, as these at once become eligible sites for the erection of buildings, instead of being, as might theretofore have been the case, useful only for agricultural purposes. But it might be that a locality had become dotted over with gentlemen's residences, occupied by persons of good means, all able to keep their carriages and saddle-horses, and that the comparative remoteness of the neighbourhood from a station was an element of value, as tending to promote selectness and privacy. The establishment of a new railway station in the immediate vicinity of this select locality would obviously much lessen the value of the existing house property. Vacant sites would no doubt improve in value, because they would be suitable for the erection of smaller dwellings, to be occupied by clerks and business people, whom the new facility would draw from the neighbouring town; but their selectness being disturbed, the old residents would leave the neighbourhood, and their residences would be too large and expensive to suit the new comers. Again, where, as constantly happened, a line of railway would pass close to a property, but have no station, within moderate distance, it would operate as a disadvantage, as inhabitants would have all the inconvenience of the noise without any counterbalancing benefits. The effect of the laying of a line of tramway might also be much miscalculated. At first thought it might appear that its effect could not be otherwise than beneficial, and so it would be to a suburb which thereby gained an additional and convenient means of access to central parts. But the effect upon the thoroughfares along which the line passed must be very different. It was a complaint of the shopkeepers in the Old Kent-road, when the tram-cars first began running along that thoroughfare, that chance customers who formerly walked past their shops morning and evening, on their way to business and back, were now carried past them in the cars, lured by the comfort and cheapness of the accommodation, and that the consequent falling-off of business was considerable. The same remark applied in great measure to canals, which, while their construction was no doubt in a high degree beneficial to places by their means brought into direct communication with commercial centres, and in and about which land would consequently greatly increase in value, might nevertheless exercise a detrimental influence on residential property lying near the line of waterway, a certain amount of dampness and consequent unhealthiness being almost inseparable from such vicinity. The establishment of harbours, piers, and lines of steamers, calling at the harbours and piers so established, could hardly fail to improve the value of property, enhancing as they did the commercial importance of the localities, and rendering them suitable and easy of access as watering-places. Strange to say, the establishment of cemeteries almost invariably enhanced the value of land and property in their neighbourhood; and this was particularly to be noticed in the cases of Norwood, Woking, and Highgate. As to the effect which markets would have on the surrounding property, he would instance the increase in rentals which the establishment of the New Wool Market in Coleman-street had occasioned, by inducing those interested in that trade to seek offices in the street or in the immediate vicinity. On the other hand, see the depressed character of the property surrounding Farringdon Market. Indeed, it would generally be found that the effect upon the neighbourhood was dependent on the success or otherwise of the market, although he was bound to say, while alluding to one of the most unsuccessful undertakings of modern times,—Columbia Market,—which had so signally failed to realise the benevolent intentions of its high-minded and public-spirited founder, that undoubtedly the value of property in its neighbourhood had increased. This would also be further proved by the important improvements arising in the vicinity of the Meat Market, and also the extension of Billingsgate Market. Few points would more severely tax the prescience of the valuer than the effect on property of new streets, affecting it as they did in such an infinite variety of ways. He could hardly estimate the effect of the new street now in course of development from Bloomsbury to Shoreditch. Few of his contemporaries, he believed, realised the wonderful alteration in value of property which followed the construction of Commercial-street, where, by the formation of a new street, plots of ground which formerly had no frontage at all, or only to back streets, became possessed of frontages to new and important thoroughfares; the increase in value was of course prodigious, but what was hardly sufficiently thought of, was the depreciatory effect exercised upon property in the old streets in the neighbourhood by the formation of new channels for the traffic which formerly passed through them, and by the sudden throwing into the market of a large quantity of new shop, office, or warehouse property, for sale or letting. This effect was at the present time being felt in Cheapside, and in the neighbourhood of the new Queen Victoria-street.

Turning now to consider the widening of existing streets, an excellent illustration of the difficulties here met with was presented by one of the latest projects of that able body, the Metropolitan Board of Works, which had so much improved London, and yet without raising a hue-and-cry about the waste of public money—he referred to the widening of Harrow-road. All the surveyor's theories of value, based upon knowledge of the locality as now existing, must be thrust aside; he had to deal with the future, and all his knowlege of present local value was wide of the mark. He had now to value on an entirely new basis. He had to pay regard to the more limited area to be occupied by buildings, to the probability of that area being required for different purposes, in consequence of the alteration. Here tables and mathematical calculations utterly failed, and a large and varied experience was the only guide. With regard to the effect on surrounding property, by the action of the Metropolitan Board or other local authority in converting commons and waste spaces into public gardens, the difficulty which met the valuer was not "what will be the effect of the alteration?" but "to how great an extent will property be improved?" as deterioration could hardly result from this cause. Another source of disturbance to the calculations, or even the most astute surveyors, was and must be the unexpected decision of Government or of local bodies as to the position of new public buildings. He need hardly refer to the great dispute as to the site for the New Law Courts. Upon the ultimate victory of the advocates of the Carey-street site, on the one hand, or the Embankment site, on the other, depended a difference of from 80 to 100 per cent. in the value of the property adjacent to their respective locations, and he was a skilful valuer indeed who could nicely balance the chances and effects. The Albert Hall in the west and the new Post Office in the City, again, had affected land in their vicinity to an extent which surveyors would have been ridiculed for suggesting as possible but a short time since. Again, as to the "Brompton Boilers," who could have foreseen that so small a beginning would lead to such great results, raising the value of property in the neighbourhood by an enormous per centage?

The influence exercised by the erection of a theatre would depend very greatly upon the character of the neighbourhood, as it was obvious that while it would hardly operate beneficially upon the value of houses in a "quiet square," a locality of a less private and select stamp might be favourably effected. The erection of a mansion of importance would very often greatly improve the value of property in its vicinity; or, if established, in a country place, would even create a neighbourhood. The building of a number of houses of a superior class would improve the value of land in the neighbourhood, and also that of the already existing house property, always providing that the houses built are not *too* good, *i.e.*, too large and expensive for the locality, in which case they would probably ultimately exercise a contrary effect, as after standing empty and perhaps unfinished for an indefinite time, they were let for much less than the rent which they were built to fetch, fall into the hands of tenants who could not and did not care to keep them up properly, and end by being blots and eyesores to the neighbourhood. The improvement or construction of a system of drainage in a neighbourhood could not, of course, affect the value of property otherwise than beneficially. One of the most perplexing, uncertain, and yet most powerful causes of alteration in the value of property was fashion. Occupation by titled folks had a much greater influence on neighbourhoods than might be supposed. In spite of the democratic tendencies of the times, people still "dearly love a lord," and loved still more dearly to live in the same terrace, or even street or road, as his lordship. Speculators, as a rule, were well aware of this, as the following amusing paragraph would show, which he met with the other day:—"Few people, except the Wandering Jew have the constitution of the nobleman who is said to have lived for many years almost rent-free, by constantly moving from one new house to another. His friends thought he was suffering from some obscure disease of the brain; but the builders' agents found him a capital decoy-duck. As soon as they told a wavering client that Lord So-and-so had taken a house in such a terrace, the houses in the terrace were immediately at a premium, particularly those on each side of his lordship. In fact, builders find it an excellent speculation to give a good house cheap to a tenant with a title, and are thankful even for such small mercies as a knight's widow." Few localities had been so much affected by the influence of fashion as the "Five Fields," which was now known as Belgravia. Those marshy fields which, he thought he was right in saying, were held on such terms that their owner parted with them to the celebrated Mr. Cubitt for a bottle of port wine, and which he, by building important houses thereon, developed into the property they now saw, with the result that houses in the *vicinity*, which formerly let at 32*l.* per annum, had been let at 250*l.*, with a premium. There was a commercial as well as a social fashion, as was plainly evidenced by the changes which had taken place within the memory of many of those present in the neighbourhoods of St. Luke's and Southwark.

With regard to the causes which were likely to operate to the disadvantage of property, gasworks and factories tended greatly to depreciate the value of the property near to which they might be placed, unless the property happened to be of a small and poor class, in which case its value might be increased, owing to the demand for dwellings for the workmen employed in the adjacent establishment. The effect to which the employment of a large number of men in any one spot would affect the neighbourhood was well illustrated in the case of Deptford, Charlton, and other parts near the dockyards, where the demand for and consequently the value of property varied with the activity or otherwise of Government works to a remarkable degree. A more striking illustration of the damage which might be done to a good class of property by the establishment of a coal depôt could hardly be found than that at Twickenham, where the depôt was so placed as to face on the other side of the line villas, which had never since let. The fact that by legislation most of the objectionable manufactures had been prohibited within populous districts, showed the tendency of the public mind to desire that these should, if possible, be altogether kept away from the vicinity of residential property, and most of them would have met in their experience instances of the great detriment arising to residential property of a decent class from the proximity of a factory. Probably few sources of annoyance more seriously affected property than the proximity of gasworks. The frightful injury to a man's garden arising from this cause might perhaps deprive him of one of his principal sources of enjoyment on his daily retirement from town and mental toil. Coming now to hospitals, he refrained from referring to the painful controversy as to Hampstead, because it was so recent and still so

undecided that it hardly came within the limits of fair discussion. But the excitement created, and the greatly varying statements as to effect on the value of land, should it be placed in the spot proposed, showed most conclusively how great an influence such a consideration as this might have. The great disputes which had arisen as to the placing of barracks at Oxford and Worcester showed how serious might be the effect of such occurrences as these upon the value of property; and at Milton-next-Gravesend, also, was a remarkable instance of the damaging influenced exercised upon what was formerly excellent property, by the establishment of a kindred institution,—he believed a military hospital. Of the effect of the proximity of a prison upon the surrounding neighbourhood, there was no need to speak, but when they approached schools, especially School Board schools, they trod on delicate ground. That the education of the children of the people was a paramount duty of the State had long been his opinion, but whether a School Board school was or was not a serious injury to the surrounding property, he refrained from expressing an opinion upon. Some there were who would and did assert that from the congregating of from 600 to 800 children into a playground, the noise from which irritated the surrounding neighbours, with the possibility that the playground was of too limited an area to accord with the desires of the rising generation, who consequently did not scruple to over-run the adjacent streets and roads in its extended gambols, was a positive advantage. The establishment of a music hall in the neighbourhood of respectable property must manifestly tend greatly to depreciate its value, but might have a directly contrary effect upon a poor or low neighbourhood. Brickmaking, though decidedly calculated to damage property in the vicinity of which it was carried on, was generally merely a temporary inconvenience. Should, however, the earth be of such a character or the land of such an extent that the manufacture might continue for some years, unquestionably a serious deterioration in the value of the adjacent property might result. How often was the owner of a few only of the houses in a terrace annoyed by finding that another owner was bringing out shop-fronts, having obtained the necessary consent from the Board of Works, while perhaps he himself was prevented from doing the same by prohibitory covenants in his lease. It was obvious that great detriment would arise to the owner of the private house in such a case, yet who could prevent it? Such restrictions showed the necessity of those lending money on the security of property which might be hampered by such prohibitions, seeing that the neighbouring property was under like restrictions, or that shops were not likely to be required. As to the effect of a small class of property, often had a client of his, contrary to advice, having land on one side of a road, neglected to purchase that on the other, at a reasonable price, but proceeded to build on his own land, what was no doubt the requirement of the neighbourhood, handsome detached or semi-detached villas, contending that if he built that class of house the other owners must do the same. Having built his villas, and exulting in prospects of success, which the rentals obtained appeared to fully justify, he was surprised to find one morning that the foundations were being laid on the opposite side for a number of small cottages, or perhaps some stabling, and that the advice given him had been only too prophetic. As to the effect upon his property, if the new buildings be carried out it would probably be to diminish the value some 30*l.* per cent.; the matter generally resulted in his purchasing the opposite land at about double the price originally asked. With respect to "bad buildings," the valuer must have regard altogether irrespective of the dilapidations, which he would of course estimate separately, and which might exist as well in good property as in badly-built houses. Modern builders, as a rule (he referred, of course, more particularly to the speculating class) displayed great ingenuity in concealing their bad building,—a talent, he might almost say, worthy a better cause. Some of the non-professional papers were becoming alive to these dangers, and the following paragraph from the *Saturday Review* of March 27th was amusing and to the point:—"When summer comes our young couple find what sort of wood has been used in their house. It is uneasoned and badly joined. If the hall-door faces south, the postmen is soon able to put the letters through the cracks in the panels, or to slip the newspapers under or over the door, whichever he prefers. The children lose their money in the crevices of the stairs, and missing tea-spoons are found in the gashes which open in the pantry slabs. There is always at least one door in a state of insubordination, and the bolts and their holes refuse to have anything to do with each other. If there are any shutters they cannot be fastened, for they do not meet, and the carpets are cut through as with a knife, owing to the distance between the gaping boards of the floors. The cupboards let in the dust, and smell of return smoke because the flues are not properly plastered, and the rooms are so full of draughts round the surbase that it is impossible to do without fur footstools. The slates will soon begin to blow off, for they are probably put on with galvanised iron nails, on which the atmosphere of London tells with fatal effect; and when our young couple have paid for all the repairs, they will, if they survive, find that they might as well have given 50*l.* a year more for a better house, and saved their time and temper."

The changes which took place unaccountably in the natural passage of time had to be weighed by the surveyor. In 1803 the freehold of a house in Cockspur-street was sold for 650*l.*; that sum to-day was about its annual rental value. Could anything show in a more startling manner the change of value in this street during the past seventy years? And yet neither the fee value nor the present rental value were by any means exceptional. Forty-two years ago a house was let in the same street for 200*l.* a year, but now the same house commanded three times the rent. Land at Chiselhurst, which was purchased twenty-five years ago for 70*l.* an acre, the owner now refused to sell for 1,000*l.* an acre. As to land in the City, the rise was astonishing. In a court leading out of Old Broad-street, the present yearly rental was about equal to the value of the fee of the house in the year 1871. The student would meet with great disappointment if he endeavoured to derive bases for his future guidance from the concurrent (?) testimony of experienced men as to the value of any given property. Mr. Fletcher contended that the annual outlay for repairs should be taken for a number of years, and the total amount of such outlay divided by the number of years, which would, of course, give the average annual outlay, or the true allowance to be deducted from the income for repairs. This, of course, on a large estate, became an important item, and therefore the necessity was all the greater for a just and sound basis of calculation. He contended in all matters, great or small, for a basis which could be fairly justified, and objected *in toto* to the "happy-go-lucky" system, which now obtained favour with so many, and which had had in its favour only two points, viz., quickness, and that it could be readily used by those who had no special or technical knowledge. Was it fair of surveyors of good standing to give favourable evidence, as was often the case, merely for the purpose of aiding those for whom they were usually retained, viz., the various railways, the Metropolitan Board of Works, the London School Board, and other influential bodies, who were constantly acquiring property, and to persistently shut their eyes to the improvement in the value of land and property? Was it right that they should, under such circumstances, say that they did not believe any permanent improvement had occurred, when in their private practice they would not let their clients' land at the old rentals. It might be said that surveyors for claimants were equally unjust. At all events, it was on the side of the powerful body taking the land that the leading surveyors were generally found, and it appeared to him no exculpation of *their* proceedings, if they could only say that the lesser men did the same. Where were they to look for probity and honour if not to those whose age and position had placed them in the foremost rank?

Mr. J. Douglass Mathews said that the question of the valuation of property was a very important one, and came more or less before every architect, so that it was absolutely necessary to obtain, as Mr. Fletcher had pointed out, a thorough knowledge of the subject. A great deal in valuing depended upon the future of a place, which was an important question to be studied. In fact, the whole subject showed them that it was of vital importance to the profession and was not to be guided by any "rule of thumb," but only by experience.

Mr. Lovegrove was of opinion that School Board schools depreciated the value of property very materially.

Mr. Todd considered that the bad buildings erected by speculative builders were becoming very common, which he attributed to what he termed the vicious system at present in vogue of land-letting, varying as it did from fifty to ninety-nine years.

Mr. Payne thought that Mr. Fletcher ought to have mentioned the fact that the discovery of minerals upon land had a very beneficial effect in improving the value of property.

POROUS SITES FOR BUILDINGS.*

IT is usually undesirable to recommend medical works to general readers, but we would like every architect and builder to get this book and make himself master of its contents. We do not say this because it contains any wonderful panacea or new-fangled theory, but because in the first place it endeavours to show on rational principles how prevention may best be secured, and further because of its practical character; and of the amount of valuable information that it contains on subjects useful to all. Dr. Hime, in his introduction, directs attention to the ground air and ground water, and throws fresh light upon several important matters hitherto not sufficiently attended to in connexion therewith. Many will at first sight hardly be prepared for his objection to the no doubt common supposition "that atmosphere ceases where the ground begins." And yet he is perfectly correct, for as he observes, "Gravel soil, though apparently so solid and able to support large buildings, is, in reality, often little more than semi-solid. A very compact gravel will consist of pores or air-holes to the extent of one-third of its bulk." In a lesser degree this is true of all light soils. So that a house built on such a foundation stands on a sort of honeycomb, and the combined volumes of these air-spaces existing under a good-sized house must be enormous. The importance, in a sanitary point of view, of fully realising this cannot be overrated, as such a soil will absorb like a sponge such substances as are allowed to percolate into it from above. When we think of the immense quantities of sewage that are allowed to soak into the ground in towns from ashpits, middens, &c., the question is brought home to us as one of immediate practical importance. Even solid stones are very porous, which only means that they contain a large proportion of air-holes.

A building stone much used in Sheffield, Dr. Hime finds will absorb 5 or 6 per cent. of its weight of water, and a new brick as much as half a pint. This porosity is stated to be the means of an active ventilation *through the walls*. For a wall of dry bricks we may calculate for each square mètre (=1·196 yards) of outside wall; and for each 1° C. difference of temperature between the interior and exterior of the house, that from 55 to 56 gallons of air will pass through the wall of every house. If, however, the wall be damp, all passage of air is stopped; hence one great disadvantage of damp walls. If water will readily pass through the ground, so will air, which is 776 times lighter and more movable. Much more readily will gases do so, which are lighter even than air. The importance of this will be seen from Dr. Hime's statement (p. 12), that "just as hot-air passing through the chimney causes a current of air from the room, so the warmer air within our houses causes a current to flow from our cellars and from the ground beneath them, when the temperature is sufficient," which is generally the case in the autumn, winter, and spring. Of course, pure air cannot come from a polluted soil; and we thus see how, quite independently of traps, &c., foul products are conveyed into our houses from the sewage polluted soil.

Experimental proofs of this are given. As this current of ground-air cannot be prevented, two courses naturally suggest themselves; firstly, to maintain the soil pure, and thus render the ground-air innocuous; and secondly, to divert the current so as to obviate the dangers arising from it.

Dr. Hime mentions, with approval, a plan which many, especially speculating builders, would object to on the score of cost, which is that the floor of the cellar (which must be made as air-tight as possible) should be raised about 1 ft. from the ground, and that an air-flue should be carried from this chamber into the kitchen

* Cholera: how to Prevent and Resist it. By Professor Max von Pettenkofer, President of the Sanitary Committee of the German Empire; translated, with Introductory Notes, and Appendix on the International Conference of Vienna, by Thomas Whiteside Hime, B.A., M.B., &c., Lecturer on Obstetric Medicine, &c., Sheffield School of Medicine. London: Bailliere & Co. 1875.

chimney-stack, so as to be kept in operation by the heat of the kitchen-flue, or other flue that may be in constant use.

The principal part of Professor Von Pettenkofer's theory of cholera is that he regards the locality as the essential element in the development of epidemic cholera from the imported poison. The Royal Commission which investigated the epidemic in Bavaria in 1854 ascertained that epidemic cholera only occurred in places situated on porous soil, permeable to air and water, while places on impermeable soil escaped. Many towns are known to enjoy immunity from this plague. Von Pettenkofer remarks that people cannot, of course, continually change their residence; but knowing the danger arising from their situation, it behoves them to be especially careful in avoiding sewage pollution and other insanitary measures which favour the growth of cholera, although they will never originate it any more than fever. Valuable information will be found of the subject of dietary, drinking water, sewage, ventilation, and even of clothing, the latter article being highly instructive. Disinfection is also treated of; but it is observed that it is not to be regarded as a specific, as the poison cannot be any longer supposed to reside only in the excretion. Sulphate of iron, alone, or mixed with about one-quarter its weight of crude carbolic acid, is especially recommended for disinfecting privies, sewers, and so on.

The various subjects referred to in this book are treated in a scientific manner. It is practical in its character, and altogether one which we have great satisfaction in recommending to all who feel interested in sanitary matters.

A BRICK FRONT IN THE POULTRY.

THE premises in the Poultry, occupied by Messrs. Delaterre, have just been rebuilt, with a frontage to the Poultry of an original character. The materials used in the elevation of the old premises consisted altogether of timber, but the new structure is built of red brick, with Dumfries stone dressings. The building is very lofty, including four stories and dormers above the ground-floor. Each floor contains a mullioned five-light window, and on the face of the elevation, between each floor, there is a long bas-relief, in a panel. The panels are in red terra-cotta, each being 16 ft. long and 3 ft. in height, and the figures and groups are supposed to represent scenes that have taken place in the Poultry. The panel in the upper portion of the frontage represents the procession of Edward VI., on the 24th of February, 1546, from the Tower to Westminster, upon the occasion of his coronation. The panel immediately below represents the procession of Queen Elizabeth entering London in State, on the 28th of November, 1551. The next represents an incident said to have occurred upon the site of the house in question, upon the occasion of Charles II. making his public entry into London, on the 29th of May, 1660, when he saluted the landlady of what was then an inn, who insisted upon welcoming the king, although in a state of great suffering. The bottom panel represents the procession of Queen Victoria upon the occasion of opening the Royal Exchange. Some of the groups might have been better modelled, especially the most modern one, nearest the eye. Mr. F. Chancellor is the architect of the building, and the contractor is Mr. Bland, of Metropolitan Buildings; the bas-reliefs were executed by Mr. Cremer, of Augusta-square, Regent's Park. The general result is very praiseworthy.

THREATENED DESTRUCTION OF CÆSAR'S CAMP AT WIMBLEDON.

THE well-known Cæsar's Camp on Wimbledon Common is threatened with destruction, and the probability is that unless active measures are immediately taken to prevent it, the site known as the camp will shortly be covered with bricks and mortar. A large portion of the ground has already been fenced off, and a considerable number of trees cut down. The camp occupies a position almost in the centre of the Common, and is several acres in extent. It is enclosed by an embankment at present covered with grass, with which originally consisted of two earth walls, with a deep trench between, and some portions are still perfect. It is surrounded by trees, which have grown up within and on each side of the camp, but, as above stated, several of these have just been cut down; building has actually been commenced, one or two houses having already been erected on the edge, and within the last few days excavations have been commenced within the camp itself, and bricks and mortar have been carted on to the enclosure. Efforts are, however, being made to preserve the camp from mutilation and destruction, the Wimbledon and Putney Commons Conservators having filed a bill in Chancery to restrain Mr. Dixon (who it is stated is a lessee for Mr. J. S. W. S. Earle-Drax, the owner of the ground) from commencing building operations, and we understand that this proceeding will test how far the Commons Conservation Act applies to the preservation of the camp.

THE METROPOLITAN DISTRICT RAILWAY COMPANY'S EXTENSION LINE FROM HAMMERSMITH TO THE SOUTH-WESTERN LINE.

DEVELOPMENT OF BUILDING LAND.

AFTER encountering a strong opposition, the Bill of the Metropolitan District Railway Company, for constructing a short new line from their Hammersmith Station to the Shaftesbury-road Station of the South-Western line, so as to give more direct communication between the Mansion House Station and Richmond, successfully passed through Parliament. From the evidence given before the Parliamentary committee, it is confidently expected that the construction of the line will be the means of building on a very large scale being carried out in the neighbourhood of Richmond and the immediate district. Mr. Venables, in opening the case on behalf of the promoters of the undertaking, said that the line was a very short one, being less than half a mile in length, and its estimated cost,—250,000*l.*—for such a short line might sound a good deal, but it passed through Hammersmith, and the nature of the works and the amount of the compensation which it is necessary to give required a very large outlay, which, however, would bring a large traffic on to the existing Metropolitan District Railway.

Amongst the witnesses examined in favour of the undertaking was Mr. Joseph Sims, a builder, residing at Richmond. He said, the line would not only be a very great advantage to the public at Richmond, but also to the whole district traversed. It would be the means of greatly developing the value of the property in Richmond and the neighbourhood.

Mr. John Maxwell, one of the largest owners of property in Richmond, also gave similar evidence, and observed that the population of Richmond was now 15,000, and was largely increasing. There was considerable agricultural land not built over between Richmond and the proposed new route, and this land would come into building land through the railway being made. He anticipated that building, more especially on the Crown lands, would be enormously developed.

Mr. John Shields Gomme, a large owner of property in the neighbourhood of Hammersmith, said he was well acquainted with the country between Hammersmith, Gunnersbury, and Richmond. There was a large amount of land there well adapted for building, which would be developed by having a good service of trains over that route. In answer to a question as to the present Hammersmith Station of the South-Western Railway, he stated that a more inconvenient station could not have been built. It was more like a treadmill. He added that he was agent for a large extent of property at Bollow Bridge. There was a very great amount of property built there, which was obliged to be underlet because it had no outlet to London, except by the Great Western or North London, and the proposed route would give a greatly improved outlet. In that district there was a large extent of land available for building, not only at Bollow Bridge, but also at Gunnersbury and to Kew Bridge. He was of opinion that to have a communication by means of the District into London would raise the landed property 25 or 30 per cent. in value.

Several other witnesses of a similar character were examined, after which evidence in opposition to the Bill was taken, one portion of which was given on behalf of the Metropolitan Board of Works, who opposed the project more especially with regard to the alterations of the levels in some of the streets in Hammersmith, and the steep gradients which it was proposed to make. The Bill was further opposed on the ground that the Mansion House-street Station was not large enough for the increased traffic which the opening of the proposed line would bring.

The committee in passing the preamble of the Bill intimated to the promoters that if there were any powers in the Metropolitan District Company by which the Mansion House Station could be improved and enlarged, they thought those powers ought to be exercised.

THE METROPOLITAN BOARD OF WORKS IMPROVEMENT BILL.

THE Bill promoted by the Metropolitan Board of Works, called the Various Powers Bill, which has been sanctioned by Parliament, authorises the Board to carry out several improvements of an important character. One of these is the opening out of better communication with the Thames Embankment, in the neighbourhood of Savoy-street. Savoy-street is to be widened by setting back the easterly fence of the burial-ground, belonging to the Chapel Royal, Savoy. Part of the site of the German Lutheran Chapel is also to be added to the street, and Savoy-street is likewise to be extended to the Embankment. Under the Bill the Council of the Duchy of Lancaster, who are interested in the property in the neighbourhood, are empowered to remove the coffins and remains from the chapel and burial-ground, and re-inter them in some other grave-yard or cemetery, and also to provide buildings elsewhere in substitution for the chapel, and minister's house, and school-house premises.

Another portion of the Bill confers special privileges on the representatives of the Inner and Middle Temple, who are about to erect new buildings facing the Embankment. Harcourt Buildings, in the Inner Temple, are about to be extended to the northern boundary of the land reclaimed from the river for the Embankment, and Plowden Buildings, belonging to the Middle Temple, are about to be extended in a similar manner; and the section of the Thames Embankment Act of 1862 has been so far modified in the Bill just passed as to admit of the Society of the Inner Temple constructing an ornamental tower at the south-eastern extremity of the buildings proposed to be erected in extension of Harcourt Buildings, also an ornamental bay window, and the eastern pier of an ornamental central arch. Likewise, to admit of the Middle Temple authorities constructing in a similar manner at the south-western extremity of the buildings to be erected, in extension of Plowden's Buildings, an ornamental tower, bay window, and western pier of central arch, all uniform with those to be erected at the south-eastern extremity by the Inner Temple authorities. The towers are to be allowed to project 10 ft., and the bay windows and piers 5 ft., on to the lands referred to in the Thames Embankment Act.

The Bill likewise contains provisions giving the Board and the Deptford Creek Bridge Company power to extinguish the tolls upon the bridge, and throw it open to the public as a free bridge.

PAINT AS AN ENGINEERING MATERIAL.

IN a paper on this subject, by Mr. Ernest Spon, read at the Society of Engineers, the author, in the first place, considered the necessity for the use of paint, and then noticed the composition and characteristics of the pigments usually employed by engineers. White lead, he observed, should be of good quality, and unmixed with substances which may impair its brightness. It is usually adulterated with chalk, sulphate of lead, and sulphate of baryta, the latter being the least objectionable. Zinc white is not so objectionable as white lead, but is dry under the bush and takes longer in drying. Red lead is durable and dries well, but should chemical action commence, it blisters, and is reduced to the metallic condition. Antimony vermilion was suggested by the author as a substitute for red lead, and its qualities enlarged upon. Black paints from the residual products of coal and shale oil manufacture, and oxide of iron, paints are generally used for ironwork, for which purpose they are peculiarly suited. Allusion was also made to anti-corrosive paints, and to those containing silica. Referring to the oils used in painting, the author stated that linseed oil was by far the most important, and that its characteristics deserved careful study. It improves greatly by age, and ought to be kept at least six months after it has been expressed before being used. It may be made a drier by

simply boiling, or by the addition of certain foreign substances. Nut oil and poppy oil are far inferior in strength, tenacity, and drying qualities to linseed oil. The author noticed the driers employed, and alluded to the properties and means of testing the purity of spirits of turpentine. He then dwelt at length upon the mixing and practical application of paint to new and old woodwork, the preservation of cast-iron by means of Dr. Smith's pitch bath, and the cleansing, painting, and care of wrought-iron structures. He stated that when used under proper supervision no better protection could be found for iron structures than oxide iron paints. He concluded by observing that the real value of any paint depended entirely upon the quality of the oil, the quality and composition of the pigment, and the care bestowed on the manufacture; and that the superiority of most esteemed paints was due to these causes rather than to any unknown process or material employed in their preparation.

ANTIQUITIES IN GOTLAND.

A RESIDENCE of some duration in Sweden, and some acquaintance with the language, has thrown in my way several valuable sources of information relative to architectural matters in that country which are unknown to the majority of English critics. From these we can form an idea of the great interest the Mediæval remains of the island possess, whether we consider their quantity, their quality, or their singular position, in a province so isolated, and so far north.

Professor Brunius, of Lund University, the restorer of Lund Cathedral, has visited the island and fully described it in a work entitled "Gotlands Konsthistoria," in three vols., published in 1864, 1865, and 1866. The contents of these volumes are as follows:—Vol. I. A summary of works, &c., illustrative of Gotland and its antiquities. A glance at the island and its history. A general review of its architecture. Separate descriptions of the Wisby churches, town wall, &c.

Vols. II. and III. are occupied by separate and precise descriptions of the ninety-seven country churches, dating from the eleventh to the fifteenth centuries inclusive, which exist in this island of about 1,200 square miles area; only six of these churches are in ruins. Amongst these churches are found twenty-two containing altar-screens, thirty containing roods or crucifixes, ten containing wall paintings, twenty-one containing remains of painted glass,—all of Mediæval workmanship.

The one drawback in this matter is the fact, much to be lamented, that, practically speaking, there are no published illustrations of the numerous and interesting remains on this island. The few drawings that do exist serve only to make the want more sensibly felt.

HENRY FIDLER.

VENTILATION.

SIR,—I ask to be allowed to address some few remarks bearing upon the important subject of ventilation, which, since the notice that appeared in the *Times* on the 12th ult., of what is called Tobin's system, has attracted a large amount of public attention.

From the graphic account which the writer gave of the system, and from subsequent letters and articles which have since appeared elsewhere, it would seem that the carrying of an air-current by means of tubes, directly towards the ceiling of a room, is regarded by many persons as quite new, and they look upon the invention as due to Mr. Tobin. Now, I submit that there is nothing new in it, for there is scarcely a prison in England where the principle has not been carried out in some modified form, though in no case by means of tubes carried up within the cells, but by means of tubes or air-conduits formed in the walls of the cells, and terminating at about 2 ft. below the ceiling. To my knowledge, this was done so long ago as 1842; but then no attempt was made to introduce a volume of fresh air, without at the same time making ample provision for the withdrawal of an equal volume of vitiated air. The late Sir Joshua Jebb, who introduced the system at the New Model Prison, knew perfectly well that no plan of interchange could be established and maintained, except under conditions that were controllable; and he also found, by experiments, that the measure of interchange, to be free from draughts and other objectionable features, was mainly governed by the areas of the ingress and egress openings, which should be equal, and should always be determined, not only by the cubical content of the building, but by the number of persons to be accommodated.

In Mr. Tobin's system there appears to be no method of exhaustion, provision being made for the admission of the external atmosphere, and from small openings in the ceiling tubes are carried directly out into the open air, thus paying no regard whatever to the difference in specific weight, due to the temperature of the inside and outside atmospheres. This is not to be wondered at, since Mr. Tobin in the account referred to, appears to condemn what he calls "scientific ventilation"; he says, "it has always been at fault;" but I suspect that Mr. Tobin has really never duly considered a plan of ventilation based upon science. I would, therefore, urge him to pay a visit to Salford Gaol, where he might see a plan of scientific ventilation carefully carried out, and in operation. It was built about eight years ago, from plans prepared by Mr. Alfred Waterhouse.

The surgeon (Mr. Braddon) in his report to the Justices, some time after the prison had been occupied, and the system thoroughly tested, stated, "that although the public health generally had for some time been unusually bad, and the mortality proportionally high, yet the amount of sickness in the prison had been below the average, and but few cases had been of a severe character"; then, after quoting figures, he goes on to say, "that he attributed the low rate of sickness and mortality to the system of heating and ventilation which had been adopted."

Now, without directly condemning Mr. Tobin's pressure system, as it is called, permit me to state a few facts, which I have gained after subjecting the system, as carried out at the Police Courts, Liverpool, to a careful and accurate test. For this purpose I paid a visit to the courts on Saturday afternoon (May 1st). Both courts had been used during the morning, and both had been equally crowded. I went first into the one which had been fitted with the new system, and had Mr. Tobin been there, he would, I think, have admitted that the place was exceedingly close and stuffy. I applied an anemometer to each tube several times during the afternoon. In nearly all the flow of air was found to be intermittent, and in one or two of the tubes there was at times a tendency to return; one appeared choked, for it scarcely affected the anemometer in any way. To secure accuracy in measurement, each tube was successively connected to the anemometer by an india-rubber case, which fitted the pipe and instrument perfectly, so that no air could pass into the court, except through the anemometer.

The quantity of air delivered by all the tubes (nine) was, as near as possible, 46 cubic feet per minute; the aggregate area of the nine tubes only amount to 134 square inches, and the velocity of the air in them varied from 10 ft. to 160 ft. per minute. The court contains 26,400 cubic feet of space; so that over nine hours would be required to change the whole atmosphere; whereas at Liverpool it ought to be changed at least three times in the hour.

The adjoining court felt perfectly fresh and wholesome,—this I found to be connected to a large ventilating shaft, in which the air is rarified by a huge fire, that is kept burning at its base; I hung the anemometer in the main foul-air flue a little beyond where it enters the hot-shaft. There it indicated a quantity of air passing off from the court equal to 2,600 cubic feet per minute, thus giving an interchange, at the rate of a little over five times the cubical content of the court in the hour.

With regard to the lowering of the temperature, upon which Mr. Tobin lays great stress, it was proved during the late severe weather, that the loss due to the tubes was from 10° to 12°. Nor could the court be raised to the required temperature of 60°, with the utmost exertions, even when carried on under Mr. Tobin's personal supervision.

But quite apart from these facts, I contend that there is nothing original in the mode of delivering the air in Mr. Tobin's system; the plan might be seen in many places. It is so in the large reading-room of the British Museum, and it was designed for the new Town Hall here (Manchester), long before Mr. Tobin's system was heard of.

With these few particulars I am content to leave the matter with those who know something of science; but it must be manifest to all who are conversant with the subject, that a building ventilated upon the principle of the Liverpool Court would not only be subject to all the variations in temperature of this variable clime, but would be liable to all those evils which the writer of the notice in question so ably condemned, as there would be no adequate supply of that all-important and vitalising element, the oxygen of the atmosphere. F. B.

NEW PIERS AUTHORISED BY PARLIAMENT.

A BILL is now in the House of Lords, having passed the Commons, confirming several Provisional Orders granted by the Board of Trade under the present Pier and Harbour Act, authorising the construction of new piers at the following places:—

At Bournemouth, the Bournemouth Promenade Pier Company (Limited) are empowered to construct and maintain a pier, 900 ft. long, with landing-place and all necessary works and conveniences suitable for embarking and landing passengers and their luggage, commencing at the east side of the toll-gates of the existing pier at that place.

The Clacton-on-Sea Pier Company are authorised to extend the existing pier at the little watering-place on the Essex coast for a distance of 170 yards. If the works are not "substantially commenced" within two years from the date of the passing of the Act, or if, having been commenced, they are suspended for twelve calendar months, the powers of the Order are to cease, except in so far as it relates to such portion as may be completed.

At Folkestone, a pier with a landing-stage and all necessary works, commencing opposite Cheriton-place, and extending 800 ft. seaward, is projected by the Folkestone Promenade Pier Company (Limited); and at Hythe, Southampton, the Hythe Pier and Hythe and Southampton Ferry Company (Limited) are authorised to build a pier, jetty, or landing-stage, as it is variously termed in the Bill, to commence at a point thirty yards east of the toll-house standing in front of the Drummond Arms Hotel, and passing in a north-easterly direction across the "mudlands" into the Southampton Water for a distance of 2,200 ft. Power is giving to lay down a tramway on the pier, and run carriages there for hire.

A Limited Company, with the multifarious duties involved in its title of the "Withernsea Pier, Promenade, Gas, and General Improvement Company," is authorised to erect a pier at that rising Yorkshire watering-place 1,300 ft. long, 14 ft. wide, and 16 ft. above high-water mark. Power is also given to erect shops, saloons, bazaar, reading and refreshment rooms on the pier or its approaches,—a privilege not accorded in any of the foregoing cases.

THE COST OF ELEMENTARY SCHOOLS IN ENGLAND.

A RETURN issued by the Education Department of the expenditure from education grants for elementary schools in the year ended 31st March, 1874, shows that in that year a total sum of 1,268,773*l.* was voted for the general purposes of the Education Act. Of this total amount, 70,352*l.* was for the building and furnishing of school premises, and 114,328*l.* for the general administration of the law. The figures show an increase of 95,986*l.* over those for the year ended March 31, 1873. The total grants since the year 1839 amount to no less a sum than 14,630,678*l.*

IMPROVEMENTS IN LAWRENCE POUNTNEY HILL.

DEMOLITION OF THE OLD MERCHANT TAYLORS' SCHOOL.

THE Merchant Taylors' Company are about to make important improvements in Lawrence Pountney-hill, Suffolk-lane, and the neighbourhood, and with this view the materials of the old property in the locality have, within the last twelve months, been from time to time sold. The materials which have thus been disposed of include the old Merchant Taylors' School, standing in Lawrence Pountney-hill, Suffolk-lane, and Ducksfoot-lane, and on the site so cleared, as well as on other sites in the immediate locality, a number of new buildings are about to be erected. The width of the several approaches and streets in the locality, are, we understand, to be extended, and several other improvements are to be made, one of which is to be the ornamental character of the different elevations.

GENERAL MEETING OF THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE council have made public the following proceedings at the late general meeting :—

Professional Practice.—Mr. H. Dawson, Fellow, called attention to a paragraph in the report of the council, relating to a question of professional practice, and proposed a motion supporting the opinion which the council had expressed, and suggesting certain steps in reference thereto. After some discussion, during which Professor Donaldson recommended that the question should be brought before the Professional Practice Committee, Mr. Dawson amended his motion, which was passed in the following form :—

Resolved—"That this meeting heartily endorses the observations of the council in that paragraph of the report (commencing at the foot of page 7) which animadverts upon the conduct of certain architects, who appear to have tendered against each other for professional commissions."

The Architectural Examination.—Mr. T. Roger Smith, Fellow, having referred to the paragraph in the report respecting architectural examination, proposed that it should be amended in a form more favourable to the continuance of the examination. Mr. E. Nash, a late examiner, defended the paragraph, which he regarded as an incentive to future candidates. After some remarks from Mr. R. P. Spiers, Associate, it was

Resolved—"That a committee, consisting of Fellows and Associates of this Institute (as representing the examining body), be appointed to confer with the committee of the Architectural Association (as representing the body of students) on the possibility of carrying on the examination with increased success; and further, that the same committee be instructed to consider the nature of the prizes offered respectively by the two societies, with the view of preventing a repetition of the same subjects.'

BUILDERS' BENEVOLENT INSTITUTION.

AN election of five pensioners,—an unusually large number,—on the funds of this Institution, took place yesterday (Thursday), at Willis's Rooms, St. James's; Mr. George Dines, president, in the chair. The poll was opened at twelve o'clock noon. There were eight candidates,—five men and three women,—of whom three men and two women were to be elected. The candidates were :—Evan Jones, aged 66, plasterer (third application); William Stribling, aged 72, carpenter (second application); Thomas William Cranstone, aged 71, builder (second application); Thomas Benham, aged 44, blind, builder (first application); Robert M. Tilson, aged 81, bricklayer (first application); Sarah E. Bear, aged 69, widow of the late Wm. Bear, plasterer (eighth application); Jane Rumens, aged 63, widow of the late J. Rumens, builder, &c. (fifth application); and Charlotte Day, aged 68, widow of R. P. Day, late pensioner on the funds of the Institution (second application). The poll closed at three o'clock, when the scrutineers, Messrs. Matthew Hall and F. W. Keeble, announced the voting to have been as follows :—Jones, 786; Stribling, 1,387; Cranstone, 1,407; Benham, 3,135; Tilson, 2,991; Bear, 4,281; Rumens, 5,066; Day, 1,468. The chairman declared the successful candidates to be Messrs. Benham, Tilson, and Cranstone, Mrs. Bear, and Mrs. Rumens. Votes of thanks to the scrutineers, chairman, and to the secretary *pro tem.*, Mr. Thomas Stirling (who, in the words of the president, has been the life and soul of the Institution since the lamented death of Mr. Harris, the secretary), brought the proceedings to a close.

THE LEEDS EXHIBITION.

LEEDS has cause to boast of the favour of Royalty. The Town-hall, erected by the Corporation at a cost of 150,000*l.*, was opened by the Queen; the General Infirmary, built by private subscription, at an expense of over 100,000*l.*, by the Prince of Wales; the People's Park, purchased by the Town Council for 130,000*l.*, by Prince Arthur; and on the 13th instant the Duke of Edinburgh inaugurated the Yorkshire Exhibition of Arts and Manufactures, the objects of which are two : first, the encouragement of the fine arts and manufactures; and, secondly, the liquidation of a debt of 10,000*l* left upon the Leeds Mechanics' Institution and Literary Society, connected with which are a school of science and a gallery of art. The Exhibition covers an area of an acre and a half, and is built on the site of the Coloured Cloth Hall and the land adjoining. Inside the large open space in the middle has been erected the central hall, named, in honour of the Duke, "The Edinburgh Hall." It is a structure of glass and iron, 186 ft. long, 98 ft. wide, and 75 ft. high, supported on forty pillars, with circular ribs to uphold the roof. The collection is large. The sanitary department is well supplied with disinfecting appliances, heat and ventilation producers, pipes, junctions, traps, and many articles of special interest. In the Fine Arts Gallery there is a good display of works, both ancient and modern.

A "TENDER" POET.

THE differences observable in the tenders delivered by a number of builders for the erection of Arlesey School (p. 426, *ante*) has educed a poet. We find the following figurative verses in the *Bedfordshire Express* :—

ARLESEY SCHOOL ESTIMATES.

4,937*l.*
Sharp and Maxwell's price was given,—
That is, they'd run them up towards heaven,
For four, nine, a three, and seven.

3,550*l.*
Allpress said they might be wrought,
The labour done, the timber bought,
For three, two fives, and just a nought.

3,253*l.*
Then Nightingale declared that he
Could through the architecture see
For three, two, five, and just a three.

3,244*l.*
But Boyce put down the figures lower;
He would complete from roof to floor
For thirty-two and forty-four.

3,062*l.*
At three, nought, eighty-two the score
Was written down by Mr. Moore,
Who wanted neither less nor more.

2,792*l.*
But Stapleton, the firm and true,
Believed that he the job could do
For twenty-seven, ninety-two.

2,533*l.*
And Mr. Redhouse thought that he
A little profit still could see
At twenty-five and thirty-three.

2,525*l.*
Long said he knew he could survive
The job, and really on it thrive
For twenty-five and twenty-five.

2,320*l.*
But Mr. Dunham truly thought
The undertaking could be wrought
For twenty-three, a two, and nought.

2,585*l.*
Two, five, and eighty-five, a Saint
Upon his estimate did paint :
He thought with that he should not faint.

2,185*l.*
The modern price of wood astounds,—
Twelve-trees beyond two thousand pounds!
These trees were grown on English grounds.

1,925*l.*
But King declared that he would plod,
And finish them with saw and hod
For nineteen and for twenty odd.
This statement made rate-payers sing,
And, as none could a lower bring,
They gave the job unto the King.

Arlesey Asylum. LUNO.

GLASGOW PUBLIC HALLS.

IT has now been finally arranged that the memorial-stone of the new Glasgow Public Halls, the plans for which were described in the columns of the *Builder* some months since, will be laid with Masonic honours on (this) Saturday, the 22nd inst., by Colonel W. M. Neilson, Provincial Grand Master. The ceremony, and preceding procession, it is anticipated, will be of an imposing character. The scheme, it may be added, is in the hands of a company with a capital of 80,000*l.*, in shares of 10*l.* each, and of which sum 73,000*l.* have been already subscribed. The inadequacy of the existing accommodation in the city having very forcibly impressed itself on the public mind during the past few years, led to the promotion of the company with the object of building public halls, which, whilst they met a long-felt want, should be an ornament and credit to the city. The present suite of Assembly-rooms, now in course of erection, has frontages towards Berkeley-street, Kent-road, and Granville-street, the principal entrance being from the latter. The great hall occupies the entire area of the most easterly portion of the building, and its dimensions are about 185 ft. in length, 75 ft. wide, and from floor to ceiling 56 ft. It will afford one half more accommodation than any other public hall in the city. The orchestra-platform at the south end will accommodate 100 performers, whilst the chorus gallery will allow of the location of 550 singers. Space is being reserved for the erection of a grand organ, plans for which are being prepared by Sir Henry Smart and Mr. Best, of St. George's Hall, Liverpool, so that in every respect the new Assembly-room will compare favourably with the City-hall. The plans embrace two halls of smaller dimensions, with reception and retiring rooms, a ball-room, supper-room, and every requisite convenience. When completed the new halls will form an important addition to the now numerous architectural ornaments of the city. Satisfactory progress has already been made with the work, and it is expected that the large hall will be ready for the roof by July next. Should no unforeseen circumstance intervene the directors hope to have the whole building completed towards the end of next year, in time for the triennial musical festival, and the meeting of the British Association, which is appointed to be held in Glasgow in 1876. The plans of the Public Halls, we may remind our readers, were prepared by the late Mr. Cunninghame, of Liverpool, and Mr. Campbell Douglas, of this city.

THEATRICAL.

MR. HOLLINGSHEAD has made arrangements with M. Coulon for a short season of Comic Opera in French, and already "Les Mousquetaires de la Reine" and "La Dame Blanche" have been given, while Auber's sparkling work, "Les Diamans de la Couronne," stands on the bills for this, Friday, evening, the 21st. Some of the critics appear a little at sea as to the acquaintance with French opera enjoyed by London. "Les Mousquetaires" was given at Drury-lane many years ago, and was afterwards done by Mr. J. R. Planché, and produced as a drama in 1846, with the title of "Queen Mary's Bower." The "Pré aux Clercs" was done twice by him, first as "The Court Masque," without music; secondly as "The Challenge," when the music also was given, so that they are not new to London, as some would have us believe. In "Les Mousquetaires de la Reine" M. Herbert and M. Barbet are both very good, and Mdme. Naddie is an elegant woman, with a sympathetic voice. The *ensemble* is very agreeable. "La Dame Blanche" presents an entire change of singers, but is scarcely so well done on the whole. The play-going part of the public owe many thanks to Mr. Hollingshead for the variety which he continuously provides at his well-managed theatre.——On the occasion of Mr. Creswick's benefit last week at the Surrey, Miss Helen Ashton made a very promising *début* as *Desdemona*, and did best where most was needed. Nature has been kind to Miss Ashton, and she is evidently determined to spare no pains herself to insure success in the profession she has chosen.

THE PICCADILLY FRONT OF ST. JAMES'S HALL.

THE new elevation in Piccadilly to St. James's Hall, which has for some time been in course of erection, is now fast approaching completion. It is 70 ft. in height from the street level, and consists of the ground floor and three stories above. The style of architecture adopted is Venetian Gothic. The materials used are red brick, with Dumfries stone freely introduced for dressings and ornamentation, and red terra-cotta is also a prominent feature in the elevation, which is further enriched by the introduction of mosaics on a gold ground. This portion of the work has been executed by Mr. Alexander Gibbs. A spacious entrance-hall leads into a vestibule, and thence to a new buffet and grill-room. The new building also contains two large dining-rooms and other offices; and from the new entrance access is also had to the Regent-street frontage, and to the large and small halls. The architect is Mr. Emden, and the contractors are Messrs. Lucas, Brothers. The decorations are under the direction of Messrs. Jackson & Graham.

The Liverpool Custom-house.—A careful examination is now being made of the dome of the Liverpool Custom-house, a portion of the eave of which, upwards of half a ton in weight, fell from its position recently. Scaffolding has been erected at the side where the stone fell. Two reasons have been assigned for the accident; first, that the stone, a soft sandstone, is being affected by the weather, and secondly that the whole structure is settling on its foundation.

CHURCH WARMING.

THE large church of St. Mary Redcliff, Bristol, has been recently warmed by Mr. Vincent Skinner, of Stoke's Croft, Bristol, who planned and erected a hot-water apparatus, under the supervision of the architect, which has proved very effective. Although nearly the whole of the pipes are above the floor, there is nothing to offend the eye. The apparatus consists chiefly of eighteen pedestals and coils of pipes in various parts of the building, so as to give a uniform temperature over all the large area. The church, moreover, is of unusual height. The apparatus contains 4,200 ft. of pipe, through which th water is constantly circulating. The chief leading pipes are beneath the floor of the side aisles, and covered with ornamental iron grating. The main source of heat is of course the boiler, which is on the upright tubular principle. The furnace bars are also hollow, through which water has to circulate. There is a second boiler, which the architect thought advisable in case of accident. These boilers are erected on the north side of the church, and sunk beneath the ground line. Mr. Skinner seems to have done his work very well.

THE PEOPLE'S CAFÉ.

THE foundation of the People's Café Company has led to the opening of a second establishment, in Whitechapel. It is bright and cheerful within, and well ventilated. On the ground floor is a good-sized coffee-room, well supplied with little marble-topped tables, and upstairs are a reading-room, where also is to be collected a small library, a room where chess, draughts, dominoes, and the like may be played; a room for billiards and also for bagatelle. At present these two latter rooms can only be used at a certain tariff, as at a club, for the necessary licence was not applied for till after Lady-day, and the Legislature has ordained that on that day only can such a licence be issued. Below, on the basement, is a room which is to be fitted up as an American bowling alley. The tariff throughout is moderate. A very reasonable and sufficient dinner, far better in all probability than many men get now at a far higher price,—a plate of meat, bread, potatoes, and pudding,—may be had for the sum of 6d., a cup of coffee or tea for 1d., a basin of soup for 2d., and for the same sum a rasher of bacon. Other charges are in a like proportion, and in certain rooms it is permitted to smoke at will. The building, it should be said, which was intrusted to Mr. George Williams, of Buckingham-street, Strand, as architect, cost, together with the purchase of the land,—for this, as in the other in Whitecross-street, is a freehold,—about 4,000*l.* At present about 10,000*l.* have been raised, and a small balance is still remaining out of this. We shall look with interest to the progress of the undertaking.

DRAINAGE WORKS.

ACTION FOR DAMAGES AND TRESPASS.

IN the Brighton County Court (before Judge Furner), held on Friday, the 7th inst., an action was heard in which the plaintiff, Mr. Moyle, a barrister, of 1, Mitre-court Buildings, London, sued defendant, Captain Spillar, a gentleman residing at 64, Lansdowne-place, Brighton, for the sum of 16*l.* 2*s.* 6*d.* Mr. Braunfeld, of London, instructed by Mr. Shaft, appeared for plaintiff; and Mr. Lamb defended.

Mr. Braunfeld, in opening the case, said plaintiff was lessee of 62, Lansdowne-place, Hove, Brighton, defendant occupying the adjoining house, No. 64, and the claim of 16*l.* 2*s.* 6*d.* was for expenses, 10*l.* 17*s.* 6*d.* which plaintiff had been put to in removing a nuisance created by defendant on plaintiff's premises, and for making his "party wall" safe; and 5*l.* 5*s.* as damages for trespass. Plaintiff declared that until the damages committed by defendant took place, his house, No. 62, was perfect in its sanitary state.

Mr. J. King, sanitary inspector of Hove, deposed that a notice requiring the draining of 64, Lansdowne-place, into the common sewer, was served on defendant by him, and that some time afterwards a similar notice referring to 62, Lansdowne-place, was served on plaintiff. The notice served on defendant had not been complied with.

Mr. Arthur Loader, architect, testified that in 1872 he surveyed and examined No. 62, Lansdowne-place for plaintiff, and found that its sanitary arrangements were perfect and connected with the main sewer, that in January of the present year he again examined the premises and found a stoppage, as shown by a plan produced, and a nuisance by reason of defendant having made a connexion from No. 64 on to plaintiff's drain by going under the party-wall of the two houses, instead of going direct into the main sewer, and thus also committing a trespass on plaintiff's premises. He found that plaintiff's pipes had been broken, and the syphon turned on one side so as to be useless as a trap, and thus sewer gases were admitted into plaintiff's house. Plaintiff's party-wall was left in an insecure state, and the vaults injured. Mr. Newnham, builder, employed by last witness to remedy the defects and make secure, corroborated. The defence was that the sanitary authorities had ordered to be done what was done, and that there was a joint cesspool.

His honour suggested a reference, being afraid that his decision would not be final, as the trespass was a continual one, being still going on. After some discussion, the judge found a verdict for the plaintiff, the amount of damages to be assessed by a competent surveyor to be chosen.

IMPROVED CAB SERVICE IN THE METROPOLIS.

A NEW company, called the Victoria Cab Company, has just been formed for introducing into the metropolis the vehicle known as the "Victoria," which has for some time been in use in Paris and other Continental capitals, and which is said to be a great improvement upon the cabs now in use in London. The capital of the proposed company is 125,100*l.*, in shares of 5*l.* each. We understand that a contract has been entered into with Mr. W. Cressey Hall, of Park-lane, to supply the company with 500 Victorias, 1,100 horses, and the requisite harness, and stable implements, for the sum of 110,000*l.* The fares are to be charged at the usual rate of cabs now in use.

TRADE MOVEMENTS.

Penrith.—The journeymen joiners of Penrith have given notice of their intention to apply for an advance of ¾d. per hour upon their present pay, the advance to date from May 31st next. They are at present receiving 6d. per hour.

Kendal.—Some of the plasterers of Kendal are out on strike for an advance of 3*s.* per week.

Wilmslow.—There has recently been a dispute pending between the operative painters of Alderley Edge and Wilmslow, with reference to the rate of wages. On January 29th last, a notice was sent to the masters of the Amalgamated Society giving three months' notice of an application for an advance of wages from 6½d. to 7d. per hour, that being represented as the average rate paid at Macclesfield and elsewhere, the advanced rate to become due on the last Saturday in April. Several meetings of the masters and men took place; but as the advanced rate was not forthcoming the men left work on May 1st. Afterwards, however, a meeting of the masters and men took place, at which it was agreed to refer the matter in dispute to two gentlemen in the neighbourhood (Mr. S. Thorp and Mr. Smithson), each party binding themselves to abide by the decision of the arbitrators, and meanwhile the men resumed work. Their award, dated the 6th inst., has been given, their decision being that the men are entitled to the advance sought.

VENTILATION OF DWELLING-HOUSES.

As ventilation of dwelling-houses is still so much neglected, will you allow me to give you my experience of a system which will answer the purpose, and can be applied to old and new houses?

Treat the hall and staircase as the conduit for the supply of fresh air to the whole of the rooms. During the day this will be effected by the constant opening of the outer doors. At night-time the trap-door in the ceiling of the topmost landing must be raised 12 in.; or some other means, such as lowering the sash on the landing, must be adopted to admit fresh air.

Over every door leading into the rooms insert two air-gratings—the larger the better; that outside the room near the head of the door; that inside the room close up to underside of cornice or ceiling. Into the flue of each room over the fireplace, near the ceiling, insert a large size Boyle's ventilator, and always keep open the register-doors over the stoves in the bedrooms. By these means the products of the gaslights and of the human breath are carried off, and a constant change of air takes place without draughts being felt. W. S. HORNER.

HOUSES FOR THE MIDDLE CLASSES.

SIR,—Having just seen the letter of your correspondent "C. J. D.," in the *Builder* of May 1, I write to say that his suggestion has already been carried out. The experiment has been made, and has met with the success which your correspondent anticipates,—the best thanks of all who participate in its benefits. Its very success has kept it from being known as it deserves to be known, as the houses are let before they are finished. They are "not exactly like barracks." On the contrary, they are as elegant as they are convenient. When the next block of eight dwellings is finished, there will be accommodation for fifty families, renting flats from 60*l.* to 20*l.* The extensive and beautiful gardens are held in common. The experiment is wholly due to the enterprise and genius of the originator of the Industrial Dwellings, Mr. Matthew Allen. The estate, where the work is still in progress, is situated in the Manor-road, Stamford-hill, and will repay a visit.

I. C. K.

ANTS IN DWELLING-HOUSES.

SIR,—An army of red ants has suddenly invaded the house of a friend of mine in the country; it is a detached building, though closely abutting on another; it has no underground rooms, but only extensive cellarage, into which the enemy does not seem to have penetrated as yet, being at present content with working his way into the commissariat department, which he plunders almost at will, in spite of every effort in the shape of boiling water, &c., to destroy him. If you or any of your subscribers can suggest a remedy, I should be most thankful. J. D.

LANDLORD'S OR TENANT'S PROPERTY?

COPPE *v.* FAULKNER.

IN the County Court of Congleton, on the 4th inst., a case of disputed ownership of property renewed by a tenant, was tried. The plaintiff, T. S. Coppe, was tenant of a house in Moody-street, Congleton, one of the most ancient in the town. In the year 1860 plaintiff wanted the oven with grate renewing, and he bought one, but the house being sold the plaintiff had to remove from there last Christmas, but having received a legal notice from Mr. Wilson not to remove the oven and grate, and other things, he did not do so. Cross-examined: he had lived in the house since 1825, and in the year 1860 he took the old oven and grate out and bought another. The oven and grate had been put up by auction. The executors of the late J. Faulkner had made a counter claim.

The Judge said the plaintiff was bound to remove the articles in question before his tenancy came to an end.

Plaintiff said he should have removed them only for the legal notice.

The Judge said the oven and grate ceased to be the property of the plaintiff after the termination of the tenancy, and became the property of the landlord.

Verdict for the defendants.

ARCHITECTS' ACTIONS.

LUNAN *v.* HALLIDAY.

THE plaintiff in this action, at the Durham County Court, before Mr. E. J. Meynell, is an architect, of Silksworth, Sunderland, and sought to recover the sum of 14*l.* 17*s.*, for preparing plans and specifications for a public-house, proposed to be erected for the defendant, one Mrs. Halliday, at Nettlesworth.

Mr. Lunan stated that Mrs. Halliday instructed him to prepare the plans in question, and having submitted them to the defendant, she said she had received tenders, and asked witness what his estimate of the cost of the building was, and he replied 907*l.* The defendant said it was to be completed before August, otherwise she would not be able to get a licence for the house. His charge was 1½ per cent. on the 907*l.* The building, however, was not proceeded with, and then Mrs. Halliday's son offered him 5*l.* for his trouble.

By Mr. Granger.—Witness has been seventeen years an architect, and is not a contractor.

Mr. Granger.—What in law or custom constitutes an architect?

Mr. Lunan.—A man capable of drawing plans, making specifications, and experience in building. The house had to be completed on the 12th of August. It was no fault of witness's that it was not done in August. Witness had not to find any of the material. 1½ per cent. was the usual charge on buildings for which plans were prepared and the buildings not completed. He did not remember the defendant saying that she did not want the house to cost more than 600*l.* or 700*l.* It is the custom to charge 2½ per cent. if the work is not completed.

Mr. W. J. Cordner contractor o Silksworth, and Mr

John Campbell, architect and surveyor, of Seaham Harbour, each stated that the usual commission was 5 per cent., and half that in the event of the work not being carried out.

The Judge (to Mr. Campbell).—Supposing no tender is accepted?

Witness.—In that event the lowest tender might fairly be assumed to be the value of the house. He and Mr. Cordner considered the claim of the plaintiff was very reasonable.

Mr. Campbell (in answer to the Judge) said, that in case he received instructions to prepare plans and specifications for a house to cost 500*l.* and the house cost 1,000*l.*, he would not expect to be paid on the 1,000*l.*

Mr. Granger.—That is the very point of the case. My client expected the house would cost no more than 600*l.* or 700*l.*, and she told the architect the building was to cost no more; but when the tenders were received it was found the cost would be 1,000*l.*, and in consequence the project was abandoned. The plaintiff had been offered 65*l.*, an offer which he asked the Court to consider in its judgment.

Mrs. Ann Halliday deposed that she told the architect that the house was not to cost more than 500*l.* or 700*l.* In consequence of the high nature of the tender, the project of building the house was for the time abandoned. She was building a public-house now, which was to cost 681*l.*, and the architect was Mr. Joseph Wilson. The house now being built was to have the same number of rooms as the house designed by the plaintiff. She never suggested any alteration in Mr. Lunan's plan. Did not give the plaintiff any information as to the size of the room; the whole thing was left to himself. A builder named Richardson offered to build the house for 850*l.*

Mr. Joseph Wilson, architect, said he was now building the defendant a house that was to cost 681*l.* 10*s.*

The Judge.—Now, Mr. Wilson, if you were asked to build a house for 700*l.*, and you sent in a plan costing 900*l.*, would you expect to be paid on the higher amount?

Mr. Wilson.—Certainly not; it would be a professional error. I should expect to have to alter the plan. Five per cent. is the usual charge, and if the work is not proceeded with 2½ per cent.

The Judge said he considered the plaintiff was entitled to 1½ per cent. on 700*l.*, and gave judgment for 10*l.* 10*s.* and full costs, the latter swelling the amount to a sum far exceeding the plaintiff's original claim.

MORTAR UNDER THE METROPOLITAN BUILDING ACT.

SIR,—It must be obvious to every one who knows anything of the case referred to in your last number that it is exaggerated.* To those who know nothing of the case the impression is given that the whole building was condemned, whereas the only portion ordered to be taken down was less than a quarter of a rod, the greater part of the building having been built of pure pit-sand and lime.

A. B.

AGREEMENTS BETWEEN MASTERS AND MEN.

A CASE decided on Monday at the Durham Police Court is one deserving more than a passing notice by builders and their men.

A few weeks back a great number of joiners in the employ of Messrs. Robson & Son, builders, of the City of Durham, sent the following notice to the firm:—"To Messrs. Robson & Son.—Sirs: Notice is hereby given, that at a general meeting of the joiners in this city, it was unanimously agreed that on and after the 24th day of April the working hours be fifty per week, and that the time be paid at the rate of 8½*d.* per hour. Signed on behalf of the committee, William Jopling, John Crawford."

The builders not complying with the terms of the joiners, the men in a body left without giving further notice. Two of the men, John Redshaw and Robert Flint, were summoned as defendants, under the Master and Servant Act, for leaving Messrs. Robson's service without giving a week's notice, and compensation was claimed for five days, at 5*s.* per day. The rule relied on was, "One week's notice shall be given before a workman leaves his employers, and before a master discharges a man."

Mr. Henry Robson said the defendants were engaged from week to week, and were perfectly aware of the rules of the shop, and had always recognised them. Five shillings a day compensation is not only a reasonable but a nominal sum. It was much less than the loss the firm were suffering, and the defendant, John Redshaw, by leaving his work without notice, had caused the greatest inconvenience. His place was standing idle; work he was employed to do had not been done,—it remained undone to the present day, and witness was being pressed to have it done. The rules that bear date April 2, 1867, hung in a conspicuous place in the workshop. There had been no new rules since, but the pay per hour had increased from 5½*d.* to 7*d.* per hour. Had never been asked to alter the rules. When they had been asked for an advance of wage in a reasonable manner they generally agreed with the men. A workman was never discharged without a week's notice except for misconduct.

Alderman Robert Robson said he was senior member of the firm. On the Friday following the receipt of the notice from the men, he requested the joiners to meet him in his office. They came in a body, and considerable argument and discussion ensued; in the course of which he pointed out the unreasonableness of their demand, and that it would entail a loss of 200*l.* or 300*l.* on his contracts. He offered to increase the wage to 8*d.* per hour, which the whole of the men, two or three excepted, were willing to accept. They said it was a liberal offer, and one they ought to accept. On the 26th, Redshaw went for his tools, and witness had some conversation with him and three other joiners. He told them if they took their tools away he would summon them, as they were bound to give a week's notice. They then left their tools and went away. They never repudiated the rules. Next morning he was going into his office about half-past nine, when he saw Redshaw coming out with his tools. He told him he would summon him under the Master and Servant Act.

By Mr. Brignal.—Witness did not consent to alter the hours from 53 to 50 per week, but promised to give 8*d.* per hour.

The defence set up was that the men were engaged and paid by the hour, and could either be discharged or leave at the end of any hour, and they further denied all knowledge of the rules. On the point of law, a case from Addison's "Defeasable Contracts," was relied on. "If a labourer is employed to dig potatoes at so much an acre, or to cut turf at so much a load, or to make excavations of earth-work at so much per cubic foot, the employer may, if there is no determinate term of employment, dispense at any time with the future services of the workman, paying him for the work actually done." The London custom was also cited, and George Newman, joiner, said he was a London man, and was engaged by Mr. Robson through an advertisement that appeared in the *Labour News*. He started work on the 27th of August last, with a friend, and Mr. Robson, on their entering his office, paid them their railway fares from London, and said he did not agree to do so if they were only going to stay a week or so. He drew up an agreement for three months, which they signed. They had worked for Mr. Robson ever since. When the three months' agreement had expired, he and his mate from London did not engage under the rules mentioned to give a week's notice. He always understood they could be discharged at a moment's notice, and that he could leave at a moment's notice. That was the London custom, but it was not carried out in all cases. Did not think the joiners came under the Master and Servant Act. Is a member of the Amalgamated Society of Joiners and Carpenters.

The Mayor said that the Bench were unanimous that the case was clearly proved with respect to the defendants leaving the service without any notice at all, and that they were bound by the rules to give a week's notice. The sentence of the court was that they should each pay the compensation claimed by their masters, and the costs of the prosecutions, to be levied by distress, or in default seven days' imprisonment.

Acting on the advice of their solicitors, some fifty men on strike returned to their work in order to give the week's notice, and then the builders will be in the same position as before. If men and masters signed duplicate copies of agreements or rules, much ill feeling and litigation would be avoided.

* This is by no means obvious to us.

CHURCH BUILDING NEWS.

King's Lynn.—The Free Christian church, which was opened here on the 8th ult., has been built on a site in Broad-street, and is of the fourteenth-century Gothic style. The front is faced with white bricks, relieved by red brick bands and Bath-stone dressings to doors and windows. The church internally is 57 ft. long by 27 ft. wide, and 24 ft. in height, and is entered from a narthex; it is seated for 160 persons, with open benches, having pitch-pine ends stained and varnished. The roof is partly open, the tie-beams being below the ceiling, with cut and pierced spandrels, pendants, and stone corbels. The window-heads are filled with stained glass, by Messrs. Farmiloe & Son, of London; gas standards, by Messrs. Skidmore, of Coventry. The total cost, including site, &c., has been 1,250*l.* Messrs. Adams & Son, of King's Lynn and Wisbech, are the architects; and Mr. John Leach, the builder.

Bradwell.—This church, which has been closed for the past few months for the purpose of restoration, has been re-opened by the Lord Bishop of the diocese. New windows have been inserted in the east ends of the aisles, carefully worked out according to the original design, as indicated by fragments of stonework remaining. The walls internally have been repaired and coloured, and new window and floor put to the tower. The work has been satisfactorily carried out by Mr. Robinson Cornish, of North Walsham, from the designs and under the superintendence of Mr. J. T. Bottle, architect, Great Yarmouth and London. The expenditure at present has been about 750*l.*, but in order to complete the restoration of the whole fabric, at least an equal additional sum will be required.

Whitegate.—This church, after having been restored, has been re-opened. The old church was erected in 1726. Externally it was a plain brick building. Internally, it was divided into nave and side aisles by means of wooden pillars, which, with the roof timbers, remain in the new building. The design of the new work is of a late Gothic character, and has been carried out by Mr. R. Beckett, of Hartford, from the plans and under the superintendence of Mr. J. Douglas, architect, of Chester. New mullioned and traceried windows of stone have been inserted in the side walls of the body of the church; the old parapet walls have been removed, and projecting eaves, with a cove formed of cement underneath, provided instead. As much as possible of the old walling, which was of bricks of a small size, has been re-used. On the south side there is a new porch, of oak. The entrance from this into the church is the old doorway. Adjoining this at the west end, is the new vestry. The tower has been pulled down to about 3 ft. above the ridge of the main roof, and is surmounted by a spire constructed of wood, and covered with oak shingles, terminated by a gilt weathercock. New windows have been inserted above the belfry floor, and at the west end an arched two-light traceried window is put in, showing in the interior of the church. The chancel, which is considerably longer than the old one, is altogether new. At the east end is a five-light window, and two lights of similar design are placed at the sides. The gable of the east end, above the chancel window, is constructed of oak filled in with nogging work, the upright pieces being panelled and traceried, and the beams and vergeboards carved. The old pews have been replaced by open benches of light wood stained and varnished. Nearly one-half of the seats are free. The chancel fittings and the new chancel arch are of oak. The windows are glazed with cathedral-tinted glass. The expenditure has been about 1,600*l.*

Miscellanea.

Newcastle Society of Antiquaries.—The monthly meeting of the Society of Antiquaries was held on the 5th inst. in the Old Castle, Mr. Robinson (Houghton-le-Spring) in the chair. The Rev. Dr. Bruce exhibited a copy of his work on the Roman Wall, bound in two volumes, and the boards in which they are bound consist of oak used in the construction of the Roman bridge over the Tyne at Newcastle, built by Hadrian, A.D. 120, maps, &c., forming a third volume, and the boards are also formed of oak. Dr. Bruce laid before the meeting a complete copy of the *Lapidarium* and said: "I have the happiness to lay upon the table a complete copy of the *Lapidarium Septentrionale*. This is to me a matter of personal satisfaction, for a work of such magnitude, and requiring so long a time to produce, it would have been nothing surprising if I had been cut off before finishing it." The chairman said they could not adequately express the thanks of the Society, and also of the public of the North of England, to Dr. Bruce for the great work he had laid before them. A discussion took place with reference to the publishing of the book, and it was agreed to sell copies of it at 7*l.* 7*s.* each. There have been only 250 copies of this valuable work printed, and there are only a small number for public sale. The volume has cost the Society upwards of 1,000*l.*, and maps, engravings, &c., have been given by noblemen and gentlemen to the value of considerably above another 1,000*l.*

Labourers' Cottages.—A Bill has been prepared and introduced into the House of Commons by Mr. Morley, Mr. Whitwell, and Mr. Stanhope to enable the Public Works Loan Commissioners to make advances to the limited owners of entailed estates and other landowners for the building, rebuilding, and improvement of labourers' cottages repayable by a rent-charge upon the inheritance, and to amend the Improvement of Land Act, 1864. When any limited owner of an entailed estate, or other landowner, as defined in the eighth section of the original Act, is desirous of borrowing money for the building, rebuilding, or improvement of labourers' cottages only, he shall make an application to the Commissioners to sanction the same. If the Commissioners should think fit to entertain the application, they may cause the farms, lands, and cottages to be inspected and reported upon, in order that they may be satisfied of the propriety of sanctioning the application. The Commissioners may require modifications to be made in the plans, &c., and they will have power to give them their sanction by a provisional order. Upon such order the Public Works Loan Commissioners may advance the loan applied for, and on the completion of the buildings the Commissioners are to execute a charge upon the inheritance.

Huyton Sewerage.—A meeting of ratepayers of Huyton-cum-Roby, called by the overseers of the poor, was held at the Queen's Arms, Huyton, for the purpose of nominating members to serve on the parochial committee, and to discuss the sewerage scheme proposed by Mr. T. M. Reade, C.E. There was a moderate attendance. Mr. W. Swift having pointed out that Mr. Reade's plan appeared to him to be insufficient for the requirements of the district, proposed that it be a recommendation to the committee to advertise that premiums of 100*l.*, 50*l.*, and 25*l.* would be given for the three best designs. Mr. Miller seconded the proposal, which was agreed to.

Stevenage Sewerage.—The plan which has been adopted by the Board here is that known as the "separate system" of sewerage and drainage, *i.e.*, a network of impervious pipe sewers for the transmission of the sewage only; the storm and surface waters being conveyed into the watercourse by the old drain sewers, which serve well enough for such purpose. The sewers are ventilated by numerous open gratings at the surface of the streets, allowing of a constant circulation of air in the sewers and preventing gases, if generated, from taking a concentrated form. The flushing is provided for by placing tanks at the heads of sewers, which collect the rainfall falling on a portion of the road surface; the sewers are, however, to a certain extent independent of this arrangement, being designed of such sizes and with such gradients as will render them, it is expected, self-cleansing. The sewage will be conveyed by gravitation to a plot of land about half a mile south of the town, utilised and purified by downward filtration. The estimated cost of the works, including those on the land, is something under 3,000*l.* Messrs. Smith & Austin are the engineers.

The Manchester Industrial Exhibition. On the 14th inst., the Manchester Industrial Exhibition for the year 1875, established by the Society for the Promotion of Scientific Industry, was formally opened in a building specially erected near the junction of Cheetham Hill-road and Queen's-road. The success which attended last year's show in Peel Park was very great, and the interest manifested by thousands of spectators in the various appliances for economising labour of all kinds was such that it was apparent equal patronage would be bestowed on these exhibitions if made annual. The exhibition building in Cheetham Hill-road lies alongside the new Wesleyan Chapel. It is 310 ft. in length, 100 ft. wide, and some 40 ft. in height from the centre of the roof. It is built entirely of timber, on the principle adopted at the Peel Park show. The novelties of the exhibition comprise a large iron tank at the lower end of the hall which will be filled with water, and three times a day a professional diver will descend and show the process of stone-setting under water.

The Proposed Municipal Buildings, Newbury.—A special meeting of the Town Council was held on the 11th inst., to afford the members an opportunity of expressing their opinions on the seven sets of plans sent in for the new municipal buildings which it is proposed to erect between the Town-hall and the premises of Messrs. Jackson & Son, at a cost not exceeding 3,500*l.* (inclusive of the sum of 1,000*l.* to be contributed by the Court of Quarter Sessions). The plans provide for better means of ingress and egress at the Town-hall, and they also embrace sketches for a suggested new Town-hall, but it is generally felt that such a large undertaking as the latter would involve a greater outlay than the Council would be justified in incurring, at least at present. We have heard that two plans were selected, and that after they have been submitted to the inspection of Mr. Morris, the county surveyor, the Council will make a final selection.

The Railway Transit to the Alexandra Palace.—We recently mentioned our experience of the railway facilities for reaching the Alexandra Palace on the opening day. Difficult and disappointing as that was, we had hoped that the Great Northern Railway Company would not allow a second opportunity to occur without improvement. But this proved to be worse than the first, and thus a bad impression was created as to the means of supplying proper conveyance, which, for so short a distance, ought to be without the slightest difficulty or discomfort. We know of passengers who were detained hours on the line on Whitmonday, and at last were compelled to walk part of the journey, not reaching their homes in Camden-town till two in the morning. The system, too, of issuing first-class tickets to those who think to get relief from overcrowding on this line, as on the railways generally, is deceptive, for no distinction of class, or the paid-for protection implied, seems to be thought of on the platform.

The Drainage of Slough.—At the meeting of the Urban Sanitary Authority last week, the surveyor reported that the cesspool made to receive the drainage from the east end of the town was full to overflowing, that the outlet was insufficient to take away the superfluous sewage, and that the damage done to the occupier's crop is very considerable. He had obtained leave for disinfecting the ditches near Upton Park.

A Refractory Grindstone.—Last week a large grindstone was fitted up in the works of the Messrs. Feetham, engineers, Soho-square. It was placed upon a spindle, and having been properly centred, was set agoing by steam power at half speed. It had been in motion for only a few minutes when a loud explosion shook the building, and a mass of stone weighing about 10 cwt., the entire weight of the stone being somewhat over 31 cwt., was sent right through the flooring of the workshop above in which several fitters were engaged and descended within [2 in. of the] shaft that drove the entire machinery. Had the grindstone been put at full speed the immense mass of stone would certainly have penetrated the three upper floors, all of which were crowded at the time. The stone was carefully inspected before being put in position, but no flaw was observable.

Death of a Good Copyist.—Illuminative art has lost one of its most skilful exponents of the late Mr. C. W. Wing, known during the last thirty years at the British Museum, as the "best facsimile copyist" of ancient illuminations. Among other valuable work he contributed to the books of Mr. Noel Humphreys and Timbs. Under the late Sir A. Panizzi he assisted in the catalogue work of the British Museum. In 1851 he made drawings on wood from the Great Exhibition for the *Illustrated London News*. For the Exhibition of 1862, he executed drawings for publication by Messrs. Day & Son; and in 1870 Mr. Wing was employed on work for the South Kensington Museum.

Claim by a Labourer for Personal Injuries.—In the case, Cassim *v.* Greenfield, held at the Court of Passage, Liverpool, the plaintiff, John Cassim, a bricklayer's labourer, claimed from Philip Greenfield, a builder and contractor, damages for injuries in consequence of the defendant's negligence. There was no defence to the action. In July last the plaintiff was engaged by the defendant to assist in taking down an old house in the Old Haymarket. He was, under the defendant's direction, removing a quantity of stone from the footway, when part of a wall was thrown down by the defendant, and a part of the *débris* fell upon the plaintiff and seriously damaged his hand. Verdict for the plaintiff for 150*l.*

Child Labour in Brick-yards. — At the West Bromwich Police-court, before Mr. I. Spooner (stipendiary), John Davies, brickmaker, of Greet's Green, was summoned at the instance of Mr. Blenkinsopp, the inspector of factories of the district, for employing four girls under the age of sixteen years to make bricks. The defendant pleaded that he did not employ the girls himself; and that, therefore, he was not the responsible person. The Stipendiary informed the defendant that by the wording of the Act of Parliament he was clearly responsible for the infringement of it, and fined him 1*l.* and costs in each case, altogether 5*l.* 18*s.*

Fall of a Chimney near Oldham.—On the 9th inst., a chimney at the mill of Messrs. Clegg & Sons, of Shaw, near Oldham, fell with a loud crash. The chimney was 72 yards high. Considerable damage was done to property adjacent. The chimney had only been built about seven months, but for some time symptoms of the foundation giving way had shown themselves. The chimney had been built on the site of an old water lodge. The structure gave way near the base, and bricks were projected in every direction within a radius of 100 yards.

The Roman Remains at South Shields. On the 12th inst. the labourers of the committee entrusted with the excavations of the Lawe, South Shields, in search of Roman remains, were rewarded by an interesting discovery. During the past few days the committee have been prosecuting their search in a northerly direction from the forum, and some distance from the forum the workmen on Wednesday came upon a building some feet below the ground, which appears to have been used by the Romans as a treasury. The building is not of large dimensions, but is built of strong ashlar blocks, and is bound with iron bars.

Lucky they were there!—A newspaper says,—"Two architects, bearing a well-known name, were on board the Bessemer on her trial trip, and glancing at the havoc made by the steamer amongst the timbers of the Calais pier, mentally assessed the damage done, the one at 300*l.*, the other at 500*l.* But the Calais municipality claims 2,800*l.*"

The Statue of the Late Lord Mayo.—On the 14th inst., at the foundry of Messrs. Cox & Son, at Thames Ditton, the final casting of the colossal equestrian statue of the late Lord Mayo was made. When completed the statue is intended to be erected at Calcutta, and it is hoped that it may be unveiled during the time of the visit of the Prince of Wales. The design comes from the studio of Mr. Thorneycroft, and the figure is that of a general officer in action. The statue, when completed, will weigh rather more than four tons, and will be about 14 ft. in height.

The Metropolitan Gas Companies Bill.—In the House of Commons last week, Sir J. Hogg moved the second reading of this Bill, which proposes to fix the maximum price of gas at 3*s.* 9*d.* per 1,000, under the penalty of a reduced dividend, and the illuminating power of sixteen candles. He proposed that after the second reading the Bill should be referred to a Select Committee. After considerable discussion the Bill was read a second time.

Enlargement of the Malpas Gas Works. The gas works being, through the increased demand for gas, too small to supply the wants of the town, it has been decided by the shareholders to enlarge the same by erecting a new gasometer, &c., and last week the tenders for the work to be done were opened, when the following were put in:—Skoins, London, 958*l.*; Willey & Ford, Exeter, 904*l.*; Holmes, Huddersfield, 832*l.*; Porter, London, 745*l.*; Poole, Dawley, 713*l.* 10*s.*

Loan Collection of Scientific Apparatus. A meeting of the Committee for organising the Loan Collection of Scientific Apparatus was held at the Science Schools, South Kensington Museum, on the 12th inst. It was decided to postpone the opening of the Exhibition until March, 1876. The schemes defining the limits of the Exhibition in the various branches of science, as prepared by the subcommittees, were considered, and it was resolved to refer them to a general subcommittee for revision.

The Proposed Bridges over the Medway. Following the example of the inhabitants of Snodland and Burham, the people of Wouldham assembled in large numbers in the National School on the 11th inst., to pass resolutions in favour of asking the Rochester Bridge Wardens to aid them in the construction of improved bridge accommodation across the Medway. The chair was taken by the rector (the Rev. C. G. Andrewes). Various resolutions to carry out these views were agreed to.

Cardiff.—The surveyor to the local board of health has reported favourably as to the results of the trial of Mr. Geo. Jennings's patent "convenience," and advises its adoption in other parts of the town at an expenditure of 300*l.* This would lessen the consumption of water to an extent that would only require an expenditure of 27*l.* a year instead of 147*l.* Upon the proposition of Mr. Winstone, it was unanimously agreed that the patent should be adopted in every instance.

Memorial of the Late Canon Gilbert.—It has been decided by the clergy and laity that a memorial shall be raised to commemorate the services rendered by the late Rev. George Gilbert to the church in the diocese of Lincoln. The memorial will take the form of a stained-glass window to be placed in the chapter-house of Lincoln Cathedral. The window will form part of a series of windows illustrating scenes from the history of the cathedral.

New Parochial Buildings, Kingswinford. The new Board-room and offices in connexion with the workhouse, which have been erected from the designs of Mr. Smallman Smith, of Stourbridge, are now completed. Externally the buildings are of brick with stone dressings, the roof being tiled, and the style is Domestic Gothic, with some modification in detail. The new Board-room is 30 ft. by 20 ft., and 20 ft. high.

Metropolitan Sepulture.—At the meeting of the Commissioners of Sewers, on the 11th inst., a letter was read from Mr. T. Willson, an architect, offering to submit his plans of the Pyramid Necropolis to the Court for their consideration. The idea was that of a sanitary sepulture for the metropolis, producing interment space for 625,000 dead, in vaults, upon a superficial area of five acres of land only.

St. Paul's Cathedral.—The *Graphic* of last week reproduced a clever drawing of St. Paul's and the *Times* Office, as seen from the Underground Railway, made by Mr. H. H. Statham.

The Industrial Exhibition at Leighton Buzzard.—Last week, was inaugurated an exhibition of objects of art and industry, the like of which in importance and value, we are assured, has never before been seen in the county of Bedford. The exhibition occupied the whole of the Corn Exchange premises, including the large hall, the assembly-room, the various ante-rooms, and a spacious *annexe*, with an area of 1,500 ft.

The New Opera House.—The promoters of the scheme for the new Opera House on the Thames Embankment, after much consideration, have elected the designs of two architects, Mr. C. J. Phipps, F.S.A., and Mr. F. Fowler (out of a number sent in competition), as being the best; and have ultimately decided to adopt those of Mr. Fowler for the building, which will be at once commenced.

A Museum for Nottingham.—The Duke of Richmond, in reply to a deputation from Nottingham, on Tuesday, asking for a grant of 1,000*l.* for building a museum in the locality, said the request, if conceded, would establish a precedent for similar demands from other towns. Before giving a definite answer, he would consult his colleagues.

Dwelling Houses Wanted.—The opinion is now becoming general that something must be done to afford increased and better accommodation for the working classes at Hinckley, Leicestershire. Trade prospects, together with the recent town improvements, make it a necessity. The wealth and growing position of the town indicate that it should be done.

Proposed New Railway Station at Aylesbury.—It is reported that the London and North-Western Railway Company intend erecting a new station, with every convenience, in a more central part of the town than that in which the present station is situated. It is understood that the work will shortly be commenced.

New Museum, Vienna.—A Vienna telegram reports the opening of the new Oriental Museum, under the presidency of Archduke Charles Louis. This institution has been recently established in the Austrian capital as a nucleus for promoting Austrian interests in connexion with the East.

Memorial of the Late Mr. Margary.—A movement has been successfully initiated for placing a stained glass window in the chapel of Brighton College, in memory of the late Mr. Margary (the circumstances of whose death in China recently came before the public).

A Gift to Birmingham.—The Mayor (Mr. Chamberlain) has given to the Town Council a sum of 1,000*l.* to be expended by the Free Libraries Committee in the purchase of objects of industrial art for permanent exhibition in the Art Gallery of the town.

Drainage of St. Columb.—Mr. Henderson, C.E., of Truro, has received instructions from the St. Columb Local Board, to prepare a scheme for the drainage of the town on the basis of the plans prepared by Mr. Coombs.

Ashampstead Church.—A fund is being raised for the purpose of restoring this ancient church. The work will include the rebuilding of the south and east chancels, a new east window, a chancel arch, and other requisites, for which a sum of 400*l.* is wanted.

Conversazione.—Mr. Harrison, as President of the Institution of Civil Engineers, and Mrs. Harrison, hold their *conversazione* this year in the galleries of the Indian Museum, South Kensington. It will take place on Tuesday next, the 25th.

Gift of a Divinity School for Cambridge.—A Syndicate recommends the purchase of premises opposite St. John's College, Cambridge, on which to erect a Divinity School, a fund for which, amounting to 10,000*l.* Consols being provided by the late Professor Selwyn.

Gift for a Public Hall at Stafford.—Alderman H. D. Pochin, of Barnes, has given 500*l.* towards the erection of a public hall at Stafford, the foundation-stone of which will be laid on the 31st inst.

Fall of a Bridge.—A serious accident has occurred at Builth-road Junction, near Knighton. A rail bridge gave way, and precipitated about 20 people down upon a railway below. Several persons were broken, but there was no loss of life.

Death of a French Architect.—The death is announced of M. F. Florimond Boulanger, a French architect of some distinction, and an ardent disciple of Fourier.

TENDERS

For building twenty-two houses, at Forest Gate, for Messrs. Saunders, Newman, & Roberts. Mr. E. Brown, architect:—

Marr	£5,346	0	0
Eaton	5,250	0	0
Pavit	4,795	0	0
Ennor	4,734	0	0
Judd & Hawkings	4,122	0	0
Beal	3,872	0	0

Additions and alterations at the Asylum for Imbeciles, at Caterham, Surrey, for the Metropolitan Asylum Board. Mr. W. Crichmay, architect. Quantities supplied by Mr. C. H. Goode:—

Wells	£18,274	0	0
Roberts	18,032	0	0
Nightingale	17,983	0	0
Warr	17,701	0	0
Jarratt	17,548	0	0
Staines & Sons	16,790	0	0
Wigmore	16,676	0	0
Chappell	15,128	0	0

For general fittings to Branch of the New Civil Service Co-operative, Limited, 30, Sloane-street:—

Stevenson	£1,140	0	0 !
Pread	989	0	0
Bowles	740	0	0
Andrews	685	10	0
Millard (accepted)	668	12	6
Hay & Son	650	0	0 !

For the erection of two semi-detached villa residences, at Fortis-green, Finchley, for Mr. M. J. Bovay. Mr. James Harrison, architect. Quantities supplied by Mr. Henry T. Gordon:—

Little	£2,298	0	0 !
Browne & Robinson	1,914	0	0
Bowman	1,866	0	0
Merritt & Ashby	1,835	0	0
Ennor	1,822	0	0
Thomas	1,500	0	0 !

For pulling down and rebuilding Farley House, Ramsgate, for Mr. Z. Prall. Mr. R. Richardson, architect:—

J. & H. Bangs	£1,555	0	0
Potter	1,540	0	0
Horne	1,549	0	0
Newby (accepted)	1,327	0	0

For enlarging and completing a mansion, at Reigate, for Mr. R. Russell. Mr. J. F. Mathews, architects. Quantities supplied:—

B. E. Nightingale	£2,483	0	0
C. Nightingale	2,050	0	0
Holdsworth	1,840	0	0
Cook	1,834	0	0
Batchelor & Son	1,787	0	0

For villa residence, at Homerton, for Mr. Wells. Mr. Collett, architect:—

Summers	£1,700	0	0
Brown	1,675	0	0
Atkinson & Son	1,630	0	0
Williams	1,625	0	0
Sharp & Maxwell	1,616	0	0

For new warehouse, Bonner's-road, Victoria Park, for Mr. G. B. Kent. Mr. W. H. Gathercole, architect. Quantities by Mr. W. Woodward:—

Wood, Brothers	£8,783	0	0
Hearme	8,685	0	0
Jackson & Shaw	8,500	0	0
Patrick & Son	8,130	0	0
Newman & Mann	7,992	0	0
Brass	7,988	0	0
Cook & Green	7,980	0	0
Macey	7,835	0	0
Ennor	7,764	0	0
Scrivener & White (accepted)	7,743	0	0
Forrest	6,982	0	0

For the restoration of the Enfield Grammar School. Mr. Thomas J. Hill, architect:—

Bentley	£1,510	0	0
Staines & Son	1,486	0	0
Fairhead	1,435	0	0
Field & Son	1,433	0	0
L. & W. D. Patman	1,298	0	0

For additions to Marsh Villa, Brook-green. Mr. J. G. Hall, architect:—

Cole	£940	0	0
Wilson	921	0	0
Braithwaite	915	0	0
Chamberlen, Brothers	912	0	0
Thompson & Smith	897	0	0
Smith & Alder (accepted)	698	0	0

For the erection of residence and stabling, Tettenhall Wood, Wolverhampton, for Mr. J. E. Underhill. Messrs. Bidlake & Fleeming, architects:—

Cockerell	£4,977	0	0
Lovatt	4,756	0	0
Horsman	4,616	18	9
Higham	4,263	5	0

Accepted for Epidemic Hospital, at Cuninghar Hills, Aberdeen. Mr. William Smith, architect. Quantities supplied:—

*Concrete Work.**

Drake & Co.	£2,999	5	0

Excavation, Levelling, Drainage, Inclosing Walls, &c.

Christison	£1,459	0	0

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Coutts	£2,388	10	0

Plumber's Work.

Robertson & Son	£920	0	0

Plasterer's Work.

Henderson	£889	16	5½

Slater's Work.

Wink	£461	15	0

* The walls are to be built and the floors formed with Portland cement concrete.

For the erection of two villa residences, at Loughborough, for Mr. T. G. Messenger. Mr. Alfred W. N. Burder, architect:—

Bricklayer, Plasterer, and Slater's Work.

Barker	£1,060	0	0
Main	910	0	0
Moss	870	0	0
Ladlow (accepted)	823	14	9

Plumbing and Glazing.

Messenger & Perkins (accepted)	£93	15	0

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We are compelled to decline pointing out books and giving address.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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CONTRACTS—*Continued from page* ii.

TO PAVIORS, CONTRACTORS, and OTHERS.—The Vestry of the Hamlet of Mile End Old Town will meet at the Vestry hall, Bancroft-road, on WEDNESDAY, the 26th of MAY inst. at SEVEN o'clock, p.m. precisely, to receive TENDERS for PAVING and MAKING UP Copperfield-road, and part of Enmott-street, in the said hamlet. The work to be done according to the terms of a specification, which may be seen at the Office of Mr. J. M. KNIGHT, the Surveyor, at the Vestry-hall, between the hours of TEN and ONE. The Contractor will be required to enter into a Contract, to be prepared by the Clerk to the Vestry, and find two approved sureties to join him in a Bond, in half the amount of the Contract, for the due performance of the work. Tenders, containing the names and addresses of proposed sureties, are to be delivered at my Office, endorsed "Tender for Paving," before THREE o'clock in the Afternoon of the day of meeting. The Vestry do not bind themselves to accept the lowest or any Tender
MILLNER JUTSUM, Clerk to the Vestry.
Vestry-hall, Bancroft-road, Mile End-road,
18th May, 1875.

TO CONTRACTORS.—HEATON WATERWORKS. CONTRACT No. 4.—The Local Board for the District of Heaton, near Bradford, Yorkshire, are prepared to receive TENDERS for the LAYING and JOINTING of about 7,000 lineal yards of CAST IRON SOCKET PIPES, varying from 3 inches to 7 inches in diameter Fixing Valves and Hydrants and Building Brick Casings to same. Building Meter House and Fixing Meter, &c. Plans and specifications may be seen, and forms of Tender had, at the Office of Mr. JAMES MANSERGH, Civil Engineer, 14, Rook-street, Bradford, from TUESDAY, MAY 18th, to MONDAY, MAY 24th, both inclusive, from TEN a.m. to FOUR p.m. Tenders to be sent in endorsed "Tender for Pipe Laying," to me, the undersigned, not later than TWELVE o'clock at Noon on TUESDAY, MAY 25th, 1875. The lowest or any Tender not necessarily accepted, and no allowance made for Tenders.—By order,
WILLIAM COX, Solicitor, Bradford, Clerk to the Board.
Wellington-chambers, Westgate, Bradford, May 5th, 1875.

CLEANSING and REPAIRING SEWERS.—CITY of LONDON.—The Commissioners of Sewers will meet in the Guildhall of the said City, on TUESDAY, the 8th of JUNE next, at HALF-PAST TWELVE o'clock precisely, to receive TENDERS for CONTRACTS for such Works of CLEANSING and REPAIRING SEWERS, within the said City, as may be required to be done during the term of three years, commencing at Midsummer Day next. A specification of the works, and conditions of contract, may be seen at this Office, together with a schedule of prices; and the Tenders are to state the percentage above or below such scheduled prices at which the parties Tendering are willing to execute the said works. The Commissioners will require the party contracting to enter into a Bond, with two approved sureties, in the sum of 1,000l. for the due performance of the Contract. All Tenders are to be on the forms supplied at this Office, to be sealed, addressed to the undersigned, and endorsed "Tender for Cleansing and Repairing Sewers," and be delivered at the Office before TWELVE o'clock on the day of treaty. The Commissioners do not pledge themselves to accept the lowest or any Tender. The parties sending in proposals must attend personally, or by a duly authorised agent, at HALF-PAST TWELVE o'clock of the said day of treaty, and the party whose Tender is accepted will be required to sign an agreement to execute a contract drawn up in accordance with the said Tender.
HENRY BLAKE, Principal Clerk.
Sewers Office, Guildhall, 18th May, 1875.

PARISH of ST. JOHN, HAMPSTEAD.—TO SEWER CONTRACTORS and OTHERS.—Notice is hereby given that the Vestry of the Parish intend to enter into a CONTRACT for the CONSTRUCTION of a certain Intended SEWER, 1,615 feet in length or thereabout, with other Works in connexion therewith, in Fortune Green-lane, Hampstead. Persons desirous of TENDERING for the work should apply at the Vestry Offices, 10, Newend, Hampstead, where the plans specifications and schedule may be inspected, and forms of Tender obtained. Security will be required for the due performance of the contract. Sealed Tenders, addressed to the undersigned, and endorsed "Tenders for the outside "Tender for Sewers Works," should be delivered at the Vestry Offices not later than FOUR o'clock on WEDNESDAY, the 2nd day of JUNE next, and no Tender will be entertained that is not made on the form provided. Persons Tendering or some authorised agent on their behalf, are requested to attend the Vestry Meeting on THURSDAY, the 3rd day of JUNE next, at HALF-PAST SEVEN o'clock in the evening, when the Tenders will be opened. The Vestry do not bind themselves to accept the lowest or any Tender.—By order,
WILLIAM GRIBBLE, Vestry Clerk.
Vestry Offices, 10, New-end, Hampstead,
19th May, 1875.

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TO ARCHITECTS
WIDNES SCHOOL BOARD.—The Widnes School Board desire to APPOINT an ARCHITECT and request gentlemen willing to accept the appointment to submit plans of works of their designing and completion with particulars of estimated and actual cost, and other references as to ability, &c. applications to be in the hands of the Clerk not later than the 30th instant. Canvassing will disqualify.
G. H. DANBY, Clerk
School Board Offices, Widnes, May 6th, 1875.

THE BOARD of WORKS for the ST. GILES DISTRICT.—The Office of SURVEYOR to the Board becoming vacant by the resignation of Mr. W. J. Treherne, late Surveyor, the Board are desirous of obtaining the Services of a gentleman of skill and experience, who is qualified to fill the office. SURVEYOR. He will be debarred from private practice, and required to devote his whole time and attention to the duties assigned to him by the Board, the particulars whereof may be seen at the Offices. The salary is 350l. per annum, all fees receivable by virtue of his office to be the property of the Board. Applications in writing for the appointment, with testimonials (not exceeding three), addressed to the Clerk, at the Offices of the Board, and endorsed "Application for the Appointment of Surveyor," should be sent not later than the 1st day of JUNE next. Personal canvass of the members of the Board strictly prohibited.—By order,
J. HENRY JONES, Clerk to the Board
Offices, 129, High Holborn, May 18th, 1875.

The Builder.

VOL. XXXIII. No. 1693. SATURDAY, MAY 29, 1875.

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Practical Hydraulics.

PROFESSOR DOWNING'S "Elements of Practical Hydraulics"* has been put into a better form than that of the edition of 1861. The text is illustrated *pari-passu* wood engravings, which, for such simple tions as the flow of water, are much to preferred to plates bound together at the d of a book. Some additional illustrations e presented, while, from this first part of e new edition, others are omitted. A second rt is promised. The simplest form in hich the phenomena of flowing water can be served is that in which it flows out of an ifice in the side of a vessel, the depth of which low the surface of the water can be accurately easured, as well as the dimensions of the ori-e. The vertical distance of the surface of the id above the centre of the orifice is usually lled the head, but the author here calls it the arge. The first thing observed in such a case that the water issues with the same velocity ether the orifice be in the side or in the ttom of a vessel, providing that the depth of centre of gravity below the surface of the ter be the same in both cases; also, it is the ne through an orifice in the top of a pipe in hich water may be under pressure, the head or arge being the same. In this latter case the locity which a jet has would carry it up nearly the height of the head, were it not that the through which it passes continually retards ascent. The velocity with which water issues m such an orifice is, theoretically, that which eavy body would acquire by falling from the ght of the head or charge down to the orifice, d a heavy body falling freely from a state of t acquires a velocity of 32·1948 ft. per second the end of the first second of its time of falling. is velocity, called the force of gravity, is ays denoted by the letter g. If the height denoted by the letter H, and the velocity V, $V = \sqrt{2gH}$, called after Toricelli, its dis-verer, the Toricellian theorem.

The author gives a table, compiled from the sults of experiments by Castel, d'Aubuisson, ssut, Poncelet, and others, showing that the ocities are proportional to the square roots of charges. "The general principle, that the ocities are as the square roots of the charges, ends to every kind of fluids—to mercury, oils, ohols; so that the velocity with which each of them issues from an orifice is independent of its particular nature, and of its density, and depends solely on the charge." The velocity here spoken of is the theoretic velocity, and if the mean velocity of all the particles were that due to the charge, and if at the same time the particles issued from all points of the orifice in parallel threads, the volume of water flowing out in a second would be equal to the volume which would have a sectional area equal to the area of the orifice, and a length equal to the distance it would move in one second; but the actual discharge is always less than this. "In order to have an exact idea of the phenomena, let us consider the fluid vein a short distance after its issue from the orifice, and let us suppose it cut by a plane perpendicular to its direction. It is manifest that the discharge will be equal to the product of the section by the mean velocity of all the several threads at the moment they intersect the plane of the section. If this section were equal to that of the orifice, and if this velocity were that due to the charge, then the actual discharge would be equal to the theoretic discharge. But whether from the section of the vein being considerably less than that of the orifice,—as in the flow through orifices in a thin plate, or from the velocity being considerably less than that due to the charge, as in cylindrical adjutages; or, again, from a diminution in both the section and the velocity, as in certain conical adjutages,—it always results that the actual discharge is less than the theoretic, and in order to reduce this last to the former, it is necessary to multiply it by some fraction." This fraction is commonly called the *coefficient of contraction*. If we represent such coefficient by the letter m, the area of the orifice in square feet by the letter S, the force of gravity by the letter g, the height of the charge in feet by H, and the number of cubic feet of water issuing in one second by Q, then $Q = m\,S\,\sqrt{2\,g\,H}$; and it is to the determination of the value of the symbol m, that all investigators into the laws of hydraulics turn their attention. The author gives a table of the results of experiments by Mariotte, Castel, Eytelwein, Bossut, Michelotti, Venturi, wherein the co-efficients vary from 0·607 to 0·692 for circular orifices, and from 0·602 to 0·655 for square orifices. MM. Poncelet and Lesbros made a large number of experiments at Metz in 1826 and 1827, in which the co-efficients varied from about 0·6 to about 0·7. Experiments on a still larger scale were made on the Canal Languedoc, in which the co-efficients varied from 0·594 to 0·647, the mean being 0 625. All these experiments, it must be understood, were made with orifices in a true plane, but when a pipe projects into a vessel the discharge is diminished, while, with proper adjutages outside the opening, it is increased beyond that which takes place through a simple orifice of the same area in the side of the vessel.

Another form in which the discharge of water is measured is when it flows over a waste board or a weir, and in this form the experiments made by the late T. E. Blackwell, C.E., on the Kennet and Avon Canal, were most extensive and accurate, and also those made by him and by the late James Simpson, C.E., at Chew Magna. A large number, also on a large scale, were made by Mr. J. B. Francis, in the United States, and published by him as the "Lowell Experiments." In this form of measuring the discharge of water, the co-efficient varies not only with the form of the weir, but with its length and with various depths over the same weir. The general formula is $Q = m\,\frac{2}{3}\,\sqrt{2g} \times l \times H\sqrt{H}$. Now, the square root of $2g = 8{\cdot}024$, and two-thirds of that $= 5{\cdot}35$. We therefore have $Q = m \times 5{\cdot}35 \times l \times H\sqrt{H}$ where Q = the quantity discharged in cubic feet per second, l the length of the weir in feet, H the head or charge, and m a coefficient determined by experiment. According to Castel's experiments, the coefficient was from 0·59 to 0·61, when the width of the overfall was nearly equal to the third of that of the canal or stream, but this is important to be noticed, for the coefficient varies with the proportion of width of overfall to width of stream, as well as with other properties of an overfall. In any case in which the mean coefficient 0·60 would be applicable, the formula for the actual discharge becomes $Q = 3{\cdot}21 \times l \times H\sqrt{H}$, for $5{\cdot}35 \times 0{\cdot}60 = 3{\cdot}21$. We can give only this one case, but the author treats of many other cases; as, for instance, "overfalls with channels attached," and "drowned weirs."

Various forms of outlet which allow fixed quantities of water to pass through them for irrigation in Italy and Spain are given by the author. Some of these are so arranged that the opening may be increased in area in proportion as the head of water may decrease, so as always to permit the same quantity of water to pass through; but these are of somewhat uncertain action in giving at all times the same quantity. The module, designed by Mr. J. F. Bateman, C.E., for the Henares Canal, in Spain, is so arranged that the water is kept, by means, of a sluice-gate, to a certain height, in a chamber, out of which it flows over an open weir, and by thus regulating the admission of water to the chamber the same quantity can be at all times discharged from it. "The guard in charge has orders to keep the level of the water to a certain height, denoted by a gauge. . . . . So long as perfect reliance can be placed on the honesty of the guards the distribution will be effected with great regularity"; and Mr. Bateman thus adopted the plan which does rely upon the honesty of the guard.

When Mr. Bateman constructed the Manchester Waterworks he adopted a means of separating the clear water of the streams, in ordinary states of the weather, from the muddy water in times of flood. The velocities with which water flows over a weir, and consequently the distances to which the streams reach, are proportional to the square roots of the depths flowing over the sill of the weir, so that the larger bodies of turbid flood-water shoot over to a greater distance than the clear streams, which drop down more perpendicularly. By placing a breast at the proper distance from the lip of the weir these turbid flood-waters are made to shoo

* Elements of Practical Hydraulics. Part I. By Samuel Downing, LL.D., Professor of Civil Engineering in the University of Dublin, &c. Third Edition. London: Longmans, Green, & Co. 1875.

over the breast, and to flow along a channel into the flood-water reservoir, while the clearer water drops down into another channel and is diverted in another direction to the town conduits.

Mr. Ramsbottom's apparatus for filling the tenders of locomotive engines with water whilst running is described. It appears that the passengers by the Irish mail-train from Chester to Holyhead must arrive there so soon that no time can be allowed for stopping to refill the tender at Conway, and as the whole distance is 84¾ miles, a tender of ordinary dimensions would not contain a sufficient quantity for the journey; so, at the half-way point, 1,000 gallons of water are scooped up from a trough laid between the rails, into which the mouth of the scoop is lowered, and the water is forced up into the tender with the velocity which the train has. A table is given which shows the results of experiments on the delivery of water into the tender at different speeds, from which it appears that the maximum result is when the speed is about 35 miles an hour; but that the variation in the quantity of water delivered is very slight at any speed above 22 miles an hour; the greater velocity with which the water enters at the higher speed being counterbalanced by the reduction in the total time of action whilst the scoop is traversing the fixed length of the trough.

The flow of water through orifices under a variable head, as through the sluices of a lock-gate, is investigated, and the last chapter treats of the flow of water through pipes, artificial channels, and rivers; and as in these latter cases the flow is much retarded by the surface with which the water is in contact, the laws of friction of fluids upon solids are contrasted with those of solids upon solids, showing that in the case of one solid body sliding upon another the friction is proportional to the force with which they are pressed together, and is independent of the area of the surfaces of the bodies in contact, but that in the case of a fluid moving in contact with a solid, the friction is independent of the force with which the fluid presses upon the solid body, and is proportional to the surface of the solid body acted upon, being in both respects contrary to the law of friction of solids. Also, that while the friction of a solid upon a solid is independent of the velocity of motion, that of a fluid upon a solid is proportional to the square of the velocity, nearly; so that, in the case of water flowing through a pipe, the retardation of the flow, with any given velocity, is inversely proportional to the diameter of the pipe and its length, the quantity delivered being the same in different cases; and in an open channel it is proportional to the "border," or "wetted perimeter," of the channel, and in both it is proportional to the square of the velocity. It is explained how the velocity is governed by the head of water in the case of pipes, and by the inclination of its surface in that of an open channel.

The author illustrates each principle of his subject by one or more "practical applications," and of the waste weirs of reservoirs he says,—"In the construction of reservoirs it is necessary to have a weir whose crest is on the level of the intended top-water line, with reference to which line the height of the embankment and of the puddle-wall must also be designed. Its length must be such that the water of a maximum rainfall shall not rise on it above a certain height." And that is so; but what follows is wrong,—"We may take the greatest available rainfall at 2 in. in twenty-four hours. This depth must be multiplied into the area of the district which drains into the reservoir"; and the author proceeds to find the proper length of the weir, taking as an example an area of 6,536 acres, and limiting the depth of water over the weir to 1·5 ft., and he finds the length required to be 84·75 ft.

But it would not be considered good practice to make the weir so short as that. Floods occur in this country which, after making all allowances for the difficulties of gauging them, cannot be stated at less than 300 cubic feet per second per 1,000 acres of the drainage area; and where that area is 6,536 acres, the quantity of water coming into the reservoir would be very nearly 2,000 cubic feet per second. It may be said that such floods do not continue long; and that may be so, but when they occur—and they may so occur—when the reservoir is full, or nearly full, they are highly dangerous, unless the waste-weir is of ample length. The discharge-pipes would, perhaps, not reduce the above-named quantity by more than 200 cubic feet per second, leaving 1,800 cubic feet per second to be provided for to pass over the waste weir. If the depth of water on the weir be limited to 1·5 ft., as it is by the author, the length of weir should be by the formula stated, $\frac{1{,}800}{\frac{2}{3} \times 0{\cdot}66 \times 1{\cdot}5 \times \sqrt{1{\cdot}5} \times 8{\cdot}024} = 277$ ft., and if the water be allowed to rise to a height of 2 ft. over the weir the length would require to be, by the same formula, 180 ft. But the co-efficient, 0·66, is too high for this case; it is, indeed, higher than the results of the experiments given which more nearly resemble this case than others do; for instance, those of Mr. Blackwell (p. 95) with broad-crested weirs, (which were similar in form to such a weir as this under consideration, and the co-efficients deduced from them would be more likely to be true for this weir than those would be which are deduced from experiments with plank weirs or thin plates), the average of which is stated to be 0·473; and of those of D'Aubuisson, which is stated to be 0·430; and of other experiments which give 0·457. Further, that Castel's experiments for overfalls, with channels attached, give 0·527 and 0·508. And (p. 97) the co-efficient in the "first set" of experiments with long overfalls, for the greatest depth given, is stated to be 0·529. Nevertheless, the co-efficient deduced from the experiments of Mr. J. B. Francis for about the same depth is 0·623, and for a depth of 1·56 ft. it is 0·62, the length of the overfall being also 10 ft., as in the other cases; and in the "second set" of experiments by Messrs. Simpson and Blackwell the co-efficient for a depth of 9 in. (the greatest given), and for a length of 10 ft., is as high as 0·781; but from the circumstances under which these latter experiments were made, we should suppose that there was a perceptible current in the water as it approached the gauge-weir, whereas in the "first set" there was none, nor would there be in the case of a waste weir of a reservoir, such as that now under consideration. The co-efficient, therefore, of 0·66, applied by the author to this case, is too high. Taking the co-efficients deduced from analogous cases, viz., 0·473, 0·430, 0·457, 0·527, 0·508, 0·529, and 0·62, the average is very nearly 0·5; and with this co-efficient the length of the weir for a depth of 2 ft. should be $\frac{1806}{\frac{2}{3} \times 0{\cdot}5 \times 2 \times \sqrt{2} \times 8{\cdot}024} = 237$ ft.

Finally, if the length of the weir were no more than 84·75 ft., such a flood as this might rise to a height of 4 ft. upon it, which would be highly dangerous.

NEGLECT OF *COUP D'ŒIL* IN ARCHITECTURAL IMPROVEMENTS.

The manner in which the general aspect of London is affected by the important changes which have occurred, and are now being carried out, in numerous details of the plan of the streets, as well as in the varied elevations of the buildings, demands very serious attention. We are spending sums which, a quarter of a century ago, would have been called enormous, and which are certainly considerable, for the improvement of the metropolis. So long as sanitary measures are under consideration, as in the case of clearance of rookeries, or opening free courses for street ventilation, there ought not to be two opinions as to what is desirable, amongst competently educated men. Traffic facilitation, again, is a matter to which we have repeatedly called attention. The establishment of islets of refuge for the foot-passenger, in the midst of our great crossings, which has been one of our earliest pet projects, has now become very general, to the advantage, not only of the foot traffic, but of the carriage traffic. The introductions of circuses, or rounded spaces, at the chief intersections of traffic, is another of these points of traffic facilitation. Although the mode which we some time back suggested, by which two streams of traffic that cross one another at right angles might be so directed as to prevent, absolutely, the dead lock which a wagon drawn by a long team of horses now frequently causes, has not been fully adopted, yet an approach to our system has been introduced at some of the most important intersections. To improvements of this nature, which, by saving time, are of the most essential importance to the City and busy part of the metropolis, it is not possible to direct too much attention.

Beyond all this, however, it must now be taken as admitted that we are contented to expend, or at all events to advance, considerable sums of money for what we may call pictorial purposes. There can be, we suppose, little doubt that the wish to open a noble *vista* from the central position of Trafalgar-square was one of the main inducements for the purchase and demolition of Northumberland House. It was not a case of sanitary clearance. It is by no means certain that, if the best plan for distributing and conducting a heavy traffic were alone considered, the line thus selected is the best. But, as far as the command of *vista* were concerned, we are now in a position to estimate what we have obtained, and what we may obtain, at so large a cost.

We must say, may obtain, rather than have obtained. The centre line of the new *vista* falls a little to the west of the *perron*, or terrace, of the National Gallery. By standing at the top of the western flight of steps to that edifice, the observer may place himself nearly in the direct line of vision. The aperture is wide and imposing,—more so, of course, in the present state of things than it will be when the new street is finished. But the objective of the spectator, the distant prospect obtained through this costly telescope, is hardly what we could have hoped.

To command, from so central a site, a full view of the river, purified by the expensive works of the metropolitan drainage, and lined by its noble granite quay wall, and broad drive edged with gardens, is an object for which such an architect as Sir Christopher Wren might have thought no cost too heavy. We are spared from the necessity of urging any argument to that effect, because we have to deal with a *fait accompli*. The cost is incurred,—the price is paid,—the *vista* is open: are we about to make a worthy use of it?—or are we, by a sort of economical or political colour-blindness, to which Englishmen are especially subject, about to spoil the ship for a halfpenny-worth of tar; and to throw away the great advantages which we have obtained, by simple, stupid disregard of what may be called pictorial, or architectural decency?

That a good view of the Thames should not be opened, after all, by this costly work is a result so ludicrous that one almost blushes to suggest its possibility. A morning contemporary has called attention to the fact of the selection of the very spot where the new avenue abuts on the Thames for the location of an establishment of swimming-baths. If the object were to select the very choicest spot in the entire world for the exhibition of those enormous letters by which bill-stickers and advertising agents rejoice it could not be much better carried out. We might suggest the north door of Westminster Abbey, the entrance to Westminster Hall, the façade, or even the dome, of St. Paul's, as places where the great object of the advertiser might be perhaps better attained; but it would not be easy to add to the list. As matters go, it looks like our having paid half a million of money in order to advertise certain baths. Against such desirable institutions we have not a word to say; but while bathing is excellent it ought to be timely. We do not select the middle of an entertainment as the moment for giving a good lather to hands and face. To locate such an establishment in such a spot is about as appropriate.

Another prospect which strikes the observer from the standpoint which we have selected is this. The Borough is brought by this optical bond into such union with the West End of London, that architectural considerations can no longer be neglected south of the Thames. A cupola, not devoid of grace, and a large spire, as yet swathed in scaffolding, are the two most salient features that close the *vista*. Between these and the river tower piles of warehouses and other buildings, not regular to be picturesque, too ugly to be pictorial. The pride, the good taste, or the commercial keenness of the owners of the property to which such a fresh and open publicity has been given at so large a cost, will probably, sooner or later, lead them to avail themselves of the opportunity of vindicating the importance of their occupations by architectural improvements. What we are anxious to urge is, the importance of regarding the general plan of the metropolis and the picturesque effect of the new localities which we are forming, unless we wish to make ourselves the ridicule of nations who take some orderly thought for the adornment of their capitals.

To the question, "What does London owe to the Thames?" the apt reply is found in the words of our immortal dramatist: "It is for more than some, my Lord; it is for all,—all I have."

the more prosaic language of the day, London owes to the Thames her position as the capital of an empire that includes a sixth part of the human race, and her acknowledged rank as the first commercial city of the world.

It is not on a sentimental ground alone that we call attention to this pregnant question. To impersonate Father Thames as a sort of hybrid between one of the Guildhall giants and a classical river goddess, and to lament the ingratitude of Britannia, or Augusta, or any other mythical impersonation, to her father, sustainer, and benefactor, might be all very well for the times of pageants and masques; but is a style of literature which we are too busy, in the present day, to enjoy. Neither is it the case that the people of London have been, of late years, by any means unmindful that this great river demanded care, thought, and outlay. Of the 16,300,000*l.* which we have recently seen that the Metropolitan Board of Works have raised, at the cost of the ratepayers, by far the lion's share has been devoted to the maintenance of the river, if we bear in mind the subterranean channels provided for preserving it from pollution, as well as the direct outlay on the enbankment and wharf walling. As we write, gardens are being opened on the site of what was, in the memory of many of us, a dreary waste of mud, twice in the twenty-four hours covered by the river. Nor is the time to be counted by weeks since the means of obtaining a commanding *vista* was opened, from the square marked by Landseer's lions to the Thames, at the cost of half a million of money, and the sacrifice of one of those storied residences which, if not of the first order of architectural merit, had associations that cannot be replaced.

It is thus not unreasonable that to any language that might come under such a heading as a "plea for the Thames," a somewhat impatient reply might rise to the lips of the reader. "Will the greedy glad never have enough?" might be said. From the sentimental standpoint, such an answer might be conclusive. But our wish is to inquire, not as matter of poetry or romance, but of practical good sense, what are the actual relations between our metropolis and the great tidal river on which it stands. We wish to see, not whether London is grateful or ungrateful, but whether we are making the best of her great natural advantages; whether we are seeing that the large sums already spent may not be to a great extent thrown away, by the want of that intelligent control which would be the function of a competent Ædile.

It is a remarkable fact that at the period when our written history (however unfairly and untruly written) commences, the natural highway afforded by the Thames was not used by the Roman invader. The Italian of the time of Cæsar, like his descendant of the present day, dreaded the water. The boundless ambition of Julius Cæsar impelled him to cross the Channel in search of fame, but like a true Italian, he took the shortest and most visible cut from shore to shore. By so doing he imperilled the success of his enterprise, in more ways than one. His first landing was due rather to fortunate accident than to seamanship, or even to generalship. He had the narrowest possible escape from being altogether cut off, by the destruction of his ship. That his true objective was Verulam, there seems to be some reason to conclude. By landing on the Kentish coast, marching inland entirely away from his base, and crossing the Thames where the single ford appears to have been accompanied by a work intended to stop the advance of ships up the river,—for it is difficult to give any other explanation of the piles mentioned in the Commentaries—Cæsar showed the military quality of audacity, but may be thought to have ignored the soundest rules of the art of war. The first campaign terminated in a flight, which the boastful language of the Commentaries ill disguises by the expression that Cæsar ordered the hostages to be sent after him. The second campaign, aided by the dissension sown by Italian craft among the British tribes, was more doubtful in its result; but though Cæsar speaks of capturing a sort of park of cattle belonging to Cassivelaunus, it is more than questionable whether he ever came in sight of the capital of that prince. But if the Roman had taken the natural highway of the Thames; ascended with his fleet as far as the water would allow; then entrenched a camp around his ships, and pushed on into the country; he could have maintained his communications until he struck a decisive blow on the heart of the British power.

In the occupation under Claudius a more thoughtful policy, with regard to the accessibility of England by the Thames, is indicated by the fortification of London, or, at least, by the foundation of the Tower, as a bridle to the River. But the first great era of the history of London may be said to have closed with the erection of London B idge. By that bold stride of early engineering two features, not yet obliterated, were impressed on the English capital. The lines of communication, north and south, were concentrated at a spot where an eastward and westward traffic was established, both by land and water. Thus the city held the keys of the communication of that part of England. Secondly, by the barrier erected against any vessels of magnitude ascending above the bridge, the military importance of the city became capital. At the same time a division was effected between the sea-going commerce, and the lighterage, or river traffic. A distinction was thus drawn between London above the bridge, and those eastward districts where the docks were subsequently formed, and where the river is yet lined by rows of masts. The necessity of breaking bulk at London was fixed by the erection of the bridge; and the commercial importance of the port and the city took a new start from that time.

The erection of London Bridge dates, if memory serve us aright, twelve years after the completion of Domesday Book,—being in the year before the capture of Jerusalem by Godfrey de Bouillon, in the great Crusade, or, A.D. 1098. This event we take to close the first great chapter of the history of London. The second period, from this engineering and architectural point of view, reached to the commencement of the present century; when the erection of the Waterloo, Southwark, and new London bridges was, after a brief pause, followed by that of the various structures which now span the river, between the port and the beautiful nine-arched road bridge at Maidenhead. With this new era of bridge-building has coincided the revolution in our internal traffic caused by the application of steam to purposes of transit, both by land and sea.

It is evident that during the long period that elapsed from the building of the first wooden gallery, with its double line of shops, its drawbridge, and its pumping machinery, which caused so formidable a cataract at low water, to the erection of the wide-spanned edifices of stone, and the still bolder structures of iron, of the present century, the river was left, to a great extent, to take care of itself. We speak with all due reverence of the corporate authorities,—of the Lord Mayor and Conservators of the Thames. But, during that time, the river was treated on the most utilitarian grounds possible. Such treatment, happily or unhappily, is ordinarily shortsighted. Thus, while lines of private quays occupied every available yard of river frontage, rows of houses grew up to prevent the Thames from remaining the chief ornament and beauty of London. Peeps were only to be obtained down steep and narrow streets, or from the parapets of bridges; on crossing which the passenger had enough to do to provide for his own safety, without heeding the picturesque. Then, with rapidly-increasing population, deterioration of the silver stream made progress,—slow at first, terribly rapid at last. The pleasure, and the ample profit, of the fishermen were destroyed. Fish for London could at last only be obtained from the sea. The one point in which alone the ancient importance of the river to the City seems to have been borne in mind was in the construction of that inland system of water carriage, the establishment of which preceded the great railway revolution, by which canals and navigable streams throughout England were put in communication with the Thames.

During this period the character of the river as the central line of communication for passenger traffic, and especially as the appropriate scene of stately water processions and floating pageants, gradually became transformed. The Thames lighter, whatever its business capacities, is probably the ugliest and least manageable craft that was ever set afloat. It is no more sea-worthy, fitted for speed, for neatness of handling, or for flotation when there is the slightest ripple on the water, than the ancient coracle. It might almost be thought to be an over-grown and degenerate coracle. These grim and unmanageable monsters have gradually elbowed the wherry from the Thames. The attempt to open the river as a highway for the million by the river steamers, although it certainly has attracted a very large traffic, has never been so conducted as to win that degree of popularity and support which might be commanded by a more thoughtful effort to study the convenience of the public, rather than the dividends of the shareholders. The latter, in our opinion, would be better, if the former aim was more clearly set before the managers of these companies.

What we have done, then, in the third period of the architectural history of the Thames, is this:—We have redeemed it, at large cost, from that condition of intolerable nuisance into which it had sunk. We have spanned it by noble bridges; we have lined it, partially, by magnificent walls; but we have failed to deal with it pictorially; to study its effect as a *coup d'œil*; to link it, as matter of site and of *vista*, with the noble buildings that are rising on its banks. In a word, we have not shown that we have ever risen to the height of the conception that the Thames, if it have justice done to it, would be a main and an unrivalled element in the architectural dignity of London. If we had this idea clearly in our minds, we should not allow the hideous enormities that now hide its waters from the view, and crush, by very bulk, the beauty of the finest structures visible from its surface.

That the extremely unsightly, however ingenious and well contrived, columns, girders, and telescopic receivers, of the gas-works near London Bridge, should continue to spoil the view down the river promenade, we think can be only a question of time. The area, no doubt, could be much more lucratively, as well as more picturesquely, occupied, and the manufacture is not one which it is desirable, on any ground, to carry on in the midst of a city. The question can be only one of the cost of removal (as we speak of the cost of changing residence), and will have to be dealt with when the great commercial and engineering question of the lighting of the metropolis is put on a satisfactory footing. The wagon-roofs of the two unsightly stations are more perplexing deformities. Still, we must live and hope. When the idea has once fully developed itself in the public mind that there is a pictorial element to be regarded, in the absence of which all splendour of architectural detail is wasted, but by due regard to which an architectural *ensemble*, of which any people in the world might be proud, is to be secured to our metropolis, we shall have some check on the practice of every one doing what he likes, without reference to the eyesores that he may inflict on his fellow citizens. If for no other reason, people will be influenced by the consideration that their property will increase in monetary value by due attention to the pictorial proprieties.

Nor should it be forgotten, in taking a glance at the architectural requirements of London, that those persons must be more confident than long-sighted who think that we possess, in our actual railway system, the *ne plus ultra* of human ingenuity. In the past there has been an oscillation between our mechanical improvements in travelling by land or by water. At one time the great object was to push roads out to the farthest point of land that would command a harbour. Such was the case, in Roman times, with Brundusium, now Brindisi, in Italy, and with Milford, in our own island. At other times, the object has been, not to push the land into the sea, but to admit sea-borne and water-borne traffic inland. Such was the view that gave prosperity to Bristol and to Norwich. Such was the main cause of the prosperity of London. That some new turn in the course of invention may again bring water-carriage into vogue, no one can deny to be possible. At the present moment, in the opinion of some competent judges, the railway companies are sacrificing large returns by keeping up the old policy of discouraging the canals. Much costly and unremunerative traffic might now, it is possible, be better conducted by water than by rail. The subject must one day or another, receive systematic attention.

In one point, indeed, we may almost venture to indicate how public favour is likely to swing back towards water traffic,—a mode of travel to which the Englishman has a natural leaning, in nine cases out of ten. When we restore, as we are attempting to do, their natural purity and limpidity to our rivers, we shall facilitate a mode of passing from place to place that is far more healthy, interesting, and luxurious, than the rapid flight of the steam horse. Every summer now witnesses the reappearance, on certain favourite lines of road, of that inspiriting spectacle, a four-horse coach.

People who are not greatly driven for time prefer to sit behind a well-handled team, over the picturesque roads of Kent or Surrey, to the jar, noise, and whirl of the railway. The same love, we will not call it of luxury, but of cultivating a taste for nature, would draw many to a new system of water transport, over a pellucid and fish-haunted stream.

However that may be, it cannot be denied that it is of primary importance, from an æsthetic point of view, to take good heed that the large sums we have spent and are spending in the improvement of the metropolis are not to a great extent wasted by absolute neglect of architectural *coup d'œil*. What we now have to climb the *perron* of the National Gallery to see, will be apparent to every one when the hoarding in front of Northumberland House is removed. If the view, then apparent to every one, be closed by an enormous advertisement, to say nothing of the bridge-piers there agglomerated, we think there is enough good sense and good taste latent among the public to become audible in a very distinct expression of disgust.

HASTINGS NEW TOWN HALL COMPETITION.

SOME twenty-six sets of plans, sent in competition for three premiums for the best designs for a new town-hall, are now being publicly exhibited at Hastings. Whether the Hastings Council are about to relieve themselves of the unenviable notoriety which they gained last October, time alone can decide, though the look-out is anything but promising. All that it is necessary to do here is to remind readers that, on a former occasion, thirty-four sets of plans were sent in for a building to cost not more than 12,000*l.*, including the foundations. It was very clear to those who had a knowledge of building prices that the bare walls of the premises, mentioned in the official "Instructions to Architects," could not be honestly put up for the money. Several architects addressed the Council to that effect, and declined to compete on that ground. After having the plans on view privately for a fortnight, the force of public opinion compelled the calling in of the county surveyor to examine the plans. Mr. Card priced the designs at 16,000*l.* to 25,000*l.* The result was that the whole were sent back, except one, the designer of which has never made known his name and address. After sleeping on the matter for four months, the Council decided to allow 18,000*l.* for the building, besides the 2,000*l.* set aside for the "special means which will have to be adopted to secure a good foundation," because the site is on a bog 40 ft. deep. They also decided that only those who sent in plans for the first competition should be invited to join in the second.

In the "Amended Instructions" some slight alterations were made in the minor offices; but the dimensions of the large hall were increased from "3,500 ft. superficial" to "about 100 ft. by 55 ft." By special circular of the 13th of February the competitors were informed, "that if the Town Council think it necessary to call in professional assistance respecting the plans, they will employ an eminent London Architect for the purpose."

The designs were received on April 2nd. On May 7th, after private inspection, the committee reported that five of the plans had not complied with the conditions, in not giving the extra space required for the large hall. These, bearing the mottoes, "Steadfast," "Justitia," "Floreat Hastyng," "Quod pelis hic est," and "Salus Populi," were ordered to be struck out of the competition, and the Roads Committee, which consists of the whole council, recommended that the competition should be decided by members of the council, and that there should be a meeting on the 10th inst. to reduce the number of plans to six. Another private meeting was afterwards held, when it was decided to recommend the plans signed as follows for the premiums:—"Palmam Perseverando," first, 100*l.*; "Con Amore," second, 50*l.*; "St. Michael," third, 25*l.* They also decided to lay the plans open to public view.

The profession and such of the public as take an interest in seeing fair play will agree in condemning the decision come to by the committee, especially as a half-promise was made to call in "an eminent London architect." The decision will be the more canvassed when we state that it is very well known and matter of conversation as to who are authors of two of the premiated designs. No. 1 is stated to be the joint work of two local firms, Messrs. Jeffery & Skiller and Messrs. Cross & Wells; and No. 2 the work of Mr. Heffer, of Liverpool. We think the committee failed in another point,—that of ascertaining whether the premiated designs could be carried out for the money stipulated. One of these, it is quite certain, cannot be carried out for 30,000*l.* The author of one of the designs proposes to use terra-cotta, contrary to the instruction that "the facing of the external wall is to be built of local hard blue stone, with freestone dressings, and any other stone may be used for ornamental work that the designer may think fit." There is quite as much reason to call in an architectural adviser now as on the previous occasion, and a greater need than ever that the final decision should come from a man of probity and knowledge, entirely free from local considerations.

The plans are shown on stands in the Swan Assembly-room,—a place in which half the designs are in perpetual gloom. With the slightest exceptions the designs are Gothic, of some kind or other. In the majority of instances the great room is put on the north, where the side abuts on the recreation-ground, and where there is great scope for a handsome elevation. There are very few designs which entirely carry out the style in which its main features are drawn. Nearly all show a tower, and a considerable proportion adopt the "public-building Gothic," up to which this generation has been educated. The area to be covered is 180 ft. deep, by 87 ft. 5 in. wide, narrowing at the back (for a depth of 53 ft.) to 64 ft. width. The principal front is in Meadow-road, on the east. The rear part of the south side, looking towards the sea, will be visible to all the passers-by in the main line of thoroughfare, and, though up a back street, ought to have good architectural treatment. The back will face Station-road, leading to the goods station, and will be sufficiently open to make an elevation with some æsthetic pretensions desirable.

Taking the principal designs in the order of merit assigned by the council, we find that of "Palmam Perseverando" drawn in fourteenth-century Gothic, with a considerable amount of carving and tracery in the windows and other decorated portions; but it has, nevertheless, a common aspect. The turrets which break the roof-line are not large enough for the purpose. Considerable pains have been taken to produce a good north elevation; but the effect in execution will probably be to give the impression that there is too much window.

The authors say:—"We propose to make the principal entrance from Meadow-road, approached through a deeply-recessed archway, opening into a handsomely-groined vestibule, 26 ft. wide, and communicating by three archway openings with an inner hall, in which would be constructed the grand staircase leading to the large hall and superior offices. The council-chamber and committee-room are placed on the upper floor [occupying rather more than three-fourths of the frontage].

The large hall will be raised 11 ft. above the general level of the ground floor, and will be approached from five separate entrances by short flights of stairs. The principal entrance will be by the grand staircase. A secondary entrance and staircase from Station-road open into the middle of the hall; another at the extreme end communicating with the back seats; and there will be a private entrance and stairs leading direct on to the platform. Annexed to the hall would be spacious corridors connecting the several entrances one with another.

[This remark cannot apply to the upper floor, where the only corridor shown is at top of landing, 8 ft. wide by 60 ft. long. There are, however, four lobbies in connexion with the staircases.]

The police-court is placed on the ground floor. At the east end is the magistrates' bench, communicating with their retiring-room.

Having no reliance upon estimates obtained by the method of cubing buildings of the character now under consideration, we have thought it necessary to go roughly into the actual quantities of the work required. The result is, we are prepared to guarantee, that the design can be carried out for the sum named in your condition, viz., 20,000*l.*, inclusive of the foundations."

Unless we misapprehend the drawings, the hall, instead of being 100 ft. long, is but 89 ft., retiring-rooms placed on the platform shortening it to the extent of 12 ft. The width is 54 ft. 6 in., giving an area of more than 600 ft. less than the area required by the Instructions.

Some of the offices are shown smaller than they ought to be; and there are deficiences which will call for remedy should the Council attempt to build from the plans as now shown. The interior of the great hall will have a showy rather than a useful aspect. The police cells have fatal defects.

"Con Amore," which is placed second, is unquestionably the best design in its interior arrangements. There is more originality, too, in the exterior design than can be claimed by any other in the room, and it will stand its ground as an effective useful building, charming by massive simplicity rather than extensive carved work. Perhaps Tudor will convey as good an idea of that style as any other term, though not technically accurate. By adopting an arcaded loggia, "Con Amore" is able to throw back his main building from Meadow-road. By abolishing from that front the series of offices which many of the competitors put there, space is found to bring forward the great hall much nearer the street, and it is the eastern end of that part which is seen over the loggia. A large circular panel containing a sculptured, historical incident will fill the lower part of the gable end; and the top will carry a pretty flèche, with "prospect gallery." "This feature, not being a costly one, will also have the advantage of not interfering with the stability of the foundation, and will be somewhat novel in character." The open balcony is a good idea. Arrangements are made for the introduction of the statues of five kings who were connected with Hastings in Mediæval times.

The long line of roof of the large hall is broken by gables at each end, and the north elevation has no more ornamentation than the simplicity of the style allows.

A fire-bell turret is made a feature on the police side to improve the elevation at a moderate expense.

The Gothic style of the fifteenth century has been selected. Care has been taken in designing the elevations to avoid expensive masonry, such as circular work, and other expensive features, and to obtain effect by well-balanced parts and agreeable proportions.

The least admirable arrangement in "Con Amore's" interior is that of placing the committee-room immediately opposite the principal entrance, where it would be lighted from the arched opening. It might have additional light, if found necessary, from the grand staircase, which is placed in the south-east corner. The principle is followed throughout of not having any of the offices looking directly into the street.

"The corridors have been proportioned in their various widths to their intended use. There are no steps in the corridors, each floor having one uniform level throughout its full extent. The position assigned to the council chamber is that which faces the open space on the south-west side. The front would be designed of a more ornamental character than the rest of the elevation, and by its bold projection would present a pleasing and dignified feature in the composition."

The building of which this room would form a part stands almost by itself, as seen from the street. Inside it is connected with the large hall by the ample corridor which would allow free circulation of the people, in case of large assemblages. It could be used *en suite* with the great room, when occasion required.

As to the interior of the large room, "Con Amore" states:—"By adopting a flat ceiling (with coved sides above cornice), and forming it in deep bold panels, instead of an open timbered roof, the hall will be kept cooler in summer and warmer in winter. The hall is lighted by seven lofty windows, facing the recreation ground. The wall opposite would be exceedingly well adapted for a series of large pictures or frescoes."

"St. Michael," to whom the third place is given in the competition, includes two designs, both full of ornamentation, and which are of a Scotch Gothic character. Oriels, turrets, statues, carvings, and tracery are abundant, taking which design we will. The front of No. 1 has a set of five windows, of a highly ornate character, over the door, surmounted by a pinnacle. There are also gabled terminals to the windows at each side. In this plan there are showy elevations both to the recreation-ground and to the Station-road. In the centre of the latter is a tower, equally elaborate in character.

The accompanying description states:—"Our object has been to design a building which, by the convenience and economy of its arrangements, shall be best suited to the several pur-

poses for which it is intended to be erected; and also one the external appearance of which will indicate it to be the seat of the municipality of your town. The style of architecture is Pointed, which we consider to be the most suitable for buildings of this kind.

The large hall, council-chamber, and other Corporation rooms, are approached direct from the entrance in Meadow-road by a grand staircase, 14 ft. wide, around which is a gallery, the staircase being lighted and ventilated by a lantern light. A staircase, similar in all respects, gives access to the police-court, and the other rooms in connexion with this department.

The walls are to be built of the local hard blue stone, and Portland stone, with terra-cotta dressings generally. . . . . Where, as in our designs, there is frequent repetition of similar forms, as in the arches, window-heads, tracery, and other ornamental details, the saving, by using this material, becomes a very considerable item."

The drawings do not supply an interior view of the large hall. The authors say of it:—"The roof, which is of the hammer-beam construction, has a ceiling, to render the acoustic properties successful. Below it are the hammer-beams, which will give a picturesque appearance. We have carefully estimated the cost of our designs, and are prepared to find a contractor to carry them out for the sum mentioned in your instructions, viz., 20,000*l.*"

Careful inspection of the interior arrangement must lead to condemnation of several details. The design has a novel feature in the open passage through the centre, from Station-road into the recreation-ground. The doorway serves to add to the effect of the elaborately ornamented north elevation. Turrets, for staircases, break the angle where the large hall meets the front offices, and the police-court at back. The design for the exterior deserves praise, but it is doubtful whether such ornate buildings would be in place in the intended locality.

"Well Considered" has some features of a commendable kind. Fourteenth-century Gothic is the style chosen; and a tower is given. In this case the tower is put over the Meadow-road entrance, and nearly in centre of the front. The unity of the north elevation is not equal to that of other designs, as it is too much broken up into sectional pieces. This plan differs from either of the others yet noticed, in putting the large hall on the south of the site. The chief reason for choosing the Station-road side for it is "chiefly because, owing to its large size, it would, if brought into a more prominent position, necessitate a larger outlay than is justified by the sum fixed by you. For the same reason I have kept it a little in the background, and propose to cover it with a low-pitched roof with flat panelled ceiling." The plans of "Well Considered" give ample room for the grand staircase, vestibule, and upper landing. The council chamber, which is in front of the building, as well as the committee-room, open on to the principal landing, which is as wide as the great hall, and 14 ft. across. The height given to the council-chamber would permit a gallery, which would be on a higher level. This forms a second floor, by providing which the designer obtains rooms for offices, which are shut out from the ground floor owing to the space appropriated to other places.

"Harold" (with arrow) took a good position in the corporate estimation. The style is Decorated Gothic, and its square tower, mullioned and traceried windows, and other details, give it a more church-like appearance than either of the plans previously brought under notice. This plan puts the large hall back to the extreme of site on the west. The large space in front, on the ground-floor, is occupied by vestibule, large-sized entrance-hall, and main staircase. The council-chamber is on the north side, with access direct from the principal stairs. The committee-room is in the south-east corner, separated from the council-chamber by the Town Clerk's offices. To secure a proper width for the police-court, on the south side, the designer finds himself obliged to appropriate about 18 in. more width of land than the "instructions" contemplated. Though there are several staircases, the plan is deficient in corridors for circulation on the upper floor. The arrangement of the principal floor otherwise is ingenious. Fault must be found with the planning of the cells, both on account of light and circulation of air.

"Fitness" takes the opposite course to "Harold" by bringing the large hall forward, in its upper portion, to the extreme easterly (Meadow-road) frontage. The space on ground-floor at entrance is cramped, but the evil is got over by having doorways at each of the three recessed arches, which form the basement of the front, as far as the width of the great hall and an open arcade inside. The offices on the south side stand almost as a separate building, with a gabled front, and with balcony to the first floor. On the ground-floor are offices for the Borough Surveyor, Weights and Measures, and others. Above, parted from the great hall by a wide corridor, are found the council-chamber in the north-east corner, the Town Clerk's offices, and the committee-room, immediately connected with each other. The police-station, the fire-engine station, and the cells, are on the ground-floor in the rear. The latter are planned admirably. On the upper floor is a police-court, with rooms for witnesses, counsel, and magistrates, on the north-west. "Fitness," like some other designers, does not allow so much floor-space for the great room as the "Official Instructions" set out. His dimensions are 92 ft. by 53 ft.; but 16 ft. additional depth is gained by placing a gallery, on a second floor level, in the front. A grave defect appears in the arrangement of the office, next the north-east corner archway. The exterior elevations, in the comparative absence of ornamental detail which the style adopted admits,—notwithstanding its French features,—are a relief after the excessive carvings and projections which the eye has previously passed over.

"Harold" (green mount) is a "Town-hall Gothic" design, in which triplet windows are largely introduced. The principal entrance has a deeply-recessed archway, with tower above, having angular columns at corners, the clock faces standing back. The north elevation, facing recreation-ground, is effective, though broken up into three parts by the front offices, the large hall, and the police-court.

"O" (circle) is very considerably church-like in its geometrical Gothic main front, nearly unbroken north elevation, and tower and spire. The apse-like west end would serve to heighten the impression. But we cannot think the best use has been made of the space in the disposition of the rooms. There are a "police-floor plan," occupying all the basement, with the police-court in the cant-angled apse; a "municipal floor plan," on which is found all the municipal offices, and a "town-hall floor-plan." How the long corridor beneath the great hall is to be lighted, the plan does not show. On the north side the range of buildings comprising the great hall and the two floors beneath, is set back about 10 ft. from the line of buildings, containing the tower at one end, and the magistrates' and jury rooms at the other. On the south front are two open yards, in which is a distinct building for residences of hall-keeper, constables, &c. The plans are nicely drawn. The estimate and cost of the building is put at 17,900*l.* "In checking this estimate by the cubical contents of the building (says the author), I have the following results, viz., 690,000 cubical feet. A full measurement from the floor, taken at 6d. per foot, gives an approximation to the above sum, allowing 750*l.* to complete the upper part of the tower."

"Practical's" plan delights a good deal in oriels and turrets, and is a little fantastic in general appearance. This design brings the east end of the large room to the Meadow-road, or east front. The stair arrangement is defective. The police department and the Quarter Sessions Court are in a separate building, on the west. There is no corridor, or crush space, from the large room, until reaching the grand vestibule at the foot of the stairs. The accompanying statement says:—"The design has been kept remarkably simple, the mouldings being bold and decided, rather than elaborate. Thus the whole can be erected for the sum stipulated. The main idea being to concentrate the several departments as much as possible, also to keep two great departments,—the borough offices and the police,—as distinct as possible, at the same time providing convenient means of communication."

"I have confidence in calling your attention to the compactness of the several departments, and also to the endeavour to adhere strictly to the amended bill of conditions."

"Condignus" exhibits two designs. His arrangement of the floors could hardly find favour, with the many angles and corners which appear in the plan.

"As You Like It," besides a rather poor design in Early English, sends a Classic perspective sufficiently bold in external appearance, and pretty in ornamentation, to make one wish more competitors had sought ancient models for inspiration.

"Each Bird her Nest esteemeth Best" has built a kind of modern mansion, or an old-fashioned club-house, added to which is a terra-cotta frieze. The doorway portion is surmounted by a smoking-tower and French-fashioned roof.

"Justitiæ Soror Fides" has given a design of the pre-Georgian era, which only just escapes the epithet ugly.

"Nil Desperandum" in either of its mixed Gothic elevations is exceedingly church-like. In one respect this design differs from all others, in putting a tower—considerably like that of the Bradford Town Hall—in the middle of the north frontage. The large room has to be turned over to the south side; and the principal staircase is under the tower. The public would have to cross a somewhat dark hall, 45 ft. by 35 ft., to reach the stairs. The large hall itself is agreeable in appearance.

In some instances the plans show open courts, variously placed. We have noticed all the features of interest, the bulk of the designs only touching mediocrity. The mottoes used are: Rursus Conatur; Utility; Arviragus; William the Conqueror; Dieu Donne; Work and Win; Justitia (in circle); Thorough; Fides; Circle with cross.

The possible result of the agitation and competition will be the discovery that, even at 20,000*l.*, the Corporation has much underset the cost of such a building as Hastings ought to possess.

ON THE THICKNESS TO BE GIVEN TO TERRACE OR RETAINING WALLS.

THE rule that obtains in France is as follows:—When the walls are destined to support the earth vertically up almost to the top of the wall itself, as in those of quays, terraces, &c., the thickness may be approximated by taking one-third or one-quarter of the height of the wall, provided that the soil to be supported is not too shifting. But when the earth greatly exceeds that of the wall in height, without, however, reaching to twice that height, the average thickness may be determined by multiplying the sum of the height of the wall and of the height of the earth above it by 0·285. This is the rule given in Col. A. Demaret's "Practical Guide to Constructors," and other technical works.

In the last century Desgodets examined the proportions which should be observed with respecting sustaining walls, and what foundations should be given them. He said that when the made soil on one side of a wall was higher than the soil on the other side, a counter-mure should be built to sustain the effect of the pressure of such filling in, and this counter-mure should be built on a solid foundation, and should be raised as high as the level of the earth, and should be thick in proportion to the height of the filling in above the level of the ground on the other side. The article in which this appears, speaks of 1 ft. as the thickness of a counter-mure, but there are cases in which the thinnest wall is sufficient, and others in which it must be thicker; for example, if the level of the earth on one side were only 1 ft. above that on the other side, a thickness of 6 in. would be absolutely sufficient, and the wall should be 3 ft. high; when the wall exceeds 3 ft. in height, the thickness should be 12 in., and increase in proportion to the height of the wall, roughly increasing the thickness 2 in. per foot of height, but the top of the counter-mure must always be 12 in. thick. Thus when the filling in is not more than 3 ft. above the level of the earth on the other side of the wall, the counter-mure should be 12 in. thick; if the earth be 6 ft. higher than on the other side, the counter-mure should be 18 in. to the height of 3 ft. above the foundation, and reduced to 12 in. above; but if the earth be 9 ft. higher than the ground at the other side of the wall, the counter-mure should be 2 ft. thick up to the height of 3 ft., 18 in. from 3 ft. to 6 ft., and 12 in. above that height. When the level is still higher, the thickness of the counter-mure must be increased in the same proportion, so that the counter-mure above shall be sufficient to sustain the lateral pressure of the earth without the aid of the other, or party-wall, because if that wall be ruined by the humidity or pressure of the earth, the proprietor of the ground where the raised portion is will have to repair the damage, although there was a counter-mure.

A writer, commenting upon the above, said that it was not possible to give a certain rule

for the necessary thickness of such supporting-walls; for that it was not only the height of the earth which determined the thickness of the wall,—the nature of the earth had to be taken into account. Heavy earth, until it has completely settled, exerts more pressure than light earth against the walls; but when thoroughly settled they may almost be said to sustain themselves. In order to prevent the pressure of such earth as much as possible, it should be well massed together as near as possible to where the party-wall is to be built, and leave it for some time before the counter-mure and party-wall are built. In this way much of the pressure is avoided, and the counter-mure may be reduced in thickness. If the filling-in be light, like sand, it pushes less than the other; but the pressure is far more continuous, as this kind of earth never settles into a mass, and is always ready to force away the sustaining-walls, the atoms always being ready, like those of water, to roll over each other and flow off; therefore thicker walls are required against light earth than against heavy earths well massed together. It must also be remembered that the terms heavy and light earths are only relative, as there are many degrees of each; so that the thickness of the wall can only be determined by a careful study of the soil to be guarded against. Custom, however, had fixed the thickness of a counter-mure at 12-in., and there is little doubt that much damage has been caused by such a rule of thumb.

A recent circumstance shows the importance of studying carefully the plans for such works. In 1867, a stonemason undertook to construct a sustaining wall at Epinal, after the plans and estimates drawn up by one of the architects of the city of Paris, which he was to follow strictly. The foundations for the walls were to be carried down till they were perfectly solid, and the wall was to be executed in ashlar, with good mortar made of hydraulic lime and sand. *Its thickness from the foot of the wall was to be* 0·65m. (say 26 in.), in the elevation to *level of the footpath* 0·60m., *and from that level to the top* 0·50m. The joints were to be made good before the soil was thrown back against the wall, and those of the visible portion carefully finished. From the level of the path the stones of each layer were to be of the same thickness. The wall was to be capped with hewn stone 0·10m. thick, twice dressed.

The wall was constructed according to the plans and conditions laid down, but it has given out, and the mischief increased continually, till in 1871 the municipal authorities caused a commission to examine the wall and declare upon whom the fault rested. Layers of cement were placed at the junction of this wall with the footpath, and fissures soon appeared in them proving that movement was going on. In a short time the fissures increased, the wall overhung to the extent of 0·10m., and bulged out in the direction of its length.

On the order of the Maire, an *architecte voyer* made the following report upon the state of the wall:—"In the plan, the difference of level between the soil of the street without, and of the garden which the wall enclosed, was set down as 1·80m.; foundation, 0·70m. high, 0·65m. thick. From the foundation to the level of the footpath, 1·80m. high, 0·60 thick. Above the footpath the wall to be 1·80m. high, and 0·50m. thick. On examination it was found that the depth of the foundations below the level of the ground were 1·15m.; the foundations 0·70m. thick; the difference of level 1·84m.; the height of the wall above the footpath 1·59, and its thickness 0·48m."

In July last year the movement continued, and a fissure appeared in the wall itself. The condition of the wall was then carefully ascertained, and it was found that the wall along a distance of 25 mètres, overhung from 4 centimètres to 10 centimètres.

An examination was then made into the question of whether the wall had been constructed upon proper principles. In ordinary cases when the natural talus of the earth to be maintained is 45°, the formula of Vauban E=O, 285, H determines the thickness to be given to the wall. E, thickness of the wall; H, height of ditto.

Taking for the height the difference of the two levels only, the thickness would be 0·51m. But the height should be measured from the upper level to below the foundations, for at the moment of construction the counter-pressure of the level of the lower soil does not act below the foundations; the thickness determined by the above formula would then be 0·84m., instead of 0·70m., as laid down in the plan. Moreover, this formula is only established for earth, with a natural talus of 45°.

In the case in question, the earth to be supported was made ground, of which the natural talus was about 0·62m. It will be found that even a thickness of 0·84m. would have been insufficient.

The wall had not sunk in any way, showing that the foundations were solid, and therefore the movement could not be attributed to the soil

In a sustaining wall, setting aside the hypothesis of a sliding on its base, which did not occur in the case in point, in order to secure equilibrium, and to prevent the wall turning on its own axis, the distribution of the pressure on the lower face of the foundations must be uniform. In order that this condition may be fulfilled, it is evident that the resultant of the forces which act on the wall (such as the weight of the wall itself, and the pressure of the earth which it sustains to the base of the foundations) should pass through the middle of the surface of the foundations, that is to say at equal distances from each outer edge.

It is easy to see, by means of a diagram, that in this case, the resultant instead of passing through the middle of the base of the wall, or at the distance of 0·35m. from the edge, passed through at 0·06m. only from the exterior edge, and the distribution of the total pressure was thus made over a breadth of 0·18m. from that edge.

The conclusion is that the soil and foundations offered sufficient resistance, but that the dimensions of the wall were entirely insufficient, and that the movement which has commenced would proceed, if left untouched, until the wall fell.

The authorities of Paris are proceeding against the architect and the contractor for repairs or reconstruction. It is a notable case and offers a valuable lesson.

THE CANAL BRIDGES AT GLOUCESTER GATE AND CHALK FARM ROAD.

THE St. Pancras Vestry, assisted by the Metropolitan Board of Works, have determined to reconstruct the Gloucester-gate and Chalk Farm-road bridges across the Regent's Canal. At the meeting of the vestry last week, a report was presented by the General Purposes Committee, accompanied by plans and estimates prepared by Mr. Scott, the chief surveyor, for the widening of the canal bridge in Chalk Farm-road, at an estimated cost of 5,000*l.*, and also plans for the widening of the bridge by Gloucester-gate, Regent's Park, at an estimated cost of 9,000*l.*

The report was unanimously adopted, and the reconstruction of the two bridges will be at once commenced.

PENARTH SCHOOLS COMPETITION.

AT a meeting of the School Board, on the 13th inst., it was determined to adopt the design submitted by Mr. H. C. Harris, Cooper's Hill, Staines, and to immediately invite tenders for the works. As a rule, the designs sent in were of considerable merit, though nearly all had ignored the great inclination in the site (over 12 ft.) Amongst the competitors were Messrs. Saines, Seward, & Thomas, Cardiff; Mr. Armstrong, Manchester; Mr. Robinson, Cardiff; and Messrs. Wilcox, Wilson, and Wilcox, Bath. In the accepted design accommodation is provided for 360 children, with a master's house.

PROPOSED EMBANKMENT OF THE THAMES AT HAMMERSMITH.

THE Fulham District Board of Works are taking steps for the construction of an embankment on the Thames at Hammersmith, and plans for the proposed works have been prepared by the surveyor to the district board. At their meeting last week the Works Committee reported that they had had these plans before them and carefully considered them. They involved the embankment of the Thames from the Oil Mills to the Draw Dock, a distance of 2,350 ft., at an estimated cost of 30,000*l.* The committee recommended the Board to adopt the plans, and to apply to the Metropolitan Board of Works to take the necessary steps for carrying out the works. The Board adopted the recommendation of the committee.

A CHRISTIAN PAINTER OF THE NINETEENTH CENTURY.

UNDER the above title, a short memoir of the late Hippolyte Flandrin, who died at Rome in March, 1864, is presented to English readers,* by the author of one or two previous little works of the same nature. The book is weak enough in style and tone, and is not written in the interests of art, or with any apparent love of it, but with the object of representing a painter who chiefly and by preference devoted himself to religious subjects, and church paintings, as *ipso facto* of a superior grade to his contemporaries. Some part, therefore, of what is said about Flandrin and other artists, his contemporaries, must be taken with reservation; but there is enough of the artist himself in it, in the shape of extracts from letters and journals, to give an interesting portrait of a character remarkable for serenity and simplicity of mind, and for the entirely elevated and unworldly spirit in which he always pursued his art. Hippolyte Flandrin was the fourth son of a worthy citizen of Lyons, who had thrown up a business in the ambition to gratify the bent of his mind and become an artist; but his talents were not in proportion to his enthusiasm, and the difficulty of finding support for his family out of art was so great as to lead to the traditionary parental prohibition of the same career for the sons; and the scruples and anxieties of Mdme. Flandrin were only overcome when their old friend, the sculptor, Foyatier, interested in the two brothers, Hippolyte and Paul, adduced himself as a living instance of success in art achieved after a most unpromising opening. By his intercession the two brothers, then eleven and twelve, were installed in the studio of a local artist named Magnin; where they worked assiduously, at the same time assisting the home department by making little vignettes and sketches for which they could obtain a sale at some of the Lyons shops. Paris, however, was the goal, and a little money saved enabled them presently to feel justified in setting out there, on foot, with an introduction to M. Hersent, which, on the good advice of an elder student, they never presented, but sought and were received in the studio of Ingres, who Flandrin had already penetration enough to perceive was the superior painter, and whose school "was much better governed and quieter." The regard and enthusiasm which Ingres seems to have inspired in his pupils, and his constant and kindly interest in their welfare and success, are very pleasantly brought out in the frequent references to him by his pupil and subsequent friend, and continued admirer. Flandrin's struggles with poverty were severe, so much so that he was about to decide not to compete for the *prix de Rome*, from the inability to provide himself with the materials for executing a large picture; but the disappointment of Ingres, who counted on his doing well, decided him to try at all costs; fortunately, for he met with a brilliant success, and before long was installed at Rome, working hard at copies of Raffaelle, and gaining the acquaintance and approval of Vernet and other leading lights of the artistic circle of Rome at the time. Like many other artists, he imbibed at this time a love for the "eternal city" which he never lost; and in not a few of his later letters we find longings for "my dear Rome" again; and he contrived to spend a considerable part of his days there, in spite of many calls elsewhere.

We cannot here trace the career of Flandrin, uneventful as it for the most part was, and distinguished by continuous industry and gradually widening appreciation and admiration, rather than by such fame as makes a noise in the world. His name and works are but little known in England, partly, perhaps, because a good many of his best productions were for churches, and not for exhibitions; partly, no doubt, because the peculiar phase of Catholic religious feeling which he illustrated in his art meets with little sympathy in this country. Yet Flandrin, while devoting his principal powers to religious art, appears to have kept quite clear, in theory at any rate, of the fallacies and narrow judgments which have generally been the besetting sins of artists of his class. He could heartily appreciate Decamp, a genius of a type so diametrically opposite to his own; and even of the Venus subjects of Cabanel and one or two others, which must have been greatly at variance with his prepossessions, he utters nothing harder than a

* A Christian Painter of the Nineteenth Century; being the Life of Hippolyte Flandrin. By the author of "A Dominican Artist," &c. London, Oxford, and Cambridge: Rivingtons.

gently-expressed regret that painters of such ability should throw away their powers on an attempt to revivify the antique. His criticism on Overbeck, then the acknowledged head of the religious revival school of German artists, but whose reputation has already lapsed into forgetfulness, is noticeable for its clear perception of the weak point in the elder painter's system:—"A few days ago Vibert and I went to see Overbeck, who was good enough to show us his works. We were charmed with the religious spirit which pervades them; and we were specially struck by an immense composition, representing the revival of art and science under the influence of religion. It is most beautiful and well conceived, but Overbeck uses means of expression which are not his own; he altogether takes the old masters' garb,—he observes nature, but by his own confession he hardly ever has it actually before his eyes when working. Moreover, he aims less at painting than at expressing his thoughts as though in writing." Flandrin's loyalty to nature, as expressed in the above quotation, was perhaps partly the result of the sound teaching of Ingres, whose creed on this point, as quoted in his own vernacular (p. 17), was that "Quand vous manquez au respect que vous devez à la nature, quand vous prétender la corriger, *vous donnez un coup de pied dans le ventre de votre mère.*" In another place, speaking of the Salon of 1839, Flandrin has a most happy criticism on Ary Scheffer, whose work there he describes as full of delicate feeling, "mais un peu *pleureur*"; a phrase which winds up as neatly as possible the subsequent verdict of the artistic world on the artist in question.

Flandrin mentions architectural effects with great and appreciative interest in his letters. Speaking of the Porta Romana at Sienna, he observes, "It is marvellous how the artists of that period knew how to give each building its individual meaning. This gate, according as it is open or shut, becomes a triumphal arch or an invincible defence." At Pisa, "the four great monuments appeared at once all golden against a glorious blue sky; but the leaning tower is as disagreeable to me as before." As an illustration of the curious turn which his old-fashioned, but apparently quite genuine, piety took, may be mentioned the incident of his inscribing the names of all the friends who were dearest to him within the folds of the drapery of his figure of Christ in the Church of St. Paul at Nimes; not visibly for any one to see, but for the satisfaction of his own private feeling. But if Hypolite Flandrin had the weakness of a childlike nature, he had its finer traits also, and it is a beautiful testimony that is borne to him in the words of a younger student of the art, in a letter quoted at the artist's funeral by his friend, M. Ambroise Thomas, the well-known composer: "Say that those who only knew him at the last are not the last to regret him; that there was never a day when his heart did not win other hearts by the warm outpourings of his loving-kindness; that many a young artist carries about for ever in his memory the friendly words which were suggested by his inexhaustible sympathy for the young, and his immense love of his art."

THE ARTIST'S MODEL.

SKETCHING from the nude is as necessary for the education of the art-student as a year or two's matriculation in the dissecting-room is essential for the development of the embryo surgeon. The study of nature in the abstract is as requisite for the one as for the other. For without a thorough knowledge of the bones, the muscles, the thews, and sinews, which serve to make up that wondrous structure styled the human form divine, the future Etty can no more hope to limn his fellow creatures than the budding Ferguson can hereafter aspire to limb them. The one, however, has to study, more particularly, the figure stripped merely of the social epidermis called clothes; whereas the other has to dive a little deeper, and to study the same figure stripped of the *cutis vera* called the skin.

With every-day crude humanity both studies are alike repugnant; and yet, without some such prefatory training there would have been no Raffaelles and no Rubens', no Canovas and no Flaxmans, no Harveys, no Cheseldens, no Hunters, and no Bells.

And now a few words, by way of preamble, as to the necessity for employing models in all artistry.

To the uninitiated, who have no notion as to how pictures are *manufactured*, and little or no sense of the beautiful (a sense that is susceptible of as much cultivation as that of touch in the wool sorter) a picture is merely what the primrose was to the unthinking realist in Wordsworth's poem,—

> "A primrose by the river's brim
> A simple primrose was to him,
> And nothing more."

Even so a picture is to uneducated eyes—a picture and "nothing more." For it is difficult, on looking at a work of art, to detect the labour of the artist which lies concealed upon the canvas. Turn a carpet the wrong way up, and you see only the weaver's throes of labour; but look at it in the right way, and all the intricate workings of the webster's hand become changed from a tangle of disorder and unthinkingness into the exquisite symmetry of design.

So it is with works of art in all cases. It is impossible to have a thorough sense of the beauty even of the commonest wild flower, unless the mind have a sense also of the Great Artist who designed the lovely form and colour of its calyx, the wondrous uniformity and structure of its leaves, as well as the cunning packing of its blossoms in their buds—and all springing from a tiny seed that was hardly bigger than a needle's eye.

Art is necessarily selective. The order and beauty which are apparent in the world come necessarily from the Omnipotent and Omniscient primordial arrangement of the elements of the universe; while the seeming confusion has arisen solely from the interclashing of one symmetrical system with the other.

The eye of the artist, therefore, educated as it is to detect the natural beauty of things, singles out what is symmetrical in the world, according to the original arrangement, and rejects what is amorphous consequent upon the heterogeneous combination of forms.

It is thus the painter or the sculptor deals with the beauty of the human figure. Nature trammelled now never makes a perfectly beautiful figure,—with perfect limbs combined with a perfect body. The members may be well proportioned, but the trunk out of keeping with the branches; while, on the contrary, the body in another case may be finely developed, and yet the limbs be spare and stunted in comparison with the luxuriance of the *torso*.

This simple and almost patent fact was evident even to the Greeks, and accordingly they copied the most perfect head from one, the most perfect *torso* from another, the most perfect limbs and the most perfect hands and feet from others; and so made up the wondrous composite ideal beauty of the classical Venus,—an exquisite figure which art formed and nature never has created.

As to what is the precise date when models were first used, there are no historic records; but it is well known that the early Grecian sculptors obtained their laws as to the symmetrical proportions of the human figure from their observations of several distinct individualities,—each of which was remarkable for some special point of beauty. The Olympian games afforded them a large field for observation in this respect, and thus enabled them to determine those æsthetic rules as to the beauty of the human frame in action and repose which govern sculptors and figure-draughtsmen down to the present day.

In later periods, however, we have several anecdotes, more or less authentic, as to the employment of nude models by artists. Every one has heard of the story of Titian and the Duchess of Ferrara; how the artist was once deploring the difficulty of finding female figures which in any way approached his ideal of female beauty; and how the Duchess on hearing this, to the utter consternation of the Court, volunteered to sit to him for the Venus that he was then about to paint. Gerome, if we remember rightly, has transferred this episode to canvas, showing the painter's reverence for the Duchess's appreciation of art, by depicting the great Italian master in the act of kissing the royal lady's hand as she is about to take her position on the dais.

In contrast with the above tale, there are several ugly traditions as to how the love of art may utterly efface, for the time being, all human feeling. One artist is said, while endeavouring to depict the mortal agony of the Saviour on the Cross, to have actually crucified his model, and then, not being satisfied with the expression of his "subject," to have stabbed him in the side, in order to discover the true muscular contortions of a figure under such circumstances. Again, Haydon, it has been told, was so delighted with the form of a certain black model, whose proportions he had transferred to canvas, that he conceived the idea of taking a cast of the man's entire frame. For this purpose, the artist made up a bath of plaster of Paris, in which the oiled negro was immersed; but, forgetting that the plaster while it sets contracts, the painter found to his horror that his admired dusky model was being rapidly squeezed to death, and had to dig him out of the pasty mass before it had time to consign him to a chalky grave.

Let us come now to the models of later times. Madame Wharton, of *poses plastiques* renown, was one of Etty's favourite models. Her husband was a model also; and, though a stage-carpenter, was wont to exhibit himself as Mars upon the turning-table at Saville House. Again, the old "whirligig-man," who was so well known as a seller of toys about the streets of London a few years back, was a well-known model, and his figure might be detected in many of the Royal Academy pictures at comparatively recent exhibitions. Moreover, Leslie delighted to paint a famous costumier of Berwick-street; and he has depicted him as Falstaff, in one of the scenes from Shakspeare's plays; while, to conclude, it may be mentioned that the fish-girl in Landseer's "Bolton Abbey" is a portrait of a well-known model of the period, who has since gone to Australia and married there exceedingly well.

The model of modern times is somewhat difficult to obtain unless the artist be "in the swim." She does not advertise, nor does she take the ordinary commercial means of making herself known. The *Era* newspaper is a wonderful journal in its way, and if the reader be disposed to believe one-third of the theatrical advertisements in it, he will be surprised to find the amount of beauty and genius that is constantly out of an engagement in the dramatic world. There is, however, no such self-laudatory organ for artists' models. Miss Torso has no class journal in which she can make known to painters and sculptors in general that nature has favoured her with a form equal to that of the Venus di Medici.

How the London model makes her special gift known is to the uninitiated a mystery. There is certainly no open market here for the hire of good proportions,—such as exists in Rome, where the dirtiest, and, consequently, most picturesque, as well as, in some cases (but more frequently among males than females), the most symmetrical and characteristic specimens of humanity are to be met with, seated patiently on the steps of the *Trinita di Monte* waiting to be carried off to any of the neighbouring studios for the small charge of a few piastres per hour. True, Messrs. Rowney and some others keep lists of models,—male and female,—old and young; but it is equally true that the models themselves are so little imbued with the modern spirit of puffing that they are, for the most part, unacquainted with the fact that they are noted down by artist-colourmen as fit subjects for canvass.

How the model first takes to the business; what leads her to think of adopting such a calling; and how she ultimately comes to obtain a sufficient number of "clients" to enable her to live by it, would seem, at a cursory glance, to be puzzling questions.

Now as to the morality of such a profession. We have no desire to whitewash sepulchres or to blacken the sweep. We have merely a simple story to tell, and to let our readers know that, unfeminine as the occupation may appear, it is still compatible with virtue, and that many women take to such an out-of-the-way profession as the easiest means available to them for contributing to the comfort of their parents in their old age.

To guard ourselves, however, against being led astray by any sentimental or ascetic theory in connexion with this part of our subject, we consulted a gentleman who has been for many years connected with one of the foremost schools of art in the metropolis, and we append his statement with all the authority of the name of Mr. Heatherley, of the "Newman-street Life Academy."

"The earnings of a model," says our informant, "vary much according to industry, punctuality, and the possession of such personal qualities as are more or less in request. The average price paid by artists is 1s. per hour. The Royal Academy used to pay 10s. for each sitting of two hours; but I am not sure whether they do so still. A good model, who unites a pretty face with a symmetrical figure, will some-

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times sit for eight or ten hours a day. Such sittings go on more or less throughout the year, the busy time being before the paintings are sent in to the Royal Academy, and the slack season occurring generally in July, August, and September, when most of the artists are out of town.

"Models vary much as to points of beauty. Figure models, as a rule, are not good as face models. A good face model will seldom be induced to sit for the figure. Some models have good hands, but are not specially good for any other point. One of the best figure models I ever knew had execrable feet. I do not know of any who have been in particular request for representing such characters as Venus, Ariadne, &c., but I remember an old man, with a grey beard, who recommended himself by saying that he had sat for 'Susannah and the Elders.' The best artists (although, no doubt, they get the finest models they can) are the least of all dependent upon models for their pictures. They are only the inferior artists who have to seek models, in order to make their pictures beautiful. Amateurs are more particular about their models than artists; since they cannot do anything as a rule without a pretty face or a good figure to copy from.

"With respect to the posing of models, the rule at the Royal Academy is, that the R.A., who is the visitor for the month, poses the figure; or, in his absence, his deputy does so. In most schools of art it is the rule for the master to pose the model. Students take their places as they come in, the best student generally making the best study, no matter what view he gets. In some of the French studios the students themselves pose the models.

"A model generally poses for one hour, and then rests for five or ten minutes. In my school the model poses for eight hours in one day, viz., from ten to one in the morning, from two to four in the afternoon, and from seven to ten in the evening."

"I seldom," continues Mr. Heatherley, in his communication to us, "place the model in violent action, as it is impossible for the muscles to keep up a strain for any length of time. In such cases the action becomes unnatural, and therefore a pose in violent muscular activity is only good for a little while, and for this reason is useless if not injurious to students.

"The temperature of the room in which the model sits varies, according to the desire of the model for the time being; some are comfortable when the warmth reaches no higher than 50° or 60°, whilst others will shiver at 70°. The refreshments usually partaken of during the sitting are beer, tea, or coffee, according to the taste of the model. It is related that when Meissonier wishes to finish a piece of drapery, he has a model who is required to keep a pose for eight hours at a stretch, and who consequently has to be fed by hand at intervals for fear of disturbing the drapery.

"I never heard that models were subject to colds or to other diseases than those to which ordinary humanity is liable.

"Models occasionally commence sitting very young, even at twelve or thirteen years of age. Widows sometimes send out their children as models; or a mother, who has been a model herself in her young days, does the same; models usually come recommended by other models.

"Many models have other callings, such as dressmaking, ballet-dancing, and the like; and they occasionally contribute to the support of their families by such means, as in other businesses. The majority of models live in Camden and Kentish Towns. Married women occasionally sit, but they form a very small percentage of the gross number. Models dress like other women; some neatly, some slovenly, and some extravagantly.

"Models generally have a recess behind a curtain, or some small dressing-room wherein to disrobe themselves. The time they take to undress varies from five to ten minutes, and they have either a sheet, blanket, or cloak with which to cover themselves while resting."

"With respect to morals," Mr. Heatherley adds, "I have known a great many who appeared to me to be very well conducted; and I have known many, too, who have married well, and who, from my own personal observation, have made good wives and mothers."

Such is the statement of a gentleman well acquainted with the subject; but it would be injudicious to rely solely upon the information received from any single individual. In order to arrive at the facts, it is necessary to consult a number of persons acquainted with the peculiar business; and thus, by checking one statement with another, to come to a fair average conclusion upon the matter.

Accordingly we obtained from Messrs. Rowney, the well-known artists' colourmen of Rathbone-place, a list of the principal models registered upon their books. How many were contained in the catalogue we did not inquire; but there were, at least, a score of addresses written out for us, so that we might take our pick from the number; and against some of the names which we saw upon the register we found entered such marginal observations as "*tall and fair*," "*short and dark*," "*very handsome and of Italian type*," whilst against that of one of the males there was attached the odd memorandum, "*an acrobat*."

Provided with such means of carrying out our work, we started on our errand to Camden Town, for, as Mr. Heatherley has truly stated, nine out of every ten of the models in our list resided in that quarter.

It was not, however, quite so easy as we expected to make a convenient appointment with any of them. One, whom we called upon, held a conversation with us through the door of the back parlour (for the lady was in the act of dressing to go out), and informed us that she was engaged every day that week at some studio, and every night at the theatre; while another, whom we visited, we found to be fully engaged for some time to come from half-past nine in the morning till half-past eight at night.

At length, however, after going in quest of others who had given up their previous residences and left no clue as to their present abodes, we lighted upon a model who had been recommended to us as one of the most intelligent of her class, and whom we found engaged in the unartistic process of making a pudding for the family dinner.

The most striking peculiarity about these models is the patent lissomeness of their figure. Moreover, their faces seem to be all quite familiar to you; for either you have seen them repeatedly in some engraving in the shop windows, or else have noted the self-same features portrayed over and over again at the exhibitions. In *this* model may be you recognise the old accustomed "Boulogne Fisher Girl," in *that* a well-known "Joan of Arc," and in another the latest edition of "Mary Queen of Scots."

Miss O. (for so the young lady insisted upon being christened, in order to prevent her real name being discovered) refused at first to make any engagement; and after we had communicated to her, straightforwardly, that we desired to see her solely for the purpose of taking down her statement as to the experience of an artist's model, with a view to having it printed in the pages of a periodical, she required no little persuasion in order to prevail upon her to give us the information we desired. She was comparatively a child in age, and yet had all the appearance of a woman who had seen some twenty odd summers at least. There was not the least approximation to what is termed "fastness" in her manner. Her voice, too, was nicely modulated—and the educated ear can soon detect from the ring of a woman's speech whether she comes of a common type or not. Indeed, she was the very opposite to what people would imagine such a person, getting her living in such an odd kind of way, would be likely to prove.

"I have been a model," she said, "now for three years. I took to the profession because I had nothing else to do, and because a young lady, who was a friend of mine, was a model herself, and I knew how much money she made by the business. I sat at first for my face only. I commenced sitting at the age of thirteen, and sat for the figure about six months after I began. I charge a shilling and eighteenpence an hour, but generally get paid by the sitting, which usually lasts about five hours. Some give me for this eight, and others ten, shillings, but some only five. I make, on an average, about thirty shillings a week. A shilling an hour is the regular charge, but of course we always take what is given us. I am mostly engaged every day nearly all the year round,—excepting in the slack time, when artists are out of town sketching for a couple of months or so. At present I am rather slacker than usual, for all the pictures are just finished for the Academy. But, taking one week with another, I reckon I earn thirty shillings weekly throughout the year. I have made as much as ten shillings a day for two short sittings, though some people give me that sum for one long one,—but very few. In the slack time I have sat for two or three hours, and got only two or three shillings. Some models will not take such short sittings, but I do. Those are the regular prices which we all get,—from a shilling to eighteenpence an hour. I have a regular set to whom I sit, and I think every artist in London knows me. But I know models without any connexion who have to dodge about from one studio to another. I have sat to some of the R.A.s, but I will not tell you who they are; I wouldn't have their names printed for all the world. I have sat at Langham-chambers, and at the Royal Academy, as well as the Hogarth Club, but never at Mr. Heatherley's. At the Royal Academy they give us ten shillings for four hours in the day, and I think ten shillings for two hours in the evening; though I myself never sat there at night. I believe my head is my best part. I will not tell you what subjects I've sat for. I know, of course, what the subjects are. I like the profession very much, and should not care about doing anything else. I can't remember my first sitting for the figure, and yet I'm not seventeen years of age now. I don't know about fatigue, for that all depends upon position. I've stood for an hour to an hour and a half in a hard position without resting. The schools generally give us hard positions; but at private studios the business is easier, and we get more rest there. I never have any cramps, but merely a desire to rest myself after standing for a long time. I've never stood with my arm out or done anything like that; that's more men's work than ours. They can't lock me up, can they, for what I'm telling you?"

Here the young lady seemed to become exceedingly nervous as to whether her disclosures would not inculpate the whole of the artistic fraternity, as well as herself, though it is due to her to add that she had sufficient professional chivalry about her to care much more for the welfare of the "fellows" (as she would persist in calling the painters collectively and the R.A.s in particular) than that of herself.

"I'm not going to tell you," Miss O. went on, "who poses me well and who roughly, for I know I shall be summoned for it if I do. The posers are never rude or ill-tempered to me,—neither in private nor in public. They are all very kind. I have never been insulted by any one. I am not more subject to colds or coughs than any one else; in fact, not so much so I believe. I am not at all careful about my diet, and I generally ride to my appointments, so that I take but little exercise. Some female models' figures last, I've heard, till they are thirty years old; but that is an extreme age in our business. They don't know, in the neighbourhood where I live, what my business is. Some of my female friends, however, *do*, and they don't slight me for it, but would rather like to take to it themselves. I never have to give credit and consequently have no bad debts. I have often seen myself at exhibitions, and on the walls of the Royal Academy. Sometimes I liked myself and sometimes I didn't. I don't know whether artists ever paint their own wives or not; but this I *do* know that their wives always treat me well enough. I'm very fond of pictures myself, though I don't draw or paint; still I think I can detect bad figure-drawing when I see it."

We now, for the thorough elucidation of the subject, wanted to know something about the girl's home relations in connexion with such a peculiar mode of living, and in answer to our questions, the following were the young model's replies:—

"I have a father, and mother, and two brothers. My mother knows what I do, but the others don't; at least they are all aware that I am a model, but they don't know that I sit for the figure, and would certainly object to my doing so. There are a good many models living round about Fitzroy-square, and many more at Camden Town. My appointments are most frequently at Kensington. Seven hours in the day, and a sitting in the evening of two hours to two hours and a half, I call a hard day's work; and that makes me feel very tired at night. I don't find it irksome sitting so long; for I am used to it now."

And with this our interview ended with the frank but nervous artist's model.

South Kensington Museum. — During Whitsun week the total number of visitors was 34,992. The average of the corresponding week in former years is 28,064.

LIFE IN LONDON.

THE recently issued summary from the General Register Office says,—London within the limits of the tables of mortality contained a population estimated for the middle of the year 1874 at *three millions four hundred thousand seven hundred and one.*

The increase of numbers since the preceding year is 44,544, as estimated by the steady rate of growth in previous years; and at the present time the excess of births over deaths is 44,788. This is a remarkable result. London is now self-sufficing; it not only sustains its own numbers, but it provides an annual surplus equal to the population of a large city. It was not always so. In the year 1861 the increase of population was 45,000, while the excess of births over deaths was only 32,000. In the year 1851 the increase of population was 44,000, the excess of registered births over deaths was 23,000; in the year 1841 the increase was 36,000, the excess of births over deaths 12,000. After allowing for defects of registration in the early years, the rapid natural increase is evident.

The area of London (the registration division so called) is 78,080 acres, or 122 square miles, including 2,718 acres of the Thames. At the Census in 1871 there were within this area 417,767 inhabited houses, containing an average of 7·8 persons to a house, exactly corresponding with the proportion in 1861. The annual rateable value of property (as assessed in 1871) equals 19,996,786*l.*

The last three years show a marked reduction in the mortality of London, and imply an improvement of the health of the drained city. The annual mortality for the ten years 1843–49 was 25·2, for the thirty-five years 1840–74 it was 24·2; for the last three years, 1872–74, it was 22·2. Upon the population of 1874 this reduction in the mortality of three in 1,000 implies a diminution of 10,200 deaths a year, and of the constant sufferings of double that number, on an average, of sick people.

We will deduce from the Summary another paragraph. The death-rate for the year ending January, 1875, was in Salford, 29·6; Manchester, 30·4; Liverpool, 32·0. Supposing that in these three places the mortality had been only in the same proportion as that of London there would have been in round numbers 1,000 fewer deaths in Salford, 2,800 in Manchester, and 4,700 in Liverpool, to say nothing of the proportionate number of people saved from illness.

A SELF-TAUGHT SCULPTOR.

ROBERT FORREST, a self-tanght sculptor, was born at Carluke, Lanarkshire, in 1790. He was bred a stonemason, his qualifications being to be able to prepare mortar, to cut a chase, and level a lintel, and his ability to do so entitled him to the distinguished honour of being called a mason. But he had a spirit beyond his mechanical occupations. In 1810 he had occasion to visit a number of gentlemen's seats, where some rude specimens of art were to be seen crusted with the moss, or half-hidden by the climbing plants of many years. Repeated examination of these aroused his self-esteem; he was confident that he might execute something as good or better, and resolved to make the attempt; but, being of a bashful spirit, and desirous that no one should know of the work he had resolved on, he set up his *al fresco* studio in a remote spot in the banks of the Clyde, surrounded by a dense wood, his only visitors being the wild game around him. Here he spent every hour not employed in his usual vocations, rising early and sitting up late, chisel in hand, shaping his blocks of hard freestone into the forms of the animals which occasionally came to see him at work. He next attempted statuettes of the human figure, but felt far from being satisfied with his work. In 1817 he made his first step towards fame. On an autumn afternoon Colonel Gordon, of the Lanarkshire Militia, when on a shooting excursion, in traversing the wood, came, to his surprise, on the studio of the mason-sculptor, and discovered the would-be artist at work. The meeting was an astonishment to both parties, and in the after-conversation the Colonel made a purchase of a small figure of Bacchus, the sale of which produced the first money he had acquired by his new calling. Forrest soon became the subject of general conversation throughout Lanarkshire, and found another patron in Robertson, of Hall-craig, for whom he executed the figure of a Highland Chief, the first full-sized human figure he had attempted. It is not necessary to recount the many commissions he received from the gentlemen of the neighbourhood. It suffices to say, that he had, now that he deserted the studio in the wood, fixed his *atelier* in a quarry-hole a few miles below the town of Lanark. Here he attempted several romantic figures such as Norval, Falstaff, and Rob Roy; and here also he produced, about the same time, a colossal statue of Sir William Wallace, which was placed in front of the Church of Lanark, the townsmen holding high holiday on the occasion, and carrying the young sculptor in processional triumph throughout the streets. Immediately after this he was engaged by the committee of Melville's monument in St. Andrew's-square, Edinburgh, to carry out a design by Chantrey of a colossal figure of the viscount, to be placed on the top of the memorial column. At this time the quarry still formed his studio, and so great was the importance attached by certain individuals to the spot, that the coach between Lanark and Glasgow was advertised as being "permitted to stop for a short time for the gratification of those who had a desire to examine the *studio* of a native artist." His "Lord Melville" led to Mr. Forrest being employed to model and execute a colossal figure of John Knox, the Reformer, which is erected in the Glasgow Necropolis. Stimulated by public approbation, he opened, in 1832, his public exhibition on the Calton-hill, Edinburgh, the committee of contributors to the National Monument (the modern ruin, as it is named), having placed the workmen's deserted sheds at his disposal. This exhibition became very popular, and brought him in many private commissions, especially from Mr. Ferguson, of Raith, whose statue is pronounced to be the finest of his works. After an illness of six weeks, Robert Forrest died at Edinburgh on the 29th of December, 1852, deeply regretted by his numerous admirers, and his many sincere friends. His career may serve to stimulate and encourage others.

PICTURES BOUGHT FOR THE ART-UNION OF LONDON.

THE following is a list of the chief prizes selected up to this date:—

From the Royal Academy.—Ligny, E. Crofts, 200*l.*; Breakfast Time, F. Wyburd, 150*l.*; Storm and Sunshine, J. C. Adams, 140*l.*; The Way over the Moor, A. Hartland, 100*l.*; On the River Arun, Sussex, T. J. Soper, 70*l.*; A Welsh Torrent, H. S. Palmer, 52*l.* 10*s.*; Vigilance and Sleep, F. G. Cotman, 47*l.* 5*s.*; A Little Farm on the Trent, J. Peel, 45*l.*; Mother's coming, J. N. Lee, 40*l.*; Magnum Bonum Plums, J. Sherrin, 31*l.* 10*s.*; A Little Maid of All-work, A. Stocks, 45*l.*

From the Society of British Artists.—Over-weight: Twopence to Pay, C. Stuart, 100*l.*; A Glade in Windsor Forest, Walter H. Foster, 80*l.*; The Goodnatured Guard, A. F. Patten, 75*l.*; The Old Lock and Mill at Shiplake, W. Gosling, 62*l.*; Between Barmouth and Dolgelly, T. F. Wainewright & C. Pearson, 60*l.*; A River Scene; Morning, T. F. Wainewright, 55*l.*; A Rocky Path, E. Holmes, 45*l.*; Tal-y-Llyn; Early Morning, B. B. Wadham, 42*l.*; Near Colchester, Essex, J. E. Meadows, 40*l.*; The Canal of the Civil Hospital, Venice, W. Henry, 35*l.*; Faces in the Fire, Haynes King, 35*l.*; Changing Pasture, A. Corbould, 35*l.*; Wreck of the Barque Grezie, &c., J. Syer, jun., 30*l.*; On the Coast, Etretat, Normandy, J. J. Wilson (the late), 30*l.*; Scarborough Castle, H. E. Roe, 30*l.*; Making a Fair Bargain, F. G. Pasmore, jun., 30*l.*; Going to the Village School, W. Jay, 27*l.*; Cottage on the Wey, near Guildford, A. Clint, 25*l.*; Girl with Apples, W. J. Lawlor, 20*l.*; A Windy, Rainy, Spring Day on the Thames, W. Gosling, 20*l.*; The Village Blacksmith, A. Verey, 20*l.*

From the New British Institution.—The Weald of Kent from Crockham, A. De Breanski, 50*l.*; The Storm, E. Hume, 42*l.*; On the Isis, P. Pilsbury, 35*l.*; The Lesson, Flora Ward, 35*l.*; Welsh River, J. Godet, 25*l.*; The Silvery Thames at Ditton, A. De Breanski, 20*l.*; Gold Fish, A. W. Bayes, 20*l.*

From the Crystal Palace Picture Gallery.—Mountain Stream, R. Harwood, 45*l.*; A Country Lane, George Turner, 25*l.*

From the Royal Scottish Academy.—Kelp Burners, Robt. W. Allan, 35*l.*; The Mistletoe Bough, Clark Stanton, 30*l.*

From the Society of Painters in Water-Colours.—Snow in Harvest, H. Clarence Whaite, 252*l.* 1*s.*; The Bridge at Killin, Perthshire, N.B., Paul J. Naftel, 45*l.*

From the Institute of Painters in Water-Colours.—Cader Idris, J. C. Reed, 75*l.*; Llanelltyd, near Dolgelly, North Wales, J. H. Mole, 60*l.*; A Derelict, J. C. Reed, 33*l.* 12*s.*; The Bay of Etretat, Walter W. May, 31*l.* 10*s.*; The Letter, John Absolon, 21*l.*

FROM THE EAST.

ACCORDING to the *Phare d'Alexandrie*, the construction of the railway from Alexandria to Rosetta is advancing rapidly. The earthworks as far as Aboukir are nearly completed, and the section of the line between Aboukir and Ramleh, cutting across a sandy tract, where the work is easy, promises also to be soon finished. The most difficult portion of the route is near the Khedive's palace at Ramleh, where gunpowder and the pickaxe are freely used to cut through the hard calcareous rock.——We get some items from the *Levant Herald*,—The Validé-Sultana, the Sultan's mother, has presented handsome tobacco-boxes, set in diamonds, to Serkis Bey, the Sultan's architect, to his Excellency's brother, Simon Bey, and to Kirkor Effendi, superintendent of public buildings.——The German papers announce that in consequence of the special application made by Professor Curtius to the German Government for the appointment of suitable persons to conduct a scientific survey of the plain of Athens, leave of absence has been granted by Count Moltke to Herr Kaupert, Inspector of the Imperial Staff of Surveyors at Berlin, and that this officer is at present engaged in the work. After the completion of the triangulation of the plain, Herr Kaupert and his staff will proceed to make an exact survey of the city of Athens, which may serve as the basis of future topographical measurements. The explorations of the German Association are being energetically proceeded with; and recently the workmen have laid bare the foundations of ten houses in the district next the Eleusinian Gate, which continues to yield the most successful results.——On the 10th, the officials of the Imperial Museum of St. Irene formally took possession of a large number of cases and baskets, containing some of the antiquities discovered in the Island of Cyprus by General de Cesnola, of which the Government of the United States has made a present to the Museum.——The excavations undertaken by Sir George Alexander for the purpose of recovering the obelisk which is known to be buried close to Cleopatra's Needle commenced on the 23rd ult., the Khedive having authorised the explorer to convey the monolith to England, should he succeed in unearthing it and in finding pecuniary means to carry it away.

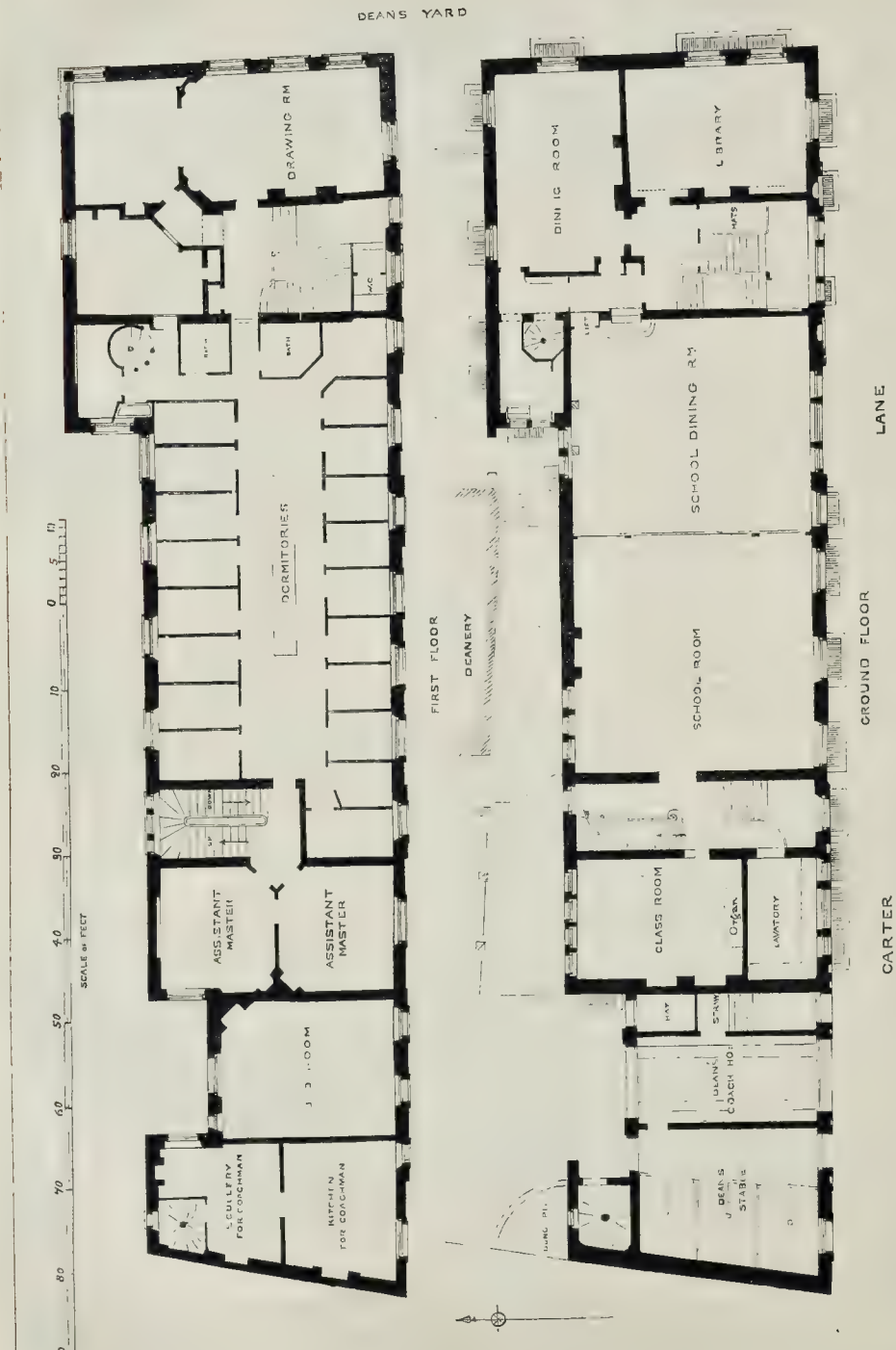
LAYING OUT ST. GEORGE'S CHURCH-YARD, SOUTHWARK.

THE churchyard of St. George the Martyr, in High-street, Southwark, has just been improved and ornamentally laid out, and was lately opened for the admission of the public. The ground at the side of the church contained a number of gravestones, which were carefully removed, and, after being cleaned, were placed at the side of the church. The ground itself was then laid out in beds, and planted with trees and shrubs, and a number of flowers are to be added. At the end of the churchyard, near the High-street, an ornamental fountain has also been erected. The work has been carried out under the superintendence of Mr. Hiscocks, the surveyor of the parish.

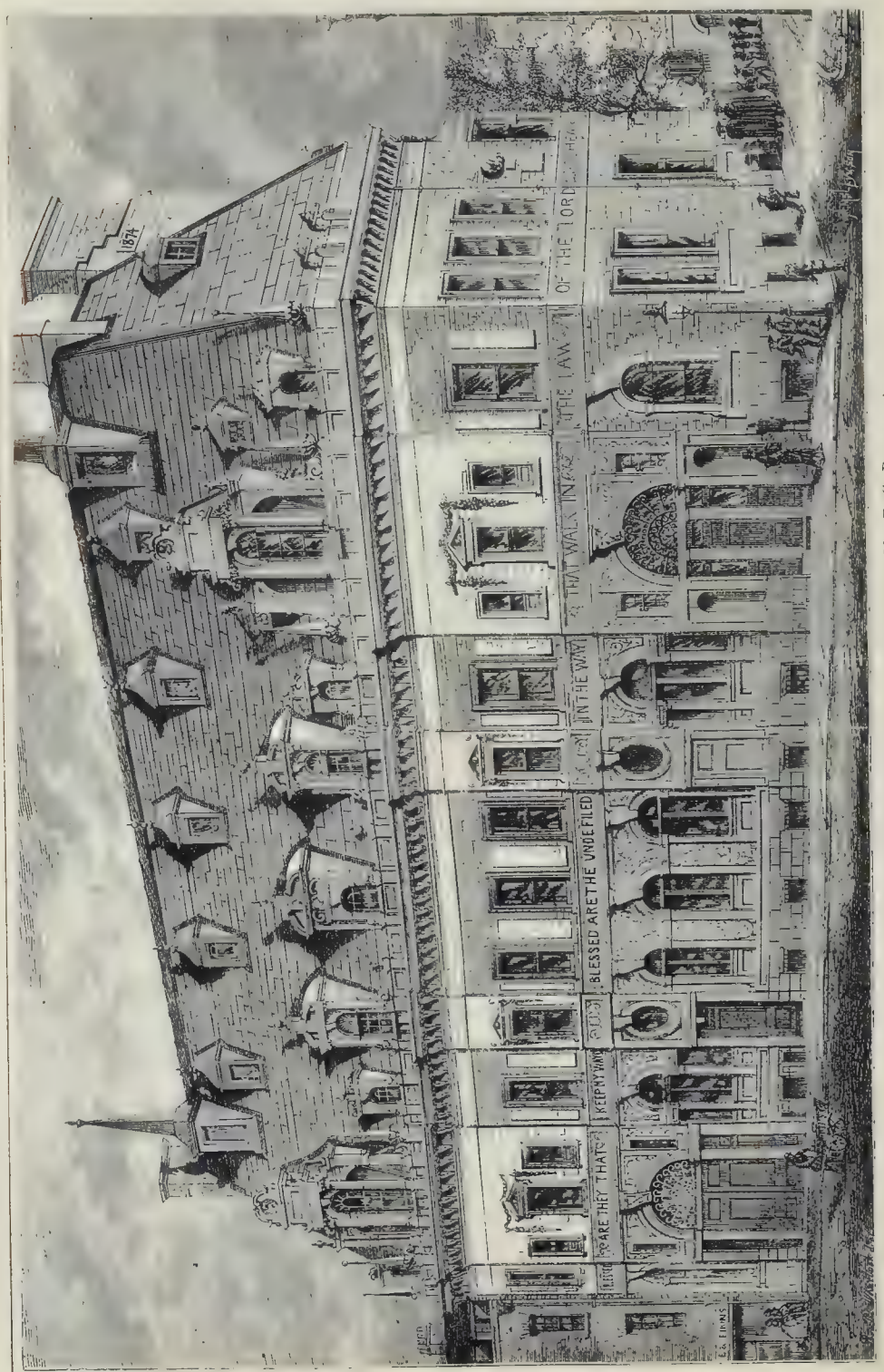
FURTHER DISCOVERIES OF ROMAN BUILDINGS AT SOUTH SHIELDS.

THE workmen employed in exploring the Roman remains at South Shields, have on the northern side of the Forum, reached the massive remains of some building that must have been one of the most important on the station, and it is supposed to have been one of the earliest erected. The walls are formed of very large stones clamped with iron, and are at some depth below the surface, forming the sides of a chamber or square, to which there is a descent by five stone steps, in capital preservation, but evidencing the marks of much wear. These steps were exposed to view on Wednesday, the 12th, by the pilots, after the regular workmen had left. The chamber contains another most interesting feature—the sill of a window 3 ft. 6 in. above the pavement, and about 4 ft. outside measurement. A portion of tile, of which fragments had already been obtained, was also found. It sets the question of the letters comprising the inscription entirely beyond doubt. They are plainly COH. V. G., which reads the "Fifth Cohort of the Gauls." Antiquaries have now only to discover the name of the station at which that Cohort was stationed. There were also found the capitals of two pilasters, square-headed and of a bold character.

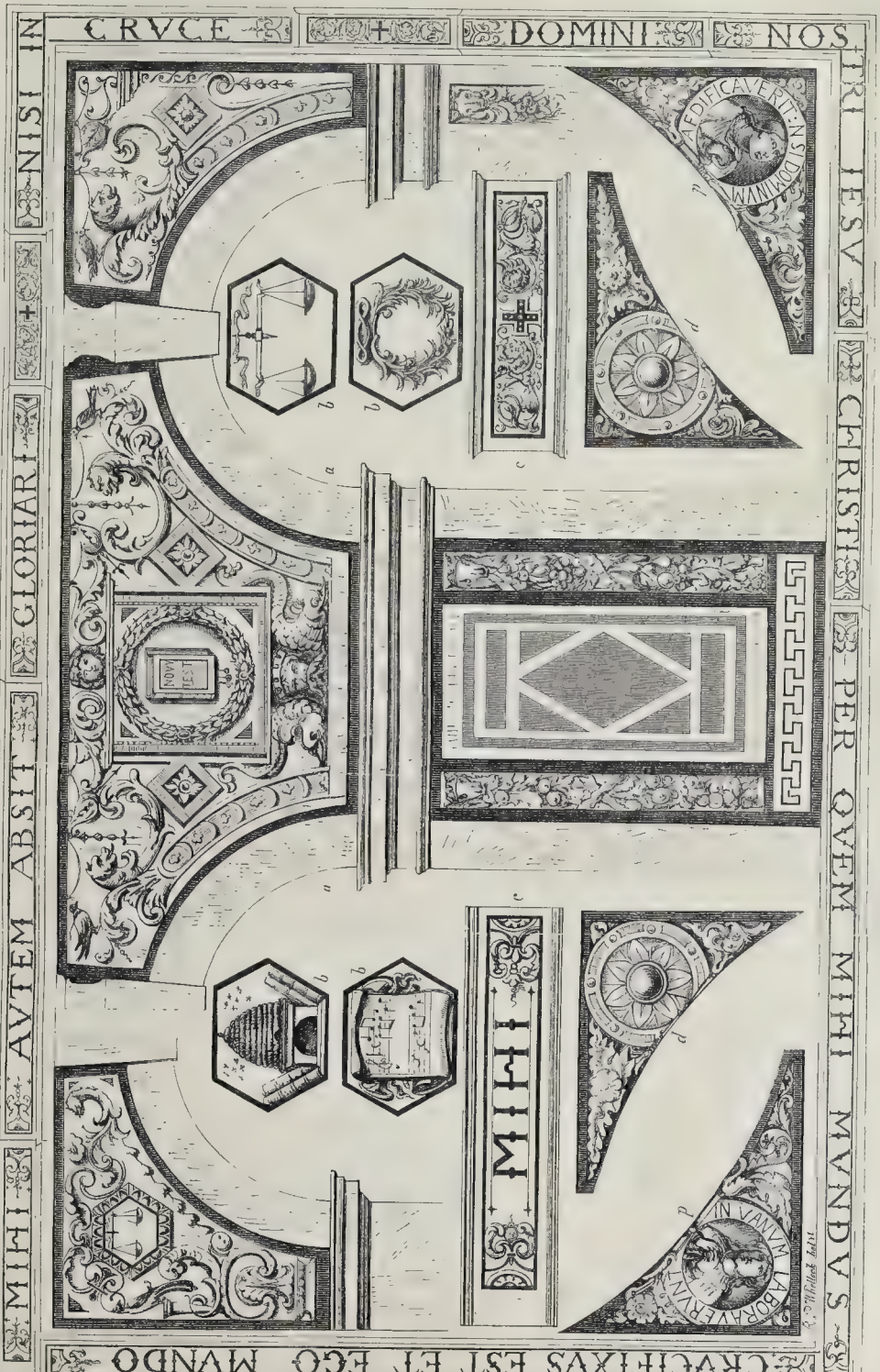
The Windsor Drainage.—The contractor, Mr. Acock, who has carried out the drainage works at Aylesbury, has just commenced the drainage works in Windsor. These consist of an outfall sewer from the lowest point of the town drainage to the Ham at Old Windsor, where works will be erected for treating the sewage by precipitation.



ST. PAUL'S CATHEDRAL-CHOIR SCHOOL.—*Plans.*



ST. PAUL'S CATHEDRAL-CHOIR SCHOOL, CARTER LANE.—Mr. F. C. Penrose, Architect.



ST. PAUL'S CATHEDRAL-CHOIR SCHOOL.—Details of Sgraffito Work.

ST. PAUL'S CATHEDRAL CHOIR SCHOOL, CARTER-LANE.

THIS school was commenced by the Dean and Chapter of St. Paul's, in November, 1873, with the intention of boarding and educating forty boys, giving them especially a musical training to qualify them for the services of the cathedral.

The school occupies the former site of some seven or eight dwelling-houses on the north side of Carter-lane, being bounded in the rear by the Deanery, and by Dean's-court on the east.

Its total length is 148 ft., and its greatest breadth about 40 ft. It consists of a basement, ground floor, and two chamber-floors, with a flat at the top. There is also a master's residence at the east end, and there are chambers for two assistant masters at the western extremity, all incorporated in one design, which is symmetrical, or nearly so.

The exterior of the edifice is built of brick, with terra cotta in the shape of dressings to all voids or openings, string-courses, cornices, and ornaments. There is an ornamental band of the same material running round the building, with a Latin inscription executed in "Sgraffito" work, being the well-known passage from Galatians vi. 14,—"God forbid that I should glory, save in the cross of our Lord Jesus Christ, by whom the world is crucified unto me, and I unto the world."

The spandrels over the windows of the principal entrance and intermediate panels are also ornamented with Sgraffito. The accompanying engravings will serve to illustrate the description more fully. Thus in that of the details, *a a* represent spandrels over the windows of the ground floor; *b b b b* show devices at large, figurative of Industry, Music, Justice, and Success; *c c* are parts of the inscription band at large; *d d d d* are the designs larger in the spandrels over the principal entrance and over the Dean's stable-doors. The inscription itself is given in full round the margin. This Sgraffito work is an Italian invention, much in use in the sixteenth and seventeenth centuries, and is an ingenious and effective, as well as being a most durable mode of external decoration; moreover, it is extremely simple in its mode of execution.*

The method followed is, first, to render with a moderately thin coat of Portland cement; upon this is laid a very thin coat of stucco, of a dark red tint and floated; this is followed, when sufficiently dry, with another, also very thin, coat of the same material, but of slight colour, and this is trowelled to a smooth surface. Before this is quite set, the artist brings his full-size design and traces it on the cement surface. This done, he commences operating upon the surface with steel tools, very similar to those used by a modeller, cutting away all parts intended to appear as dark lines or masses; the upper coat, therefore, being removed, the dark-coloured cement reappears and forms the design. The effect at a distance is like a light-and-shade drawing tinted, and when done in black and white resembles a coarse engraving, the lines being hatched. The effect is good. The surface becomes very hard, and there is a good reason to believe it will be very durable.

The introduction of Sgraffito into this country is due to the enterprise of the late director of the South Kensington Museum, Sir Henry Cole, C.B., under whose auspices Mr. F. W. Moody, of the Fine Art Department, with the able assistance of Mr. W. Wise and an efficient staff, has executed a series of pictures upon one of the façades of the new buildings at Kensington.

The choir school has unfortunately suffered mutilation in its upper story, through the failure of negotiations relating to a light-and-air question, and all the proposed work above the main cornice, and portions of the cornice itself, have been omitted. The design of the building and of the Sgraffito decorations is by Mr. F. C. Penrose, the architect to the fabric of St. Paul's Cathedral.

The accompanying perspective view represents the principal façade looking N.W. We also give the ground story and dormitory plans. The floors are all executed in a fireproof material, viz., Homan's patent. The builders are Messrs. Hill, Higgs, & Hill, the amount of the contract being 13,260*l*. The building is now occupied.

HALF-TIMBER HOUSES.

SIR,—Will any of your readers inform me where I can see a good timbered or half-timbered house anywhere within fifty miles of Wells, Somerset? S.

* In our volume for 1873, p. 220, an account of the process will be found.

PROGRESS OF THE TAY BRIDGE WORKS

OWING to the engineering difficulties in the way, the severity of the weather, and to the death of the head of the contracting firm of De Bergue & Co., which necessitated the conduct of the work changing hands, the operations in connexion with the Tay Bridge were, during last winter, considerably retarded. At the beginning of March, however, work was recommenced, and has since been carried on with great vigour, nearly three hundred men being now employed in the various departments of the work. Many new appliances for facilitating operations have also been introduced, so that there is every probability that ere long substantial progress will be made with this expensive and gigantic undertaking. Additional barges having been found necessary, the contractors established some time since a barge-building yard in Wormit Bay. Two pumping-barges have just been launched, and there are now on the stocks ten large pontoons, 70 ft. by 18 ft., to be used for floating out the piers and heavy girders for the large spans. These pontoons are to be of extra strength, and will each be capable of bearing 150 tons. A new steam-launch is in course of erection in Dundee, and a sloop is already employed in making borings to ascertain the nature of the river's bed. Plans have been prepared for extending the jetty accommodation so as to facilitate the building of the girders for the larger spans, and simultaneously means are being taken for storing iron and other materials near the water level. When these plans are carried out, there will be an additional space, about 240 ft. long, on a line with the sea, with a width to be increased as required. Along this a railway is to run, while on the new jetty will be constructed a "traveller" in connexion with the railway. A new plan has also been adopted for obtaining foundations for the piers. Formerly the cylinders were sunk till they would go no further, and as it frequently happened that they did not reach the hard clay or rock until great depth had been found, a serious expenditure of time and labour was involved. According to the method now to be adopted, and which is often followed in Holland, it will not be necessary to sink to the natural foundation, but an artificial one is constructed in a very ingenious manner. A large iron oval-shaped caisson, or cylinder, has been constructed, its dimensions being 25 ft. by 15 ft., and inside this, to a height of 10 ft., there is a lining of brickwork, 9 in. in thickness. On this caisson being floated out to one of the piers on the Newport side, a number of piles are driven 40 ft. into the ground, and standing about 3 ft. above the level of the bed of the river, and in the space inside the caisson. The inside space is afterwards filled with concrete to the height of the top of the brickwork, and the iron casing being removed, the foundation is complete. The large piers in the middle of the river are sunk on a somewhat similar plan. On the Dundee side three large iron cylinders, 6 ft. in diameter, are sunk in the river-bed till they find hard foundation, on which they are filled with concrete. The piers now erected on the Newport side are composed of brickwork to the top; but it is not intended to construct the others of the same material. In no case will the brickwork rise to more than 5 ft. above the level of high-water. The brick portions of the piers will in future be built in the harbour, and then floated out by means of pontoons, and placed on the foundation already prepared, the hollow inside being filled with concrete. From this point to the top the piers are to be composed of iron columns, joined together with cross-bars. Both the new foundations and the brickwork of the piers are considerably wider than the bridge. The masonry being floated out and put in position, the girders will be floated out and put above it. The two girders will be joined together, but more widely apart than is ultimately intended, enough room being left to allow the pillars to be erected in the space they enclose. A temporary, but strong, wooden erection will then be placed upon the top. To this tackle will be attached, the girders disconnected, separately raised to their proper position, and again joined. So far as the girders at the Dundee end of the bridge are concerned, these are being made on the bowstring span, and when the columns are finished, are, by means of rollers and powerful tackle, run out to their places. We may also mention, among the new appliances introduced, a machine for testing the strength of concrete, by means of a hydraulic engine and gauge; a new lamp, constructed in Germany, which is so constructed that it can burn under water for any length of time; and a new machine, fastened on the diver's back by means of straps, and which obviates the necessity of his wearing the cumbrous dress and carrying about the heavy weights, as formerly, to keep him under water.

On the Newport side, twelve of the piers have been entirely finished, three others are nearly so, and, with the exception of the space between two of them, have the girders on them. Much progress has also been made of late in the middle of the river, four of the piers being built up to the top, and having the girders on them, whilst several others will be ready for the girders in a short time. On the Dundee side the ten last piers are finished; while in the case of others, all the foundations are laid, and ready to receive the iron columns.

ROCHESTER BRIDGE—OLD AND NEW.

MR. CARLETON BAYNES, at a meeting at Wouldham, recently, in advocating the building of a new bridge across the Medway, gave some particulars as to the erection of Rochester Bridge. About the twelfth century there was an old wooden bridge at Rochester, which was set on fire by that great general, Simon de Montfort. A very severe frost followed, and ice came down the river in great abundance, and carried away the bridge. There was no money forthcoming, and the bridge remained in a ruined state for many years. Rather more than five centuries ago, Sir Robert Knowles, who had been doing service for the Government abroad, and had become possessed of a great deal of money, returned to this country, and, like a true English gentleman, began to think how he could do good to his neighbours. He decided upon building a new bridge at Rochester, near to which place he was living, and, remembering that the old structure had remained unrepaired from want of funds, he went to the bishop of the city, who managed its affairs in the fourteenth century, and said, "If I build a bridge at Rochester, your lordship must make ample provision that for ever and a day that bridge shall be kept in good repair." The bishop thought the proposition very reasonable, and accordingly drew up an Act which stated that Borstal, Cuxton, and Frindsbury parishes must give up certain pieces of land, sufficient to maintain the pier, and to plank and plate three yards of the bridge. Chatham and Gillingham were then ordered to do the same, and so it went on. Next, the far-seeing gentleman, Sir Robert Knowles, went to the king, and represented to him that the Londoners used the bridge in going to Dover, and that they should help to support it. The king, or his ministers, said they quite agreed with Sir Robert, and a piece of land in London was accordingly appropriated to the bridge. And so the bridge became repaired, and was maintained for many years. At last it began to require such a deal of timber to repair it, and became so costly and rotten that it was decided to build, out of the ever-increasing funds, the present structure. It was accordingly erected at a cost of 120,000*l*., by Messrs. Fox & Henderson, from the design of Sir John Hawkshaw. Three years ago the debt was finally paid off.

THE SHEFFIELD GAS COMPANY'S NEW OFFICES.

THE Sheffield United Gas-Light Company have erected a handsome building in Station-road for the purposes of their business, from the designs and under the superintendence of the well-known architects of that town, Messrs. Hadfield & Son. The stone used in the facing of the front is from Hollington, in Staffordshire, with an admixture of red Mansfield for pilasters, &c, and the columns of granite are the Ross of Mull, supplied by Messrs. Fenning, of Shap, being all monoliths. The jambs and arch of the great doorway are also from the same quarries. The floors of the entrance-hall, corridor, and dock space in the general office are laid with tiles. The style chosen is the Early Renaissance of a Venetian type. The principal façade is 131 ft. in length. Upon a moulded base course, level with the site at the upper end, rests an Order of coupled composite columns and pilasters with their proper entablature, with arched-headed windows intervening. At the great entrance doorway, the cornice and entablatures are supported by two carved athletes of bold execution. Mr. Thomas Earp, of Lam-

beth, has executed the whole of the sculpture and carving in the building. The doors are of panelled wainscot, and there is in the arched head a grille of wrought iron. The order of columns and pilasters is repeated in the upper story, the windows being well designed in harmony with the whole composition. In the centre is a pediment, in the tympanum of which are carved the initials of the company and the date of the building. A Mansard roof surmounts the whole composition. At the corners of the building are turrets 25 ft. high, having niches with escallop arch heads and conical finials; and the chimneys are large, bold, and effective. The return ends of the building are continued in the same style, whilst the wing, so to speak, in which is placed the general office has a special arrangement which marks its use. From the footings of the foundations to the crest of the roof the height is no less than 127 ft. The roofs are covered with Swithland slates; they were supplied by Messrs. Ellis & Sons, of Leicester.

The general office is a handsome apartment, being 53 ft. by 42 ft., and 30 ft. high to the ceiling. In the centre is a dome 25 ft. in diameter, for the double purpose of ventilation and light. The ceiling is coved and panelled; the sides are divided, by Corinthian pilasters, betwixt the arch-headed windows, by which the room is lighted on three sides. On the fourth is the great entrance,—a frontispiece of stone, richly carved, with a curved pediment, in which is placed a clock. The doors are folding, and the upper panels are glazed. This apartment (the largest of its kind in the town) is arranged with a central dock or space for the public, and counter round three sides; and within the space to be occupied by the clerks there is accommodation for the whole staff. The desks and counters are of Spanish mahogany, and well executed by Messrs. Johnson & Son, of Barker Pool. The staircase is of Hopton Wood stone, the steps 6 ft. wide, and the landings and floor of the upper gallery are of the same material. The balustrades are of bronze, and the newel is a massive stone pedestal for a figure bearing a lamp. There is on the upper basement floor a strong-room or safe for the books, and a lift working direct with the general offices, enables the clerks to remove the books every night and morning for safety against fire, &c. For warming and ventilation a very complete system is in operation, whereby these valuable and necessary arrangements are secured. An engine of four-horse power is fixed on the lowest floor, which drives a fan placed adjacent to the chamber where the air is warmed, being drawn into it from the yard in rear of the building. This chamber is connected by flues in the walls with the various apartments, and the fresh air, either warm or cold, according to the season, is introduced near the floor in every case. The vitiated air is extracted near the ceiling, and extraction flues are made to communicate with the shaft from the furnace, which is used for warming the air in winter, and so drawn off and discharged above the roof of the building. All this part of the work has been devised and ably carried out by Mr. W. W. Phipson, C.E. The invention of Mr. Dennett, of Nottingham, has been applied in the construction of the floors throughout, and also in the ceiling of the general office. The whole of the locks and furniture have been supplied by Messrs. C. Smith & Son, Birmingham. The lifts for the general office and show-room have been supplied by Messrs. J. & C. Ellis, of Norfolk Foundry. Messrs. Bunnett & Co. have fitted their fireproof shutters to the windows. Mr. D. J. Brown, of Lincoln's-inn-fields, took out the quantities; and the contractors for the entire building in all its branches are Messrs. J. Chambers & Sons. The contract, exclusive of fittings, was about 25,000*l*. Mr. R. W. Payne has acted as clerk of the works, and the architects have given all the details much care.

Memorial of the Countess of Portarlington.—A memorial of the late Countess of Portarlington has been inaugurated in the Roman Catholic Church of Emo. It is a beautiful work of art, consisting of a monumental tomb of brown marble, on which is a kind of couch of alabaster, whereon reposes a full-length figure of the lamented lady, dressed in the Carmelite habit, with a cross in the right hand resting on the bosom, and a book of prayer in the left. On the pillow on which her head rests is worked the arms and motto of her noble house.

THE NOTTINGHAM CASTLE MUSEUM.

On the 17th inst., the Right. Hon. E. W. Gladstone, accompanied by Mr. Frederic Ouvry, solicitor to the Park Estate, arrived in Nottingham. They proceeded from the Midland Station to the residence of Mr. T. C. Hine, where the Mayor and Vicar of St. Mary's and other influential gentlemen of the town had been invited to meet Mr. Gladstone. At three o'clock the party adjourned to the castle, where, according to previous arrangement, the meeting between that gentleman and the Committee of the Castle Museum project took place, in the now disused drill-hall of the above. The plans for the restoration and adaptation of the building were here exhibited. Mr. Hine submitted these, and on behalf of the Committee explained to Mr. Gladstone that they represented approximately what was proposed to be done, in the first instance, showing how that by throwing the three original stories of the building into two and raising the lower one to a height of 16 ft. abundant light might be obtained to render the latter suitable for the exhibition of machinery and objects of mechanical and scientific interest, while above it there would be a noble suite of rooms, 30 ft. high, lighted from the roof, which might be devoted to pictures, statuary, and other works of art. By such an arrangement, and with a few trifling alterations in regard to the main entrance, it was shown that the shell of the present building would, generally speaking, be found as suitable for a museum as if it had been designed expressly for the purpose, while the stipulated restoration of the exterior, and more especially that of its unique eastern façade, might be carried into execution without any sacrifice of internal convenience. A sketch was also exhibited showing the effect of a possible central tower and other ornamental additions in sculpture.

A large scale drawing was also exhibited, showing the plan of the old Castle, taken by Smithson previous to its demolition, together with an engraving published by Mr. Hine upwards of forty years ago, representing what he supposed to be the general appearance of the exterior.

Some matters of detail were then discussed between the gentlemen of the Museum Committee and Mr. Gladstone, and about which there is every prospect of a satisfactory adjustment. After inspecting the new road by the Castle rock, and the proposed southern approach to the Museum, by a series of steps up "Mortimer's Hole," the committee took leave of the right honourable gentleman, who proceeded to inspect the buildings and improvements in the Park Estate.

PROVISION FOR SAFETY AT THEATRES

Sir W. Fraser in the House of Commons on the 21st inst. called the attention of the Home Secretary to the inadequate provision for the safety of the public in case of fire in the London theatres. It was believed, he said, that there was complete rotation in regard to the burning of the theatres, but unfortunately science had not advanced so far as to show on what particular evening a theatre would be burnt. Still, persons experienced in fire insurance would point out the probabilities of particular theatres being burnt at a certain time. Shortly before the last Covent Garden Theatre was burnt an additional insurance was refused, on the ground that its turn to be burnt must soon come. He thought there might be more stringent rules with regard to means of exit, and more inspection as to precautionary measures. He desired to know whether the police employed in theatres were under the direction of the management, or were sent to keep order for the public.

Mr. Cross said he should be glad to say that there was no danger from fire in any of the London theatres; but that, of course, he could not do, because many of the theatres had been built a long time ago. At the same time, great care was taken by the authorities. This was a matter which rested with the Lord Chamberlain. The theatres were inspected by competent architects, and it was stated that there was not a theatre in London which could not be cleared in a few minutes, and, in the greater number of cases, provision was made for the opening of a water supply in case of fire. It was very desirable that where two passages converged upon a third, this last should be made wide enough to accommodate the stream of people that might pour into it, and he hoped that, in future, the architects would take care that this eventually should be met. With respect to the employment and payment of the police, at most of the theatres the police were employed by request for the regulation of the admission of the public, the preservation of order, and for checking riotous and disorderly proceedings.

But ordinarily, we may add, no provision is made by the police for regulating the crowds on the outside of theatres on popular occasions, when, however well-intentioned the visitors may be, dangerous and sometimes fatal struggles ensue in their endeavours to gain ingress.

DRAINAGE OF HUNTINGDON UNION WORKHOUSE.

This workhouse has recently been drained in accordance with plans and specifications prepared by Mr. Baldwin Latham, C.E. What the sanitary condition of this establishment was before the new system of drainage was executed, may be inferred from the following description of the old system.

There were twenty large brick cesspools upon the premises, with large brick drains with very little fall conveying the sewage into them from the privies, water-closets, lavatories, laundry, baths, sinks, and yard-gullies; and overflow brick drains from some of them communicating with the town sewers; both cesspools and drains being unprovided with ventilating pipes. In consequence of this arrangement and construction, nearly all the decomposing matters were retained in the cesspools and drains; the noxious gases engendered therein were expelled through the inlets into the premises as the sewage was discharged down them; and most of the liquids percolated into the subsoil, and through it into the wells, whence water was pumped up into cisterns for the requirements of the establishment. The whole of these cesspools and drains have been emptied, disinfected, filled in with dry earth, and abolished; and a complete new system of impermeable sewage and rain-water drains, separate from each other, has been provided instead.

The sewage drains, which are constructed of 12 in., 9 in., 6 in., and 4 in. stoneware pipes, now convey all the sewage of the workhouse nearly as fast as it is produced into the main sewer in High-street. Where the main drains meet shafts have been built for examining them at any time; on their outlets in the shafts lightly-balanced shackle-valves have been placed to prevent direct currents of air from passing up them; and their heads in the shafts consist of stoneware blocks fitted with sluice boards for occasionally penning back the sewage and flushing them.

The rain-water drains, which consists of 6 in. and 4 in. stoneware pipes, conduct the rain which falls on the roofs into three water-tight tanks built underground in the yards. The soft water thus collected is chiefly used in the laundry and lavatories, and for washing the floors. From the tanks 4 in. overflow trapped drains discharge into the yard-gullies, which are also trapped, and empty into the sewage drains. The waste water thrown down the gullies daily keep the traps always charged.

All the drains have been laid in straight lines from point to point, and carefully to the gradients. All the joints have also been made tight against leakage by filling them with gasket and Portland cement, especially round the under part.

On different floors within the buildings there are several single and double water-closets, and several lavatories, baths, and sinks. The soil and drain-pipes from these discharge underground, just outside the walls into syphon-traps having vertical pipes with grated covers fitted into them level with the surface, and drains leading into the main drains, which have been carried round the outside of the buildings for thus picking up the drainage. The drain from the kitchen and scullery sinks is provided with a large trap for intercepting the fat, silt, and other matters coming from this department. But for this trap, which is cleared out daily, the drains in this locality would soon become choked with coagulated fatty matter.

There are six latrines, with three pans to each, making eighteen pans altogether. The pans and pipes of these latrines are of strong stoneware, firmly bolted to each other, and bedded in concrete. The horizontal outlet pipe from each latrine is bolted to a vertical cast-iron pipe, which is bolted at bottom to a stoneware syphon-trap, which empties into the drain. The vertical pipe is fitted with a hollow overflow plug, which

is raised by a lever. Water is supplied to each set of pans by a 1½ in. lead pipe from a cistern overhead, which also supplies a lavatory near the latrine. The water contained in each set of pans and pipes is let off twice a day; and as four of the latrines are situated at the heads of the branch drains the water so let off acts as a strong flush throughout the system of drains, keeping them perfectly free from deposit. These latrines are very clean and sweet. No closet in a palace could possibly be cleaner and sweeter. Moreover, the pans and pipes being of salt-glazed stoneware, do not corrode. From over the outlets of all the syphon-traps 2-in. lead pipes have been carried above the roofs for ventilating the drains. There are twenty-five of these pipes, and out of each a strong current of air constantly shoots upward into, and is swept away by, the atmosphere above the workhouse.

Thus the drains have been truly laid in straight lines to the inclinations, and tightly jointed against leakage into the subsoil; they have been so put down outside the buildings, and the inlets so provided with syphon-traps and ventilating pipes, that the escape of foul air from them into the premises is next to impossible; provision has been made for examining and flushing them from the most suitable points, namely, from the access shafts and latrines; and they at once carry away all the liquid and solid sewage produced in the workhouse. The rain which falls on the roofs is also saved for useful and economical purposes, and after it is used it materially assists to scour the drains. The subsoil water, which stands in the wells, about 13 ft. below the surface, is also fast recovering its purity.

The whole of the works have been executed by Mr. George Maile, builder, of Huntingdon, under the superintendence of Mr. Thomas Ogden, the master of the workhouse. Messrs. Henry Doulton & Co. manufactured the pans and pipes for the latrines.

THE SURFACE OF THE GROUND WITHIN BUILDINGS.

SIR,—Now that numerous district sanitary authorities throughout the country are framing building regulations for obtaining the proper construction of dwelling-houses in their districts, not only with a view to securing stability and the prevention of fires, but also on improved sanitary principles, it may not be inopportune to remind those who have the subject under consideration of the great value, in a sanitary sense, of covering the surface of the ground within the main walls of every house with a layer of good concrete. It is customary to put houses on the ground,—often not very sweet itself,—with nothing to separate the rooms intended for habitation from the ground beneath but a boarded floor, of which the wide openings between the boards allow free access for damp and other exhalations rising from the soil. It is frequently supposed that the usual regulation requiring the owner of any new house to cause the subsoil thereof to be effectually drained is sufficient to secure the dryness of the site; but this, which is done only "when such a precaution may appear necessary," is a great mistake. Almost every kind of subsoil is more or less damp at various seasons of the year, and some soils hold moisture much more than others, and therefore damp will rise up into a house through any ordinary boarded floor in the lowest story, or from the cellars beneath any house, unless special provision be made to prevent its doing so. It may be said that the space beneath the flooring is usually required to be ventilated; but this, supposing it to be efficiently done, is of very little use in preventing the exhalations from the ground, or some portion of them, from getting into the house, for fires, gas, &c., will draw air into the interior by the easiest channel, and this is too frequently from the space beneath the flooring of the lowest story. Now, no one, I apprehend, will dispute the fact that it is unwholesome to sleep in a house that is shut up for many consecutive hours at night, with a continual in-pour of air, such as that to be found between the lowest boarded floor and the ground upon which the house is built. It has been shown on high authority * that "wetness of soil is a cause of phthisis to the population living upon it," and there can be no doubt that this result is mainly due to "living upon it," not out of doors in the day time, but *in closed houses during the many hours of night time*. It, therefore, seems most important to impress upon all sanitary authorities the necessity for requiring the site of every dwelling-house, without exception, to be covered with a sufficient layer of good concrete or asphalte or other impervious material. Such a requirement was proposed in the Bill of last session for amending the Metropolitan Building Act, and was strongly advocated by numerous witnesses, yourself among the number, who gave evidence upon the subject before the Select Committee of the House of Commons. It will, doubtless, be embodied in any new Building Act; and, I am sure, valuable results in the form of a lower death-rate may be anticipated wherever such a provision is properly carried out.

P. GORDON SMITH.

* *Vide* the "Tenth Annual Report of the Medical Officer of the Privy Council, 1867."

INFRINGEMENT OF THE METROPOLITAN BUILDING ACT.

CAUTION TO BUILDERS.

MR. WILLIAM JACKSON, a builder residing at Lower Norwood, appeared at the Lambeth Police Court last week, on a summons which had been issued against him at the instance of Mr. Edwin Nash, the district surveyor, for unlawfully erecting a building at Norwood, without giving two days' previous notice in writing, as required by the Metropolitan Building Act.

Mr. Nash said the case was one of considerable importance to builders and others. He had summoned the defendant for putting up a structure near the wall of St. Luke's churchyard, Norwood, and not giving the required notice under the section of the Act. Mr. Nash said that on discovering that a building had been put up in March last by the defendant, who had given no notice, he instructed his clerk to inform him that it was an improper building. Subsequently he had himself spoken to the defendant about the matter, and also written to him, pointing out to him that the building must be taken down immediately, but without effect, the defendant taking no notice whatever, and the building still remained. The whole structure was illegal, according to the 43rd section of the Building Act, and must be removed. He (Mr. Nash) had seldom taken such proceedings as the present, but the Metropolitan Board instructed him that such steps must be taken to put a stop to the system. The defendant could not plead ignorance of the law, as he had before offended, and been cautioned. Mr. Nash said he did not press for a large penalty, but asked for such a decision as would show the defendant and others that he was not to be ignored in his office of surveyor.

In answer to Mr. Ellison, the magistrate, as to what description of building it was, Mr. Nash stated that it was an iron-roofed building, not 8 ft. from the public road, and within 30 ft. of a building, and was not under the exemption clause of the Act.

The defendant said the structure was only an outside cover in which to place a few monuments; but in reply to this, Mr. Nash said it was really a building within the meaning of the Act, on which the defendant observed that if it was really a building within the meaning of the Act, he had nothing further to say, and would pull it down.

Mr. Ellison said it was of the greatest possible importance that the law should be carried out, and he must, therefore, inflict a penalty. He ordered the defendant to pay a fine of 20s., and the costs of the summons.

FREE LIBRARIES *v.* MECHANICS' INSTITUTES.

THE question as to how far free libraries injure or assist mechanics' institutes that are supported by members' yearly subscriptions, has been discussed by the Yorkshire Union of Mechanics' Institutes. The Yorkshiremen say it is obvious that no other institute library can hope to rival a free library sustained by local rates. How far the public rates should be used for the dissemination of large quantities of merely ephemeral literature is a question open for discussion, but it would be manifestly prejudicial to the great cause we all have at heart, to discourage or oppose the establishment, in the great centres of industry, of public libraries, where the standard literature of England, including the records of our country, should find fit and accessible home.

It would, indeed, be of the highest value, if to these libraries were added local museums and galleries of art, that the student in literature, science, or art might be able to guide his progress and test his results. The committee believe that so far from such libraries being injurious to mechanics' institutes, they would be of the greatest practical benefit, and enable the committees of the institutes to use their undivided energies and funds for the purposes of sound, continuous, and advanced culture.

If, however, we have to record cases of failure, we have much greater cause to give instances of success. A long list of institutes might be named in which the class-work goes on with sustained and increased vigour. Keighley is beginning to fulfil its glorious promise, and, perhaps, nowhere in the Union could we even now point to a more complete or a more thorough organisation. Huddersfield, knowing well what yet remains to be done for elementary work, keeps true to its old traditions, and its twenty-five class-rooms are nightly filled with industrious and persevering pupils. Lockwood, Calverley, Pudsey, Northowram, and a number of places of similar small populations, are showing what can be done by committees who meet once a week, *and who meet for business*.

The Yorkshire Union may also be congratulated on the fact that during the year the restored Institute of Heckmondwike has held its first *soirée*, and, well officered and taught, its classes show the results arising from regular and sound instruction; whilst Whitby has at one step sprung from death into life, and Sheffield bids fair, with its 500 earnest students, to take once more its proper position amongst the Yorkshire institutes.

The combination of the day with the evening school continues at Slaithwaite, with marked success, an example to all villages similarly placed; whilst in a dozen places the committee are either, as at Whitby, Barnsley, and Horsforth, contemplating the erection of new premises, or as at Darlington, Dewsbury, and Skipton, have been engaged in the improvement, better adaptation or extension of their present buildings.

The above is specially commended to the attention of the mechanics of London, who have hitherto treated institutes for improvement, and even free libraries, with marked indifference if not hostility.

MAIDSTONE MUSEUM.

IN taking leave of the Maidstone Town Council, Mr. Alderman Laurence offered to restore the dilapidated front walls of the fine old Museum, in St. Faith's-street. The contract has been placed in the hands of Messrs. Clements & Wallis, under the direction of Mr. Hubert Bensted, architect, of this town. Care is being taken to *restore* to the walls their former appearance, with something more than their former strength, and this is naturally a process accompanied by many features of difficulty. Material of the necessary kind has first to be obtained.

The Museum consists, as most people who have visited Maidstone are aware, of a main block, facing the street, and two new wings running south. Three sides of the quadrangle are thus formed, and the iron gate and palings make up the fourth. The principal front consists of three towers and two recesses, and it may be recollected by some that the west tower was renovated at the time the wing on that side was re-built. Mr. Laurence's wish, therefore, was to see the whole of the front uniformly constructed, and this involved the partial demolition of the central and east towers, and restoration of the two inner walls or recesses.

On each of the towers now undergoing repair, corner pinnacles, similar to those at the west side, as reproduced from the old building, will be placed, with central figures in stone, to represent in the one case a griffin, holding the coat of arms of the family anciently occupying the Manor House, and in the other a bear. The stone figure of a lion already occupies the centre of the west tower. Very noticeable improvements have already been made in the porch. A little too much of the old museum has been pulled down.

CAPITULAR ESTATES.

THE Ecclesiastical Commissioners for England have in nowise satisfied the lessees of church property in their report to her Majesty. After detailing at some length the measures adopted by the Commissioners, and referring to the reports of the Committees of the House of Commons on the question of church leases, they say in 1852 it was found to be more convenient that chapters, instead of dealing with the lessees of the capitular estates under the sanction of the Church Estates Commissioners, should commute their estates for annuities from the Ecclesiastical Commissioners, on the condition of estates in possession of adequate value being substituted for the annuities as soon as it would be practicable for the Commissioners to make such a substitution.

The chapters of York and Carlisle, in 1852, and all other chapters subsequently, except those of Lichfield and Hereford, have adopted this course, and effected commutations of their estates by similar arrangements, and by the operation of the Act passed in 1860.

The estates of all the bishopries (except those of Bangor and Llandaff) have now become vested in the Commissioners; and, as regards the enfranchisement of the pro-

perty vested in them, the Commissioners have proceeded on the principles before mentioned.

In the case of the chapter of Carlisle, commuted in 1852, all the leases were granted for twenty-one years (except the burgage leases), and the whole of the capitular property (except seven burgage tenements) has been enfranchised; and in the case of the chapter of York, commuted in the same year, the whole of the property (except three leaseholds held for lives, and two burgage tenements) has also been enfranchised.

In many other cases the enfranchisements are nearly completed, and in all but one of the later commutations where the process is not so far advanced, the transactions are proceeding harmoniously and satisfactorily.

The number of enfranchisements to be completed to the present time by the Episcopal and Capitular Corporations, with the sanction of the Church Estates Commissioners, and the Ecclesiastical Commissioners, is about 9,500, viz., 1,600 purchases of leasehold interests, and 7,900 sales of reversions. The one exception above alluded to arises from the claim to special consideration, which has been made by some of the lessees, who hold leases for twenty-one years of estates transferred to the Commissioners by the Chapter of Durham.

The estates of this Chapter (exclusive of the house property belonging to it) were demised at the date when the Episcopal and Capitular Estates Management Act, was passed by about 700 leases, and of these about 500 were dealt with by voluntary agreements entered into between the Chapter and the lessees, and sanctioned by the Church Estates Commissioners, prior to the transfer of the residue of the Chapter property to the Ecclesiastical Commissioners, under the commutation scheme, dated the 3rd of August, 1871.

When the scheme was submitted for confirmation by the Queen in Council, an opposition was raised against it by a petition signed by certain lessees of the Chapter. On the hearing of the petition, on the 13th of November, 1872, her Majesty was advised to ratify the scheme. The opposing lessees then transmitted a memorial to the Commissioners, and urged that if some ancient Court Rolls, which they stated to exist, were produced, the lessees would be found to have been copyholders before they began, 300 years ago, to be lessees, and that their leasehold estates should therefore be treated as customary estates renewable for ever.

On the Commissioners declining to entertain the claim, the memorialists announced their intention to institute proceedings in Chancery, to enforce the same.

The Commissioners have no knowledge of the existence of the alleged Court Rolls. If they exist, and their contents were found to be as these lessees allege, such evidence would not, as it seems to the Commissioners, countervail the fact of the premises having been held exactly like other episcopal and capitular leaseholds, at least from the time that the Chapter of Durham was established in 1555, on the new foundation.

A large amount of evidence relative to the Durham capitular leaseholds was taken before the committee of the House of Commons, on church leaseholds, in 1837, '38, '39; before the Commission on Episcopal and Capitular Leaseholds, in 1850; and before the above-named Committee of the House of Lord, in 1858. But no such claim on the part of the lessees of the Chapter of Durham was then set up, and those lessees who then advocated the claims of themselves and other co-lessees have all effected the enfranchisement of their several leaseholds, either by the sale of their leasehold interest, or by the purchase of the reversionary interest, on the principles previously referred to."

THE LATE ALFRED STEVENS.

I CANNOT refrain from expressing my appreciation of your excellent and straightforward article in reference to the late Mr. Alfred Stevens. I had noticed so often of late years disparaging remarks, and sometimes even actual misrepresentations, about him and his works, appearing in the papers from time to time, that I had almost begun to be afraid—until I saw your article of the 8th inst.—that the real worth of this truly great man would never be publicly acknowledged.

I certainly never saw the whole unhappy affair of the Wellington Monument put so truthfully and fairly before the public as you have done it in this article. And I think, sir, for this alone you deserve the thanks of all who ever knew him, however slightly. But my principal object in writing to you is to call attention to the insignificant manner of his burial in an obscure corner of Highgate Cemetery. He was followed to his last resting-place, devotedly enough, by only twelve or fourteen of his more immediate friends and former pupils, and these with three or four others, who in like devotion found their way to the spot, formed the sole, sad surroundings of the grave that received all that was mortal of a genius as pure and lofty as ever enriched the store of art in England.

To me there is something inexpressibly sad in the thought that so great an artist, struck down in so awfully sudden a manner in the very midst of working on works that seemed to breathe of almost Divine inspiration, should be tumbled into a poor hole in the earth of an ordinary burying-ground, when only recently we have seen men—certainly no greater, if more popular—buried, with all the honours a grateful public could offer them, in such places as St. Paul's or Westminster Abbey.

The only comfort, I think, his friends can find in this apparent public neglect, is the knowledge they must have, that in that quiet, that humble, grave, there rest the ashes of one who gave his whole life to advance—for his country's good—all that is noblest and purest in art, and that, whatever the world may say now, his name must one day be inscribed among England's most illustrious dead. W. AUMONIER.

MUTILATION OF ST. BARNABAS R. C. CATHEDRAL, NOTTINGHAM.

SIR,—A series of what are called *alterations*, but which really are mutilations, have recently been effected in this beautiful building. I have no doubt that to the bulk of your readers it is well known as one of the choicest examples of the revival of Early English Gothic to be found either here or abroad: it is the work of the late Augustus Pugin.

Some time last autumn a new bishop, the Rev. E. Bagshaw, was installed, and since his accession important changes have been made, totally regardless of the feelings of the congregation, or respect for the designs of the eminent architect to whom Nottingham is indebted for so fine a building. In the first place, the sedilia, which was placed in the easternmost bay in the south side of the chancel, has been pushed back till it projects into the south chancel aisle, over which it hangs, supported by props, the aisle floor being several feet below the elevated floor of the sanctuary; a long wooden bench with a sloping back is placed across and touching the pilasters of the sedilia, which is thus thrown out of use.

Some two or three years ago, a fine memorial brass, by Hardman, was laid down on the north end, and in front of the rood-screen; it is now partially covered with a carpet, and an iron rod has been inserted in the Purbeck marble of the memorial to support a rail for communicants to kneel against, instead of going, as formerly, to the altar-steps. The choristers, numbering about thirty, forming one of the finest choirs in England, have been disbanded, and the beautiful music of the mass of Beethoven, Mozart, Haydn, Hummel, Weber, and others, discontinued, substituting instead a plain Gregorian service intoned by a priest, assisted by a number of boys.

Whatever difference of opinion may exist upon the musical question, I think there can scarcely be two opinions about the mutilation of the sedilia and memorial brass.

In addition to all this, an exquisite metal crucifix upon the high altar has been removed, and in its place a piece of carpenter's work,—super-altar, I suppose, it must be called, I know no proper name,—is constructed, upon which rests a crucifix of most repulsive design.

All these things have been done upon the new bishop's instruction. He is said to be an Ultramontane. If this is Ultramontanism, well may we exclaim, in the language of Macbeth,—"Can such things be, and overcome us like a summer's cloud, without our special wonder?" and well may Count Munster, in language which displeased Mr. Sullivan, M.P., warn us against things that are now menacing from the old source, and caution us to be awake to the revived activity of that Italian party in the Church of Rome which has, and always has, worked such mischief both to the individual and the State in times past.

KATHOLIKOS.

TIMBER OF CUBA.

THE report to the Foreign Office by Mr. A. Graham Dunlop, on the forests of Cuba, and the consumption of its timber, states that no calculation of any value can be made at present, so much of the best forest districts in the central and eastern departments being in the hands of the insurgents; but little has been cut since 1868, when the insurrection began, the trade having been paralysed; and the timber must have increased, and large masses must be maturing and improving. Mr. Dunlop gives a long list of useful Cuban trees. There is the hard and compact mahogany; the soft cedar, "one of the most precious trees, and everlasting in dry places;" the light violet acana, a very hard wood; the sabina, "everlasting, and good for all uses;" the ramon, a great resource in drought for feeding cattle with its leaves. Cuba produces an immense variety of coloured woods for cabinet work. Mr. Chapman, member and representative in Cuba of a large English engineering house, makes mention of a floor in a room he has seen inlaid with fifteen or sixteen different kinds of beautiful hard woods. Of the fustic wood of this part of the world a vice-consul in Honduras says:—"It resists the action of water better than any other wood known here, and house-posts made of it have been found sound and fresh after being in the ground for a century." Mr. Dunlop states that, if the fellings were properly regulated, the export of timber from Cuba might be very large, even though the Government should not insist on "re-plantings." 3,000,000 square feet of mahogany, 5,000,000 square feet of cedar, and 2,000 tons of fustic wood would be ready for the axe every year. Mr. Chapman observes that in the last century forty-two ships of war were built in the Royal Arsenal of Havannah, chiefly with Cuban wood, and some of them still exist as hulks; and ships of excellent quality were built in Cuba not very long ago.

The Clyde.—Sir John Hawkshaw, C.E., has opened a court of inquiry in Glasgow regarding the means of purifying the Clyde. Schemes were submitted by two gentlemen, who were the only persons present to give suggestions.

THE ORDNANCE MAPS.

THE *Pall Mall Gazette* observed recently, that the new and enlarged Ordnance maps amount to something like a picture of the country, and their use for finding the way, and for many other purposes, is undoubted. But it is strange, especially considering that the head of the department is a man of antiquarian reputation, that the nomenclature employed, in some cases at least, in the description of ancient buildings, should be so obsolete and misleading. Thus in the map of Waltham Abbey, at some distance from the church, is marked "Supposed Site of Monastery." The site of a monastery in such a place leaves no room for "supposition." The Monastic buildings at Waltham were attached to the church. The "supposed site of monastery" seems to be the site of a house built after the dissolution. A part of the monastic buildings is set down as a "Midnight Chapel." Not far off appears, "Entrance to Subterranean Passage," which this writer believes to be a mythical description, the passage being merely a drain. Objection is also made that the Abbey Church is marked with a dotted restoration of the eastern part, taken from a conjecture by Mr. Burges, as to its state in the twelfth century; but which, it is alleged, could not have represented the buildings after the changes which happened in the thirteenth century. The writer prefers the definition of "Antient Remains," used in the former Ordnance maps, as the definition, if vague, is not wrong, and it is preferable to descriptions which, it is alleged, only lead the unlearned astray.

THE LOOK-OUT IN A FOG.

SIR,—Disastrous news from the sea again horrifies us. There are two awful accounts in the paper before me. With the *Cadiz* were lost 62 lives, and with the *Schiller* more than 300. If ships must run in fog, let us aid the mariner with some means to see danger ahead. The only English seaman saved from the *Cadiz* states that while swimming he perceived the thick fog did not touch the water,—a clear space intervened, which enabled him to see and strike out for the rock.

Now, sir, I start from this point, with the hope of devising a remedy, accepting the fact that fog does not rest on the water.

To get a look out, I would have a long telescope tube, with a mirror angularly adjusted at the other end; from the bulwark I lower it to scan the horizon through the thin clear gleam.

Death is reaping sad harvests at sea. Powers that be, care for those who meet England's foes when called to arms and duty. R. T.

LONDON SCHOOL BOARD SCHOOLS.

Two new schools were opened by the Board on the 21st inst.; one in the neighbourhood of Plumstead and the other at Hackney. That at Plumstead is situate in Upper Earl-street, not far from the railway station, and consists of two blocks of attached buildings, one of two stories, containing large school and class rooms for boys and girls (the latter on the ground and the former on the first floors), and the other of one story having also school and class-rooms, and babies' room for the infants. Each department has ample cloak-rooms, lavatories, &c., with spacious playgrounds, while the caretaker's or "janitor's" apartments are located over a portion of the infants' school-room. The contractors were Messrs. Kirk & Randall, of Woolwich, whose accepted tender was 6,693*l*. The building will contain 810 children, and the cost per head, including purchase of ground, &c., amounts to the sum of 9*l*. 18s. 4d. Mr. Beeching was clerk of works. The school at Hackney is in Pritchard's-road, on the north side of the Hackney-road, not far from Cambridge-heath. The new building, which will accommodate about 400 boys and girls, consists of three stories, the lower or ground-floor being open and forming a covered playground. The girls' school and class rooms are on the first floor, and the boys' on that above, each with separate approaches, cloak-rooms, mistress's room, &c. The builders were Messrs. Niblett & Son, of Hornsey-rise, whose accepted tender for the work was 3,500*l*. Mr. Hall was clerk of works. The infants are at present taught in the old school which stands in the rear of the new building. Mr. E. R. Robson was the architect to both these schools; the style adopted being that usually employed in the erection of these buildings, namely, that of Queen Anne.

SCHOOL BOARD SCHOOLS.

Drighlington.—The new schools for the Drighlington School Board, of which the corner-stone was laid on the 8th inst., will stand on a site, containing about three quarters of an acre of ground. The accommodation will consist of boys' and girls' schools, each 51 ft. 6 in. long by 32 ft. broad, and 22 ft. 6 in. high. Each school will possess two class-rooms, 15 ft. by 12 ft. 6 in. The number of pupils accommodated will be 500. The infants' school will be 49 ft. long, 24 ft. broad, and 23 ft. 6 in. high, with a gallery at one end, for 170 children. Each of the schools will have a separate entrance, with lavatories, cloak-rooms, and other conveniences: while in the rear, and accessible from either the boys' or girls' entrances, will be a mixed school 27 ft. 6 in. long by 25 ft. broad, in which eighty advanced pupils of either sex can be instructed, and for whom two separate class-rooms are arranged. The heating will be by Haden & Co.'s system of hot-water pipes. All the schools will have open dressed timber roofs, and the interior woodwork will be stained and varnished. Messrs. Lockwood & Mawson, of Bradford, are the architects. The contractors for the work are:—Mr. Jeremiah Thornton, masons' work; Messrs. Bates & Storey, joiners' work; Messrs. Rushworth & Son, plumbers' work; Mr. Dixon, plasterers' work; Mr. Smithies, slaters' work; and Messrs. Morrell & Hartley, painters' work. The accommodation is for 700 children, and the cost will be under 5,000*l.* Mr. Johnstone acts as clerk of works.

Colton.—The Templenewsam and Austhorpe School Board is about to erect a new mixed school on the Common-road at Colton. The site, which is on the Ingram estate, is about three-quarters of an acre in extent. The building is to be in the Domestic Gothic style of architecture, and will consist of a large room 40 ft. by 20 ft., and a class-room 18 ft. by 12 ft. 6 in. There will be separate playgrounds as well as separate entrances to the school for boys and girls. Adjoining the school is to be a master's house, containing parlour, kitchen, scullery, &c., and three bedrooms, and attached a large garden. The plans and drawings have been prepared by Mr. R. Chorley, architect, Park-row, Leeds.

CHURCH BUILDING NEWS.

Merton.—The parish church has been restored. It was erected about A.D. 1400, the north aisle about a century later. The building is in the Perpendicular style, with granite piers and arches. It was filled with the old-fashioned high pews, and had a gallery at the west end, which blocked up the tower arch and west window, the tracery of the tower window being also destroyed. In the north aisle there were four windows of square-headed Sixteenth Century work, which were very defective; but they, together with one in the south side of the nave, and one on the west side of the tower, all of Hambill stone, have been renewed, and filled in with tinted cathedral glass, designed by the architect. The plastering has been taken from the nave roof, and the roof repaired, the carved work restored, and the face of the rafters tinted with paint. The north-aisle roof has been repaired, and the chancel roof is new, constructed of moulded panels, with carved bosses at the intersections. The new chancel-arch is of wood, with rood-beam angels as corbels. The reredos has been slightly raised, and a super-altar added; it was put up about eleven years ago, and is of Caen stone, with marble shafts. The floor of the chancel has been laid with Godwin's tiles, and the steps are formed of Devonshire marble. The new choir-stalls are of pitch-pine, and a high parclose screen with traceried heads has been added on the north side. The seating throughout is of red deal with pitch-pine ends, and is altogether new. The pulpit is also of pitch-pine. The heating is by one of Perritt's stoves. The south transept has been rebuilt by Mr. Samuel Hooper, of Hatherleigh, at the expense of Mr. J. C. Moore-Stevens. With this exception the whole of the general work has been carried out by Mr. W. Williams, of Merton, under the instructions of the architect, Mr. R. M. Fulford, of Exeter. The carving has been executed by Mr. Harry Hems, of Exeter. The bells have been put in order, and the chiming apparatus of the Rev. H. T. Ellacombe put up by Messrs. Hooper & Stokes, of Woodbury. The cost is about 1,700*l.*

Grafton.—Various alterations having been made to this old church not in harmony with the original fabric, it was determined to raze it to the ground, and rebuild it. The edifice now consiste of a nave, 40 ft. long, by 21 ft. 3 in.; the north aisle, the same length, and 10 ft. 4 in. wide; and chancel, 27 ft., by 16 ft. 3 in. At the south-west corner of the nave is a tower, the base of which forms a porch, the upper part being for the belfry and a clock. The aisle is divided from the nave by three stone arches resting on cylindrical shafts. The chancel is divided from the nave in a similar manner. The roofs are open-timbered, and plastered between the rafters, the nave roof having massive carved trusses at intervals, supported by carved stone corbels. The windows of the nave and chancel have tracery heads of the same character as those of the ancient church. The other windows are plain lancet. The east window is of stained glass, representing "The Ascension"; the west window is filled with stained glass, representing "The Acts of Mercy." In the tracery is the "Agnus Dei." These windows were designed and painted by the architect. The interior walls are arranged in bands of Campden, Bourton, and Inkberrow stone. The chancel floor is laid with Minton's encaustic tiles; the aisles are laid with stone, the floor under the open seats being boarded. The seats are of oak, and open. The pulpit, prayer-desk, altar-rails, and the altar, are all of massive oak, the base steps of the pulpit being of stone. The church will be heated with hot water. The roof is covered with Broseley tiles, and the spire with oak shingles. The architect was Mr. Preedy, of London. The contractor was Mr. Alfred Espley, of Evesham. The pulpit and chancel fittings were made by Mr. Boulton, of Cheltenham; and the clock by Mr. Tucker, of London. The entire cost has been defrayed by Mr. J. W. Carlile, of Barasct, Alveston, near Stratford-upon-Avon.

Earlestown.—A new church is about to be built at this place. The site is in Market-street, near to the new Police-station and Market-square. The church will seat about 900 persons; but at the present time it is intended to provide for 600, leaving the remaining portion of the structure for a future effort. The building will consist of a nave, north and south aisles, two transepts, an octagonally-ended chancel, a vestry, and a tower. The portion now intended to be built comprises half the nave and aisles, transepts, chancel, and vestry. The style of architecture chosen is that of the Transitional Early English Period. The seats in the nave and aisles will be low open benches, which will be removable, while those in the chancel will be fixtures. The children will be placed in the south transept, to which they will gain access by a separate entrance. The roofs of the nave, transepts, and aisles will be open-timbered, and that of the chancel will be lined with boarding to the level of the collars, and panelled by dividing ribs. The arcade between the nave and north aisle will consist of six arches, and the corresponding one of five arches, above which will be the clerestory windows. Provision is made for a heating-chamber under the vestry. Messrs. Whitley & Fry are the architects.

Davidstow.—The church of this Cornish parish, a large structure, chiefly of the fifteenth century, is in such a dilapidated and dangerous state that it has been resolved to take it down and rebuild it. The cost, estimated at about 2,000*l.*, will be defrayed by Miss Pearse. It is intended to preserve the original proportions and details of the church, and the sound portions of the ancient materials will be re-used. The roofs will be open, as were the old ones, and the walls internally as well as externally will be of wrought stone. Polyphant stone, the beautiful material of the locality, will be largely used for the tracery of the windows. Mr. Hine, architect, of Plymouth, has made a survey of the church, and under his direction and from his drawings it will be rebuilt and restored. Two of the five-light windows at the east end will be filled with stained glass by O'Connor,—the gift of Mr. Williams, the lay rector.

Cranborne.—A new chancel is being erected at the parish church of Cranborne, and the Marquis of Salisbury will bear the whole expense of the work.

Middlesbrough.—On the 20th ult. the corner-stone of the new church of All Saints, Linthorpe-road, Middlesbrough, was laid by Mr. W. R. I. Hopkins, of Greytowers, near Nunthorpe. The edifice will be the most costly of any yet erected in Middlesbrough or the district. The plans provide for a cruciform structure externally of stone and internally of red pressed bricks, embracing nave, north and south aisles, transepts, chancel, chancel aisles, and tower and spire 236 ft. high. The tower and spire will cost 3,000*l.*, and it has been agreed to defer this portion of the work for the present. The church will furnish sitting accommodation for 772 persons, all on the ground floor. The contract has been let to Messrs. Simpson & Baker, of London, for about 7,800*l.*, but this does not include seating, heating, lighting, or the tower.

DISSENTING CHURCH-BUILDING NEWS.

Padgate.—The new Wesleyan chapel, which has been built on a site given by Mr. William Bennett, near the Padgate Railway Station, was opened on the 5th ult. The foundation-stone was laid by Mrs. Samuel Rigby, on April 30th, 1874. The chapel has been laid out to seat 200. There is, in addition, a schoolroom about 30 ft. by 20 ft.; a vestry, the dimensions being 13 ft. by 10 ft., with organ-chamber, and space for a boiler-room. At the east end of the chapel there is a chancel, with a stained window, and at one side of the chancel an archway opening into the schoolroom, which has been filled in with a screen of pitch-pine and glass, so arranged as to be thrown open in case of necessity. The whole of the pews are of pitch-pine, and of modern description. The architect was Mr. C. O. Ellison, of Liverpool, and the builders were Messrs. Gibson, of Warrington.

Spennymoor.—A new Wesleyan chapel has been opened here by the Rev. Dr. Punshon, president of the Conference. The building, which is situate close to the Tudhoe Grange Market, is from plans by Mr. W. Ranger, of London, and is 100 ft. long by 50 ft. wide, and capable of seating about 900 persons. The cost was 3,500*l.*

Darwen.—The foundation-stone of a Primitive Methodist chapel and school has been laid in Over Darwen, by Mr. John Walmsley. The cost of this new edifice is estimated at 3,500*l.*, and the style of building chosen is Gothic. When finished it will accommodate about 700 persons.

Barnton.—The foundation-stones of a new Wesleyan Methodist Chapel and schools have been laid here. The building will be 65 ft. 6 in. by 38 ft. 6 in. The style of architecture is Gothic, of the geometrical period. The ceiling will be vaulted with all the principal roof timbers stained and varnished and open to view. The materials to be used are red bricks, with other colours in band sparingly introduced, and Manley stone dressings. The general arrangements of the chapel are:—A vestibule laid with encaustic tiles, with vestry on one side, and a circular staircase to the orchestra on the other. The entrance to the chapel from the vestibule will be by two side doors. The seats will be open and low-backed. The framing will be pitch pine, filled in with red deal, and varnished. Over the vestibule, with a flat round front, will be a gallery for the organ and choir; and on the ground floor will be a rostrum and communion of polished mottled pitch-pine. At the other end of the chapel will be the school-room, with heating-cell underneath. Over the school will be a children's gallery, opening to the chapel by a Gothic arch. The chapel is designed to seat 350 persons, and will be heated by hot-water apparatus. The contract is let to Mr. W. Leicester, builder, of Northwich; and the plans and specifications are the free gift of Mr. H. J. Bennett, of Northwich. The cost will be about 1,300*l.*

West Bromwich.—On the 26th ult. the new Unitarian Chapel in the Lodge-road was opened for divine worship. The need for a place of worship had long been felt by the Unitarians, and a year or two ago they resolved to build a chapel on the above site. The new chapel, which is in the Early English style of architecture, is built of red brick, with stone dressings, and is covered with ornamental tiles. The front gable is surmounted by a gable turret and cross, beneath which are five pointed lights, divided by stone shafts with moulded capitals and bases. Each side of the building is lighted by five pairs of trefoil-headed windows. The roof is partly open, and is supported by circular moulded timber arches, carried on stone corbels. There is a recess at the end, in which stands the pulpit, and over that is a moulded stone arch carried on stone shafts and corbels. Behind the pulpit is a circular traceried window, filled in with stained glass—the gift of the architect. The fittings are of varnished deal, and the chapel is capable

of seating 200 persons. Mr. A. B. Phipson (Birmingham) was the architect; and Messrs. Stockton & Son (Oldbury) the builders. The cost is estimated at about 1,600*l*.

ON NEW MATERIALS AND RECENT INVENTIONS CONNECTED WITH BUILDING.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

AN ordinary general meeting of the session was held last Monday evening, the 24th inst., under the presidency of Sir Gilbert Scott, when the following gentlemen were elected:—Mr. W. Parslow, Fellow; and Messrs. J. Clarke, J. Neale (Pugin student, 1875), S. J. Newman, and J. H. Robinson, Associates.

Mr. T. Roger Smith then read a paper, entitled "New Materials and Recent Inventions connected with Building." In the course of his observations, he said that the subject was necessarily full of details, and the first remark that would occur to most observant men was, that the building art, as conducted in England at the present day, presented fewer novelties than almost any others of the leading technical processes. Steam, electricity, and the progress of mechanical inventions and chemical research, had revolutionised most of the great divisions of human industry; and, in a hundred instances, the craftsman had a constantly increasing series of new substances placed within his reach by the scientific discoverer. Building, compared with such matters as locomotion, the manufacture of clothing, or the transmission of intelligence, was an art which had changed wonderfully little; so little, indeed, that he was sometimes tempted to believe that there still remained open to some inventive genius among themselves the possibility of effecting something like the revolution which Arkwright commenced for textile fabrics, when he applied steam-power to spinning. It was, of course, natural to say that it could not be done; but the same thing might have been said before-hand of all the great steps which handicrafts had taken, and they might, Mr. Smith believed, do worse than entertain very seriously indeed the possibility of adopting machinery, mechanical processes, and novel combinations of materials to building, on such a scale and in such a way as to cheapen the cost of simple plain structures to a great extent. If, however, a wholesome transformation,—such, for example, as would be effected were they prepared to abandon brickwork for concrete and slates for felt,—was not within their reach, there were available for use no small number of inventions, in which the progress of contrivances and discovery had told upon the resources at the builder's disposal, and it was some of these which he was about to consider. Granted, then, that there existed a certain number of novelties, his second preliminary observations must be directed to the position which the architect ought to take with regard to them. It might be said that the architect, as the skilled, cultivated, and trained director of the work, was bound to know what was going on, to make himself familiar with the latest improvements, and to give his clients the benefit of his knowledge. In short, he was to be abreast of the building art in his own day, and was to show that he was solely making himself acquainted with each capital invention as it came out, and to embrace every opportunity of using it. An architect ought to make himself familiar with all the new inventions, and ought to neglect no advantage offered by them; but he had no business to try experiments at a client's expense. Their first duty as architects was to secure that their buildings should answer their purpose, and that trying experiments in them was not justifiable except under conditions which either rendered failure impossible, or, at least, would shift the entire responsibility on to other shoulders. With regard to the inventions worth notice during the past few years, the first he would refer to were new or revived materials. Of these the most important by far were iron and glass. The modern application of both to building had been well known to them for a quarter of a century. In fact, ever since the Exhibition building of 1851 showed how rapidly and cheaply vast structures of iron and glass (the ironwork being chiefly cast) could be erected, and how great a claim they possessed. The leading principle upon which that building depended, and to which it owed both its architectural quality and its constructional success, was the continued repetition of a small number of well-considered forms. Every pane of glass was of one size, and so upwards as far as possible. Every column was of the same length, and every girder was of the same span. This principle was adhered to in the design of the Sydenham Crystal Palace; but it had been, in some other instances, overlooked. An iron and glass building was, no doubt, a very durable one, not very weather-tight, and the expense of its maintenance would be considerable; but nothing was in first cost so cheap, and for the purposes of large gatherings of people, nothing so appropriate. Treated in a different way, iron ribs, carrying some light filling-in, which might be glass or wood, had enabled them, when enormous spaces were enclosed, in a more permanent manner to roof them over. The great railway sheds, and such buildings as the Agricultural Hall, the British Museum reading-room, and the Albert Hall, were examples of buildings having iron roofs of prodigious span. These were buildings such as from time to time come within the ordinary scope of an architect's practice. It was very desirable for them to obtain a familiarity with the principles upon which these roofs were constructed, as, although it might be very wise to obtain upon them the assistance of an engineer, whose whole time was spent in working out the details of the ironwork, the architect would find that he was at a great advantage if he could design their general forms himself. All these applications of iron as a building material seemed, however, to shrink into insignificance before Mr. Scott Russell's Vienna cone; but this had been so recently described there by the inventor himself, that he need not do more than refer to it. In respect to other applications of iron to construction, as a contrivance, Phillips's girders were still tolerably new. These were built up by bolting two rolled iron joists together, and sometimes four such joists were combined with plates, in addition to their own flanges, into one large beam. Messrs. Moreland & Son, who were well known as skilled in the application of iron to building purposes, had contrived a description of fire-proof construction, in which they imbedded a kind of slight bow-string truss in the concrete, which they placed in between large girders. This construction was so far different from ordinary fire-proofing as to deserve to be mentioned. It was employed at the St. Pancras Hotel, and appeared to him to offer considerable advantages. With regard to selenitic mortar, the invention of General Scott, this mixture consisted of the ordinary ingredients of mortar, namely, lime and sand, though the sand was in larger proportions than usual, with the additions of a small quantity of gypsum (sulphate of lime), very intimately mixed with the lime. The Albert Hall was the first large building in which this material was employed; and the London School Board had latterly adopted it throughout their new buildings, and probably their architects might have met with varying results, considering the various builders who had worked for them. On a building of any magnitude, and under proper supervision, selenitic mortar would be found, he thought, to be a trustworthy auxiliary to the architect; but of the use of the same material for plastering he could not speak so fully. The adaptation of concrete to building walls, floors, and roofs, as well as the foundations, might fairly claim a moment's notice. Tall and Drake were names best known in connexion with it. As far as he was aware, the use of lime concrete, which involved walls, &c., of considerable thickness, had not been much pushed. Portland cement concrete, a stronger material, capable of being used as thin walls, and having the property of hardening very rapidly, was more commonly employed. He was not disposed to believe that much economy resulted from building in concrete, except where the work was very plain and straightforward, and when little was spent on subsequent finish, but there could be no doubt that a wonderfully strong and tenacious material was obtained, and probably where the foundation was questionable, the materials good, and the supervision during the progress of the work thorough, a stronger building was erected, and one more proof against attacks of weather than if brick was employed, and at a not great expense. Allied to concrete was artificial stone, and this, with the various panacea for arresting the decay of building stones, had of late retreated to some extent from the public view. It was happily very difficult indeed to make bad stone into good, and consequently most of the solutions and washes which had that for their object, had proved unsuccessful. Not that there were many of them which had a sound scientific basis, but the difference was very great between treating a specimen of stone in the course of a well-arranged laboratory experiment, and treating similar stone built into a wall, perhaps saturated with wet, and exposed to all the vicissitudes of the weather, in the rough way in which, on a scaffolding, even careful workmen would apply what they called chemical stuff, and they could not wonder that solutions, which were theoretically excellent, had often in practice failed to protect masonry. The artificial stone of Mr. Ransome was, he thought, the only material called artificial stone which held its ground; and Mr. Smith believed that under his more recent patents an excellent and durable substance had been produced, but in many cases, not at such a price as enabled it to displace natural stone for plain work. Where elaborate work had been required, this material had, he was informed, proved both economical and satisfactory. Another material which could often be adopted as an alternative material, was that very old form of brick known as terra-cotta, the use of which had revived to such an extent as to stimulate the manufacture. Although terra-cotta was not a new material in one sense, it was so in another, for it was only very recently that it had become possible to obtain it in such quantities, and of such varied quality that it could be readily adopted by the English architect. He who would employ terra-cotta must submit to a certain amount of limitation; he could not deal with it as freely as he could with masonry. Subject to certain conditions terra-cotta was an admirable material. When used in large quantities it was cheap, it was very durable, it could be obtained of beautiful colour and texture, it was the most appropriate material to employ along with brick, and it admitted of the introduction of great richness, and of the indefinite multiplication of a few pieces of artistically modelled work. Bricks themselves have not furnished of late years many really new inventions, but with regard to Pether's ornamental bricks, there was a variety available for use in surface decoration. These bricks had a pattern impressed on them, and being made of fine clay and well executed, had been often introduced lately into decorative work, and might with great advantage be more generally employed, as architects could readily design ornament appropriate to them. The various sorts of flooring and encaustic tiles were no longer new; indeed, they presented one of the best possible examples of a new building material becoming generally so adopted as in a few years to grow perfectly familiar. A tile of German manufacture was, however, introduced into this country a short time ago which had not yet become very generally known; it was in large slabs and rather delicate tones of colour seemed preferred, though very elaborate decorations had been executed in it. A comparatively new mode of employing tiles for the lining of rooms had been introduced by Messrs. Simpson, who had decorated the interior of many parts of Messrs. Spiers & Pond's Criterion in this manner. The tiles were placed together in their unglazed state, and a picture was painted upon them in suitable colours for firing. They were then taken asunder and put into the furnace, and then subjected to great heat and glazed. If this was successfully accomplished, the tiles could now be fixed against the wall of the room and present an absolutely indestructible decoration, which could be washed as often as it was needed, though from its high glaze it was not easily apt to catch dirt. Mosaic—the most ancient of all the arts of decoration—had a claim to be named amongst the revived processes, if not admissible as a new one. Another description of work approaching mosaic had lately been introduced to London—he alluded to marble mosaic. This work was executed to a large extent out of smallish irregular shaped fragments of the material, of two or three tins, so laid as to produce the general appearance of a mottled ground which give relief to a few portions of brighter colours executed in more valuable marbles. When well done, this sort of mosaic was very effective: it could be obtained at a very moderate price, and it might be expected to prove extremely durable. The building trade had not been revolutionised by the introduction of machinery, as other trades had been, and it was really only in one or two of its branches that anything approaching to innovation awaited them. A remarkable attempt to introduce machinery into this production of high art work was made when the machines by which the woodwork of the Houses of Parliament was roughed out were designed. These, he believed,

were now in the possession of Messrs. Cox & Son, and were still worked by them; but from various circumstances they did not seem to have become generally known or copied. Machinery for dressing stone had been again and again attempted, and had been employed with considerable success. The contractor for St. Thomas's Hospital had a series of machines at work, partly employed in sawing up the stone and partly in dressing it; and one or two stone-dressing yards exist, or did lately exist, where plain descriptions of work are performed by mechanical means. Joiners' work admitted of the application of machinery to a larger extent than masons' work, chiefly, if not solely, because it included so much repetition. In a first-class joiner's shop they now found a very interesting and complete series of machines working circular and cross-cut and ribbon saws; mortising and tenoning machines, moulding machines, what were called "general joiners," and other such inventions rendered it impossible to diminish the labour on joinery very largely. It was hardly necessary to describe these inventions at length; they might be seen at work in the establishments of large builders, and no one who had watched their operation could doubt their efficiency in all ordinary work.

A year or two back they were threatened with an importation of Swedish or Norwegian buildings, which, so far as their employment in this country was concerned, would be new buildings. He referred to timber dwelling-houses. The publicity given to Mr. Vicary's importation of a timber house, which he erected in Devonshire, turned attention to the possibility of building very roomy structures of wood at a low cost. He had no means of knowing how far this house had been copied, but it did not seem to have led to many such experiments, or some of them would have been pretty sure to become generally known. It was not easy to see why this build of house should not be followed in sheltered situations in this country. No doubt, careful examination would show that it had drawbacks; but for use as a country resort, a shooting-lodge, or a hunting-box, a timber house, properly constructed, ought to be fairly comfortable and cheap.

Mr. Hebb thought the indiscriminate introduction of inventions to the Institute was not desirable, unless there were some exceptional circumstances in connexion with them. He had been requested to explain the process of xylography, or printing on soft wood, the peculiarity of which appeared to be in the ink which was used, and by which a better impression was obtainable than had hitherto been produced. It was applicable chiefly to soft wood, but he had been informed by the inventor that it could also be used for hard wood.

Professor Kerr considered that the subject was one that the Institute of Architects ought to annually have a paper upon, as the public had complained so much of the want of knowledge on the part of architects of all the new inventions which affected their business. The only difficulty that occurred to him was in confining the subject to such a limit as to be disposed of in one night. Mr. Smith had stated that the building trade was making no progress, but he (Professor Kerr) contended that any one who could look back for twenty or thirty years and observe the condition of building, must testify that the progress in detail and in principle, in various erections, was very great. With regard to the use of iron and glass, he did not think that these materials were very beneficial for building purposes. They could not consider the Crystal Palace to be a great success as a building, but it was illustrative of building enterprise. His opinion was that the more iron and glass were used together, the more it would be seen that no permanent building could be constructed in those materials. The Vienna dome, he believed, was one of the most remarkable building inventions of the present time. Its marvellous simplicity was most striking, and he was of opinion that the students of construction would do well to consider the principles which were involved in that construction. With regard to Phillips's girders, he did not think that they deserved to be so lightly passed over. When they considered the manner in which these girders were constructed, with regard to its dispensing with riveting, he thought the invention very valuable, and deserved more attention. Referring to concrete, he stated that there was more in this material than most people believed. It was the only perfect wall. Brick walls and stone walls might be of various degrees of perfection, but concrete was perfect, as compared with both. Its only difficulties were in manipulating the concrete properly, and in making it weather-tight. With regard to terra-cotta, it had been used in two processes; one was exceedingly good, and the other exceedingly bad. He considered that a material which came in a rough state should be designed so as to accommodate it to the rough material; for if they trimmed the terra-cotta just before putting it into the oven and trimmed it again when it came out, they were using it in imitation of stone, which he did not consider proper; and he did not see why terra-cotta could not be handled in such a way as to be burnt in the form in which it was to be used.

Mr. Edmeston wished for further explanation with respect to the selenitic mortar, because he had tried it once or twice, and it had failed. As cement was very dear, it would be most advisable to use selenitic mortar in its stead, if it was possible; and he would like to know how long it would take to get hard, and other particulars with respect to its use. With regard to concrete walling, he had found that it was cheaper than brickwork, and was very durable; and it was quite new to him that the wet penetrated it, as he had considered it the dryest wall, and exceedingly strong. As to mineral asphalte paving, he did not think that there was any pure asphalte in use for paving in London. There had recently been asphalte employed for roofs, but not for paving. He then referred to two or three modes of paving which were not known in this country, but were in use in France. Another kind of asphalte, he said, was that in which thin tiles were employed, and, perhaps, the great merit of which was their elasticity. He had seen a sample of the tiles, and had been informed that they answered exceedingly well.

Mr. Cockerell believed that Mr. Edmeston was mistaken in considering that concrete was the dryest walling, as his experience had been that the water penetrated it.

Mr. Aitchison stated that on one occasion, when Professor Lewis was speaking at the Institute on concrete, he referred to a wall over 60 ft. in length that had been cracked, owing to the changes in the temperature, and the Professor also instanced a church in France, which had been built in concrete, which the weather had affected so much as to cause a large crack, which opened and shut at intervals. His (the speaker's) experience of concrete,—and he had used a great deal of it in wharfing walls,—was that it was pervious to water.

Mr. Hansard proposed that the further discussion on the paper should be adjourned until some future occasion.

Sir Gilbert Scott considered the subject so extremely interesting that he did not think it could possibly be discussed with any great advantage to the members in one evening. Almost every point connected with it required thinking over, and he considered, if there was an evening to spare, it would be advisable to discuss the paper then.

Mr. Eastlake having stated that the 7th of June was open, it was put to the meeting, and the resolution agreed to, that the further discussion would be resumed on that day.

SOCIETY OF FRENCH ARTISTS.

The tenth exhibition at the rooms in New Bond-street, which opened last week, is disappointing as compared with some of its predecessors. The death of Corot, who, for the last two or three years, contributed some great new works to it annually, has been a sad loss to the society. There are some very beautiful specimens of his work on a smaller scale exhibited: "The Wall of Corot's Garden, Ville d'Avray" (55), being perhaps the best, though "The Moat" and "River Scene, near Douai" (53, 54), contest the palm with it: the truth and beauty of tone and atmospheric effect in these little pieces are beyond praise, but they are slight in subject. Dupré is not well represented, and in his "Storm" (31) has gone beyond the limits of allowable dash of execution, and produced a kind of chaos of struggling pigments loaded on the canvas. Daubigny is at his best in artistic merit of execution in two tolerably large works, of which "A Normandy Orchard" is a fine specimen of a matter-of-fact and simple subject, rendered almost poetic by its vigorous and bold handling. There are some fine works by less familiar names; a very good one bearing the English name of Edwin Edwards, but entirely in the French school; the painter is, we believe, a resident in Paris for some time past; "Copper Smelting, Neath Abbey" (7), is the title of a work which gives what one may call the poetry of a manufacturing district,—a "black country," with a barge dropping down a canal on the right, painted with much power and concentration of effect. "Washerwomen," by Munkacsy (42), is an admirable work, comprising figures full of character and rough humour, kneeling over their work at a pool in the foreground, with a dark evening landscape behind, and a streak of sunset-light in the sky, which really looks like light, and seems to gleam on the canvas. Madame Marie Cazin's admirable works we always see with pleasure; "A Sussex Lane, Twilight" (18) is perhaps more powerful and more distinctly French in style than what she has previously sent; trees and houses rising from the foreground form a rather indistinct mass against the sky, with the faintest gleam of daylight behind; there is much poetry in the work, though we should not altogether wish to see the lady abandon her own characteristic style to assimilate too much with the prevalent dark painting of landscape, of which there is enough among her compatriots already. Troyon's large work, "The Shepherd's Dog" (22) seems cold and repelling in tone at first; but there is really something rather grand in the aspect of this rough but faithful guardian standing aloft above the flock on a bank, with a storm of rain impending in the rear; the contrast in point of interest between such a work and the everlasting "sheep and goats" receipts of certain English manufacture, speaks for itself. Roybet sends "The Chess Players," a couple of brilliantly clad rowdies sitting each astride of a bench which supports the chess-board between them; it has the painter's usual force of colour and execution, but does not interest us. Baron de Lyoncourt's "Bishop's Meadows, near Dol" (41) is a fine and glowing landscape; and Mrs. Alma Tadema makes a decided success in her brilliant little performance "Light and Shade" (14), a bright hayfield sparkling in the foreground, against the dark shadow on the opposite hill. De Nittis's lady "Skater" (3) is charmingly natural in action, as she comes swaying along to the front of the picture, and a very pretty girl too. A sharp contrast is presented by the "Ballet-dancer practising" of Degas (72), who seems to have taken up this line of subject—we noticed his *pas de deux* last year: here a girl of the most ordinary type, dressed in her theatre costume, is practising before a glass, the corner of which just cuts into the angle of the foreground; the artist has shown in repulsive reality the low type of features, the scraggy neck, thin arms, and overdeveloped legs; it is a merciless *exposé* of the reality which underlies the paint and glitter of a very unintellectual form of entertainment: the work points a moral, whether intentionally or not.

The upper room, where may be noticed a very delicately-toned and beautiful figure of a "Lady knitting," by Alfred Stevens, and a "Bull-fight," by Fortuny, in a style which may be called clever and impudent, is mostly taken up with works, including sketches and studies, by Legros, who is apparently tired of being "skied" at the Academy, and has concentrated his forces here. We think his "Pilgrimage" has been exhibited before in London: it is a work of high merit. His other large one, "Chantres Espagnols" (in the lower room), has hardly interest enough for the canvas. His two landscapes, "Le Canal" and "Les Bûcherons," show another phase of this artist's talent; the former is a very beautiful work, and very original both in composition and tone. Some of his small pencil and "*eau-forte*" studies of figures and effects are admirable, and should have attention, as the work of an able foreign artist who has not received the recognition among us which his exceptional abilities deserve.

A Memorial Pulpit, Mildenhall.—At a meeting of the committee in connexion with the fund to be raised with a view to perpetuate the memory of the late Mr. James Read, of this place, held at the Manor House on the 14th inst., it was unanimously resolved that a pulpit, to consist of oak, marble, and stone, after a design shown by Mr. J. D. Wyatt, architect, be selected as the subject of the memorial to be placed in the parish church of Mildenhall, where he acted as vicar's churchwarden for upwards of half a century.

THE ANT NUISANCE.

THE letter from "J. D." on this subject, printed in our last issue, reached us late, and we had not time to add any observation. We may now point out to the writer that various remedies have been suggested in our columns from time to time, and that, in especial, communications bearing on the subject will be found in vol. xxx. (1872), pp. 752, 769, 791, 810, 824, 851.

SOUTHOWRAM SCHOOL BOARD SCHOOLS.

THE competition for these buildings has resulted in the acceptance of the designs submitted by Messrs. Holtom & Connon, of Dewsbury.

THE TENDERS FOR THE ARLESEY SCHOOLS.

SIR,—As my name appeared in the professional journals as having taken out the quantities for the Arlesey Board Schools, the tenders for which have received so much notice as to evoke the poetic muse of the *Bedfordshire Express*, I should like to state that I cannot account for the astounding difference in the tenders. There were no speculative items, such as old materials, to credit, or making good to adjoining premises. The whole was plain and straightforward; and what renders the matter still more strange, I know as a fact that two of the builders went carefully through the drawings and specifications to make a rough estimate, independently of the quantities, one of whom appeared near the top, and the other near the bottom of the list.

HENRY LOVEGROVE.

SURVEYORS' LIABILITIES.

FRESHNEY *v.* BEVERLEY.

THIS case, heard at the Louth County Court, last week, was one in which plaintiff, the Vicar of Skidbrook, sued defendant, who is surveyor of the highways for the parish of South Cockerington, for the sum of 5*l.* for damages done to a vehicle belonging to plaintiff, by coming into contact with some large stones, which, it was alleged, had been placed on the highway in South Cockerington, by the servants of defendant, for whose acts he was supposed to be responsible.

The Judge said there was no doubt that an action could not be sustained against a surveyor for the non-repair of roads, the parish must be held liable for that. Although this is undoubtedly clear, yet he may become personally liable for wilful negligence or carelessness in placing, or allowing to be placed, an obstruction on the highway. His being a parish surveyor would not protect him more than any other person from the consequences of such an act. The placing of those large stones on the highway was clearly a piece of negligence. The question then remained: were those men who were employed on the roads the servants of the parish or of the surveyor? If the surveyor had contracted to keep the roads in repair, the men employed would have been his servants, and he would have been responsible for their acts, but such was not the case, and it appeared to him that they were the servants of the parish as much as the surveyor was. The verdict would therefore be for the defendant, with costs.

MASTERS AND MEN.

HOLDSWORTH *v.* COLLS.

IN this case, at the Woolwich County Court, before Mr J. Pitt Taylor, Judge, Mr. Whale appeared for the plaintiff, who was a bricklayer. The defendant was represented by Mr. Henry, one of his *employés*. It was an action to decide whether the bricklayers in this neighbourhood are entitled to 7d. or 8d. per hour.

The plaintiff said he entered the defendant's service on March 9th as a bricklayer, and worked 32½ hours, and was paid on Friday at the rate of 7d. per hour, the current rate of bricklayers' wages being 8d. per hour.

James Parker, secretary of the Woolwich Branch of the Bricklayers' Trade Union, said that in May, 1873, the master builders on this side of the water agreed to pay not less than 8d. per hour, and, for some kinds of work, 8½d. and 9d. He himself was receiving 8½d., and was not aware that any one was taking as low as 7d.

George Jury, foreman of buildings at Siemens's Telegraph Works, said he frequently employed bricklayers, and paid them 8½d. and 9d. per hour.

Mr. Hutchinson, foreman to Messrs. Colls & Sons, Camberwell-road, and contractors in the Royal Arsenal, said he took plaintiff on as a bricklayer. Nothing was said about wages, it being understood that he entered on the work the same as the others, to be paid according to his merits and skill. Witness produced the wages book to show that the firm paid 7d., 7½d., and 8d. They did not recognise Town or any uniform rate of wages. In reply to the Judge, witness said that the rate of wages in the Arsenal was lower than most other places. They employed 130 men, about a fourth of whom were in the lower class of pay. The plaintiff was employed on a plain wall, requiring no skill.

The Judge said that the plaintiff was perfectly at liberty to get any wages he could, and he could, if he had liked, have ascertained beforehand the rate, it being perfectly well known amongst the men what the firm paid. He could also have ascertained whether he was going to be put in class 1, 2, or 3, and could have said, "I shan't come in, or do one stroke of work unless I have 8d. an hour"; but he had not done this, and he therefore gave judgment for the defendant.

Isfield Church, Brighton.—Messrs. Cheesman & Co., of Brighton, builders, have the contract for restoring this place of worship. The total cost is estimated at 1,700*l.* or 1,800*l.*, the greater portion of which has been already subscribed.

Books Received.

A Grammar of Colouring. By G. FIELD. New edition, revised. London: Lockwood & Co.

THIS is one of the re-issues which are being made of a good many of the original treatises comprised in "Weale's Series"; the "Grammar of Colouring" being that of Field, re-edited, with additions, by Mr. Ellis A. Davidson. Field's treatise must not be confounded with his well-known one on colour in the wider sense; the present treatise being an entirely practical one, on the varieties and qualities of the pigments used in colouring, and the media and (to some extent) the processes of manipulation employed. A good deal of what is included under this latter head is supplied by the editor, who gives directions for the preparation of paper, canvas, and other materials for painting on, the choice and use of brushes, &c.; and also a chapter on the characteristic features of the various styles of ornament; the latter, however, is only of an empirical nature, and not intended, probably, to do more than give a general notion of the matter to decorative painters. Otherwise the book is a most useful *resumé* of the properties of pigments, one for reference rather than reading. In re-editing, however, it should have been pointed out that the old division of primary and secondary colours (which, as far as pigments are concerned, is the practically correct one) can hardly be alluded to now without at least a reference to the newer theory on the subject evolved by Professor Church and others, from the study of the combinations of coloured rays, instead of pigments, and in which green usurps the former place of yellow as a primary. The point is of more theoretical than practical importance, certainly; but the results arrived at in Professor Church's experiments are too striking to be passed over in any book in which the subject is touched upon.

VARIORUM.

MR. SERJEANT COX'S Inaugural Address at the first meeting of the Psychological Society in April last has been published (Longmans & Co.), and will be read by many with interest. Serjeant Cox is giving much consideration to a recondite and important question.——"The Crystal Palace District Handbook and Directory (Clark & Son, Sydenham)" includes an elaborate and very interesting account of "A Ramble Round the Crystal Palace," by Mr. T. C. Noble. It gives a large amount of information.——The "Saturday Half-holiday Guide," at 3d., is remarkably well done, and might be usefully circulated by all who are anxious that the half-holidays now at the disposal of large numbers of persons should be profitably and pleasantly spent.——Parts 108 and 109 of "Cassell's Illustrated History of England" contains such an interesting and valuable sketch of the Progress of British Industry, &c., during recent years, that it might be usefully reprinted in a separate form. It is understood that it was written by Mr. Joseph Dare, a name we have before now had occasion to mention.——May's "British and Irish Press Guide for 1875" is useful for advertisers, and includes some carefully compiled statistics as to periodical publications which are very interesting.

Miscellanea.

Windsor Sanitary Authority.—A special meeting of the Sanitary Authority was held on the 18th inst. for the purpose of affixing the common seal of the Corporation to the contract for the drainage works and other documents. A resolution was passed directing the seal to be affixed to the contracts and some other document. It was resolved that the 10,000*l.* to be lent by the Public Works Loan Commissioners should be paid to a deposit account, in the names of the treasurer and mayor for the time being, and the common seal was ordered to be affixed to the mortgage securing that sum.

Liverpool Builders' Dispute.—The dispute between the plasterers and the master builders of Liverpool has been settled through the mutually appointed umpire, Mr. Lawrence R. Baily, of the Temple, Dale-street, who has awarded the men ½d. per hour in advance of their former wages, the hours of working to remain the same as at present. This increase in wages commenced from the 1st inst.

Railway Fete at the Crystal Palace.—A railway fête is announced to take place at this popular place of amusement on Wednesday, June 16th. In addition to other special attractions, there will be an interesting exhibition of models, appliances, inventions, sketches, plant, and portraits illustrative of railway history. Excursion trains will run from all parts of the kingdom. Tickets, one shilling each, may be obtained at the stations, and each ticket purchased will aid in benefiting the Railway Benevolent Institution, for railway servants disabled by old age or accident, and the widows and orphans of those who may be left in distressed circumstances. Inventors and others having models, or designs for stations and other railway works, for exhibition, are invited at once to apply to the General Manager of the Crystal Palace Company.

Conference of Yorkshire Mechanics' Institutes.—On the 21st inst., the annual conference of the Yorkshire Union of Mechanics' Institutes was held at Wakefield, 32,000 members being represented. The delegates were received by the Mayor and Corporation in the saloon of the Corn Exchange, and walked in procession to the Mechanics' Institute, where Mr. Edward Baines presided, and delivered the opening address. A letter from M. Chevalier was read, in which he expressed an opinion that of all the organisations founded by the English nation these were the most worthy of admiration and the most useful. At the evening meeting, Mr. Stansfeld, M.P., presided.

Reading Town Council.—On Monday last a meeting of the Corporation was held in the late Free School for the purpose of affixing the common seal to a mortgage of the general district rates to the Public Works Loan Commissioners, for securing the sum of 10,000*l.* for the purchase of land for the utilisation of sewage; and also to affix the seal to an instrument of appointment of Mr. Henry Cooper as arbitrator in the matter of the claim of the executors of the late Mr. R. L. Sims for compensation for damage occasioned to houses in Ort's-road, by the laying of the sewer and rising main along the Kennet towing-path.

International Public Health Congress and Sanitary Exhibition.—The Council of the Social Science Association has been invited to co-operate with the promoters of a proposed "Exposition Internationale et Congrès d'Hygiène et de Sauvetage," to be held in Brussels in 1876, under the auspices of the King of the Belgians and the presidency of the Count de Flandre. The Exhibition will be solely for the collection of all sorts of apparatus and appliances for the prevention of accidents and the saving of life, the Conference to discuss subjects of a sanitary nature appertaining thereto. The Council has referred the subject to the consideration of a committee.

Failure at Leamington: — Mr. James Hewett, of Dormer Villa, Leamington, has filed his petition in the Warwick County Court. The debtor has been engaged in building speculations at Leamington for some time, and also carried on business as a brickmaker. His liabilities are large, and make the stoppage one of the heaviest that has occurred in Leamington for many years. It is roughly estimated that the total sum will exceed 40,000*l.* In the list of creditors are eleven at Wolverhampton, representing 15,800*l.*

Destruction of an Iron Church by Fire. A destructive fire has occurred at the Iron Church of St. Mildred, Burnt Ash-lane, Lee, Kent. The building was about 100 ft. long and 50 ft. wide. The fire-engines of Lee, Lewisham, and Blackheath shortly arrived, but in spite of every exertion the church was entirely destroyed. What are called iron churches, and such, indeed, as are constantly licensed by the Metropolitan Board of Works as temporary structures, are a mere delusion and a snare. They would be more rightly called wooden churches. When once alight they burn like a bundle of firewood.

New General Post-Office for Shrewsbury. Government having purchased the Old Butter Cross, for the erection thereon of their new General Post-Office for Shrewsbury, the plans, which number fourteen or fifteen, now lie at the Post-Office for the use of those who intend tendering for the work. Twelve months are given for the completion of the buildings, under a penalty of 40*l.* per week. The building will be of Staffordshire red brick, relieved with Grinshill white stone facings.

Very Proper.—At the meeting of the South Stockton Local Board, on the 20th inst., plans for the erection of a wooden shop in Thornaby-road, for Mr. Ralph Wheatley, were rejected, as also were plans for twenty-six wooden houses, proposed at the last meeting to be erected on the land at the corner of Mandale-road and George-street, for Mr. Richard Alderson, and which, after a brief discussion, were rejected, on the ground that they were objectionable, and considered dangerous in case of fire breaking out in their immediate neighbourhood.

The Memorial of Lord Tredegar.—At an influential meeting of gentlemen of Monmouth and Glamorgan, held at Newport, on Thursday, under the presidency of the Duke of Beaufort, it was resolved that the proposed memorial to the late Lord Tredegar should take the form of a corn exchange, to be erected at Newport, with a statue or bust of the late noble lord over the entrance. The subscriptions already amount to 700*l*.

New Schools in Birmingham.—The Sites and Buildings Committee of the Birmingham School Board, on the 21st inst., reported that they had examined the tenders for the erection of the boys' and girls' departments of the schools in Dartmouth-street, and they recommended the acceptance of the one sent in by Messrs. Horsley Brothers, who offered to do the work for the sum of 6,381*l*. The committee's recommendation was adopted.

Laying a Foundation-stone at Lockerbie. The foundation-stone of the new Established Church for the parish of St. Mungo was laid by Master William Jardine, son of Mr. R. Jardine, Castlemilk. The building will accommodate 400 sitters, and is estimated to cost 5,000*l*. It is to be built at the sole expense of Mr. Jardine, of Castlemilk, who has likewise presented the site on which it stands.

The Late Mr. Walesby.—Readers of the *Builder* will remember many communications on the subject of Bells signed Thos. Walesby, but will see no more. Mr. Walesby died a few days ago at Collingtree, Northamptonshire. His knowledge of music and bells was considerable, and his enthusiasm on the subject great.

The New Church, Rowfant.—The following tenders have been received for Lady Lampson's new church:—

How & White	£3,370 16 0
Newman & Mann	3,100 0 0
Rowland	2,894 0 0
Steer	2,753 0 0
Shearburn	2,712 0 0

British Archæological Association.—We understand that the Marquis of Hertford has been elected president, and the annual Congress will be held at Evesham, in the second week in August. There is a numerous and influential list of vice-presidents, and a good working committee are arranging details.

Patents for Inventions Bill. — Petitions *against* the Bill have been presented to the House of Commons by a number of important bodies, and we believe no petition has been presented in favour of the Bill. It is not a satisfactory Bill, and this is the opinion generally entertained by those who understand the matter.

Loftus Oddfellows' Hall.—The new Oddfellows' Hall, at Loftus, the capital of East Cleveland, was formally opened on Whit-Monday. The hall is situated on the south side of the main thoroughfare, and was erected by Messrs. Dickenson & Walker, at a cost of about 1,200*l*.

London Temperance Halls Committee. The foundation-stone of the first hall, in Blackfriars-road (between the Surrey Theatre, and Peabody's-buildings), was laid by Alderman McArthur, M.P., on Thursday, the 27th instant.

The Durham Painters.—The masters have acceded to the demands of the men, and the wages will in future be 7d. an hour instead of 6d., and the working hours 53 per week instead of 54.

Liverpool Art Club. — This club, which makes the Burlington Art Club its prototype, has just now on view an interesting exhibition of works of art in illustration of Dutch, Flemish, and Belgian art, catalogued with intelligence.

Public Lighting in St. Pancras.—The report of the chairman of the Lighting Committee (Mr. Thomas C. Jones) states that the actual saving *per annum* by the meter system amounts to 2,175*l*.

TENDERS

For the erection of four cottages, Sanford-lane, Stoke Newington, for the Incorporated Society of Licensed Victuallers. Messrs. Nunn & Green, architects:—

Hanley	£1,650 0 0
Grimwood & Sons	1,430 0 0
Wagner	1,328 0 0
Pickersgill	1,300 0 0
Cole	1,290 0 0
Heyworth	1,280 0 0
Lamble	1,143 0 0

For alterations and additions to Irondale, Church-street, Brompton, for Mr. W. S. Allen. Mr. F. A. Dovey, architect:—

Wagner (accepted)	£1,029 0 0

For warehouse, Farringdon-road. Mr. J. Wimble, architect:—

		If Piers in brick instead of stone, deduct
Dove, Brothers	£9,975	£250
Coleman	9,749	230
Brass	9,397	175
Scrivener & White	8,990	134
Mortar	8,842	143
Newman & Mann	8,835	137
Killby	8,827	170
W. & F. Croaker	8,813	249

For partly rebuilding premises adjoining Queen Victoria-street, for Mr. P. B. Hall. Mr. Walter Graves, architect:—

Fisher	£365 0 0
Hook & Oldrey	350 0 0
Lidstone & Son (accepted)	295 0 0

For the erection of slaughter-houses at Islington Cattle-market, for the corporation of the City of London. Mr. Horace Jones, architect. Quantities supplied by Mr. W. Reddall:—

Philps & Bisiker	£18,323 0 0
Carter	18,319 0 0
Killby	16,396 0 0
Williams & Son	16,312 0 0
Patrick & Son	16,241 0 0
Patman & Fotheringham	16,192 0 0
Conder	16,622 0 0
Holland & Hannen	15,448 0 0
Trollope & Sons	15,357 0 0
Elkington	14,728 0 0
Mortar	14,673 0 0
Perry & Co. (accepted)	14,654 0 0

For rebuilding premises for Mr. Henry Vickers, 317, Strand. Messrs. J. & S. F. Clarkson, architects. Quantities supplied:—

Howard	£8,740 0 0
Bywater	8,313 0 0
Nightingale	8,183 0 0
Patman & Fotheringham	7,775 0 0
Scrivener & White	7,700 0 0
Macey	7,533 0 0
Elkington	7,394 0 0

For building warehouses, High-street, Wapping, for Messrs. Middleton & Co. Mr. Charles Dunch, architect. Quantities supplied by Mr. G. P. Raggett:—

Jackson & Shaw	£9,655 0 0
Bayes & Ramrage	8,557 0 0
Macey	8,198 0 0
Browne & Robinson	8,174 0 0
Killby	8,052 0 0
Elkington	7,800 0 0

For new warehouse at St. George's Mills, Hoxton, for Mr. James Austin. Mr. H. J. Hammon, architect. Quantities by Mr. Alfred L. Buzzard:—

Heiser	£2,907 0 0
Elkington	2,695 0 0
More and Nixon	2,660 0 0
Merritt & Ashby	2,400 0 0
Crabb	2,275 0 0
Brown & Sons	2,249 0 0
Hunt (accepted)	2,209 0 0

For additions to resident manager's house at the gas-works, Lea Bridge. Mr. E. H. Thorman, architect:—

Bangs & Co.	£646 0 0
Mark	645 0 0
Rivett	629 0 0
Reed (accepted)	610 0 0

For cellarage to the West London Brewery. Mr. A. J. Rouse, architect:—

Turner & Enderson	£770 0 0
Stephenson	700 0 0
Brindle	579 0 0
Lose (accepted)	550 0 0

For building new sanitorium at St. Peter's Orphanage, Isle of Thanet, for Mrs. Tait. Mr. J. P. Seddon, architect:—

Belham & Co. (accepted)	£1,725 0 0

For the erection of five houses, the conversion of school-buildings into two dwelling-houses, and repairs to existing house, at Grays, Essex, for Mr. David Hodge. Mr. Frederick Thomson, architect. Quantities by Mr. Walter Barnett:—

Aitchison & Walker	£3,092 0 0
Wenmouth & Co.	2,891 0 0
Blake	2,820 0 0
Warr	2,737 0 0
Higgins	2,717 0 0
Philbey	2,499 0 0
Purkiss	2,430 0 0
Ford	2,295 0 0

For rebuilding No. 11, Henrietta-street, Covent-garden. Mr. J. Wimble, architect:—

Scrivener & White	£5,299 0 0
Newman & Mann	5,256 0 0
Coleman	5,217 0 0
Bayes & Ramage	5,150 0 0
Laurance	5,149 0 0
Falkner	5,093 0 0
W. & F. Croaker	5,043 0 0
Killby	4,875 0 0

For rebuilding No. 148, Holborn. Mr. J. Wimb architect:—

		Old Material.
Scrivener & White	£3,933	£35
Hoare & Son	3,911	30
Falkner	3,895	40
W. & F. Croaker	3,727	100
Stoner	3,675	85
Bayes & Ramage	3,666	60
Mortar (net)	£3,637	

For a new drawing-room at Cumberland House, East Southsea, for R. J. Marrell. Mr. G. Rake, architect:—

Cooper	£674 0 0
Roberts	665 0 0
Burbidge	650 0 0
Ward (accepted)	637 0 0

For the foundations and footings of a Lunatic Asylum, for 450 patients, for the Mayor and Corporation of the borough of Portsmouth. Mr. G. Rake, architect:—

Burbidge	£4,943 0 0
Cooper	4,435 0 0
Barnes	4,300 0 0
Ward	4,250 0 0
Cook	4,170 0 0
Light	4,120 0 0
Quick	4,090 0 0
Hayter (accepted)	3,896 0 0

For erecting and completing three shops and houses, with stable and coach-house in rear, in Mare-street, Hackney, for Mr. J. C. Davis. Mr. Henry Shaw, architect:—

Plowman	£3,187 0 0
Harper	2,790 0 0
Outhwaite & Son	2,743 0 0
Tulley	2,644 0 0
Stamp & Boutell	2,643 0 0
Ennor	2,592 0 0
Lewis	2,500 0 0
Tulley	2,497 0 0
Boyce	2,490 0 0
Stoner	2,359 0 0

For alterations to market-buildings, for Monmouthshire Beacon Offices. Mr. R. W. Vaughan, architect:—

Lawrence (accepted)	£295 0 0

For rebuilding Nos. 1 and 2, Coburg-place, Hastings, and for repairing and improving Nos. 3, 4, and 5, adjoining, for Mr. W. Williams. Messrs. Cross & Wells, architects:—

	Wood			Plumbing, Painting, and Glazing.
Wood	£2,040	0	0	£333 0 0
Howell & Son	1,895	0	0	279 0 0
Parks	1,880	0	0	281 10 0
Geary	1,880	0	0	287 0 0
Vidler	1,876	0	0	270 0 0
Stenteford	1,851	0	0	268 0 0
Womersley	1,849	0	0	290 0 0
Longhurst (accpt.)	1,834	0	0	262 0 0
Poole	——			340 0 0
Brown (accepted)	——			245 0 0

For the erection of twenty-two cottages in Chestnut-avenue, Forest-gate, Essex, for Messrs. Sanders, Newman, & Roberts. Mr. Edward Brown, architect:—

Marr	£5,346 0 0
Eaton	5,250 0 0
Favitt	4,795 0 0
Ennor	4,734 0 0
Judd & Hawkings	4,122 0 0
Beale (accepted)	3,872 0 0

For alterations and additions to the Royal Oak, Columbia-street, Bethnal-green, for Mr. B. Hyams. Mr. Edward Brown, architect:—

Impey	£1,370 0 0
Eaton	1,345 0 0
Marr (accepted)	1,237 15 0

For alterations and additions to the Greyhound, Old Ford-road, for Mr. C. Mees. Mr. E. Browe, architect:—

Allen	£150 10 0
Loaring (accepted)	140 0 0
Impey	324 0 0

For alterations and repairs to No. 40, Bishopsgate-street Within, City, for Mr. G. S. Brutton. Mr. W. H. Gathercole, architect:—

Merritt & Ashby	£425 0 0
Maxwell, Brothers	273 0 0
Cohen	260 0 0
Banks (accepted)	230 0 0

For Cottage Home Penitentiary at Basingstoke, diocese of Winchester:—

Musselwhite	£1,580 0 0
Foster & Son	1,404 0 0
Pool	1,341 0 0
Davis & Stepens	1,193 0 0

For additions to Warrior House, Warrior-square, St. Leonard's. Messrs. Fowler & Hill, architects. Quantities by Messrs. Fowler & Hayman:—

Cruttenden	£992 0 0
Rodda	889 0 0
Watts	589 13 0

For Methodist Free Chapel and Schools, Bruce-road, Bow. Mr. F. Boreham, architect:—

Newman & Mann	£3,525 0 0
Perry & Co.	3,497 0 0
Catley	3,425 0 0
Mortar	3,299 0 0
Palmer	3,290 0 0
Nightingale	3,283 0 0
Niblett & Son	3,259 0 0
Watts	3,249 0 0
Ennor	3,198 0 0
Cullum	3,196 0 0
Bangs & Co.	3,180 0 0
Johnson	3,160 0 0
Hearle & Son	2,993 0 0
Sheffield (accepted)	2,975 0 0

For the erection of stabling, &c., Brentford, for Messrs. T. B. Rowe & Co. Mr. John W. Smithies, architect:—

Beauchamp	£329 0 0
Brunsden	320 0 0
Hiscock	289 0 0

For whitewashing, colouring, cleaning, &c., to the Bethnal-green Workhouse, for the Guardians of St. Matthew, Bethnal-green. Mr. William Mundy, architect :—

Stamp & Boutel	£397	0	0
Chessum	296	0	0
Hearle & Son	380	0	0
Judd & Hawkins	373	0	0
Brown	363	0	0
King & Son (accepted)	235	0	0

For whitewashing, colouring, cleaning, &c., and for the erection of lavatories and W. C.s, at the Children's Schools, Leytonstone, Essex, for the Guardians of St. Matthew, Bethnal-green. Mr. William Mundy, architect :—

King & Son	£329	0	0
Chessum	645	0	0
Stamp & Boutel	599	0	0
Arber	570	0	0
Thomason	533	0	0
Judd & Hawkins	520	0	0
Hearle & Son (accepted)	317	0	0

For additions and alterations to Brock Hall, near Leominster, for Mr. J. Jackson. Messrs. Haddon, architects :—

Page & Son	£1,030	0	0
Smith (accepted)	895	0	0
Cox	845	0	0

For new offices &c., at Leominster, for Mr. C. D. Andrews. Messrs. Haddon, architects :—

Smith	£1,230	0	0
Edwards	1,150	0	0
Cox	1,120	0	0
Hine	1,100	0	0
Davis (accepted)	1,100	0	0

For new villa residence at Great Malvern, for Mr. H. B. Clarke. Earthwork, drainage, roads, laying out grounds, grates, chimney-pieces, and fittings, not included. Messrs. Haddon, architects :—

Kendrick	£2,276	5	0
Collins & Cullis	2,192	0	0
Bowers	2,124	0	0
Porter	1,985	0	0
Niblett	1,963	0	0
Everal	1,949	0	0
Mills	1,780	4	0
Osborn	1,780	0	0

For alterations and additions to Marsh Hall, near Ludlow, for Mr. William Hall. Messrs. Haddon, architects :—

Lewis	£985	0	0
Davis (accepted)	964	0	0

For additions and alterations to Norden Hall, near Leominster, for Mr. E. C. Scarlett. Messrs. Haddon, architects :—

Smith	£1,060	0	0
Davis (accepted)	1,000	0	0

For additions to the school-house, Malvern College, giving additional accommodation for fifty-four boys, for the Right Hon. Earl Beauchamp. Exclusive of heating-apparatus, circulating-pipes, cooking-ranges, &c. Messrs. Haddon, architects :—

	If cloisters are omitted.	
Wood & Sons	£8,997	£8,527
Collins & Cullis	8,451	8,020
Everal	8,435	7,995
Porter	8,175	7,755

For school, Regent-street, Deptford, for the London School Board. Mr. E. R. Robson, architect. Quantities by Messrs. Gardiner, Son, & Theobald :—

Pritchard	£8,350	0	0
Cowland	8,288	0	0
Grover	8,283	0	0
Roberts	8,245	0	0
Stimpson & Co.	8,168	0	0
Ernor	7,980	0	0
Hobson	7,847	0	0
Hill, Higgs, & Hill	7,840	0	0
Thompson	7,840	0	0
Sheppard	7,833	0	0
Cooper	7,747	0	0
Kirk & Randall	7,679	0	0
Jerrard	7,587	0	0
Nightingale	7,333	0	0

For new Baptist Chapel, School, &c., Castle-street, Guildford. Mr. H. Peak, architect. Quantities by Mr. R. Carpenter :—

Reavell	£2,615	0	0
Dover, Son, & Co.	2,059	0	0
Mitchell	1,900	0	0
Filewood	1,847	0	0
Pollard & Son	1,814	0	0
Martin, Wells, & Co.	1,809	0	0
Jarritt (too late)	1,787	0	0
Duke & Fooler	1,725	0	0
Nye	1,597	10	0
Bishop	1,580	0	0
Mason	1,533	0	0
Studwick	1,537	0	0
Horn	1,495	0	0

For building a bailiff's cottage, granary, cart-shed, stables, &c., at Waterhall, Patcham, for Mr. R. Kemp. Mr. G. Tuppen, architect :—

Lockyer (accepted)	£1,540	0	0

For alterations and forming new bar at the Station Inn, Lewes. Mr. G. Tuppen, architect :—

Harman	£187	0	0
Norman	185	0	0
Botting	180	0	0
W. & T. Garrett (accepted)	172	0	0

For alterations at the New Steine Hotel, Brighton, for Mr. Archer. Mr. G. Tuppen, architect :—

Lockyer	£1,330	0	0
Botting	1,300	0	0
Cheeseman & Co.	1,300	0	0
Dean	1,215	0	0
Howard	1,189	9	0
Anscombe (accepted)	1,144	0	0

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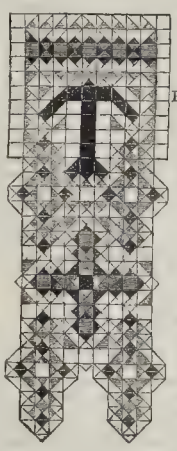
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The Public Works of India.

THE subject of the public works of India is one of extreme interest. To the statesman the questions of communication and transit, which are dependent, in countries like India, almost entirely on the engineer, are scarcely more important than are those of the docks and harbours which ensure maritime intercourse; or those of the dams, canals, tanks, and other works for the maintenance of water supply, which, in a distant antiquity, were conducted with far more labour and audacity than is now the case. We may hesitate to say with more skill, as we know nothing of the failures which formed part of the education of the early engineers. But no modern effort has appointed such mighty tasks as those accomplished by the ancient monarchs of the East, in Africa as well as in India.

It is comparatively a very small portion of his work recently published*, that Mr. Thornton has devoted to the subject most cognate to our pages, that of actual description of public works, or of any of those special conditions that give their peculiar complexion to the public works of India. These are roughly distributed under the heads of communications, irrigation, and miscellaneous works. The chapter on establishments might be regarded as a useful supplement, as showing in what manner public works are conducted. But land tenure and national education are topics so foreign to the proper occupation of the engineer, that we cannot but regret that they have been allowed to occupy space to the exclusion of much that we should have been glad to learn as to the work of the engineer in India.

That portion of engineering which brings the daily life of India into the most intimate union with that of Great Britain is, of course, the telegraphic system. As to this, it would have been desirable to have more than the three pages which contain all that Mr. Thornton has to tell us on the subject. At the end of 1873, India was reticulated by nearly 16,000 miles of electric telegraph, laid at a cost of 170*l.* per mile, and having cost the sum of 2,730,000*l.* As to the connection of this system with England we are told nothing, excepting that the Indian Government owns a submarine cable laid down from Kurrachee to Faô, at the head of the Persian Gulf, and a wire carried on iron standards along the Mekran coast from Kurrachee to Gwadur, and thence to Jask. A line from Jask to Teheran is held under an agreement with the Persian Government, connecting the Mekran coast and Persian Gulf lines with the Russo-Persian line of the Indo-European Company. To this scanty information should have been added, that the British-Indian Submarine Telegraph Company has two submarine cables; one of 1,463 miles in length, from Suez to Aden, and one of 1,820 miles, from Aden to Bombay. This company also owns two land lines, between Alexandria and Suez; one going *vid* Cairo, 224 miles in length, and the other *vid* Benha and Zegazig, of 230 miles; making a total of 3,737 miles. From Alexandria to Malta, the Anglo-Mediterranean Telegraph Company owns two cables, measuring together 1,900 miles. Three lines branch from Malta; one leading through Italy, one *vid* Marseilles, and one almost entirely submarine. The last is that of the Falmouth, Gibraltar, and Malta Telegraph Company, which owns four cables; namely, one from Porthcurno, near Penzance, to Lisbon, of 824 miles; one from Lisbon to Gibraltar, of 331 miles; one from Gibraltar to Malta, of 1,120 miles; besides a branch called the Villa Real line, of 155 miles; the total being 2,430 miles. The aggregate capital of these three companies amounts to the sum of 2,377,500*l.* The total length of line, including the branch of 155 miles above mentioned, being 8,067 miles.

The length of the Government Indo-European cables is not given by Mr. Thornton. It is as follows:—From Kurrachee to Gwadur, 268 miles; Gwadur to Jask, 291 miles; Jask to Bushire, two cables, 105 miles; Bushire to Faô, 157 miles; total, 1,721 miles. The Anglo-Mediterranean Company paid 15 per cent. per annum in 1871; the British-Indian Submarine Telegraph Company, 7½ per cent.; the Falmouth, Gibraltar, and Malta Telegraph Company, also 7½ per cent. It will be observed that the two more distant lines have cost respectively 313*l.* and 317*l.* per mile, and the better-paying Malta and Alexandria line only 226*l.* per mile.

In 1873, we learn from Mr. Thornton, the expenses of the telegraphic establishment of the Indian Government were 247,000*l.*, and the returns only 172,000*l.*, showing a loss of about 75,000*l.* Of course, the advantage to the country is not to be measured by a comparison like this. Of the 726,341 messages sent in 1873, only 100,612 were official. The remainder measure the commercial and industrial activity of this mighty engine of progress, 66 per cent. of these private messages being commercial, and 34 per cent. of a social or personal character. As to the class of people using the telegraphs, 55 per cent. were Europeans, and 45 per cent. natives. Information of that kind is of much value. We may add, on the authority of Sir James Anderson's statistical report, that while in Italy 8·7 telegrams are despatched for every 1,000*l.* of exports and imports, in British India, for the same amount of business, only 0·4 telegrams were sent in 1869 and 1870, and 0·6 in 1871. The comparison may show what is to be expected from the development of Indian telegraphy.

The necessity of using iron standards, owing to the destruction of wood by the white ants, is mentioned by Mr. Thornton, who adds that the wire used in India is more than one-fifth of an inch in diameter, or nearly twice the weight usual in this country. The latter increase of cost, we believe, is due to the monkeys. These creatures amuse themselves by swinging on the wires, which have thus to be made monkey-proof.

For the lighting the coasts of India we are referred to a remark by Mr. Markham, to the effect that it is not even in so complete and satisfactory a state as that of Spain or of Greece. The map is of value in this respect, as it indicates the position of some thirty-six lighthouses, with the limits of their radiation. But it would have been acceptable to have a little more information on this very important subject.

As to harbours, we have reference to two first-class harbours; namely, that of Bombay on the western coast, and the river harbour of Calcutta, on the eastern coast. There is nothing that can be called a description of either. Kurrachee, two miles westward of the Ghisri mouth of the Indus; the little-used harbours of Poshetra and Seraya, in the Gulf of Cutch, and of Chud Bunder, in the Gulf of Cambay; Broach and Surat, at the mouths of the rivers Nerbudda and Sapta; Jygurh and Viziadrog, some 120 miles south of Bombay, are merely named. Carwar is indicated as a point where Mr. Abernethy has recommended the formation of a breakwater, by means of which a quiet harbour of four square miles in area might be formed, in lieu of the actual small cove, with a hard bottom.

Cochin, a few minutes north of the tenth degree of north latitude, is capable, we are told, on the authority of Mr. Robertson, of being made the finest harbour in India, by the construction of groynes, of 3,000 ft. and 2,300 ft. respectively in length. The entrance is said to be likely to secure a depth of from 20 ft. to 21 ft. at low-water spring tides. Within will be room for the mooring, in tiers, of fifty ships of 700 tons each. But by dredging in the back-water an area is to be obtained which would form a wet dock of greater extent than all the docks in Great Britain put together. The expenditure of the small sum of 75,000*l.* on the harbour, and the more formidable, but truly economical, outlay of some three-quarters of a million for railway communication with Madras, are required to provide southern India with a new Liverpool and Birkenhead combined at Cochin.

The Mudbanks of Narrakal and Allipey, one five miles north, the other forty miles south, of Cochin, form natural breakwaters, under shelter of which vessels may lie in perfect safety during the bad monsoon, in 20 ft. of water, without any strain on their cables. The existence and properties of these banks, according to Mr. Robertson, have been known for 200 years, and it is extraordinary that these advantages have not been more generally appreciated.

* Indian Public Works and cognate Indian Topics. By W. T. Thornton, C.B., Secretary for Public Works in the India Office, London; Macmillan, 1875.

Along the whole western coast of India, from Cape Comorin to Calcutta, there is not, says Mr. Robertson, a single spot where large vessels can be sheltered in all weathers. It was anticipated by Sir C. Trevelyan, in 1859, that Cocanada would become a flourishing port. But further experience shows that the Godavery brings down such quantities of silt, that Cocanada Bay is actually a delta in course of formation. A similar action on the part of the Mahanuddy, however, by forming a long island parallel with the mainland, promises to protect a channel which will prove to be the most sheltered harbour on the east coast of India, and of incalculable value in the development of Orissa.

At Madras, a close harbour is about to be constructed, "after designs by Mr. Parkes, whose well-earned reputation, based on his brilliant success at Kurrachee, justifies considerable confidence in any proposals of his of the kind." "It is to be formed by two parallel piers, 24 ft. thick, 3½ ft. above high-water level, and 1,000 yards apart, projecting 830 yards from the beach, and having arms at their extremities curving inwardly, and leaving between them an entrance 150 yards wide. An area of about 170 acres will be thus inclosed, in which from sixteen to forty-eight ships can be safely sheltered in any weather short of a decided hurricane. It is calculated that the saving of cost to vessels bound for Madras will amount to 2s. a ton in cost of landing and shipping.

The chapter on irrigation is the most interesting part of the book, and leads us to regret that Mr. Thornton should not have confined his attention to subjects on which, from his official position, he could have given so much useful information. Even in literary style we seem here to meet with a different, and a far more acceptable writer, than we have had to follow in the speculative chapters. The vast peninsula of India is divided, we are told, by De Brandis, into seven hygrometric regions, but two of which have a perfectly abundant and reliable water supply provided by nature. These appear to be, if we follow Mr. Thornton's map, rather than his text, the exterior and interior river valleys and basins that lie parallel to the southern range of the Himalaya mountains, the outlets of which, turning to the south, pour into the Arabian Sea and the Bay of Bengal the mighty and many-mouthed floods of the Indus, the Ganges, and the Bramaputra. The basin of the Irawaddy partakes of a similar hydraulic character, although the course of this river and its affluents trends directly towards the equator.

These vast streams, fed by the melting snow of the Himalayas, are at their full at Midsummer, and at their lowest in what is, elsewhere, the fullest season. The periodical rise of the Indus, Mr. Thornton says, "is exceedingly variable, scarcely ever beginning or ending at the same time in two consecutive years, and exhibiting a difference in height of 2 ft., and sometimes even of 5 ft., in corresponding months." Throughout India, "nothing can be more variable than the aspect of Indian rivers at different seasons. In spring and early summer, when swollen by melted snow from the mountains, or by the deluging monsoon rains, the smallest become furious torrents, rising to an extraordinary height wherever confined between high banks, and spreading far and wide over the country on both sides wherever they can find an outlet. After the rains, the largest dwindle into rivulets which are everywhere fordable, and over which in many places a child might step dry-footed. The Indus, Ganges, and Bramaputra are almost the only exceptions to this rule; and even the Indus, which in July rises to a height of 50 ft. between Attock and Kalabagh,"—this is just below the *débouchure* into the narrowed valley of the Indus of the drainage of the Khyber Pass,—"cannot six months later be navigated without difficulty by boats of more than 2 ft. draught."

The main difference between the systems of valleys and plains watered by the rivers which derive their water from the Himalaya, and the other great river districts of India, such as that of the Cauvery, which has a course of 700 miles, running from within fifty miles of the shore of the Arabian Gulf until it flows into the Bay of Bengal, is due to the perennial supply afforded by the stupendous range of the giant mountains. A little sooner or a little later, a few feet higher, or a few feet lower, the summer floods are certain to come down. It is therefore possible, in these districts, by adequate irrigation works, to secure abundant water supply, and ample crops. Where the feeding-grounds and catch-water areas from which the rivers descend lie, on the other hand, in districts of which the rainfall is uncertain, no irrigation works can prove adequate barriers against occasional excessive droughts, and consequent failure of crops. This is an obvious truth, when once pointed out; and Mr. Thornton deserves gratitude for calling attention to it. Thus while the *delta* of the Mahanuddy, the *delta* of the Ganges, and the lower part of the Gangetic valley have a yearly rainfall of from 60 in. to 75 in., the rainfall throughout Sind, and in one-half of the Punjab, is less than 15 in. In Central India, and the east coast of the Madras Presidency, the fall varies from 30 in. to 60 in. It is thus evident that an amount of water might be used for irrigation in wet years very far exceeding that obtainable in dry years, even in districts where absolute drought might be prevented by the forethought and skill of the engineer. Thus "in 1853 the land revenue of Sind was only 284,000*l.*, whereas in 1854 it rose to 351,000*l.*, the explanation of the increase being simply that the greater rise of the river permitted more water to flow into the canals in the one year than in the other."

The brief notice of the Ganges Canal, partially finished in 1854, under the direction of Sir Proby Cautley, leads the reader to wish for a detailed description of this noble work. Mr. Thornton tells us that it has a main channel 348 miles long, primary branches of 306 miles, and minor distributaries of more than 3,000 miles in aggregate length: in one place it is carried, by an aqueduct of fifteen arches, of 30 ft. span each, over a river 920 ft. broad, and thence for nearly three miles along the top of an embankment 30 ft. high. The area over which it diffuses irrigation is 320 miles long by about 50 broad.

The Jumna Canals, constructed by order of Shah Jehan, of which the easternmost became choked and useless about the middle of the eighteenth century, and the westernmost long before, were re-opened, between 1823 and 1843, by the labours of the Bengal engineer officers, Colonel Colvin, Sir William Baker, and Sir Henry Durand. These works supply water to an area of 350,000 acres.

Under the direction of Sir Henry and Sir John Lawrence was undertaken a great work, which is now rapidly changing the aspect of the Baree Doab, the one of the five doabs or tongues of land, formed by the five rivers from which the Punjab derives its name, which lies between the rivers Beeas and Ravee. Leaving the latter river just below the spot where it issues from the lower Himalayas, and passing by the famous city of Umritsur, this canal runs through a desert of hard clay, overgrown with tamarisk, to rejoin the Ravee after a course of 140 miles. With branches to Kussoor, Sobraon, and Lahore, the aggregate length, exclusive of minor distributories, will be 357 miles. The breadth and depth of the principal channel are 120 ft. by 4 ft. 9 in. These dimensions are reduced, after the divergence of the Kussoor branch, to 92 ft. by 5½ ft.; and after that of the Lahore branch to 68 ft. by 4½ ft. The water is taken from the Ravee by a cutting through a solid bank of stone of two miles in length. From this head, and from some subsidiary sources, a supply is obtained of 3,000 cubic feet of water per second. Five hundred cubic feet of water per second is allowed to each of the three main branches, reducing the flow of the main canal, after the fifty-fifth mile, where the Lahore branch breaks off, to a flow of 1,500 ft. per second, *minus* the evaporation suffered in bringing the stream to that point. The area to be watered by this system is 650,000 acres.

The irrigation of Tanjore, after the design of Sir Arthur Cotton, of the Madras Engineers, is another noble work, the details of which must be of extreme value to the engineer. The river Cauvery, not long before entering Tanjore, is divided by the island of Seringham into two branches, of which the northern takes the name of the Coleroon, while the southern retains that of the Cauvery. Forty years ago, when Sir Arthur Cotton was appointed to the post of chief engineer in Tanjore, he found that the Coleroon, which had a more direct course and a more rapid fall than the Cauvery, was rapidly deepening its bed, and robbing the sister river of more and more of its supply, so that the latter gave signs of being about to be entirely silted up. Sir Arthur constructed a dam at the western end of Seringham, by which he regulated the proportionate flow of the two streams. The success of this, and the subsidiary works, was complete. The cultivation of the province at once took a fresh start. During the next sixteen years the area of cultivation was largely extended. At least 50,000 additional acres were brought under tillage. The average produce per acre was increased by one-eighth; and the land revenue of the Government was increased by the sum of 70,000*l.* per annum, or from 430,000*l.* to 500,000*l.*

Colonel Cotton next turned his energy to the irrigation of Rajahmundry, a thinly-inhabited and poorly-cultivated district, through which the river Godavery takes the last hundred miles of its course. There he brought under irrigation 265,000 acres; turned the district into a luxuriant garden, and nearly doubled the average produce per acre.

The banks of the Godavery, Mr. Thornton tells us, had been raised above the level of the adjoining plains by the continued deposit of silt. Across this river-formed embankment, which varies in height from 6 ft. to 24 ft., is thrown an enormous dam,—or annicut, as it is called in the locality,—two miles and a half long, 130 ft. broad at the base, and 12 ft. high, revetted by masonry, if we understand a description which is not altogether clear, of 4 ft. in thickness. A level platform of 19 ft. wide, parallel, we take it, to the course of the river, is bordered by an inclined plane of 28 ft. wide, forming an overflow weir, supported by an apron of massive stone, on which the stability of the whole fabric depends. The river behind the dam is converted into the head-water of a canal, which supplies some 800 or 900 miles of artificial channel. The area already watered by this system is nearly 800,000 acres, which will be raised to a million by the time that the works are complete. In the Kistna *delta*, to the south of the valley of the Godavery, works of a somewhat similar nature are now in progress.

It is highly desirable that a full technical account of these important works should be brought within the reach of the English reader. What Sir Arthur Cotton has done in Madras, what Colonel Colvin and his colleagues have done in Bengal, what Sir John and Sir Henry Lawrence have done in the Punjaub, what Sir Proby Cautley has done in the valley of the Ganges, has yet to be done, on a smaller scale, in many a river valley of the United Kingdom. It is true that we have not those Heaven-sent oceans of water here to restrain from causing devastation, rather than fertility. It is true that we have not the brazen heaven, iron soil, and stifling heat of India to compel us to turn to wise account the treasures heaven pours from its bosom on our hill-tops. But it is also true that a neglect, as general, if not as disastrous, of the mode of economically employing our rainfall, as that which has allowed, in India, the mighty works of former rulers of the country to fall into decay, is the rule, with, but few exceptions, in this country. Our irregular climate gives us, in some years, a distribution of water over our crops, without cost to ourselves. Relying on the caprice of nature, we have, as a people, utterly neglected that intelligent and economic engineering which would enable so large a portion of the country, come wet, come dry, to treble the amount of its actual produce.

We have left ourselves no space to discuss Mr. Thornton's chapter on "Communications." With his views as to the narrow gauge we are disposed to agree. As to the method of raising capital for Indian works, we speak with more hesitation, but cannot feel that he has proved his case. Direct Government action, which he seems to recommend, is, as far as our experience goes, the most costly of all methods of executing public works. So again, when he argues that common roads should precede railways in unopened districts, we think he is but little aware of the rapidity, ease, and economy with which a light line of small gauge can be laid down,—when the object is to save time, art, and labour; and of the immense advantage, in speed as well as in hauling power, that the use of even a slight temporary way gives to the constructor of a railway. The same must apply to those who wish to use a line for traffic. On this point, however, as on most of those treated in the book, a pint of experience is worth a bushel of argument. We wish Mr. Thornton, or some other author, would present us with an exhaustive collection of those facts on which alone it will be possible to base a sound judgment as to the future of our public works in India. A good readable description of the public works of the former rulers of India; of the attempts, the successes, and the failures of European engineers and architects in that country; and of the

hysical facilities and difficulties, as well as of e requirements, of the country, has yet to be ritten. Such a work would possess extra- dinary interest.

THE "EMPEROR" BELL.

"What in the foundry-pit's deep abyss
Our hands with help of fire found,
High in the belfry of the tower
Our work to mankind wide will sound."
Schiller's Lied von der Glocke.

THIS famous new bell, which is to be hung in e southern tower of Cologne Cathedral, now pidly reaching completion, after the impulse ven at the close of the Franco-German war, is st from French guns captured during that mpaign, presented by the German Emperor to e committee charged with the work of com- eting that cathedral.

The bell has been cast at the machine works o which is attached a bell-foundry) of Herr ndreas Hamm, at Frankenthal, an industrial wn of the Palatinate; and it was only after ro failures, and after untold anxiety and care, at he was able to produce the work which will nd down his name to posterity. It should be entioned here that the first casting took place August 19, 1873; the second, on November 13 the same year; the third and successful cast as made on October 3, 1874.

Before describing his handiwork, let us have a ok at its cradle. On entering the machine- orks, we notice on the right the casting-pit, early 10 ft. deep, 20 ft. long, and 16½ ft. broad, th the temporary belfry, and a strong frame- ork, to which the gin for raising the bell from e pit is secured. On the left is the furnace, parated from the casting-house by a wall. In e latter is an opening, permitting the running of the molten bell-metal into the mould. The ual mode of casting bells had to be somewhat parted from, probably on account of the huge e of the new bell; and we subjoin the follow- g account of the difficult process.

In the pit a hollow core of brickwork was st erected; this received a coating of loam, and e whole was then smoothed by means of care- l ganging until the exterior of the core pre- nted the same dimensions and form as the tended bell. On this core, the so-called false bell," or "model bell," was formed, also loam. It had to be the exact counterpart of e real one; it received the same decorations id the same inscriptions, made partly of tallow id partly of wax. Another thin coating was en applied, to serve as a separator between the lse bell and the "shell" of the bell. The latter sted on an iron ring, provided with eyes, and as bound round besides with strong iron hoops, make it more secure. In the hollow core a fire as now lighted through an opening left at the p, and core, false bell, and shell were thoroughly ied and burnt hard; while at the same time e decorations and inscriptions of the false bell, rmed of wax and tallow, melted. The shell as then lifted by means of chains, the false bell roken up, and the shell lowered again in its ace, and the whole covered up. A tackle of ght sets of pulleys, which in its turn had to be ised by another set of tackle, was put up for lift- g the new bell at the proper time out of the pit. he iron beam to which it was suspended had a ameter of 8 in. The furnace, with two grates at s working side, each of an area of about 33 square et, consumed at each cast twenty tons of coal. he metal was put in through an opening at the ack of the furnace, on to the hearth, of an area over 36 square feet. At the first cast, each f the twenty cannon used for the bell was ushed in resting on a truck. They weighed gether about 50,000 lb. (German); to this as added 80 cwt. of tin. At the first cast the etal took from one o'clock at night until three clock the next afternoon before it was perfectly quid, fit for running off; at the two following astings the time of melting was only ten hours, om five a.m. to three p.m. At the last cast, he filling of the mould took twenty-nine minutes id a half, without any mishap. But then fol- wed four long, weary weeks of anxious wait- g, before the shell could be broken; but when fell, the master had the satisfaction of seeing at his labour had at last been crowned with erfect success.

A feeling of silent admiration steals over the beholder as he looks upon this mighty form, 0 ft. 8 in. high, of a diameter of 11 ft. 2 in., which eighs 52,500 German pounds (over 25 tons), nd which will receive a clapper or hammer of ft. 10 in. long, weighing 1,530 lb. The bell, which has at the sound-bow a thickness of 13⅛ in., tapers towards the crown to a little over 3 in. The screw passing through the crown of the bell, and through the apparatus for receiving the hammer, is of corresponding size, weighing 996 lb., and carries a nut weighing 178 lb. The six arms forming the crown are decorated with angels' heads, and end where they join the bell in lions' feet. Below the crown, in three lines running round the bell, is the following inscription in Gothic letters:—

"Guilelmus, Augustissimus Imperator Germanorum Rex Borussorum pie memor caelestis auxilii accepti in gerendo felicissime conficiendoque nuperrimo bello Gallico instaurato Imperio Germanico. Bellica tormenta captiva aeris quinquaginta millia pondo inusit conflari in campanam suspendendam in hac admiranda structurae aede exaedificationi tandem proxima.

Cui victoriosissimi principis pientissimae voluntati obsecuta societas perficiendo huic templo metropolitano constituta F. C. Pio P. IX. Pontifice Romano Paulo Melchers Archiep. Coloniensi A. D. MDCCCLXXIV."

"William, the Most Illustrious Emperor of Germany, and King of Prussia, in pious remembrance of the heavenly aid granted him in the fortunate course and conclusion of the last French war, has ordered, after the restoration of the German Empire, a bell to be cast from captured cannon, of the weight of 50,000 lb., which is to be suspended in the house of God, now nearly completed. In accordance with this pious desire of the victorious prince, the society formed for the completion of this cathedral has caused it to be cast, under the Roman Pontiff, Pius IX., and the Archbishop of Cologne, Paul Melchers, in the year of our Lord 1874."

Under the figure of St. Peter is the following inscription:—

"Voce mea coeli populo dum nuntio sortes
Sursum corda volant semula voce sua.
Patronus qui voce mea templi atria pandis
Janitor et coeli limina pande simul."

"Send I with brazen lips to the peoples heavenly message,
Souls upwards soar, leaving earth; join, full of ardour, in song.
Thou, who through my deep voice of the fane the portals wide open'st,
Ope thou of heaven the gate, heavenly guardian, as well."

Opposite to the image of the apostle, is the German Imperial coat of arms, beautifully executed, with this verse below:—

"Die Kaiserglocke heiss ich,
Des Kaisers Ehren preis ich,
Auf heil'ger Warte steh ich;
Dem deutschen Reich erflieh ich,
Dass Fried' und Wehr
Ihm Gott bescheer'."

"Emperor Bell I am named,
The Emperor's name make famed;
On holy ward I stand,
For German Fatherland
I pray: God grant it hence
Peace, welfare, and defence!"

In the first-named inscription is also the archi-episcopal coat of arms. The mottoes have Gothic borderings, successfully designed and executed. The pleasing appearance of the bell is further enhanced by parallel rings round it. The note sounded by the bell was to be the deep C, but according to the test committee it is C sharp; and it will, consequently be found not to be in tune with the other bells of the cathedral when tried with them. However, should this prove to be the case, the evil, the founder is confident, may be remedied by somewhat planing down the sides.

The Emperor Bell, which was shipped at Frankenthal on the 15th of April, arrived safely at Cologne on the 8th of May. The somewhat lengthened voyage, which was interrupted at the principal towns along the Rhine, to give the inhabitants an opportunity of viewing the monster, was successfully performed. The transport from the wharf to the southern tower was accomplished without accident on the 13th of May, under the special supervision of Herr Hamm, amongst the excitement of thousands of spectators. A wagon had to be expressly made for moving it from the foundry on board a sailing-barge on the canal leading to the Rhine, and this was used again on its arrival at Cologne, for its transit from the river to the cathedral. An idea may be formed of the difficulties attending it when it is stated that it took eleven hours to move the mass a distance of 350 paces on a level roadway.

We may add in conclusion, that the new bell, next to those of Moscow (both not now in use, weighing respectively 193 tons and 63 tons; the former broken in 1737, the latter fell in 1855); that at Pekin, said to weigh 53 tons; and that of Novgorod (31 tons), is the largest in existence. It exceeds in size by far the largest of our English church bells: Big Ben, of Westminster, weighing only 14 tons; York Minster bell, 10¾ tons; Old Tom, of Oxford, 7½ tons; Exeter Cathedral bell, Great Tom of Lincoln, and St. Paul's bell, having a weight of 5½ tons and 5¼ tons respectively.

THE GIRTIN DRAWINGS AT THE BURLINGTON CLUB.

THOSE who are interested in the art of water-colour painting should by no means omit to visit the large and interesting collection of the works of our first great water-colour artist, at present exhibited at the Burlington Fine Arts Club, access to which is readily obtained through any member of the club. The collection is interesting not only as a representative exhibition of the works of a great and early-lost genius, and for the intrinsic power of most of the drawings comprising it, but also as affording an illustration of the aims and practice of this peculiarly English branch of art at the commencement of its career as a distinct art, and of the extent of the change which has come over it, and the gulf which separates the art of Girtin from that displayed on the walls of the Institute and the Society of Painters in Water-colour.

Viewed from the standpoint of the present day, Girtin's style would be regarded as a conventional interpretation of Nature in a remarkably broad and powerful manner, with the object of conveying the feeling rather than the facts of a scene; and it is almost curious to reflect that one of Girtin's distinguishing merits as the inaugurator of a new style in water-colour was considered to be the superior force and brilliancy of local colour in his works; whereas a modern "critic," meeting with one of them in an exhibition, would be almost certain to characterise it as monotonous and "deficient in local colour." But when we consider that, previously to Girtin, water-colour was little more than a system of washed-in effects in monochrome, it is easy to understand what a revelation his delicately-balanced tints must have appeared; and as we turn from one work to another, and realise the manner in which the artist looked at Nature, and the media which he used in representing her, we come to see that though he does not give us much of the positive facts of colour, he gives us its relative effects almost in perfection, and that we need only to learn his language to find colour, even of a warm and glowing tone, in these combinations of cool greys and warm browns so artfully composed and contrasted, yet with a result which seems rather to suggest rapid and vigorous dash of execution than the subtle artifice and patient study with which, as we know by the record of the artist's contemporaries, these works were produced.

The immense change which we see between the broad and (in one sense) conventional style of Girtin, and such brilliant colour and realism of detail as we see in every exhibition now, is not, of course, æsthetically peculiar to water-colour painting, for the style of Girtin, and in his earlier days (to some extent) of Turner, was a part of the artistic feeling of the day in landscape, when that pleasure in mere intensity and glow of colour for its own sake, which has pervaded even to exaggeration the poetry as well as the painting of the present day, was not,—and the subsequent achievements of Turner and Hunt in evolving something like actual and positive light and radiation out of pigments, would perhaps have been regarded as scarcely more desirable than possible. But the change in the method and objects of water-colour is probably owing a good deal to the improvement in the materials used, both as to purity of colour and ease of manipulation. The effects of modern water-colour would have been to a great extent impossible in Girtin's day, for want of the mechanical means of producing them. In one small drawing at the Burlington Club ("Dunrobin Castle," No. 24) we see an evident intention to produce an effect of intense brightness and sunlight on the hill and castle; but the means for accomplishing it are limited, the effect is rather raw, and the water in the foreground has had to be sacrificed to it, as it is. What is observed in the quotation from Miller's "Life of Girtin," in the introductory remarks prefixed to the catalogue, shows how the *modus operandi* of the artist was directed to making the most of a comparatively limited palette:—

"When he had accomplished the laying on of his sky, he would proceed with great facility in the general arrangement of his tints on the buildings, trees, water, and other objects. Every colour appeared to be placed with a most judicious perception to effecting a general union or harmony. His light stone tints were put in with thin washes of Roman ochre, the same mixed with light red; and certain spaces, free from the warm tints, were touched with grey composed of light red and indigo, or, brighter still, with ultramarine and light red; the brick buildings with Roman ochre, light red and lake, or a mixture of Roman ochre, lake, and indigo, or Roman

ochre, madder brown, and indigo; also with burnt Sienna and Roman ochre, and these colours in all their combinations. For finishing the buildings which came nearest to the foreground, where the local colour and form were intended to be represented with particular force and effect, Vandyke brown and Cologne earth were combined with these tints, which gave depth and richness of tone that raised the scale without any diminution of the harmony; on the contrary, the richness of effect was increased from their glowing warmth, by neutralising the previous tones, and by throwing them into their respective distances, or into proper keeping. The trees, which he frequently introduced in his views (1), exhibiting all the varieties of autumnal hues, he coloured with corresponding harmony to the scale of richness exhibited in his buildings. The greens for these operations were composed of gamboge, indigo, and burnt Sienna; these sometimes mixed with Prussian blue. The shadows for the trees, indigo, burnt Sienna, and a most beautiful shadow tint, composed of grey and madder brown, which perhaps is nearer to the general tone of the shadow of trees than any other combinations that can be formed by water-colours. *He so mixed his greys, that by using them judiciously they seemed to represent the basis of every species of subject and effect*, as viewed in the middle distance under the influence of Girtin's atmosphere, when he pictured the autumnal season in our humid climate, which constantly exhibits the charm of rich effects in a greater variety than any other country in Europe."

This passage is really curious in its way, as evincing the different methods of looking at nature with a view to artistic reproduction which may exist at different times. If it had ever occurred to the writer who mentions with such delightful *naïveté* the fact of Girtin "frequently introducing trees" in his landscapes (as if this were a sort of compliment to the scene, entirely *ad libitum*) to take one of Girtin's wooded scenes out of doors and compare it with the living foliage "in all the varieties of autumnal hues," it is possible he might have reconsidered his words. Girtin's wooded scenes are not his *forte*, and certainly no one will find anything like the richness of autumnal tints in them, though there is great power of massing the trees finely as vehicles for the light and shadow of the picture, and of defining their form and movement. But the sentence we have italicised does to a great extent give the key to the character of Girtin's art. It was a translation of nature, on a fixed principle, into the key of his palette, preserving the relations of tone completely, but ignoring both the positive colour and much of the detail. One element in Girtin's method is too characteristic to be overlooked, and we are surprised that no reference whatever is made to it in the catalogue; we mean his preference for toned paper to work upon; frequently brown and grey paper of apparently very coarse texture. Few of his drawings are so much covered as to leave nothing of the original ground visible, and in a majority of cases this is not white. This quality of paper, while it certainly increased the conventional character of his drawings, also assisted the peculiar combination of tone which he aimed at, and gave him effects which would have been attained only with much more labour on white paper. In one of the finest of the smaller works at the Art Club, "Hereford Castle from the Banks of the Wye" (No. 45), the sky and the calm river are literally nothing but brown paper, part of the river surface very slightly touched upon with a thin wash just indicating the surface, the effect of water otherwise being purely dependent on the reflections of objects. A more remarkable instance is the "Village of Kirkstall" (68), an effect on paper of a similar kind, but more laboured (if one can apply such a term to work which has so completely the opposite appearance) and evidently most carefully studied in its balance of tones. There is not a single part of this drawing,—the water, the houses, the distant rising field,—which, taken separately, can be said to represent the tones of nature; but the relation of the tones to each other is so true that, taken as a whole, the effect is perfectly real and atmospheric. The beautiful drawing, "Kirkstall Abbey" (91), is, if we mistake not, a specimen on grey paper, and the faint gleam of light over the hill, transparent and aërial as it seems, appears to be obtained by body colour added after the washes. Girtin seldom used this resource, however, and only in general for a single high light prominent in the composition. An instance of this is seen in the beautiful little drawing of "Richmond, Yorkshire" (21), a less striking work than some, but one of the finest in regard to delicacy of effect. The sky to the left is remarkably successful, and in general nothing is more remarkable in these drawings than the perfection with which Girtin gives the aërial softness and perspective to his clouds, which seem to round off and vanish into the distance in a manner which, considering how slight is the apparent labour bestowed, is a notable instance of the *ars est celare artem*.

Among the more remarkable works here may be noticed "The Rocking Stone, Cornwall" (17),—a grand and powerful drawing of the peak of a rocky hill, with a glimpse of the sea far below; the channelled weather-beaten mass of rock which leads up to the peak is given with remarkable solidity and perspective effect. Girtin is not less at home in the buildings of man than in those of nature; all his architectural subjects are fine. The large drawing of "Durham" (30), with the bridge crossing the picture, is magnificent in every respect, composition, tone, and texture, and perhaps there could hardly be a better example of the peculiar power of the artist, and of his method of dealing with the tones which he most affected, in combinations of water and building. The interior of "Exeter" (44) is as fine a specimen of architectural drawing, not excluding artistic effect, as could well be seen; clear and precise in every detail, without the slightest hardness. "Knaresborough Castle" (65) is a charming sketch of an old tower. "Chepstow Castle" (77) is not an architectural subject, but merely gives the name to a landscape remarkable for the effect of air and distance, and for the grand treatment of the rolling mass of clouds, with a strong light on one side; the treatment of the water in the foreground is odd, but the effect of open air freedom and space in this drawing is remarkable. Two large companion drawings, "Harewood Castle" and "Harewood House" (94 and 106) perhaps show the fullest extent to which Girtin had carried his art as a landscape-painter; in power and force of composition the latter drawing strongly reminds one of Turner; but the beauty of the former (94) is more characteristic of its author; the tones and contrasts of light and shadow on the opposite hill in the middle distance are managed with the utmost finish, and show in perfection that quality of the artist which we have referred to, of giving perfectly the effect of the relations of tone and colour in nature, without literal imitation. A peculiarity observable in this collection is the practice which Girtin not unfrequently seems to have adopted of making two studies of the same subject similar in point of view, and in every respect except in the key of colour adopted, and some variations in the relative force of different portions. We see specimens of this in the two drawings of "Guisborough" (22 and 49), of which the latter is simply a reproduction of the former, with stronger and darker tones; and in the two remarkable drawings of "Rainbow Effect at the Mouth of the Exe" (96 and 108), of which the former is the most effective; but both are remarkably true to the character of the Exe country. A still more curious instance is in the two drawings of the interior, apparently, of St. Alban's Abbey (98 and 104), in which the artist has experimented on two completely different methods of representing the same building in the same light; the light falls on the white reredos as the back of the picture, which in 98 is almost white, and all the other tones in proportion, cool and greyish; while in 104 the screen, still with light on it in the same direction, is a reddish-brown, and the foreground pier, where the light falls on it, is treated with great power in a strong variety of the same tint, and the jointings of the stones deeply marked, so as to dominate over the other portions. These drawings are labelled "St. Alban's Abbey" and "Winchester Cathedral" respectively; in fact, they are almost precisely the same scene, in every detail, even to the hatchments on the walls, and are no doubt meant for St. Alban's Abbey, though the artist seems to have blended a reminiscence or two of Winchester with it, through some odd freak of fancy or forgetfulness. We can only mention two other notable drawings, "Morpeth Bridge" (109), interesting, not only as a remarkably fine one, but as being said to be the artist's last work; and "The White House, Chelsea-reach" (102), which Turner is stated to have pronounced superior to any of his own drawings. It may be questioned, perhaps, whether Turner would have thanked any one else for saying so; but this little combination of colour and light over a calm river is something extraordinary,—a kind of inspiration, which might be paired off with Cotman's wonderful little drawing, called "The Hay-barge" (in the last International Exhibition), as a specimen of a style of effect in which, once or twice, these three artists, of unequal fame, seemed to have touched each other so nearly as to fall almost into the same quality and feeling. We like to mention the three together, for they were kindred geniuses, and perhaps Cotman under happier circumstances, and Girtin with a longer life (he died it must be remembered, before he was thirty) might have claimed a place nearer to the mighty master of landscape than is generally assigned to them.

The age at which Girtin died renders it, in fact, difficult to estimate what he might ultimately have accomplished; and the fact of the want of dates to nearly all the drawings here precludes any definite judgment being formed of the tendency of the painter's genius during the short period of his artistic life; we can hardly trace a development of style, the few drawings which are dated scarcely giving any indication of a "later or earlier manner." But the collection is of the highest interest and beauty, and we owe thanks to the gentlemen who have lent the drawings, and to the club which has afforded the opportunity for their collection and exhibition, and which is doing much for art and artists in this way.

THE MEMORIAL CHAPEL, WINDSOR.

OUR readers are aware that for some ten years past works have been going on by command of Her Majesty the Queen, to render what was formerly known as the Wolsey Chapel at Windsor worthy to perpetuate the memory of the late Prince Consort; neither pains, money, nor skill has been spared, and the result is an interior of unequalled splendour,—floors, walls, windows, and roof being alike magnificent. The chapel being now complete, it is thought likely that it will before long be opened occasionally to the public; so, leaving for another opportunity such general and critical remarks as may seem called for, we give at once a complete and correct list of the subjects illustrated in the decorations.

The vaulting of the chapel is filled with mosaic work by Clayton & Bell, executed by Salviati, with angels bearing shields, with devices symbolic of the Passion in the apse, and heraldry relating to the Prince Consort in the nave.

The blank window at the west end, filled with mosaic work by the same hands, contains standing figures, as follows:—Henry III., Edward III., Edward IV., Henry VII., Jane Seymour, Anne, Duchess of Exeter; Edward Clinton, Earl of Lincoln; Charles Brandon, Duke of Suffolk; Henry VI., Henry VIII., Charles I., George III., Sir Reginald Bray, Sir John Shorn, Elizabeth Woodville, wife of Edward IV.; Henry Somerset, Marquis of Worcester; Archbishop Bambridge, M. A. De Dominis, Mathew Wren, Bruno Ryves, Bishop Beachamp, William of Wykeham, Cardinal Wolsey, Dean Urswick, Bishop Turner, Bishop Robinson, Bishop Douglas, and Archbishop Sutton.

The stained glass in the five windows in the apse, also by Clayton & Bell, has the following subjects:—

The Garden of Eden:—Including Creation of Adam, Naming Animals, Creation of Eve, The Tree of Life shown, Adam and Eve blessed, The Fall, Hiding, Doom, Expulsion, Clothing, Labour, and Abel's Sacrifice.

The Garden of Gethsemane:—Judas receiving Bribe, Judas lying in Wait, Agony, Sleeping Apostles, Judas bringing in Band, Soldiers falling down before Our Lord, The Kiss, Cutting off Malchus's Ear, Healing Malchus's Ear, Binding Our Lord, Young Man following Our Lord, and Our Lord led out.

The Passion Window:—Our Lord before Caiaphas, The Denial, Before Pilate, Scourging, Crowning with Thorns, Ecce Homo, Pilate washing His hands, Bearing the Cross, Disrobing, Crucifixion, Descent from Cross, and St. Joseph begging the Body.

The Garden of St. Joseph of Arimathea:—Bearing the Body, Embalming, Entombment, Setting the Seal, Watching, Resurrection, Angels rolling away the Stone, Angels folding up Cloth, Angels and Maries, Noli me Tangere, Our Lord and three Maries, and SS. Peter and John at the Sepulchre.

The Garden of the Blessed:—The Afflicted, Maids and Widows, Rich and Poor, the Learned, Priests, Kings, Queens, Soldiers, Patriarchs, Prophets, Martyrs and Innocents, and Apostles.

The windows on the north and south sides of the chapel illustrate the *genealogy of the Prince Consort*, represented by figures and their heraldic bearings in full achievement. Commencing at the west end of the north side are seen:—Witekindus Magnus; Dedo I. Comes Wettini; Dietricus II. Comes Eulenburgii et Landsburgii; Mathildis Hæres Misniæ; Thimo Strennus, Marchis Landsburgi; Conradus Pius primus Marchio Misniæ;

Otto Dives, Marchio Misniæ; Hedwig; Dietrichus IV. Vexatus Comes Weissenfelsæ et Marchio Misniæ; Judith Hæres Thuringiæ; Henricus Illustris, Marchio Misniæ primus Landgrafus Thuringiæ; Albertus Degener Landgrafus Thuringiæ; Margareta; Fridericus I. Admorsus; Fridericus II. Severus; Mechtildis; Fridericus III. Strennus; Catharina Hæres Comburgii; Fridericus I. Bellicosus Primii Saxoniæ Elector; Fridericus II.; Margareta; Ernestus I. Elector; Albertus Animosus Dux; Fridericus III. Sapiens Elector; Johannes I. Constans Elector; Johannes Fridericus I. Magnanimus Elector; Sibylla; Johannes Ernestus, Dux Saxoniæ Coburgi; Mauritius, Elector; Johannes Fridericus II. Medius, Dux Saxoniæ Gothæ; Johannes Wilhelmus I. Dux Saxoniæ Vimariæ; Dorothea; Johannes III. Dux Saxoniæ Vimariæ; Johannes Casimirus, Dux Saxoniæ Coburgi; Ernestus III., Pius, Dux Saxoniæ Gothæ et Altenburgi; Elizabetha; Johannes Ernestus VIII. Dux Saxoniæ Salfeldi; Franciscus Josias; Ernestus Fridericus; Fridericus Josias; Franciscus Fredericus Antonius; Ernestus I. Dux Saxoniæ Coburgi Gothæ; Luisa; Maria Luisa Victoria; Leopoldus Rex Belgarum; Ferdinandus, Rex Lusitaniæ; Ernestus II. Dux; and Albertus Princeps.

The Wall Spaces under Windows contain subjects in inlaid marble; those at the east end being each surmounted by a carved bust of an Evangelist and having on either side a bust of an Apostle: those in the nave having each a bust of a member of the Royal Family at top and an angel on either side, the subjects executed by the late Baron de Triqueti, the busts by the late Miss Durant.

The subjects on the south side reading from the east are:—Angel Weeping in the Sepulchre; Jacob Blessing his children; Joseph made Ruler over Egypt; Return of Isaac with Abraham from the Sacrifice; Moses Blessing the Children of Israel; Daniel in the Lions' Den.

On the north side reading from the west we find: Nethaniel (Sincerity); David (Eloquence and Harmony); Solomon receiving Presents; Jehoshaphat sending Priest and Levite to teach in Judah; Jephtha's Daughter; Jeremiah Lamenting over the Tomb of Josiah; Agony; Entombment.

The sculpture of the altar represents the Resurrection, and is also the work of the late Baron de Triqueti.

In the centre of the marble pavement stands the effigy of the Prince and the Cenotaph by the late Baron de Triqueti; and we will only add, at present, that the whole of the works have been executed under the direction of Sir G. Gilbert Scott, R.A., as architect.

SCULPTURE AT THE ACADEMY.

To pass without note or comment the contents of the sculpture-room would seem like a sanction of the prevalent indifference to this art; though it must be admitted that it will be but a short task to mention the works which are of any importance or value. One excellent name, that of Mr. Woolner, is unrepresented. There is no such group as the "Danse" of M. Carpeaux to remind us that in France there are artists who, with whatever faults of style, can still rise above the prosaic in the conception and execution of a subject; and the works which at all repay attention are chiefly the productions of two or three old contributors, who show the usual average of excellence, but hardly more. Of these the most important, perhaps, is the group of the "Siren and the drowned Leander," by Mr. Durham, the plaster model of which we noticed a year or two ago in the International Exhibition. The siren sits with the dead body stretched across her knees, gazing mournfully into the countenance, as if striving to understand where the life has fled to. There is much pathos in the group, which is composed so as to bear looking at from all points of view; the right arm of the siren seems, however, thin, and somewhat shapeless. The same sculptor's model for the bust of Hogarth, on a large scale, for Leicester-square, is a fine specimen of bold and effective modelling, and worthy of its subject. The story of Leander forms the subject of another important work,—a bas-relief,—by Mr. Armstead, showing the swimmer dead upon the shore, and Hero, with hair wildly blown about in the wind, weeping over him; an eagle which seems prepared to attack the corpse, fills up the left side of the composition, with outstretched and advanced wing: the work is in that very low relief which affords such a delicate and difficult problem to the sculptor in its subtle blending of relief with perspective; in execution this work is, perhaps, superior to the Leander group before alluded to, though in feeling, we think, less unusual. Mr. Armstead's seated figure of "Philosophy," designed for execution in bronze for a fountain at King's College, Cambridge, exhibits a female figure of considerable dignity of expression and pose, in the act of intently perusing a scroll; in endeavouring to give the somewhat strenuous and masculine character which the artist seems to have aimed at as befitting the subject, the arms have been made of an exaggerated and formidable "scantling" (to borrow a building term), with which the scale and proportions of the torso are hardly in keeping. Mr. Calder Marshall shows remarkable ability, in his "Nausicaa," in dealing with an unusual pose and action of the body; the princess, nearly nude, is letting herself down to a lower level of the rock to pick up the ball which has been thrown and lies at her feet, half supporting her weight on her two hands placed on the ledge of rock behind her; in choosing this position and action the artist has set himself a most difficult task, in which he has been quite successful in giving the muscular effort of the body without losing the repose and flow of line so important in sculpture; it must be admitted that the figure might just as well represent any one else as Nausicaa. The sculptor's "Convalescence," a clay model of a woman, fully clad, reclined in a chair in slumber, is a successful example of sculpturesque treatment of a realistic subject, far superior in its unpretending breadth of manner to the elaborately-dressed statues, all lace and crinkles and folds, which the corrupt taste of modern Italy in sculpture has set the fashion of. Mr. Marshall's third work, "Marguerite" (Goethe's heroine), hurrying along with wild eyes and garments blown back from her figure, to drown the child whom she clasps convulsively in her arms, is another work of considerable power; and if the distinct types of expression in these three figures by the same hand are taken into account, it must be conceded that Mr. Marshall is quite equal in this year's Exhibition to the reputation he has built for himself. We devoted some words to Foley's works recently, and may just mention that his bronze figure of "Stonewall Jackson" occupies a place in the Lecture Room, and the marble statue of the Prince Consort (for the University of Cambridge), and the plaster full-size statue of Sir Benjamin Guinness, are in the central hall. Mr. E. B. Stephens has had a definite and original aim before him in his two figures of young girls in the act of devotion, under the title "Evening" and "Morning": the former is the best, and both the expression and the physical conformation of young, half-developed girlhood are well given. A piquant contrast to these are Signor Barzaghi's two very clever figures of girls, called "Blind Man's Buff" and "Vanity"; the latter is, like too much contemporary Italian sculpture, pictorial rather than sculptural; but the former, though a trifle sensational, is an unusual and effective figure in action and *motif*. Mr. Boehm, who has generally been represented by portrait figures of a more courtly type, is this year conspicuous with a sitting figure of Mr. Carlyle, which shows qualities beyond the average of ordinary achievements: the face is a good likeness, and very expressive; the mouth especially has been carefully studied. A long dressing-gown, as one may suppose it, envelopes the figure, and furnishes the breadth of surface and flow of line which ordinary modern costume unhappily refuses to the sculptor. The name of Mr. Bruce Joy is appended to several things that are more or less good,—in particular his seated figure of a girl reading, called "The Fairy Tale" (terra-cotta), noticeable especially for the carefully-studied, and yet apparently spontaneous, manner in which the limbs and the drapery alike combine to give a movement of line, as by a consentaneous impulse, from right to left of the figure. This is a very good work in a quiet way,—more satisfactory than the sculptor's more ambitious work, "Forsaken," which very much wants repose, and is again an instance of pictorial treatment of sculpture. After these, attention is divided by works of more or less technical merit, some simply repeating commonplaces of *motif*, which have been worn out long ago; others appealing purely to the "goody" sense of the English exhibition-going public, in works with a religious or moral title; among which, by the way, Mr. J. Bell contributes a basrelief of the "Struggle between Good and Evil" which is so palpable an imitation of our greatest sculptor's treatment of the same subject, that it really should have appeared in the catalogue as "Flaxman and Bell"; and another artist sends a realistic group of mother and children, which might shortly be defined as "Dalou-and-water." Among the crowd of busts and portrait medallions we may particularise, as rising above the average, and attaining to artistic interest, Count Gleichen's family group of basrelief heads on a gold ground (perhaps chiefly interesting from its novelty); Miss Nottidge's two basrelief medallions called "Edie" and "Miss Maggie Harrison"; Mr. E. Gibson's two portrait medallions (1288, '90); M. Malempré's "Master Miss"; Mr. Bruce Joy's posthumous bust of Napoleon III.; M. Dalou's terra-cotta bust of Mr. J. E. Hodgson; and Mr. Adams-Acton's bust of Lady Victoria Campbell, which is very original in manner and treatment. We have not overlooked this latter sculptor's large figure of "The Angel of the Resurrection," but cannot term it a success, while it too much recalls Tenerani's work with the same title.

DOVER.

THE ancient Dwr or Dwfyrrha—the original British name by which Dover was known—vies with any town in the kingdom for the splendour of its ancestral traditions, whether as town or port, and its historical importance as the key of these realms during many centuries of warlike strife in Western Europe, is second to none. Conveniently situate in a valley, fringed by the sea, under the shelter of high cliffs upon the right and the left, the nearest port to the Continent, it has, during nineteen centuries, enjoyed the sweets of peace and felt the horrors of warfare, as well as seen more brilliant deeds of manly daring and skill than any ultra-metropolitan place within the dominions.

Possibly the oldest parts of Dover remaining, and now known, are within the castle precincts, where are portions of the church and fortifications of the Roman period, while many of the various styles of architecture since those times contribute to the existing military fabrics. This church, or the original one whereon the foundations of the present church of St. Mary the Virgin rest, is supposed to have been erected in the second century by Lucius, son of Coilus, king of Britain, on the establishment of Christianity in this country, in which he was assisted by Eleutherius, bishop of Rome. The town itself also possesses fragments of bygone monkish days, which have in their times played conspicuous acts in history. The Maison Dieu, or God's House, was founded as a hospital by Hubert de Burgh, Constable of the Castle, and for some time joint Protector during the minority of Henry III., after the death of Pembroke, and he bravely defended the citadel against Prince Louis, who besieged it, and thus not improbably saved England from a French succession. Its immediate object would seem to be a serai, or travellers' rest for pilgrims journeying from the Continent to the shrine of A'Becket at the neighbouring city of Canterbury. The building passed into disuse for religious and hospitable objects, on suppression of the monastic establishments, at which time its revenues amounted to 231*l.* 16s. 7d., and for several centuries served ignoble purposes, either as victualling stores for the Royal navy, or as stables and shambles, until finally, a few years since, a more worthy purpose was found for the relics, on their becoming the property of the corporation, who restored and converted the structure into an Hôtel de Ville, which contains many valued objects, also excellent stained windows, and paintings illustrative of events of national as well as local interest.

On the outskirts of the town, on the Western Heights, were discovered early in this century the remains of one of the few Knights Templars' churches which were established in A.D. 1118. This relic, however, claims notoriety as the spot where, at an early hour in the morning of May 15, 1213, King John Sans-terre or Lackland disgraced himself by swearing fealty to Rome, and on his bended knees before the legate Pandulph,—in presence of his barons and knights,—declared himself and England vassals of the Pope! A much more pretentious range of buildings was St. Martin's Priory, of about the same date as the Templars' church. Its history, however, goes back far beyond the time of Henry I. The church itself would seem to have been a grand imposing structure, proportionate to the other buildings of the priory, and cathedral-like in its dimensions.

To give an account of the castle and citadel fortifications in any way adequate to their deserts, of all the scenes and incidents in their chequered and eventful career during so long a period, would be to write a long history, for they have played conspicuous parts in many national dramas from before Cæsar's time down to our own.

Of late years the construction of the Admiralty pier,—the further it extends into blue water,—affords excellent facilities to Continental traffic for landing or receiving passengers and goods in any state of the tide and weather. It is a fine specimen of engineering skill: Portland cement with shore shingle enter largely into its internal and submerged construction, faced with grey granite. The whole forms a splendid promenade of half a mile or so in length, having lines of rail branching from the South-Eastern and Chatham and Dover Railways, running throughout the entire length to facilitate as well the works in progress as also the permanent traffic. Considerable shelter from southerly gales is now provided by the pier to vessels riding in the haven; but should the more extensive works, now agitated for so many years, for a harbour of refuge be carried into execution, Dover would then in very deed become the famous port Sir Walter Raleigh deemed it, himself a travelled mariner of great experience, and capable of giving valuable advice. He said,—and his words may not be without weight even now:—"No town or haven in Christendom is so placed by nature and situation, both to gratify friends and annoy enemies, as this town of Dover. No place is so settled to receive and deliver intelligence for all matters and actions in Europe from time to time. No town is by nature so settled either to allure intercourse by sea or to retain inhabitants by land, to make it great, fair, rich, and populous. Nor is there in the whole circuit of this famous isle any port, either in respect of security or defence, or of traffic or intercourse more convenient and needful than this of Dover."

As a health resort, whether marine or rural, the town and suburbs possess great advantages, of which the inhabitants make the most, and the local authorities seem desirous of effecting improvements of public utility. Geologically speaking, the town is for the most part built in a chalk valley denuded, filled up again to some extent with beach-gravel, which gives a dry surface to the ground, but somewhat wet subsoil. On the beach, with a south aspect, are some fine terraces of villas and mansions, enjoying a good sea view, and where the occupiers, be they residents or temporarily visitors, inhale the ozone-charged air breathed in gentle zephyrs from the Channel. More inland, good streets are observed, of well-built, well-designed dwellings, shaded with trees, and front gardens neat and trimly kept. Dover early adopted, and carried into effect, the Public Health Act of 1848, constructing lines of trunk and intercepting sewers, diverting the sullage-water from the Pent or Harbour Head direct into the bay. However, the points of debouchure upon the beach, although great improvements upon the old system, are not at all in accordance with modern ideas of sanitation. The sewers discharge by several outfalls into the bay. The Castle drain pours its contents on the beach below low-water mark, on the east or town side of the great pier. The town and citadel sewers discharge into the bay on the opposite or west side of the pier, chiefly by gravitation, but in the case of the borough drainage, by pumping for an hour or two before and subsequent to high water. From the set of the currents, from surface-action of the wind from the southward, and the pent-up waters of the bay, the sewage, although delivered into an immense body of sea water, is under certain conditions thrown back upon the beach, becoming a nuisance to bathers and promenaders, and to some degree polluting the air, in hot weather, blowing to the town, from fœcal matters left on the shore. Several remedial schemes are proposed for dealing with this difficulty—that under discussion by the Board for some time past is for amalgamation of the various outfalls and conveyance of the foul waters a mile and a half further from the town, beyond Shakspeare's Cliff in the direction of Folkestone. But whispers are heard that even if carried so far away the action of the tidal currents may prove unpropitious and reconvey the sewage back to Dover Bay. Herein, however, the Sanitary Board being fully alive to local interests will be satisfied experimentally before committing themselves to any final undertaking.

In a great measure Dover is free from those social nuisances so prevalent in many towns—especially old towns—back-to-back houses, closet cesspits, and yard pumps, with as a resultant the enjoyment by the inhabitants, as a body, of good health and low mortality bills. The water supply—abundant, pure, and cool—is derived from wells sunk deep into the chalk on the hill side near the castle, from whence it is pumped into cavernous reservoirs holding a million gallons and a half, well down below the ground surface. Here, however, as is too commonly the custom in our towns, the service is intermittent and delivered into house cisterns, although the practice is yearly less prevalent. In some few spots personally inspected we found the conditions under which the domestic supplies were delivered not quite creditable to Dover,—viz., the service discharging into tanks open to receive local contamination from defective "closets," and where the flushing and drinking water was furnished by the same cistern. Ventilation of sewers by passage of gaseous matters through charcoal trays, is provided for in several parts of the town; but from the condition of some of the houses an extension would seem desirable in older and central districts. The paths and roads of the town are in fair condition, and well scavenged; yet the introduction of gas-tar pavement does not seem altogether successful, if judged by the soft consistency of the mass, possibly due to insufficiency of boiling. Putting aside the defects referred to, and some that we may on another occasion revert to, we give a hearty commendation to Dover as an invigorating and pleasant seaside resort for all classes.

BIBLICAL ARCHÆOLOGICAL SOCIETY.

AT a meeting held on Tuesday evening, the 1st of June, Dr. Birch, president, in the chair, a beautiful series of water-colour sketches of temples and other buildings and antiquities in Thebes, and on the banks of the Nile, were exhibited. They are the production of Miss Edwards, who was present, and described them in a graphic manner. One remarkable subject of interest was the discovery of a speos, or rock-cut chamber, close to the large temple of Ipsambul, or Abou-sambul. Miss Edwards was, with a party, making a trip up the Nile, and one of the party, Mr. Mackinnon, had gone on shore, and was examining the surface of the rock, close to the gigantic seated figures, on the return face at the level of the feet. He saw a rent in the rock, and, clearing out the sand, and pushing in a stick, found that it entered the whole depth. He then sent for Miss Edwards, saying he had made a discovery. By perseverance they cleared away the sand deeper down, employing many of the natives for a couple of days, and came at last to a square aperture, which opened into a chamber 12 ft. by 12 ft.; and found that a large fragment of the ceiling had fallen on the floor. The sand had drifted into the chamber and filled it to a great depth. One side only, at the further end, was sculptured with hieroglyphic inscriptions and figures, and there were some characters written in chalk, stating that the chamber had been visited by some officer, probably of Rhamses II.

This discovery seems to prove that if the sand were entirely removed around the lower part of the rock, a tedious but not difficult task, many other chambers might be discovered, and probably produce curious results,—a pleasant occupation for future travellers.

Oxford Architectural and Historical Society. — The second excursion this term was to Coventry; but, partly in consequence of the uncertain weather, partly in consequence of the engagements of members, very few assembled to join in it. The programme was, however, gone through. A meeting of the Society was held on Tuesday evening, last week, at the Taylor Buildings, when Mr. W. S. W. Vaux, M.A., Balliol College, read a paper on "Recent Researches at the Colosseum in Rome," before a rather large audience. Mr. Vaux attempted to show that the excavations proved that at some time or other the great amphitheatre had been used for naval combats as well as for the ordinary gladiatorial contests, and at the conclusion of his address a discussion took place, in which Professor Westwood, Canon Ridgway, the President of Trinity, and Mr. James Parker took part, the latter differing from some of the views enunciated by Mr. Vaux. The usual vote of thanks terminated the proceedings.

ANTIQUE AND MODERN HORSE-RACING ARTISTICALLY VIEWED.

THERE is certainly one, if not more than one, word in daily, nay, hourly use, which will and must before long demand from the thoughtful some attention. It already, as it is, puzzles those sorely who find themselves, whether by design or accident, in some but little known spot on the earth's surface. We refer to that most significant and comprehensive word "civilisation." What is *civilisation?* and in what and how far does our *modern* civilisation differ from those older civilisations in the remote past which have gone before it, and to which it owes so much? A wide enough question this; and without attempting to fathom it, deep as it is, at present, we would dwell for a moment on one single phase of it,—just at this time of the year of special interest. It has been said, and often enough repeated, that it matters but little, in the attempt to judge of the "status" of a people, to know who it was that made such people's *laws*; but that it does matter to know who they were that made their *songs* for them. And the same may with equal truth be affirmed of their "business," as contrasted with their "amusements"; and more than all, perhaps, is it significant to know of the *form*, more or less artistic, which those amusements or pastimes assumed. It is impossible to pass a "Derby-day" without some such thoughts as these, or without a mental comparison or two between the racing "games" of Old Greece,—so highly civilised in so many ways,—with our own annual horse-racing displays. And not only as to these realities, but at their pictorial representations in whatever way these have been made, and are being made. It is, therefore, to this *artistic* aspect of the Derby horse-race, and to kindred things, that we would call a moment's attention, and revert at the same time to that older state of things which men can no longer see, but can still read about, and get a glimpse of, through the artistic work of those who, at the time they were visible, made some record of them.

But before we thus glance at these strange things and evidences of "civilisation," if they be so, we may remind the reader of one remarkable,—for remarkable it certainly is,—evidence of modern imitative and reproductive power. We allude to those exceedingly clever and painstaking representations of Classic life and modes of existence and manners, which some of the French painters, such as Gerome, Coomans, Magner, have given to the world. All, more or less, know a something of the multitude of pictures and engravings almost without end, which exist, representative, in an imaginative way, of the classic life and ways of work, and life scenes of the antique Greek and Roman. Quite into another world at times they certainly do carry you; but still are they all more or less false to the actual truth of things as they then were. Accurate knowledge of Classic details, details of costume, and architecture and household furniture, and a whole multitude of little matters which altogether went to make up Greek and Roman daily life, whether public or private, were wanting, and these French painters with study and ingenuity have got all these together, and have been able through them to build, and furnish, and people a Greek room of 2,000 or more years back, and to show the world what it looked like almost with as much accuracy of detail and fidelity as if they themselves had lived in that remote day, and, like the famous sleepers, had but wakened up for a brief moment to tell us all about it. We might cite not a few instances of it, but it is hardly needful, as many of them must be familiar to all. One of the most striking of these, and which bears on our present subject of inquiry, is "The Chariot Race," by Magner. It shows us a something of that always exciting scene wherein men and horses strive together for the mastery. Herein we may see a little of the intense eagerness and impetuosity of the old racers. All and everything would seem to combine together to intensify and add to the interest of the scene. The dresses of the drivers, the form of the chariots, the harness of the horses, all harmonise together, and combine to produce an artistic unity. Nature has certainly done her part, and art has but *added* what was needful in a special and individualised and national way. It would, perhaps, be impossible to cite any other example of nature and fine art in combination, and living action, so complete as this of the antique and world-famous chariot-race; and looking at them

even at this distance of time, it must cease to be matter of surprise that chariot-races excited that intense interest in the multitude that we know they did. *Fine art in action* was certainly the rule in old Greek life, and, in its degree, of old Roman life as well,—a phase at least of a high civilisation. We say "civilisation," for art surely, when thus pressed into the service of daily life, and even into "shows" and "pastimes," is a fair test of its presence.

There is, too, another thought here which occurs to us, and one which might well engage profitably the attention of the thoughtful. It is that of the indestructibility of some things. Of the precise date in the world's history, of the first horse-race, who would venture to determine? Far beyond the time certainly when history began to record the world's doings. The last horse-race happened but yesterday. However different the surroundings, and accompanying apparatus, the main ideas were and yet are the very same. The most advanced civilisation has not destroyed horse-racing, or the love for it in human beings; it has but changed, whether for better or worse, the art which must needs in some shape or other form a part of it. The "Derby" is a great artistic show of a certain kind, and wealth does all it possibly can to help and to add to it, and surely no expense is spared after the show itself is over to record it in forms more or less enduring and multitudinous. And the question occurs in more forms than one, has an ever advancing and refining civilisation, stretching from a remote antiquity to the present hour, done much, and what, to refine and make more artistic this world-wide pastime? And again, will the civilisation of the future eventually destroy it, and do away with it, or will it still further refine on it, and make it yet more and more artistic?

It is certainly somewhat unfair, though it is done perpetually to *compare* too closely one distinct style of art with another, for the purpose of determining priority of merit. It thus happens perpetually that some style or other of art or architecture comes to grief, and gets hopelessly, at least for the time, condemned. Thus the very Greek itself, the ideal of perfect work, as far as things human can be perfect, has at times suffered eclipse. But the beauty of such work never dies, and ever asserts itself with new force, and the mind is captivated with it again and again, sometimes in spite of itself. An English race-course, with all its accessories, as seen the other day, has a charm of its own, without doubt, but it might puzzle the keenest of art analysts to define the art style to which the whole of the show might be supposed to belong, looking at the whole matter, as we are here doing, from a purely artistic point of view. And it is this consideration that makes comparison with the old Greek forms all but impossible, if not, as we say, unfair. But still is comparison of some kind or other a necessity, for without this element, so useful in many ways, it would be difficult indeed to come to any certain conclusion at all in so changeable a matter as fine art. It must help, therefore, those who care to look a little closely into things past and present to compare attentively these graphic representations of the past of, horse-racing with the present, both to be seen without much journeying or trouble. The oftener and the closer these are looked at the more evident does it become that in the classic days it was the study of those who managed the "race" to harmonise artistically every detail of it. We are looking at this subject from a two-fold point of view,—as art in action, and as a fitting subject for pictorial and sculpturesque treatment. It was the first of these that so delighted Goethe, and it is of the two the most important, and certainly the most difficult to get a clear idea of. In the old Greek games, whatever they might have been, and putting aside their religious significance, there was always an effort made instinctively to render them artistic, and to harmonise the different elements in them, and, in short, to make the most of the opportunity, and to utilise it as an art influence. Nothing seems to have been forgotten or missed, and there can be now no doubt that the great and wonderful power which the Greek artists acquired over form is to be attributed in the main to this idea of utilising these "shows" and "games" as art influences, and to their perpetual sight of them.

Now let us turn for a moment to our own horse-racing shows, of which there are so many, all the year round, and of which so many representations and pictures are always being made. Of the *picturesqueness* of "the course," and all that it contains, there can surely be no manner of doubt, of its life, and movement, and perpetual changefulness, there can be no mies; but of fine art it might be difficult, indeed, to find much evidence. What there is of it is accidental, and appears but here and there, in fitful spots, and belongs to individuals. It would, perhaps, have been impossible in the antique horse shows to have found any group absolutely unfitted for the purposes of the sculptor. So thoroughly and completely did the horse and his rider or driver understand each other and work together. But this is hardly to be said of their modern successors. We might here go into details, and point to not a few things not a little incongruous and out of harmony with each other. To "witch the world with noble horsmanship" would seem to have been the aim of the antique horse-show; and to compel all things about it to combine in artistic harmony to this end. In the modern display this most surely cannot be seen, and is may be hardly to be looked for; but it serves to show how much there is in the future to be studied and to be at least aimed at. We have hardly dared to hint at the architectural surroundings of these great and popular gatherings, for much is conjectured, though much is certain and clearly to be made out in the antique shows. A very slight glance, indeed, is enough to evidence how much has to be done, and what a wide field there is for improvement here. Indeed, so strikingly does the difference between the old and the new make itself felt, when we come to the architecture of the matter, that we are apt to forget the sculpturesque portion of the work and to ask for the architecture first. We need not here trust altogether to the ingenious French painters who have done so much to interpret these curious things, for we may see not a little of it on coins and medals, and in fragments of sculpture, and thus find out, without possibility of doubt for ourselves, what the men of the old world did for their recreation and amusement, and, may we not add, for their own instruction and education, and, must we not say it, high "civilisation!" Art always present surely is one sign of this.

TECHNICAL EDUCATION OF WORKMEN.

IT seems to be desired that opportunities should be afforded to workmen to obtain a practical and scientific knowledge of their trades, in order to emulate the great developments of manipulative and intellectual skill in certain branches of industry on the Continent. One main object sought is to supplement the daily experience of apprentices, so as to enhance the value of the time devoted by them to the mastery of their several crafts; and, in addition to this, to complete the industrial training of young journeymen, and stimulate the faculty of invention for useful, rather than fanciful, purposes; a point of the utmost interest, if we remember the waste of ingenuity too often characteristic of working-class exhibitions. Thus we have tea-caddies composed of 2,000 bits, hearthrugs wrought from shreds of every uniform in the British army, and kindred trivialities which are, in reality, no more than proofs of patience, and an indifference to the substantial ends in view. The suggestion that a man who can artistically piece together several hundred eccentrically-shaped fragments of wood or cloth, will probably be a good hand at cabinet-making or pattern-drawing scarcely holds good, because it is rarely found that men carry these ingenuities into their own trades; for, as a rule, if they design a pretty bird-cage, bird-cage making is almost sure not to be their habitual vocation; while the contriver of a new easy-chair is very likely to be a manfacturer of fishing-rods. At the same time, all that renders home pleasant and healthy to the artisan merits the warmest encouragement; so that window-gardens, clean, cheap, and convenient fowl-houses, appliances for facilitating comfort and tidiness in small dwellings, and so forth, are by no means to be despised. But the true utility of technical culture, understood in its broad sense, consists in, to begin with, a proper knowledge of implements, whether for field-labour or the workshop. Let the tools be those of sewing-machine makers, book-binders, hand-wrought gold chains, or whatever else in the infinite variety presenting itself, here is the solid ground of competition for the British mechanic and his fellows in America or Europe. Thus, to quote an example or two at random, the Belgians claim to have invented the best baking oven, the Germans the best shoe last, the Dutch the best spectacles for ironworkers and founders, the Badenese the best cooperage, and the last the best carpenter's bench, the last being a claim which is admitted in many parts of the Continent. It is in such directions that the English industrial opportunity lies, and it is in this direction, to a great degree, that an honourable rivalry should be stimulated. The French have pushed us hard, it is admitted, in the matter of punches and shears for working by hand metals of even considerable thickness, together with their circular saws, mortising machines, and chisels, excellent alike in solidity and finish, as the shipwrights of Hamburg and the seaports of the North testify, as well as official reports. The Germans, moreover, are making swift advances in the manipulation of steel and hardened iron, and attribute their success principally to their system of capital instruction. It is unnecessary to disparage the products of our home genius in order to make these admissions; since, in many instances, England keeps the lead, and the only danger is lest competition abroad should, under the influence of superior training, overtake and pass her in the race. So much, indeed, was lately admitted by a lecturer in the Technical School of Mulheim, who told his hearers,—a most intelligent class of working men, interested in a particular sort of industry,—that they were far behind the English in such manufactures as those of plumbago crucibles, syphon condensers, distilling apparatus, smelting furnaces, the assay of gold and silver, and metal refining generally. These people, it should be borne in mind, almost live in a laboratory, and are sure, after this hint, to turn over the leaves of their books, and multiply their experiments quickly and intelligently enough. All that the English workman has to do, however, is to maintain his relative position, which technical study alone can enable him to do. If we can make boots which the Germans are glad to buy, even at Mayence and Leipsic, despite their admirable shoe-lasts, on account of their cheapness and excellence, why, it is asked, not assert a similar distinction in other arenas, hard as, in special branches, the rivalry may be? But there are two distinctive characteristics of technical education on the Continent, which ought not to be passed over. The first is that, in accordance with the idea, hackneyed rather in expression than in development, of combining amusement with instruction, children are taught, not only to practise industry, but also to delight in it, and in new contrivances connected with it, from their tenderest youth. There is no hardship, even to the infant pupils of Amsterdam, in learning to draw from models; to plait straw; to twist, fold, and cut paper; to play with dissected maps, and ask questions about them; or to understand how, and of what materials, a house is built. On the contrary, these little exercises afford them much pleasure, without overweighing their intelligence, as the bright young faces show; although, of course, the principle in injudicious hands, is liable to abuse. In the second, fond though the Continental workman is of his song and of merriment, he generally employs himself in reflecting upon, and modelling, as it were, suggestions associated with his own craft, whether it be pottery, mill construction, the foundations of structures, the arrangement of staircases, fixed or locomotive engines, boring metals, carpentry, dyeing, or weaving. To encourage this exceedingly valuable habit of the mind, the Austrian Government issues, every year, a technical dictionary of all the tools and implements used in industry, which, though costly, is available for the working man, through the medium of free libraries. In the preface to this important compilation, it is invariably reiterated,—"In all occupations, there are many grades, and to reach the highest is an ambition not to be underrated; but, at the same time, not easy to fulfil." On the other hand, it seems an equally vital point, as a matter of technical teaching, that not merely should the workman thoroughly master his own craft, and thereby elevate himself in the industrial ranks; but that he should comprehend how best to apply his wages, when he has earned them, and this is said without the slightest intention of moralising upon his social habits. His great necessities, included under this head, are:—The necessities of healthy living, the possibilities of humble household improvement, the fabrics which will wear longest and be the most serviceable, the food that is most palatable and nourishing—with the methods of preparing it; the difference between sham and substance in furniture, clothing, and all else essential; and the chances of benefiting through the examples of other nations, always keeping in mind the con-

trasts of climate. It is not too much to say that technical, which is only another word for practical, education of this kind, would add largely to the wealth and happiness of the working classes. At the same time, it need by no means be understood that these are the limits within which, or even including a thorough knowledge of special craftsmanships, the education we are speaking of should be confined. A thoughtful and keen-sighted inventor will often burst every bond of habit, and find himself in an entirely new industrial region, or even in one above that which is commonly described as industrial. In these cases an ordinary institute is no longer a sufficient school for him, albeit he might not be of that marvellous genius which hammered out from a single bar of iron that tree-like cross at Antwerp; and he must seek a higher instruction, wherever it is possible for him to find it. Nevertheless, his elementary studies will never have been thrown away. In the nature of things, as Porson said, such instances must of necessity comparatively be rare. The inventor is, too frequently, among the most self-deluded of men, as witness the Patent Offices of South Kensington and Southampton-buildings, and the history of ten thousand disappointments external to them. The weeding down, as it were, of this ingenuity would be no disadvantage to the really inventive class, but would rather prevent their ideas from being confused with the crude, the stale, and the impracticable; and here are lines of definition which may wisely be considered in any provision for teaching. That it does not exclude science is a sign of common sense, because science is an essential element in any improving industry;—chemistry, for example, as applied to dyeing; all metallurgical trades, tanning, curriery, plumbing, glazing, calico printing, and a hundred other industrial processes. Every handicraft, indeed, has its exigencies of this kind varying in degree according to the scale upon which the workman plies his trade, and, these being adequately met will in due season diffuse a general knowledge of the principles necessary to constitute an intelligent and improving workman. Regarded in this light, the importance of technical training which must not be confounded with all the pedantries of some Continental systems for adults not less than for the young, can scarcely be over-estimated, since it must tend to raise practical industry above the common rule-of-thumb principle; for every day's toil is a fresh lesson, and brings with it a fresh incentive. Only, the movement runs a risk, under particular influences, of being schemed out too large and on too desultory a surface. In one respect the cultivation sought to be conferred is practical beyond any doubt; that is, in so far as it stimulates manual dexterity, and what is familiarly called "cleverness," in boys, though it is a way to be very carefully grooved for them, if we would not have a surplus of erratic facility, leading to little or nothing. It frequently occurs that the parents of a youth allow years to elapse before deciding what to do with him; but, if he belong to the industrial order, there are tools which every lad should know how to use, and which he can never regret being acquainted with, quickening as they do his suppleness of hand and readiness in the adaptation of physical strength, confirming him in habits of routine; for, although routine may be obnoxious when it absorbs everything else, no real industry is possible without it,—no regularity, no efficiency, and, therefore, no progress. In factories, of course, a departure from routine lies exclusively within the province of the employer; but in the case of the mechanic, who is expected to know all the details of a complex handicraft, there is room for a certain independence of mind and action, though this, occasionally, may conduce to accidents. Some other points are commonly dwelt upon, and one is the necessity of technical learning on the part of many masters themselves, and the jealousy which they are said, from time to time, to exhibit with respect to the superior training of their workmen; but these are circumstances which, if they exist, belong to an obsolete period, and will speedily wear out. It is the same in a great degree with the evils of the apprentice system,—the confused and cumbersome state of the law; the irreconcilable grounds of dissatisfaction often arising on both sides; and the disjointed nature of the teaching. Thus, many masters can only teach part of a trade, as, for instance, country coachmakers, who have the bodies built in towns, and simply undertake to dress and decorate them. Here the technical knowledge acquired from experience is necessarily limited, and a carriage-builder's apprentice, nominally so styled, may, at the expiration of his term, know hardly anything of carriage-building. The most important point of any is, however, the gradual recognition by the working classes, and especially, be it marked, by those which are already the best educated, that there is a trying race before them, that long vistas of study must be contemplated, and that the world is moving upon something more than an easy level, with nothing but emptiness behind, and nothing but monotony in front. It is technical teaching which is to render the workman of the future worthy of his work, and capable of it.

CAST AND WROUGHT IRON GIRDERS, AND THEIR APPLICATION TO BUILDING PURPOSES.

ARCHITECTURAL ASSOCIATION.

AN ordinary general meeting of the session was held last Friday evening, the 28th ult., under the presidency of Mr. G. H. Birch, when Messrs. Robert Foster and H. B. Buckley were elected members.

Votes of thanks were accorded to Mr. Edward C. Robins for accompanying the members of the Association over the New School and Clergy House attached to St. Andrew's Church, Wells-street; and to the Rev. Benjamin Webb, M.A., for permitting them to inspect the building and enabling them to see a number of objects of interest connected with it on the occasion of their recent visit.

Mr. S. Flint Clarkson (secretary) announced that the next visit would take place on June 5th, (Saturday), the place selected being the New Floating Swimming Baths adjoining Charing-cross Bridge, after which it was proposed to visit the New Offices of the London School Board on the Embankment.

Mr. Richard Moreland, jun., then read a paper "On the Detail of Cast and Wrought Iron Girders, and their Application to Building Purposes." The conditions of equilibrium under which the safety of a structure consisted were, he said, in the first place, the effect of the attraction of the earth, or, in other words, the weight of the whole structure, including the loaded supports. The forces generated by this total load being resisted by the supporting pressures or the resistance of the foundations, the strength of structure should be such that the whole of it should be in equilibrium when it was loaded with its maximum weight, so that the greatest stress on any given portion or piece of the structure should not deform that particular portion. The stress in each part must not be greater than the material could bear with its ordinary working load with its proper factor of safety. Though the greatest stress which might come upon each portion might not cause immediate fracture, yet it must be of such strength that it might not suffer by fatigue or disintegration of its particles, whereby such injury might be done to it as would cause its fracture in the course of time. The component parts of a structure should not only possess the element of strength, but also that of stiffness and rigidity. The proportion of its dimensions should be such that it should not be capable of being deformed, twisted, or put out of shape. The general stability of a building depended on the way in which it was tied and bound together, not only by its internal framework, but also its main lines of masonry. For the last thirty years girders had been employed largely in the construction of large and extensive buildings, and had been carried to considerable spans, and support very great loads, much greater than the original structures where "wood-beams" were employed. Girders were maintained also in equilibrium by their own weight, and the load which they supported being acted upon by the attraction of the earth. The stability and strength of a loaded girder depended on the equilibrium that must exist between the forces occasioned by its own weight and the load which it supported, and the sum of the molecular forces and reactions which resisted them. They had still the "law of gravitation" acting on the girder and the cohesive nature of the material, and its resistance to crushing action against that force. Girders, by supporting loads in structures, played a very important part in their construction; considerable loads were necessarily accumulated upon them from large areas of loaded floors, and so discharged great weights upon their supports, either columns or piers in walls, so that it became important to consider the nature of the support as much as the design and construction of the girder. The action of the load on a girder produced vertical forces upon its supports, and at the same time tended to shear the girder at these supports. The shearing strain, as it was commonly termed, varied as the load was concentrated or distributed. The relative strength of a girder depended on the way in which it was loaded and supported. A girder would carry double the load if equally distributed that it would if it were in the centre. It was important in large structural girders that the weight of the girder itself should be considered as a portion of its load. Wrought-iron plate girders had merely a web and two angle irons at each flange; the depth might vary from 12 in. to 3 ft. Of course they could be made of a less depth than 12 in., but then they were in comparison with rolled iron girders, and it was then a matter of judgment which should be used. The web might be varied in thickness from $\frac{5}{16}$ in. to $\frac{1}{2}$ in., or for the deeper girders it might be thickened to $\frac{5}{8}$ in. The angle-irons might vary from $3 \times 3 \times \frac{5}{8}$ to $6 \times 6 \times \frac{5}{8}$. These girders of light loads were rigid and simply constructed. They did not require stiffness up to 15 in.; beyond that they required stiffening according to their length and depth, and the way in which the load was distributed upon them. The portion of the web nearest the flanges partook to a certain extent of flange strain, and might be taken into calculation from the flange area. Where the girder supported floors on either side of it, the upper flange might be kept nearly level with the top of the joists; the floor-boards being laid immediately over; the girders being thus immersed in the construction were stiffened sideways. Tie-rods should be carried from girder to girder through the web, and then into the wall, as the mere fastening of the timbers to the girder was not sufficient to take side strains. The rivet-holes securing the angle irons to the web need not be less than 6 in. pitch; the rivets from $\frac{3}{4}$ in. to $\frac{5}{8}$ in. diameter. Flange girders were similar to the web-plate girders, with the exception of having flange-plates riveted upon the angle-irons at each flange; but the rivet-holes which were made in the angle-irons for the purpose of securing the flange-plates to them reduced the strength of the angles, and so an addition had to be made to the flange-plate to compensate for the reduction of rivet-holes in both angles and flanges. The loss was calculated at about 17 to 18 per cent. The plate-girders being of equal section throughout, a certain amount of metal was wasted; whereas, in the flange-girders, the flanges and angles could be so arranged as to make the sections more proportionate to the strains which passed through them; so that this fact tended to counterbalance the reduction caused by the rivet-holes already mentioned. With regard to box-girders, these were used when a considerable width was required in proportion to the depth. There was no theoretical advantage of a box-girder over a plate-girder; but the only advantage that could be claimed for a box-girder over a plate-girder was that in isolated positions, or where there was a possibility of side strain acting upon it, the webs and angles of the girder act as flanges to resist such strain. Box-girders being usually of a greater width than plate-girders, the flanges thus made the girder stiffer laterally. Plate-gussets in large box-girders should be used at close intervals. In all three classes of girders the webs should be graduated, and become thinner towards the centre, being the thickest at the ends. The stiffness in box-girders might be placed with advantage inside the web, and so be riveted to both angles and web, the ends of the stiffener touching the inner side of both flanges. It was advantageous sometimes to use two plate-girders instead of a box-girder, and bolt them together; this was very useful for slinging purposes, as the bolts could be made to pass between the two girders. In respect of the discharge of weight from the end of girders, where considerable loads rest on girders, it was important to find the amount of load discharged on each support; and very often the accumulation of weight became very intense on one support. In those cases where a pier, or a sufficiently large one, was not available, the discharge should be taken by a girder resting upon the line of wall of sufficient length and strength to distribute that discharge on the wall, which it might be capable of supporting; stones, unless of considerable thickness, could not be depended upon. A cantilever or semi-girder, was a lever which was a beam fixed at

one extremity only and supporting a weight at the other; it was subject to transverse strains. The upper edge being extended, and the lower compressed; and it had a tendency to overturn the structure to which it was fixed. Strains in webs were difficult to define with accuracy; they might be vertical, diagonal, and curved. If vertical they must be diagonal, for the weight or load placed on a girder exerted a vertical force in consequence of the attraction of the earth, and this was generated into horizontal forces at both flanges, so that the web must be under diagonal strains, because the vertical force was converted into a horizontal one. The primary idea of a web might be taken from a single series of bracing, and supposing those braces to be crossed, and additional ones added so as to fill up the whole of the vacant space, there would then be sufficient iron in the braces to make two webs in consequence of their over-lapping, so that the continuous web would always be more advantageous, as regarded strength, than the bracing in lattice girders, provided it was convenient to employ it. Shearing strain at the centre of a girder supported at both ends, and with the load equally distributed, was nothing, and at the other sections was the sum of the weights between that section and the centre. The shearing strain at any section was the pressure transmitted to the abutment through that section, and was equal to the lines of ordinates of a triangle, and the sectional area of the web should vary accordingly to that ratio, being thickest at the ends and thinnest in the centre. The thickness of the flanges varying in the form of a parabola, being thickest in the middle and thinnest at the ends. All structures which spanned a space either thrusted their supports from each other, or dragged their supports towards each other, or pressed their supports by vertical forces. In the first case might be included brick or masonry arches, and other arched structures in iron or wood. The spring or skewback on which the arch was supported was inclined in proportion to the span of the arch, and the reason why arches maintained their position was, in the first place, the resistance of the material to compression, and the maintenance of its stability, and the resistance of the spring or the skewbacks to the thrust imposed upon them. However, in the case of semicircular arches, the springing being of course horizontal, these arches discharged their own and the weight they supported downwards in a vertical direction; but all arches whose skewbacks were inclined to act as a wedge did have a tendency to drive their supports outwards. The arched ribs of Blackfriars Bridge, and the Victoria Bridge at Chelsea, might be cited as examples of arched ribs composed of wrought iron, and Southwark Bridge as an example of arched ribs of cast-iron. Suspension-bridges, on the other hand, were a series of rods or chains slung from piers, and securely anchored to the side of the space to be spanned. One of the earliest bridges was the Menai Bridge, by Telford, with a central span of 580 feet, a versed sine of 50 ft., and two side spans of 258 ft. and 199 ft.; the height from high-water mark to the under side of the bridge was about 100 ft. Another example of a suspension-bridge was the one which was built in 1867 by Mr. John A. Roebling, an American engineer, over the river Ohio, at Cincinnati, of 1,057 ft. span, this having, in addition to chains, inclined rods from the piers to the platform to keep the bridge free from undulatory motion, which was caused by the passage of traffic across it. Another example might be given of a suspension-bridge which was designed by Mr. R. M. Ordish, in 1857, over the river Moldau, at Prague; the span was not very great,—about 492 ft.; but he had introduced inclined suspension-rods from the piers to a strong continuous girder which supported the platform on either side. These rods or chains maintained the girder in balance; the suspension-chain was also carried the whole length of the bridge, and attached by vertical rods to it. This method of construction made the structure more in the form of a girder than a suspension-bridge. The first two straight rods were attached to the tower, and slung the bridge at 82 ft. from the centre of each tower; the second two slung the bridge at 164 ft. from the towers, leaving a space of 164 ft. to be supported by two further chains, which met each other at the centre of the suspension-chain proper. No wave or undulation could thus be produced, as the principal portion of the supports were suspended by straight rods. The main and side span inclined links were all attached to the archway at five points, dividing the girder into six lengths; the side spans were supported by the chains at one point 82 ft. from the centre of the pier; the other straight inclined link went to the side span at the point of support; the width of the roadway was 31 ft., the carriage-way 20 ft., and two footways 5 ft. 6 in. each. The chains were anchored on one side in the rock, on the other was an artificial foundation; the main chains were of flat homogeneous steel, 14 ft. long and 4 in. by 1 in. cross section. Each link was tested to 22 tons per square inch without permanent set. The main girders supporting the roadway were 7 ft. deep; the cross girders were 32 ft. long and 2 ft. deep, being placed at intervals of 6 ft. 10 in. They had the combination of both arch and suspension-bridge in the stupendous structure which Mr. I. K. Brunel erected for the Devon and Cornwall Railway Company over the river Tamar, at Saltash, commonly known as the Royal Albert Bridge. It not only showed boldness of conception, but also great ingenuity of construction; and in it they had an illustration of the fact that in the arches the whole of the metal supporting the load was in compression, and in suspension-bridges the whole of the metal supporting the load was in tension. By the combination of the arch and the suspension-bridge, they got a structure independent of any thrust or pull, the whole of the strains being inherent in the structure itself, which transmitted its pressure, due to its own weight and that of its load, in a vertical direction upon its supports. The bowstring system of girders was that of the construction, where one member was horizontal and the other curved upwards, forming an arch, or downwards, forming a suspension flange. The design of the Royal Albert Bridge was to keep the upper member sufficiently high to enable a train to pass beneath it, as the upper tube was the whole width of the bridge, but in ordinary bowstring bridges, where there was a bow on each side, the lower member was made horizontal. A bowstring girder, in consequence of its uniformity of strength, was the lightest of all girders. The tension-rod or tie-beam received a tension equal to the horizontal thrust of the bow, and a bending action due to the load between any pair of suspenders. With an unequal load, some of the suspenders might be columns in compression, and some ties at various times, as the load was varied. If the girder was without diagonal braces, then its strength would depend on the stiffness of the bow. The thrust on the curved flange of a bowstring varied as the secant of the inclination. It was stated that the first bowstring girder was designed by Alexander Nasmyth in 1796, the father of the inventor of the steam hammer. It was a bowstring bridge of 3,000 ft. span. Menai tubular bridge was another fine example of girder construction, and was one of the earliest applications of wrought-iron tubular construction to bridge-work. But the first application of wrought-iron girders was at the bridge at Chalk Farm over the North-Western Railway, erected in 1846, by Mr. R. Stephenson. As to truss-girders, wooden beams might be trussed to carry considerable loads with iron truss-rods. The proportion of iron required for a truss, as in ordinary lattice-girders and that of the Bollman truss, and that of the Fink truss, was as 262, 370, 396. These trusses semed to have no advantage over an ordinary lattice-girder, provided that they were made of equal depths. Where girders were unequally loaded, and supported at both ends, the tensile strain on the flanges might be discovered by projecting lines at the centre of gravity of each of the weights as ordinates, these lines being proportioned to the weight discharged upon these points; if from each of these points lines be drawn to the end of the girder, forming a series of triangles, the apex of each being the points already referred to in the line of pressures; and if these lines be projected, and the distance of each intersection of all the lines be taken and added to the apex of each triangle in the same line of projection, then the curve drawn through the points thus obtained would be equal to the total strain produced upon the girder by the applied weights. Mr. Stephenson's first idea of designing the tubular bridge was to conceive two cast-iron beams, of equal flanges, 16 ft. wide and 30 ft. deep, laid side by side, the whole of the metal in the flanges being transferred to the space between the webs. This idea was ultimately worked out in the section of the bridge now in existence. The shearing strain in girders, supported at both ends, was decreased as the centre was approached. The deflection of smaller beams, from their own weight, was as the square of their lineal dimensions. In designing wrought-iron girders, it was important to collect the whole of the metal as far away from the neutral axis as possible, and to accumulate it in the flanges, leaving the web and its stiffening to take up the intermediate strains as might be required. The resistance that cast-iron girders gave to a compressive strain was from 40 to 42 tons per square inch as a crushing strain, from 6 to 8 tons for a tensile strain, so that the area of the flanges of cast-iron girders should be in this proportion—about 6 or 7 to 1. The upper flange, however, where the girder was isolated and not held in position by the structure itself, should be proportionally wide according to each particular case, as the upper flange had to resist flexure which would possibly deform it before compression of the flange could occur; but where the web and upper flange were supported by the structure itself, as in the case of arches and flooring, the theoretical proportion might be taken. Cast-iron girders should not be proved beyond their working strain if they were to be used afterwards. If it was desired to see the effect of the strain upon the girder, select a few and destroy them by the proof; the facts of the case would then show the conditions under which the girder existed. It was not advisable to use cast-iron girders of a greater length than 25 ft., and depth of 1-20th span, to carry considerable loads. Wrought-iron became as economical and safer; and also in the event of girders being heated to redness during a fire, wrought-iron was likely to stand the cooling action of water poured on it better than cast-iron. After the fire at Hadley's Flour Mills, in Thames-street, it was discovered that the great portion of the girders that had fallen were shorn off close to the bearing, and this could not have occurred if there had been any particular load upon them. The girders had evidently been red hot in the fire, and the bearing being immersed in the wall, partook of the wall temperature, so there was unequal temperature set up in the girders, and the water which was used to put out the fire cooled it down at the junction where the varying temperatures occurred, and so fractured the girders at that place; this would not have occurred if the girders had been wrought-iron. It was important that girders, if they had to withstand fire, should be encased in either plaster or wood. Cast-iron would, no doubt, withstand the heat as well as wrought-iron, but would not bear any shock during the time that it was kept heated. In a diagram before them he showed a design for encasing wrought-iron girders completely in concrete. The girders were formed continuously from one end of the building to the other, and were made in two parts, and one was fixed on either side of the columns. Each of them was composed of a simple angle-iron, $5 \times 4 \times \frac{1}{2}$ in. for each of the flanges, and the bracing was composed of $5 \times 5 \times \frac{1}{2}$ in. angles for the first bar, and $4 \times 4 \times \frac{1}{2}$ in. for the second bar. The girder was thus an open braced parallel girder, 15 in. deep, the concrete being $2\frac{1}{2}$ in. thick on both top and bottom, so that these girders were immersed in a concrete block 20 in. deep. Bow-string girders, 10 ft. 9 in. long, 15 in. deep, were placed one over each column, and three between; the girders were 15 ft. long, and 12 ft. apart from centre to centre; the bow-strings were thus 3 ft. 9 in. apart; they were composed $3 \times 3 \times \frac{5}{16}$ in. angle-iron for the top and bottom flanges, with $3 \times \frac{5}{16}$ in. flat iron to connect them together. The advantage of this arrangement was that the block of concrete was not separated by the webs of either the main or transverse girders, but adhered through the braces; an effectual coherence was thereby made, and the whole of the iron composing the floor was immersed in one solid block of concrete from one end of the building to the other; this floor was calculated to carry a load of 3 cwt. to 1 ft. superficial. It was proposed that the columns should also be cased by using a sheet-iron cylinder made in three segments, and working on hinges, and putting it round the column with a space of about 3 in. all round, between the interior of the casing and the outside of the column, and then to pour some fire-proof material into this space, either cement or plaster, and when that was set to remove the casing. This was designed for a warehouse for inflammable materials. It was believed that this would effectually prevent the spread of fire, as the whole of the iron would be encased.

It was found that when girders were deflected, the lines which were originally vertical and

parallel in the web, would not be vertical, but would form wedge-shaped segments on the girder; but all the lines were straight, so that the two lines at the ends of the girder, if projected, would meet at some distance from the girder. Now this same effect took place only in another way in columns. The pressure, with the greatest care possible, could never be applied to a column of 10 diameters to length, so as to transmit the strain through all the particles equally, so that one portion strained to a greater extent than another, and bent the columns from the ends by the action of the pressure. This was exactly similar to the girder being pressed in the centre and becoming deflected, and the under-side of the girder becoming unparallel. Of course the point of flexure in the column would be a point opposite to that where the strain occurred. A fine example of a curved girder were the arched iron ribs of the St. Pancras Railway Station. The arch was 240 ft. span internally, by 96 ft. high from the springing to the top. From the springing to the under-side of the tie-girder was 6 ft. The tie itself was composed of girders which were supported on columns, and this supported the whole of the floor of the station. The ribs were 6 ft. deep and 18 in. in width, tapering to 2 ft. 6 in. at the base; the depth was one quarter of the span; the lower part of the ribs was about 20 ft. high, of solid plates; and the rest was composed of open brace-work. It was designed by Mr. H. W. Barlow. The whole construction might be taken as a girder, the rib forming the upper flange, and the tie forming the lower flange, without any immediate bracing whatever. Any segment of this rib might be assumed to act in the form of a girder; and, suppose one-half of it to act as a prop or strut, the other portion would act as a girder, and the line of equilibrium would not pass outside the line of structure; and, owing to the form of the arched rib, portions of it might act as girders, one side being in compression, and the other in tension, as the case might be. The line of compression might pass outside the structure at the base, one flange having to be sufficiently strong to take the whole compression. The strength in the crown was greatly in excess of that which was really required. The structure gave a very good example of the arched rib with a tied base, without internal bracing, the bracing being within the rib itself. Where a considerable concentrated load was discharged upon piers in a building by a girder being placed over them, and this girder being supposed to discharge the strain equally on each of the piers, then the sills of the openings between the piers should be girders also, or inverted arches. The base of the pier would receive just as much pressure as the top of it, making, therefore, an unequal discharge of pressure in the structure beneath, and between the piers. A case in point might be noticed. The window-sills at St. Paul's Cathedral were bent in an upward direction from the pressure being discharged on the piers at the side, and not between the piers, as it should be; whereas, if some inverted arches had been placed under the sills to discharge the weight, this would not have occurred. This was also the case with foundations. Walls with continuous foundations should not have isolated piers merely laid upon the line of structure without having inverted arches or girders. Foundations should never act as girders; the whole of the foundations should be in compression. The only way to make them act as girders was to put a girder on the top of them, or some inverted arches over the sub-structure. In granaries and stores considerable loads had to be taken by the side partitions and walls,—so much so that there was often a greater load upon the walls and partitions than upon the base or floor of the structure. The loads being very unequally distributed, especially where the spaces were being filled or emptied, the author had designed structures for testing a side strain equal to from 10 to 15 cwt. per square foot at the base of the structure by employing thick corrugated iron as a skin or basis for the partition, with a system of joists or girders on either side, and these being bolted through the corrugated iron, so that there was a system of girders on either side of the corrugated iron. Ties acting as columns at the same time, were placed at intervals of from 10 ft. to 15 ft.; these passed through the walls of the structure in the case before them. There was a series of spaces 40 ft. square and 50 ft. in height; these were divided by two cross partitions, supporting in each space of 20 ft. square a load of about 270 tons, and as one space was filled another might be being emptied, so that each side might be alternately put in compression or tension, as the case might be. Each tie, indeed, had to act as a tie-rod, as a column, and as a girder; it had to act as a tie and a column, because of the alternate extension or compression, whether the space itself was filled, or the adjoining space was filled; it had to act as a girder, because when the space was being emptied, the drag of the grain downward acted upon the tie with the whole force of the descending mass; the external walls had to be tied with longitudinal tie-rods in the same line with the ties, within the spaces, by having ties built in or bolted to the wall; the walls only had an outward thrust, and were not acted upon in two or three directions, like the partitions. The corrugated iron was about ⅛ in. thick, and 5 in. flute; the flutes were placed horizontally, and the spaces between the first set of girders, which were vertical, were 3 ft., and the corrugated iron was made in a continuous sheet right through the building, both vertically and horizontally; the vertical girders were made continuous on either side of the corrugated iron; and the main girders which supported these vertical girders were horizontal, and also ran the whole length of the building. They acted not only as girders, but as ties to the wall: the corrugated iron also assisted them. Tie-rods were taken from these girders, and carried through the building continuously, and strongly fastened to the walls. This construction was light, and exceedingly strong; it had been in use for several years, and no flexure had taken place, loads of 15 cwt. being discharged at the foot of some of these structures.

The President said there could be but one opinion with regard to the value of the paper just rear to the meeting. It showed them the necessity of studying the subject for themselves, for there were very few of them who had not met with the question of iron and its application to building purposes in the course of their practice.

Mr. Bancroft, in speaking of the construction of the Menai bridge, thought that the author of the paper had not given credit to the late Sir William Fairbairn in regard to the share that he had in that work.

Mr. Robertson was glad that the subject of iron construction was especially treated in some of the classes attached to the Association, for the tendency was still very much to neglect its study, especially by the younger members of the society, who were apt to be drawn by the more attractive branches of the profession.

PRIVATE BILLS IN PARLIAMENT.

THE state of private Bill business in resuming after the Whitsuntide holidays may be epitomised.

There were 262 Bills on the general list at starting, fourteen of which did not reach the first reading, which leaves a residue of 248. The Lords commenced proceedings with sixty-seven Bills, all of which have been dealt with. In rejecting a Bill, my Lords find euphemistically that "it is not expedient that the parties should proceed," or some such gentle formula. Of this class, and of Lords' Bills withdrawn, there are seventeen, leaving fifty Lords' Bills for the Commons to deal with. This leaves 231 Bills on foot. The Commons' committees have these fifty Lords' Bills to consider, and there are still twenty-one Commons' Bills that are not yet reported. In the Commons thirty-eight Bills have been withdrawn after first or second reading, and eleven have been rejected on preamble. This number includes two Bills in respect to which a needed dispensation from Standing Orders was not granted.

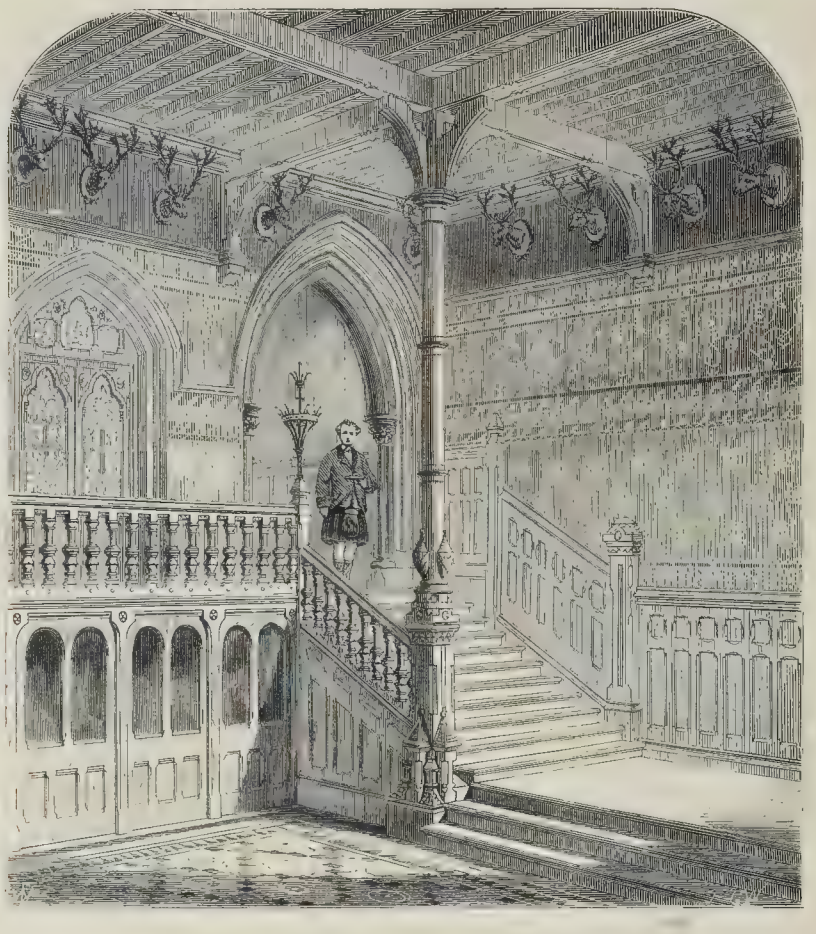
The first committee to resume its sittings since the recess was Mr. Knight's on Group E, the Bills before the committee, which were taken together, being the Crosshill Burgh Extension, and the Glasgow Corporation (Municipal Extension, &c.) Bills. Tuesday, the first sitting since the recess, was the ninth day of hearing. The Crosshill Burgh Extension Bill is opposed nominally, or really, by the Corporation of the City of Glasgow; the Caledonian Railway Company; the Caledonian and Glasgow and South-Western, and Glasgow and Kilmarnock Joint Line Committee; the Commissioners of Supply of Lanarkshire; the Govan Statute Labour Road Trustees; the Royal Incorporation of Hutchinson's Hospital; and others. The Glasgow Corporation (Extension, &c.) Bill is opposed by thirteen petitions, but is also fortified by six petitions in favour of the Bill. The petitioners in opposition include the Commissioners of Supply of Lanarkshire, and of Renfrewshire; owners of property in Lanarkshire, and in Renfrewshire; owners of property in Pollokshaws; magistrates and commissioners of police of the burgh of Crosshill; Cathcart Parochial Board; the Cathcart School Board; the Govan School Board; the Caledonian Railway Company; and the combination of railway interest that oppose the Crosshill Bill; with other petitioners. The most eminent counsel at the Parliamentary bar are retained on one side or the other, ten or a dozen Q.C.s and juniors holding briefs in the case. The Crosshill Extension is a comparatively small affair; by the Glasgow Bill it is proposed to swallow up whole the Crosshill Burgh, including the proposed extension. The magistrates and commissioners fight for existence, and it might almost be supposed as hopelessly as Denmark fought against the overwhelming odds that wrenched from her Schleswig and Holstein. The case, however, is not quite so bad as that, the county authorities of Renfrew and Lanark giving their powerful support to the Crosshill petitioners. The opponents of the Glasgow Bill have a decided opinion that it would be a readjustment of "local taxation" in the wrong direction to make the people of Crosshill jointly liable for Glasgow Corporation obligations, incurred, it may be, half a century ago, for objects in which they have no interest, and from which they can derive no benefit. The Glasgow Bill is regarded with alarm by the authorities and inhabitants of other outlying burghs, the boundaries of which abut upon those of the city of Glasgow. Such, for instance, as the burghs of Partick, Kinning Park, and Govan. The little burgh of Crosshill is attacked first, and if successfully, it will only prove, probably, the commencement of a policy of annexation, and the other burghs will be swallowed in succession. The committee give unmistakable evidence of being aweary of the contest. The evidence on the Crosshill Bill was first taken; the Glasgow witnesses were heard in part on on Tuesday, the 25th ult. Concerning one of them, the chairman of the committee remarked that it was "a pity the promoters had brought the witness all the way from Glasgow for all the good he had done them." Another Glasgow Corporation witness cut a sorry figure under cross-examination by Mr. Venables, who confronted him with certain pamphlets he had formerly written in the interests of the Burgh of Crosshill, and diametrically opposed to the evidence he was now giving. The questions were put whether the circumstances had changed materially? Whether witness was in the pay of Crosshill then, and of Glasgow now? We forbear from giving his answers, except that some one else had prepared the pamphlet, and that he had allowed his name to be put to it without due thought.

The following unopposed Bills were passed through the committee stage:—Fishguard Railway; Ingleby, Bilsdale, and Helmsley Railway; Boston and East Coast Railway and Pier; Gravesend Terrace Pier; West Lancashire Railway; Romford Canal; and the London, Brighton, and South Coast Railway Bill.

THE NEW TEMPERANCE HOSPITAL.

THE Board of Management of the London Temperance Hospital, Gower-street, in order to meet the numerous requests for participation in its benefits, have succeeded in purchasing, as a site for a new and larger hospital, a freehold plot of ground, on the north side of St. James's Chapel of Ease, in the Hampstead-road, near the junction of the Euston and Tottenham Court-roads, and about five minutes' walk from the Gower-street station of the Metropolitan Railway. The site itself, which covers a superficial area of 8,554 ft., and has a frontage to the Hampstead-road of 72 ft. 6 in., has been secured at public auction for 3,300*l*. It is proposed to erect a hospital to contain from 80 to 100 beds, placed for sanitary means, in wards of small dimensions. The best modern system of ventilation and drainage will be employed. There is an open space of about four acres in the rear. The Board propose to raise a building and extension fund of 20,000*l*.

Japanese Metal Work.—Some very fine metal work brought from Japan by Mr. Mitford, the author of "Tales of Old Japan," has been added to the South Kensington Museum. One specimen is an eagle formed in hammered iron.



INVERCAULD, BRAEMAR. VIEW IN THE LOWER HALL.

INVERCAULD, BRAEMAR, ABERDEENSHIRE.

THE additions and alterations to the mansion-house of Invercauld have been in progress for some few years past, and are now almost completed, with the exception of the decorations. The works have been carried out from the designs, and under the superintendence, of Mr. J. Thos. Wimperis, architect; the contractors being Messrs. Warruck & Daniel, of Aberdeen, who have executed their work in a very satisfactory manner.

The style of the extended building is the Scotch baronial. The old foundations have been used, and the old mansion is preserved as much as possible; in some parts two or three stories have been added; while the most important feature, and one that gives grandeur to the whole, is the carrying up of the tower to a height of about 70 ft. to the battlements, together with the staircase and other turrets, and a flag-tower. The tower measures on plan 47 ft. by 27 ft.

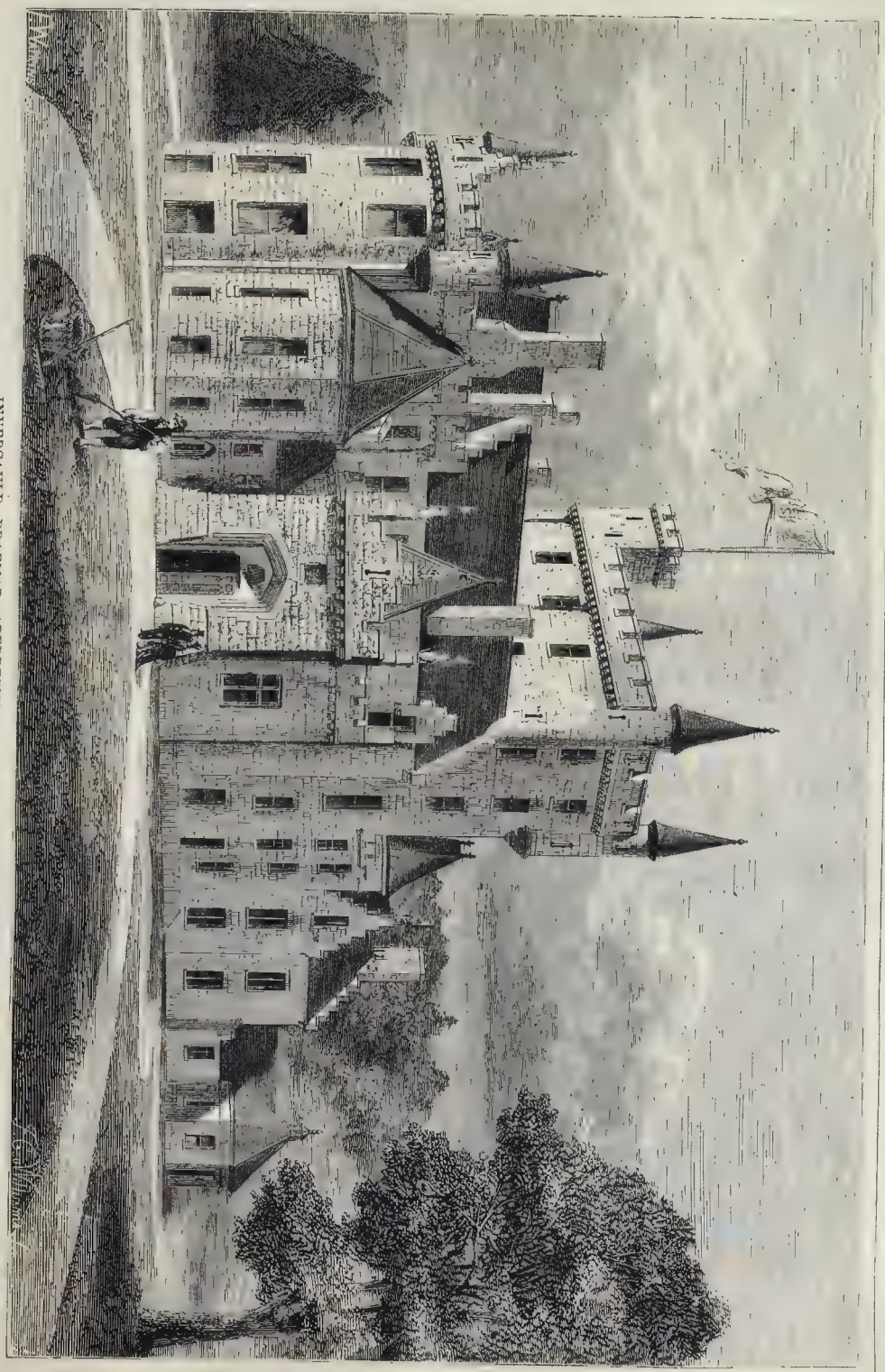
The new entrance doorway opens into a vestibule, which is about 14 ft. square and 20 ft. high. It has an open timber roof, with circular angle ribs springing from carved stone corbels, meeting in a large pendant in the centre, from which lamps will be suspended. Swing-doors lead into the lower hall, of which a view is given, and this communicates with the upper hall by a flight of steps about 12 ft. wide. Both these halls have timber roofs. The size of the lower hall is 22 ft. by 22 ft., and 22 ft. 6 in. high; while the upper hall is 33 ft. by 15 ft., and 15 ft. 6 in. high. At the end of the upper hall is the drawing-room, from the windows of which some of the most beautiful and romantic views of the valley of the Dee are visible, and which vie with almost any in Scotland. The size of this room is 34 ft. by 22 ft., and 15 ft. high. The old dining-hall is preserved, and is at a lower level, and is approached by a handsome pine staircase from the upper hall and along the garden corridor. The whole of the masonry is of blue granite, quarried on the estate about four miles from the mansion, and is finished externally with rough hammer-dressed face.

Polished granite columns and chimney-pieces have been used in the interior, and the windows of the hall and other portions have been filled with heraldic glass by Messrs. Gibbs & Moore.

The interior fittings, moulded and carved, are of pine-wood cut upon the estate, and chiefly from the forest of Ballochbuie, and were in great part prepared in Aberdeen.

At the latter end of last year her Majesty the Queen, accompanied by Princess Beatrice, paid a visit to Miss Farquharson, of Invercauld, and inspected, with much interest, the improvements and additions to the mansion-house. The house is a conspicuous feature in the view from the summit of Lochnagar. Craig Clunie and the Lion's Face, directly opposite the mansion, on the south side of the river, would of themselves suffice to redeem the landscape.

The dining-room is of historical interest. The chiefs of the clans assembled there when the Earl of Mar raised his standard, at Castleton of Braemar, in 1715. His address calling out the clans was dated from Invercauld House. This was the last time on record when the "Fiery Cross" was sent through the Highlands. The Earl of Mar was feudal superior over the district, and induced the Laird of Invercauld (the great-great-grandfather of the present proprietor), much against his will, to accompany him to England with some followers. He subsequently distinguished himself at Preston, where he held a bridge with a hundred men against considerable odds. On the failure of the expedition he was taken prisoner, and lodged in the Marshalsea Prison, where he remained until 1717. At the time of the rising in 1745 he was still alive, being seventy-six years of age, but did not side with the Jacobites. The clan, however, went under Farquharson of Balmoral and Invereye, and Farquharson of Monaltrie. According to the "Annual Register" of the time, the clan numbered 700 at Falkirk, and only 300 at Culloden, and it is believed that few of the number ever returned to their homes.



INVERCAULD, BRAEMAR, ABERDEENSHIRE.—MR. WILKINS, ARCHITECT.

NEW PUMPING-ENGINES FOR ST. PETERSBURG.

THE City of St. Petersburg New Waterworks Company, having contracted with Messrs. Laidlaw & Sons, engineers, Glasgow, for the construction of the pumping-engines, by means of which they are to supply a large population with water, a pair of these fine pieces of machinery have just been finished, and are all but ready for shipment by Messrs. Donald Macgregor & Co., of Leith. Three important districts of the Russian capital,—Wassiliostroff, Vieux Petersburg, and Viborgskaja,—it seems, have hitherto been dependent for their water supply on the ordinary barrels drawn by horses; but now it is intended, by using a pair of powerful pumping-engines for each district, to draw water from the Neva, and thus bring it within reach of the inhabitants. The pair of engines just completed, and which are to be erected in the Wassiliostroff district, are on the horizontal condensing principle, having a combined nominal horse-power of 130, with double-action pumps, double-beat Cornish valves, and will be worked at a high degree of expansion, with a view to the economy of fuel. In order to efficiently carry out this purpose, the expansion gear has been constructed on a somewhat novel plan. The engines are furnished with 30-in. cylinders, and are of 4-ft. stroke. The ground forming the site on which the two new pumping-engines are to be erected being of comparatively recent formation, it has been found necessary to use piles to afford a secure foundation,—a necessity which will be more apparent when it is stated that the engines are about 36 ft. in length, whilst the weight of each sole-plate is about 10 tons. To Mr. John Thomson, formerly manager at the Alliance Engine Works and Foundry, and now a partner with Messrs. Laidlaw, belongs the credit of designing these species of mechanism. The contract price of the whole of the engines, we are informed, amounts to the large sum of 250,000*l*. The engines yet to be constructed will be less powerful than those ready for shipment,—they will only be each about 80-horse power combined, and 50-horse power nominal.

A CITY OF THE FUTURE.*

LETTERS FROM SHAKSPEARIA BY SCAMOZZI SMITH, ESQ., ARCHITECT.

Written to his Friends in London during the Summer and Autumn of 1915-16.

MY DEAR ——,—I must now fulfil my promise to give you some account of the style of architecture prevailing here, which, as an architect, you will naturally be impatient to receive.

This new nation have made no attempt at the invention of a new style, but have adopted and made their own the styles which they found ready to their hands: I say styles, for they have cast none away. In fact, while you in England, divided into two hostile camps, have been pitting style against style, with all the rancour of political faction, they have been quietly and unitedly rearing to perfection for their various uses three several styles, viz., an Italian, a Romanesque, and a Gothic. These, though clearly definable, are yet so broad that they touch each other, and make perfect harmony among the different buildings and parts of the city. By the exercise of an enlightened spirit and creative energy in the treatment of the Italian and the Gothic—the trabeated and the aspiring styles—they have unconsciously greatly lessened the gap between them, and rendered the intermediate style—the Round-arched or Romanesque, which they have evolved from the Round-arched style which preceded the Gothic of Europe—a complete link between them, joining up to both. The Italian has been so thrilled with the picturesque that it quite reaches the Romanesque on one side; while the Gothic has been so sobered, chastened, and ennobled by a more rational, religious sentiment, that it perfectly harmonises with it on the other. They not only touch,—they are a sort of trinity in unity: each style has imbibed so much of the others, and all have so much assimilated to the place, that they appear, in a broad view, but as one comprehensive and varied style, embracing so many subordinate manners of design, and all the known principles of construction and means of roofing over space,—one great, broad style, which has a constant tendency to simplify itself and become more homogeneous.

If such it may be considered, where is the style that for richness, copiousness, and capability can compare with this style?—a style rich in the spoils of all times and all countries; with ideas from the east and from the west,—a style in which every beautiful feature or idea in all ancient, Mediæval, or modern style re-appears intensified and more beautiful than ever. What is excellent and beautiful in all these has been, as by a sure chemistry, extracted, while what is defective has been allowed to fall. It reminded me of the movement of the Caracci.

In selecting their style in any given instance, architects are determined by the purpose of the building: ecclesiastical edifices are almost always Gothic or Romanesque; civil, municipal, and commercial buildings are Classic or Italian; but all styles are so rationally treated,—so influenced by local considerations of material, scenery, and climate, so thrilled by the spirit of the time and occasion, that no antagonism anywhere exists. Nothing is out of place. Each building seems just what it should be, and where it should be. Nor could you imagine it otherwise than it is without introducing a false image to your mind. I have seen at one end of a street a complete Florid Gothic church, and at the other an Austral-Italian palace, affecting the grandeur and severe simplicity of the Athenian temples, and yet detected no discordancy in the street; so artistically have the buildings been united by intermediate edifices.

The way some streets have preserved their harmony I am told is this:—The public buildings, churches, &c., having been erected first in different styles, have operated as key-notes to the rest,—the private ones,—which have been filled in afterwards, and become the means of uniting them, till all the parts, various as they may be, are held together by an invisible thread of gentle transition.

Though no absolutely new style has arisen, new and beautiful designs are everywhere seen,—

> "New as if brought from other spheres,
> Yet welcome as if loved for years."

Welcome, not only because they contain the old familiar elements as well as the new, but because they are beautiful as well as new,—because along with novelty are combined æsthetic beauty and structural propriety and sufficiency, which must all unite in the formation of a true work of art. Such are the multitude and variety of these true and genuine productions, that often an uninterrupted current of rich and bright thoughts and glowing fancies regales the wayfarer through entire districts, who cannot but feel that a spirit of beauty hovers around these delightful scenes, and glides along these enchanting avenues with healing on its wings. The architects, out of a study of all styles, seem to have evolved the true principles of architecture for their guidance in design, and exchanged the pursuit of mere style for the pursuit of art itself, the shadow for the substance; and are consequently on the way to the restoring of the golden age of architecture, or the creation of one that may rival the Periclean. They are truly Australian works, because the architects have brought their own minds and feelings, imbued with the poetry and spirit and sentiment of their country and times, to bear upon their elements and their reconstruction.

There is no attempt here at utter originality in all details and features. All their buildings reflect the past as the source of their elemental design,—Greek, Mediæval, or what not. Their aim is not to make their buildings entirely dissimilar, unlike all former buildings, but to make them beautiful buildings, to vie in beauty and artistic quality with all the works of the past. Their anxiety is how they may impart to them all those qualities on which beauty depends,—unity, variety, breadth, power, harmony,—the qualities that alone entitle them to rank as works of art. In this they maintain that they are doing just what Greek or Mediævalists would have done under the same or the like circumstances, which circumstances they believe, and I think truly, are very different from those under which the ancient and Gothic architects entered on the elaboration, and creation, and refinement of their style, which from the imperfect germs, Pelasgic, Egyptian, and Assyrian germs, was necessarily more of a creation, a new style, than ours need or ought to be out of the perfect materials bequeathed to us.

MY DEAR,——,—Of the three great styles indicated in my last, the newest seems to me to be the Round-arched one; for this, when first taken up, was farthest of any from its perfected condition. Convinced that the Norman, compounded of two perfect elements, the column and round arch, and which owes its boldness and vigour to the inborn genius of the conquering race who reared it, still afforded great scope to architectural invention and taste, and was susceptible of the highest refinements, the Australian architects set themselves with enthusiasm to the task of working it out. They have taken it up at its best and most consistent phase, before it betrayed any tendency to develope itself into Pointed, and have carved it out agreeably with its own spirit; yet with all the purity that a taste chastened by Classic culture would dictate, and which had preserved the Romanesque ideal in their minds from everything barbarious and infantine, or that was tending or transitional to the future Pointed style. But this great Romanesque style is derived not from the Norman only, its elements are from all the Romanesques; Lombard, Rhenish, Byzantine, Provençal, Pisan, Italian, Romanesque,—all, whether domed or vaulted, have been laid under contribution. Everything good and consistent in each of these styles is preserved; and every hint for freedom of treatment taken advantage of. Out of all has been produced one noble and consistent Romanesque, with all the grandeur of the original Roman and all the richness and grace of Pointed Gothic; and to which genius, and immense resources in the past style have given an immense elemental variety. The variety of capital alone is enormous—some of these are from ancient German and Norman specimens, purified and corrected; but most of them are new designs in the same grand spirit as the old. They are chiefly foliated after the Corinthian type, and the bold abacus is generally richly moulded and carved.

I was delighted with the great churches—the creation of this style, with their massive unbuttressed walls, and bold square-sectioned arch; for they confirmed my own impressions of the Norman, Rhenish, and Lombard styles, which I always considered as all pointing to a style distinct from Gothic; capable of being purged from all impurity, and made as perfect a style in all decoration and detail as the Gothic itself, without losing its own characteristic qualities. They exhibit the ancient Round-arched style wedded to a refined and fitting system of decoration, and philosophically and consistently developed, with the full preservation of its native energy.

These churches are of various forms, as regards horizontal section,—round, octagonal, semi-octagonal, hexagonal, square, oblong, semi-circular. Some affect the Greek cross plan; others that of the Latin cross; but they are chiefly of the compact forms best suited to the reformed ritual, which, if not so significant of man's religious aspiration as the long-drawn aisle and lofty vault, are more fitting modern purposes, and are perhaps more symbolic of the great and noble simplicity of the Gospel, and to these forms the style seems very complacently to blend. I came, a few days ago, upon a most beautiful example of the Greek cross plan, in which the idea was beautifully worked out. The interior was crowned above by a noble hemispherical dome, springing from pendentives surrounded by four segmental ones, springing from a somewhat narrower base. On the exterior this arrangement is as fine as within. This is a favourite form, not because it is the Greek cross, but because it is geometrically a form favourable to artistic composition; for there is no set type of form here, either for cathedrals or the smaller churches. They use the cross as a symbol in decoration; but they think it ridiculous to mar their plans with it or deny themselves the variety that freedom would insure, by adhering to that type of form in their plans.

MY DEAR ——, —We had the good fortune of meeting the other day with the aged architect, the Earl of Sydney, who, I am told, has been most instrumental in introducing, or rather reviving, the great Romanesque style, and who is evidently a man of lofty and poetical mind. He entered delightedly into the subject of his views. "I could never," said he, "behold the illustrations of Caen, Winchester, or Ely Cathedrals, much less pace their venerable avenues, without feeling a yearning to divest the majestic pile of what offended the critical and cultured eye, and give to the expression of a noble idea all the faultless grace of language of which it was susceptible. I longed, in short," said he, warming with his subject, "to impart to their

* See pp. 327, 344, 373, and 456, *ante*, with letter from Mr. S. Huggins.

noble style of architecture those other graces and excellencies of which I felt it was susceptible, and which its great framers would have imparted had they been able."

I further gathered from the noble artist that he was the more wedded to the round-arched and vaulted style, from its being the chosen style of early Protestant communities,—the Albigenses and Waldenses of France and Spain, who repudiated Gothic, and clung to the Romanesque, the practice of which would have continued in the South of France but for the persecutions of those sects.

He has brought the style to the greatest perfection, I think, in his Church of St. John, situated in the collegiate quarter, close to the water's edge, and which I went to see yesterday. It is a domed and vaulted composition, the vault as well as the dome exhibiting itself externally, or rather having their external counterparts, for they are double, and have all the simplicity, repose, and grandeur of the ancient architecture.

With the utmost physiological vigour and greatness, it combines an intellectual grace and beauty, and approaches nearer to an ideal perfection than anything I have yet seen. The massive pillars of the nave are columns which have the graceful Classical entasis and diminution upwards. The arches are stilted and refined in their details. The windows are not the small, timid apertures of the ancient churches, but noble, fully-developed features, with bold shafts to the reveals, and filled in with tracery and stained glass. These, along with small arcades, here blank, there open, with the miniature column detached, and throwing a shadow on the wall, so enrich and beautify the façades that no want of intervening buttress is felt, and these are omitted generally.

It has no spire nor pinnacle of any kind, which the architect considers as belonging to the Pointed Gothic only. But, to break the skyline, some noble statues, of somewhat Herculean proportions, are placed over the angles and piers, and round the base of the dome, with an enlivening effect. These are of the highest class of art. The whole composition is, in short, the same bold masculine Norman idea encountered in Durham and Peterborough, in the most refined language in which it could be appropriately expressed. Broune, who has an intense love for the dome, was in raptures at seeing it happily wedded to, and forming an integral part of, this noble pile. Instead of adopting Venetian Gothic,—a name, by the bye, scarcely thought of here,—as Ruskin somewhere suggests as the groundwork of a national style, a wiser and more national course, I submit, would be to beautify our own by similar means, and enrich it with what other elements the sacred fire can fuse into it; and, as was the case in Venice, though influenced by other styles, and using freely various of their characteristics, we may yet avoid all incongruity. But this is a digression.

The highest possibilities of art can only be achieved by making every feature the most beautiful form it is capable of, with due harmony to the whole, and without regard to style or period; by emulating in the design of any given feature the finest example of that feature in any building, of any style, of any country; and by gathering hints in the works of the day from all that the past bequeaths and the distant unfolds. Important as this principle is, I believe it is less so than another which I see strictly respected here,—I mean that of bringing the influences of time, place, and occasion, material, and so forth, to bear upon our style. Styles, like human beings, must not only be the reflex of the creative energy that called them into existence, and of the organisation of the parent style or styles; but in their growth and development they must be the creatures of circumstances. If they be so considered, and laid bare to every circumstance and natural influence, the root is laid not only of originality, but of a new style. Let Gothic be pursued in this way, and we shall see the old style not merely revived, awakened from its ages of slumber, put on its legs, and set mechanically in motion,—it will be another Gothic style, growing organically out of the old, which old or parent style possesses, I believe, an inherent power for the development of the new and the beautiful in structural art, and only waits a due measure of creative power for its realisation. Buildings copied from thirteenth or fourteenth century architecture cannot be anything but dead, unoriginal, and false, as regards the present time; but architecture originating, taking its rise, merely, in the ancient Gothic, and in new hands truthfully adapted to new circumstances of new times and places, will be original—distinct from what went before and what ought to come after, and in harmony with itself.

SCAMOZZI SMITH.

TEMPERANCE HALLS.

WE mentioned in our last that the foundation-stone of the first building proposed to be erected by the London and Provincial Temperance Halls Company had been laid on a site between the Peabody-buildings and the Surrey Theatre. The building has a frontage upon the Blackfriars-road of 70 ft., and is designed in the Italian Pointed style, with facings of red brick and Portland stone, surmounted by a carved gable and inscription. The main entrance will be by two spacious enriched openings from flight of steps, giving ingress and egress to and from a vaulted vestibule. The great hall is approached by a stone staircase, and is arranged to hold 1,000 people. The shape, owing to peculiarity of site, is an oval founded on a hexagon, with a horse-shoe balcony and platform, and the ceiling will be coved and domed. The floors are to be constructed on fireproof principles, and ironwork where practicable is used throughout the building. The main hall will be lighted by a sunlight burner communicating with a large ventilating tube. The ground floor comprises two stone staircases, vestibule, and hall, main entrance corridor, Board-room and company's office, front and back restaurant, with lavatories, kitchens, &c., proposed to be fitted up on the same principles as the "People's Cafés." There is also a front shop, and a carriage entrance to the spare land in the rear, and private staircase to front hall. On the mezzanine floor there is a large room for suppers or meetings, dressing-rooms, committee-rooms for business purposes, lavatories, kitchen, offices, corridor, &c.

The works are being carried out by the contractor, Mr. Alfred Deards, of Blackfriars-road, at a cost of about 7,000*l.* Mr. John H. Swan is the architect.

BRICKS AND BRICK-DRYING.

WE have received some particulars of a brick-making process at works set up by Mr. Stephens at Kidwelly. Upon entering the works the first thing to be seen is a stone-crushing machine, into which the stones are cast and crushed to pebble size; from thence they are shovelled into a pan, over which two large rollers are worked, which grind the stone to powder. Both the pan and rollers are lined with chilled iron, and so are proof to damage by the hard silica stones from Mynydd-y-garreg. While the grinding process goes on a small white stream of a liquid compound falls into the pan which brings the powdered stone into the substance of mortar; then it is delivered to the moulder, who deposits the composition into a double-mould, places it into a press, which answers the purpose of pressing closely the bricks and of forcing them out of the mould. Then a lad carries them on a sheet of iron and places them in the oven for drying under the new process. This oven is constructed very much on the same principle as a baker's oven, only considerably larger, but in lieu of one floor there are several tiers constructed of upright and horizontal irons about 5 in. apart, upon which to lay the bricks, so that the oven can be filled from bottom to top, capable of storing about 10,000. When the oven is full, the iron doors are closed up air tight. Certain flues admit the hot air, and the bricks are said to be thoroughly dried in from three to four hours. Under the old process it would take twelve hours, with the consumption of two tons of coal and the labour of several persons over a large area of ground to dry 5,000 bricks; under the new system 10,000 bricks can be dried in three or four hours with 2 cwt. of coal, with less than half the manual labour, and without the extreme exhaustion caused to the workmen from being hours in the old dry-houses. The originator of the idea is Mr. P. Conniff, an experienced man in the trade.

Sale of a Tombstone by a Sexton.—Much indignation has been caused in South Kirkby by the discovery that a tombstone in the churchyard has been sold by the sexton. It was ascertained that the stone (which had cost over 20*l.* in erecting) had been "worked up" as a store table in a new house at Kirkby Flatts, belonging to the South Kirkby Colliery Company.

THE EXHIBITION AT SOUTHAMPTON.

SIR ALEXANDER COCKBURN opened the Exhibition of Works of Art at the Hartley Institution last week, and in the course of his address said, speaking of the Academy Exhibition,—I would recommend every one who has not seen this exhibition to make a journey to the metropolis on purpose, and all may rest assured their trouble in this way will be amply repaid. Every form of human life—enjoyment, feeling, emotion, and passion—is portrayed in vivid and glowing colours with a power and truth which do justice to nature; and the great merit of all these works is that whatever they portray, whatever form or phase of life they exhibit, they cannot fail to work upon our best feelings and to call forth all that is noble and good in the mind of man, and so not merely to gratify a passing sense and to create an intellectual pleasure, but also to promote the moral welfare of mankind. I confess that when I look at some of these productions of human power and art I am lost in speechless admiration at the power and capacity of man, who from the naked, bare canvas or from the cold and shapeless marble brings forth works that portray nature in all its beauty or exhibit man in every form of his existence. I rejoice that, besides the great advantages which this institution affords in the way of education and of intellectual culture, works of art will now invite the attention of the inhabitants of this town, and I rejoice also to see among some of those productions which we have visited with so much pleasure some most talented works by native artists of Southampton. I hope such exhibitions as the present will tend to develop and foster a taste for art, and be the means of encouraging native artists to compete, as I believe they can do, with those of the metropolis or the rest of the United Kingdom. I take a most deep interest in the welfare of the town of Southampton. The happiest portion of my public life was so closely associated with it that I cannot stand in the middle of this noble institution without congratulating you upon its existence. It affords the means of intellectual cultivation of the young, to whom education is of the utmost importance, and to those who are older it affords the opportunity of further improving themselves, and of that high intellectual enjoyment which results from literature and reading, and educational advantages for their children which they could not otherwise obtain. And believe me that of all the blessings, short of those which belong to another world, which man can possess in this, is the pleasure which arises from the possession of the intellectual treasures placed at his disposal. In conclusion, I beg to congratulate you on the opening of an exhibition from which I am sure you will derive the greatest possible pleasure and enjoyment.

Sir Henry Cole addressed the assembly, urging the popularisation of art-exhibitions by cheap admissions, and the establishment of rate-aided museums. He appealed to the Lord Chief Justice, as one of the trustees of the British Museum, to use his influence in endeavouring that the superfluous treasures in the cellars of that building should be made available for exhibition in local museums.

THE ARTISTS' RIFLE VOLUNTEER CORPS.

AMONG the numerous organisations which have emanated from the Architectural Association not the least successful are the architectural companies of the Artists' Rifle Volunteer Corps. They with the rest of the battalion were on Saturday last inspected on the parade-ground at the Horse Guards by his Serene Highness Prince Edward of Saxe Weimar, the general commanding the Home District. The commanding officer Major Leighton (Royal Academician) and the corps were, after the inspection, congratulated by the Prince on the manner in which the evolutions had been performed, and his remarks seemed fully to justify the universal feeling that both in numbers and efficiency the corps had far surpassed the standard of any previous period of its existence. The corps also took part in good force in the review at Panshanger (held in Earl Cowper's beautiful park) on Whit-Monday, a very considerable proportion of those present having left town on the previous Saturday and marched to Hertford under the command of Captain Edis, the acting major of the battalion, to whose initiative, it will be remembered, the formation of the Archi-

tectural Companies is due. It is, we think, creditable to the profession that it should be specially represented in the Volunteer force, and this patriotic movement ought to receive the hearty co-operation of those who are young, and at least the moral support of all. We understand that the Prize Meeting for rifle shooting will be held in June.

THE LATHE.

IN the opening lecture, given before the Manchester Society for the Promotion of Scientific Industry, Dr. Anderson, discoursing of Tools, said:—To select for an example the familiar tool called a lathe,—it is chiefly intended to impart to materials true circles, straight lines and flat surfaces, and all of these conditions must first exist in the tool. The bearing surface of the spindle neck must itself be absolutely round in the strictest sense, otherwise the article operated upon will not derive a true circle from the revolution of the spindle. The mathematically true circle here referred to is practically very difficult to attain. There are many tools in the world that are supposed to be round, but which are not so in reality. An examination of the Whitworth gauges will best convey the idea of what is meant by mechanical truth and a true circle, each part fitting accurately into the other, yet perfectly free in every position. Then again the lathe has to afford absolutely straight lines of movement for the guidance of the cutting instruments, whereby the true circle derived from the spindle and dead-centre point is developed into a true cylinder, but not so unless the parent circle and straight lines are correct in themselves. If a perfectly flat surface is required from the lathe, the cutting instrument must pass in a straight line transversely to the axis of the revolving spindle, and if the two are set absolutely at right angles to each other, a correctly flat surface is the result. If, however, any of the conditions of accuracy are wanting, then imperfection in the produce will follow, as a matter of course. If the lathe is intended to afford screws, it must first have a perfect screw within itself to copy from, for if there is any imperfection in the screw copy, or in the divisions of the teeth of the wheels by which it receives collateral motion, the screw produced will contain a transferred copy of each imperfection. It will thus be seen that the lathe is simply a tool to transfer its own character to other things; hence the paramount importance of having the lathe perfect in itself. But, unfortunately, the world, as a rule, does not sufficiently appreciate the difference between perfect tools and tools nearly perfect; but in the government of this portion of the world it is so arranged that those who do not are invariably punished, because the want of truth and accuracy entails greater cost in their production, both at the present time and hereafter.

WARMING AND VENTILATING.

WE have briefly alluded to the arrangements made and patented by Dr. Ancell Ball, of Spalding. As carried out under the patentee's own eye they seem to act so well that some further particulars may be found useful. He has a five-roomed cottage (of two sitting and three bed-rooms) so arranged, that in the partition-wall between the two lower rooms an aperture is left, with only one chimney, beneath which is placed in the said aperture a double-faced or Janus-grate, on each side of which is a hot-air chamber, provided with a water-vaporating pan, so that heated moist air, after being diffused into the sitting-rooms, can be conveyed through a hole in each brick up a *lofty* coachhouse into a hay-chamber above, where 140° are obtained. A higher temperature, we believe, can be commanded, for the thermometer would only show the above amount. The same kind of air can be conveyed into a lobby in each lower room, or a passage or hall, where it is admitted through openings, which can be plugged with a stopper at night before bed-time, when the warm air can be conducted up to the three cottage bedrooms, which will be comfortably warmed before bed time. We now come to the description of the little double-faced Janus-grate for a cottage, it has two very *different-looking* faces, the one for the sitting-room, looking like an ordinary, cheerful fireside, with the front flush with the wall, which does not project into the room; whilst the *kitchen-side face* presents a complete *range*, with three holes in the hot-plate for a large pot with tap, as a substitute for boiler,—one for a frying-pan, and a central one for a kettle, &c., which can, by means of a little door above the grate, be conveyed from one room to the other,—a very useful and ingenious contrivance. Beneath the grate a large oven is placed, and the flame is conveyed round three sides of it, at the same time imparting heat to the two hot-air chambers, so that the maximum of heat is abstracted before the little smoke that remains passes into the chimney. This is not all, for the *two* faces abstract so much air that cheap coke is readily consumed in the upper two-thirds of the grate, whilst a grated drawer slides in beneath to consume the best riddled small yet cheaper coals, called "*Nuts*," the *smoke* from which ascends through the incandescent coke, where it is *consumed*, at the same time emitting light and additional heat. The hot ashes are frequently falling upon the *top* of the oven, which is thus well heated through four of its surfaces.

As to ventilation, the doctor's first step is to admit the outer cold winter and pure air into the two lobbies of the cottage, first by conducting it to the ceiling through finely-perforated zinc and muslin, which not only excludes an excess of air, but also divides the cold current so finely that it becomes rapidly heated by the hot, moist air which it meets in the lobbies, so that when a person opens the inner lobby-door, to enter the sitting-room, no current of cold air or disagreeable draught is experienced by those sitting there. This plan is only adopted in the cold weather; for in the summer-time the windows above the outer doors work on pivots, in order that a full current of air can be commanded in the hotter months.

Having thus admitted the outer pure air after first warming it, the next important thing to be done is to carry off, as fast as it is generated, the impure air in the room proceeding from the breath, from gas, lamps, perspiration, &c.; and this is accomplished through a cheap flue, formed by an opening in each brick, and placed one above another, from a part near to the ceiling to a certain distance up the breast of the chimney, having no communication, however, with the smoke-flue, although warmed by it; for the said ventilating-flue is formed in and through the brickwork in the breastwork itself, and in order to prove its successful action a feather is suspended over the entrance, where it is powerfully drawn by the upward current into the chimney.

CREMATION OR BURIAL.

SIR,—When a question is being freely discussed there is nothing to be done but to reiterate the old arguments on either side till these are put in the tersest of forms. The argument in favour of cremation will, in this letter, I am inclined to believe, be found more cogent than those which I previously addressed to you, and which appeared in the *Builder*.*

I must confess that, although a "Cremationist," I have myself made designs for carrying out Mr. Seymour Haden's mode of burial, which have been approved by experienced undertakers. I did this in the hope that the adoption of Mr. Haden's plan for a brief space of time would have the effect of breaking through old forms and prejudices, and that it would therefore serve as a step towards the right thing. Nevertheless, I consider Mr. Haden's argument for "earth to earth," as against cremation, utterly untenable. It appears to me to be based upon erroneous assumption, and to exhibit a total forgetfulness of the great principle in nature by which all decomposition is effected, viz., by fire. The entire solar system is worked by cremation. Without cremation, *i. e.* solar heat, all animation, all change, all decomposition would be at an end.

One of Mr. Haden's *dicta* is, that "nature never errs." How was it, then, that nature did not implant the instinct to bury in the animal creation in the generations of animal life which preceded man on the earth? The huge carcass of the mastodon, as well as the bodies of lesser creatures, rotted on the surface of this planet, and this was Nature's system through eons of time. Again, how will the assumption that "earth to earth" is the *natural system* hold in reference to the mammalia of the deep, the largest mammals of this globe? Moreover, I believe it could be demonstrated that this surface exposure of animal remains to decomposition, to the action of wind, rain, and sun, is even preferable to burial in any form, as decomposition, *i. e.* cremation, thus effected, is more speedy, and the resolved elements are sooner spread broadcast, for reappropriation, reassimilation, by the living. The fact is that every one rightly tutored in physical science will know that the decomposition of human remains, in whatever way effected, is only either a quicker or slower process of combustion, *i. e.* cremation. The question therefore resolves itself into the simple one, of which, in the interests of the living and commonweal of nature, is the better mode of the two, the rapid or leisurely system of consuming them.

Animate beings are even during life cremated, over and over again. It used to be supposed once in seven years, but Mr. Haden now tells us that it occurs much oftener and that the whole *matériel* of a human being is consumed and given off every six weeks. So that the *rapid* decomposition of animal life on the surface of the globe is, after all, not noxious. But if this natural rate of combination be impeded and lowered, communities are immediately afflicted with infectious diseases.

If in burial the earth enters into chemical combination with the decomposed elements of animal matter, these are locked up from use for an indefinite period and we wrong living things. On the other hand, if this intimate union between the earth and the decomposed elements does not take place, and these elements are only held suspended in it, we may be sure that they will escape, and that the very slow process of combustion, necessitated by burial, will be prejudicial to the living.

Seeing, then, that nature effects all decomposition by cremation, and that slow and impeded decomposition, combustion, is alone hurtful, cremation is evidently the mode of resolving the dead body indicated by nature and that most conducive to the health of the living.

W. C. T.

* See p. 34, *ante*; also vol. xxxii., pp. 337, 771, 951.

THE LIGHTING OF LONDON.

SIR,—There are many ways in which they still do things better in France and elsewhere than we choose to do them in England, and one of these is the artistic way in which they light their streets and large open spaces. The lamps are so disposed as not only to give a pleasing effect when they are lighted, but their arrangement is seen in the day-time to conform to some plan. They are an ornament by day as well as by night. Is there one spot in London where this can be said of our public lamps? This, of course, is partly because nothing is done in London under one authority or on one system. But a chief cause of this is attributable to mere stupidity and a want of taste on the part of those into whose hands the business of placing the lamps has fallen. Out of many examples that might be selected let us take the Thames Embankment, the most important thoroughfare lately completed, and one about which we are a little boastful. There is nothing to be said against the handsome lamps on the parapet. They are an ornament by day as well as by night. But it was necessary to have additional lamps to light the broad roadway. There are several ways in which they might have been arranged to correspond with the lamps on the parapet. A lamp in every interval, on the opposite side of the roadway, would have given ample light, and probably have produced the best effect from every point of view. But the person employed did here just what he would do in any other street. He commenced at one end of the embankment and placed the lamps on each side at the regulation interval. It was nothing to him that one of his lamps should thus repeatedly stand close under one on the parapet, and that many intervals should in consequence be without any lamp. He merely did the thing in the stupid, regulation way with which our Boards and Vestries are contented. There can be no doubt that some rule on this subject—that there should be a certain number of lights along a given distance—is very necessary, but no rule necessitates blundering. Another exception to the rule should be that, where one street intersects another, there should be a lamp at the four corners. These are points where light is most required. The intervening lamps would be spaced accordingly. What would it matter, if, along a broad safe pavement, the lamps were a little unequally spaced? Then about the larger open spaces, and in the centres of crossings, there should be double or clustered lamps, with some pretensions to adorn the places where

they stand. Where this has hitherto been attempted stupidity has of course done its best to mar the effect. Look at the combination, without any thought of arrangement, of the ordinary street-lamps, at their regulation intervals, with the ornamental clusters of lamps about the Houses of Parliament. It is a scene of confusion both by day and by night. How unlike a *Place* in Paris! The same cause is seen to defeat the attempt to give a little dignity to the new space in front of St. Paul's. Could not the chapter and the vestry agree to act together in this matter, or was there not taste enough on the part of either body to lead them to think about it? It is perhaps not too much to hope that before long the lighting of London may share in the improvement of the City in other respects. Soon there will be the necessity, when the new street from Charing-cross is opened out to the Embankment, and the promised improvements are made in Trafalgar-square, to think about the lighting of "the finest site in Europe." It is scarcely an exaggeration to say that at present it is not lighted. Let us hope that here at last a good example may be set. A. P.

THE INSTITUTION OF SURVEYORS.

THE annual meeting of the members of this Institution was held last Monday, at their hall in Great George-street, Westminster, Mr. Thomas Huskinson, presiding.

The report, which recorded the proceedings of the seventh year of the Society's existence, congratulated the members on the progress and prosperity of the Institution during that period. The number of members of all classes who had, during the past year joined the Society, was 52, being 1 honorary member, 31 ordinary members, 16 associates, and 4 students, making the present number as follows:—Honorary members, 6; ordinary members, 269; associates, 101; and students, 10; or a total of 386. Four debentures bonds of 25*l.* each from an anonymous donor; an elaborate and massive carved presidential chair from Mr. T. T. Wing; and the payment of the cost of improvements at the entrance to the hall by Mr. Driver, were among the gifts acknowledged by the Council. The total subscriptions from members and associates during the past year amounted to 895*l.* 13s., which was a large increase upon those of former years. The report was adopted.

Thanks having been passed to the various officers of this Society, the following were the gentlemen elected as the Council for the ensuing year:—Mr. Thomas Huskinson (president); Messrs. J. Mathews, J. Oakley, E. J. Smith, and W. Sturge (vice-presidents); Messrs. W. J. Beadel, V. Buckland, H. Crawter, R. C. Driver, E. Ryde, C. J. Shoppee, F. Vigers, T. C. Clarke, C. Stephenson, E. P. Squarey, D. Watney, and T. S. Woolley (ordinary members); and Messrs. J. H. Lloyd and R. B. Grantham (associates).

The president then received the thanks of the meeting for presiding.

MONUMENTAL.

MR. FORSTER, M.P., unveiled at Bradford, recently, a statue of Mr. S. C. Lister, whose enterprise and inventive genius have been the means of materially adding to the prosperity of the town. The right hon. gentleman expressed a hope that, in after days, the statue of Mr. Lister would be admired, not merely because it gave the form and features of a rich and successful man, but because it presented the form and features of one who was endowed with industry, with intellect, with energy, with courage, with perseverance, and who spared himself no pains in first ascertaining the conditions of the problems he had to solve. His heart never fainted, his will never relaxed, in determining to carry out those conditions.

The statue, which is of white Sicilian marble, and 10 ft. high, represents Mr. Lister standing erect with a 2-ft. rule in his right hand, his left resting on a scroll of paper on a pedestal, which bears four bas reliefs, setting forth the progress made in weaving. The monument stands at the junction of two paths, just within the principal entrance of Manningham-park. It is from the studio of Mr. Noble, of London.

Bristol.—A considerable dispute is growing up between the masters and labourers: the latter suggest arbitration.

CHURCH BUILDING NEWS.

Crofton (near Wakefield).—The parish church has been re-opened after restoration. As it now stands, it is built in the form of a Latin cross, consisting of a nave, 50 ft. long and 20 ft. wide, without aisles; a north and south transept, each 13 ft. wide and 19 ft. in length; and a chancel, 30 ft. long and 16 ft. wide. The north doorway is now closed by masonry, the original oak door being still preserved in its place. At the intersection of the nave and transepts is a tower, 19 ft. square, and about 52 ft. in height, containing a clock and three bells. The piers, or responds, of the tower arch are brought forward 5 ft. on each side into the nave. The repairs just completed include new roofs to the nave, chancel, and transepts; new stalls throughout, with pulpit and prayer-desk, and a traceried screen separating the vestry from the south transept; new doors to the nave and chancel; a crypt under the vestry, with a hot-water apparatus; new mullions to the windows, and repairs to the window-jambs and other parts of the building; the old floor of the tower has been replaced by a new one with an oak ceiling, instead of the former lath and plaster; all the interior has been cleared of plaster, and the stonework restored. The whole of the woodwork has been executed in oak, in style to match the original structure. The new roofs have been formed with arched ribs concentric with the tower arches, carried by moulded stone corbels, enriched with carving in the chancel, and boarded. The chancel has been laid with Messrs. Minton, Hollins, & Co.'s tiles. The work has been carried out by Messrs. Leake & Denison, builders, of Normanton; the hot-water apparatus by Messrs. J. Bevitt & Son, of Pontefract; and the glazing by Mr. Cuthbert, of Wakefield.

Farley.—This church, built by Sir Stephen Fox in 1688, was rededicated on Easter Tuesday, after restoration. No attempt has been made by the architect to alter the essential features of the church. The seats, of grained oak, have been cut down, their doors removed, and their dimensions and direction made uniform. A new oak screen has been placed under the south arch, the pulpit has been cut down, relieved from the heavy sounding-board, and placed on a base consisting of a stone plinth, and pierced panels of the old oak, outside the chancel screen. The chancel has been raised, and on either side are a prayer-desk and two rows of choir-stalls. These show a combination of old and new materials: the fronts of the prayer-desk are formed from the door and a superfluous panel of the pulpit; the fronts and backs of the stalls are made by an admixture of the dark panels from the old pew doors, with new stiles and rails. The whole of the east wall is occupied by a reredos designed to accord with the Classic architecture of the church, and formed of Caen stone, with panels of Devonshire marble separated by alabaster pilasters at the sides, and a centre with inlaid marble, and panels of Venetian mosaic, executed by Signor Salviati, from the designs of Mr. W. F. Dixon, London, under whose direction the decoration of the walls was effected, and by whom the east window was executed. This window represents the Crucifixion, and contains five figures of large size. The rest of the windows were supplied by Mr. Powell. The standards and other lighting apparatus in the chancel are from the manufactory of Messrs. Hardman. The architect was Mr. Currie Christian.

Northampton.—The Parish Church of Old (or Wold, as it is sometimes called) has been re-opened after restoration and repair. The restoration has included the entire re-roofing of the edifice. The organ-chamber and the south side of the chancel are new, as are also the vestry on the north side of the chancel, and the arcade on either side of the same. The east end of the church has been raised and restored, and a partially new window put in. The old fittings have been removed; the original floor-level restored to the nave and south aisle; and the chancel floor raised three steps above the nave and aisle. The new chancel floor is laid with Maw's encaustic tiles, as are likewise the steps leading up to the altar, &c. The whole of the plaster has been removed from the masonry and walls of the interior, and the windows and arcades restored. The windows, with the exception of the west window, have been re-glazed. An almost entirely new ceiling has been put into the tower, from which the old gallery has been removed. The choir fittings and the screens are new, and, like the new roof, are of pitch-pine. The walls within the sacrarium, to the height of the reredos, are lined with smooth Bath stone. On the outside the ground for two yards round the walls has been lowered half a yard, forming a pathway all round the building. There has been an external restoration of the plinths, coigns, and buttresses, but only partial. The cost has been about 1,950*l.* The architect is Mr. C. J. Bather, of Shrewsbury; Mr. R. Cornish, of North Walsham, did the masonry; Mr. Pilgrim, of the same place, acting as clerk of the works. The glazing was done by Mr. Dove, of Shrewsbury.

Stonesby (Leicestershire).—The parish church was re-opened on the 12th ult., after having been under restoration for more than twelve months. The works comprise new roof to the nave, extensive window restorations, removal of plastering and pointing walls, and repair of wrought stonework generally, and drainage outside building. The interior is fitted up with new deal benches, and a portion of old benches; new pulpit of oak, with stone base; new reading-desks, heating apparatus, tower screen, &c. The south porch has had stone-work restored and a new pair of oak gates. The works have been carried out by Mr. G. Chester, builder, of Waltham, from the designs and under the superintendence of Mr. R. W. Johnson, architect, of Melton Mowbray. The work has been done by voluntary contributions, the Duke of Rutland being the principal subscriber to the work.

Islington.—The new church recently erected in Prebend-square, Popham-road, Islington, at the cost of the Clothworkers' Company, in lieu of Lamb's Chapel, Monkwell-street, City, which has been pulled down to make room for City improvements, has been consecrated by the Bishop of London. The church, which is dedicated to St. James, adjoins the almshouses in the Popham-road, and is in the Gothic style of architecture, from designs by Mr. F. W. Porter, the builders being Messrs. Dove, Brothers, and has been erected at a cost of 8,400*l.* There is sitting accommodation for 500 persons, the whole of the seats to be free and unappropriated, with the exception of fifty, which are reserved for the members of the Court of Clothworkers. The tower contains a clock and a peal of six bells.

Hastings.—On the 13th ult., the new Christ Church, in London-road, was opened for divine service. Its dimensions are,—total length, 150 ft.; total width, 92 ft.; height from floor to ceiling, 59 ft. The architect is Mr. Arthur W. Blomfield; Messrs. Dove, Brothers, being entrusted with the carrying out of the plans.

Burghclere.—The parish church, commonly called "the New Church," was built in 1838. This church, now the Church of the Ascension, built of squared flint, with west tower, transepts, and small apse, in the debased Perpendicular style, possessed no architectural features, but has since been remodelled, and was on the 16th ult. (Ascension Day) re-consecrated. The west and north galleries have disappeared. A light glazed screen admits to the church through the west tower, while the ringing-loft above is concealed from view by carved panel or dark pine, relieved with red. The open seats are of yellow deal, stained and varnished. The east wall has been taken down, and a chancel, approached by three steps and divided from the nave by a low stone wall and arch, has taken the place of the former apse. The chancel, as well as the sanctuary, which is raised another three steps, is paved with Maw's encaustic tiles, the nave being paved with a hard grey tile of local manufacture. The five-light east window is of stone tracery in the Late Perpendicular style, as are the two windows on the north, and the one on the south of the chancel. The roof is ribbed and panelled in pitch pine varnished, the choir-seats being in oak. On the north of the chancel is an arched doorway leading into a vestry, and on the south an arch opens into the chancel aisle. The old east window (which is a memorial to the late Rev. W. B. Barter) has been placed in the east end of the north transept. The restoration has been carried out by Mr. W. G. Adey, of Newbury, under the direction of Mr. R. Norman Shaw, of London, architect.

Hook (Dorset).—The church of this parish has been re-opened after restoration. The tower, roof, windows, and chancel-arch are new, the outer walls made sound, and the unsightly old belfry and gallery have been removed. We are informed the entire cost of this renovation has been defrayed by the Countess of Sandwich. The architect is Mr. G. R. Crickmay, of Weymouth, and the work has been executed under the superintendence of Mr. Rowe, the Earl of Sandwich's agent at Hook.

OLD LONDON.

IN the course of some extensive building operations now in progress at the well-known works of Messrs. Tylor & Sons, No. 2, Newgate-street, a small portion of the wall with which the Romans surrounded the London of their days has been brought to light, and, with the good spirit which is characteristic of the firm in question, a small area has been formed by brick walls in front of it, so that it may be retained as a historic landmark. The London level at the time of the Great Fire (of which some relics have also been found) appears here to have been about 12 ft. below the present level, and the portion of wall found is all below the old level. The foundation is of small pieces of rubble concreted, over which run four courses of tiles, or large thin bricks; upon which is ragstone masonry to the height of 2 ft. 6 in. Then come two more courses of the tiles, and above them more masonry. Even if this be not actually Roman work, which we are not prepared to assert (our examination having been cursory), but the result of Norman rebuilding, the Roman model was closely followed. Looking on this wall, we see through seventeen centuries and more, for the Romans when walling the *Colonia* kept to the line of the Celtic hill fortress which existed long before their advent.

SANITARY STATE OF DUBLIN.

WHILE the Corporation this present week are disputing their responsibility in the law-courts as to the cleansing of the Liffey with the Port and Dock Board, the streets of Dublin are in a worse condition than ever as regards filth and obstructions. It is simply disgraceful that the municipal body should be so oblivious to their duties. What with the abominable odour arising from the bed of the Liffey, which is nothing more than a foul elongated open sewer, and the accumulations of unspeakable nastiness to be observed in many quarters of the city north and south, Dublin is ready at any moment for the ravage of a frightful epidemic. During the last few days we have witnessed some deplorable sights, plainly and undeniably traceable to Corporate neglect. Dirt and filth in courts, alleys, and lanes, dirt in back streets, and leading thoroughfares; several feet deep of dirt and stagnating filth in the bed of the Liffey, and no less offensive dirt on either side of it; on quays and crossways, under the very walls of the now nearly "restored" Christ Church Cathedral. We observed heaps upon heaps of all sorts of rubbish and nuisance upon the streets, and these heaps were allowed to lie undisturbed not for a few hours, but two or three days, unremoved. At the present hour several of the leading thoroughfares are out of repair and broken up into ruts, on a fine day enveloped in clouds of blinding dust, and on rainy days studded with pools of water or miry slush. The public money is being wasted right and left in law-suits, religion and politics are uppermost in the Council Chambers, and sanitary reform is relegated to misty futurity.

CONVERSAZIONE AT THE INDIA MUSEUM.

MR. HARRISON, as President of the Institution of Civil Engineers, and Mrs. Harrison, held a *conversazione* in the galleries at South Kensington, now occupied by the collections of the India Museum. The Horticultural Society lent plants, the band of the Royal Engineers discoursed music, and for some hours Mr. and Mrs. Harrison, assisted by Mr. James Forrest (the secretary), and a few members of the council, received and welcomed a continuous stream of visitors. In the first room entered after ascending the staircase are found Dr. Leitner's Takht-i-Bhai Sculptures, of the highest interest and value, illustrating the blended influence of Budhism and Hindooism, and, it would seem, of Greece, through Bactria; also the Ethnological Collections made by Dr. Leitner, in Dardestan, and by Shaw and Forsyth, in Kashgar and Yarkand. The walls are hung with copies by Major Gill, R.E., and Mr. Griffiths, of the celebrated paintings of the rock-cut temples of Ellora and Ajunta; and with a series of photographs, arranged by Mr. James Fergusson, which represent the ancient architecture of India. The centre of the room is occupied by four cases and a pagoda of idols, forming a Hindoo Pantheon. In Room XIX., besides the continuation of the "Yarkand Museum," one entire side is covered by a collection of Indian and Oriental arms. In Room XVIII., the choicest manufactures of India have been brought together—silver, gold, jewellery, enamels, brass and copper, carvings in ivory and sandal-wood, *Bederi* and *Koftkari*, pottery, *papier mâché*, Delhi miniatures, and native paintings. In Rooms XVII. and XVI. the ordinary manufactures of the country are exhibited, amongst which its textiles occupy a large space. The collection is especially rich in artistic muslins, nets, and embroideries, *Kinkobs*, silks, Cashmir shawls, and carpets. We shall give a fuller account of the Museum in our next. The *coversazione* was entirely successful.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

SIR,—In your account of the ordinary general meeting held at this Institute on Monday last, I am reported to have said, when the question of adjournment was under consideration, "that the 7th of June was open."

This is a mistake, but an excusable one. The 7th of June had been fixed and announced for the reading of Mr. R. P. Pullan's paper "On the Decoration of Basilicas and Byzantine Churches," and it would have been ungracious indeed to its author if this fact had been ignored. The truth is, that only one more meeting-night remained in the present session; and, as a general wish was expressed to adjourn the discussion on Mr. Smith's paper, there seemed no choice but to postpone the reading of Mr. Pullan's paper until next session.

To this arrangement, which was made with great reluctance on the part of our President, Mr. Pullan has since most courteously consented; but, in justice to him, it is only right that the circumstances under which his paper was withdrawn should be accurately recorded.

CHARLES L. EASTLAKE, Sec.

Books Received.

Renaissance in Italy: the Age of the Despots. By JOHN ADDINGTON SYMONDS. London: Smith, Elder, & Co.

THIS volume forms the first instalment of what is intended to be an exhaustive treatise on the period of the Renaissance in Italy; the second part of which will be devoted to the fine arts and the revival of learning; and the third part to Italian literature. It will, of course, be in the promised second part that the chief interest of readers of this journal would centre; and we shall defer any notice in detail till this second part reaches us. Meanwhile, we may say that the work of Mr. Symonds seems likely to form an important contribution to the literature arising out of that revived interest in the Renaissance in Italy, of which we have seen not a few indications lately; and that the author supports the view which has already been put forth by critical writers on this period of history, that the spirit of rebellion against monasticism, and the desire of intellectual freedom, which mainly gave rise to the Renaissance, had been stirring in the social and literary mind of the nation for a considerable time before the period from which its open and acknowledged development is generally dated. "It must not be imagined," he observes in his introductory chapter, "that the Renaissance burst suddenly upon the world without premonitory symptoms. Far from that, within the Middle age itself, over and over again, the reason strove to break loose from its fetters." The volume deals with the relation of the political and social life of Italy to the great change of thought, as the headings of some of the chapters will sufficiently indicate,—"The Republics," "The Popes of the Renaissance," &c.; and two entire chapters are devoted to Machiavelli and Savonarola respectively. The author, in his remarks on the spectacle of unbridled and exaggerated cruelty and licentiousness which this age in Italy presents, is probably correct in his opinion that this fearful pre-eminence of unusual crime was due in some measure to the high-wrought fantasy of the Italians, which could not be contented with ordinary or common revenges or indulgences, but sought to exalt cruelty into an art. "This is why so many acts of violence in Italy assumed fantastic forms"; and this, we may add, is possibly, in a measure, the key to what has puzzled many who would wish to claim for art a purifying influence; the fact, namely, that the age of the highest art since Greece was also the age of the greatest immorality. The pre-eminence in each case is to be traced, in the end, to the same over-wrought mental and intellectual activity and excitement.

As a specimen of Mr. Symonds's style and tone in dealing with his subject we may extract the following description of "the men of the new age."

"Europe was, as it were, a fallow field, beneath which lay buried the civilisation of the old world. Behind stretched the centuries of Mediævalism, intellectually barren and inert. Of the future there were as yet but faint foreshadowings. Meanwhile, the force of the nations who were destined to achieve the coming transformation was unexhausted; their physical and mental faculties were unimpaired. No ages of enervating luxury, of intellectual endeavours, of life artificially preserved or ingeniously prolonged, had sapped the fibre of the men who were about to inaugurate the modern world. Severely nurtured, unused to delicate living, these giants of the Renaissance were like boys in their capacity for endurance, their inordinate appetite for enjoyment. . . . Their fresh and unperverted senses rendered them keenly alive to what was beautiful and natural. They yearned for magnificence and instinctively comprehended splendour. At the same time the period of satiety was still far off. Everything seemed possible to their young energy; nor had a single pleasure palled on their appetite. Born, as it were, at the moment when desires and faculties are evenly balanced, when the perceptions are not blunted nor the senses cloyed, opening their eyes for the first time on a world of wonder, these men of the Renaissance enjoyed what we may term the first transcendent springtide of the modern world. Nothing is more remarkable than the fulness of the life that throbbed in them. Natures rich in all capacities and endowed with every kind of sensibility were frequent. Nor was there any limit to the play of personality in action. We may apply to them what Mr. Browning has written of Sordello's temperament:—

> 'A footfall there
> Suffices to upturn to the warm air
> Half-germinating spices; mere decay
> Produces richer life, and day by day
> New pollen on the lily-petal grows,
> And still more labyrinthine buds the rose.'"

Miscellanea.

An Engineering Difficulty.—In the construction of the extension of the Great Western Railway from Netherton to Old Hill and Hales Owen, an engineering difficulty of a novel kind has been met with. At a point about three-quarters of a mile from Hales Owen, the line has to pass through a deep cutting along the side of a hill. The excavation has been made for some time, and shortly after its completion it was noticed that the face of the cutting on the side nearest the summit of the hill was gradually settling or sliding down towards the line. Accordingly men were set to work, and the cutting was enlarged. Again, however, the ground sank, and it has done this so repeatedly that although the width of the cutting has been extended for a considerable distance beyond the boundary of the railway, the line cannot be pronounced safe. The ground has been found to consist of layers of clay, so unstable that it is considered no breadth of cutting would ever render the line safe, as the summit of the hill almost would have to be removed before the downward movement could be arrested. At present two plans are under consideration. One is to face the sides of the cutting with a massive wall, which will be further supported by heavy cross girders of iron. Another plan is to tunnel through the hill, in which case extensive colliery rights will have to be purchased. The completion of the line is thus prevented.

Lord Aberdare and the Strike.—Lord Aberdare has written a letter to the Cardiff papers, showing the losses which the men in Wales have sustained through the present strike. He takes the figures given by the men themselves, which, allowing for deductions of colliers at work, gave 50,000 men out of employment. They have now been out, he says, after deducting holidays and Sundays, 122 days, and allowing the men to earn 5*s.* a day, that makes 1,300,000*l.*, while the 12,000*l.* sent by the Miners' Association only give one day's wages for men on strike. Add to this number 60,000 men locked out, and their wages would make a total of 3,000,000*l.* lost by the workmen alone. The loss to capital, he says, is incalculable. He adds that this only represents a portion of the suffering caused by the strike, as a large number of other employers of labour have had to dismiss workmen entirely unconnected with collieries.

The Drainage of Towns on the Thames. A Local Government Board inquiry was held on the 26th ult., at Abingdon, before Mr. J. Thornhill Harrison, C.E., one of the inspectors of the Board, in answer to an application from the corporation of Abingdon, for powers to purchase land compulsorily for a sewage farm. It is intended at Abingdon to carry out a scheme of Mr. J. Bailey Denton's for the disposal of the sewage by intermittent downward filtration, combined with irrigation. Mr. S. W. Leach, engineer to the Thames Conservancy Board, was one of the witnesses, and was asked by Mr. Harrison to tell him what had been done by the various towns on the Thames towards diverting the sewage from the river. Mr. Leach said that a vast number of notices had been served upon local authorities and upon individuals requiring them to discontinue discharging sewage into the Thames, and in looking over that list it was astonishing to see the number of cases in which the requirements of the Conservators had been met, though in some cases only temporarily, by stopping the drains and running the sewage into cesspools, a system which the inspector described as dangerous to the water supply of towns which had adopted the system, Staines being one that had come under his notice. Mr. Leach stated that this process had been adopted at Wallingford, Henley, Marlow, Egham, and Staines. Mr. Leach said he had observed beneficial results from the diversion of the sewage in the condition of the water.

Accident at the Leeds Corporation Pumping Works.—Early on the 26th ult. a serious accident occurred at the Arthington Pumping Station of the Leeds Corporation Waterworks. By the breakage of a portion of the machinery the pumping power of the works has been reduced one-half, rendering it probable that the supply of water to the borough will have to be materially curtailed. Early in the morning, the two men in charge of the machinery were alarmed by what seemed an explosion. An examination of the pumping apparatus revealed the fact that the clack-box of the pump, a strong iron cylinder about 30 in. in diameter, had burst. In addition to this the 30-in. pipe connecting the clack-box with the valve had been smashed and rendered useless, and the valve itself injured. At a special meeting of the Waterworks Committee, Mr. Filiter, C.E., the Waterworks engineer, reported the extent of the injuries done. It would, he said, take four or five weeks to repair the injuries, and as their present supply of water would not last more than a month, it was desirable that the greatest care should be exercised by consumers. The committee resolved that the water should be turned off every evening at six o'clock, until six the next morning, so as to prevent any waste that might take place during the night.

Removal of Bars and Gates.—At the usual weekly meeting of the Marylebone Vestry, last week, a communication from the Vestry of St. George's, Hanover-square, was read, stating that, in answer to a letter from that Board relative to the opening of the gates at Harewood-place, Oxford-street, the Vestry of that parish had come to the following resolution,—"That this Vestry do join the Vestry of St. Marylebone in suggesting to the Earl of Harewood that directions should be given for the opening of the gate at Harewood-place daily for a few hours in the afternoon, as requested by the Marylebone parish." It was further suggested that the application should be for light traffic only. The vestry clerk then read a letter from the Earl of Harewood, stating that he declined to comply with the application. Mr. Poland thought it high time that the Vestry, with the co-operation of other vestries, should take the matter up, and have these abominable nuisances of gates and bars removed from the metropolis. He moved that the matter be referred to a committee, and this was ultimately resolved on. We quite agree with Mr. Poland.

Toughened Glass Exhibited.—The toughened glass of M. de la Bastie has just made its first appearance in a public exhibition at the agricultural show of Avignon (Vaucluse). The visitors pressed around the rail, which was insufficient to protect the specimens from the experiments each person wished to make on his own account; neither knocks with stones, blows with walkingsticks, nor even digs with bootheels being spared. Consequently, no decision of the jury was received with greater approval than that which awarded to the inventor a gold medal and a diploma of honour.

Demolition of a Factory Chimney at Stalybridge.—At a large building at Stalybridge, known as Johnson's Mill, and immediately adjoining the railway station, which had been in course of demolition for several weeks, the material had been purchased and removed by various contractors, with the exception of a large brick chimney, which had been purchased by Mr. Samuel Cook, of Mottramroad. This chimney was 65 ft. in circumference at the base, and 145 ft. high; and in order to accomplish its speedy demolition, a deep trench was formed underneath, and four courses of brickwork removed; twenty-nine large blocks of wood were then placed in the aperture, and covered with a quantity of coal, and the pile was lighted at noon. The fire burned steadily for twenty-five minutes, when the apex of the chimney was observed to lean slightly, and the whole pile came to the ground immediately afterwards with a loud crash. The building was erected some forty years since, and has been purchased for a contemplated extension of the Manchester, Sheffield, and Lincolnshire Railway Company's premises.

Joint Water Supply for Manchester and Liverpool.—A second report on the proposed new water supply for Liverpool has just been drawn up by Mr. J. F. Bateman, C.E., and laid before the Water Committee. The Bleasdale and Wyredale schemes which have been proposed, Mr. Bateman estimates would produce about 24 million gallons of water a day, and that the cost would be 2,871,047*l.* This, as compared with the Ullswater scheme, which is proposed to be worked in conjunction with Manchester, shows a greater expenditure, the Ullswater scheme giving a supply of 20 million gallons *per diem*, and costing 2,420,703*l.* Mr. Bateman is in favour of the Ullswater scheme, as providing for a longer period, and objects very strongly to a proposal to open twenty additional pumping-stations in the Liverpool district, as they would cost 1,800,000*l.*, and the water would be hard, and sometimes impure.

The Use of Sewage Water in Factories. In an inquest held at Rochdale on the body of John Keyton Hardiker, engineer, employed at the foundry of Mr. Davenport, the evidence went to show that the health of the deceased had been seriously affected by the effluvium of the water used for the condenser of the engine, which water was taken from the sewers. The jury gave as a verdict that Hardiker had died from cerebral hemorrhage, and that his death had been accelerated by working in an atmosphere where sewage water was used for condensing purposes; and they recommended the Health Committee of the Town Council to put a stop to the use of sewage water for condensing purposes.

Children Playing with Matches again.—On the 27th ult. a disaster, resulting in the destruction of property valued at from 8,000*l.* to 10,000*l.*, happened at Ickham, a village distant about six miles from Canterbury. Two children, while playing with matches, set fire to a stack at the rear of the Court Farm, occupied by Mrs. Henry Collard. The flames communicated to other stacks and outbuildings, all of which were destroyed. Favoured by the wind, the conflagration next extended to some farm buildings on the opposite side of the road. These were quickly burned to the ground, as were a builder's workshops and the contents of the yard. A public-house and twelve cottages were gutted, as was also a hop oast, which contained about sixty quarters of wheat and other valuable produce, together with many agricultural implements.

New Church at Stanley.—The foundation-stone of the new church of St. Andrew, in course of erection at Stanley, was laid on the 19th ult., by Colonel Joicey. The parish of Beamish, for which the church is being built, was created in October, 1873, with the Rev. J. Crennell as incumbent. The church, which occupies a splendid site, is designed to hold 350 worshippers. It will consist of nave and chancel, north aisle, and organ chamber, forming a parallelogram measuring 96 ft. long by 42 ft. wide internally, with a south porch. The building is in the style prevalent in England in the fourteenth century.

Destructive Fire at Haslingden.—The large workshops belonging to Messrs. John Tattersall & Sons, joiners and builders, Haslingden, last week were discovered to be on fire, and in about two hours were a complete wreck.

Seats in the Streets of St. Pancras.—The contractor for supplying the public seats just fixed on various sites in St. Pancras is Mr. Lazarus, of Old-street. The seats may be described as 6 ft. in length, having in the middle and at each end a scroll arm, which admit of four persons sitting at ease, two in each division, the object of the arm in the middle being to prevent any one from occupying the length of the seat by lying down. The framework of the seats is constructed of wrought iron of double the usual thickness, the seat itself being formed of stout wooden laths, and the top back piece of stout elm, the woodwork being painted and grained oak and varnished, supported on iron scroll legs bolted into piles down in the ground.

A Big Figure.—Herr Ernst von Bandel, a Westphalian nobleman devoted to the sculptor's art, has executed a gigantic statue to Hermann, the vanquisher of Varus, in the Teutoburg Forest. According to German papers, the statue is of embossed copper, 100 ft. in height irrespective of pedestal, and has been wrought by the hand of the man whose brain created it. His whole life has been consumed in this one object. When he had done modelling—no small task in the case of a figure with hands 5 ft. long—he took to the hammer and forge, and literally formed the immense surface with his own unaided strength. A good deal of it was done at the foot of the hill whereon it stands, near Detmold, the capital of the principality of Lippe.

Falling in of a Roof.—The chimney of a dwelling-house at Emscote, Warwick, was recently blown down. In its fall it crushed in the roof. The *débris* fell into a bedroom, in which were two bedsteads, on one of which was sleeping Mr. Reading, the owner of the house, while his son slept on the other. On the son's bedstead fell a heap of bricks and slates, some of which inflicted very severe injuries on the young man, who was removed to the Warneford Hospital, where he lies in a precarious condition. For some time the chimney has been noticeable for its inclination; but no one seems to have supposed it was in quite so dangerous a state as the result has proved.

Memorial of Bishop Wilberforce.—A memorial chapel of the late Bishop Wilberforce, erected at the cost of nearly 6,000*l.*, was opened on the 25th ult. by the Bishop of Oxford, in the presence of the Bishop of Brechin, Bishop of Bloemfontein, and the Bishop of Nassau, about 300 clergy of the diocese, and a large number of ladies. The chapel is built adjoining the college of Cuddesdon, which was founded by Bishop Wilberforce, and is intended for the use of students. This was considered to be the most fitting memorial to the late Bishop, who desired to erect a chapel for the college.

The Proposed Widening of London Bridge.—At a meeting of the Common Council on the 27th ult., Mr. Stewart asked the chairman of the Bridge House Committee what progress had been made in regard to the proposal to widen London Bridge, and when the report of the committee on the subject would be presented to the Court? Mr. Rigby replied that the Bridge House Committee had given this question their most earnest attention, and at the present time their architect was consulting with an eminent engineer in regard to it. They hoped to be able soon to bring up a report on the matter.

Painters' Strike at Leek, Staffordshire. This unfortunate strike, which has been productive of much inconvenience and loss to all parties, was last week arbitrated upon by the Mayor of Hanley. The reference to him was taken at the Red Lion Inn, the masters being represented by Mr. Phillips and Mr. Johnson, and the men by Mr. Mason and Mr. Byrne. The award was received by Mr. Phillips on Saturday, and gives ½d. per hour advance on the old rate. This rule is to apply until May next. If any change is then proposed by either masters or men, a month's notice of the intended alteration to be given.

Art Loan Exhibition at Winchester.—On the 31st ult., Lord Selborne opened the Art Loan Exhibition at Winchester. The proceedings commenced with a *déjeûner* given by the Mayor at St. John's-rooms. At three o'clock the company proceeded to the Guildhall, where a number of the principal residents had assembled, and Lord Selborne declared the Exhibition open.

Re-opening of Wawne Church, Yorkshire.—The parish church of Wawne, near Beverley, which has been undergoing restoration, has been re-opened with special services. The stonework of the navê has been generally restored, and the building re-roofed, the interior re-seated with open seats, and a new pulpit added. The north porch has also been rebuilt. The cost has been about 1,400*l.* The chancel remains to be done, and other improvements made. Mr. Dennison, of York, was the contractor; Mr. Bannister, of Beverley, executing the stonework; and Mr. Cherry, of Beverley, the plumbing work.

The Tower of St. Antholin's.—At a meeting of the City Commissioners of Sewers on the 25th ult., Mr. W. Clark said he understood that the Vestry for the district of St. Antholin's had decided to pull down the tower of that church. At the union of the benefices, it was arranged that this tower, which was a great architectural ornament, should be allowed to stand, and he moved that the matter be referred to the Improvement Committee for consideration and report, and with power to take such steps as they might be advised to preserve the tower.

Completion of the New Reservoir, Pontefract.—The new reservoir, for storage purposes, to supply the town of Pontefract and district with water, erected in the Park, has now been completed by the contractor, Mr. Marsh, of Castleford. The defects in the construction of this reservoir during the first stages of its erection have been removed, and it is now considered to be water-tight. The tank will hold, when filled, 369,000 gallons of water, which will be forced from the present works in Tanshelf, and conveyed into the town through the pipes already laid down.

Enterprise in Turkey. — Two industrial undertakings are reported in a letter to the *Bassiret* to have been set on foot at Tirnovo, in Bulgaria. One is a blacking manufactory, which is already at work, and the other a soap manufactory, which will shortly be opened. This is satisfactory. It is something to know that enterprise is not yet quite extinct in Turkey. As the *Levant Herald* says,—"These undertakings will thrive, unless some over-zealous governor takes it into his head to tax all the profits out of them on behalf of the Government."

Tenders for Work, Bethnal-green.—The guardians have opened tenders for whitewashing, colour-washing, and the construction of a lift at the Workhouse, and for the erection of water-closets and lavatories at the Leytonstone School in accordance with specifications prepared by Mr. Mundy, surveyor. The offer of Messrs. King & Son for the carrying out of the required work at the Workhouse was accepted, and the tender of Messrs. Earl & Son for the execution of the work at Leytonstone Schools.

Kelly College, Tavistock.—On Saturday Mrs. Kelly, widow of the late Admiral Kelly, laid the memorial-stone of the new college (towards the establishment and endowment of which the Admiral left the sum of 80,000*l.*), in the presence of several thousands of spectators. The object of the institution is to afford a good education to the sons of poor naval officers at a small cost. The architect is Mr. C. F. Hansom, of Clifton, and the builder, Mr. John Pethick, of Plymouth.

The Gold Casket, presented by the Corporation of the city of London to H.I.M. Alexander II., Emperor of all the Russias, in connexion with his visit to the city of London, 18th of May, 1874, was executed, by order of the Corporation, by Mr. J. W. Benson, of Ludgate-hill and Old Bond-street. It is composed of gold and enamel, and is in the cinque-cento style. Mr. Benson has almost a monopoly of such commissions, and seems to have made up his mind to deserve it.

The Building Trade, Wolverhampton.—It has just been announced that Mr. Young, barrister, of the Oxford circuit, has unconditionally accepted the post of umpire to the Wolverhampton Building Trade Arbitration Board, owing to Mr. Rupert Kettle having retired. The master builders have acceded to the bricklayers a demand of ½d. per hour extra, rather than suffer the annoyance which would be occasioned by a strike.

The Way to Do it.—At a meeting of the Guardians of Winslow on Saturday last, Mr. R. W. Munday, of Buckingham, builder, was appointed Inspector of Nuisances, at 10*l.* per year.

The Demolition of Ancient Houses at Hackney.—Several very ancient houses at Hackney, full of historical interest and old associations, are in course of demolition. The King's Head Tavern, at Upper Clapton, which was a house of entertainment when Queen Elizabeth visited her favourite counsellor, Lord Hunsden, at the old house opposite, is being razed to the ground. The King's Head, in Mare-street, is also doomed.

Intermittent Downward Filtration.—We see by the public papers that there has been no opposition at the inquiries held by the Inspectors of the Local Government Board in the two cases of Hitchen (Herts) and Abingdon (Berks), in both of which it is intended to adopt the process of Intermittent Downward Filtration as recommended by Mr. Bailey Denton, C.E., for the disposal of the sewage of those towns.

Association of Engineering and Shipbuilding Draughtsmen.—The annual general meeting of this Association was held in the Religious Institution Rooms last week, Mr. D. Halley, president, in the chair. The annual report showed that the association was in a satisfactory state. Some modifications were made in the rules so that gentlemen engaged or interested in scientific pursuits might become associates.

Dereham Church.—The repair, by the Ecclesiastical Commissioners, of the parish church having involved a like reconstruction of the continuous roof between the chancel and the central or lantern tower, this has been recently completed by the Churchwardens. The work has been performed by Mr. Hubbard, builder, of this town, under the superintendence of Mr. Phipson, architect.

Small-pox.—A plague of small-pox of most malignant type has been desolating the town of Athenry during the last month. The terror of the surrounding district is a serious aggravation of the misery of the inhabitants. Nobody that can possibly avoid it will come near them. Business is at a deadlock, and there is dire distress among the population.

Marylebone Presbyterian Church.—The building in Upper George-street, Bryanston-square, which has been known under this name for thirty years, has been rebuilt and enlarged at a cost of about 15,000*l.*, and now appears as a Gothic church, capable of containing 1,650 worshippers, with accommodation for Sunday-school classes, &c.

Landslip at Liverpool Pier.—A landslip took place at St. George's Pierhead, Liverpool, last week. A portion of the roadway, 20 ft. in diameter, which had been undermined by percolations, gave way suddenly and sank to a depth of 16 ft., causing a shivering sensation to on-lookers.

Glass superior to Marble.—A patent has been taken out for an invention by which it is claimed that glass can be used as a building material for house fronts, floors, or pavements, superior to marble in durability and economy. It may be made plain or variegated, and its colours are indestructible.

New Building Company, Middlesbrough. Among the new companies registered during the past week is one for the purpose of carrying on the usual business of a land, building, and investment company at Middlesbrough. The capital, 40,000*l.*, is proposed to be raised in 10*l.* shares.

New Reservoir at Barnard Castle.—The tender of Mr. John Lee, of this town, for the construction of a storage reservoir, has been accepted by the Board of Health. Mr. Lee proposes to execute the works for 3,266*l.* Mr. Robinson, of Darlington, is the engineer. The undertaking was ordered by Government.

Pension to the Widow of Mr. Philip, the Sculptor.—The Queen has, on the recommendation of Mr. Disraeli, granted a pension of 100*l.* per annum to the widow of J. Bernie Philip, the sculptor, who died suddenly some weeks ago from bronchitis.

Sanitary Inspector, Halesworth. — Mr. Henry Mountain, of Darsham, builder, was on Monday last elected Inspector of Nuisances for the Westleton district, at a salary of 40*l.* per annum, in the room of Mr. James Rous, resigned. There were nine candidates.

Syston, Leicester.—A large clock, striking the hours and playing the Cambridge chimes, has just been placed in the parish church here. Mr. Smith, Midland Clock Works, Derby, has carried out the work.

Destruction by Fire of the Theatre Royal, Leeds.—About half-past ten o'clock on the 28th ult., the Theatre Royal, Leeds, took fire, and within about an hour was entirely destroyed, the fire engines having little effect in checking the progress of the flames.

Graveley.—The Bishop of Ely, on the 19th ult., re-opened the parish church of Graveley, Cambs, after partial restoration, at a cost of about 800*l.* The architect employed was Mr. Somers Clarke; and the builders were Messrs. Edey, Wildman, & Wade, of St. Neots.

A Congress of French Architects will be held from the 7th to the 12th of June next, inclusive, at the "École des Beaux-Arts." Several public buildings are to be visited.

TENDERS

For building a cottage, and alterations to house, at Triangle Farm, Plumpton, for Mr. D. Mutton. Mr. G. Tuppen, architect:—

W. & T. Garrett	£283 0 0
Botting (accepted)	265 0 0

All bricks found.

For house and studio, Steele's-road, Haverstock-hill, for Mr. C. E. Johnson. Messrs. Batterbury & Hurley, architects. Quantities supplied:—

Nightingale	£2,600 0 0
Newman & Mann	2,580 0 0
Grimwood & Son	2,455 0 0
Manley & Rogers	2,377 0 0
Linzell & Son (accepted)	2,293 0 0

For finishing four villa residences on the St. Helen's Estate, Hastings, for Mr. John Leach. Mr. L. Vernon, architect:—

Steel	£1,196 15 6
Vidler	1,146 0 0
Shortell	1,134 1 0
Champion	1,079 11 0

For building a new residence, coach-house, and stable, a pair of cottages, and a gardener's cottage, at Rochetts South Weald, for Mr. C. E. Coope, M.P. Mr. E. C. Lee, architect. Quantities supplied by Mr. L. C. Riddett:—

Scrivener & White	£3,406 0 0
Bayes & Rammage	3,323 0 0
Axford	3,105 0 0
Hammond	3,077 17 0

For enclosing an additional piece of land, Barking Side Church. Mr. W. G. Bartlett, architect:—

Drake	£138 0 0
Walter	120 0 0
Hammond	114 0 0

For building an addition to schools at Stanford-le-Hope. Mr. J. Brooks, architect:—

Hammond	£522 0 0
Crosley	519 0 0
Blake	477 0 0

For new infants' school and teacher's house at Marston Green, near Birmingham, for the School Board. Mr. John Cotton, architect. Quantities supplied:—

Chalfers	868 0 0
Davis	780 0 0
Hughes	715 0 0
Brooks	650 0 0
Davis, Brothers	645 0 0
Matthews	623 0 0
Widdowson & Lerrigo	577 0 0
Wheeler	528 0 0

For new parsonage at Little Hereford, near Fenbury, for Rev. L. Jones. Mr. John Cotton, architect. Quantities supplied:—

Bowers	£2,810 0 0
Geodman	2,627 0 0
Thompson	2,600 0 0
Grosvenor	2,593 0 0
Welsh	2,584 0 0
Pugh	2,508 0 0
Edwards	2,500 0 0
Collins & Cullis	2,316 0 0
Brazier & Weaver	2,190 0 0
Smith	2,055 0 0
Second List, after Revision of Plans.	
Collins & Cullis	£2,100 0 0
Brazier & Weaver	2,000 0 0
Smith	1,857 0 0

For the erection of eleven houses in Gordon-road, Peckham. Messrs. Berriman & Son, architects:—

Garland & Perkins	£4,340 0 0
Lingfield	4,123 0 0
Fisher	3,897 0 0
Prebble & Morley	3,830 0 0
Grummant	3,223 0 0
Faulkner (accepted)	3,135 0 0
Shapley	3,079 0 0
Wainwright	3,114 0 0
Monday	2,980 0 0

For new schools, for the School Board of Dartford, in St. Albau's-road, to accommodate 300 children. Mr. W. H. Powell, architect:—

Stevenson	£2,213 0 0
Waller	2,200 0 0
Melton	2,200 0 0
Kirk & Randall	2,075 0 0
Blake	2,050 0 0
Tongue	1,979 0 0
Naylor	1,890 0 0
Waller	1,850 0 0
Longley	1,840 0 0
Knight	1,830 0 0
Vicary	1,795 0 0
Sharp & Sons (accepted)	1,647 0 0
Spencer	1,587 0 0

For alterations to the "Marquis of Cornwallis," Bethnal-green-road, for Mr. J. Brown. Messrs. Hills & Fletcher, architects:—

Andrews	£856 10 0
Coleman	437 0 0
Craig	387 0 0

For alterations and additions to "Raymead," Hendon. Mr. Thomas Archer, architect:—

Davids (accepted)	£1,245 0 0

For new farm buildings, at "Eden," Beckenham, Kent, for Mr. C. A. R. Hoare. Mr. Archer, architect:—

Hooker (accepted)	£300 0 0

For additional stable buildings, and alterations to old stable buildings, at Kelsey Park, Beckenham, Kent, for Mr. C. A. R. Hoare. Mr. Archer, architect:—

Hooker (accepted)	£1,175 0 0

For alterations to the "Ben Jonson" public-house, Houndsditch, for Mrs. Moore. Mr. J. G. Needham, architect:—

Watson	£325 0 0
Palmer (accepted)	319 10 0
Balsam (too late)	297 0 0

For alterations to the "Duke of York," Caroline-street, Clapton, for Mr. Craufield. Mr. J. G. Needham, architect:—

Green	£351 0 0
Burton	235 0 0
Woodrow	220 0 0
Watson (accepted)	205 0 0

For restoring the foot-bridge and approaches, Mill Mead, Guildford, for the Urban Sanitary Authority. Mr. Henry Peak, architect:—

Pollard & Son	£165 0 0
Mason	163 0 0
W. Swayne, jun.	160 0 0
Garnett (accepted)	153 0 0

For a new farmhouse at Flexford, near Guildford. Mr. Henry Peak, architect:—

Nye (accepted)	£834 0 0

For alterations at No. 83, High-street, Guildford. Mr. Henry Peak, architect:—

Clark	£460 0 0
Garnett	451 10 0
W. Swayne, jun.	420 10 0
Mason	408 0 0
Strudwick (accepted)	403 0 0

Tender for farm buildings, &c., at Waterhall, Sussex. Mr. G. Tuppen, architect:—

Hill	£1,743 0 0
Patching & Webber	1,695 0 0
Dean	1,650 0 0
Miles	1,625 0 0
Colwell	1,600 0 0
Anscombe	1,585 0 0
Lockyer (accepted)	1,540 0 0
Parsons	1,438 0 0

For School Board Schools at Southwick, Sussex:—

Gehere	£2,140 0 0
Peskitt & Taylor	1,799 0 0
Bushby	1,786 0 0
Jarrett	1,735 0 0
Longley	1,685 0 0
Miles	1,650 0 0
Steer	1,610 0 0
Ockley	1,600 0 0
Bruton	1,585 0 0
Colwell	1,500 0 0
Wells & Mills	1,419 0 0

For proposed works at the Stamford Arms, Stamford-street, Blackfriars, for Mr. Thos. Parker. Messrs. Bird & Walters, architects:—

McLachlan & Son	£276 0 0
Williams & Son	265 0 0
Blott	225 0 0
Mills	218 0 0
Thompson & Smith	213 0 0
Mark	209 0 0

For proposed works at the East India-chambers, Leadenhall-street, for Mr. H. J. Solomon. Mr. Benj. Tabberer, architect:—

Crabb	£1,864 0 0
Mark	1,866 0 0
Cohen	1,845 0 0

For schools, teacher's residence, &c., Cove, near Tiverton. Mr. W. E. Williams, architect. Quantities by Mr. R. Carpenter:—

Roberts	£1,088 10 4
Hamlin	883 17 6
Cole, Willis, & Pratt	830 0 0
Dover, Son, & Co.	777 0 0
Barrows & Son (accepted)	764 0 0

For schools, residence, &c., at Edgewick, near Coventry. Mr. Arthur H. Byrd, architect. Quantities by Mr. R. Carpenter:—

Storer (accepted conditionally)	£1,975 0 0

For new studio for Mr. C. James, Prince's-street, Leicester-square, London. Messrs. Ingram & Hollands, architects:—

Axford	£221 0 0
Stephenson	209 0 0
Land	195 0 0

For rebuilding No. 487, Hackney-road, London, for Mr. J. Hill. Messrs. Ingram & Hollands, architects:—

Williamson (accepted)	£415 0 0

For new Wesleyan Chapel, Blackwell, Derbyshire. Mr. W. Ranger, architect:—

Forrest (accepted)	£1,675 0 0

For new Primitive Methodist Chapel, Havant, Hants. Mr. Ranger, architect:—

Elliss (accepted)	£398 10 0

For the renovation of the Free Church of England, Leamington. Mr. George Hart, architect:—

Mills	£220 0 0
Hodkisson	114 5 0
Brown & Son (accepted)	109 0 0

For the erection of new Board schools, with residence, &c., at Tyler's Green, High Wycombe, Bucks. Mr. Arthur Vernon, architect. Quantities by Messrs. Lamb & Church:—

Simmonds	£2,300 0 0
Traveno	2,270 0 0
Hook & Oldrey	2,170 0 0
Dover, Son, & Co.	2,151 0 0
Shurmur	2,124 0 0
Durley & Son	2,055 0 0
Reavell	2,042 0 0
Walker	1,986 0 0
Child	1,945 0 0
Hancock	1,931 15 0
Wheeler	1,910 3 1
Woodbridge	1,870 0 0
Serton	1,790 0 0
Hunt	1,561 17 6

Alterations to "The Greyhound."—Mr. Impey says his tender was 269*l.* 10*s.*

TO CORRESPONDENTS.

N. W. (we are not disposed to advocate the re-erection of Temple Bar at the public expense).—J. M & Co. (we are forced to decline entering into private disputes).—Old Tenant (ditto).—H. S.—H. S. R.—J. K. C.—F. P.—C. S.—L.—R. W.—E. Y.—W. H. P.—L. W. R.—B. A. F.—L. W. G.—W. B.—Mr. P.—C. L. E.—S. F. P.—B. & H.—J. J. D.—T.—W. P.—J. S—Lord K.—I. & H.—F. P.—A. V.—E. G.—T. D.—H.—W. J. B.—C. H.—F. H. F.—F. & Co.—I. A.—L. A.—J. L.—M. (no).—G. J. J. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE. The responsibility of signed articles, and papers read at public meetings, rests of course, with the authors.

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VOL. XXXIII. No. 1688. SATURDAY, JUNE 12, 1875.

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Old Architecture, and its Preservation.



READERS of this journal are aware that we have always, as on every consideration we are bound to do, given our support in favour of the preservation of old buildings, as far as possible, in the midst of the changes rendered necessary in the progress of town improvements; and even when the ultimate fate of an old building appeared to be only a question of time, we have always preferred to be among those who defer the day of destruction as long as can reasonably be done. The question is not without its difficulties; and as the real relative importance of old buildings and new improvements is often not duly balanced in these cases, perhaps the value of old association and historical evidence, and the extent to which these should influence us in any consideration affecting the destruction or preservation of buildings which have the prestige of age, is one on which a suggestion may be seasonably offered.

The matter assumes a different aspect in proportion as the buildings to be dealt with are or are not of inherent architectural value. The former case has been before the profession for long enough, in the most extensive possible form, in the proceedings arising out of the great restoration movement among the custodians of our churches and cathedrals. Of the preservation of the architecture of the Middle Ages, in every way possible, scarcely a difference of opinion, we surmise, exists, in spite of some recent doings. But the question as to the method of effecting this preservation, and the principle to be adopted, is by no means so unanimously settled, and has been the subject of not a few discussions and observations in our own columns. Where a building is no longer safe, and cannot be made so, of course there is no more to say in the matter; it has to be removed. Where it is inconvenient and unsuitable for the most modern requirements, it then remains a question between the ultimate value of convenience or of architectural effect and association. The tendency of the present day is to exaggerate the importance of the former to a sometimes undue extent. In planning a new building convenience should of course be amongst the first things. In altering an old one the balance is not so easily struck between the practical and the architectural. It seldom happens that an old building is not susceptible of considerable modification in its arrangements without materially distorting its architectural countenance, and it should be felt in such a case that the preservation of architectural character is a definite gain worth sacrificing a little convenience for at times; a sacrifice which, in such cases, too, is sometimes more imaginary than real. We get into superstitions in these self-indulgent days as to what is necessary for the comfort of life, and are too ready to think that there is a necessity laid upon us to conform to requirements sanctioned rather by fashion and common consent than by any real necessity of things. There is further the problem, speaking in regard to buildings which are, or have been, of real architectural value, which arises when the architecture of an old building, evidently once fine and impressive, has suffered so much from time and decay as to be, though practically secure, but the ghost of its former self, almost obliterated, and shorn as to its architectural character. Yet such a building is venerable to all who have passed their lives in its immediate neighbourhood, and to whom it has become an important link in the chain of their associations. Do we in such a case show most reverence for the ancestral building by letting it moulder away untouched by the restorer's tools, or by gathering up the evidences of its original design before all trace of them is gone, and renewing this design in what we conclude to have been its primitive form, as far as we can ascertain? A great deal has been done on this latter principle, and in one or two cases whole churches or cathedrals have been cased with new work, professedly a repetition or resurrection of what was there before. Has this been too hastily done, and in too wholesale a manner? We think so, in some instances. Could we really restore the architectural design, undoubtedly, to its primitive state, there would be less room for question in the matter. But we can never do that; we seldom have records of every detail, and if we had, the hand and tool of the modern workman are not as those of the ancient one (we say not they are worse or better, only different), and what we have renewed is something of our own day, only in the dress of the past. Have we gained by the exchange? Scarcely, in many cases at least. The historic value of the old building, its associations with the life of the neighbourhood, and with the *genius loci* generally, have a real and definite æsthetic value equal in the main, perhaps in some cases superior, to its architectural effect when new; and this particular sort of value, once gone, is gone for ever; no one can anticipate time and forestall this interest for the new intruder. Is not the moral from this, then, rather to let an old building alone so long as it is safe? Better to leave its mouldering cornices and weather-stained walls to tell their own history, and to grow old with the dignity and interests of the past investing them, than make them give place to a fallacious attempt to reinstate their original condition. In many cases, however, the face of an old church, say, has been allowed gradually to fall into decay, while the interior and the substance of the walls are sound. The outside of the building must then be reinstated under good advice. The building, as a building, must be maintained for its purpose,—discussion is useless.

When we are concerned with old buildings in what may be generally admitted to be a bad style, or no style at all, the argument seems to be stronger in favour of removing them, if they cannot be maintained, and replacing them by something better. At all events, the mere replacing of old work by new in such a case is the last thing that should be done, for it is taking away the only chance for architectural dignity or effect from the design. An old building, in a bad and corrupt style, acquires in process of time its own picturesque effect from the softening down of bad detail or pronounced vulgarity of treatment, in the gradual process of decay, and becomes subject to that assimilating power which Nature exercises on all the objects which come under the play of her forces, and which tend more and more to become part of her own scenery and effect. The mere fact of age, too, imparts an interest to that which, when new, may have been commonplace enough. We look with a considerable, and perhaps rather melancholy, interest on that river-gate near the Charing-cross Station, though its age is not very great, now half-submerged beneath the level of the reclaimed land behind the Embankment, and standing there in mute protest against decay and abandonment. Should we at all care for the same feature if we saw it set up in one of the streets in fresh-hewn stone? Probably not. But we still have to consider the question whether, having arrived at the conclusion that a certain style of past architecture was altogether bad, and that we have got hold of and are practising a better one, we are as a matter of course wise in removing the old construction to replace it with what we believe to be better. And even here we think the utilitarian view is often the wrong one; speaking so far as the æsthetics of the matter are concerned, and leaving practical considerations on one side. And we are more desirous to suggest this side of the question, because there is a growing tendency to underrate and ignore it, and to be prepared to pull down anything and everything in favour of some such object as saving five minutes by a new route. We have said enough of the value of association in regard to the interest which old architectural works have for us; but there is also their interest as historical facts. It is absurd and narrow-minded to say that, because a style was bad, the fact of its having been practised is of no consequence, and may just as well be forgotten. It is just the history of the development of a style, or of its lapse again into an inferior and debased form, that is one of the most important elements in the formation of taste, and in leading us to discriminate between what is good and what is not. And the mere fact that such a style, bad or good, was for a certain period practised and admired by a number of men, or

by the society of the period in general, gives i an importance and an interest which no artistic consideration can entirely obliterate. However it appears to us, in our days of more enlightened criticism, there was a period when a form of architecture which we now scout as tawdry, or weak, or affected, was the *ne plus ultra* of artistic good taste in the eyes of men better and wiser perhaps in some other things than those who now decry and despise their taste. This is an important fact to be remembered, and is likely to be remembered by those who have most education and most capability of judging between the inherent and the associated value of architectural or artistic monuments. The present custodian of Westminster Abbey, who has evinced in many ways his enlightened interest in the noble Mediæval building committed to his care, has shown in his treatise on the history of the building, a true appreciation of the value of the curious and oddly-associated crowd of monuments which line its walls. No doubt they do destroy the purely architectural character and completeness of the building; but they have their own value as testimonies of the taste which at one period prevailed; as the Dean puts it (we quote from memory), they are the records of the artistic spirit of their period, awkwardly struggling into existence. Some little time ago a memorial was addressed from the Institute of Architects to the Board of Works, praying them to preserve intact the space to the west of the Mansion House, adjoining Queen Victoria-street, so as not to intercept or spoil the view of a building of so much interest in regard to architectural and metropolitan history. The memorial (as witnesseth the large block of offices by which the Mansion House is now faced or flanked) was unsuccessful, and was even regarded as frivolous and absurd by some of the body to whom it was addressed. Considering the great value of the site in question as building land it was perhaps scarcely possible that it would be sacrificed for such an object. But though most of us may think, and some of us with justice, that we could put something better in place of the Mansion House now, the memorialists were perfectly right and to be commended in the feeling which led to their appeal. This is a subject which ought to be put in its true light, and jealously watched over; for the tendency to mere utilitarianism in building is becoming so marked that there is danger of the architectural history of the metropolis being speedily wiped out, or at least many of its most interesting chapters, in the thoughtless search after short routes and high rents at any sacrifice. And what is thus going on here may be expected to go on, though in a less marked degree, in other places. We have surely not come yet to such a pitch of prosaic dulness, that we are to prefer the destruction of buildings which, however defective, are landmarks of our architectural and social history, to the slightest deficiency in some real or fancied requirement of modern convenience or modern hurry.

THE NEW INDIA MUSEUM, SOUTH KENSINGTON.

WE congratulate the Director of the India Museum, and all those interested in the produce and the welfare of our Indian empire, on the safe establishment of a most valuable collection in its new home. Our readers may remember the account which we gave of so much of the display as was visible in its original locality. It has undergone chance and change since then, including the risks of packing and unpacking, to say nothing of the lengthened abode of many objects in darkness and obscurity. It is now well housed, well lighted, accessible to the public, and with room to expand.

With all our experience of exhibitions, there is something special in the Indian Museum. A certain element of competition, not to say of advertisement, to which the great displays of London, Paris, Vienna, and other cities, owed, no doubt, much of their brilliancy, is here conspicuous by its absence. It is replaced, however, and that to the great relief of the noncommercial visitors, by a certain statesmanlike air. It is, perhaps, difficult to convey in words the exact idea that we have in view; but the impression formed by the India collection is rather that it has been the result of a set purpose to foster and develope the resources of a mighty empire, than that it is the outcome of a phase of actual civilisation. And, in point of fact, we apprehend that this idea very justly characterises this most interesting display.

A great charm of the collection is its universality. Whatever be the hobby of the visitor, he can have a chance of giving it a canter. Whatever he desires to learn as to Indian produce, art, manners, craft, scenery, he has a good chance of discovery. From mineralogy to ethnology every department of study is illustrated; and one or two are illustrated in a manner which is to us, we candidly own, as novel as it is interesting and suggestive.

In the absence, as yet, of any catalogue, we will ask our readers to step round with us in fancy, as we endeavour to recal some of the salient features of the two long galleries, which are those of the eastern side of the once perpetual International Exhibition. The raw products of the soil, although not first in the gallery, may be naturally so regarded. Here we have, first, the great determinant of human concentration,—at least, in the West,—coal. Cubes of this precious mineral, some 14 in. square, indicate one source of Indian wealth. Comparing the number of specimens with the vast area of the enormous peninsula, we may conclude that, in this department of mineral study, we are but at the commencement of discovery.

Parallel to the case containing specimens of coal, is a collection of samples of building stone. Here, again, may the last remark be repeated. From the peaks of the loftiest mountains in the world, along the varied ranges, and exhaustive series of geological formations, that intervene between the Himalaya range and Cape Cormorin and Point de Galle, we may expect to find almost every known, and possibly many unknown, species of building stone. The collection exhibited consists of remarkably compact, durable specimens, but they are nearly all marked by a sombre hue. We see nothing like the glitter of some of our own limestones and sandstones,—no stone approaching in beauty our own Bramley Fall; or the material of those mighty blocks which, in prehistoric times were brought from unknown quarries to rear the mystic temples of Avebury. We find nothing so fine and workable as Caen stone or even Portland. But from a very fine-grained and solid granite, down to a red conglomerate that looks almost like a faggoted mass of scrap iron, there is such a variety of the grey, brown, and dusky stones that appear to have been selected by Indian taste, that we cannot doubt that almost any quality desired might be found by diligent search. We did not observe any samples of slate. But either here or in other parts of the museum are to be found malachite, quartz, jade, alabaster, basalt, serpentine, dark-coloured marbles, soapstone, and so many earths and gems that we cannot doubt that the list of building stones may be almost indefinitely increased.

Then come the minerals that form the rough materials for industrial processes. There is Kaolin and potter's clay,—white, yellow, brown,—of almost every hue. There are limestones for cement. There are numerous specimens of metalliferous sand, red hæmatite iron ore, magnetic iron ore, and iron sand of varied degrees of fineness. Gold appears, not in nuggets, but in grains, scales, and little moss-like lumps, in gold-sand and gold-washings, and in little rude buttons which we take to be the result of native fusing. Silver is not so conspicuous, although there are argentiferous ores of other metals. Sulphur, graphite, and copper ore, as well as malachite, are exhibited. There is tin-stone as well as tin ore, and metallic tin, lead, galena, and antimony. There are various specimens of pure felspar. The geologic rocks range from the boldest to the minutest specimens. Quartz occurs in groups of crystal, and in striated crystals. There are little heaps of "gem-sand," and precious stones in the rough; corundum, garnet, carbuncle, and oriental turquoise. Small specimens of the latter are set on little straws or reeds for carriage. The materials for enamel have a case to themselves. Near are those precious to the painter,—lazulite, ultra-marine, remarkably pure Prussian blue, and cinnabar. Stones for personal ornament form a group apart. Crystals, garnets, cat's-eyes, chalcedonies, cut in facets or dim *en cabochon*, are shown, both alone and set in native gold, with more display of wealth than of taste, but not without a certain Oriental magnificence.

Among the minerals which form the materials for manufactures are realgar and orpiment, which are the red and yellow sulphuret of arsenic; and a curious series of specimens of salt. These range from a cube of rock salt, some 2 in. by 1 in., looking almost like a piece of rock crystal, to brown, black, and red salts. A specimen of the latter consists of little sponge-like bodies, that give the idea of coarse moist sugar rather than of salt.

The products of the vegetable kingdom are illustrated in greater detail than are the sources of the mineral wealth of India. Although a good catalogue is here a great desideratum, and although a complete system of printed labels is also a necessity to be met in the future, yet the combination of information that may be acquired from the drawings, photographs, and actual specimens of trees, plants, woods, seeds, and fruits is of very great value. As far as the collection of seeds, and materials for *materia medica*, or for industrial processes, is concerned, there is perhaps but little left to be wished. With regard to the very important question of timber and the finer woods applicable to the purposes of building, of furniture, and of all kinds of carved and enriched woodwork, we hope to see specimens of the various woods, in balks, blocks, or planks, added to those well-arranged sections which are displayed in the vertical cases. The connexion, too, between the raw material and the artificer's work which is applied to it, should be so pointed out that our mechanics and art workmen may at once understand it. No doubt it may be the fault of not being able to give more than a few hours to an inspection; but the identification of the trees which produce the beautiful black-wood, and the sweet-scented sandal-wood, in which such elaborate carving is displayed in another part of the gallery, did not present itself to the mind as clearly as we could have wished.

There is ample, however, to show how exhaustless are the vegetable resources of India. In the reviving taste for the application of true art and elaborate skill to the construction of domestic furniture, nothing can be more opportune than a knowledge of the rich variety of coloured, mottled, and pencilled woods which the Indian forests offer to the cabinet-maker. For these we refer to the vertical cases; calling attention to the silver, fir-like, delicacy of the *acacia*, the satin surface of the *citrus*, the full black colour of the *dalbergia*, the curious outlines, like those of islands on a chart, traced on the sections of the *antidesma*, and the beautiful contrasts to be observed between the clear simple tints of both the light and the dark coloured woods, and the varied touch with which striated and ocellated surfaces mock the pencilling of the wing of the partridge and the dotted plumage of some of the rarer *phasianidæ*.

One application of timber, namely, that to boat-building, is illustrated by numerous models of various forms; from the ark-like abode of those river market-boats which seem to form the permanent home of their owners, and rise in stories from the water, to the long narrow canoes, one of which is gilded, and one copied in ivory, in which, under the name of a war-vessel, a dignified personage, seated under an umbrella on the stern, is propelled by thirty rowers. The quaint and elaborate carving of these ornaments, which in our waters appear only under the somewhat rude form of figure-heads, is often worthy of attentive examination. The sails, moreover, of these boats illustrate another branch of vegetable produce, that of fibre used in arts and manufactures.

The seeds and fruits of forest trees, and other plants, are well represented. Of these,—the greatest novelty to the English visitor,—is the male cone of the *Cycas pectinata*, an oblong body some 15 in. long, which might be taken for a rough sponge, or a dark-coloured fungus. The cones of the *Deodara excelsa*, and of various species of cedars and pines, will also be regarded with interest. The great body of seeds, however, will be found arranged under either agricultural produce; vegetable products, used in arts, manufactures, or *materia medica*; or spices and condiments.

The highly important class of vegetable gums and resins contains numerous and beautiful specimens. There are various kinds of *gutta-percha*, a material which, from its perfect pliability when treated with hot water, and from its hard solidity at lower temperatures, is invaluable for many of the most delicate processes of art. For the surgeon, and more especially for the dentist, it is invaluable. There is also the longer known, and scarcely less valuable, caoutchouc, the specimens of which might be instructively illustrated by the juxtaposition of a living plant.

Agricultural produce is illustrated, of course, in the first place, by the paddy, or rice-plant,—

the *Oryza sativa* of the botanist. Of the main forms of cereal on which large races of mankind depend for food, the rice is one of the very few which are found in a state of nature. This fact has led many to question whether wheat, rye, barley, and other seed-corn have not been gradually developed, by human care, out of wild grass. That such was not the case, we take to be positively proved by the permanence of these types. The barleycorn of the early Phœnician and Babylonian shekel is identically the same as the Troy grain of to-day. The specific gravity of wheat, attained by comparing certain literary *data* of the eleventh century of our era, is a fair average for to-day. Our own idea is, that wild wheat, wild barley, and the like, have offered so irresistible a temptation to the birds as to have been actually exterminated by these hungry and improvident consumers; and preserved only by human care. Paddy, on the other hand, being an aquatic plant, and thus having a better chance of sowing its own seed, still holds its own in a wild state, side by side with its cultivated condition. The ears of this precious food-plant resemble the small pearls strung on the Indian necklaces, not of course in form or in lustre, but in general effect.

Maize (*Zea Mays*) and Jowaree (*Sorghum vulgare*) are shown both in pod and panicle, and in seeds. The spike of the Bajra (*Penicillaria spicata*) resembles the club of our English bulrush. The sedge-like growth of the Raggi is a rare form for an edible, or rather food-producing, plant. An assortment of starches and meals, produced from various seeds, is appropriately added here.

Then comes an interesting group of edible cryptogamous plants.

Tea, both in the dirty little nuts which form the seed of the plant, and in every conceivable form of manufactured leaf, occupies a considerable space. Coffee is no less fully illustrated. Almonds, Cashew nuts, Shah bulloot or edible acorns, pepper, long pepper, capsicums, cloves, opium, narcotic hemp juice, betel or areca nut, and the yet more universally consumed narcotic, tobacco (in the crop of which the present year witnesses so great a deficiency), bring us to the close of a series of exhibits which will receive an unusual degree of gratified attention.

The next group of vegetable products comprises fibres, used in, or likely to be useful for, industrial and manufacturing purposes. It is impossible to look at these numerous exhibits, drawn from so many distinct families of the vegetable kingdom, without coming to the conclusion that the natural home of the paper-maker is in the East,—in India, no doubt, as well as in Japan,—and that we may expect that the markets of the world will, sooner or later, be supplied with Indian, Chinese, and Japanese papers. The unrivalled materials with which nature has enriched the Japanese Islands enables the inhabitants, at the present hour, to produce papers, varying from the delicate film used for pocket handkerchiefs, to the thick water-proof material used for tarpaulins, over-coats, and roofing purposes, which no European maker can attempt to come near. Whatever texture or thickness is required can be, and actually is, produced in Japan. The number of different kinds of paper is extraordinary, and the customs and etiquette of the country affect each to a specific use. In the course of time, European luxury will refuse to be denied these elegant varieties of paper. The question will have to be decided whether it is better to export our manufacturers to the countries where the materials are found, or to import the materials to this country. We believe that the former will be found by far the most lucrative course, especially having regard to temperature during manufacture, and to the fresh condition of the plant which furnishes the pulp. We therefore venture to suggest to those who take so much interest in developing the extraordinary native wealth of India, to pay especial attention to the subject of these vegetable fibres and vegetable pulps, which may be available for this most important manufacture.

The department of *materia medica*, or vegetable substances used as medicine, is as fully illustrated as either of those which we have mentioned. First here must be mentioned with gratitude and admiration for the indomitable courage and perseverance of the gentleman to whom India is indebted for the most precious drug that is at the command of the physician, the magical quinine) the very fine specimens of cinchona-bark which the Indian Government may well be proud to exhibit. The plant is of rapid growth, but the bark is of a size such as would be attained by the bark of the oak in about eight or ten years. Large areas of country are now planted with this tree of life. There can be little doubt that India will hereafter supply the world with quinine, and we may look forward to a great reduction in the price of a drug which, though worth its weight in gold if not otherwise to be attained, is certainly out of the reach of many to whom it might mean health, or even life, at its present price of three times its weight in silver. It is highly satisfactory to see the healthy condition of the samples of bark. They are exhibited in two states,—first, as stripped from the tree, and secondly, as "mossed," that is, cleansed from all parasitic growth of moss or lichen. It will be an interesting question for the physiologist to ascertain whether lichens growing on the *cinchona* possess any special medicinal properties.

After what was formerly called Jesuits' bark, or the material from which quinine is extracted, come chamomile; arnica, that unrivalled heal-all in sprains, bruises, or injuries to the skin; santonar, both branch and seed; arctostaphylos, or bears-grapes; diospyros, under the native name of "gab," and in the form of a rather dirty nut; digitalis, or foxglove; belladonna; camphor; sal resin, from the *Shorea robusta*; piney resin; rhubarb, the rarest of drugs to purchase in its purest state (there is but one shop in London where it should be procured: in its ordinary qualities it is mischievous), and cassia.

We have exhausted the space at our command without having introduced our readers to more than a fourth of the area occupied by the collections. The mineral and botanical specimens are arranged in the southern half of the ground floor of the museum, which occupies, as most of us are aware, the eastern gallery of the building in connexion with the Albert Hall. We have entered more fully into the subject than we otherwise might have done,—first, because of its permanent interest; and the importance to the grandeur and dignity of our empire of this vast outlying kingdom, or rather continent of kingdoms; and, secondly, because, in the absence of a catalogue, a somewhat detailed introduction may be of material service to those of our readers who visit, as we strongly recommend them to do, the spot. While we have thus thought it not unsuitable to dwell on some subjects which do not often fill our pages, such as the elements of *materia medica*, it will be borne in mind that the great questions of building materials, and of materials for various art industries of importance, are admirably illustrated, as we have endeavoured to point out, in the museum. As to the remaining contents of the galleries, we hope to have another opportunity of bringing them before our readers. They comprise a very beautiful and well-arranged illustration of the Indian fauna,—that is to say, of the birds, beasts, reptiles, fishes, and insects of India; a gallery of sculptures, bronzes, and similar objects, some of which have an interest, as we hope to show, altogether novel; and a further display of these textile manufactures, metal manufactures, and exquisite works in wood, jade, blackwood, sandal-wood, filigree, and jeweller's work, which many of our readers have climbed to the garrets of the Foreign Office to admire. There is also a very good collection of arms, the distribution of which, no less than the peculiar character of one group of sculpture, throws a very distinct light on an ethnological question of the deepest interest. The museum is too much to be exhausted by the visitor in a single visit, or by the art critic in a single report.

FREDERICK WALKER, A.R.A.

ALL who are interested in English art will have heard, with sincere regret, of the death, at a very early age, of one of our few really poetic and original artists. Mr. Frederick Walker was educated, if we mistake not, as an architect, and after giving up the set-square, first came before the public as a book-illustrator. He was elected an Associate of the Royal Academy in 1871.

Mr. Walker was one of the most gifted representatives of that school of what may be called idyllic painting, which has recently been developed in England, of which the late G. Mason was a shining light, attaining, as he did, a perfect balance of feeling and tone, a harmony between the figures and the landscape, more complete than any of his successors have reached, though in a very quiet and undemonstrative manner. Mr. Walker's style was not so perfectly balanced as Mason's, nor so delicate and harmonious in colour, but in intensity and variety of feeling he surpassed the elder artist, and in every way may be said to have been a painter of more power, and one who appealed, in spite of certain undeniable defects of style, to a deeper feeling than is generally touched in contemporary English painting. The artist showed early indications of his leaning towards the portrayal, in his figures, of the more touching and dignified side of humble life, commenced at first apparently as a study, and continued and enlarged as a subject with which his heart was in sympathy. One of the works which first attracted general attention was his painting of London boys of the lower order bathing in some suburban canal, a picture which, while it gave opportunity for exhibiting his knowledge of figure-drawing in a very realistic form, gave evidence, too, of a new way of regarding and translating the tones of landscape, a way which, indeed, was looked upon with more surprise than satisfaction by those who first took notice of it. But this strongly-marked idiosyncrasy of colouring, in which nature seemed jaundiced, was toned down eventually into a style remarkable for what may be termed a quiet brightness in the representation of local colour and light in foreground and middle distance. Nowhere has this power been better shown than in his latest small work in this year's Academy. But landscape with Walker was always subordinate in interest to the figures for which it formed the setting, and in which he achieved, what is very seldom achieved in painting, the combination of moral purpose with artistic feeling. Perhaps the work which most successfully illustrates this is the one exhibited three or four years back at the Academy, with the title "Man goeth forth to his Work and to his Labour until the Evening"; on the whole, certainly, the best balanced of all his works, and that which gives the truest idea of the peculiar bent of his genius. In this the scene, with its melancholy and sober tones, was in complete harmony with the almost grand pathos of the wearied figure following the plough, thrown forward and half-leaning on it for support. The blending of art and *morale* has seldom been more complete; it was scarcely possible to say which kind of interest predominated. The later work, the "Harbour of Refuge," which made such a sensation, was more intense in feeling, but not so well balanced, and open to question in regard to some technicalities. The artist's genius was shown very remarkably, too, in some of his small water-colour drawings from time to time at the gallery in Pall Mall East. Most people who visited the last winter exhibition of sketches and studies there will recollect the little interior with two girls at a window, under the title of "The Rainbow": few designs more perfect in execution and feeling could be seen; the figures were so characteristic in their whole attitude and expression that the spectator could almost read their thoughts. The loss of a painter capable of such genuine poetic feeling will leave a sad gap in our already too prosaic exhibitions, and many will think with regret that "What is there of Walker's?" can no longer be one of the first questions in relation to the annual Academy collection.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

PRESENTATION OF THE ROYAL GOLD MEDAL.

THE closing general meeting of the session was held last Monday evening, the 7th inst., under the presidency of Sir Gilbert Scott, when the following gentlemen were elected:—Messrs. T. Garlick and John Gibson (fellows), and Mr. E. George Jones (associate).

Mr. Cockerell intimated that the library of the Institute would remain open until the end of August.

Sir Gilbert Scott, in presenting the Royal Gold Medal of 1875, said that, considering the circumstances of the case, it was unanimously agreed at the Institute in favour of recommending Mr. Edmund Sharpe as the recipient of the medal for the year, and her Majesty had confirmed that recommendation. Referring to the works published by Mr. Sharpe, the President went on to say that they were greatly indebted to the elder Pugin for his works in connexion with architecture, but he thought that none of these equalled the works of their valued friend, Mr. Edmund Sharpe, especially with regard to the magnificent abbeys of the country.

The abbeys were once the pride and delight, as they were once the shame, of the country. Beautiful as these abbeys were, the neglect which they had received of late years had been one of the great disgraces to art and art feeling in England. Mr. Sharpe had done more than any one to redeem this state of things, and had added much to the interest of this study by his publications; and his lectures, which were of a very graphic character, were calculated greatly to maintain the interests of the profession. To this gentleman, too, they were also under an obligation for having personally conducted, for the last two or three years, a large number of architectural students through different towns, especially in France, which was rich in architectural remains. The president was glad to state that this year Mr. Sharpe had promised to again superintend another autumnal tour.

Mr. Edmund Sharpe, after receiving the Gold Medal, said he believed that in order duly to appreciate the honour which the medal which had just been presented to him conferred upon the person who received it, it was necessary that the recipient should either be an architect in professional practice, or one who had been so at some earlier period of his life. For to such a one this testimonial, which, although the gift of the Queen, was the award of the representative body of the whole of his professional brethren, came with a fuller significance, and a higher value than it possibly could to any one else. For his own part, he could assure them that on this account he looked upon it as the highest possible honour that he could ever wish for, or hope to attain. In his own case, its value was enhanced by a consideration, the force of which they would readily understand. The works, the publication of which had obtained for him this honour, were not works of general interest; they had been published for the use and the instruction of the architect alone; they were, in fact, what the publishing trade called "class-books." Their circulation was consequently very limited, much more so, perhaps, than those who had not tried the experiment might be inclined to suppose. The publication of such works was, in fact, it must be confessed, a somewhat expensive luxury; and the sole reward that those who indulged in this pursuit could expect was the satisfaction that was derived from the belief that their publication was of use and value to those for whom they were intended. To receive, then, so satisfactory a confirmation of this belief as that which was conveyed by this testimonial was, he need scarcely repeat, the highest possible reward that he could receive for any past efforts of his in this direction; and in very sincerely thanking the Council of the Institute for the choice they had made this year of the recipient of the medal which her Majesty was graciously pleased annually to bestow, and in thanking those present for their confirmation of that choice, and their worthy and distinguished president for the flattering terms with which he had accompanied the presentation of the medal, he could assure them that, greatly as he appreciated this honour, he should look upon it quite as much as an encouragement to renewed efforts as the reward of those of which it was the gratifying expression of their approval.

Sir Gilbert Scott said that if they would allow him he would like to add two or three more words to what he had already stated, with reference to ruined buildings, especially of an ancient character. Ruins were falling into decay winter by winter, and in a few years they would become unrecognisable; but it was to such ruins as these, he was glad to state, that Mr. Sharpe directed attention, and thus prevented them being lost to future generations. In his (the President's) short memory with regard to such things, he had known many instances in which, in former years, he had made sketches of ruins, but when he revisited the ruins, after some considerable time had elapsed, he had found that they were almost unintelligible. In this view he was supported by Mr. Ruskin. He thought that they were under great obligations to all those who took up the matter of saving these ruins from perishing in the manner Mr. Sharpe had done. He wished that this gentleman's example might incite members of the architectural profession to institute a society which would, from time to time, register and chronicle, one by one, the best and more obscure of the remains which were mouldering away, so that in due time they might satisfy their minds that the majority of the admirable works of ancient Greece and Rome, which were beautiful in their details, might be handed down in some shape or other to future generations.

Mr. Christian concurred in the remarks of the president, and instanced Furness Abbey, which he found was possessed of many beautiful details. Twenty-five years later he again visited it, and discovered that it had fallen most distressingly into decay, which might have been prevented had proper means been taken to preserve it.

Mr. T. H. Wyatt said that probably they were not all aware that the death had recently occurred of Mr. Welby Pugin, who had lately been before them in a somewhat painful position.

Sir Gilbert Scott stated that the Council had heard of Mr. Pugin's death with regret.

The distribution of the Institute prizes of 1874–75 then took place. The names of the respective recipients have already appeared in the *Builder*, but in regard to the architectural examination, Mr. J. F. Hennessey stands first on the list, and is consequently entitled to hold the studentship of the Institute for three years. In addition to this Mr. Hennessey was awarded the Ashpitel Prize.

Mr. Eastlake (secretary) then read a letter from Mr. Disraeli, in which the Prime Minister courtly stated that he had received the memorial of the President and Council of the Royal Institute of British Architects on the subject of the excavations at Ephesus.

Mr. Hayward referred to the death of Mr. Joseph James, a former Fellow of this Institute, who died last month at the age of forty-seven, having been a practising architect for twenty-five years, and author of some works on the Gothic Revival.

The discussion of Mr. Roger Smith's paper on "New Materials and Recent Inventions connected with Building" (which has already been reported in the *Builder*), was then resumed, and is reported under another heading.

NEW MATERIALS AND RECENT INVENTIONS.

MR. AITCHISON, in opening the discussion, said that the paper by Mr. Smith, read at the Institute of Architects, embraced nearly the whole of the discoveries of modern invention; but he had omitted to refer to mosaic pavement of glass, which had been employed at the South Kensington Museum. He was rather surprised to find, from a paper recently read at the Society of Arts, that the invention of toughened glass, which appeared to have slumbered since the early part of the Christian era, had been rediscovered. With regard to concrete walls, they were apt to split perpendicularly, and great fissures were thereby caused; they also shrank very much. In respect to selenitic mortar, he counselled its prudent use, for mortar was a material that dried very rapidly.

Mr. Redgrave stated, at the last meeting it was affirmed that selenitic mortar was the invention of General Scott; but other people had a different view of the matter. This mixture, it was stated, consisted of the ordinary ingredients of mortar, viz., lime and sand, though the sand was in larger proportions than usual, with the addition of a small quantity of gypsum (sulphate of lime) very intimately mixed with the lime. If, however, the invention was subsequently modified, he thought that it was only due to General Scott that some explanation should be given.

Professor Kerr (who had read a paper on the subject of "Artificial Stones," some time ago, and who in his remarks at the time had referred to this mortar) stated, in reply, that he did not undertake the responsibility of the matter, for at the time he only pointed out the assertion of several others that an idea which then prevailed was that General Scott's invention was almost identical in science with Mr. Westmacott's invention. He would be very sorry to take away from General Scott any credit of his invention.

Mr. Edmeston said that whenever he had used concrete he had carefully seen that a quantity of sand was mixed with it.

Mr. Morris referred to the Imperial Fire Office, in Pall-mall, which he said, was a concrete building, so that from this proper *data* could be gathered as to the properties of concrete. With regard to iron beams, he did not think that fair play had been given to Phillips's girders. In respect to toughened glass, it had been said there recently had come up a new invention, and he thought that if anything could be done to make glass bear greater pressure, without impairing its brilliancy, a very important point would be gained.

Mr. Paine had heard it stated that in the case of many concrete walls water ran through them like as through a sieve; but this was not the case at the Manchester Waterworks. He had seen enormous breakwaters made entirely of concrete, and engineers would not dream of using a material in which there was a possibility of it splitting perpendicularly, and thereby causing a fissure to be made.

Mr. Cockerell asked how long the concrete had been used in connexion with the Manchester Waterworks.

Mr. Paine replied that it had been in use about five years.

Mr. MacVicar Anderson did not think it was possible to make concrete withstand water. The principal point was to have the concrete thoroughly mixed, and if this were not done, it would not turn out satisfactorily. For his own part he preferred a good brick wall.

Mr. Eastlake apologised for the absence of Mr. Roger Smith, who had been called away from town on pressing business.

Professor Kerr, at the wish of the President, then replied to the various questions raised in Mr. Smith's paper. He commenced by saying that he hoped the Council of the Institute would take some notice of the suggestion which had been made, so that they might have an annual report of any inventions of new materials in connexion with building purposes, so as to enable the members to show that they really took some interest in the matter. The discussion on concrete had displayed a good deal of science. In whatever way they might make concrete, it was still an artificial stone. As all natural stone absorbed moisture, it followed that concrete must be very porous. He considered that it would be best to make a few experiments with regard to it. He thought that Mr. Smith was wrong in stating that building science had not made great progress in relation to the other departments of the profession. Mr. Smith had forgotten one thing, and that was in respect to architectural design as regarded contrivance of houses, churches, and public buildings of all kinds; and he thought they would be disposed to maintain that they had advanced considerably within the last twenty years; as, for instance, hospital construction. There were a great many points of the same kind in which the architects of England had, within the last twenty years, signally displayed the progress of inventions. But upon heating and ventilation, and in respect to the cure of smoky chimneys, they had not so much advanced. He really was inclined, however, to think that architects had done their share in relation to these matters to bring about better results in these petty, vexatious things. He did not think that architects ought to be charged for neglecting their duties in this direction. He ventured to say the houses were better formed than they used to be; they were better ventilated, and chimneys did not smoke so much; while drainage was improved. But the most important consideration in these matters was the rapid growth of fastidiousness. What was comfort a few years ago was the height of discomfort now. With regard to dwellings of the poor in the country, he advocated timber dwellings, which could be built for about 30*l.* or 40*l.* each, and would accommodate the working man with comfort.

THE LATE MR. E. WELBY PUGIN.

THE death has been announced of Mr. E. Welby Pugin, son of the late Augustus Welby Northmore Pugin, and grandson of Augustus Pugin; it took place at his residence in Victoria-street, Westminster, on Saturday evening last, June 5th. The cause was syncope of the heart. He had been very ill, partly through the injudicious use of chloral hydrate, a valuable but very dangerous medicine except in proper hands, but had so far recovered that he walked out on the day of his death and spent the greater part of the afternoon in a Turkish Bath. About eight o'clock in the evening he said to his confidential assistant that he felt tired and should go to bed. Very soon after he had entered his room a noise was heard, and in a very short time he had ceased to live. He died, as his father had done before him, at the age of 41.

Edward Welby Pugin was born March, 1834, and was educated at home under the care of his father, whose right-hand man he early became. Upon his father's death, in 1852, he undertook the entire management of his architectural business. At the age of seventeen years he was

thus placed in an arduous and trying position, which tested not only his abilities but his character. He stood the test, and his native energy was rapidly developed. He completed all his father's buildings, and soon cut out work for himself. From early in the morning until late at night, without relaxation, he worked at the drawing-board, and the great skill he displayed was the result of a long course of severe labour and intense application. He was lively in temperament, though subject to fits of depression, and appears to have had the faculty of attaching to him the people around him, even at those times when the outside public were least disposed to consider his conduct wise. When he first established himself in London he obtained a large amount of business, and working early and late, is said to have made 40,000*l.* in five years. He continued to execute a large amount of work, either in partnership with others or single-handed. The erection and establishment of the Granville Hotel proved, however, a disastrous speculation, and knocked down what had been before set up.

Seven or eight years ago Mr. Pugin entered into controversy with more energy than wisdom to claim for his distinguished father, erroneously (as we were able to show at the time) the title of architect of the Houses of Parliament; and since then he has been too often before the public in courts of law, both in London and Ramsgate. From what took place on one of these occasions, it is said by those about him, he never recovered. In giving evidence in the case of Hayes *v.* King, when, as his friends think, his bodily state was such that he scarcely knew what he was doing, his assertions brought upon him some observations from the Lord Chief Baron, Kelly, which continued greatly to affect him. In the conversation shortly before Mr. Pugin's death, to which we have referred, he had expressed his determination to give up law, and "go in again for hard work." Nearly the last words he uttered on that occasion sound now prophetical,—"On my tomb I should like written, 'Here lies a man of many miseries.'" He was buried at St. Augustine's Church, Ramsgate, on Thursday last, the 10th inst.

The following list, which has been put together with some pains, will serve to show the amount of work he executed:—

Ecclesiastical Buildings.

Cathedrals and churches, mostly Roman Catholic:—Churches at Peckham, Kingsland, Whitehaven, Workington, Hastings, Northampton, St. Vincent of Paul, Barrow-in-Furness, Great Harwood; Dadizeele, Belgium; Tower-hill, London; Croydon; the Augustinian, Dublin; Barton, Mont St. Marie, Leeds; Fleetwood-on-Wire, Kensington, Ratcliffe, Crosshaven, Rotherwas, Monkstown, Oldam, Glenfinnan, Dover; Holy Cross, Liverpool; Much Woolton; Westby, Liverpool; Margate (additions), Rugby, St. Marie's, Newcastle; Northampton Cathedral; Burton-le-Coggles Church, near Grantham; Queenstown Cathedral; the churches of Guernsey (additions); Stanbrook, Worcester; Preston; Eldon-street, Liverpool; Tasmania, Warwick, Barking, Ashford, Wrexham, Blackpool; St. Edward, Liverpool; Derby, Stourbridge, Batley, Shrewsbury; St. Marie, Euxton; Cleator; St. Goderich, Durham; Haddington, Birkdale, Dewsbury, Kingsdown; SS. Peter and Paul, Cork; Bootle Church and Schools; Nechell's-green Church and Schools, Birmingham; Rochferry Church and Schools, Birkenhead Church and Presbytery, Greengate Church and Schools; Cuba Church, West Indies; Gorton Church and Monastery, Sheerness Church and Presbytery, Huyton Church and Presbytery, Mayfield restorations, Leith Monastery, St. Joseph's Retreat, Highgate; St. Marie's Monastery, Kilburn; Tralee Convent, Glaseran Convent, Ravenshurst Convent, Oulton Convent; Nenagh Convent, Ireland; Handsworth Convent, Waterford Convent, Good Shepherd Convent, Liverpool; St. Gregory's College, Ramsgate; Oscott Chantry, Ushaw new Chapel and College, Danesfield Chapel, Aston Lady-chapel, Stafford Church and Schools, Belmont St. Michael's Church and Monastery, the Knill Chantry; St. Augustine's Monastery (additions), Ramsgate; Mount Vernon Convent and Schools, Liverpool; Sedgley Park Schools, Birmingham; Church and Schools, Hoxton-square, London; Bradford Schools and Presbytery; Challoner's Schools, Liverpool; St. Alban's Schools, Liverpool; Birchley Bilinge Schools, Salisbury Schools, Wooton Schools, Mount Carmel Schools, Liverpool; Newton School, Hammersmith Training College, Nottingham Training Schools, Maidstone Schools, Stretford Church Presbytery and Schools, Tranmere Schools, Warrington Schools, Woolwich Schools, Sandhurst Schools, Turnham-green Schools, Egremont, Trissington, and Cleator Moor Schools; Schofield Chantry, Hanwell Chapel, Bletchley Orphanage, Hellingsley Orphanage, Hanley Presbytery, Harwich Chapel, Edinburgh Church, the Lord Cemetery, Liverpool; and St. Helen's Cemetery.

Also the following buildings:—Chirk Castle, Tofts, Harrington House, Leamington; Château at St. Michel, Belgium; Burton Manor, Croston Hall, Scarisbrick Hall; Meanwood, near Leeds; The Chimes, Kilburn; Carlton Towers, Seel's Buildings, Liverpool; Burton Manor, Clapton Almshouses; the Granville Hotel, Ramsgate; Grafton Farmhouse, Monument erected at Nice in memory of the late Mrs. Lamb, Oswald Croft House; Garendon Hall, Leicester (additions); St. Marie's, Newcastle; and many others, both Ecclesiastical and Domestic.

VALUE OF LAND, CHANCERY-LANE AND HOLBORN.

ARRANGEMENTS having been made for widening the end of Chancery-lane next Holborn, the House Committee of St. Bartholomew's Hospital, to which important Institution the plot of land affected (on the west side of Chancery-lane) belongs, have relet the remainder of it for building on. The "Lane" will be widened to the extent of 20 ft. next Holborn, and for the piece of land thus thrown in, which is about 90 ft. long and 10 ft. wide at the farther end, the Hospital will receive 5,000*l.* from the Metropolitan Board of Works. The land remaining is divided into seven plots, and these have been let on lease for eighty years at the rent of a peppercorn for the first nine months, and after that time as follows:—Three plots in Holborn (each about 18 ft. frontage), at 170*l.* per annum each; three plots in Chancery-lane, about 18 ft. frontage, and of varied depth, at 95*l.* per annum, 125*l.*, and 190*l.* respectively, and the corner piece, extending (say) 28 ft. in each direction, at 250*l.* per annum. The whole piece, which may be called roughly 90 ft. square, will thus produce 1,170*l.* per annum, or at the rate of about 6,300*l.* per annum per acre.

A NEW MARINE WATERING PLACE.

SALTBURN-BY-THE-SEA is now to have a rival in Hardwick-by-the-Sea, for a large portion of the Hardwick Hall Estate, near Castle Eden, Durham, is to be converted into a marine watering-place. No less than 400 acres on the side nearest the sea are dedicated to the new town. Large hotels, marine residences, houses and shops, are to be erected, and a drive will be constructed along the sea coast. The Blackhall Rocks are contiguous, and the spot is pronounced salubrious and picturesque. The estimated cost of building alone is 200,000*l.*

The Hardwick Hall estate belongs to the trustees of the late Mr. Ayre, who will merely dispose of the ground to a company.

THE BRIXTON AND CLAPHAM BATHS.

AT the formal opening of the new baths in Shepherd's-lane, Brixton, last week, by Sir James Hogg, M.P., chairman of the Metropolitan Board of Works, Sir James observed that he believed such establishments did as much as anything could towards the elevation of the people. Without a clean and wholesome body, no man or woman could expect to have a clean and wholesome mind. People were therefore elevated in the social scale by means of baths. These baths would confer a benefit on thousands of people, which they could not possibly attain in their own homes.

Mr. J. M. Cottrell, the chairman of the directors, stated that the cost of the structure, including sinking the well, and providing the necessary machinery, would be about 14,000*l.* The swimming-bath is 150 ft. long by 60 ft. broad, and is said to be the largest in London. Its depth at the shallowest end is 3 ft. 6 in., and it gradually deepens to 8 ft. There are eighty-six boxes for bathers ranged on either side, and a spacious gallery runs round the entire building. The roof is supported on circular arches, and on each pier a statuette has been placed. The bath just opened is only part of the plan, which includes, in addition, a swimming-bath for ladies, as well as hot, shower, and Turkish baths. A skating rink has been provided in the grounds adjoining the building.

Only a short time before the hour appointed for the ceremony of opening the baths, the box of the pump in connexion with the artesian well for supplying the baths with water, unfortunately broke down, which caused a serious difficulty. Application was made to the Southwark and Vauxhall Water Company, in whose district the baths are situated, for a supply, but they were unable to furnish it. Ultimately, however, the Lambeth Water Company, who were next applied to, opened their mains, and with the assistance of Mr. Hewitt's steam fire-engine from Clapham, pumped a considerable quantity of water into the baths, so as to admit of Captain Boyton going through a series of performances. There were upwards of 4,000 persons present.

The baths were designed by Mr. F. H. Fowler, architect; and the contractor was Mr. Timewell, of Brixton.

THE SANITARY STATE OF WOLVERHAMPTON.

TWELVE months have nearly elapsed since Dr. Ballard, of the Local Government Board, presented to the head authorities a report which was anything but favourable respecting the sanitary state of Wolverhampton. At numerous council and committee meetings the questions put forward in the report were debated upon, and, after careful consideration, the Council, through the town clerk, have issued a long report in reply to Dr. Ballard's complaints, and in which, instead of advising attention to his requirement, they try what excuses can be found for not doing so.

THE SANITARY STATE OF TIVERTON.

A NUMBER of people have been killed off before their time, and a larger number made ill, through the want of proper sanitary arrangements in Tiverton and its neighbourhood; and the Urban Sanitary Authorities there are very angry because some of the relatives of those who have been killed are not entirely patient under the loss. We congratulate the editor of the *Tiverton Gazette* on having incurred the displeasure of the authorities, and we advise the Local Government Board to look into the matter at once.

THE LAST NEW DULWICH COLLEGE SCHEME.

PROPOSED NEW SCHOOLS AND BUILDINGS.

WITHIN the last two or three years several schemes have been proposed by the late Endowed School Commissioners and others for the future management of Dulwich College and the estates belonging to it, but their unpopularity, amongst other causes, led to their withdrawal. Another scheme issued by the Charity Commissioners, and which has received the sanction of the Committee of Council on Education, is now before the public, and it already appears that it is likely to meet with as strong an opposition as its predecessors. Should the scheme be ultimately adopted it will necessitate the erection of no less than five new schools in the several parishes of Camberwell; St. Luke's, Middlesex; St. Botolph's, Bishopsgate; and St. Saviour's, Southwark; and also the erection of a five-court, and the fencing of the grounds around Dulwich College, at an outlay of 5,000*l.* In order to erect and establish the proposed new schools in the several above-named parishes the estate will be charged with the sum of 90,000*l.*, the scheme providing that 15,000*l.* shall be paid out of the college estates for the establishment and endowment of a boys' school at Camberwell; 10,000*l.* for a girls' school at Camberwell; 50,000*l.* for two schools in St. Luke's, Middlesex, and St. Botolph's, Bishopsgate, respectively; and 15,000*l.* for a school in St. Saviour's, Southwark. There is also to be a school of art, in connexion with the Picture Gallery at Dulwich, with an endowment of such balance as shall remain out of the annual income of the Picture Gallery Endowment Fund, when the expenses of management of the gallery and the maintenance of the pictures shall have been defrayed. The present upper school at Dulwich College is to continue, and its endowment is to consist of the

new college buildings, gardens, playgrounds, and cricket-field, but the lower school is to be closed. The almshouses at Dulwich are also to be continued and maintained at an annual expenditure of 1,500*l.*

The scheme is causing much agitation amongst the several parties interested. Amongst those who object to the scheme it is urged that under it the college will lose its position and dignity, and that the estate is to be practically taken from it in order to found schools in St. Luke's and other districts to an extent never contemplated by the founder; whilst, on the other hand, the northern parishes (St. Luke's and St. Botolph's) oppose the scheme, on the ground that it does not give them enough. They contend that under Alleyn's bequest they are entitled to a moiety of the college estates, and they therefore claim 100,000*l.* to build a college in the north part of London, and in addition to this sum one-half of the future income of the estate. Dr. Webster, an old inhabitant of Dulwich, stigmatises this claim as "monstrous," and endeavours to prove that Alleyn bequeathed the greater part of his income to the wardens and fellows of Dulwich College. The Endowments Committee of the London School Board have also induced the Board to oppose the scheme, on the ground that it does not provide for the higher education of scholars in elementary schools, and the advancement of meritorious children amongst the poorer classes.

IMPORTANT DECISION IN A BUILDING CASE.

PREES *v.* MORGAN AND JONES.

THIS was a claim tried at the Swansea County Court for 25*l.*, the amount expended in rebuilding a shed in Pontardulais which had fallen down. The case was heard at the last court, and the site of the building was inspected by the Judge, who took time to consider his judgment.

His Honour, in delivering judgment, said:—The plaintiff sues for damages arising from the alleged unskilful manner in which the roof was put on a certain building under a verbal agreement between him and the defendants, and in consequence of such want of skill the roof, being tiled, fell in. The plaintiff was to supply the woodwork, and the defendants were to fix on the roof. The agreement was made on the 14th of September, 1874, and the sum to be chargedwas apparently very small. The charge was first proposed to be 2*l.* 12s.; the defendant offered 2*l.*, and finally 2*l.* 7s. was charged. The span of the building was 16 ft. 9 in., and the length 45 ft. The roof put on was one of the most simple construction. It was a span roof, tied to the couple blades of the rafters. The sole questions are,—Whether or not the fastenings were sufficient, and such as experienced and skilful persons would regard as sufficient. After going very fully into the particulars, the Judge concluded by saying,—What was done was not an unusual mode to fasten collar-beams, though I think to be condemned. It was faulty, but this did not excuse the plaintiff from ascertaining this before he put on the tiles. Judgment for the defendants.

SCHOOL BUILDING NEWS.

Neath.—The new buildings at Ty Segur, near Neath, for the County Reformatory Schools, have been opened. The premises are L-shaped in plan, the longer wing containing the schoolrooms, dormitories, dining-room, master's office, &c., and the smaller one the kitchen, &c., with the head master's private rooms. The main elevation is in two stories, with a central block, to which something of a tower-like appearance is given by the addition of a third story, containing an isolated sick-room and nurse's room. The materials are the local Pennant stone from the neighbouring quarries for the walling, with dressings of hard black Staffordshire brick, Bath stone being sparingly introduced into the central doorway, and some of the chimneys, &c. The roofs are covered with green slate from Whitland Abbey, with red ridge cresting from the Maidenhead Tile works. The walls on the south and west aspects are hollow, consisting of an 18 in. stone outer wall, and a 4½ in. brick lining, with a 3-in. space between the two, so as to exclude damp. The work has been executed by Mr. John Thomas, of Neath, Mr. Thomas Hancock acting as clerk of the works, under the supervision of the architect, Mr. J. Bacon Fowler. The contract for the main building was 2,750*l.*; for the outbuildings, &c., a second contract was taken at 495*l.*, the laying out of the grounds remaining for the boys to complete as part of their school labours.

Curry Rivel.—The foundation-stone of the new schools, which are about to be built here by the voluntary contributions of the landowners, parishioners, and others, has been laid. The schools are to be built of white lias, with Ham stone dressing and blue bands, from the designs of Mr. J. M. Allen, architect, of Crewkerne, and they will be of the following dimensions:—Classroom, 18 ft. by 14 ft.; mixed room, 45 ft. 6 in. by 18 ft.; infants' room, 35 ft. by 18 ft.; with all necessary offices, and a spacious play-ground. The work has been entrusted to Mr. Alfred Webb, of Curry Rivel, the contract being for 1,000*l.*

Whitchurch.—The foundation-stones of a new Primitive Methodist Sunday School have been laid here. The site is in the rear of the chapel, which was built about a dozen years ago, and the building, which will be a plain brick structure, is intended to accommodate about 200 persons. The cost is estimated to be a little over 300*l.* The builders are Messrs. Powell & Co., of Whitchurch and Prees.

Coventry. — The foundation-stones of St. Osburg's new Roman Catholic schools, in Hill-street, Coventry, have been laid. The schools, which are intended to accommodate 700 children, will be a handsome building of red brick, with blue brick bands and white-stone dressings. The amount of the contract is 2,160*l.*, and the work is being executed by Messrs. Hallam & Co., builders, Palace yard, from plans prepared by Mr. T. P. Donnelly, architect, Hertford-street.

Sherborne. — The school, styled Foster's School, just erected at Sherborne, has been opened. Several endowments having been amalgamated with that of Richard Foster, it was decided to erect a second-grade school for the commercial inhabitants. Messrs. Slater & Carpenter, architects, of London, were instructed to prepare plans, which, having been approved, contracts were invited, and the tender of Mr. Thomas Farrall, builder, &c., of this town, accepted at about 1,200*l.* The entrance is in Hound-street, opposite the door on the western side of the school; on opening the door is the hall, and to the south the large schoolroom, 60 ft. by 20 ft., with open timber roof, two fireplaces, with Portland stone mantelpieces and Hamstone fenders. The style of architecture is Gothic.

Wrotham.—The new Borough Green Schools, which have been erected for some time past, were opened on the 5th ult. by the Rev. Canon Lane, rector of Wrotham. The building, which has a substantial and neat appearance, was erected by Mr. Tomlyn, of Wrotham; the architect being Mr. Wheeler, of Tunbridge Wells.

Crofton (Hants).—New National Schools, for 150 children, have just been completed here, on a site in the Gosport-road, one acre in extent, the gift of Mr. F. Delmé, the lord of the manor. The buildings comprise a schoolroom, 40 ft. by 17 ft.; classroom, 18 ft. by 15 ft.; and an infants' schoolroom, 30 ft. by 18 ft. There is a teachers' residence attached. All are built of Fareham red bricks (hollow walls), with white brick arches and strings. Open roofs, boarded, felted, and slated. The interior woodwork and fittings are stained and varnished. The schools were formally opened on the 31st ult., by Bishop M'Dougall. The architect is Mr. T. Goodchild, London; and the builder, Mr. G. Barnes, of Portsea.

Wellington.—New parochial schools are about to be erected in this town from the designs of Messrs. Hay & Oliver, of London and Bath.

Ardwick (Manchester).—The memorial-stone of the Ardwick School was laid on the 15th ult., by the Rev. Dr. M'Kerrow. The building, with which considerable progress has already been made, is situated at the corner of Tempest and Chester-streets, and in the midst of a dense population. The walls are of red brick, with facings of picked white-burned bricks, and the design is Gothic, adapted to the purposes of a school. In the basement will be a large covered play-ground, well ventilated and lighted, besides a kitchen, stoves, &c., and the ground-floor will contain the infants' schoolroom, 54 ft. by 30 ft., and a room for the younger infants and babies, 50 ft. by 22 ft. On this floor will also be a stove, room for books, and class-room accommodation, &c. The boys' school-room, 54 ft. by 30 ft., and the girls' school-room, 37 ft. by 32 ft., will be on the upper floor, where cloak and class rooms, lavatories, &c., will be provided. The architects are Messrs. Royle & Bennett, Manchester, and the contractor is Mr. J. Howard, Hulme. The cost, including furniture, laying out of playground, &c., will be 6,000*l.* Messrs. Shillito & Shorland's school grates are used.

STAINED GLASS.

Lincoln. — A new stained glass tripartite window has been added to the Church of St. Martin, thereby filling up the whole of the north side of five windows with decorated glass. The subject is the Three Marys of the Gospel. For the whole of the fifteen windows which now adorn this church, the same artists have been employed, Messrs. Ward & Hughes, of London. Only four more windows have now to be filled in.

Knighton (Leicestershire).—A stained-glass window has been placed at the east end of the south aisle of this church, to the memory of the late Mr. John Allen. It is the work of Mr. A. Gibbs, of Bedford-square. The stonework has been restored, and a new window inserted, from designs, and under the superintendence, of Mr. W. Jackson, of Leicester.

Ozleworth.—A new stained window has been placed in Ozleworth Church, to the memory of the late Sir John Rolt, the subject being "Gamaliel pleading on behalf of the Apostles."

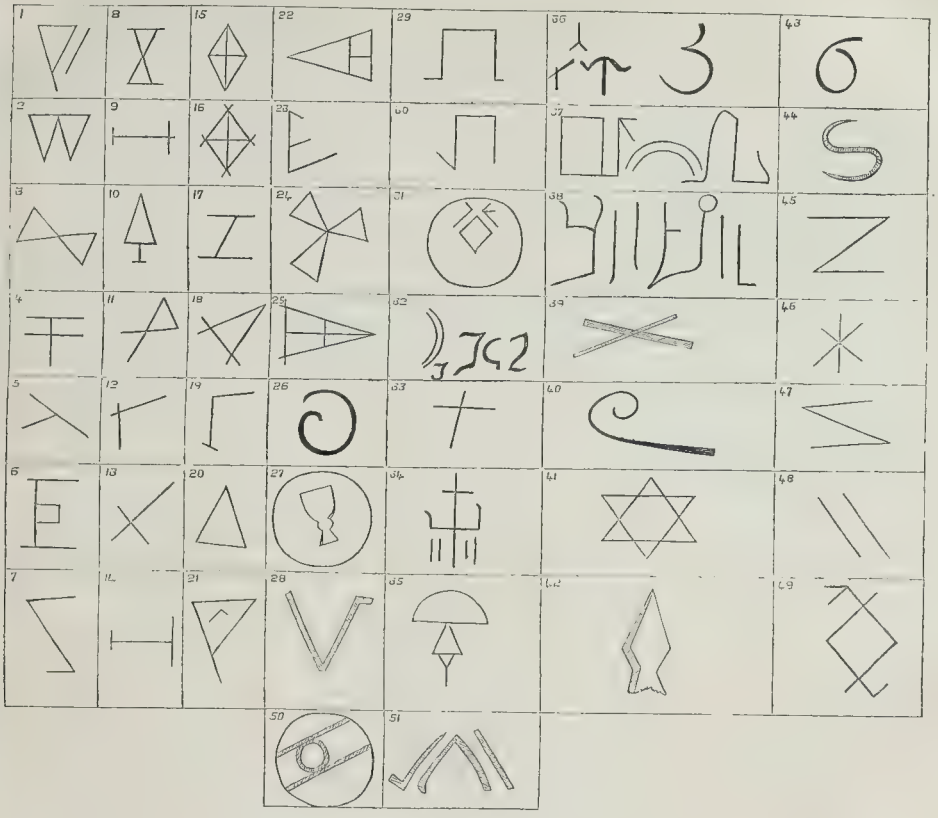
Basingstoke.—Two new windows have lately been placed in the chancel of the Parish Church of Basingstoke. They are the gift of a gentleman in memory of his wife, and the subjects are chosen from the domestic life of Holy Scripture. The principal figures are, in one window, three matrons from the Old Testament; in the other, three from the New. In the former Eve occupies the centre, screened by the Tree of Knowledge with its forbidden fruit; beneath is a panel representing the beginning of labour, "When Adam delved and Eve span." On the right hand of Eve is Ruth the gleaner, beneath whom is the scene of Orpah departing while Ruth cleaves to her mother-in-law. The figure on the left of the centre is Hannah, who is seen in the panel below visiting the child Samuel at the yearly sacrifice, and bringing the "little coat" as a gift; Eli is seated in the background. The New Testament window contains the three Maries. In the centre is the mother of our Lord, with the infant Saviour in her arms; beneath is the child Jesus, "subject to his parents," and at work in the carpenter's shop. The planks on which he is at work take the form of a cross. On the right is Mary Magdalene holding the alabaster box of ointment, and underneath the sisters of Bethany, Martha and Mary, the latter sitting at the feet of Jesus. The remaining light shows Mary or Salome, the mother of James and John. These windows were erected by Messrs. Lavers, Barraud, & Westlake.

Tunbridge Wells.—Two memorial windows have been set up in Emmanuel Church,—the one in memory of the late Mrs. George Jones, by her family; the other to the memory of Mr. Walter Fairbanks, son of Mr. Charles Fairbanks, late of Southborough. The work was executed by Messrs. Holland, Son, & Holt, of Warwick.

Harberton.—A specimen of stained glass, in the Perpendicular style, has recently been placed in one of the windows of the north aisle of Harberton Church, to the memory of Mrs. Wynne Pendarvis, by Major Trist, of Tristford. In the principal openings are subjects representing Four of the Acts of Charity. In the bases are shields bearing the arms of Trist, Rooke, Hoare, Wise, and Pendarvis. In the tracery above are figures of our Lord in glory, and adoring angels. The work has been executed (from a design by Mr. Manktelow Driffield) by Messrs. Beer & Driffield, of Exeter.

Charlbury.—As an addition to the recent restoration of the parish church, a stained-glass window has been placed therein, on the left side of the chancel, near the altar, to the memory of the late Mr. B. J. Whippy, by his widow. The window is of ancient design, in rich colours, and contains two divisions, each having different representations of "The Good Shepherd." The window was supplied by Messrs. Clayton & Bell, of London, and was fixed in the church by Mr. Henry Baskett, plumber, of this town.

Exhibition at Lower Norwood Institute. The exhibition of science and art at this Institute hat been signally successful, and throughout the present week has been a subject of considerable interest to the neighbourhood.



MASONS' MARKS, FROM TARTÛS AND JEBEIL, IN THE NORTH OF SYRIA.

MASONS' MARKS FROM THE NORTH OF SYRIA.

RUAD AND TARTÛS.

MR. GREVILLE J. CHESTER, who has recently visited these little-known places, has sent an account of his journey to the Committee of the Palestine Exploration Fund. Aradus, the Biblical Arvad, now called Ruad, is a small rocky island, very little raised above the level of the sea, with a double harbour protected by rocks and ancient moles. The modern population occupy nearly the whole of the island. Along the edge of the harbour, both on land and in the water, are scattered about great numbers of columns of grey granite, turned black by age, which once, in all probability, formed colonnades and open markets, like those at Tripoli, Byblus, and Tyre. "Far the most interesting remains, however," Mr. Chester writes, "are those of the sea-walls, which belong apparently to an earlier epoch,—that, namely, of the substructures at Baalbec, and the megalithic remains of Amrit. The immense stones of which these walls are built seem to have been hewn out of the rock on the spot. Some of the stones are 10 ft. to 12 ft. long by 7 ft. and 8 ft. high." These stones do not show the marginal draft or bevel; four have deep grooves cut into their upper surface on the side next the land, three of these indentations being semicircular and one square. They were, perhaps, intended as holdfasts for the cables of ships. The largest fragments of the existing walls are on the western side, *i.e.*, towards the sea. They are set on a platform of rock cut even for their reception, and are of four or five courses inside, but of more towards the sea. The total height is probably between 30 ft. and 40 ft. No mortar has been used. In one place a great oblong ring has been left projecting seawards from the face of a stone, doubtless for the purpose of securing the cable of a ship. At the foot of these fragments lies a narrow terrace of levelled rock, washed over by the waves, and a few yards from the wall is a small islet, also levelled artificially, as if for the construction of a temple.

The walls of Aradus have been spoken of as "double"; but Mr. Chester failed to find any evidence of this fact. They were, however, he observes, originally of great breadth. No inscription was found on any of the stones.

On the south side of Ruad are the remains of houses with chambers cut in the rock; in some of them a few shallow niches, perhaps intended to hold lamps; in others, the old plaster still remaining. There are also baths, public and private, one of which is lined with plaster, into which have been let bits of red pottery. Open spaces appear to have existed between the walls and the main town. Here the fissures left between the rocks after they were smoothed down are filled in with waterworn gravel, pottery, bits of marble, and rubbish, which, by the infiltrations of water charged with lime, have been converted into a mass of solid breccia. The flat surface so obtained, although in some cases showing the foundations of ancient houses, was generally kept open for traffic. The water-supply was wholly drawn from rock-cut cisterns, of which there are reported to be 400. The Greek inscriptions mentioned in Murray's Handbook are said to have been carried away to France. Two uninscribed altars are still in existence.

From Aradus, Mr. Chester went on to Tartûs (Tortosa), where the principal buildings consist of the castle and the cathedral. The former is an immense structure of massive drafted masonry. Mr. Chester considers it to be of crusading date, which may have incorporated with itself constructions and masonry of an earlier date. The stones exhibit many masons' marks.

The cathedral is thus described:—"It stands outside the walls of Tartûs, to the south-east of the town, and is in an extraordinarily perfect state of preservation. Its plan displays a lofty nave and aisles, separated by tall but massive piers, with columns with Corinthianising capitals. The west front has a pointed doorway with a large three-fold window above it, of which the third light is above and between the other two. Seen from within, nothing can be more perfect than the proportions of this noble triplet. On either side, at the west end of each wing or aisle, is an elegant lancet window with a small square window above, the southernmost lancet having its moulding on the left side ending in a sculptured lion. Over the great western entrance is a large slab of red granite. The church consists of four bays, besides the sacrarium, each of which is separated externally by a massive square buttress. The east end, with three apses, has each apse square outside; those to the north and south, together with two vaulted sacristies, being as it were, enclosed in two square towers, which do not rise higher than the roof. This, although described in Murray's Handbook as 'entirely gone,' is, on the contrary, intact. It is of vaulted stone, and into the lower part of its curve small square-headed windows have been cut. In each bay of the side aisles is one lancet window, and in some instances are two lancet windows. The south door is ornamented

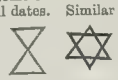
with a rich moulding. The condition of this noble church is such that it might at any moment be used for Christian worship."

Mr. Chester also visited Amrit, the ancient Marathus. The ruins are mentioned in Murray's "Handbook," but do not appear to have been ever carefully examined. He says, "The first object of interest was a scarped rock, to the left of the track, presenting a principal face, with two projecting wings. In the front are three round-headed entrances to tombs, the entrance to a tomb on either side being square. About a mile further to the south is a curious excavated enclosure, cut in the rock to the depth of 10 ft. In the midst is a platform of natural rock, on which is a shrine of four great stones, the largest of which, the uppermost, has a rude overhanging cornice. Within is a stone bench, apparently for the divinity of the place, like those in many Egyptian grottoes. . . . . About a mile south are four sepulchral monuments, which stand near the edge of a ridge of grey rocks, running parallel with the sea. The first of these monuments* consists of a pedestal, formed of a single vast stone, upon which are placed two others, which taper upwards, the upper one having a conical top. The whole structure forms a kind of rude obelisk, between 30 ft. and 40 ft. high. Close by stands a second monument, of similar but somewhat lower dimensions. Upon a huge pedestal stands another stone, which, at somewhat more than half its height, decreases in size, and then again decreases till it ends in a rounded top. Just below the apex, and again below the shoulder, there is a battlemented moulding, and at the four corners  of the pedestal below are sculptured the fore parts of as many lions."

It is greatly to be desired that these ruins were examined and sketched by an architect. Mr. Chester's archæological results principally consist of coins. But besides these he has secured an admirable bronze figure of Fortune, in the best Greek art; a bronze boss, with a Christian inscription; and a number of flint implements. He also found, at the distance of an hour and a half from Jebeil, a cave, within which rude benches were cut in the rock, and containing great quantities of a hard breccia, similar to that found by Dr. Tristram near the Nahr el Kelb, and composed of an immense quantity of flint flakes worked by hand, bones and teeth of animals, and sea-shells. A large number of flint implements were found by Mr. Chester on the Ras of Beyrût.

We have engraved, with the permission of the committee of the Palestine Exploration Fund, the marks sent home by Mr. Chester. Nos. 39 to 51, inclusive, are from Jebeil; Nos. 39 and 48 are marked "Outer Wall"; 40, 41, and 49, "Keep"; 42, "in relief; House, Jebeil"; and 51, "Cathedral." The previous Nos., 1 to 38, appear to be all from Tartûs; 28 and 35 are marked "Outside North Wall," and 34, "North Gateway."

Mr. Chester notes that Nos. 26, 28, 35, 38, 39, 44, 50, and 51 "appear to be older than the rest."

With two or three exceptions, which are only doubtful, these marks are all Christian and European, and were used chiefly in the eleventh and twelfth centuries, though some of them are found in all countries and of all dates. Similar marks, notably the hour-glass form, No. 3; the N form, Nos. 45 and 47; and the double triangle, No. 41, will be found in the collection made by Mr. Godwin, and partly published in the *Archæologia* (vol. xxx.), and partly in our volume for 1869.† 

A Painting by Rubens.—The *Journal de Dunkerque* says that a beautiful original work by Rubens has been discovered, disguised by dirt and dust, in the church of Notre Dame, at Cassel (Département du Nord), on the occasion of the restoration which the paintings of the church are undergoing. It was only when the superincumbent coat of dirt, the accumulation of ages, was removed, that the importance of the discovery was recognised. The painting represents the appearance of the Virgin to St. Francis of Assisi. It is said that, after being cleaned, the picture proved to be well preserved.

* See also Murray's Hand-book, p. 559.

† Vol. xxvii., pp. 237, 245, 246, &c. In the same volume will also be found a collection of marks from the North West Provinces of India, and from Upper Assam, p. 505.

ARTISANS' DWELLINGS BILL.

LORD SHAFTESBURY'S ADDRESS IN THE HOUSE OF LORDS.

HER Majesty's Government deserve our praise and gratitude for the Bill they have introduced. I admire the boldness and perseverance with which they have addressed themselves to this difficult question. They have done their best to master the difficulty; but they have not mastered it; nor will they do so, until after wide and protracted experience. The Bill, on a broad view of it, may be divided into two parts,—demolition and reconstruction. It may be, though the matter is doubtful, that the part affecting demolition is complete; I will assume, however, that it is so; but the more intricate part remains—and they will find that to cover with houses the large spaces that shall have been laid bare, houses adapted in number and quality to the wants of the displaced population, will put their scheme very severely to the test. I cannot but think that the Government are over-sanguine in the forecast of what will be effected by the Bill. It may ultimately produce great good; but the working of it will demand much thought and patience. It is true that there are very large areas in which great benefit will result to the community from the mere removal of the houses which now encumber them; but when they are removed, what is to be substituted?

Now look to the *effects* of demolition. Hundreds, indeed thousands, of families will be *displaced*; some for a time until the tenements shall have been rebuilt; but many permanently. Such was the case in the Westminster improvements; and for the population so disturbed provision must be made. It is stated, I know, in the Bill, that arrangements of this sort must accompany demolition; but the requirements of a clause and the fulfilment of those requirements are very different things, and oftentimes separated by a long interval. It is vain to rely on the ample notice that is to be given to the inhabitants. They do not, and they really cannot, give heed to it. Occupied as they are, day by day and hour by hour, they think only of the present; and they cannot afford time or loss of wage to run about in quest of other dwellings. And so when the moment arrives for the levelling of the domiciles in which they reside, they are like persons possessed—perplexity and dismay are everywhere; the district has all the air of a town taken by assault. Then they rush into every hole where they can be received; some near, some very far off; though all struggle to be as close as possible to their former dwellings. Streets and houses, already overcrowded, become doubled in population. Every demand of health and decency is set aside; and people submit, by compulsion, to the greatest moral and physical degradation. I need not multiply instances, though I could well do so. But all that I have stated was seen when New Oxford-street was constructed, and the St. Giles's rookeries were destroyed; the masses in Church-lane—a district already seething with life—were, in consequence, increased two-fold. And in Westminster, to make room for Victoria-street and other handsome improvements, a nation of men, women, and children was driven out; many of the old ones went into the workhouse, and never escaped from it; many fled across the water, suffering great privations, until they had formed new connexions of work; and many pressed into the swarming rooms of the neighbourhood, the landlord, in numberless instances, where the poor inhabitants had two rooms, taking from them one, and then forcing them to pay for the single as much as they had paid for the double apartment.

Now I would not have spoken on the present occasion had not the subject before us been one on which I have been engaged ever since 1843; one to which I have devoted a great deal of time and attention; and yet I am no nearer the solution of the problem than when I began it.

I mention all this to show the necessity of much care and circumspection in your preliminary operations. My noble friend has said, and very truly, that the labourer must in many cases reside near his work. That is exactly the point I am insisting on. It is so, even with several classes of the skilled artisans. Take, for example, the watchmakers of Clerkenwell. They must live near together, because, as no one of them is rich enough to possess a complete set of tools for his minute and delicate business, they borrow of each other; a mutual service that could not be rendered were they far apart. And I concur again with my noble friend that suburban dwellings will not give the full remedy we seek,—they will furnish but a part of it,—nevertheless, if taste and preference lie that way, these tastes should be encouraged.

But now, my Lords, let us think of reconstruction,—we must not, on commencing so vast a work, rely on what is ordinarily called philanthropy. It must be a commercial enterprise; and with that view we must have recourse to the building capitalists. Now such experience as I have leads me to believe that few of them would undertake a work like that with less than a fair prospect of 10 per cent. on the outlay. But here the promoters and the contractors will be at variance. The promoters will of course desire accommodation for the classes temporarily displaced; but the contractors will seek to erect houses which will bear the highest rent by being adapted to the richer order of skilled artisans. At once, then, will arise the difficulty. The large proportion of the labouring people in the metropolis are not of the skilled class, but of the inferior order of labourers who live by casual and irregular duty, without any definite or constant employment, and, consequently, unable to afford sufficient house-room for themselves and their families. Here is a sample, and a sample only, from the report of the Charity Organisation Society on the dwellings of this class:—

"In St. Giles's, about 3,000 families have only one room, exclusive of about 2,000 persons living in common lodging-houses; and in Holborn, out of a population of 44,809 persons, about 8,000 families are in single rooms." I may just in passing show the sanitary results of such things. "The average mortality," the report adds, "in the worst streets in St. Giles's varies from about 40 to 60 per 1,000 persons living, and that in the worst parts of Whitechapel averages 40 per 1,000, while that of all London for the year 1872 was only 21·4."

Now, must we not infer from this statement that if two parishes alone present such a mass, the whole aggregate of London must present something almost intolerable? And yet these are the classes for which you are to provide sufficient and proper abodes. My noble friend has said that the experiment has already been tried in Glasgow, and with success. He says that some 250 families were removed, and that they found ample accommodation in the immediate neighbourhood. Now, in the first place, I remember a saying of Mr. Canning's, that "nothing was so fallacious as figures, except facts"; but I must also observe that an experiment made on 250 families is widely different from one to be made on some thousands; and we must also ask what was the precise class of the parties removed, and we must consider, moreover, the distinctive peculiarities of the Scotch and English character.

But when my noble friend makes his calculations as to the possibility of erecting cheap tenements for the poorer sort, he must remember that the cost of buildings already erected, and the rent put upon them, do not furnish a proof that similar results may be attained in the present day. The price of material is higher than it was; and the rate of wages in the building trade is so advanced that, in order to make a remunerative profit, a much heavier weekly payment must be imposed on the occupier of apartments, whether they be constructed on the separate or the block system.

Well, what are we to do? Are we to construct a vast number of single rooms in order to meet the means of these poor people, or are we to build houses according to our new sanitary requirements? If we reconstruct single rooms, we shall maintain a most indecent and most immoral state of things; if, on the other hand, we do not, rents will be raised so high that it will be perfectly impossible for the people to bear the demands that will be made upon them. I am speaking now of labourers who have no regular work of any kind, and not of skilled artisans. These men live from hand to mouth, and have to take work as it comes, just at the moment. At the docks, for instance, men may be seen standing in single file forty or fifty deep. There they remain for hours in the hope of getting work, and were they not on the spot they would stand no chance of being employed. The earnings of these men, whose employment is dependent on the wind and the arrival of the ships, are extremely small. When there is plenty of work they make about 17s. a week, but taking the average throughout the year, their earnings in the aggregate do not exceed 9s. 9d. a week. Then, as to their abodes. Some single rooms are let for 2s. 6d. and 3s. 6d. a week,

but there are some of these people who pay as much as 4s. 6d. a week for a single apartment. You must remember, too, that although the wages of skilled artisans and those who have fixed labour, have risen very considerably, the earnings of the class I have been alluding to have not perceptibly increased, owing partly to the nature of the work, and partly to the great influx of people from the country every year. Now I must repeat that, unless we reconstruct dwellings adapted to their means, great injury will be inflicted on the people who are displaced.

Yet there is one form of remedy well worthy of consideration. We can adapt, drain, and ventilate old tenements, courts, alleys, and *culs-de-sac* at a far less outlay than is required to construct anything new. The society with which I am connected (the Labourers' Friend Society) has made, and successfully made, such efforts on a pretty large scale. We began it some years ago, and since that time the plan has been pursued, and with very good results, by an energetic lady, Miss Octavia Hill. Let me show your lordships some of the happy results. Take, for instance, Tyndall's-buildings, in Gray's-inn-road. We got possession of this court, and renovated it at a cost of 2,699*l.* 19s. 11d. Well, on an average of seven years, from 1864 to 1870, the return has been 5¼ per cent. It contains eighty-seven rooms for families; and your lordships will bear in mind that the inhabitants are of the poorest class of labourers, mostly Irish, who cannot afford to pay more than from 1s. up to 2s. for their week's lodgings.

This court I had long coveted, for it was filthy, miserable, and disorderly beyond all precedent. Fever was never absent; and I can answer, from personal inspection, that I at least have not descriptive power enough to say what it was physically and morally. Nevertheless, we had courage for the work, and the issue had better be stated in the words of two authorities of some value in the district. The medical officer reported that fever was now unknown in that locality; and the police-constable, who for a long time had been acquainted with the wretched place, assured me that while formerly the police always went down the court by couples, they had now seldom occasion to go there at all.

Similar statements may be made in respect of Wild-court, near Drury-lane. It contains 100 rooms for families, which families are also mostly Irish. It was renovated at an outlay of 3,364*l.* 19s. 11d., with an average per-centage of 4¼. I may add without going into details, the like results have been obtained in Clarke's-buildings, in St. Giles's-in-the-fields.

Now I venture to suggest this plan: it is, unquestionably, worthy of consideration, as a partial, not as a complete, remedy. Surely, in every area where there is to be a wide demolition, some of the best buildings might be reserved for improvements and adaptation, the only mode whereby we shall be able, at least so far as we know at present, to better the domiciliary condition of the great bulk of the labouring classes. But whatever be the determination of higher powers, I will venture to express a hope that all will be done with care, circumspection, and, above all, not in haste. If the clearances be gradual, it will be far more easy to make provision, temporary or permanent, for those who are driven out. I have been much among the people in such circumstances; and I know what they suffer; and I know, too, how they bear it. I have often heard the language of complaint and sorrow, but never of sedition or revenge. The law thus carried into effect may, by God's blessing, do much good; and my noble friend may take this assurance to his heart,—*His brevibus principiis ria sternitur ad majora.*

THE SALFORD TOWN-HALL.

THE enlargement and decorations of the various offices, &c., contained in the Salford Town-hall are now nearly completed, and the Council met in their chamber on the 2nd inst. for the first time to resume business. The Council chamber is a fine room in the Greek style, 52 ft. long by 28 ft. wide, and 23 ft. high, and has a coved and coffered ceiling, which has been handsomely decorated. The flat of the panels is dark blue, with diaper in grey, white, and yellow. The mouldings surrounding the panels are picked out with two tints of blueish green, relieved with two shades of buff, intersected by a Greek fret of buff and gold. The cove of the ceiling, springing from the cornice, is painted a neutral fawn-colour, and ornamented by various allegorical devices, supported by a well-designed flat ornament in three colours. Over the mayor's chair are the borough arms, on the side of which are medallion figures representing Commerce and Plenty. At the opposite end of the room are the Royal arms, with the emblems of Justice and Mercy. On the one side of the room are the arms of the Duchy of Lancaster, supported by figures representing Literature and Industry, and on the opposite side are the arms of the County Palatine, supported by Wisdom and Science. The predominant colour in the cornice is buff, relieved with gold, with a geometrical ornament in brown and black. The pilasters which divide the walls into compartments are in imitation of Sienna marble, with Aberdeen granite base, black and gold marble skirting and mouldings. The walls are a delicate blueish-green, and the window furniture maroon and gold curtains. The work has been executed by Mr. Thomas Ellison, decorator, of Bury New-road, Manchester, who himself painted the medallions. Messrs. Strode & Co., of London, have placed in the ceiling two of their patent sunlights, and the effect altogether is very satisfactory.

NEW MUNICIPAL BUILDINGS AT KIDDERMINSTER.

ON the 24th ult., the mayor (Ald. Goodwin) laid the memorial stone of new municipal buildings. The directors of the Public Rooms Company offered to the corporation for a little more than 8,000*l.*, or only about two-thirds its cost, their property, consisting of music-hall, corn-exchange, free library, school of art, and other adjuncts. The council accepted the offer, and resolved to erect municipal offices at the side of these buildings. The contract for the new buildings is 7,546*l.*, so that at a cost of about 16,000*l.* the town will possess public buildings the intrinsic value of which is said to be, at least, 20,000*l.*, everything included.

The buildings consist of two main divisions, one of which affords accommodation for police purposes, and the other for municipal and magisterial business. The police department is approached by a lofty entrance gateway, which will form a connecting-link in the elevation between the new block and the present Public Rooms, and the access to the municipal offices will be had through a spacious entrance-lobby opening into a large hall, in which is the main staircase. On the ground-floor are the police-rooms, consisting of day-room, 22 ft. by 15 ft., superintendent's office, and weights and measures offices; and there is an underground approach to the police-cells lying at the rear under the police-court, with which they have a direct communication. The borough surveyor's offices are approached from the main entrance-hall, and consist of two rooms, with a small dark room for gas-testing, and a strong-room. On the upper floor, which is reached by a staircase 6 ft. wide, are the town-clerk's offices (three rooms and a strong-room); the mayor's parlour, 28 ft. by 14 ft. 6 in.; the council chamber, 36 ft. by 24 ft; and the public court, 38 ft. by 24 ft., with magistrates' retiring-room, 7 ft. by 13 ft.; and witnesses' room, 14 ft. by 10 ft. The façade will be treated in a free Italian style, the main feature being to harmonise with the adjoining Public Rooms.

Mr. T. Meredith is the architect; and the contractors are Messrs. Bennion & Son.

CASES UNDER THE METROPOLITAN BUILDING ACT.

WOODEN BUILDINGS.

MR. JARVIS, district surveyor of Camberwell, summoned Mr. Hall, of 45, Church-road, Camberwell, florist, before the magistrate at Lambeth Police-court, for having erected a wooden building 12 ft. long, 8 ft. wide, and 10 ft. high, in the fore court of his house, contrary to the Metropolis Building Act.

The Surveyor stated that the building in question was used as a shop in which plants were exhibited for sale, and was enclosed on all sides with wood, contrary to No. 1 clause, 1st schedule, preliminary, of the said Act.

It was urged by the solicitor for the defence that as the erection had wheels fixed to it, and it could be moved about, it was not a building.

The magistrate, however, ruled that it was a building, and made an order accordingly.

STAFFORD BOROUGH HALL.

BESIDES the Shire-hall Assembly-room, the use of which cannot always be obtained, and a little theatre in St. Martin's-lane, Stafford, has hitherto been without any public room adequate to its requirements. A short time ago, Mr. H. D. Pochin, of Manchester, offered to give to the Corporation the sum of 3,000*l.* towards a new town hall. This gift was not readily accepted. The Corporation could not find either a site for the building or the money necessary to be added to Mr. Pochin's contribution. At length, however, a site was found. The borough surveyor was instructed to make a design, and the mortgage upon the Corporate property was augmented by a further charge of 6,000*l.* The plans of the building were prepared; the tender of Messrs. John Hayes & Sons, builders, Birmingham, for 7,150*l.*, was accepted; and on the 31st ult. Mr. Pochin laid the foundation-stone.

The style of the new hall will be Early French Gothic, rock-faced, ashlar and smooth dressings being used up to the first-floor windows. The upper part of the elevation will be brick, with stone-dressings, &c. In the centre, over the principal entrance doorway, will be a large tracery window with a balcony, and a range of four smaller tracery windows on either side. There will be three gables in the front, with a bold wheel-window in each. The roof will be all high-pitched, and surmounted by an ornamental cresting at the angles, and springing from each gable will be a pedestal for some grotesque figure. The internal dimensions of the main building will be 112 ft. by 50 ft. The principal entrance to the assembly-rooms will be in the centre of the front elevation, and open into a spacious entrance-hall leading directly to the principal staircase. The side entrance and staircase will be at the west end, and at the east end will be a wide entrance to the yard and out-offices. The whole of the front floor of the main building will be appropriated for the assembly-room, 103 ft. by 50 ft., including the stage and proscenium at the east end. The roof of the assembly-room will be plastered at the collar-beams, which are to be exposed. The ceiling will be divided into panels, which are intended to be decorated. The height from floor and moulding at the springing of the curb is 30 ft. 3 in., and the extreme height to the collar-beam, 39 ft. The frontage facing Eastgate-street is 122 ft. in length and 40 ft. in height.

PROPOSED NEW LIBERAL CLUB HOUSE AT BRADFORD.

THE plot of land bounded by the continuation of Darley-street, Kirkgate, Queensgate, and Bank-street, is to be cleared for the erection of a pile from the designs of Messrs. Lockwood & Mawson, architects, Bradford. Messrs. M. Rhodes & Son, jewellers, Westgate, will occupy the front to Kirkgate, and a portion of Darley-street and Queensgate; next will be the property of Mr. Varley, of Staningley, and the remaining portion will form the new Liberal Club House. The whole will be in the Italian style; but each owner's premises will be treated a little differently in detail, showing where one property begins and another ends. The general design includes shops on the ground floor, and the buildings will be four stories in height. The front entrance to the club will be in Darley-street. Owing to the rapid fall in the street level, a rise of 11 ft. up the broad staircase will bring the visitor to the dining or coffee room, 51 ft. by 36 ft., with a height of 20 ft., lighted on each side with tall windows, a bay window being placed in the end looking on to Bank-street and the Exchange. Over the dining-room will be the billiard-room, of the same size, with a height of 15 ft., also lighted on each side. The smoking-room will be 50 ft. by 24 ft., the reading-room 24 ft. square, and the kitchen, 35 ft. by 24 ft., will be above. Ample accommodation is provided for the servants, and there will be a separate entrance to the club from Queensgate. The principal staircase, lighted by a dome in the roof, will be 45 ft. wide. The cost of the entire scheme is estimated at about 30,000*l.*

Tything District Church, Worcester.—The promoters of this scheme have now appointed a sub-committee for the purpose of seeking a site for the new church. Mr. Priddey, formerly a resident of the city, has been appointed architect.

THE DWELLINGS OF THE POOR IN MILE END OLD TOWN.

Two cases which came before the Mile-end Old Town Vestry at their meeting last week were strongly illustrative of the necessity which exists for sanitary and constructive improvements, in that locality, in the dwellings of the labouring classes. In the one instance the medical officer of health and the surveyor had reported, in reference to a number of houses in Upper York-place, that they were not fit to live in, and that unless certain constructional and other improvements were immediately made, they advised the Vestry at once to take steps for their demolition under the Artisans' and Labourers' Dwellings Act of 1868. The owner of the houses attended the meeting, and although he raised some objections to the reports he did not deny that the houses needed repairs, but wished for two months' grace to execute them. The feeling of the Vestry, however, was against such a length of time being given, and Mr. Atrell, one of the members, in moving that a month only be given, remarked that more disgraceful erections did not exist in the parish, and the worst punishment which could be inflicted on the owner would be to make him reside in one of the so-called "houses" for a month. Another member observed that the owner deserved no sympathy, as last year he evaded the action of the Vestry by shutting up the "houses" for a time, and his representation that he had done the work was untrue. Eventually the Vestry resolved to give the owner a month only, the Chairman intimating to him that if the repairs were not carried out by that time they would at once take action for the demolition of the houses. The other case was a striking instance of overcrowding in the district. The Medical Officer of Health reported that there was a house in Ben Jonson-road, consisting of twenty reputed rooms, but of these eight consisted of four larger rooms on the first and upper floors, each of which was divided by a partition into two compartments, one portion being deficient in both light and ventilation. Upon the occasion of a previous visit the medical officer found that there were fifty-one persons living and sleeping in the house, and in one instance, at least, there was a separate family in each of two compartments alluded to,—one consisting of a husband, wife, and five children; the other, of husband, wife, and two children, allowing about 100 cubic feet of space to each person. On the recommendation of the Sanitary Committee the Vestry resolved to serve the owner with notice to suppress the overcrowding.

WELSH CALVINISTIC METHODIST CHAPEL, MOSS SIDE, MANCHESTER.

THIS chapel is situate at the corner of Moss-lane East and Lloyd-street, and was opened for divine service on the 30th ult. It is designed in the Early Pointed style of architecture, and has accommodation for 800 persons. The galleries extend to three sides of the building, that portion immediately opposite the pulpit being circular. The principal entrance consists of an arcaded porch having three pointed-headed openings, which, together with the two-light and circular windows over them, form the main features of the principal elevation facing Moss-lane. The chapel is about 64 ft. by 46 ft. on the ground-floor. The roof is in one span, being supported by principals having curved ribs, those at the intersection of the slightly-marked transept (introduced for the sake of external effect) being diagonal.

In the rear of the chapel, and facing Lloyd-street, is the chapel-keeper's residence, the vestries, &c., being placed between them, together with a corridor which connects the whole with the school-buildings consisting of a main school, 64 ft. by 37 ft., class-room, library, porches, hoist, tea-room, heating-apparatus cellar, and other requirements. The roof of the main school-room is also in one span, the roof being of open construction and ceiled at the collar.

The greater portion of the internal woodwork is stained and varnished; the whole of the walling, internally, is plastered, and the windows of the chapel are filled with lead-lights, many being of geometrical design and filled with coloured glass. The floor of the vestibule is laid with Maw & Co.'s tiles.

Externally the main buildings are faced with parpoints, the dressings generally consisting of Yorkshire stone, Hollington being used in the spire, which is octagonal in form, and, together with the tower, stands at the main angle of the building, and forms one of its most noticeable features. The total height being about 95 ft. The roofs are covered with Welsh slates, of diverse tints, cut to pattern, and surmounted by an ornamental cresting.

The total cost of the buildings, including a considerable outlay necessitated by defective foundations, is about 8,500*l.*; and the whole have been executed by Mr. Mark Foggett, of Cheetham, builder, from the designs, and under the superintendence of Mr. John Lowe, architect, Manchester.

DIFFICULTIES WITH APPRENTICES: CAUTION.

"NOTICE.—Ascension Day.—As the apprentices are not entitled under their indentures to a half-holiday on this day, notice is hereby given, that any apprentice absenting himself during the afternoon of this day, without special leave from his foreman, will be liable to legal penalties for so doing.—By order, May 6, 1875."

The above memorandum was posted up between five and six on the morning of Ascension Day in the workshops of Messrs. Stephenson & Co., ironfounders, of Newcastle, and at six o'clock no less than 123 apprentices to this firm came on to work, and at half-past twelve all the lads struck work, and absented themselves. Each apprentice was separately charged before the police magistrates "with having absented himself from his employment without leave, and contrary to an order issued by his masters." A distinct charge, Henry Bousfield, was taken to represent the whole batch; and Mr. Joel, the prosecuting attorney, stated a case that deserves attention on the part of masters owning apprentices, particularly at a period when the complaint from nearly every trade is that neither parents nor boys can be got to enter into indentures, even without premiums.

The attorney said, as he was instructed, the lad Bousfield was bound on the 13th of January, 1871, to serve a certain term. He had served four years and two months, and his time would expire in January, 1876. On the 6th of May the whole of the apprentices absented themselves from work. He was bound to admit that for many years previously the apprentices had been in the habit of having a half-holiday on Ascension Day—the day they now struck work. On the present occasion Messrs. Stephenson found it inconvenient for the lads to go away on that day, and thought it necessary to alter the form of contracts under which the apprentices were bound. In their indentures the holidays granted were New Year's Day, Good Friday, and Christmas Day; and the half-holidays were, on Easter Monday, Tuesday, Whit Monday, Tuesday, and Shrove Tuesday.

Sir John Lubbock's Bank Holiday Act does not appear to take cognizance of apprentices' holidays, and here the London as well as the country apprentices are getting up a fight.

Messrs. Stephenson had resolved to adhere to the form of indenture, and caused a notice to be stuck up early on the morning in order that the whole of the apprentices might see that the holiday was not permitted.

Other evidence having been given,

Mr. Bush, for the defence, said the apprentices were acting on a supposition, and were justified in doing so, that they were entitled, as of old, to a half-day on Holy Thursday. It had been the custom in these particular works for thirty-six years to have this holiday. It was true the indentures did not mention Ascension Day; neither did they Sunday or other holidays. When the apprentices were at work they were bound by a deed, and bound by the practice that existed at the time their indentures were first put into force. No regulation that had been made since the indentures were signed could bind or alter those which had been the custom, and had been the usage, exclusive of the indenture, in those works for thirty-six years. Then as to the notice. It was only posted up a quarter before six in the morning of the day on which these lads had been in the habit of leaving for a half-holiday from time immemorial. New rules had also been put up; but he contended they did not affect the old rules under which these apprentices enlisted.

Witnesses were called to prove the custom, and further that they always received wages for this half-holiday.

The Chairman of the Bench, Mr. Cail, said the apprentices were clearly guilty of an infringement of the law, under extenuating circumstances. The notice was very short, and the lads had some reason to think they had a right to the half-day. They would all be fined 5*s.* each.

VENTILATION IN ST. GEORGE'S HOSPITAL.

LORD KINNAIRD sends us copy of a letter addressed by him to the Duke of Sutherland, in which he says,—

"I observe that you were one of the committee who met at St. George's Hospital, to witness and report on Mr. Tobin's system of ventilation in one of the wards, and very properly declined to pronounce an opinion as to whether Mr. Tobin's plan of ventilation was a new thing or not. It certainly is no new invention, for it is now more than thirty years since I introduced a plan of admitting air into a building, and giving it an upward current to strike the ceiling, and become diffused without causing draughts. That plan is in effective operation, not only in my own rooms at Rossie Priory, but in schools, cottages, stables, cow-houses, and hot-houses on the estate. No doubt, the diluting of foul air with pure oxygen is a great advantage; but no system of ventilation can be satisfactor unless the vitiated air is taken off as it ascend when warm, at the ceiling, instead of bein drawn off by the fireplace or some other openin lower down. This I provide for by a pipe, on th syphon principle, inserted in the wall, openin in the room near the ceiling, and its outlet en carried into the flue near the mantelpiece, cheap and simple contrivance, of continuou action, which never gets out of order. Wher windows are not available, a slit in the wa should be made, 2 ft. or 3 ft. broad, with a upward inclination inwards, the opening bein above the heads of the cattle (in dwelling-house above the heads of the inmates), with a fla regulator."

PAISLEY TOWN-HALL COMPETITION.

THE committee appointed to adjudicate upo the plans in this competition, having appointe Mr. Mathieson, of H.M. Board of Works, Edi burgh, to assist them in selecting the mos meritorious designs, after several meetings an repeated inspection of the various plans, hel their final meeting on the 3rd inst., and, guide by the advice of Mr. Mathieson, they unan mously awarded the first place to the plan bearin the motto "Fortuna Sequatur," the second t that with the motto "Experientia," and th third to that with the motto "The Moon." O the envelopes with the relative mottoes bein subsequently opened, it was found that the firs plan was by Messrs. Rennison & Scott, architect Paisley; and the third by Mr. Henry Higgin junior, 273, Dumbarton-road, Glasgow. Wit reference to the second, it appeared, that whil there were two plans bearing the motto "Exp rientia," there was only one envelope with th motto. It was accordingly agreed to communi cate with the architect whose address wa enclosed in the envelope so marked, and asce tain whether he had lodged two plans, or, if no to describe his plan for identification.

The style of Messrs. Rennison & Scott design is Early French Gothic. The amount which competitors were limited is 20,000*l.*

We have received a letter, signed "R. Smiles, objecting strongly to the decision. The write says:—"The premiated design will cost at lea 60,000*l.*, as any competent professional ma would state. The drawings are shaded in viol tion of Article 5 of the instructions, and a accompanied by no specification whatever. Th second and third premiums are awarded f designs that will each cost 40,000*l.*, and a shaded in disregard of the instructions. A num ber of the competitors have complied rigidl with the instructions and have occasion to fe that they have been unjustly treated."

THE NEW NATIONAL OPERA HOUSE, THAMES EMBANKMENT.

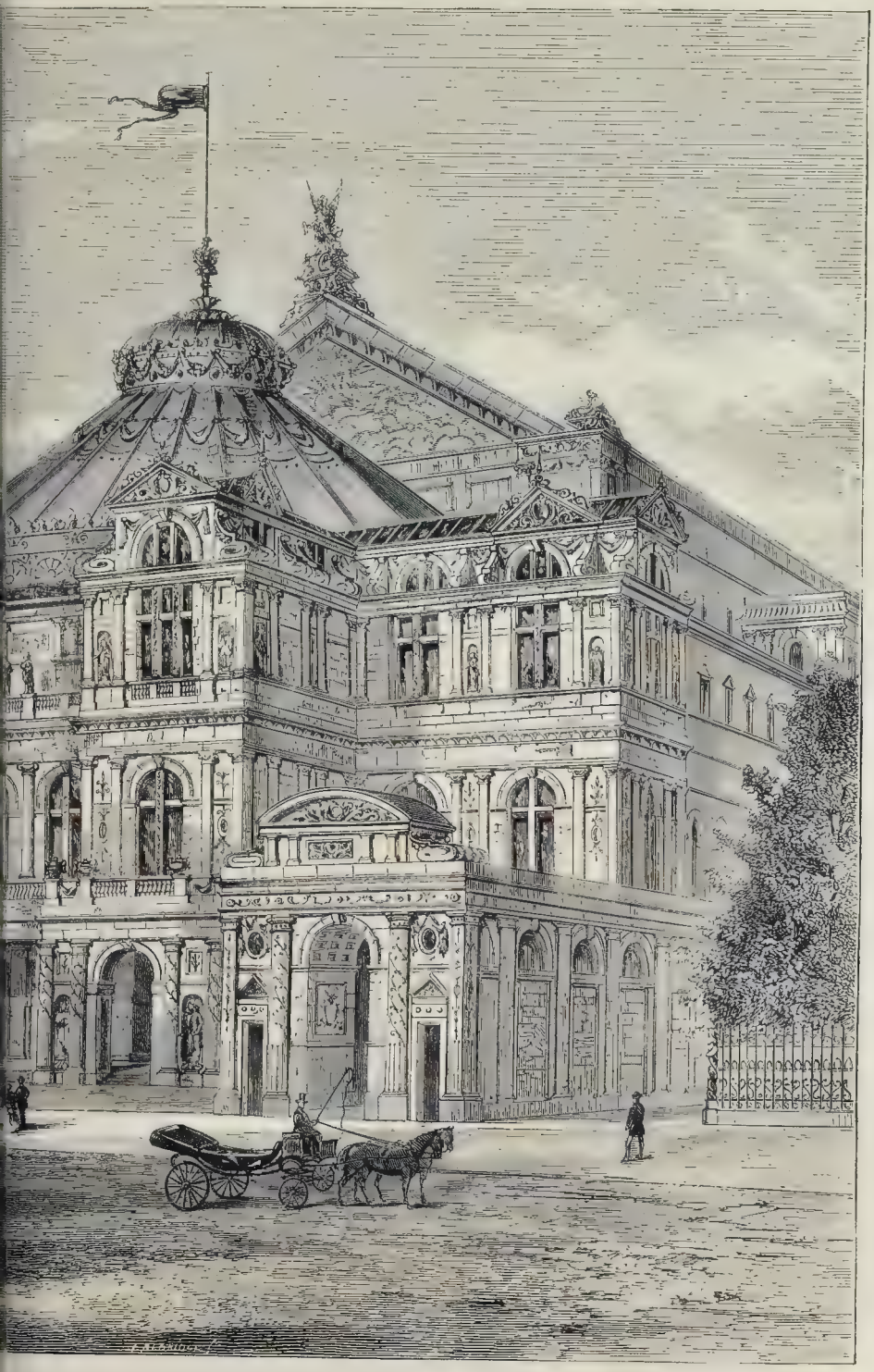
WE give in our present number an illustration the design submitted by Mr. F. H. Fowler, arch tect, and selected in the late competition. Th building will cover an area of 190 ft. by 200 ft a superficial area, it is stated, one-third larg than that of Covent Garden Theatre. It is to b perfectly isolated, a roadway being preserved either side, so as to open up direct communic tion with Parliament-street, opposite the Foreig and Colonial Offices. The preliminary works taking out the ground are being proceeded wi by Mr. Webster, the contractor. It is suppose that in consequence of the bad substratum depth of 30 ft. will have to be attained befo putting in concrete. This will, it is hoped, b effected during next month, when his Roy Highness the Prince of Wales will be asked lay the first stone. The interior dimensions the auditorium are nearly the same as in Scala in Milan. The form of a horseshoe, som what elongaged, has been adopted. The foye or grand *salon*, will be on a level with the gra tier, and will be at least 100 ft. long.

There will be a siding into the Opera Hou from the Metropolitan District Railway.

Discovery of an Ancient Bible.—A co of the edition of the Bible printed by Gutenber at Mayence, between 1450 and 1456, was di covered last autumn in the vestry of the Churc of Klein Bantzen, in Saxony. It is printe partly on paper, partly on parchment. It wa presented to the church in 1677, and had lai nearly 200 years among the Psalm Books an Bibles, being mistaken for a manuscript Bibl It has been purchased for 450*l.* by an Englis collector.



SELECTED DESIGN FOR THE NEW NATIONAL OPER



THAMES EMBANKMENT.—Mr. F. H. Fowler, Architect.

THE ARTIST AND THE AMATEUR.

IT is unreasonable to expect that an artist will be satisfied unless his work is appreciated. He may indeed do much to satisfy the longings and aspirations of his own soul; he may have the strongest conviction that his work is worthy of approval; but without the stimulus of sympathy of some sort, his mind is certain to be burdened with an incubus which cannot be thrown off. If he secures the approval of contemporaries who have gained a high position, he may then, even although not appreciated by others, and unsuccessful in a pecuniary point of view, be satisfied that his labour is not in vain. But he may have still greater reason for satisfaction if he meets with the generous approval of the cultivated amateur who has made art his study for no other reason than the love of art, and who is not swayed by professional predilections.

There is apt to be a spirit of rivalry amongst contemporary artists, who, in the heat of the strife, cannot with coolness and deliberation pause to adjudicate upon the work of those with whom they contend. The very fact of one artist taking up a peculiar stand-point, from which he views the field of art, acts as a disqualification to his fairly gauging what does not lie within his immediate range of sight. Mere technical excellence is too often considered the acme of perfection. He is apt to overlook that higher aspiration, that appearance of undeveloped power, which underlies a work, and which, although in a sense unsuccessful, is sometimes more worthy of admiration than the achieved success of another. The best check to this is a vigorous expression of opinion by those outside the profession, who can give reasons for the faith that is in them, and who have no persoual ends to serve.

The artist himself is undoubtedly in the best position to judge of the technical qualities of art workmanship. He alone who has had personally to contend with difficulties can adequately appreciate them, but they often make so strong an impression as to nearly obliterate all else. The more subtile elements of originality and inventiveness may be pushed aside, and the form lost under the detail.

A fine appreciation is not always combined with original invention; and even although it may be, the power of execution may not have been acquired; it is sufficient, therefore, for the non-professional critic to express his opinions, and it would be absurd to ask him to give an example of what he desires.

The general education of the artist is too often of a very limited character, and confined to his own peculiar province. Mathematical exactness he may have, and be entirely devoid of poetical feeling; he may be embued with an intense love of nature, and be quite ignorant of history; he may have some knowledge of anatomy, and be obtuse in the observation of character. He who is confined to one chamber of the palace must certainly know every small feature of it, better than he who ranges through the halls and corridors, and has acquired a general knowledge of the arrangement, decoration, and furnishing of the whole building.

The architect must possess a knowledge of styles, in order to be able to produce satisfactory work. The work itself may, however, although perfectly accurate in every particular, be cold, spiritless, and devoid of beauty; nay, it may even possess a considerable amount of beauty, but that may have been produced by the mere accurate copying of a fine original conception. Such a work may be admired by those not in the secret, but they who have a knowledge of the subject are in a better position to judge of its true merits.

There are two classes of individuals,—the poetic and the prosaic,—each looking upon the proclivities of the other with disfavour. The sublime ignorance of art displayed by some is only surpassed by the supreme dogmatism of their dicta regarding it. "Looking through their own loopholes, they fancy they see the whole world." The ever-varying form of the clouds and delicate gradations of colour, which fade away in the distance, may be reflected in the retina of the eye, but not photographed on the brain. The taste must be cultivated before it can be of value, practically or theoretically.

To the merely practical man of business usefulness is the acme of perfection; if a building is adapted to the purposes for which it is intended it matters little to him that it is devoid of expression. If a church more resembles a concert-hall than a place of worship, that is no concern of his provided he is comfortably seated, and can hear and see well. Expression in architecture, and that higher fitness (which does not necessarily militate against usefulness) which accords with refined natures, is to him a myth, a stumbling-block in the way of utility. He has no idea of making a sacrifice for art, however small, unless it will pay or contribute towards his comfort or desire for ostentatious display. A trumpery erection coated with cement and made to imitate stone is quite as good as one produced in the genuine material, if it attracts the eye and answers the purpose of an advertising medium. And as there are literary hacks ready and willing for hire to pander to a vitiated appetite, so are there men following the profession of architecture equally willing, for a like consideration, to foster a debased taste regardless of the effect it has upon the progress of the art. These charlatans do find admirers amongst the vulgar and uncultivated; but the man of culture and refinement looks upon them, not so much with a feeling of hatred or contempt as with a certain degree of disgust.

There is another class of architects, honest and enthusiastic, but without originality or firmness, who are wafted about by every breeze. No sooner does an architect of ability produce a novelty than it is caught at, imitated, and lauded as the one thing needed. What was once considered contrary to "true principles" is defended on the ground of picturesqueness, and beauty is found in objects which were formerly passed every day unobserved. To the calm and dispassionate observer these escapades afford a source of amusement similar to that he would derive from looking on at a fancy ball. The figures are decked out in ancient costumes, but the modern face and action are plainly discernible notwithstanding the bygone fashion of the garb; it is not worn with perfect ease and naturalness; it is put on for the amusement of the passing hour, and it becomes the wearer passing well, but he will be more at ease and natural in the garb he dons on the morrow. Having "strutted and fretted his hour" as prince or noble, he subsides into his wonted oblivion.

No one would now, if he could help it, travel by the slow, cumbersome, jolting diligence, with its plunging team, urged on by a quaintly-attired postillion in high boots and long whip; it is picturesque enough, but the shrieking, whirring railway train is preferable. During these fine summer days, however, when on pleasure intent, we do not object, nay, we decidedly prefer, the resuscitated and well-appointed stage-coach which dashes along between bushy hedges, past gabled cottages, and over bridges spanning clear streams, giving one a sense of freedom and enjoyment unknown in a pent-up railway compartment. All old fashions are not to be despised: it depends upon how they are used, and how far they are compatible with modern requirements and ideas.

TEMPERED GLASS.

SINCE we first mentioned in our columns the important discovery of M. de la Bastie, much has been written by contemporaries on the subject; and there can be no doubt that his invention, which consists in "tempering" glass to such a degree as will make it, under certain conditions, practically unbreakable, is deserving all the attention it has aroused, being, as we think, destined to create a complete revolution in the mode of applying metals for industrial and other purposes. There is scarcely a branch in the whole domain of arts, sciences, and manufactures, where its usefulness will not in time be appreciated.

We advisedly use the word "tempering," having been informed by M. de la Bastie's agents in this country that this can be considered the only proper designation of the treatment the glass undergoes; and that the expression often used, "hardened" or "toughened" glass is incorrect.

The treatment to which glass to be "tempered" is subjected may be compared with Bessemer's process of converting steel. The secret of the process consists in the proportion in which the materials used for the tempering bath,—tallow and other oleaginous substances,—are mixed, as well as in the exact temperature at which the glass is plunged into the bath. This much is known, however, that the composition of the compound and the temperature of the bath are varied according to the different descriptions of glass to be treated. M. de la Bastie met with many difficulties in carrying on his experiments; but he has now successfully overcome them all. He raises the glass to a very high temperature. The hotter it is the less is the risk of breaking the glass, and the greater is the shrinking or condensation. Hence the advantage, and often the necessity, of heating the glass to the point of softening, which is attended by the difficulty that glass in this condition gets readily out of shape, so that it must be plunged into the bath almost without touching it. In plunging the hot glass into a heated combustible liquid, the latter is apt to take fire, and cannot easily be extinguished, so that time and material are lost. M. de la Bastie now places the tempering bath in immediate connexion with the heating oven, and prevents access of air. When the articles in the oven are heated to the required degree, they are made to slide (the floor of the oven being made to cant, so that it may be turned to a sloping position) into the adjoining bath without being handled, ignition of the bath being prevented by the exclusion of air. To avoid the clearness of the glass being affected by the furnace-flame, it is heated in a muffle, to which the flame has no access, being applied externally. The shock of the fall of the glass into the bath is prevented by a sheet of wire-gauze, or asbestos fabric, on to which the glass falls. The changes which glass thus treated undergoes are remarkable; but it is thereby made fit to resist pressure to which ordinary glass would succumb.

We have said that this invention will cause an entire change in the application of metals to industrial and other purposes. We ought to have stated that it may in time completely replace such metals as lead, copper, zinc, iron, for certain purposes. The latter are almost unlimited. Besides the vast importance of the discovery to manufacturers of chemicals, who are stated to be the most eager to make use of it, its application is hundredfold, as it may be introduced into all branches of industry where formerly iron, lead, copper, &c., were employed. Pipes and receptacles in chemical manufactories made of this glass will not be attacked even by the most powerful acids. In breweries, its use will especially recommend itself, on account of its cleanliness, for pipes and vats, the latter now generally made of slate, the former of copper or lead.

Varied as will be its application for scientific and industrial uses, its utility for domestic purposes will be considerable. It will be a boon to the careful housewife; besides its utility for all articles of common household crockery, china, hot-water and washing apparatus, M. de la Bastie's invention will in future relieve her mind of all anxiety regarding her most favourite china and glass, for, if "tempered" by this process, they will be proof against the carelessness of the most careless servants. To give an illustration. Amongst several articles which we inspected and tried, one, which appeared to us to be a common china plate, turned out to be of the tempered glass enamelled on the top. It was thrown on the floor, gave forth a bell-like sound, but did not break. In fact, it may be thrown about anyhow without breaking. A square piece of glass, about ¼ in. in thickness, was put into a wooden frame, resting only with its sides on the latter, and we were surprised to find that it sustained the weight of an adult man. Chimney-glasses and globes will fly directly if the gas is turned on too suddenly on lighting up; tempered glass will stand any sudden changes. It is even stated that pipes made of this glass will withstand the greatest pressure, and that it would be worth while trying it for water-pipes. If it were once established to be proof against frost, what discomfort would be spared the householder of London, who looks, at the breaking up of frost, for the bursting of his water-pipes and its concomitant misery, as regularly as to the non-appearance of watering-carts when an east or north wind is blinding him with dust.

We should not omit to mention that there is a great probability of the efficiency and durability of the new glass being put to a severe test. We are informed that there is some prospect of its being used for the large tanks of the new Westminster Aquarium, now in course of erection. The glass plates forming the sides of the tanks are, of necessity, of such an enormous thickness, to insure safety, which is not always obtainable, as to make their construction very expensive. Glass tempered by M. de la Bastie's process, it is stated, need only be of a quarter the thickness of ordinary plate glass used for that purpose, and will even then resist any possible amount

of lateral pressure under the circumstances. Besides other and innumerable industrial uses the new glass is also spoken of as the material for the rollers for machines for calico-printing; and last, not least, it may possibly be used for large printing-types. The agents are in communication with a well-known type-founder, who intends bringing out his idea of using the tempered glass for types. There is no doubt that tempered glass will last longer than either metal or wood.

Besides the manifold uses to which we thus see the new glass may be applied, there is said to be one other advantage connected with it, and that is that a great saving will be effected in cooling the glass. Glass manufacturers know too well, and to their cost, how much glass is yearly spoiled in cooling. Expensive cooling apparatus are now generally constructed; but, still, the bill for spoilt glass is very heavy. The new process is said effectually to prevent all such waste.

We may add, in conclusion, that the erroneous impression has got abroad that Messrs. Abel Rey & Brothers are the agents for the sale of articles manufactured of tempered glass. We are requested by them to state that such is not the case. They are merely empowered, and their only concern is to effect sales of royalties to glass manufacturers or other persons wishing to make use of the invention in their particular branches of industry.

THE PATENTS FOR INVENTION BILL, 1875.

SIR,—On behalf of the Artisans and Inventors Patent Bill Amendment Committee meeting at this address, formed for the purpose of securing amendments in the Patents for Inventions Bill, 1875, we beg to send you the substance of the resolutions which the committee have adopted, showing the objections they take to the Bill in its present shape.

The committee consists of artisans and inventors, and persons professionally and commercially engaged in devising and practically applying new inventions; and, therefore, directly interested in the commercial and industrial prosperity of the United Kingdom.

The Bill bears evidence of an attempt to do justice to the interests of the inventor and the public, yet it contains many provisions which, while they must prove highly injurious to artisans and inventors of small pecuniary means, as tending to debar them from obtaining any material benefit from the efforts of their ingenuity, will be most detrimental to the public welfare, as such provisions will in various ways discourage the improvement of our useful arts and manufactures.

The objectionable provisions in the Bill are the following:—

(*a.*) *The requirement of the deposit of the full specification as the very first step* in obtaining protection for an invention, the effect of which will be, that until an invention is complete in all its details, no protection will be obtainable, nor advice or assistance to be had in regard thereto, without jeopardy; which requirement will also entail on the inventor the payment at the very outset (subject to the chance of loss if the application be rejected) of a considerable sum of money for costs of specification; matters of very great importance not usually effected without the employment of professional assistance, unobtainable except at some considerable expense.

(*b.*) *An Examination* before the grant of letters patent, which will be highly objectionable, inasmuch as it will form the groundwork for rejecting an application for a patent "by reason of the frivolous character of the invention rendering it not worthy of a patent," a matter no man, nor any set of men, can with any certainty be capable of deciding; as what may appear to be frivolous to one person will seem of importance to another; and, moreover, as this proposed examination is to take place before the invention has been practically tested in the workshop, or in actual industrial use, the decision must necessarily be arrived at upon very insufficient data.

It is desirable that there should be an inquiry into *novelty* previously to the issue of letters patent, based upon the examination of prior specifications of patents, public documents, and publications, or upon sufficient evidence offered by legitimate opponents. But the extension as proposed of such inquiry beyond novelty cannot prove otherwise than absolutely mischievous, as discouraging inventors, and therefore injuring the public.

(*c.*) The provisions of the Bill for *shortening some patents to seven years'* duration; in the vast majority of cases fourteen years being, as experience testifies, not too long. It is, however, submitted that if it be considered desirable, to meet the case of minor inventions (such as some of those now registered under the Utility Designs Act), to allow short patents for seven years to be taken (with the chance of renewal if the proper authority allows same); this might be effected by offering the option of suing out such short patents at one half the stamp-duties at each and every stage, beginning with the application which would induce many inventors to apply for the shorter term of patent.

(*d.*) The provisions as to forfeiture of the patent *for non-working of the invention within two years* from its date, and as to *compulsory licences*, is very mischievous, and no possible excuse exists for such enactments, except, perhaps, as applicable to cases where a patentee is proved to be abusing or misusing his patent rights and privileges; and such cases are so rare that they are practically no evil.

Further, the Bill requires amendment in its provisions generally, and especially as regards the power given to the Commissioners to make rules "prescribing and regulating (*inter alia*) the deposit of models in such cases as they think fit," as this would enable the Commissioners to call for models whenever they please, and thus entail a heavy burden on inventors, accurate models not unfrequently entailing the cost of 100*l.*, or even larger sums of money. Therefore the deposit of models should not be compulsory in any case.

The committee regret to find the Bill does not practically reduce the Government charge for a patent, which is what is greatly needed by artisans and inventors of small pecuniary means, who constitute the great majority of the inventors of this country, and who have for years past been complaining of the high scale of stamp duties imposed on patents in the United Kingdom; and if the Bill now before Parliament is not so altered as to allow provisional protection on deposit of a provisional specification for a sum of money not greater than a 1*l.*, as would be preferable, the first step to protection of an inventor should, at all events, be very cheap.

In regard to the Government dues on letters patent, there is no valid reason whatever why the cost of securing the right to obtain remuneration for devising and developing an invention should amount to many pounds, whilst the right to remuneration for literary work under the Copyright Acts does not amount to many shillings; copyright, moreover, unlike patent-right, not being limited to fourteen years, but extending to forty-two years certain, and even exceeding that term in case the author lives longer. As artisans and workers, on behalf of industrial progress, the committee feel that an injustice is done them by heavily mulcting them, because their brain-work relates to our industrial progress, which would not be the case if it related to our artistic progress or literary work, and the Bill ought to be amended, so that all stamp-duties be much smaller in amount, especially the stamp-duty payable at the first stage.

We are, Sir, your obedient servants,

THOMAS PATERSON, Chairman,
C. GRAHAM CARTTAR, } Joint Hon.
THOS. MOTTERSHEAD, } Secretaries.

14, *Clement's Inn, Strand, W.C.*,
June, 1875.

A PRETTY PICTURE OF MIDDLESBROUGH.

THE town of Middlesbrough, that lays claim to be a model borough of neatness, cleanliness, and all that can be desired, in sanitary matters, has been thus described by one of its own officers, in a report to its Sanitary and Drainage Committee:—

"Myself and assistant have made an inspection of nearly the whole of the town. We have served, during the last three months, 600 notices on owners and occupiers, mostly for wet ashpits, defective drains, and for whitewashing houses and yards. But there is yet a large number of back streets, or 9 ft. passages, still unpaved. Some others are in a very bad state. But what I want most especially to call your attention to is several old places in the town where ashpits are still uncovered, and are of large area, with the whole surface covered with filth, disseminating gases from the excrement and decayed vegetable refuse, which is injurious to health.

I wish also to call your attention to the midden system in a large part of the borough, more particularly where large rows of ashpits are placed, and emptied into the narrow 3 ft. passages, contaminating the air between two rows of houses, and the occupiers, inhaling the foetid atmosphere, causing enteric fever and other diseases. Scarcely one of these ashpits but is a nuisance, and when the contents are emptied into the narrow 3 ft. or 30 ft. street, the stench in these places is inhaled, and dangerous to the health and lives of people living near, more particularly to children of tender years. I would advise, with the consent of the borough surveyor and medical officer, to compel all owners of property to put in sanitary pail-closets. It would do away with the filthy state of the back streets, and make them fit to live in, instead of, as at present, the occupiers having to close their doors and windows to prevent the stench from percolating into the dwellings."

In reply to this recommendation, a member of the Sanitary Board said he believed the pail-closet system, adopted at Rochdale, at considerable cost, had now been given up, because the "game was not worth the candle."

THE NEW COUNTY LUNATIC ASYLUM AT BANSTEAD.

AT a meeting of the magistrates of Middlesex, on the 27th ult., at the Sessions House, Clerkenwell, Mr. A. Robinson moved, pursuant to notice, "That the plans and estimates now submitted to the court for the erection of the aftermentioned works at the third county lunatic asylum at Banstead be approved, viz.:—For erection of boundary walls, gateways, and entrance-lodge and weigh-bridge, at a cost of 8,870*l.*; farm buildings and fencing, 7,700*l.*; boundary walls of cemetery, 707*l.*; mortuary, 300*l.*; and that the committee appointed by the court to provide a third lunatic asylum be authorised to carry out the said works at a cost not exceeding the sum of 18,500*l.*" He said the plans had been submitted to the Commissioners of Lunacy, and they persisted on the mortuary being erected for the reception of male and female bodies in separate places, and that caused increased expense.

The Marquis of Salisbury said this was a small matter financially, but the requirements of the commissioners were so grotesque that he believed if the court saw fit to fight the question, the commissioners would have to give way in the face of public ridicule. He thought, however, as the matter was so small it was not worth while to fight it.

The report was then adopted.

Mr. Robinson then moved—"That the clerk of the peace be directed to execute the contract to be prepared between the committee and Messrs. Eastons & Anderson, the plans for which are now submitted to the court, and for the execution of which works the court granted a sum of money on the 23rd July, 1874."

The motion was put and agreed to.

PLASTER CASTS.

THE Prussian Government has offered two prizes of the value of about 150*l.* (3,000 marks) and 500*l.* (10,000 marks), respectively, for the discovery of a new method of cleansing plaster casts, statues, &c., and for the invention of a new material possessing the advantages of plaster, but which will not deteriorate by repeated washings.

As to the first, the method must be applicable in equal degree to all kinds of plaster occurring in trade, and must not diminish the hardness of the cast. In order to entirely preserve the delicacy of the form, those materials are absolutely excluded which do not soak into the plaster. It is not necessary to preserve the original colour of the plaster; a yellowish tint, or any warmer tint, may be allowed; but the evenness of the colour is at any rate indispensable.

As to the new material, it must easily allow casting in original moulds, without their becoming more injured than with plaster, and it must reproduce the mould as exactly as plaster. The solidity of the material must not be less than that of plaster, so that it may be used for the largest casts. Casts made of this material must stand repeated washings with soap and lukewarm water. The price of the material must not considerably exceed that of plaster; and the price of the moulds for casting must likewise not considerably differ from that of plaster moulds.

Competitors are to forward their consignments to the Royal Prussian Ministry of Public Worship, Instruction, and Health (Königl. Preussisches Ministerium der geistlichen, Unterrichts, und Medicinal Angelegenheiten), not later than 31st December, 1875.

Opening of New Board Schools at Burton-on-Trent. — Victoria-road Schools, which cover a site of nearly an acre, and are intended to accommodate 800 children, were publicly opened on the 24th ult. by Mrs. Henry Wardle, wife of the chairman of the Burton District School Board. These premises are the largest of the kind under the jurisdiction of the Board, and are situated in a very populous district west of the Midland Railway. The architects were Messrs. Giles & Brookhouse, of Derby. The schools cover an area of land about ¾ of an acre in extent, and are capable of accommodating 800 children. The foundation-stone was laid about fourteen months ago by Mr. S. C. Allsopp.

THE HASTINGS COUNCIL AND THE TOWN HALL PLANS.

AT the monthly meeting of the Hastings Council on Friday, the 4th inst., the Building Committee brought up a report, recommending that the premiums for the Town Hall designs should be given to "Palmam Perseverando," "Con Amore," and "St. Michael," "subject to having fulfilled, in every respect, the conditions mentioned in the instructions to architects, and giving, if required, satisfactory proof that the design can be executed for the sum named therein." A long and warm discussion arose.

The Town Clerk having stated that he had received a protest from "Con Amore," Mr. Councillor Hughes (builder) opposed the reading of the protest "until after the plans had been passed by the Council." His motion that the letter be not read was adopted.

Mr. Hughes then moved that the report of the committee, which had been carried by a large majority, should be adopted. There were plenty of practical men in the Council, and, as was now known, the choice had happened to fall upon two local architectural firms.

Mr. Russell having seconded,

Mr. Alderman Gausden said that he had moved, in committee, that an eminent London architect should be called in to decided on the plans. As that was defeated by a large majority, he would not now move an amendment, but state his own view. The Council had taken upon itself to become arbiters between all parties, and they were bound to do something more than merely carry out their own fancies. They had advertised for the best design, with a certain amount of accommodation, and at a definite maximum cost. The "Palmam Perseverando" plans had very grave defects. The Council had sent back five sets of plans because they did not give the required area to the large hall. But he now found it was proposed to give the first prize to a plan which had 622 ft. superficial in that room less than the Instructions required. In doing so he could not see they were acting fairly towards other competitors. Amid interruptions from Mr. Hughes and others, Mr. Gausden pointed out that the plan showed no corridors to pass from one part of the great hall to another, that the principal entrances were at the objectionable position of being by the sides of the platform, that the retiring rooms were within the big room, and that the police cells and some other rooms did not give the required area. He also alluded to the probable cost of the building, and asserted that the design did not come up to either of the requirements laid down in the Instructions. The arrangement in the design "Con Amore" was, to his own view, far superior. It was very well for gentlemen to say they had spent many anxious hours in deciding; but to say there was no town interest in it would be simply ridiculous.

Mr. Councillor Hill (architect) felt more and more sorry that Mr. Gausden's motion was not carried in the committee meeting. In the interests of his profession he felt he could not be silent, and must stand up in its behalf. Shortly after the plans were put up, he had heard, outside the Council, that two local firms of architects had coalesced to produce a plan, but he did not know which it was until the last meeting. He then saw immediately by the voting which it was. In justice to his profession he must say he thought the thing had been entirely mismanaged, and he deeply regretted it was so.

After some further discussion the report was adopted.

DRAINAGE, NORTHAMPTONSHIRE.

At the last quarterly meeting (held at Rothwell, Northamptonshire) of the Association of Sanitary Inspectors of the combined sanitary authorities in the counties of Northampton, Leicester, Rutland, and Bucks, under the presidency of Mr. Haviland, the medical officer of health to the combined area, the following resolution was adopted:—

"That this Association, after very carefully considering the different systems of sewage disposal, is of opinion that it is desirable to represent to the delegates of the combined area the necessity of their determining on adopting some dry portable system, such as that of the Goux Company under the entire superintendence of the Inspector of Nuisances as the simplest system of disposing of village 'sewage.'"

The president at the same meeting gave an outline of his late visits to Halifax and Aldershott, where he had seen the Goux system in full operation, and spoke strongly in its favour.

"GRINDING MONEY."

AN action was recently brought in the Clerkenwell County Court, by Mr. Double, a carpenter, against Mr. Elkington, of Golden-lane, St. Luke's, builder, to recover ninepence for grinding money in lieu of notice. The case was heard before Mr. G. Whitbread, the judge, on the 1st inst. The plaintiff conducted his own case. The defendant was represented by Mr. Jennings, solicitor, Leadenhall-street.

The plaintiff stated he had been in the employ of the defendant, and was discharged on the 14th of April last, at a few minutes before 5 p.m. He had been paid one hour's grinding money, but claimed two, alleging that it was the general custom of the trade to pay two hours' grinding money to carpenters and joiners, and that defendant had paid two hours in several cases in which workmen had summoned him to that court. In support of his case he called a fellow-workman (Mr. Ham).

Mr. Jennings, in addressing the court on behalf of the defendant, cited the case of Saunders & Stevenson *v.* Fisk (reported in the *Builder* the 4th March, 1871, p. 171); also the cases reported in the *Builder* of 24th April last.

The defendant, upon examination, proved that he only allowed one hour's grinding money. The reason he had paid when summoned on former occasions was, that he had been prevented from attending the court. He also admitted having paid a few exceptionally good workmen two hours.

Mr. Russell (defendant's foreman) corroborated defendant's evidence.

Mr. Grover, of Packington-street, builder, stated that he did not pay grinding money, and denied any general custom for two hours. He had been summoned to that court on two or three occasions for grinding money, but the plaintiffs had been non-suited.

Mr. Devereux, of Albion-road, builder, was next called. He denied the existence of any general custom for two hours, and stated that he paid one hour only. In his experience, he found that the moment a man received notice he ceased to work, but he did not grind his tools. He generally left the shop, and did not return until the expiration of the hour, sometimes not until the next day, for his tools.

Mr. C. Goolden, secretary of the Central Association of Master Builders of London, was next called. He stated that in February last he sent a circular to about 600 master builders desiring to be informed how far the allowance in time or money for "grinding" should be regarded as an "old or established" custom in the trade. Replies had been received from 109 firms only, from which he established that the custom which had existed when the men were engaged by the week had, since the hour system had been adopted, ceased to be general; about one-third of the firms allowed two hours, one-third allowed one hour, and one-third did not recognise grinding allowance at all. That, therefore, the balance of evidence he had collected was decidedly against the existence of a "general custom" of giving two hours.

The Judge, after complimenting the plaintiff on the skill he had shown in conducting his own case, stated from the evidence before him he was of opinion that the plaintiff had failed to prove the existence of any established general custom for payment of grinding money. He, therefore, had no alternative but to non-suit the plaintiff, with costs.

Mr. Ham, a carpenter, had also brought a similar action against Mr. Elkington.

The Judge, having ascertained that the evidence was in all respects similar to the foregoing, advised Mr. Ham to consent to a nonsuit, and a nonsuit was accordingly entered.

THORNBRIDGE, BAKEWELL, DERBYSHIRE.

DERBYSHIRE is rich in sites of villa residences and mansions. One of these, Thornbridge, built about 1785, by a Russian merchant, was sold three years ago to the present owner, Mr. Craven, of Manchester, who decided on taking down the old house, and erecting a more modern mansion in the Gothic style of architecture, which harmonises with many of the old Derbyshire buildings, such as Haddon Hall and others. The south front of the new house is well seen from the road leading to Hassop from Ashford. It has a central low tower, with a steeply-pitched roof and lead finial. Its gables are steep; windows mullioned; chimneys of dressed stone, set anglewise on their bases; the central door, richly moulded, has angle shafts with caps and bases. An oriel window forms a conspicuous feature over the door, and a bay window in the eastern gable is carried up two stories. The wall stone is principally from the old house, but has been hack-faced. The dressed stone is from Stanton Moor. The roof is covered with brindled Staffordshire tiles.

The interior, in addition to the usual entertaining rooms, of ample dimensions, has a lofty staircase hall, with the roof timbers decorated. The woodwork in this part of the house is of oak, and the lofty chimney-pieces are also of this material, with bevilled glass mirrors instead and many shelves and nooks for decorative china, the lower portion being of various marbles manufactured by Mr. Twigg, of Ashford. The hearths are tiled, the fire-grates being made by Messrs. Longden, of Sheffield, and the hand-painted tiles by Morris & Co. Mr. J. B. Mitchell-Withers was the architect. The contractors for the mason-work were Messrs. Clubley & Stringfellow; and Mr. Robertson, was the joiner,—all of Sheffield.

PLYMOUTH HIGH SCHOOL FOR GIRLS.

SOME time since the council of this school felt it necessary to have plans prepared for the erection of a building capable of accommodating 200 pupils, with the power of enlarging it for 300. The gentlemen who have sent in plans are Mr. James Hine, of Plymouth; Mr. E. Appleton, of Torquay; Mr. H. J. Snell, of Plymouth; Mr. H. J. Paull, of London; and Mr. H. Moorshead, of Devonport.

SCHOOL BOARD SCHOOLS.

Sheffield.—On the 31st ult. the schools erected by the School Board in Darnall-road were opened. The building is of Durnford Bridge stone, the whole of the rooms being on the ground floor. The front erection nearest the Darnall-road contains the girls' and infants' departments; the girls having a schoolroom 48 ft. by 20 ft., and three large class-rooms, cloak-room, lavatory, teachers' retiring room, &c. The infants have a schoolroom 59 ft. by 25 ft., with a large semi-circular recess for gallery on one side, class-room, cloak-room, lavatory, &c. Behind this building is a playground, with covered sheds, at the rear of which is the building for boys, which contains schoolroom 50 ft. by 20 ft., three class-rooms, lavatory, cap-room, and teachers' retiring-room. A separate playground, with covered shed, is provided for boys. The school-rooms are warmed on the hot-water system known as "Perkin's patent," and the class-rooms have open fire-places. The windows have swing casements in the upper parts, the walls are boarded up to the window cills and plastered above, and the internal joiners' work is of pitch pine. The contract for the building, including fittings and furniture, is 5,735*l.*, and the number of scholars it will accommodate is 753, or, allowing 8 ft. for each child, 889. The contractor for the works is Mr. Thomas Hopkinson, of Retford.——The Park Schools, situated in Norwich-street, were opened on the same day. The front building will be occupied by infants on the ground floor, with school-room and two class-rooms; and by the girls on the upper floor, with school-room and three class-rooms. The boys will occupy a separate building in the rear, which has school-room and three class-rooms. The entrance will be from Duke-street-lane. The contractors were:—For the masons' work, Mr. James White; joiners' work, Messrs. Sharpe & Son; slating, Messrs. Harrison & Chadwick; plastering, Mr. A. Berisford; plumbing, Mr. J. B. Corry; and painting, Mr. J. Puttrell. Accommodation is provided for 738 scholars, as now calculated, or, 963, allowing 8 ft. for each. The contracts amount to 6,334*l.* 16s., including fittings and furniture. The architects for both schools are Messrs. Innocent & Brown.

New Middle-Class School for Cowley St. John.—In consequence of the Middle-Class School in the Iffley-road, conducted by Mr. Shaw, being found inadequate for the accommodation of the scholars, the Rev. R. M. Benson is about to erect an extensive school on the site and grounds of the present iron church. Plans for the same have been prepared by Mr. C. Rolph, architect, of Reading, and accommodation will be provided for 200 boarders besides a large number of day scholars.

CHURCH BUILDING NEWS.

Fisherton (*Salisbury*).—The enlargement of this church is about to be commenced, the existing accommodation being insufficient for the requirements of the parish, the population numbering 3,673, and the seat-room in the church being only for 622. In accordance with the recommendation of Mr. Wyatt, the diocesan architect, it is intended to take down the north wall of the nave, and to erect upon a portion of the adjacent consecrated ground a north aisle, and to build an arcade between the nave and aisle; to take down the lower portion of the west wall of the nave, re-set the windows, form a new entrance to the church, and erect a porch; to erect a new staircase to the gallery at the west end of the nave; to remove and re-fix the prayer-desk and pulpit, placing the latter near the south-east corner of the nave, and to provide a new lectern; to remove the present stoves and apparatus for heating the building, and to provide a new heating apparatus in a chamber underneath the new aisle. It is estimated that the cost of the proposed works will be 1,600*l.*, of which 1,330*l.* have been raised by voluntary contributions. By the enlargement proposed, 200 additional sittings will be obtained, half of which will be free and unappropriated.

Whittington (*Northwold*).—About seventeen years since the Rev. C. M. R. Norman, the late rector of this parish, purchased a small chapel which had been erected by the Wesleyan Methodists at Whittington, a hamlet at Northwold. This building, at his own expense, he converted into a district school church, it being used for the purpose of a school during the week and a church on Sundays. The ministerial labours of Mr. Thwaites here having necessitated further accommodation, Mrs. Norman, on the death of her husband, the rector, in 1873, to retain the services of Mr. Thwaites, who was specially ordained, undertook, at her own cost, to build a new church, and endow the same with 3,000*l.*; she also gave a further sum of 500*l.*, the interest of which is to go for future repairs; and arrangements were made to convert Whittington into a separate parish. The edifice is now completed, and together with the churchyard has been consecrated by the Bishop of Norwich, and opened for divine service. The building, which consists of a nave and chancel, is built of Boxground Bath stone and Brandon flint work, and is in the Early Decorated English style of architecture, from a design by Mr. R. M. Phipson, of Norwich; the builders being Messrs. Bardell, Brothers, of Middleton and Lynn. The contract was 2,500*l.*, but this was increased by "extras," &c. There is also an unattached parsonage, built of napped flint-work from Brandon, with red-brick facings.

Adwick-le-Street.—During the last few weeks considerable alterations and improvements have been made to the church at Adwick-le-Street, the principal portion of the cost being defrayed by Mr. Thomas Walker, of The Woodlands. Through this gentleman's liberality a new south front of stone has been built, and a new porch erected, the latter being constructed of stone, oak, and glass. This work has been carried out under the superintendence of Mr. W. M. Teulon, of London, by Mr. A. Clark, builder, of Adwick-le-Street. Additional interest has been added to the church by the insertion of two stained-glass windows, the work of Messrs. Ward & Hughes. The church floor has also been newly laid with tiles. The nave has been covered with plain, the chancel with plain and encaustic, and the reredos with glazed tiles. The cost has been about 800*l.*

St. Leonards.—A new church, which has been erected at St. Leonards at a cost of 20,000*l.*, capable of seating 1,000 persons, was opened last week. The sermon was preached by the Rev. Malcolm MacColl, rector of St. Botolph, Bishopsgate, and the collection at the close amounted to 500*l.*

Haywood (*near Doncaster*).—The new church here is built, though within the boundaries of the parish of Burghwallis, just on the confines of the parochial districts of Burghwallis, Moss, Fenwick, and Owston. The edifice has been erected in memory of Mrs. Birch, a former inhabitant of Skellow Grange, by her husband, Mr. Scholes Birch, at a cost of about 3,000*l.* It is dedicated to All Saints, and is in the Gothic or Early English style. It consists of nave and chancel, with a tower and spire at the western end. The length of the building is 72 ft. and the height of the spire 100 ft. The nave measures 39 ft. by 22 ft.; the chancel, 22 ft. by 14 ft.; and the bell-tower is 11 ft. square. The church is built of stone from the Park Nook Quarry, and internally it is lined with white and red Pontefract pressed bricks. Outside there are three gable crosses. Internally, the small shafts of the chancel window, and those in the sedilia are of red Mansfield stone. The roof and the tower floor are of pitch pine, covered with patent inodorous asphalte felt. The porch and the priest's door in the chancel are of deal framing, covered with oak match boarding. The floors in the nave aisles, tower, and porch are covered with Staffordshire tiles, and that of the chancel with Godwin's tiles. The interior is fitted up with pitch-pine stalls, for 150 sittings. The font is of Ancaster stone. The eastern, or principal window, has been filled with stained glass, by Messrs. Clayton & Bell, of London. The bell in the tower weighs 8 cwt. It was cast by Messrs. Taylor, of Loughborough. The church is heated by hot air by means of a stove. The architects were Messrs. Buckeridge & Pearson, of London, but in consequence of the first-named gentleman having died soon after the work was commenced, the superintendence of the works devolved on Mr. Pearson. The builders are Messrs. Shillito & Morgan, of Campsall.

Seathwaite.—On the 17th ult. the Bishop of Carlisle consecrated a new church at the hamlet of Seathwaite. The new edifice, which stands on the site of the old chapel, has been built partly by the liberality of Mr. H. W. Schneider, of Belsfield. It was erected from plans prepared by Mr. Schneider, and executed by Mr. J. Brownrigg, of Bowness. Internally the dimensions of the chapel are,—length, 50 ft.; width, 18 ft.; and height from the floor to the ridge, 30 ft. The exterior is of plain, undressed, blue freestone, with Roman crosses of the same material, though dressed, over the eastern and western gables, and the entrance-porch, on the south side. Inside, the fittings and furniture are of plain polished pitch pine, the seats being capable of accommodating nearly a hundred worshippers.

Baxterley (*Warwickshire*).—Baxterley Church, so well known from the connexion of Bishop Latimer with it, has been re-opened by the Bishop of Worcester, after undergoing restoration and enlargement. The nave has been entirely rebuilt, and a new aisle added on the north side. The south wall, which was dangerously leaning over, has been rebuilt, and every feature replaced in its original position. The church is of early Norman date, but very little of the original remains. The flat plaster ceiling has been replaced by an open roof, to the old lines, and the gallery has been removed. The new aisle is divided from the nave by stone piers and arches. A porch of English oak has been added, and a new bell has been hung in the tower. The roofs are covered with red tiles. Messrs. Paull & Bickerdike are the architects, and Messrs. Fox, Brothers, of Atherstone, the contractors.

Grafton Flyford. — The village of Grafton Flyford was enlivened by the re-opening of the restored church, which has been entirely rebuilt, with the exception of the tower, after plans prepared by Mr. Hopkins, of Worcester, architect, the work being executed by Mr. Warner, of Malvern Link.

Hales Owen.—This old church, having recently undergone restoration, under the direction of Sir Gilbert Scott, has been reopened. The aim of the architect has been to preserve the ancient features of the fabric, to bring to light those which had been hidden by successive "restorers," and to restore those which had been mutilated. At the west end the floor has been lowered sufficiently to expose the bases of the columns supporting the roof. The roof at this part of the building has been restored, the old plate-roof being removed and replaced by purlins and tie-beams of oak. There not being sufficient funds to carry out the entire restoration of the oak roofing, and as the old plate ceiling of the north and south aisles will have to remain for a time, two temporary flying arches have had to be erected, both to support the plate ceiling and divide it from that portion of the west roof which has been restored. The north and south aisles were rendered unsightly by two wide galleries, whilst there was a children's gallery beneath the tower, which stands in the centre of the church. These galleries have been abolished, and the rough plaster has been removed from the base of the tower, laying bare the original stone. The roof of the body of the church has been renovated, an open perpendicular carved oak roof being substituted. On the southern side of the chancel traces of old Norman arcading have been carefully brought into view; whilst on the north side the ancient rood-loft staircase has been opened out. Between the east portion of the north aisle and chancel was an arch, which was carried in a very clumsy manner to the floor. The lower part of this aisle has been taken away, and the arch rests on two corbels. By the removal of a monument on the north side of the sacrarium, an old door to the vestry, a sedilia, and an old Norman window were discovered. These have now been once more cleaned. The church throughout has been paved with Godwin's encaustic tiles. The cost has been about 4,000*l.* Messrs. Collins & Collis, of Tewkesbury, were the contractors.

DISSENTING CHURCH-BUILDING NEWS.

Leeds.—A new Wesleyan Methodist Church, in Beckett-street, has been opened for public worship. The building, which is from designs by Messrs. Hill & Swaun, architects, Leeds, is in the Gothic style, modified to suit the requirements of the denomination. It consists of nave, with transepts, the length being 59 ft.; width across nave, 37 ft. 6 in.; and across transept, 53 ft. 6 in. The roof is open, and ceiled across the collar-beam, and has arched rib bindings, the whole of the timbers being seen, and stained and varnished. The chapel will seat 600 persons, including the accommodation in the gallery, which extends round three sides of the building, and is supported on ornamental cast-iron pillars, enriched in colour and gold. Access is had through an open loggia of three arches, with shafts of Bolton Wood stone, into an entrance-lobby, extending the whole width of the chapel, with staircases to gallery and basement at each end of the same. Above the loggia is a large seven-light window, filled in with geometrical tracery and stained glass. To the left of this is an octagonal turret, which rises to a height of 78 ft. At the rear of the chapel is the minister's vestry. In the basement are vestries and school-room. The chapel is lighted by large starlights suspended from the roof, and brackets under the gallery. The warming apparatus has been supplied by Mr. E. Lumby, of Halifax. The contractors were:—Masons' work, Mr. H. Smith; joiners' work, Mr. J. H. Thorp; slating, Messrs. Watson & Wormald; plumbing, Mr. J. Hall; plastering, Mr. William Garlick. The cost has been upwards of 5,000*l.*

Moulton.—The memorial stones of a new Primitive Methodist Chapel were laid here on the 24th ult. The building adjoins the old chapel, which is to be used as a schoolroom. The design and plans have been prepared by the Rev. W. Wray, of Manchester, in the Italian style of architecture. The area of the building is 51 ft. 6 in. by 33 ft., there being 17 ft. from the floor to the roof. The chapel will be heated by Trusswell & Holden's hot-air apparatus. The cost will be about 800*l.* Mr. Whittle, of Manchester, is the contractor; the brickwork being sub-let to Mr. Lanabert, of Altrincham, and the masonry to Messrs. Rathbone, of Northwich.

Tarvin.—The new Wesleyan chapel has been opened for divine service. It is Gothic in style. The memorial stones were laid on the 28th of October, 1874, by Mr. Ellis Davies, of Liverpool, and Mr. J. Simpson, of Runcorn; and the work of erection has been carried on by Mr. Langford, of Tarvin. The walls are of brick with stone dressings. The chapel proper provides accommodation for about 160 persons, the back part of it being raised slightly. On the right of the rostrum is the schoolroom, which is open to the chapel, and this will seat 100 more persons. The vestry will also be utilised, and forty persons can be seated there if necessary. The total number of sittings is 300. When not in use the vestry and schoolroom will be shut off from the chapel by folding doors. The cost of the building, including heating, lighting, fencing, &c., is 700*l.* The architect was Mr. John Wills, of Kingsbridge.

Litherland.—A new Wesleyan Chapel has been opened here, situate in Wilson's-lane, facing Litherland-park. It comprises, in addition to the chapel proper, a Sunday-school, band-room, society class-room, and a chapel-keeper's house. The design is in the Gothic style. The material used is grey brick, relieved by bands of coloured pressed bricks and red stone dressings. The south side of the chapel is divided into four bays by buttresses projecting from the wall line, and ascending in two set-offs formed by diagonal brickwork; each bay contains a two-light win-

dow terminating with pressed brick arches, and stone keys. At the rear of the chapel is a house for the chapel-keeper. The main front of the chapel is pierced by a two-light window on each side of the porch, the centre of the gable over the porch being formed into a bay by a large pressed brick arch, and pierced with a three-light window. The porch-entrance is formed by a Gothic brick arch, with moulded stone label, terminating at the spring on carved bosses. On the right of the entrance, and forming a wing from the body of the chapel, are the school, class, and band rooms. At the rear of the school-room, in proximity to the pulpit, is the minister's vestry. The inside dimensions of the chapel are 50 ft. by 33 ft., and it will accommodate about 320 persons. The roof is spanned by three open principals in varnished pitch-pine springing off stone corbels. The principals and purlins are the only wood-work exposed in the roof; the walls are finished stone face, and the ceilings, which are 30 ft. from the floor, are finished white. The pulpit and communion are spanned by a large labelled arch, and terminate on carved bosses. The seats are open-framed pitch-pine, with filled-in sloping backs, and have book-boards and hat-racks, the whole being varnished. The chapel and school and class-rooms are lined with pitch-pine wainscot, 4 ft. high, and finished with moulded capping. Both chapel and school are heated by hot water. The contract has been carried out by Mr. Wm. Roberts, of Liverpool; Mr. C. W. Mullin, of Walton-road, being the contractor for the joiner work. The estimated cost is about 1,600*l.* Mr. Stephen Middlebrook, of Walton, was the architect.

West Bromwich.—The memorial stones of the new Wesleyan Chapel at Carter's-green, which will stand at the junction of the Wolverhampton and Dudley main roads, have been laid. The building is in the Early English style of architecture, and will be built with red bricks and stone dressings. The sittings will be of pinewood, stained and varnished, and will seat 450 persons; but the place is so constructed that galleries,—which will accommodate 350 worshippers,—can at any future period be erected. The cost is estimated at about 4,100*l.* Mr. Loxton, of Wednesbury, is the architect, and Mr. Trow, of the same place, the builder.

Southport.—A new Methodist New Connexion Chapel has been opened in this town. Its site is in Manchester-road. The six memorial-stones were laid by lady friends nearly twelve months ago. The style of the building may be termed Italian treated to suit modern requirements, and will seat about 250 persons on the ground-floor. The architects are Messrs. Mellor & Sutton, of Southport. The contractor for the work is Mr. T. Cheetham, of Liverpool and Southport; Mr. Philip Richards, of Liverpool, is the subcontractor for brickwork; and Messrs. Johnson & Co., for plastering.

Batley.—On the 8th ult. the foundation-stone of a new chapel and school, in Taylor-street, Batley, for the Methodist New Connexion denomination, was laid by Mr. John Jubb. The congregation worshipping at Zion Chapel had become so numerous that it was found necessary to erect another chapel and school, and the site selected is in a new part of the town, where the population is rapidly increasing. The new structure, which will be in the modern style of architecture, and is estimated to cost about 2,600*l.*, will be built from designs by Mr. John Law, architect, of Batley, and will accommodate upwards of 400 persons in the chapel, and 275 scholars in the school.

A NEW CEMETERY AT BLOXWICH.

On the 27th ult., the Bishop of Lichfield consecrated the Established Church portion of a new cemetery at Bloxwich, provided by the Walsall Town Council for that district. The area of the land enclosed is six acres, situated in Holly-lane. In the centre are two chapels, in Gothic style, one intended for Nonconformists, and the other for members of the Establishment, each 33 ft. by 16 ft., with a robing-room, 9 ft. square, attached. These are divided by an archway, with a moulded arch at either end, springing from coloured stone columns, with carved capitals; and above this rises a square tower, which forms the base of an octagon stone spire, 70 ft. high. The walls of the buildings are faced with pressed red bricks, with Attleborough stone dressings to the buttresses and angles, and Codsal Wood stone for the shafts, columns, and bands. In the western elevation are two tracery Gothic windows, glazed with cathedral glass, and stained margins; and over each porch is a window in keeping with the general design, with coloured stone columns, carved capitals, moulded arches, labels, and heads. The internal fittings, viz., seats and reading-desks, are of pitch pine, and the roofs are open, and stained and varnished. The sexton's lodge, built with red bricks, with blue and white brick bands and dressings, is in the Modern Gothic style. The grounds have been planted by Mr. Parnell. All the work has been designed by Mr. J. W. Boys, borough surveyor. The contractors were Messrs. Rowley & Lynex. The cost of the buildings was 3,700*l.*, and the total cost of the cemetery 5,000*l.*

VALUE OF LAND IN THE CITY.

SOME ground in Clement's-lane, City, was disposed of last week (Messrs. Fox & Bousfield, auctioneers), when 3,880 superficial feet obtained a ground-rent of 2,230*l.*, or nearly 11s. 6d. per foot. Lease, eighty years.

Instructions have been given by the purchaser, Mr. Thomas N. Stokes, to Messrs. Batterbury & Huxley, architects, to prepare plans for new offices about to be erected on the site, at an estimated cost of 12,500*l.*

COMPENSATION TO WORKMEN FOR ACCIDENTS.

A BILL is now before Parliament "to provide for Compensation to Workpeople engaged in common Employment in Cases of Injury by Accidents when employed."

It extends the jurisdiction of county-court judges to the objects and purposes of the Act, and provides that it shall not be any ground of defence to an action brought by a workman for compensation for injuries received in the course of employment, that the person by whose negligence the injury was occasioned was employed in a common employment with the person injured, or the risk of injury was knowingly or voluntarily incurred.

It is also provided that actions must be brought within three months, but the amount of compensation shall be limited to 200*l.*; that allowances from sick and provident funds are to be taken into account; and that the Act is not to extend to persons who do not employ *more than ten workmen.*

Books Received.

A History of Caricature and Grotesque in Literature and Art. By THOMAS WRIGHT, M.A., F.S.A. London: Chatto & Windus.

THIS, which appears as a new work, is, if we mistake not, a re-issue by the enterprising publishers whose names are attached to it, of a book which was before the public, in its original form, a good many years since. The intention of the work is, as stated in the author's preface, to follow the subject chiefly "through those branches of it which have contributed most towards the formation of modern comic and satiric literature and art in our own island"; some such limitation being necessary in order to bring the subject within the limits of a convenient sized volume. During the feudal period the point of the grotesque and satirical productions of one nation can hardly be understood without a general knowledge of the whole literature of Western Europe; it is only subsequently to this that the literature of each separate country becomes more entirely its own. "Thus the satirical literature of the Reformation, and political caricature, had their cradle in Germany, and in the earlier half of the sixteenth century carried their influence largely into France and England; but from that time any influence of German literature on these two countries ceases. Modern satirical literature has its models in France during the sixteenth century, and the direct influence of this literature in France upon English literature continued during that and the succeeding century, but no further. Political caricature rose to importance in France in the sixteenth century, and was transplanted to Holland in the seventeenth; and until the beginning of the eighteenth century England owed its caricature, indirectly or directly, to the French and Dutch; but after that time a purely English school of caricature was formed, which was entirely independent of Continental caricaturists."

Accordingly, Mr. Wright takes his readers, after commencing with a general sketch of what is known of caricature in Roman literature, through the various forms which it assumed in the Middle Age period, and which aim mostly at little more than coarse joking, with a more general than special point, until, in the sixteenth and seventeenth centuries, caricature enters more decidedly into the field of politics, and becomes an important agent in the attack on obnoxious Governments, and their projects and weaknesses. The most effective part of Mediæval caricature is in the subjects of *diablerie*, of which Callot was a noted author; but Mediæval caricature generally is on a wrong principle, and only appeals to a very childish order of understanding; consisting much more in a conventional putting together of certain emblems, such as heads and limbs of different animals attached to the body of a man, each of which had its own meaning, understood by those to whom it was addressed, so long as it was recognisable, whether well or ill drawn. It was only in times much nearer to our own day that the school of artistic and intellectual caricature was formed, which attacked by seizing and humorously exaggerating the features and character of a face, or the position of the political situation which it was desired to bring into ridicule. This order of caricature, as it was carried out by the best of the modern satirists, requires real wit and considerable power of draughtsmanship; the latter quality being possessed in especial by Gillray, whose carefully-drawn exaggerations of the physiognomy of his victims are as precise and finished as possible. A consideration of these works, so near our own day, shows how much we have progressed in refinement and charity during that comparatively short interval: the caricatures of the days of the French war and of the Regency being absolutely cruel in comparison with anything that would be tolerated now. The kind of general glance at the subject, afforded by such a volume, hardly raises our idea of the wit of the human race; a very large proportion at least of the caricature on record being rather remarkable for mere coarseness and buffoonery than for anything which deserves the name of humour; but it gives a valuable insight into the ways and feelings of past generations. The book will be found interesting.

VARIORUM.

"THE Skeleton at the Plough, or the Poor Farm Labourers of the West" (*Beehive* Office, Bolt-court), is a little book which also includes "the Autobiography and Reminiscences of George Mitchell, one from the Plough." Mr. Mitchell has so good a cause, and has assisted in bringing about already so much improvement in the condition of a depressed class, that he could afford to do without the sensational title and ugly engraving with which he has headed his book, and which enables opponents to fix on it the title exaggeration. His case would be much stronger without these. Of Mr. Mitchell's own career we have before now spoken. It is a very remarkable one, and should serve to encourage others equally ill placed. He ran away from his work as a half-starved plough-boy; got some, little knowledge of stone-working at Ham Hill, and now, notwithstanding losses and disasters, is a prosperous tradesman. Whether or not we agree with him in all his opinions, we can praise him for the determination and disinterestedness with which he pursues a course he thinks likely to benefit a much-neglected and down-trodden portion of society.——We will not pretend to limit the number of editions through which the June number of the *Contemporary Review* will run. Attention has been adventitiously directed to an article in it on the Life of the Prince Consort and the Court of Queen Victoria, by the attribution of it to Mr. Gladstone, and we have no doubt correctly, but the beauty of the article is such that we are satisfied the desire to read it will extend with the reading of it.——The Birmingham correspondent of the *Engineer* says as to Foreign Competition:—"This afternoon the market was astonished to learn that the makers of railway spikes and bolts in Belgium are underselling Staffordshire makers by the enormous difference of 8*l.* per ton. At a price embracing that difference they have just taken an order virtually from our own Government, for the East India Railway; yet it has been usual for certain of the orders for that line to come at this season into this district. Orders for spikes for Finland the Belgians have also

wrested from us by a difference of fully 4*l.* to 5*l.* per ton. Further, we have just been largely undersold by firms in France, which have well beaten us in competition for an order for nuts and bolts distributed by the London, Brighton, and South Coast Railway. All this is taking place at a time when the assumption of operative nut and bolt makers as a trade organisation is something remarkable. In illustration of what they are doing, I cannot do better than report that a special meeting of the executive committee of the National Amalgamation of Nut and Bolt Makers, at a public-house, at Darlaston, the following 'special business' was transacted: — The council took into consideration the resolutions adopted by the conference, 'That this conference do not allow any members of this association to carry their work to the warehouse, or from the wagon, or to the shears. Any member doing so shall be fined 2*s.* 6*d.* And that the executive council give such employers notice that such system will be discontinued when considered desirable by the council.' 'That employers provide olivers for nut and bolt makers who are members of the association.' Having discussed both resolutions, it was resolved 'That a circular be sent to each employer, where it is the practice of carrying iron from the work to the warehouse, informing them that such a system will be discontinued on and after a month on Saturday week'; and 'That on and after the same date each employer must supply each bolt-maker with an oliver irrespective of sizes, and all nut-makers with olivers from ⅜ upwards.' Hereabouts it is well known in the trade that the very best forks for all kinds of agricultural uses are being made, and so extensive is the usual demand in spring and in summer, that ironmongers are seldom able to supply their necessities if they should not have forecasted that demand. To the satisfaction of the ironmongers, but by no means so to the edge toolmakers, this seems likely to be reversed. United States forks are now being sold in this market which are 15 per cent. lower in price, and in quality 20 per cent. superior to the best English product. The implement merchants of this district are good judges of such articles; and it is somewhat alarming that by certain of these, orders should have been given for as many as 100 dozen in one line."

Miscellanea.

Victoria (Philosophical) Institute.—The Radcliffe Observer (Rev. Robert Main, F.R.S.) delivered the address at the ninth annual meeting of this Institute, which was held on Monday evening last, at the house of the Society of Arts. The room was crowded. The address itself was in three sections:—1. A sketch of most important discoveries in physics, chiefly astronomical, which have been made during the last few years; 2. A slight review of some of the most startling assumptions in two recent publications,—namely, Mill's "Essay on Theism," and Strauss's "Old and New Faith"; 3. A consideration of the Atomic Philosophy in connexion with Dr. Tyndall's Belfast address. Mr. Main concluded with these words:—"With regard to physical science, I think we have seen that its real advances are in favour of religious faith. The mysterious atom in which some can see the 'promise and the potency of all terrestrial life,' has, to my mind, brought God nearer to us. We now see the elements of which it has pleased Him to make the worlds; we see the presence of that one Supreme Intelligence as distinctly in the weed that grows and the flower that blossoms on our own planet, as in the stars and nebulæ, which at still unmeasured or unimagined distances reflect His glory and proclaim His unvarying laws." The Lord Mayor having moved a vote of thanks, after some remarks by Lord Shaftesbury, Lord Harrowby, the Bishop of Llandaff, and others, the members and their friends assembled in the Museum, where refreshments were served.

Hotel and Aquarium, Great Yarmouth. Great Yarmouth, we are informed, is to have a new hotel, to which is to be attached an aquarium, a large skating-rink, a winter garden, a music-hall, and a ball-room. The site acquired is situated on the marine drive, immediately opposite the Britannia Pier, and bounded on the north side by the Regent-road, which is to be widened to give better access to the building. Mr. Edward L. Paraire, of London, is the architect engaged.

The Lewes Waterworks. — The efforts which the Lewes Water Company have been making during the last few months to obtain a new and abundant supply of water from sources, the purity of which is beyond all question, have resulted successfully. The construction of the necessary works was entrusted to Messrs. Easton & Amos, and the manner in which they have carried out the task has, we understand, given satisfaction to the directors. A new well has been made, 24 ft. deep, by the sinking of four iron cylinders, 6 ft. in diameter, and these have been carefully joined together to prevent the possibility of water entering from the outside. The bottom has also been cemented, so that in fact the cavity is completely water-tight. Through the centre of the bottom of the well a "boring" has been executed 116 ft. deep, lined with iron pipes 14 in. in diameter, securely joined: the top end of the tube thus formed projects some few inches above the cemented bottom of the well. Therefore at the present moment every drop of water pumped from the well must come from a depth of 140 ft., through the chalk rock which during the borings was found to be very hard. During the progress of the work tests were frequently applied, and although good water could be obtained at a much less distance than that to which the supply tube has been carried, yet it was not sufficiently profuse to be depended on as a source of constant supply, and therefore the works have been carried out to the extent already indicated. The result is that when the pumps are not at work the well remains filled to within 2 ft. of the top of the uppermost of the four iron cylinders. When the pumps are in operation 1,100 gallons of water are drawn per minute.

Royal National Hospital for Consumption at Ventnor.—A grand fancy bazaar will be held in aid of this hospital on Wednesday, Thursday, and Friday, the 16th, 17th, and 18th of June, 1875, at the Duke of Wellington's Riding School, Knightsbridge. A large sum is required to furnish the houses, to construct the subways, roads, drainage-works, &c., and to provide for the maintenance of the largely increased number of patients, there being no endowments. In addition to the articles usually to be found in most bazaars, some of the stalls will be furnished with very handsome and valuable gifts, notably two stalls with Oriental and Japanese laquered ware, obtained expressly from Japan. A special feature in connexion with the bazaar will be a gallery of paintings in oil and water colours, which will be hung in a conspicuous position. Mr. Cremer will, for two days of the bazaar, give entertainments of conjuring, and the Band of the Royal Horse Guards (Blues), and the Band of the 2nd Life Guards will attend. Such promises ought to draw a large attendance. We hope they will.

Birmingham and District Architectural Association.—On the 28th ult., the first annual meeting of this Association was held at Temple-row, under the presidency of Mr. J. J. Bateman. There was a good attendance of the members, and the reports of the secretary and treasurer were read to the meeting. The President, in his address, congratulated the Association upon the success it had already attained, both with regard to the work done and its financial position; and impressed upon the members the necessity of a thorough study of scientific construction. He referred particularly to the satisfactory way in which the Association was working, and announced his intention of giving a sum of 5*l.* 5*s.* to the prize fund. The prizes for designs submitted during the past session were awarded to Mr. J. W. Fisher (who received especial commendation for his work), and Mr. A. F. Greening. The usual vote of thanks having been given to the president and other officers, the members of the Association adjourned to the Royal Hotel, where a supper had been prepared, and a pleasant reunion terminated the evening's proceedings.

Deceptive Promises to Emigrating Masons. — A large number of stone-masons arrived at Ontario lately from Scotland, where they had been engaged by a person representing himself as agent for the contractors engaged in the enlargement of the Welland Canal. They were promised $3 a day and steady work, and left Scotland in good faith for the scene of their engagement. Arrived, however, at St. Catherine's, in Ontario, where the principal work is now going on, the contractors repudiated any such agreement, stating they never authorised any agent to engage men, and in fact did not require any more hands.

The Bradford Carpenters and Joiners and their Employers.—A meeting of operative carpenters and joiners was held at Bradford on the 2nd inst., and the following resolution was adopted:—"Resolved — Having heard through the press the decision of the employers at last night's meeting, we repudiate the statement that we have either directly or indirectly had recourse to intimidation towards our fellow-workmen; also the statement made by the employers, that many firms had not signed the rules as proposed, is a statement contrary to facts well known by the members of the Employers' Association. Seeing they have assumed such a defiant attitude, we take steps to meet their resolution by preparing ourselves for a determined struggle. The time has gone by for entertaining any compromise with them." At a meeting of the men held at the Sun Hotel, Shipley, the same resolution was unanimously adopted.

Restoration of Norton Church, Gloucester. — Efforts are being made to restore the ancient church at Norton, five miles from Gloucester, to complete the parish schools, now in course of erection, and to provide suitable accommodation at the vicarage. The church at Norton was founded by the priory of St. Oswald, in this city. It is a landmark, perched on a hill which commands views of the vale of Gloucester. The tower is an example of the solid masonry of former days; and attached to it are a nave and chancel. But internally and externally the fabric is, according to Messrs. Waller & Son, the architects, "in a most lamentable condition, and, owing to the defective state of the roof of the nave, almost unfit for public worship." The vicarage is to be enlarged, and the church renovated. The estimated cost is thus set forth: — Church, 1,100*l.*; vicarage, 960*l.*; schools, 880*l.*; total, 2,940*l.*

The Sewerage of the Potteries.—At a recent conference at Hanley the surveyors to several local governing bodies were requested to consider the subject and report the conclusions to which they came. We are given to understand that these gentlemen have met, and that, on their behalf, Mr. Lobley, the surveyor to the Hanley Town Council, has drawn up an exhaustive report. They have come to the conclusion that they cannot advise the local authorities to combine to deal with the sewage of the Potteries by irrigation on the gravitation principle. This conclusion was forced upon them by the difficulty which would be found in obtaining within a short distance sufficient land of a suitable description, and by the great cost of constructing a covered sewer to and beyond Tittensor.

Number of New Churches in England and Wales, from A.D. 1,300 to Present Time.—At the sittings of the Committee on the Public Worship Facility Bill, Canon Gregory, who was examined, said that 4,210 new churches had been consecrated in England and Wales during the present century; and he considered that the Established Church of England should find accommodation for 30 per cent. of the population. The average number of churches built each year, according to the Canon's statement, stands, therefore, at fifty-seven, or rather more than one a week; but taking Roman Catholic and other Nonconformist churches and chapels into the list, it may be fairly assumed that, since the year 1,800, at least 100 sacred edifices of all denominations have been yearly built in England and Wales.

Destructive Fire at Wardie, near Edinburgh.—The workshops occupied by Messrs. Sutherland & Son, builders and house carpenters, Wardie-road, together with a valuable stock of wood stored in an adjoining yard, were recently destroyed by fire. The building in which the fire originated was a brick erection, two flats in height, and 130 ft. in length,—the lower flat being fitted up with sawing, mortising, and other machines, while the upper floor was set apart as a workshop for the men. About five years ago the workshops at this place were burned down, the woodwork in part of the building having at that time been ignited by a spark from a locomotive engine passing along the Granton line, which runs past within a few feet of the back of the tenement.

"The Baptism of Christ in Jordan."—The painting by Mr. E. Goodwyn Lewis, which was recently on view at the Metropolitan Tabernacle, and also at Dr. Landell's Chapel, Regent's Park, has been sold for 1,000*l.* The picture (8 ft. by 5 ft.) contains about 300 figures. It is to be engraved.

The East. — The stonework of the new ...senal, in course of erection on the plateau of ...atchka, above Beshiktash, is now finished. ...is fine building will be ornamented with a ...lumned portico. The Russian Hospital at ...ancaldi, and the chapel attached to it, are also ...proaching completion.——The Athens corre...ondent of the *Kölnische Zeitung* (Cologne ...azette) announces that the buildings which are ... form the focus of the great works of archæo...gical exploration at Athens will be ready for ...e by the middle of May, when the German ...rectors of the undertaking will enter upon ...eir new quarters. The road from the coast to ...e plain of Olympia will also, it is hoped, be ...eedily completed, and it is therefore antici...ted that the work of excavation may be ...stematically organised as soon as the summer ...ats are over.

Improvement in Buildings.—Mr. Mac...od, of Manchester (manager of the Limmer ...sphalte and Concrete Company), has patented ...me improvements in constructing buildings ... concrete and other plastic material, which ...nsist in mixing cement, asphalte, plaster, and ...her cementing materials together, by spreading ...e of them on small gravel, and then applying ...e other, thereby causing them to unite and ...here together. His apparatus consists ... improved wall gauges and wall braces; ...so in tie-rods with slotted ends; also in support...g scaffolding, clamping plates, and other ...rticles by pudlocks; also in securing the ...aming by T-clamping plates; also in various ...nd-tools to be used in combination with the ...ove apparatus.

The Stonehouse (Devon) Infirmary.—...he Stonehouse Board of Guardians have been ...viting tenders for building additions to the ...firmary, and on the 13th of May there were ...ceived:—Mr. Partridge, 950*l.*; Mr. T. Taylor, ...95*l.*; and Mr. Verren, 682*l.* The Board ...cepted the latter tender, but on the following ...ard day received a note from Mr. Verren ...forming them that he could not carry out the ...ork for the price named. The Guardians ...ereupon departed from the custom of taking ...e next lowest tender, and again advertised for ...nders, receiving the following:—Mr. Williams, ...77*l.* 2*s.*; Mr. Taylor, 810*l.*; Mr. Verren, 783*l.* ...he latter was once more accepted, but outside ...e Board the greatest dissatisfaction is mani...ested.

New Schools at North Stoneham.—On ...e 2nd inst., the foundation-stone of the pro...sed new schools for this village was laid by ...rs. J. B. Fleming and her young son. The ...hools will be built of red brick, and will ...clude boys' and girls' school-room, each mea...ring 34 ft. by 18 ft., with a residence for the ...aster adjoining. Messrs. Brinton & Bone are ...e builders; Mr. C. Pink, architect; with Mr. ...icklan as clerk of the works; and we hear that ...early the whole of the money required, about ...100*l.*, has been collected. The site is in a ...eadow on the road from the rectory to the ...illage.

Dwellings for Police Constables.—At a ...eeting of the Court of Common Council, on the ...7th ult., the Coal, Corn, and Finance Com...ittee reporting on the reference of the 15th of ...pril last, recommended that the sum of 8,200*l.* ...r the erection of dwellings for married police...onstables, in Rose-alley, Bishopsgate, be pro...ided out of the reserve fund, and that in respect ...hereof there be paid by the police committee to ...he reserve fund a sum annually equivalent to ...nterest at the rate of 4*l.* 10*s.* per cent. On the ...notion of Mr. J. E. Saunders, the chairman of ...he committee, the report was adopted without ...issent.

Bequests to Owen's College and Sheffield and Leicester Mechanics' Institutes.—...r. Charles Clifton, an engineer at New York, ...as recently died suddenly, possessed of con...derable property, the bulk of which he has ...ft to Owen's College, at Manchester. He has ...ade bequests of 250*l.* each to the Mechanics' ...nstitutions at Sheffield and Leicester; but, ...nfortunately, the latter place is not now pos...essed of a Mechanics' Institution. It is expected ...hat either the Free Library or the Museum ...uthorities will put in a claim for the legacy.

A New College.—Messrs. T. E. Murray and ...H. Thomas, architects, have been instructed ... prepare plans, and procure tenders, for a new ...ollege at Birkdale. The cost will be about ...0,000*l.*

The Spire of St. Peter's Church, Hereford.—It appears that the vane of St. Peter's Church has failed to act properly ever since it was fixed, and a workman named Taylor, of Nailsworth, Gloucestershire, has been engaged to put it into working order. In consequence of the great height of the spire, the task, as may be imagined, was no easy one, and great preparations were made before the top of the spire could be reached. Perseverance, however, was ultimately rewarded with success, and on the 2nd inst., Taylor succeeded in accomplishing the feat of gaining the top. With the assistance of ladders the work was completed on the 5th.

Oxford Drainage.—Mr. Robert Rawlinson, C.E., one of the Chief Inspectors of the Local Government Board, held an inquiry on the 31st of May in reference to the application by the Board for authority to borrow a further sum of 100,000*l.* for drainage works. After receiving the evidence of the Engineer on the works in progress and the estimate, he proceeded to view the works themselves and the proposed irrigation farm, and authorised the Chairman of the Drainage Committee to express his approval of the way in which the works were being executed, and of the suitableness of the irrigation land.

Erection of a New Railway Bridge.—The foundation-stone of the Severn Bridge Railway, near Sharpness, connecting the Forest of Dean with the new docks there, was laid by Mr. Lucy, of Gloucester, who is the chairman of the Company, on the 3rd inst. The bridge will be 1,320 yards in length, and the contract has been let to the Hamilton and Windsor Iron Company, Liverpool, at 190,000*l.*, and the railway work at 90,000*l.* to Messrs. Vickers & Cook, Westminster-chambers, London. The directors and engineers of the Company, with representatives of important interests, witnessed the ceremony, together with a large number of Foresters.

Kelly College.—The memorial stone of Kelly College, Tavistock, laid recently, as already mentioned, by the widow of its founder, Admiral Kelly, is a well-selected piece of granite weighing about eight tons, having been reduced from a large block upwards of 40 tons in weight. It is a fine-grain hard granite, and the block has been very neatly worked on the exposed surfaces, having a sunk moulded panel in the front end in which a suitable inscription is to be engraved. The stone was supplied by the Gunnislake Granite Company (Messrs. Crocker), and was produced, we understand, in a very short space of time.

Surveyor of the Highways, Kidderminster.—The Board of Guardians proceeded to the election of a surveyor of highways, in the room of Mr. Thornburgh, whose death took place some weeks ago. There were sixteen candidates for the office, and a very close contest ensued, Mr. Thornburgh, jun., son of the late surveyor, ultimately being elected by a very narrow majority. The situation is, we believe, worth about 300*l.* a year. We are informed that Mr. Thornburgh owes his election to the representative guardians, the *ex officio* being in favour of a gentleman from Weston-super-Mare,—a Mr. Jones.

The New Lunatic Asylum, Portsmouth.—At a meeting of the town council, the town clerk, in answer to Mr. Cunningham, said the architect had informed him on the previous day that everything had been supplied to the contractor for the new asylum to enable him to proceed with the works at once. Mr. Cunningham also called attention to the fact that the youngest of thirty-two candidates had been chosen by the gaol committee as clerk of the works, and asked whether it was usual for the committee to appoint the clerk of the works. The town clerk replied affirmatively.

Stonemasons' Strike at York.—The strike of stonemasons at York, which commenced on the 1st of May, still continues, and at present there seems not the slightest approach to concession on either side. The masters having taken care in their contracts to include a proviso in the case of strikes that during their continuance the time should be reckoned when work was stopped, they are content to allow the matter to rest on this basis until the men return to their employment on the old terms.

Railways in Persia.—German newspapers show that a new scheme for railways in Persia has been secretly arranged, in the interest of Russia. M. Pressel, an eminent Austrian engineer, is the author of it.

"Penny-wise and Pound-foolish."—The rich corporation of Sunderland have just set an example of economy that is highly approved by burglars, garotters, thieves, and bad characters in general. The chief constable of the borough informed the magistrates that in consequence of the corporation issuing orders that no lamps were to be lighted during the summer months, the streets and houses were decidedly unsafe, as his limited number of men were unable to prevent burglaries, robberies, and assaults, owing to the darkness, and identification of offenders was impossible.

Temple Bar.—The Metropolitan Board of Works, on the 4th inst., referred three alternative proposed alterations in the neighbourhood of the new Law Courts and Temple Bar, and a letter from the Commissioners of Sewers accompanying the same, to the Works Committee for them to receive a deputation from the Commissioners of Sewers for the purpose of conferring generally with regard to what improvements the Metropolitan Board of Works should identify themselves with in regard to the suggested alterations.

Conistone.—The memorial stone of a new Wesleyan Chapel was laid at Conistone on Tuesday in last week by Mr. F. Barratt. The building will be in the Early English Gothic style, built with the blue stone of the neighbourhood, freestone dressings being used for the windows, doorways, and buttresses. The interior will have an open pitch-pine roof. Sittings will be provided for about 150. Mr. Eli Cox, of Kendal, is the architect; and Mr. Bell, of Conistone, the contractor

New Chapel at Barnsley. — On Monday afternoon the foundation-stone of a new chapel about to be erected by the Primitive Methodist body in Buckley-street, Barnsley, was laid by Mr. H. Lodge, coal owner of Barugh; whilst memorial stones were laid by Mr. Councillor Rymer and others. The chapel will be a substantial stone building in the Italian style of architecture, capable of accommodating 500 persons, and is estimated to cost about 2,400*l.*

New Chapel at Hastings.—On the 25th ult. the memorial-stone of a new Wesleyan Methodist Chapel, on the Cornwallis Park Estate, Hastings, was laid by Mrs. Brassey, wife of the senior member for the borough. The situation is very good. The chapel with site will cost about 7,000*l.* The number of seats provided will be 900. Mr. W. W. Pocock is the architect, and Messrs. C. & H. Hughes are the builders.

Sale of Serjeants' Inn.—The London Correspondent of the *Manchester Guardian* says:—"As the Judicature Bill has abolished the title of serjeants-at-law, the members of Serjeants' Inn, in Chancery-lane, have determined to sell that property and divide the proceeds among themselves. The value cannot be less than 30,000*l.* or 35,000*l.*, so that each of the thirty-six gentlemen who now wear the coif will receive a handsome sum.

Regent's Park Explosion.—At the meeting of the Marylebone vestry, on the 3rd inst., Mr. Greenwell, vestry clerk and solicitor, read a letter from Sir Thomas Chambers, Q.C., M.P., dated House of Commons, May 27th, 1875, stating that in answer to a question he lately put to Lord Henry Lennox, he had been assured that already orders had been given for the preparation of plans for the restoration of the destroyed Macclesfield Bridge.

Fatal Accident in the Borough.—On the 3rd inst., a shocking accident happened at Messrs. W. H. Lee's lead manufactory, Market-street, Borough, by which a man named James Doland, aged 47, a foreman, was killed. It appears a large stone, weighing 16 cwt., was being pulled up by five or six men, when the chain broke, and the stone fell on deceased, crushing him to death.

Scientific Simplicity. — The beautiful simplicity of chemical terminology is strikingly exhibited in a paper by M. Hoyduck in a late issue of the "Annalen der Chemie," on ortho-amido-toluene-para-sulphonic acid. The author deals with introthobromo-toluene-para-sulphonic, amidorthobromo-toluene-para-sulphonic, and tribromo-toluene-para-sulphonic acids in the same paper.

The Spire for Christ Church, Whitley.—The new spire of this church is now completed. It forms a conspicuous and pleasing architectural feature, and being situated on high ground, can be seen for miles round.

A Woollen Manufactory at Pompeii.—One of the latest discoveries at Pompeii is a small woollen manufactory, situated very near the house where the fresco representing Orpheus was recently discovered. Several charred fragments of tapestry were found in this place, besides various machines for carding and weaving wool.

Strike at the Leicester Municipal Buildings.—The bricklayers engaged in the erection of the New Municipal Buildings struck work on the 1st inst. It seems that Mr. Brass, the contractor, had occasion to discharge one of the society men, when the remainder of the men left work. Dissatisfaction has existed for some time past, the men having been anxious to obtain an increase of from 7d. to 8d. per hour in their wages.

School Board Architects.—The Great Grimsby School Board have elected Mr. Charles Bell, of London, their architect for the new schools there for 1,000 children; Mr. Reynard, of Hull, being awarded the second premium. Mr. Bell has been also appointed architect to the Bourne School Board, for which there were thirteen competitors, but no premiums.

The Royal Society of Artists, Birmingham.—Saturday evening saw the close of the Spring Exhibition of this society—one of the most successful exhibitions on record. The number of visitors exceeds that of last year. The sales have amounted to 3,350*l.*, to which must be added the Art Union prizes, amounting to 350*l.*

Monument to Savonarola.—A monument to Savonarola was unveiled at Ferrari, May 23, in the presence of Prince Humbert and the authorities. Signor Finali and others delivered speeches, dwelling upon the principle of liberty professed by Savonarola. The Agricultural Exhibition was then opened.

Society of Engineers.—At a meeting of the Society of Engineers held on Monday evening in the Society's Hall, Westminster Chambers, Victoria-street, the president, Mr. J. H. Adams, in the chair, a paper on "Continuous Brakes" was read by Mr. St. John V. Day, C.E.

Death from Bad Air.—Three men have been killed by incautiously entering a covered manure-hole in the yard of a livery-stable keeper in Nottingham. Idiots are still to be met with in society who disbelieve in the evils of foul air!

The Band of the Corps of Commissionaires will play every evening after half-past six p.m., in the Cambridge Enclosure, near the Horse Guards' Parade, St. James's Park.

Artisans' Institute.—On Friday, the 4th June, 1875, a paper was read by Mr. Henry James Snell, on "Masters and Men, their Duties and Responsibilities."

TENDERS

For rebuilding "The New Inn," Edgware-road, for Mr. F. W. Hammond. Mr. Henry R. Cotton, architect. Quantities by Mr. A. J. Gale:—

Foster	£7,497 0 0
Axford	7,488 0 0
Shepherd	7,283 0 0
Gould & Brand	7,278 0 0
Foxley	7,137 0 0
McLachlan	7,133 0 0
Newman & Mann	7,116 0 0
Temple & Foster	7,024 0 0
Toms	6,883 0 0
Williams & Son (accepted)	6,807 0 0

For the erection of residence and stabling at Box-grove, Merrow, near Guildford, for Captain Charles Lennox Tredcroft. Mr. A. Guy, architect:—

Mitchell	£3,364 0 0
Moon, Brothers	2,944 0 0
Harris (accepted)	2,850 0 0

For the erection of a school chapel, at Seale, near Farnham, Surrey, for the Rev. Ernest Utterton. Mr. A. Guy, architect. The stone given by Mr. Morton Sumner, of Puttenham Priory, from the Bargate Quarry, and the cartage done by the farmers gratuitously:—

Bolter	£337 10 0
Swan	332 10 0

For reinstating, repairing, and adapting Nos. 1, 2, 16, 43, 44, and 45, Verulam-street, Gray's-inn-road, for the Model Houses Association. Mr. Frank E. Thicke, architect:—

Plant	£443 12 6
Heath	435 15 0

For schools at Kingswood, for the Banstead and Kingswood School Board. Mr. William Smith, architect:—

Taylor	£2,371 17 0
Keal (accepted)	2,268 0 0

For alterations to premises, Cases-street, Liverpool. Messrs. T. E. Murray and G. H. Thomas, architects:—

Wilkinson & Adams	£1,468 0 0
Wilson	1,450 0 0

For inclosing Forest-hill cemetery, for the Burial Board of St. Giles's, Camberwell. Mr. Berriman, architect:—

Willis	£1,630 0 0
Cooper	1,527 0 0
Pearce	1,469 0 0
Fisher	1,445 0 0
Chaffen & Farrow	1,443 10 0
Wainwright	1,425 0 0
Bielefarn	1,420 0 0
Unwin	1,129 0 0
Dover, Son, & Co.	1,109 10 0

For completion of Bramingham, Luton. Mr. T. C. Sorby, architect. Quantities by Messrs. Shoppee & Young:—

Johnson	£11,050 0 0
Lascelles	10,965 0 0
Gregory	10,770 0 0
Lathey, Brothers	10,651 0 0
Patman & Fotheringham	10,600 0 0
Spencer	10,496 0 0
Jackson & Shaw	10,475 0 0
Smart, Brothers	10,365 0 0
Williams	10,250 0 0
Crossley	10,070 0 0

For new day-schools to Baptist chapel, Child's-hill. Mr. W. Allen Dixon, architect:—

Burford	£722 0 0
King	606 0 0
Wright	593 0 0
Carter	570 0 0
Bangs	560 0 0
Staines & Son (accepted)	536 0 0

For the repair and decoration of No. 119, Great Russell-street, Bloomsbury, for Mr. J. McLaren. Mr. John C. Dear, architect:—

Brand	£163 0 0

For the repair and decoration of No. 41, Sydenham-park. Mr. John C. Dear, architect:—

Cohen	£118 0 0

For the erection of business premises, High-street, Deptford. Mr. A. H. Kersey, architect. Quantities by Mr. Henry Lovegrove:—

Slade	£2,262 0 0
Allpress	2,049 0 0
Williams	1,976 0 0
Nightingale	1,949 0 0
Crabb	1,884 0 0
Simpson	1,837 0 0
Brai', Jopling, & Co.	1,807 0 0
Richardson	1,768 0 0
Batchelder	1,707 0 0
Hammer	1,618 0 0

For new workshops, No. 83, Dean-street, Soho. Mr. Edward Lavender, architect:—

Niblett & Sons	£1,300 0 0
Clarke & Bracey	1,279 0 0
Patman & Fotheringham	1,260 0 0
Nightingale (accepted)	1,183 0 0
Scrivener & White (withdrawn)	1,129 0 0

For rebuilding Nos. 135 and 135a, Tottenham-court-road, for Mr. Gilbert. Mr. G. P. Raggett, architect. Quantities supplied:—

Scrivener & White	£2,330 0 0
Brass	2,325 0 0
Browne & Robinson	2,223 0 0
Clemence	2,175 0 0
Lake	2,133 0 0
Macey	2,099 0 0
Kilby	2,042 0 0
Elkington (accepted)	2,013 0 0

For coach-house, stables, and outbuildings, &c., Erith, Kent. Mr. Herbert Ford, architect:—

Willis	£1,875 0 0
Smale	1,680 0 0
Kirk & Randall	1,617 0 0
Tongue	1,330 0 0

For manager's house, Silk Mills, Tring. Mr. Herbert Ford, architect:—

Smith & Finch	£306 0 0
Chappell	735 0 0
Honour	715 0 0
Snell (accepted)	700 0 0

For alterations to manager's house, Silk Mills, Aylesbury. Mr. Herbert Ford, architect:—

Green (accepted)	£300 0 0

For rebuilding No. 73, Minories. Mr. J. Wimble, architect:—

Bayes & Ramage	£2,235 0 0
Newman & Mann	2,253 0 0
Hoare & Son	2,213 0 0
Scrivener & White	2,175 0 0
Kilby	2,147 0 0
W. & F. Croaker	2,053 0 0

For new porch, and sundry decorative works at Greybury, Edenbridge, for Mr. J. T. Morton. Messrs. Ingram & Hollands, architects:—

Rooms	£563 0 0
Fellwick	545 0 0
Colls & Sons	333 0 0
Jordon	295 10 0
Godley	230 0 0
Goodwin (accepted)	205 10 0
Charlwood	185 0 0

TO CORRESPONDENTS.

J. J. D. (we should only mislead if we expressed opinions, in private disputes, on *ex parte* evidence) F. M. (we are forced to decline giving advice in private disputes)—R. M. (next week).—A. F. G.—F. & G. H.—F. M.—J. B. M. W.—H. F.—P. T.—M. & K.—Major W.—Sergeant P.—C.—E. F.—E. C.—F. P.—E. W.—C. G. C.—J. S. P.—J.—A. C.—Mr. M.—G. S.—E. L. P.—G. M.—S. & S.—A. A. M.—C. G. S.—E. & Son.—M. & T.—H. L.—B. & H.—J. D.—H. St. J.—E.

We are compelled to decline pointing out books and giving address.s.

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VOL. XXXIII. No. 1688. SATURDAY, JUNE 19, 1875.

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Indian Architecture and Art.

IN our former glance at the valuable contents of the New India Museum our attention was chiefly directed, as far as the special information prized by the *Builder* is concerned, to the materials for construction and for ornamentation which are yielded by the mineral and vegetable products of India. We dwelt at some little length on the picture presented to the visitor of the *Flora* of that vast country, partly on account of its economical value, and partly as affording an admirable example of the mode in which one department of knowledge grades into another. Thus the engineer or architect who is in search of the best timber, or the most beautifully marked and mottled wood which can be used, either for construction or manipulation in India, or for importation to this country, will obtain a very feeble and unsatisfactory grasp of the subject of his quest, unless he knows something of Indian forestry, and something of the peculiar conditions under which the rare and precious products of the Indian *Flora* have their birth.

In that part of the exhibition of which we were compelled to defer the notice, the objects most germane to our habitual study are the specimens and representations of Indian architecture. The skill and experience of Mr. Fergusson, which are specially valuable on Indian subjects, have been wisely sought, and happily ministered, in the arrangement of a fine series of photographs, representing many of the chief architectural monuments of the East. In these, sculpture is so linked to architecture, in the guise of a handmaid art, that some account of the chief peculiarities of this branch of Indian art cannot be neglected. From sculpture, through the link of bronze statuettes and other works in bronze, the attention is led to the metal-work of India, to its exquisite filigrees, rich goldsmith's work, and abundance of precious, although rudely-cut, gems.

Ascending to the upper floor, we come at once upon a group of relics of extreme interest. It is nearly forty years since men of science in this country were made aware of the existence of what are here denominated Græco-Boodhic sculptures; although it is far less than half that period that they have been supplied with some definite information on the subject by the Transactions of the Royal Asiatic Society. No literature, however, can supply the absence of actual specimens. A visit to those now accessible to the English artist at South Kensington cannot fail to produce a novel and striking impression on his mind. The first idea is, that all that the study of philology has lately revealed of the affinity between the Sanscrit-speaking people and the Greeks, is confirmed by relics of an art that had attained a high degree of development before the European tribes broke off from the Asiatic stem. Such, indeed, is not the fact. History and chronology, as well as the relics of the early art of Greece, contradict such a hasty hypothesis. But in the intimate blending of the Greek and the Indian characteristics, although the date must be brought down to a time subsequent to the invasion of India by Alexander the Great, there is a sure sign of kindred blood. It would, it seems to us, be impossible for workmen of one race so to identify their own motives and handling with those of another faith and habit, were not the subtle sympathy of blood present to harmonise the contrast.

Art in India, which it was once the fashion to trace back to an immense and fabulous antiquity, is now considered to have left no relics of date anterior to the reign of Asoka, about 250 B.C. Between this time and the establishment of the Mohammedan supremacy in India,—that is to say, somewhere in a range of a thousand years,—the statuary now in the Museum must have been wrought. The specimens are for the most part fragmentary; but, as far as we are able to judge, the special motive of Indian sculpture, that is to say its conception as altogether subservient to architecture, has controlled the artist. Of the presence of a strong Greek element there can be no doubt. The history of art, and the history of race, will both be luminously illustrated by the full elucidation of this remarkable group of sculpture, and by all that can throw light on its origin. We are glad to learn that specimens now in Peshawur will be sent to this country. We have before us the materials for an entirely new chapter in the history of art. The rapidity with which, in Greece, the Aryan artist sprang from the archaic conventional forms of such figures as the Apollo of Tegea, with a strong flavour of Egyptian influence perceptible in its proportions and pose, to the zenith of the sculptor's power in the time of Phidias and of Polycletus, is one of the most striking characteristics of Greek art. That a not dissimilar facility for changing type and treatment, and for seizing what was best suited to the need of the hour, has been displayed by the sculptors whose work, in stone, in terra-cotta, and in baked mud, is now to be found in the Indian Museum, there can be but little doubt. Not less precious, as matter of instruction, than our magnificent collection of the Elgin and Phigalean marbles, however in form, in grandeur, and in beauty, these Indian hybrids may hereafter prove.

The genius of Greek and of Indian art, indeed, is far from identical. In the former, sculpture, and sculpture as applied to its noblest subject, the nude human form, is the central element. In the latter, the human figure is generally degraded to a mere ornamental function. Wonderful elaboration of ornament, in which quaint and caricatured human forms act as hieroglyphics, rather than as reflections of what is beautiful, is the chief object of the Indian artist. We have examples of this, in the Indian Museum, in fine bronzes, as well as in stone and in more perishable materials. The subject demands the fullest attention; first, to collect as much as may place before us the historical sequence of this product of the mingling of the East and the West; and secondly, to write that new chapter in the history of sculpture for which the materials will be thus provided.

Akin to this inquiry we may here call attention to the fine collection of Indian arms and armour, which has been so judiciously arranged as to have not only an antiquarian, but an ethnological, interest. The mere introduction of an unusual word as the label of part of a collection may seem to the casual observer a bit of pedantry. Very differently do we read the words Aryan, Semi-Aryan, and Non-Aryan, under which the quaint and elaborate work of the Indian armourers has been arranged in the gallery. The last word, indeed, may be said to have the defect of being purely negative. But it is used, like the word *Anarien* by the French *savans*, to denote a group, large, indeed, and capable, may be, of future distribution into important subdivisions, but distinguished by the total absence of the spirit of the Greek-speaking, or Sanscrit-speaking, people. The word Turanian has been applied to the people from which these products emanate; nor can there be any good objection to the term so long as we consider it as provisional. Yellow, lank-haired hordes, with oblique eyes, prominent cheek-bones, and depressed noses, the Tartar tribes, the Chinese, the Malay, and other Asiatic stems, have a strange community of character. Monosyllabic language and Pantheistic religion belong to them. The arrangement of arms to which we refer gives another peculiarity which it is more easy to recognise in the objects themselves than to describe in technical language. There is almost the same difference between the weapons of these races and those of a pure Aryan tribe, as there is between the nervous organisation of the *mollusca* and that of the *insecta*. We might call the non-Aryan weapons amorphous, were it not that they have a certain quaint form of their own. The blades of the swords, axes, and daggers seem fitted for sudden and violent use, rather than for the interchange of offensive and defensive fight. There are no handles, such as we are accustomed to use. The reed-like form of the hilt of the Japanese sword, which is an implement on which very special care and attention is bestowed, is an instance of this. The handles of the swords of the Hindoo tribes, although too small for the grasp of a European soldier, are constructed on the same principles as those to which he is accustomed. So it is with all other weapons, if we except halberts, which seem to have a prescriptive right, at all times and among all people, to ramify into the most fantastic forms.

When the visitor has once grasped the idea of the peculiarity of non-Aryan weapons, and contrasted it with that of the Aryan arms, he will at once see how the intermediate group of the semi-Aryan arms defines itself. We dwell upon this novel branch of inquiry, because it promises to open a new source of ethnological investigation, and because we believe that ethnology is one main key to all true political science.

Indian sculpture, being, as we have said, decorative rather than statuesque, passes by slight but natural grades to ornamental work applied to other subjects than those which are architectural. The phase of religious art, to which we owe all that is most beautiful in the sculptures of Egypt and of Greece, and in the paintings as well as the sculptures, of the Renaissance, attains full development in India. The manufacture of gods for public, private, and domestic use, is no small branch of Indian art. It is said, indeed, to have been carried on stealthily by a Birmingham manufacturer, who managed to combine a reputation for orthodox propriety among his fellow townsmen, with a wealth steadily increasing from the lucrative proceeds of his idol manufacture; until the unfortunate rupture of a packing case not only declared the source of his gains, but put other people on the scent. There are ample signs of the revival amongst ourselves of an industry not altogether alien to that of our polytheistic fellow subjects In India, however, we see idolatry,—we were about to say in its naked deformity,—but we observe that a large class of the symbols that have received worship from a very hoary antiquity, are conspicuous by their absence in the present instance. Public instruction, in fact, is here somewhat smothered by our respect for our own code of public morals.

The central idea of the religion of so many Aryan people, that of the incarnation of the Deity, is fully illustrated by many of the quaint, symbolic forms of the Hindoo Pantheon. A key to the whole is supplied in a drawing, to which we direct attention. It shows the ten incarnations of Vishnoo. Philosophically regarded, it speaks of that development and advance in organic life which, geology teaches us, has ruled since the first appearance, beneath the waters of the earliest ocean, of the simplest living forms. The creative energy is first represented or embodied in the fish. Then in the reptilian semi-aquatic type of the turtle. Then in the terrestrial form of the boar. It is natural to those whose physiological knowledge is imperfect to place the *carnivora*, although really of simpler organisation than the *herbivora*, above them in the ascending series. Thus the Lion-god follows the Pig-god. Then appears the pigmy or little man, as he may be seen among the Bosgesmans or the Esquimaux. Sixth is the form of Ram, or the fully-developed man, apt to labour; he is armed with an axe. Next comes warlike man; Ram with a bow. Agriculture is a more advanced stage of life than that of the hunter. The eighth incarnation is Ram with a plough. Ninth comes Boodha, or the religious man. Tenth,—the hope which is not special to Hindoo mythology,—the Coming King, denoted by the inartificial couplet,

> "When Kalki mounts his milk-white steed,
> Heaven, earth, and all will then recede."

The frequently expressed form of the elephant God, although expressing an idea not foreign to some of the preceding, is not included in this series, and, as an offspring of tropical climate, must be of a different date. The excellence of the bronze work of some of these figures is of a high order.

In the work of the coppersmith we pass from the architectural details of religious sculpture to the industrial occupation of the metal-worker. The brass vessels of India are now becoming objects of domestic ornament in London drawing-rooms. Of the beautiful Bidree work, the iron inlaid with silver, for which Bombay is renowned, we have more than once found occasion to speak. The silver filigree of India is represented by some beautiful specimens in the present collection. The only European parallel for this delicate work of the silversmith is to be found in Genoa. One street in that ancient home of commerce, the Strada degl' Orefice, is full of goldsmiths' shops, in which is displayed the product of a skill which may, perhaps, be traced to an Eastern origin. But the Indian work differs from the Genoese much in the same way as that in which the earlier form of "plate tracery" in architecture differs from the later development of "bar tracery."

The textile fabrics have also been repeatedly noticed, as displayed in the Indian Courts of the International Exhibition. The richness of the carpets, some of them made of velvet, here exhibited, forms a wonderful contrast to the fairy-like delicacy of the Dacca muslin. A piece of the latter, a yard wide, and ten yards long, weighs only three ounces. The fineness of the thread which weaves it is such that nothing short of Sir Joseph Whitworth's machine could measure it. We estimate it at from the six-hundredth to the one-thousandth part of an inch in diameter, and that for this reason: the piece of muslin was passed through a ring, and the finger inserted together with it, as far as convenient. The area left between the inside of the ring, and the outside of the finger, was ·25 of a square inch. If the whole of this had been evenly occupied by the web, we might calculate how many folds must be superposed, and thus arrive at a maximum thickness of the material. It does not appear that any machinery has yet been produced that equals the human fingers, especially the fingers of women, as to delicacy of work in spinning.

The endless patience of Oriental life, where a handful of rice is almost all that is needed for the daily sustenance of a workman, and where labour may be called a drug in the market, is displayed by the conquest of the two extremes of the opposition which materials offer to manipulation. Very soft, and very hard, materials are alike difficult to work with minute exactitude. We have seen what can be done, by way of delicacy, with fibre. The opposite end of the scale is occupied by jade. This silicious substance, as hard as quartz, is formed into cups, vases, and other objects, of a thinness and a finish which rival the operations of the glass-blower. It is said, by some writers on gems, that there is a secret method of softening jade which is employed by the workers. We are not in a position to say that this is impossible, but it seems to us extremely improbable. It is rather the softening, or wearing power of untiring industry, than any chemical solvent, to which the formation of these delicate objects in so hard a substance is, we think, to be attributed. In wood, horn, ivory, blackwood stone, tortoise-shell, silver, in almost every imaginable material, the same character of elaborate work, utterly regardless of the expenditure of time, is displayed. The influence of climate on art is thus shown to be as real, if not as apparent in the first instance, as its influence on architecture. It could only be in a climate where human life requires but little to sustain it, where rugged toil is not needed to keep the blood in vigorous flow, where one day succeeds another under the same influence of depressing heat, that a style of work could be produced, or, at all events, could originate, in which the labour bestowed on a table or a chair is to be measured by tens of years of the life of the workman. It is no exaggeration to speak thus of the absolute indifference to the consumption of human labour, measured by time, which is displayed by the character of Indian ornamentation.

We trust that, in its new home, the Indian Museum will soon acquire the popularity which it deserves. Of the pains and skill which have been applied to developing the collection to its present condition, those who study it most deeply will be most fully convinced; and yet we trust that it is to be regarded as a starting-point, rather than as a goal attained; as a nucleus of a future museum, worthy in all aspects both of England and of India, rather than as a work done once for all, to be visited once for all, and to be left to gather such venerable dust as covers certain portions of other museums not unknown to Englishmen.

THE "BLACK AND WHITE" EXHIBITION.

THE fancifully-contrived ticket, with half the printing white on a black ground, admitted "private viewers" on Saturday last (the public opening being on the Monday following) to an exhibition which impressed one at first sight as the most brilliant of the three which have now been held, but which a little disappoints on a more detailed inspection. The number of rather large and elaborate drawings is greater than in the two previous years; but the proportion of works which give the real artistic value to such an exhibition, those in which the poetic element of design is set forth in its simple primary form, is less than before. There is too large a proportion of mere drawing; subjects of little interest or feeling made use of only to show how much of effect the artist can attain in the absence of colour. The rather large number of original drawings for illustrated papers show how much ability and good draughtsmanship is at the service of those publications; but drawings made specially for engraving necessarily tend to fall into a certain mechanical style, nor is it in the sphere of newspaper illustrations that we expect to find the most intellectual type of artistic thought or achievement. We should prefer to see more of artists' studies of a high class in future exhibitions here, and less of the mechanical excellence of finished drawing of inferior interest in subject and feeling.

The works which best illustrate the type of art-production for which such an exhibition is to be valued, are the charcoal studies of M. Leon Lhermitte, nine in number, in which high finish and manipulation are less aimed at than artistic effect in shorthand, so to speak. Of these two of the best are "Priests' Stalls in Notre Dame," and "A Corner of a Market-place, Brittany" (172, 194), companion drawings, in which groups of figures are given with powerful Rembrandtish effect, and with carefully-studied composition; of his larger single figures we may specially notice "An Old Woman, Finisterre" (226), as very powerful in expression, the face highly characteristic alike in its features and in the effect of half-shadow in which it is seen. In a similar category with the contributions of M. Lhermitte are those of M. Legros, whose sepia drawing of "Un Mendiant de Bruges" (92), shows the same kind of half-grotesque, half-pathetic power which we find in the sketches and studies of Decamp; and his large free etching of a stormy bit of landscape, under the title of "Le Coup de Vent" (512), is as masterly a thing of the kind as one could wish to see: the artist's power as an etcher is shown equally, in a different manner, in his "Portrait of Thomas Carlyle" (247). We have another French contribution of great merit in "The Storm" of M. Achille Dien (150), a striking little study of atmospheric effect. It is impossible not to notice how much clearer is the æsthetic perception as to the best capabilities of "black and white" media among French, as a rule, than among English artists. Among the latter we may note this year a tendency to send *replicas* of paintings exhibited elsewhere: thus Mr. Powell sends a repetition in black and white of his "Loch Coruisk" (191), the same size, and occupying a similar position at the top of the room, as the coloured drawing in the "Society of Water-colours"; Mr. Raven sends a similar repetition of "The Monk's Walk" (83) exhibited in the Academy a year or two back, and M. Aumonier a very large drawing of "The Thames at Great Marlow," nearly, if not quite, the size of the picture hanging in the "lecture-room" at the Academy. In this latter case the drawing is superior to the painting, in which the colour is not, to our thinking, fortunate; but in a general way we can hardly see what end is served by these large and elaborated reproductions in black and white of previously executed paintings. M. Roybet's etching (88) of one of the figures in his "Game of Chess" has the interest of a study; so also has Mr. Crowe's study (282) for the "French Savants" picture; in both the figures are reversed from the position they assume in the paintings. Mr. Huiber's large life-size drawings of figures, half-length, have considerable power and character, especially that of the old woman threading her needle "Encore sans Lunettes" (193). Mr. Riviere's "Midnight Assassins" (295) is a result apparently of zoological garden studies,—three lions attacking a giraffe; a cruel subject portrayed with some power. Mr. Macbeth's "Steamer waiting Arrivals from the Ferry" (189) shows fine feeling for effect, probably all the better from the artist being debarred from the use of colour; and the large charcoal drawing of a sea-side scene under the title "Shrimping" (244), by Mr. Colin Hunter, is notable for its wild and windy effect. Nr. Leitch's small sepia drawings, especially "Castelamare" (6), have a pleasing touch of the "Liber Veritatis" style and feeling about them. Mr. Ditchfield's "Study of Rocks" (47) is well worth attention for admirable and careful drawing; and in a similar spirit is the "Beach at Rottingdean" (97) of Mr. Slocombe, with its curiously buttressed rock. Mr. Bradley's little etching of "Venetian Boats" (51), Mr. Severn's "Westminster, Evening" (57), Mr. Pocock's "Road to the Farm" (215), Mr. Cole's "Ville d'Arvey" (265), Mr. Hopkin's "Study of a Wave Breaking" (275), Mr. Hall's "Pine-wood" (292), and

Mr. Glennie's small sepia drawings, are among bits of landscape study to be looked at; and Mr. Bunney's small drawings (283) are capital examples of free pen-sketching, as Mr. Brewer's "Old London Bridge" (454) is of more elaborate and finished drawing in the same medium. Among figure-studies of some importance, in regard to subject or execution, are Mr. Marks's "Wassail Bowl" (374), Mr. Cave Thomas's composition in red chalk, entitled "The Fate of Benefactors" (391), which, perhaps, hardly sufficiently explains itself, though presenting fine drawing and composition; Mr. T. W. Waterhouse's "After the Dance" (370); Mr. Hayllar's "Once a Week" and "All the Year Round" (227.8); Mr. Hicks's very spirited "Studies from Life" (366, 443); Mr. Maclaren's "Study in Red Chalk" (341) of a woman and infant; Mr. Fahey's "End of the First Volume" (430), a girl sitting lighted by lamplight, with the book on her knee; Mr. Wirgman's "Reminiscences, Schumann" (483); M. Emile Levy's "Étude de Femme Moderne" (269); and others. There are some fine specimens of reproduction in etching, especially Vibert's card-players, by M. Mongin (133), and two subjects after Toulmouche (296-8), bearing the well-known name of Leopold Flameng; and those who have enjoyed "The Land of Cuyp" in the Academy will be interested in seeing Mr. Hook on the same ground as an etcher, with a small subject of river and figures under the title "Brimming Holland" (331). Among oddities of the exhibition is Mr. Sullivan's drawing of a boating "coach" and his party coming in full swing along the river-bank towards the spectator, under the title "Settle down to that, gentlemen" (176); the subject is new and the drawing clever. The lady who, in scenes in which children act men's parts ("We never Perform out of London," 239), shows such genius in delineating that part of little boys which is *not* called the top, has perhaps given us the joke often enough. Some of Mr. Du Maurier's and Mr. Sambourne's original drawings for *Punch*, on the screen, meet us like old friends, whose humour we are very willing to enjoy over again.

FROM ROME: ABOUT THE OBELISKS.

THERE is much stolen property among the treasures of Rome, and should a day of restoration ever come, Egypt, among others, would receive many a ship-load from the Eternal City. To Egypt belong the most ancient, and perhaps, if rightly considered, the most impressive monuments to be found here. Her obelisks, disfigured though they are by the embellishments of the sixteenth and subsequent centuries, carry an expression of mysterious beauty of a far higher order than anything we meet with in works which can justly be called Roman; and the utter want of appreciation with which these obelisks have been applied, alike by her ancient conquerors and their later representatives, secures for Egypt relatively a very high place among the art-builders of the world.

The word *obelisk* means literally a small thing sharpened to a point, and there is something in the simplicity of the name, and in the strangeness of its sound to English ears, well in accordance with the object which it represents. There is a weird sublimity in those single blocks of Syenian granite which cannot be expressed. They speak to us; but their language is without interpretation. Their very history and purpose are involved in obscurity. Some have asked,—"Were they solar quadrants?" But their position beneath the shadow of the temple forbids the entertaining of such a supposition. "Were they gravestones?" No. All that can now be known must be gathered from the hieroglyphics which they bear, and from these we learn that, generally speaking, they were consecrated to the sun or to the moon, in commemoration of the founding of the temples they adorned, by the kings whose names are recorded upon them. But was this their only use? It is difficult to suppose so when we find, for instance, that the sides of one now in Rome are of unequal breadths, and that one of them is convex. Not until we are learned in all the learning of the Egyptians shall we be able to understand the purposes which they answered.

Augustus found the obelisks of Egypt standing like eternal sentinels before the dark shrines of Thebes and Heliopolis, and, giving an example of rapacity which Cæsars have been too prone to follow, commenced the exportation of them to Rome. The process was continued until the division of the Empire; and not only did the Emperors carry off the examples which they found in the conquered country, but they also compelled the inhabitants to work others in the quarries of Syene. It is not possible to think that the Romans did not admire these wonderful monoliths. They readily accepted the ancient belief that their form was the representation of a ray of light, and they expended upon their transportation much treasure and toil; but the manner in which they adapted them to the ornamenting of their city showed that they never grasped the pure ideal which these antique stones embody. Their first innovation was the placing of them upon moulded pedestals, wrought in Egypt, but only in compliance with the imperial command, and the consequent introduction of an effect of duality, whereas *one-ness* is an essential attribute of the Egyptian symbol. On those obelisks with one exception which were quarried under the superintendence of the Romans no hieroglyphics or other inscriptions are found; the hieroglyphics they did not want, and the pedestal afforded space for their own records. This omission, as may be still seen, proves absolutely fatal. It did not deprive the monument of its voice only; but of its very soul. Its motive—the reason of its existence—was gone.

In the great majority of instances, the obelisks were placed upon the *spinæ*, or central walls, which divided the circuses of Rome in the direction of their length, among *ova*-bearing columns, urns, statues, *metæ*, and other works of art. Two were placed in each circus, a larger one and a smaller, dedicated respectively to the Sun and the Moon; the former being crowned with a sphere of bronze, and the latter with a silver disk. These latter additions completed the annihilation of the spirit which had lived in the original design, and converted the structure into an inferior kind of column. One obelisk was applied to an exceptional and to a better purpose by Augustus, who raised it in the Campus Martius as the gnomen of a sun-dial. It was placed upon a base of polished marble on which were traced in bronze the lines necessary for determining the hours of the day. We do not learn whether it escaped the exaltation of a pedestal; but we can hope it did so in order to preserve the direct line of the shadow. We read in Pliny, who gives a minute account of it, that a sphere of bronze-gilt (*pyropum*) was fixed on the top.

In evil days the obelisks of Rome were, with one exception, thrown down, and, more or less, broken into fragments. So they remained until 1586, when, after a severe architectural competition, into which Michelangelo declined to enter, the reigning Pope, Sixtus V., entrusted to the celebrated architect, Domenico Fontana, the removal of the one which was still erect and entire from its original position on the *spina* of the circus of Nero to that it at present occupies in front of the basilica of St. Peter. The commencement of the work was preceded by an imposing religious ceremony; its accomplishment was regarded as a miracle. The architect was rewarded with a donation equal to sixty-five thousand crowns, and an indulgence of ten years was granted to all who, passing before this reclaimed instrument of paganism, should adore the sign of redemption, with recital of Pater Noster. But why were there blowing of trumpets and salvoes of artillery? The design is certainly not as offensive as it might be; a former Pope "conceived the grand but impractical idea of raising the obelisk on the shoulders of four colossal statues of the Evangelists, and placing on its summit a bronze statue of Christ bearing the cross"!

The composition, as we now see it, consists, commencing from the summit, of the "victorious cross," with its usual accompaniments and stays; next the obelisk itself a fine mass of red granite of Roman origin, and consequently without hieroglyphics; next a double pedestal, or rather two pedestals placed the one upon the other, both having cornices, and the lower a heavy moulded base; then the plinth of two fascias; and, lastly, three low steps. The height of the original shaft itself is 82 ft. 6 in.; the total height of the modern parts, 50 ft.! As one looks at it, covering all the lower parts with the hand, it is impossible not to think that a mistake has been made. To him who does not come ready primed to explode with indiscriminate admiration, the pile appears in danger of tottering to its fall. The lower pedestal appears to be of less breadth than the upper one, and the base of the obelisk (so much does the eye demand that the sloping lines of the monolith should terminate on a surface broader than its base); and this appearance, whether it be an optical delusion or not, produces a sense of weakness, for which the architect was assuredly answerable. Some additions which were made long subsequently to the time of Fontana add much to the look of insecurity mentioned above. They consist of most miserable heraldic lions and eagles in bronze placed at the base of the obelisk itself, which has been so recessed as to give the idea that it is resting in part on the flanks of those feeble caricatures. Fontana himself seems to have felt his mistake; for when we come to the next one he erected, viz., that in the Piazzo del Popolo, the superiority of its mounting strikes us immediately. It was brought by Augustus from the Temple of the Sun at Heliopolis, and placed in the Circus Maximus, and of course, therefore, it has the advantage of hieroglyphical inscriptions. It has the cross at its summit, and stands upon a base and plinth of small dimensions, and below them on a single pedestal with cornice and base: this itself stands upon a plinth of two fascias, and is surrounded by five beautiful Egyptian lions, each raised on a stepped pyramid, and the whole again is raised on five steps. The height of the shaft is 79 ft., and that of the additions 32 ft.; so that these latter bear a much better proportion to the whole than they did in our former instance. The pedestal, too, is considerably wider than the base of the pyramid, and we do not notice the appearance of weakness which was observable before. Fontana erected also the obelisk of the Lateran, the largest and most ancient in Rome, dating from 1540 B.C.; and that of St. Maria Maggiore; but space forbids us to follow him further.

The next obeliskic monument is an atrocity committed by the great architect Bernini. It is situated in the Piazza Minerva, and consists of a small obelisk of bluish-grey granite surmounted by the cross, and poised on the back of an undersized elephant. The trappings of the animal are rich, and it carries a kind of saddle, the slightly-raised sides of which retain the shaft in its place. Add, that the obelisk is out of the perpendicular, and that the elephant stands upon a high pedestal, and a picture is presented to the mental eye which needs no criticism.

Hard by, opposite the Pantheon, is another comparatively small obelisk with hieroglyphics. In this instance, the stone is used as a terminal to its pedestal, a position which many other objects would have occupied to greater advantage. The lower addition to the obelisk is the most gratuitous piece of ugliness ever met with. The fountain, for such it is, consists of the cross, an obelisk, a broad rectangular cincture, a rectangular (!) continuation of the obelisk with a *congé* at the bottom, a moulded base, a plinth, an elaborate pedestal in the form of a truncated pyramid of curved lines, ornamented with dolphins, tiaras, coats of arms, a rockery on which the pedestal stands, a large basin, and, lastly, six steps on which the whole are raised.

The obelisk of Monte Citorio, erected in 1792 by Antinori, is perhaps the most ungainly of all. On its summit is placed a large "globe and spike," a finial even less successful than the cross. It is of red granite, with hieroglyphics, and has been much restored. The stone is 72 ft. in height, the additions together 62 ft.! If the ancient Egyptians were right in giving to the monument such proportions as they did, those who raised it where it now stands must have been very wrong.

There are many other obelisks in Rome; but the mode of treatment is so slightly varied that they do not call for any special remark.

Enough has been said to indicate that these works, which form the chief monuments which the Popes have left in this city, stand as witnesses to prove how vastly superior to the men of more modern ages, in matters of art, was that nation of remote antiquity whose creations are now rendered ridiculous.

Opening of the New Infant School, Hertford.—The infant school recently erected in the Hertingfordbury-road, to meet the requirements for the town of the Education Act, 1870, was opened on Sunday last. The new school-house is a structure in the Tudor style of architecture, the material being red brick. The building was erected by Messrs. Ekins & Son from the designs of Messrs. Wilds & Son, at a cost of about 740*l*. The size of the school-room is 40 ft. by 20 ft., and its height 14 ft. The class-room is 15 ft. by 17 ft.

ANNUAL CONGRESS OF FRENCH ARCHITECTS.

THE third session of the Annual Congress of French architects was opened in the Hemicycle de l'École des Beaux Arts, on the 7th ult., under the auspices of the "Société Centrale des Architectes." M. Henri Labrouste, president of the "Société Centrale," presided, assisted by M. Guillaume, secretary of the "École des Beaux Arts"; M. Sauvage, architect, of Lille, president of the "Société des Architectes du Département du Nord"; and by M. Mallay, architect, of Clermont-Ferrand, president of the "Société des Architectes de l'Ancienne Province d'Auvergne." MM. Auguste Duvert, Paul Sedille, and Charles Lucas, secretaries of the "Société Centrale," were *ex officiis* secretaries of the Congress. After an eloquent address by M. H. Labrouste, M. Hermant, one of the vice-presidents of the "Société Centrale," read a very carefully studied scheme, of which he is the author; but the conclusions of which have been adopted by the different committees, including the governing body of the "Société Centrale." This essay has for its object to restore *the legal responsibility of the French architect* (who, according to Article 1789 of the Code Civil, is at present liable along with the contractor, being considered as no more than a co-constructor with him); and, having rejected all idea of connexion between the architect and contractor, to place the former before the tribunals in the position of a director or representative agent, subject nevertheless to certain special conditions. In spite of a scheme of a slightly different tendency, read by M. Marteau, architect, of Lille, in the name of the "Société du Département du Nord," the Congress adopted, almost unanimously, the conclusions brought forward by M. Hermant, in the name of the "Société Centrale."

The first sitting was terminated by a lecture on the "Salon d'Architecture of 1875," by M. Chas. Lucas. A fortunate innovation to be noted, which was quite a success, was, that the speaker brought before the eyes of his audience, by the aid of a number of photographs and original drawings, the works of which he spoke; among others, the Restoration of the Forum of Rome under the Antonines, by M. F. Dutert; that of the Palace of the Emperors on Mount Palatine, by M. Seellier; the "Asile d'Aliénés," by M. Louvier; the design for a "Maison de Répression" at Nanterre, by MM. Trélat and Simonnet; and an attempt at the reconstruction in the Roman style of the Basilica of St. Martin, at Tours, by M. Baillargé, &c. The eloquent criticisms in regard to each of the works exhibited, were much applauded.

On Tuesday, June 8th, the members of the Congress met at nine for a visit to the new Paris Abattoir and Cattle-market, near the fortifications, at Villotte. M. Alphand, director of the Paris Public Works, received the Congress in the name of the Prefect of the Seine, who was unable to be present, and the honours of the occasion were done, with great interest to the visitors, by M. Janvier, the architect of the building. The members of the Congress passed successively over all the different services connected with the immense establishment, and particularly admired the "cattle-shelter" (*abri pour bœufs*), — a vast shed supported on cast-iron columns, and covering an area of 25,000 mètres, and, in a more artistic way, the "Exchange," for commercial transactions. In the large room of the Exchange a lunch was given to his professional brethren by M. Janvier, who also presented each visitor with a plan of the buildings.

At two, the Congress resumed its sitting at the École des Beaux Arts, under the presidency of M. Sauvage. Some excellent remarks were made in regard to public competitions, and specially in reference to the competitions for the *Maison de Répression* at Nanterre and the *Église de Sacré Cœur*, by MM. Lucien Étienne and Paul Sedille. Several architects of departments, particularly M. Meurant, of Douai, and M. Vandenbergh, of Lille, cited special cases of great interest, and an expression of opinion on the part of M. Trélat, architect of the "Department of the Seine," and director of the "École spéciale d'Architecture," has been adopted with the object of leading to a better system of drawing up the instructions for competitors, especially by inviting architects of standing and position to take part in preparing them.

Mr. Léopold Cernesson then read a notice of the life and works of Emile Gilbert, member of the Institute, president of the "Société Centrale" from 1854 to 1864, one of the two architects of the Mazas prison, and architect of the "Maison d'Aliénés," at Charenton. This essay, in which the lecturer evinced a respectful affection for the master whose life he retraced and whose works he appreciated, strongly moved the audience, and may be considered a model at once of sobriety of style and elevation of feeling. M. Mallay concluded the sitting by explaining, with the help of a plan, the archæological excavations made at the summit of the Puy de Dôme,—excavations which have led to brilliant results.

M. Dormoy, architect, of Bar-sur-Aube, presided at the third sitting,—that of Wednesday, the 9th. M. Chas. Lucas treated, in the first place, of the Restoration of Historic Monuments and Diocesan Edifices, and, in a carefully-considered study, of which the official report of M. Viollet-le-Duc has furnished a portion of the elements, showed what was really to be thought of all the outcry that has been made about the work commenced at the cathedral of Évreux. M. Lucas even proved, by the aid of a photograph recently taken of the actual state of the buttresses, that originally they only consisted of a single flying-buttress. After a violent storm, which interrupted the sitting, M. Lucas completed his lecture on the "Salon d'Architecture of 1875." The restorations of the Château of Pierrefonds, of Mont St. Michel, the Château of St. Germain, the Jubé at Fécamp, the Château of Pau, and the Church of Argès, in Valachie, &c., works exhibited at the "Salon" by MM. Viollet-le-Duc, Corroyer, Millet, Sauvageot, Laffolye, and others, excited much interest, and will certainly make the treatment of the "Salon d'Architecture" a necessity in the future annual congresses.

We may be able to report the further proceedings of the Congress in our next.

THE LATE MR. JAMES LOCKYER, ARCHITECT.

MR. JAMES LOCKYER, of 19, Southampton-street, Fitzroy-square, who died on the 23rd of May, after a lingering illness from paralysis, aged seventy-eight, was articled to Robert Abraham, and commenced business early on his own account. He acquired a large practice as the following list of the buildings carried out by him will suffice to prove:—Paddington Vestry Hall, Harrow-road; No. 86, Oxford-street, for Mr. Nicholay (now in the occupation of Alfred Duclos, the French confectioner); and a number of other houses in the same street; the Royal College of Chemistry, in Oxford-street (illustrated in the *Builder*),—the foundation-stone of this was laid by Prince Albert in 1846; the St. Pancras Industrial Training Schools; Manufactory, for Mr. Peirce, New Bond-street, and other houses in this street; Reading-room and Library, for Mr. Nisbet, Berners-street; Nightly Refuge, Market-street, Paddington; the Southampton Offices, Fitzroy-square; Trinity National District Schools, St. Marylebone; the Gilders' Asylum, Holloway; No. 95, Wimpole-street, for Mr. Morant; the Crown Hotel, Rupert-street, Haymarket; Vicarage House, for the Rev. T. Pittman, at Eastbourne; Farm Buildings at Falconhurst, Edenbridge, for Mr. Fox; the Spa Room and Hotel at Hockley, Essex; Knowle Church, Somerset; Enlargement of Limpsfield Church; the Enlargement of Tottenham Chapel; Additions and New Front, White's Club, St. James's-street (of which a view was given in our pages); also, Extensive Alterations at Keythorpe Hall, for the late Lord Berners; at Aldergrove, Epping and at Norfolk-terrace, for Prince L. L. Bonaparte; of Skirsgill Hall, Westmoreland, for Miss Dent; at Hackney Theological Seminary; and at Kidderpore Hall, Hampstead.

Of late years he had handed over his architectural practice to his son, Mr. Gilbert Lockyer, and confined himself to surveys and references, his integrity and clear-headedness being widely known. Like many others, we had personally a high respect for his character. About eight years before his death he declined the surveyorship to the Portland Estate, feeling that his health was beginning to fail, since which time his business has been carried on by his son and grandson.

Tenders for Sewerage in Marylebone.—At the Marylebone Vestry, on the 11th inst., tenders for certain sewer works, at Little James-street, Lisson-grove, and Henry-street, Portland-town, were received, and that of Mr. Cricket, for 1,084*l.*, was accepted.

AN OPENING FOR THE UNEMPLOYED.

SIR RICHARD TEMPLE, in replying to a letter from the projectors of a Science Association in Bengal, in which they asked support, drew their attention to "the demand which is springing up in all parts of Bengal for land-surveyors, for civil engineers, for geological surveyors, for foresters, for gardeners of a superior description, for persons versed in scientific agriculture, for carvers in wood and stone, for architects, and for many other sorts of men possessing scientic and artistic culture." The Lieutenant-Governor of the province went on to say that the more such persons increased in numbers and abilities, the more would the resources of the country grow, and the more would employment expand. Thus one cause would react upon the others. The fact of trained men being available on the spot would render enterprise profitable, and the success of such undertakings would cause occupation to offer itself to those who sought it. Sir Richard Temple's great desire is to induce educated East-Indian youths to adopt such professions as he indicated, instead of continuing to crowd into the public service and the bar, which are fast becoming overstocked, and cannot supply the means of livelihood for all the candidates who flock to them. The Eurasian cannot compete with the Anglo-Saxon; and if, on investigation, the prospect of success proves all that Sir Richard Temple has painted, some British members of the classes he has specified may think it worth while to accept his hint.

A PRESENTATION AT THE ROYAL ARCHITECTURAL MUSEUM.

ON Wednesday last a meeting was held at the above Institution to present a testimonial to Mr. Francis Child, under whom, for some time past, the drawing and modelling classes have been conducted.

The chair was taken by the president, Mr. Beresford Hope, M.P., who, in a few kind remarks, called attention to the great benefit Mr. Child had rendered to the Institution by his valuable, though honorary, services, for which he had sacrificed much of his time, and to which he had shown most indefatigable attention. The president then presented him with a gold watch and chain, the former containing this inscription:—"To Mr. Francis Child, for Services rendered to the Art Classes of the Royal Architectural Museum. Presented by the Council, May, 1875."

Mr. Child, in returning thanks, said that the work he had undertaken had always been a pleasure to him, since he felt that the art classes of the Architectural Museum were really furthering the cause of technical education among workmen. In the art manufacturers' workshops he more often saw students from these art classes than from the more important classes at South Kensington or the schools of art.

THE SANITARY STATE OF TIVERTON.

WE have received the following letter:—

"Sir,—I have just seen a paragraph in the *Builder* of the 12th inst., under the above heading. If you will read the *Tiverton Gazette* of the 15th inst. you will find that the persons you refer to as having been "killed," were not living in, but nearly a mile and a half from the town of Tiverton, and were "killed," to use your own word, by the negligence of their relatives; the whole matter being this, that the pump and well belonging to the house were out of order, and instead of getting them repaired they chose to drink water from some out-of-doors dipping-place.

If the Sanitary Authority ought to have found out that that pump and well were out of order, and seen to the repair of the same, then, and then only, will I admit that some blame attaches to the Authority for not having entered the residence in question and tested the water.

Now that we have Rural and Urban Sanitary Authorities, it appears to be the notion of some people that everything ought to be done at the expense of the rates, and that nobody ought to die.

The Sanitary Authority of Tiverton may well ask itself,—'Am I God, that I should kill and make alive'? C. M. HOLE, Town Clerk."

If we are to judge from this letter, we know more as to the state of parts of Tiverton and its neighbourhood than the town clerk, and would suggest to him the necessity for a little

careful inquiry. The Sanitary Authority of Tiverton have certainly power to kill, whatever their ability or will in the other direction may be. We should have been glad to find indications of a rather different spirit in Mr. Hole's letter.

It will scarcely be believed that the town clerk had written two days before to the Local Government Board:—

"The Sanitary Authority have only to add that in consequence of the very unusual epidemic of scarlet fever which has occurred, they have the instructions of the Council to consult some engineer of experience, with a view to render effectual the water supply and drainage of the town, and they will be prepared to carry out any well-considered plans which may be advised for the benefit of the public health."

And that the Medical Officer of Health has reported that during the months of April and May just past there have been seventy-two deaths, while the average of the past five years would make the number thirty-seven! Was it not quite time for us to point out that "A number of people have been killed off before their time, and a larger number made ill, through the want of proper sanitary arrangements in Tiverton and its neighbourhood"?

ANOTHER LARGE RAILWAY STATION.

THE awkwardly-situated station at Dunlop-street, Glasgow, is to be improved away, and a new structure for the use of the Glasgow and South-Western, the Glasgow City Union, and the Midland Railways is already commenced in its stead. As a fitting terminus for the Midland Railway in Scotland, the St. Pancras Station is to be reproduced with all its bold features, but on a somewhat reduced scale. The length of the new station is to be 522 ft., but instead of a span of 240 ft. as at St. Pancras, the span at Glasgow is to be 198 ft. Owing to the arrangement of the side walls, the main ribs cannot conveniently be placed so near together as at St. Pancras. The purlins, because of their greater length, require, therefore, to be proportionately stronger. The principal difference which will strike the eye is in the diagonals forming the lattice of the main ribs, the Glasgow ribs having only a single triangulation instead of the double or cross triangulation at St. Pancras.

The engineer is Mr. J. F. Blair, while Mr. Milroy represents the contractors, Messrs. Thos. Brassey & Co., who have been for some time past engaged on the adjacent railway work.

The construction of the roof, in which there will be about 900 tons of iron, has been entrusted to Andrew Handyside & Co. (Limited), of Derby and London, who have already built roofs for the large terminal stations of the Midland Railway at Bath and Liverpool.

ACCIDENTS.

DR. HARDWICKE held an inquest, on the 14th inst., at the Bank of England Tavern, Paddington, as to the death of Samuel Odell, aged 34, a labourer, in the employ of Messrs. Kirk & Randall, builders, of Woolwich. The deceased was engaged in pulling down a wall 12 ft. high in Nightingale-street, Lisson-grove. Suddenly the wall gave way, carrying with it the hoarding. The deceased was conveyed in an insensible state to St. Mary's Hospital, where he died, eight hours after admission, from a fracture of the base of the skull and injury to the brain. The jury returned a verdict of "Accidental death."

On the 11th inst., a bricklayer named John Evans, whilst employed by Messrs. Smith & Hewit, of Old-street, St. Luke's, on a scaffold erected at the Midland Railway Goods Station, at Agar Town, slipped and fell to the ground, a distance of some 20 ft. to 25 ft. He was picked up in an insensible state and conveyed to the Royal Free Hospital, where little hopes were entertained of his recovery. He was suffering from severe concussion of the brain, one of his shoulder bones was crushed to pieces, and his ribs were severely fractured.

On the same day James Welch, aged 44, a labourer, fell from a scaffold on which he was employed a distance of some 6 ft. or 7 ft., and so severely injured his ankle that he was admitted to the Royal Free Hospital.

At Ramsgate, on the 12th inst., a number of men were at work on a high scaffolding, when suddenly it gave way, precipitating the workmen to the ground. Some escaped uninjured, but four of the men were fearfully hurt, and one shortly afterwards expired.

At Peckforton, Cheshire, on the 11th inst., Mr. Churton held an inquest, touching the death of a labourer named Hewitt, at Peckforton Castle. It appeared that the deceased, with others, was removing ivy from the lodge tower, and while a ladder was being shifted he clung on to a chimney, the cope-stone of which gave way, and precipitated him a distance of 40 ft. to the flags below. The deceased was picked up in an unconscious state. Death subsequently ensued. The jury returned a verdict of "Accidentally killed."

On the 10th inst. an accident happened at the Steel and Plant Company's Works, Newton Heath. A number of men were working in the "converting" house, when the roof suddenly fell in. A man named Jackson Longhorn had two fingers taken off his left hand, besides being otherwise injured; and James Phœnix was severly injured about the head. They were removed to the Infirmary. A boy named Bywell, was carried home, but he appeared to be suffering most from fright.

WATER SUPPLY AND SEWERAGE WORKS FOR ALCESTER.

AT the last meeting of the Sanitary Authority, in consequence of Dr. Ballard's report upon the present defective state of the town as regards sanitary matters, it was unanimously decided that Alcester be included in the list of places for which urban powers are sought. It was stated that it was probable that the town would have to be constituted a special drainage district; and ultimately it was decided to instruct Mr. E. Pritchard, C.E., of Warwick, to report to the sanitary committee on the best and most economical method of providing suitable works of water supply and sewerage.

Ashwood Bank, Worcester.—Last week, after a long inquiry, Major Tullock, R.E. (one of the Local Government Inspectors), inspected the proposed drainage district of Ashwood Bank, and he desired the clerk to inform the sanitary committee (Alcester) that a modification of the proposed system might be made, and that it would be better to call in the aid of a practical consulting engineer for advice as to what should be done, when it was decided that the services of Mr. Pritchard be secured to advise the sanitary committee upon such subject.

SCHOOL BUILDING NEWS.

Barnet.—Queen Elizabeth's school, which is a grammar school established by charter of Queen Elizabeth in 1573, and which has undergone reconstitution and enlargement under a new scheme by the Endowed Schools Commissioners, has been re-opened. The old building consisted of a quaint old hall (built at the time of the foundation of the school) and master's house, which were in a dilapidated condition. This hall, which will now be used as a dining-hall, has been restored to its original dimensions, with a new Elizabethan front at the east end. The new buildings, which are erected in a free Elizabethan style in keeping with the remains of the old school, consist of a master's house, built of brick and roofed with plain tiles, and with bay windows, timbered porch, and open hall and staircase. The new school buildings are connected with the old hall by a committee-room and laboratory, and contain four large class-rooms (two downstairs and two upstairs), with open-timbered roofs and broad staircases. Each room measures 26 ft. by 19 ft., and 15 ft. high, and provides space for thirty or forty boys under one master. They are furnished with desks and seats with backs, and are well lighted, the light being so arranged that it should always be on the left of the boys; and the gas-burners are placed in the same position. The architect is Mr. William White, and Mr. William Carter, of Holloway, is the builder. The cost of the class-rooms and the head master's house, with fences and various offices, is 4,000*l.*, to which sum must be added another 1,000*l.* for the purchase of land and levelling and gravelling play-ground, &c. The play-ground is a large one, an acre of land having been purchased for the purpose.

Goudhurst.—These schools, which have been built, according to the requirements of the Education Department, to hold 100 infants, and 150 boys and girls, mixed, were opened on the 17th ult., by the Rev. Julius Deedes. The schools, with two houses, are built on the site of the old grammar-school, of red brick, with light-coloured tiles, designed by Mr. Morris, of Bedgbury. There are two class-rooms, and an infant school, 36 ft. by 22 ft. The contract was taken by Messrs. Marshall & Cramp, of Cranbrook, for 1,900*l.*, including all fittings. Provision has been made for 215 children, at a cost of 2,000*l.* The buildings stand back from the road, and are rather hidden by houses, but are open to the south, and look over the valley to Bedgbury.

Newbury.—New schools in connexion with St. John's Church, provided by the vicar's father, Mr. Morgan, at a cost of 3,000*l.*, were opened by the bishop of the diocese, on the 12th inst. The buildings were erected from a design furnished by Mr. J. H. Money, architect, of Speenhamland, and the style is an adaptation of the Domestic Gothic. The building is entered from the Newtown-road, by a porch and lobby, leading to the school-room, the clear dimensions of which are 55 ft. by 22 ft. There are also class-rooms and requisites for carrying on the work of education among the poor children of the district. The contractor was Mr. W. G. Adey, of West Mills.

Morton.—On the 8th ult. the foundation-stone was laid at Morton of a Congregational Sunday-school. The designs for the new building have been prepared by Mr. J. B. Bailey, architect, Keighley. The school will be 40 ft. in length by 28 ft. in width, and will be capable of accommodating 250 scholars. There will be three large class-rooms and a vestry. The cost of the building, &c., will be from 650*l.* to 700*l.*, towards which sum the congregation have subscribed a little over 400*l.* The contractors are Messrs. Hartley, Morton, masons; Mr. John Taylor, Morton, joiner; Mr. Newbould, Keighley, plumber; Messrs. Thornton & Son, Bingley, slaters; Mr. Eli Sharp, plasterer; and Mr. C. Dawson, Bingley, painter.

Abbot's Bromley.—On the 27th ult., the first stones of new school buildings and a Memorial Chapel, about to be erected in connexion with St. Anne's Middle-class Boarding School for Girls, were laid. The school, which is under the direction of the Provost and Fellows of SS. Mary and John's College, of Lichfield, is intended to provide "religious and useful learning upon a sound and accurate system, and at the same time to prepare girls for the homely duties of life." It is contemplated to enlarge the premises so as to allow of the reception of 100 girls. The new school buildings will extend some distance in line with the present house, and then be projected forward at a right angle to it. They will be three stories in height, the lower floor being appropriated to general school and class-rooms, and the upper floors to dormitories, bath-rooms, &c. The chapel when completed will form the third side of a quadrangle. The portion of it first to be erected, viz., the choir and sanctuary, is to be raised as a memorial of the late Miss Lowe. The chapel will be in the Early Decorated style, and built of bricks 2 in. only in thickness, similar to those commonly used in Belgium. Its height, to the apex of the roof, will be about 50 ft. From the chancel step to the east wall of the apsidal termination of the sanctuary will be a length of 25 ft., with a breadth of 20 ft. For the present the inside walls are to be left rough to the height of 15 ft. to allow hereafter of mural decoration. Mr. Carpenter, of London, is the architect; and Messrs. Espley & Son, of Stafford, are the builders. The contract for the choir and sanctuary will be about 1,000*l.*

Llanfachretts, near Dolgelley.—Some additions have recently been made to the national schools at Llanfachretts. A new schoolroom, 20 ft. by 16 ft., with gallery, has been built, and a master's residence, consisting of parlour (16 ft. by 12 ft.), kitchen (12 ft. by 10 ft.), and three bedrooms, with the usual offices. The roof of the school is of trussed-rafter construction, stained deal, lath-and-plastered at back of rafters. The walls are built of very hard local limestone, which is obtained in large blocks roughly squared, the quoins being of the same material. The roofs are covered with Portmadoc slates, the ridges being composed of red tiles. The dressings are of Wrexham stone. The cost of the work (about 500*l.*) has been defrayed by Mr. John Vaughan, of Nannau, Dolgelley. Mr. Edmund B. Ferrey was the architect.

Eye (Suffolk).—The Grammar School of Eye, founded about 1566, being in a dilapidated condition, and the want of a good middle-class school being felt, it was resolved to restore the old school-house, render it suitable for the residence of the head-master, with accommodation for boarders, and to build a new school-room; and by legitimate restoration the tumble-down building has been turned into the quaint

open timber house that is now to be found in its place. When the work of restoration was taken in hand by the builders, the first thing was to reduce the walls and roof to a skeleton, leaving nothing standing but the timbers of the walls and the principal beams of the roof. The skeleton has been simply restored and filled in afresh, and the beams which supported the floor of the upper story three centuries ago serve that purpose still, so that the school-house is still the house in which the school was first held. The upper story projects, and new wood in the projecting beams that support it is a rarity. On the churchyard side of the building are three oriel windows to the first floor, each having a carved oak corbel. The oriel window in the gable facing the street has a corbel on which the arms of the borough of Eye are carved. The chimney-shafts of red brick are in keeping with the style of the building. The interior of the old house has been rearranged, and besides providing accommodation for the master and his family, there is room for about fifteen or twenty boarders, convenient offices have been built, water laid on to the dormitory, and a spacious day-room for the boarders built out at one side. A gravelled space, separated from the road by open oak gates, and leading in the rear to the playground, runs between the school-house and the new school-room, built of red brick, with a high-pitched tile roof, and with stone dressings, to the windows. This consists of a large school-room, 36 ft. by 18 ft., with a class-room 18 ft. by 16 ft. in the rear. The gable faces the street, and here is the main entrance—a lean-to porch of timber, which forms a lobby. The spandrels of the doorway are carved, there being on one side the arms of the Honour of Eye, and on the other those of Sir E. Kerrison. Mr. J. K. Colling, of London, was the architect; and Messrs. Vine & Day, of Eye, the builders.

Hillsley (*Wotton-under-Edge*).—New schools have been built in this village. Mr. Hale, the lord of the manor, provided a site, and gave the stone for building, in addition to subscriptions towards the building fund. The schoolhouse and playgrounds occupy about a quarter of an acre of ground, and are situated on the right of the road to Kilcot as it enters Hillsley. The schools are from designs by Messrs. Medland, of Gloucester, and form a square building of about 51 ft. by 49 ft., rising with a gable end in the middle of the front of the building, and covered with Bridgwater dun-colour tiles. The interior consists of two rooms—an infants' room, 30 ft. by 16 ft., fitted with gallery, and a lobby at each end. A larger room for the elder children runs the length of the building, giving an interior measurement of 47 ft. by 18 ft. This is divided if required, by curtains, to separate the girls' and boys' school, and is fitted up with pitch-pine desks, upon Sidebotham's patent standards. The woodwork is stained and varnished. The cost of the building, exclusive of stone and ground, was 400*l*. The masonry was executed by Mr. G. Werrett, of Hillsley; Mr. Bloodworth, of Dursley, doing the woodwork.

THE ARCHITECTURAL ASSOCIATION.

AT an ordinary general meeting of the Association, held on the 11th inst., under the presidency of Mr. Birch, Messrs. Wm. Eade, Wm. Jacques, and G. R. Desgrane were elected members.

Votes of thanks were accorded to Mr. Perrott, the engineer of the Floating Swimming Baths, and to Mr. Croad, the clerk of the London School Board, for the facilities these gentlemen afforded on the occasion of the recent visit of the members to these places.

The president said that with regard to the proposed fusion of the Architectural Association and the Royal Institute of British Architects, he believed that the secretary had some communication to make to the meeting.

Mr. S. Flint Clarkson (Hon. Secretary) then read the following "message" from the committee of the Association:—

"11th June, 1875.

"The question of the possibility or advantage of a fusion between the Royal Institute of British Architects and this Association was brought under the notice of the committee, when they were informed that the special committee on the affairs of the Institute had appointed a sub-committee to confer with a sub-committee of the Association on the subject. A sub-committee of members of the Association was accordingly appointed, and the sub-committee have met and conferred.

The following report, dealing with the questions referred to them by the committee, has been furnished by the sub-committee. In submitting it to the members of the Association, the committee desire to express their general approval of its contents, and to state that they wish to co-operate with the Institute in every possible way, keeping clear of any attempt to rival that body. It will always be their endeavour to induce the senior members of the Association to become members of the Institute."

"*To the Committee of the Architectural Association,*
4th *June*, 1875.

Gentlemen,—We beg to report the result of our consideration on the subjects referred to us by the committee in the resolution of the 16th April, 1875.

1st. With reference to the suggested fusion of the Royal Institute of British Architects and the Association.

We have taken into consideration the scheme suggested by Mr. T. Chatfield Clarke, which has been already reported to the Committee of the Association, and it does not appear to us such a fusion would be either desirable or possible. We consider that it would imperil the usefulness of the Association, owing to the control under which its work would be carried on, and so radical a change in its constitution might paralyse its energy for years. We cannot recommend the members to part with their present independence of action, in which we recognise one of the means by which the Association has attained such great success.

We are fully aware of the advantage that would be gained by a joint and unanimous action of the whole profession in securing and maintaining professional status, awarding honours, promoting education, and accumulating the results of study and experience; but such united action does not at present appear possible, and it is unnecessary to speculate as to the future.

2nd. With reference to the question referred to us, 'whether a scheme on the basis of co-operation rather than fusion is worthy of consideration':

We are of opinion that there is no desire on the part of the Association to stand apart from any action by the profession or the Institute in which the Association can render any assistance; nor do we anticipate any such disposition in the future. The relation between the two societies is quite free from any antagonism or rivalry. Still, as each Society has, and should keep to, its special sphere of action, co-operation could only take place in such matters as:—(A) An interchange of invitations, by which members of either Society would be at liberty to attend lectures or other general meetings of both Societies; and, occasionally, joint meetings of the two Societies might be held for the discussion of suitable subjects; (B) the abandonment by the Institute of its class of students, the Association being recognised in the place of the same, and assisted by such influence and privileges as the Institute can give to it; (C) the joint use of the libraries by the members of both Societies,—that of the Institute for reference, and that of the Association for circulation, with such arrangements as would secure the extension and best use of each; (D) joint action on the part of the two Societies in order to obtain a better system as to awarding prizes.

Other similar modes of co-operation might be suggested, which could be carried out without affecting the independent existence of either Society; but any attempt to obtain an official connexion between the two Societies would not materially assist either, whilst there might be danger of the less powerful being injuriously controlled, or of a collision of opinions or interests.—We are, gentlemen, yours faithfully,

(Signed) GEORGE H. BIRCH,
JOHN S. QUILTER,
BOWES A. PAICE,
S. FLINT CLARKSON,
EDWARD G. HAYES."

Mr. Quilter announced his intention at the next meeting of moving a resolution affecting Rule 5 of the Association; after which several officers were nominated to serve on the Committee for the next Session, the president for the year proposed being Mr. J. S. Quilter.

Mr. S. Flint Clarkson stated that the annual dinner would be held on Wednesday, the 30th inst., at the Holborn Restaurant; and that the annual fortnightly excursion of the members would start on the 30th of August. With regard to the Saturday afternoon visits, the last of the season would take place on the 19th inst., when the members would visit Christ Church, Westminster Bridge-road.

Professor Lewis then read a paper on "What a Student's Course in Architecture should be," a report of which we give below.

"WHAT A STUDENT'S COURSE IN ARCHITECTURE SHOULD BE."

PROFESSOR LEWIS, after a few introductory remarks, said that he would, in the first place, ascertain clearly the objects to be aimed at, and then see how students could best work up to them. He assumed the common case of a youth, fond of drawing, charmed with the picturesqueness or splendour of our grand old buildings, or ambitious of the distinction to be acquired by designing new. In his views every feeling was subordinated to that of the artist. All his training, so far as his inclination went, was limited to that. Then he found, when he came to the real working life of an architect, that he had painfully to work up again many a branch of study which he had abandoned before he knew how it would aid him in the profession which he chose. The classics, for any branch of it beyond the mere routine; mathematics, for calculating the strength of materials and their strains; the rudiments of the physical sciences, for understanding the nature of materials; and so on. Or, take the case (more common, perhaps, and more to their purpose) of a youth or his parents, who had clearly before them the fact that much beyond an architect's training would be required; but, uncertain as to the amount of knowledge that would be wanted, or the steps by which it could best be attained. Now, in the first place (and the point was of more real importance than perhaps it appeared to be), they wanted to take their place in society on equal terms with the members of other professions, and to do this they must equal others in knowledge, who had a concise test as to what that knowledge was expected to be in the subjects given for examination at the entrance to them, no matter what the profession might be. The army, the law, medicine, each examination showed that its members were expected to have some knowledge of classics and modern languages, mathematics, and the physical sciences, English history, and literature. In special cases, such as the Indian Civil Service College, and for the Royal Artillery and Engineers, the examination was very severe, and a good knowledge of drawing was also required. But the list which he had given above was suggested, if not absolutely required, in all. They might say that all this was true, but that an artist held his position in society by his artist work only, and if that were worth the having, he kept that position, whether he were learned or not. But the Association would all bear him (the speaker) out in saying that in most cases they met in an accomplished artist an accomplished gentleman; and he need scarcely say that one at least of the leaders amongst the artists might almost lay claim to be a worthy successor to the Admirable Crichton. He assumed, then, the necessity of an education equal to that of those with whom they were most likely to meet in the world as friends or as clients. Now, how was this knowledge to be obtained? He supposed, again, the question to be asked by the parent proposing to bring up his son essentially as an architect, was that he believed all that was then wanted for the young intended student was the ordinary education of an English gentleman, supplemented with some special instruction in drawing, and somewhat more in science than was usually given. He should be sorry to think otherwise; for of all the modes of cramping genius, he believed an absolutely technical school to be about the worst. Obtain first, he went on to say, a good primary groundwork in knowledge generally, and let technical work come after. To go one step further, his decided feeling was that nowhere was this primary education to be so well acquired as at their great universities. He knew their shortcomings in the matters of drawing and science. But all this was being amended, and when they had seen Sir Digby Wyatt a professor at Cambridge, and witnessed the brilliant success of Mr. Ruskin at Oxford, they might be sure that art would receive more care there than ever it had before. Anyhow, be it little or much, as much attention was paid to art and science at the universities as they were likely to find elsewhere. He did not say that in passing through them any one *must* have obtained what was wanted. To many, no doubt, all training there was useless, so must *all* training anywhere be to many; but college life implied discipline, tests by frequent examinations, contact with clever men, and an atmosphere, if he might so express it, of learning, which could not be obtained elsewhere. He might be allowed to speak of his own experience after what might be called, he supposed, a tolerably successful career; and the greatest want which he had felt, and felt bitterly many a time at his first start in life, was his not having been to a university. He told them fairly that some amongst them who had been there, did not value it as he did. He spoke simply from his own experience in the particular path of life in which it was gained, and in which most of his fellow workers were university men. He knew, too, that university life necessitated a later start in the strictly professional life than would otherwise be required. No doubt it did; but he did not believe that the time was wasted. No one would trust a youth with work worth having until years after college life had ended; and they might depend upon it that three years time of study in early life would prove of incalculable value afterwards. In a public school there were, of course, much the same opportunities of study as at college; frequent examinations as tests; and something of the same prestige in after-life as a university gave. But, as to schools generally, he could say nothing, simply because their status varied in every conceivable way, both as to the kind of knowledge given and the way of giving it. No doubt there was little special training anywhere; and an amusing instance, bearing directly upon

his subject, was given in the last report of the Cambridge examiners. They examined 4,283 boys and girls at 114 centres, so that the range was a large one; and, as an instance of what an architect would learn in the way of drawing, they noted that many candidates drew without the least regard to the rules of perspective, and that many who had evidently heard that certain lines ought to converge to a point, proceeded to make them do so accordingly, but with remarkable rapidity. And what an architect would learn as to his common work might be seen by another question, viz., what quantity of paper would be required to paper the sides of a room of a given size and height? Thereupon almost all the girls, and many of the boys, set to work at once, either to find the area of the room or its cubical contents. Now there was nothing difficult in the question. Arithmetic and drawing had simply been learnt parrot-like, and no attempt had been made to adapt their working to the common uses of life. Such, no doubt, were the shortcomings of the schools in which most of their young architects, so far as he could see, must be educated; but the mere fact that such shortcomings were now brought to light was an earnest that they were likely to be amended. Now, as to the student, when he began work—he said nothing now as to their English system of pupilage as compared with the foreign one of the Academy—pupilage was that to which they were accustomed, and whether it was best (and he confessed that he thought it *was*) or not, they must take it as they found it. Now what did a student learn in an architect's office? So far as teaching went, he had commonly found, though there were no doubt bright exceptions, just nothing. No one as a rule taught; the pupil simply picked up what he could from the work that was going on in the office, and from his fellow pupils or assistants there, having at rare intervals a little bit of advice and instruction from his master. He spoke feelingly, for he had *none*. The drawings and specifications on which he had to work were, for the most part, dry and well nigh unintelligible to him, and if he had entered the profession with enthusiastic feelings in respect to it, his ardour too often got damped at the outset. Was this beginning of the technical education right? He thought not; but the fact was as he had stated; and so let them learn what was to be acquired out of the office. Undoubtedly, first, the power of being able to draw from the buildings which they ought to study, and then open out to themselves the secret of their beauty, was the reverse. He said nothing now of drawing from the life—the finest way no doubt to train the hand and the eye to the perception of what was most beautiful in form. Now not only in drawing could they realise to themselves the secrets of the design, but in sketching a building or a detail in the way in which it ought to be sketched, they could not fail to perceive which were the most important of the outlines, how the skeleton was filled up by the ornaments added to them, how the whole system of the construction was carried out, and how for themselves they might produce such effects in their designs. In no way, so well as by a careful drawing of the thing itself, could they ascertain this. He did not say that good sketching must result in all this. A man might have the power of appreciating the beautiful, but the power to create it was vastly different, and the above result might, perhaps, not be gained. But sure he was that no one was able to design (except by chance) a thing worth looking at, unless he had mastered the principles on which such things should be done, and no way was so likely to lead him to this as the habit of carefully sketching, first to get the perspective effect of the masses, and then, if need be, by measured drawings, worked to scale on the spot. He was pleased to see that the silver medal of the Institute, and the Pugin memorial prize, were usually well competed for, as the requirements of the competitors for them, as carried out by the Institute, gave just what seemed to him to be wanted. And, in speaking of sketching, he would ask them to take from him a few words of advice, which long practice entitled him, perhaps, to give, and which, no doubt, had already regulated the practice of most there—never alter or add to a sketch unless the actual thing sketched was before them. They never could be sure that in what was called finishing a sketch they had not added or omitted something, trifling it might, perhaps, seem at the time, but possibly important after all. Make pretty copies if they thought it worth the trouble, but leave the original untouched. Let them use themselves to sketch without compass or rule, except, of course, in measured drawings, and they would find that they would soon be able to do without them, and their work would be more free, and, in the main, more true. Now to work out what he meant of the extreme value of sketching. First, they must, from absolute necessity, get the general outline, and thus they could study the effect of the mass, irrespective of details, much as they did when they studied an outline, boldly marked out by moonlight against the sky, whilst its details were hidden by the gloom. No one could draw a graceful outline thus without its giving him a practical lesson in design. Then came the important details of doors and windows, showing more delicate contrasts of light and shade. Put in the joints of the masonry or other work, and they had the construction. Then came the ornamental parts, and these would show how the constructive and other main lines were emphasised, not hidden; and thus they got the whole history of the structure in their minds, whilst its likeness was being formed by their pencils. He thought so very much of the effect of sketching in the training of a young architect that he had ventured to bring a few sketches here of his own, not as possessing any artistic merit, but serving only to show how easily rule and compass might be dispensed with after a little practice. He would advise them not to lose any opportunity of sketching, and of measuring and drawing details to scale on the spot. Most of the eminent architects had sketched through their whole career, and the members of the Association could not do it too much. He must decline to enter into the invidious question as to where power of freehand drawing was acquired, but one exception to this he could fairly make in the Royal Academy. Wherever else they might study, the Royal Academy would always be the fountain of honour in art, and to become one of its students was one thing to be aimed at by every young architect. He knew well that his own first start in life was given to him by one of its medals, and Mr. Spiers and Mr. Watson would doubtless tell them much the same. He knew its shortcomings; and the success of Professor Poynter's Slade school was an emphatic protest against them. But in architectural drawing, simply, they had at the Royal Academy, a colleague, Mr. Spiers, in whose zeal and talents they might safely rely on doing the best that was likely to be done for them. Once in the Royal Academy its prizes and all its sources were open to them, and they got there much that they could not obtain elsewhere in most departments of art. In drawing from the life and from the antique, he believed, however, that Professor Poynter's school was pre-eminent. As to the history and literature of architecture and the elements of construction generally, he would much like to have said something as to the lectures at King's and University Colleges, and he purposely had this lecture postponed because it was his intention to resign his professorship at the end of this session, and then he could have spoken more freely,—of his own part, at least. For various reasons he had not done so, and thus his mouth was well-nigh stopped as to this. But he might say this much, had he known of these lectures when he was a pupil, and had gone through such a course as that of Professors Donaldson and Kerr, and had these gentlemen pointed out to him the leading facts which he ought to know, they would have suggested many a subject of which he was well-nigh ignorant until long after, and thus saved him a vast deal of groping in the dark, and have taught him, with a little exertion in early life, much that only came to him afterwards by experience, and often dearly bought. He spoke now only of the history of their art, not design. That at least was a delicate thing to try to teach. On the one hand, teaching might lead to an academic formalism; on the other, a habit of regarding too much the details of a style, and thus working in a narrow and contracted way. In this matter of art he knew of no such admirable way of learning as that for which they owed so much to Mr. Edmund Sharpe. Under such a guide, with the opportunity of seeing a building under different aspects of light and shade, and from various points of view, not only could the varying effects of perspective be studied, but the value of every detail was brought home to the student in a way which it would be hopeless to expect from any lectures in a room. With regard to the more practical part of the subject, he knew well how a youth, looking at architecture merely as one of the Fine Arts, felt how like drudgery it was to turn for a time, however small, to study, however slightly, so dry a subject as mathematics. Very joyous to the student must be Professor Huxley's idea of it, and he (Professor Lewis) quite admitted that their grand old groined roofs, and other triumphs of Mediæval construction, were achieved without their aid. But then they could not ignore the fact that this construction was perfected by repeated trials and repeated failures, which established those rules which modern science had reduced to a matter of rote; and he must be blind indeed to what is passing around him who would attempt to vie with the bold construction of the engineers, and yet ignore the science by which alone that bold construction might be safely tried. In this matter of construction the want of supplemental teaching was equally great as in drawing; but it was not easy to suggest the proper mode of supplying it. Special courses of lectures upon the various subjects to be studied seemed to be the most obvious one; but he was very doubtful as to whether they were not over-lectured as it was; and, in any case, he doubted their meeting the requirements needed. His own view was that they wanted something that would come more home to them, and it was for that reason that he originally took the clauses in an ordinary specification as the basis of the more elementary of his college lectures. But anything of this sort seemed to him to require to be supplemented by something which would bring the student face to face with his actual work, and his view was that this would best be done by extending the system which had already been of much use here, viz., of visits to large buildings in progress, not looking upon them as mere matters of pleasure, but as genuine practical lessons, given with the working examples before them, by a thoroughly competent person, who should make a complete analysis of materials and construction as much a matter of business as though he were in a lecture-room. Supplement these by visits to iron foundries, brickfields, workshops, and so on, still under skilled guidance, and then have the formulæ and other such matters worked out here as a wind-up in a way somewhat of lectures and teaching. The lecturer must, no doubt, be a paid one, and the work would be too great for the Association to undertake; but he thought that it might well be tried by the Institute, and be of more value and interest than any series of ordinary lectures; and this system, if approved, might be afterwards worked in the country also, and so give to students much greater opportunities than they at present possessed for acquiring knowledge. They wanted then, so far as he could see, as a supplement to their office work,—first, such lectures as could be given at college to explain the history and principles of art and construction in a large way, thus receiving a clear, general view of the subject; and then have the details worked out on the spot, item by item, in a thoroughly practical manner. Their own system of classes, by which they could test their knowledge with each other, would supply the rest. Now, as to the examination. He took a special interest in this, not only as having been one of the earliest examiners, in company with Sir G. G. Scott and Mr. Ashpitel, but because it so happened that it was during his hon. secretaryship at the Institute that the Council put the examination forward as a definite object of the Institute to work out. Now he knew well the objections to it, and the shortcomings of all examinations,—those at least conducted on the English plan. No doubt they narrowed to some extent the study of any particular subject, and led to a system of cramming for any one part of it selected. So much he fairly knew was this the case, that every examiner of large practice soon found out that if, *e.g.*, he suggested for any subject a particular author, that author alone would be read up. If he narrowed the reference to one volume of that author, then the volume only would be read, and so on to a very conceivable extent. Of greater importance was another objection, which had, he knew, led some men of eminence to look with disfavour upon that part of the examination which embraced drawing. They doubted the power of any examiner to assign proper and exact places of merit to designs, worked out in various styles, and feared that the students' work would be influenced by the known feelings of the examiner. These difficulties certainly did not present themselves in his (Professor Lewis's) experience, and he thought that he might say the same of others. But the examination had to him a prospective advantage beyond the mere learning. The published list of questions would show clearly to any intending student exactly the kind of

knowledge which would be of real use to him, and also the technical reason for its use, and, in after life, invite him to keep up some branches of knowledge which otherwise he might neglect. In conclusion, the Professor said, the case seemed to him to be this. A student before entering an office required a good ordinary education, but with a much greater knowledge of drawing and science than was usually obtained. But as to the technical training, which the architect required afterwards, Professor Lewis was more at a loss. In few instances did the pupil gain this in the ordinary routine of office work, and he must learn what he could from his fellow-pupils or assistants, or seek for it elsewhere. And beyond the office there was no definite place to be pointed out in which he could acquire it. The three years' course of engineering at King's and University Colleges supplied much of it, no doubt, but few young architects would afford time for this, and drawing, so important to them, occupied but a small place in the course, and, so far as at present existed, he must rely upon such applications of learning as such classes gave him; even were the means to be obtained, they could scarcely be of much avail, unless it were a recognised custom to allow the pupil more time to study than he had usually now. Offer what inducements one might, it would only be those young men who had greater energy than usual who would set to at hard work after their office work was done. But, if time were allowed, he thought that some such means as the lessons on the spot, by such a man as Mr. Sharpe, in art, and by others on construction, would go a good way towards supplying what was required. These might be of modest proportions, as compared with the grand academic education of the Continent, but after all it would be merely carrying out their work pretty much in a thoroughly English way, viz., that of submitting themselves loyally to some one teacher, a leader in whom they could put faith, and then, for working out the details, relying upon themselves.

Mr. Robins said that they must all have had an immense sympathy with the principles which Professor Lewis had just laid down. The system adopted in England of apprenticeships was very different from that abroad, which he thought should not be the case. He considered that there was a speciality in art as well as in other things, which was very important to them, and a specialty in the architectural profession he considered might be carried on with advantage to all of them.

Mr. E. J. Tarver stated that one of the earliest recollections he had, as a student, was that of a kindly smile and friendly nod which one always got from Professor Lewis. With regard to the subject before them, he would venture to make a suggestion as to the period of terms of their articles at one office, which, in his opinion, was too long,—three or five years in one office becoming rather monotonous to a student. He did not mean to say that the period of education should be shortened; on the contrary, it should be much longer; but he would recommend that a student should only remain in one office a single year, which was an uncommonly bad thing for the master, but the best thing for the student.

Mr. Phené Spiers agreed with Professor Lewis that it would be of great advantage to the profession if a large number of its members were educated at the universities. As to supplementing their course, University and King's Colleges had been referred to, and he thought that if it were possible to spend a year or two at either of these colleges, it would be of the greatest possible service to every architect. If this could not be done, the next best thing was to attend evening lectures, and he was in hopes, some time or other, that the Institute would establish a course on purely technical subjects. For the first two or three years, as a rule, students did not know what to do; but he would urge upon them the necessity and importance of learning to think for themselves. With regard to architectural examinations, there had not been that success in this respect which was hoped for. Since Professor Lewis first started the architectural examination, there had been many changes made in it in accordance with views expressed by this Association. At the recent examination, when there was not one stumbling-block in the way, for every possible facility had been given in the matter, only five students presented themselves. Did students now think that the examination was hopeless? It was perfectly useless for the Institute to continue examinations if such a small number again came forward. The main value of the examination was, that it gave an end and aim for all the study done at the Association. A committee of the Institute were again going to take up the question of their prizes, and he trusted that the students would, during that time think over the matter.

Mr. Ferrey considered that an immense benefit was gained by architects visiting works which were in progress, for such experience was invaluable, and could not be obtained by any amount of book-work. He did not agree with Mr. Tarver as to a pupil being only one year in an office, and thought that three years was not at all too long.

Mr. J. Douglass Mathews agreed with Professor Lewis that it would be to the advantage of the architect to be accompanied to brick-fields, timber-yards, &c., by some competent man, who could in a short time give him a full knowledge of any technicalities during such visits, which would be to the advantage of himself and his clients hereafter.

Mr. Watson said that it seemed to him much of their difficulty arose from the fact of having a very large syllabus before them, and not knowing what to do. He believed there was nothing more valuable to students making their first steps in the architectural profession than these examinations. The system of pupilage in architecture had worked extremely well; it had many defects, but what were they going to put in its place? In London there were extraordinary facilities for acquiring a professional education, and an examination was certainly necessary, for it was a test of education.

Mr. Quilter would not advocate specialities in architecture until the architects had received their qualifications. When this was done they could devote themselves to special branches of the profession.

Professor Lewis, in reply, said that what students clearly wanted was something more than a mere communion of fellowship between themselves; some one at the head who could teach them something that they did not know. With respect to visits to buildings, it really seemed to him this was the most practical way of giving practical education. If they went to a building, and the architect showed them round it, that was not sufficient; but they required a paid instructor to minutely explain everything in connexion with the building. The lectures afterwards were extremely necessary, and he assumed that they had known sufficient of the rudiments of science to thoroughly understand what they were told.

FOREIGN TIMBER.*

ABOUT a year ago Lord Derby addressed a circular to her Majesty's representatives abroad, requesting information as to foreign timber, including timber used for shipbuilding, house construction, and railway purposes; and answers have now been received from a considerable number of Consuls and Secretaries of Legation, and have been published in a Blue Book, portions of which we have already printed. Some of these reports are very meagre, and replies have not, apparently, come to hand from Russia, Italy, Turkey, or Spain; but, from those which have been printed, a very fair idea may be derived of the actual condition of the forests of Europe at the present time, and of the probable state of the timber supply for some years to come.

The first point which strikes the reader is the almost unanimous testimony which is given that the European forest area is rapidly diminishing. This is the case in Austro-Hungary, where the decrease is attributed to "The wanton and irrational destruction of the timber by the peasants." It is stated that in France about three-fifths of the woodlands owned by private persons (and most French forests are in private hands) produce only underwood and brushwood, and that, moreover, these woodlands are rapidly diminishing, "partly owing to the small value of the underwood, and partly owing to the frequent division of properties, which renders the planting of trees with the view of allowing them to grow into timber an unremunerative undertaking." Indeed, France has to import almost all the timber she requires for building, and there is generally a difference of from 130,000,000 to 140,000,000 between her exports and imports of wood. In Sweden, although it cannot be said that the forest area is diminishing, its productive power is becoming rapidly smaller, owing to the indiscriminate felling of miniature trees; and the same cause has led to a similar result in Norway. In Switzerland, also, it is found that wood is becoming scarcer, owing to the reckless waste attending its consumption. The same state of affairs is noticeable everywhere. As we recently showed, the forests of India have been greatly damaged by the mode of felling practised by unscrupulous contractors; and in the reports before us we find it stated that even the vast timber-producing lands of the United States are being quickly exhausted, on account of the waste of the article for fuel, and, in a less degree, "through running fires, the ravages of insects, obstructions in streams, and other causes." It is only in countries like Prussia and its German dependencies, where a semi-military mode prevails even in the civil administration, that the forests are found in a satisfactory condition. Thus, in Baden and Hesse-Darmstadt the forestal laws are almost as stringent as those of Japan, where the man who cuts down a tree must immediately plant another. The Hessian rule is, that every thirty years, land which has once belonged to the cultivation of trees must return to its original employment; and the police control the cutting down of wood even in private forests. The consequence is, that "the forests preserve their character for being some of the finest in Europe, and boast some of the finest and healthiest trees." In Wurtemberg, a plan of felling is drawn out annually, and the State revierförster marks the wood to be cut down, while private forests cannot be brought into cultivation without the express sanction of the forest police authorities; and the persons responsible for clearances are compelled to replant the ground within a stated time; while in cases of non-compliance the area is replanted at the expense of the owner by the police. By such means it is found that the desired end is attained; and while our Government is proposing to disafforest great tracts like the New Forest, the Governments of other countries are endeavouring to preserve their forestal wealth by regulations and enactments of increasing strictness. Austria has abolished feudal privileges, and repeated supplementary decrees for the protection of woodlands have lately been issued from the Ministry of Agriculture. In addition to these measures, attempts have been made to win the approbation of landowners and the goodwill of the people by the establishment of nursery-gardens and schools of arboriculture, whence teachers are disseminated throughout the empire, and by offering prizes both to those who have successfully replanted clear spaces, and to those who exhibit the best seedlings and young trees at exhibitions. In Sweden and Norway, laws have been passed prohibiting the felling of trees of smaller diameter than 7 in. at 16 ft. from the ground; and a considerable sum is annually voted to purchase private forest lands, so that they may be administered under the eye of the Government. The recently-revised constitution confers upon the federal authorities of Switzerland a right of supervision over the forests of the highlands; and, besides devoting considerable sums to re-wooding the unduly cleared portions of their territory, almost all the cantons have laws for the protection, renewal, and extension of the forests, while unremitting efforts are made to spread information concerning sylviculture among the masses. In Europe, at least, it is impossible to provide sufficient timber without such precautionary measures. They have been found necessary in India; and it is only too plain that even on the American continent the time is not very far distant when the ignorant rapacity of the settlers must be checked by law.

These reports naturally convey no novel information respecting the distribution and characteristics of the building and trades timbers of Europe. Their authors have invariably been indebted to standard works in which the same facts are better stated, and the bald lists of names before us are practically useless to builders and others who want to know where to find abundance of suitable wood within easy reach of the scene of their operations. We are only reminded of the fact, known long ago, that the chief timber-producing trees of Europe are pines, oaks, beeches, maples, larches, birches, elms, alders, poplars, limes, and a few others, which are equally familiar. The reports from the American continent are more interesting. In the report from the United States a long list is given, containing the names of 285 trees, of which no less than thirty-five are diversities of oak, while other European varieties abound in

* Reports respecting the Production and Consumption of Timber in Foreign Countries.

similar profusion. Mention is made of an abundance of walnuts and magnolias, of iron-wood and of mahogany, satinwood, and lignum vitæ in addition; but their names are merely recorded, and not a word is said about their properties. From Brazil, however, we have a report of a different character. More than twenty trees are noted, and some curious particulars are given about each of them. The information, however, is less practical than peculiar. We are told that the jacaranda is the favourite timber-tree, that South American pines are found near the settlements, and that the Arueira (*Schinus terebinthofolus*) is of excessive hardness, resists the weather admirably, and takes a fine polish. Beyond this the foreign contractor will not be indebted to her Majesty's representative; although those who take an interest in the romance and folk-lore of the woods will be interested to learn such facts as that the natives will not burn the *Cedrela odorata*, because they believe that it supplied the wood for the true cross; that they will not sleep under the arueira, beliving it to produce tumours on the face; and that they catch fish by intoxicating them with the bark of the Tinqui, which they throw into ponds and streamlets. The Cuban report is full and good. Ninety trees are named, and a brief description is supplied of their properties and common uses. Among others we find the Acana (*Bassia albescens*), a very hard, compact, and inelastic wood which breaks vertically. A piece a yard long and an inch square resisted a strain of 408 lb., bending on an arc of 1·9 in. It makes excellent posts for buildings, and is used also for window frames. Next in alphabetical order we have the Almendro (*Laplacea curtyana*), which is hard, compact, and flexible. It is used for beams. A piece of the same dimensions as that just given formed an arc of 2·9 in. under a weight 547 lb., and did not break entirely under that pressure. Then comes the cedar (*Cedrela odorata*), which is described as "very useful for all carpenter's work, buildings, and cabinet-making," on account of its freedom from the attacks of insects and its softness. The test sample broke in an arc of 2 in., under 300 lb. weight. Ebony follows with a resistance of 305 lb., at an arc of 1 in. Further on we meet the Jaragua (*Philanthus myrtiloides*), hard, compact, and somewhat elastic, which is said to be "everlasting in posts." A specimen of it broke at 583 lb. strain in an arc of 2¼ in. The Jocuma (*Sideroxylon mastichodendron*) is a hard wood used for building and all kinds of carpenter's work, while the Majaqua is in so great demand that it is getting scarce. It grows very quickly, however, and if the island were at peace would be replanted. The last we shall name is the Yaba (*Andira inermis*), a hard, brown wood, stated to be indestructible under water and under ground. It resists 300 lb., and bends 3 in. But these are only a few of the best woods, and almost all of the ninety named may be made serviceable in the arts of construction and decoration. A report of similar excellence comes from Honduras, but it contains the names of only thirty-three different woods. Mahogany naturally occupies the first place, and we find also the familiar cedar, pine, iron-wood, oak, and fustic. Among those less known we have San Juan, a tall tree, growing to above 2 ft. in diameter, and extensively used for building purposes; Sisileon, a large tree with a red durable wood, highly esteemed by carpenters; and Santa Maria, a tall tree, resembling mahogany, of whose character it partakes. It is one of the best woods known for wet works such as piles and foundations, contains no acid, resists great pressure, and is found at a short distance from the coast. With regard to Honduras it is stated that notwithstanding the considerable export of its woods the loss is scarcely observable, and that beneficent nature very speedily repairs the destruction effected by the axe.

Secretaries of Embassy and Legation are in a position to obtain reliable information and statistics which are not within the reach of ordinary inquirers, and these reports contain many interesting facts which would not have been made public had not Lord Derby asked for answers to his questions. But many of the Governments which were applied to were themselves unable to reply to the queries propounded, so that the reports are much less complete than could have been desired. Running down them in the order in which they stand, we find that Mr. French can tell us comparatively little about Austro-Hungary. He sets down the timber-producing area of the empire at 19,000,000 of English acres, and estimates the total exports of wood at 67,400,000 florins decennially. Home consumption absorbs the most considerable portion of the produce of the forests. Brazil is so wealthy in timber that the Government scarcely troubles itself about it; but the Customs returns show an average export equal to about 120,000*l.* in value, and the quantity exported is on the increase. Thirty-eight trees are named for building purposes which are said to endure from twenty to forty years, and some of them have even been said to last from sixty to eighty years. Ten are marked as particularly fit for railway sleepers. French official returns show that, in 1873, England was indebted to the sister country for 2,616 cubic mètres of building oak and 169,216 cubic mètres of other building wood, but, as already stated, France has little to give away, and imports much more than she sends out. Information respecting Baden, Hesse, Saxony, and Prussia proper is scanty, as the Zollverein has the management of all statistics respecting imported and exported goods in Germany. According to a recent calculation, it would appear that the forests in Hesse are grown upon an area equal to 591,975 English acres. This statement, which is founded on official data, is rather startling when it is remembered that the whole area of the Grand Duchy does not exceed 139½ square miles, or 757,120 acres; inasmuch as it only leaves 162,145 acres for agrarian purposes. Twenty-three per cent. of the whole area of Prussia is forest-land, and the timber area of Saxony covers about 1,162,000 acres. Mr. Dering's report from Sweden and Norway is very full. The last general measurement gave an area covered with forest in Sweden of about thirty million acres, being 42·8 per cent. of the whole surface of the country, and this is exclusive of Lapland, which has never been surveyed. Taking the average of estimates given by the best available authorities, the annual consumption of forest produce may be computed at 7,950,133 Swedish cords. In other words, the product of about 30,000 acres is annually consumed, the period of re-growth being 100 years. In 1872, Sweden exported about 4,779,137*l.* worth of timber and fashioned wood, and of this quantity Great Britain took 2,363,652*l.* worth, or nearly one-half of the whole export of the country. There is hardly a maritime country in the world, with the exception of China and Japan, to which the produce of Swedish forests does not appear to find its way. The forest lands of Norway cover about 35,000 square miles. Britain again takes about half the produce. The forests of Switzerland cover an area of about 1,900,000 acres, or about 18·8 per cent. of the entire surface of the country. The annual export for building purposes, fire-wood, and charcoal is about 10,900,000 cubic feet; but this export is steadily decreasing. During 1873, the United States exported timber and wooden manufactures to this country valued at 532,068*l.*, and to British possessions similar goods to the value of 241,439*l.*, or a total export to Great Britain and her colonies of wood worth 773,507*l.* From Mr. Petre's report we learn that 30·6 per cent. of the area of Wurtemberg is covered with forests. A considerable quantity of oak is exported to Holland for ship-building purposes, and the Dutch also use Wurtemburg oak for the erection of mills. Manheim is the great outlet of the South German timber trade. The Cuban report says:—"Were the fellings properly regulated and judiciously superintended, the export of timber, useful abroad, from Cuba might still be very large, even although the Government did not insist on replantings. 3,000,000 square feet of mahogany, 5,000,000 square feet of cedar, and 2,000 tons of fustic wood would be ready for the axe every year." No calculation of any value can, however, be made at present, as most of the best forest land has, for the last six years, been in the hands of the insurgents. It is unfortunate that these reports should not, as a rule, attain the standard of excellence usually observable in commercial reports, and that the information they convey should be so limited, owing to the absence of reliable statistics. It is, however, to be hoped that those still to come will be more explicit, and that the questions put by the Earl of Derby will not be forgotten at our embassies and legations, but that future attempts will be made to supply the gaps which are now unavoidable.

Proposed New Baptist College. — The Baptists in Wales, who have already three training colleges for ministers, propose building another at Cardiff at a cost of 12,000*l.*

THE LATE MR. JOSEPH JAMES, ARCHITECT.

THE death of Mr. Joseph James, at a comparatively early age, has been announced. He was a son of the late Rev. Thomas James, of Highbury. Thomas James had three sons, and Joseph was the last to die, one brother having died only a few months previously. Joseph James was articled to Mr. Dankes, and became a student of the Royal Academy. For some time he was assistant to Mr. Horace Jones, then in Furnival's-inn, and afterwards was in practice for himself for many years in Furnival's-inn, and afterwards in Finsbury-circus. One of his earliest and most important buildings was Spring Hill College, Birmingham; the next, Square Church, Halifax, illustrated in a former volume of the *Builder*; and he built many other churches, chapels, and schools all over the country; and the West of England Dissenters' College, also illustrated in our pages. A year or two ago, Mr. James was appointed one of the School Board architects, and built the large schools in Riley-street, Bermondsey (his last work), and which was illustrated in the *Builder* last year. Mr James had complained that excessive hard work had knocked him up; for the last eighteen months he had done nothing, being thoroughly ill. Only a week or two before he died he hopefully returned to Highbury, to live near his late father's old house, where all his early years were passed, and it was at Highbury he died.

Joseph James was one of the most amiable and gentle of men, an excellent and accurate draughtsman, and no mean colourist; his knowledge of the details of architecture was considerable; the style he generally selected for his buildings was Early English, of a late type, but he was well acquainted with Classic architecture.

Some eight years since he married Miss Blackett, sister of the late Mr. Blackett, of the firm of Hurst & Blackett (and sister of Walter Blackett, architect), and has left several children.

FARRINGDON-ROAD GOODS STATION.

THE unobservant passenger in Farringdon-road may have been unconscious of there having been in full operation for many months past, in connexion with the Great Northern Railway, a large goods station. He has been unconscious of its existence and activity simply because the large covered area is all under the street level, and inclosed by boundary walls too high to afford a sight of the rails or goods yard below. Of late, however, a lofty and rather ornate superstructure has been rapidly rising on the site of the original station at the junction of Farringdon-road with Charles-street of the Metropolitan Railway Company that no passenger can fail to notice.

The covered space of the substructure already in full work is very large, and in shape irregular. The elevation to Charles-street will have a length of 42 ft. for the block of offices, and of 92 ft. adjoining, in the end frontage of the goods warehouse. The side elevation of the warehouse pile facing Farringdon-road will be, when finished, 310 ft. long, but only half of that length is being put up at present; the other half, now roofed at the ground level, will have the roof taken off, the walls raised, and the work finished uniformly with the building now in progress. The warehouse will then be a block of building 310 ft. long, 92 ft. wide at one end, and 42 ft. at the other; bounded on one side by the Metropolitan Station and Railway, and on the other by Farringdon-road; at the broad end bounded by Charles-street, the narrow end running into the Great Northern Company's lines. The present covered area for the accommodation of goods traffic embraces in all about 3,544 square yards, which is, of course, exclusive of the space covered by the office buildings. Three lines of rails run into the covered space, which is furnished with the necessary platforms, and hydraulic capstans, worked by a treadle, with catch-heads, giving the means of moving loaded or empty wagons from any part of the station without using horse-power. There are also thirteen hydraulic cranes in different parts of the station, with powers to lift from various weights of from 1½ ton to 4 tons. A 20-ton hydraulic hoist will be provided to raise and lower loaded trucks between the rails and the Farringdon-road or ground level, and four 3-ton hoists communicating between the ground and the upper floors.

The ironwork, of which there will be upwards

of 1,500 tons in sub- and superstructures, is somewhat peculiar in character. In numerous instances, where clear space on the ground-floor is a desideratum, very strong wrought-iron stanchions, with an inner web for extra strength, take the place of cast-iron columns. At the upper angles they have brackets, giving the girders an extra bearing of about 3 ft. on each side. The stanchions are 2 ft. by 1 ft. 5 in., and built of four 2½-in. plates, strengthened by angle irons 3½ in. by 3½ in. by ⅜ in. The rivets of the stanchions and girders are ¾ in., with 6 in. pitch. A number of the stanchions have been tested up to 700 tons each. Six of the box-girders weigh 10 tons each.

The roofs, which will be placed across the building, will be of iron, and supported on lattice girders. The rafters of T-iron are to be 3½ in. by 3 in. by ½ in.; the struts, 2½ in. by 3 in. by ½ in.; and the tie-rods ¾ in. Each cross-roof will have a wide louvred light at the ridge; the remainder will be covered with Bangor countess slates.

The fire-proof floors of the structure will be a special feature. They will be constructed on the system patented by J. Westwood, jun., of London-yard Ironworks, Poplar. The flooring is of corrugated iron plates, levelled up with concrete, and faced and finished with Val de Travers or other rock asphalte. The essential feature is the method adopted of supporting the floor, by comparatively light trusses in the place of heavy iron girders. This system of flooring has already been introduced in other buildings, and it is claimed for it that it is extremely rigid, light, and durable; that it is applicable to every class of building, and combines a maximum bearing power with a minimum weight of flooring and support. The results of a test applied to this flooring are reported to us as follows:—the flooring tested had a clear space of 35 ft., divided into five bays of 7 ft. each. The depth of truss at the centre was 3 ft. A load of 48 tons was equally distributed over a space of 6 ft. in width, which multiplied by the span of 35 ft. super., or 210 ft. in all, gives 4½ cwt. per foot super. as the load borne. The deflection under this crucial test was ⅛ in., and the permanent set, after removal of the load, ⅛ in. The total weight of flooring, trussing, concrete, and asphalte, was less than 41 lb. per foot super., showing a large saving in weight of material, load taken into account, as compared with other systems. The Hoarwithy Bridge, in Herefordshire, 250 ft. long, has been built upon this system at a saving, it is stated, of 30 per cent. The front elevations of the offices and warehouse show a ground-floor, and first and second floors above the street level. They promise to be very effective, quietly harmonious, and free from the patchy appearance that a lavish use of parti-coloured bricks is so apt to impart. The principal material in the fronts is wire-cut Burham brick of Gault clay. The surfaces will be relieved and enriched by a liberal use, in string-courses, mouldings, friezes, caps, cornice, &c., of Pether's patent moulded bricks, made of the same clay, and having, of course, precisely the same colour. The dressings of Portland stone harmonise with the brick-work in tint. The only exception in the way of introducing colour is in a course of Pether's patent plain radial red bricks, with a course of blue bricks over it, above the windows. An egg-and-dart string course, and an ogee and cavetto moulding, carried round the two fronts, are very effective, as the ornamental patterns in the cornice, and other unostentatious enrichments, promise to be also. The elevations are divided into bays, within which the windows are coupled. There will be four entrances for carts and wagons from the street level. The foundations of the piers upon which the superstructure rest are on beds of concrete 2 ft. thick, resting on the London clay, reached, in some places, at a depth of about 14 ft. below the rail-level. The piers are of blue brick, in one to one cement, and are about 8 ft. square; one of them that has extra duty, is 11 ft. 6 in. by 8 ft. The walls are 2 ft. 6 in. thick at the bottom, diminishing upwards to 1 ft. 11 in. under the roof girders, and 1 ft. 6 in. above. There are four strands of tarred and sanded iron hoop in the lower parts of the wall, and three and two strands above. There will be 13,089 yards of hoop in the completed building. The windows are Moline's patent wrought-iron sashes, filled with 26 oz. glass. The roof-lights will contain 2,375 ft. super. of $\frac{3}{16}$ in. rough plate-glass. In the office windows there will be 656 ft. super. of British plate-glass. The iron windows have opening spaces in the centre, that may be kept open at any angle. The stairs will have Hawksley's patent treads, supplied by Messrs. Westwood, jun.

The buildings, and all details, are from the designs of Mr. R. Johnson, C.E., Engineer in Chief of the Great Northern Railway Company; Mr. W. Wilkinson is resident engineer; and Mr. J. N. Thompson, clerk of the works, to all of whom we are indebted for access to the drawings, and their polite supply of any desired information. Messrs. Eastwood, Swingler, & Co., of Derby, are contractors for the iron work, and Mr. Randall, of Woolwich, for all the other branches.

THE MADRAS RAILWAY COMPANY.

THE annual general meeting of this company was held on Tuesday last to receive the report of the directors. The reports to this company appear usually to consist of excuses for the non-fulfilment of anticipations and explanations of disasters. This time it is singularly jubilant, because the great amount of injury done to various parts of the railway by floods has not affected the traffic receipts even more injuriously than is the case. The directors seem delighted that such an opportunity for the display of energy should have been afforded to the company's officers. The following are the more important bridges which received serious injuries:—

"At the Goriattum Bridge, on the South-West Line, five arches were swept away. At the Cheyair Bridge five piers and two abutments. At the Paupugnee Bridge four permanent and two temporary piers were washed away; At the Chittravutty Bridge nine piers were destroyed and two sets of 140 ft. girders carried away, besides two more much damaged. At the Pennair Bridge two piers were destroyed. Besides the foregoing, innumerable other casualties of a minor description were experienced on several parts of the lines."

"In regard to the reconstruction of the damaged portions of the bridges, in order to render them capable of passing trains when the rivers shall again be in flood, the acting chief engineer, in a letter dated 5th March, remarks that 'designs for these works have been duly submitted, and have received the sanction of Government. They are being executed with the greatest possible energy. How far we shall succeed in completing them without interruption from floods is a matter of some little uncertainty, depending upon the character of the season as regards rainfall.'"

The most amusing observation in the report,—amusing, that is, to those not pecuniarily interested,—is the following:—"When the repairs here referred to are completed, it is expected that the bridges will be as secure as they have ever been." Does the consulting engineer, Sir John Hawkshaw, take the responsibility of these works?

The company may be able perhaps to lessen the cost of their staff. If they wish it, we will send them out half a dozen lively young engineers who will design and superintend for them, with wonderful self-confidence, any number of bridges capable of being washed away by the next freshes.

FURTHER NEW PIERS AND HARBOUR WORKS AUTHORISED BY PARLIAMENT.

PROVISIONAL Orders have been made by the Board of Trade authorising the erection of the following piers and other works in addition to those referred to by us in a previous issue; and the Bill confirming these Provisional Orders by Parliament has been so far agreed to as to have received the sanction of the House of Commons, and to have passed a second reading in the Lords. The following are the principal works authorised:—

At Carrickfergus, two new piers are to be constructed, one commencing at the southern end of the quay known as Wilson's Quay, and extending in a south-easterly direction along extending in a south-easterly direction along Wilson's-road for a distance of 570 ft., thence in a south-south-easterly direction for a distance of 620 ft. to a point near the Red Buoy, and thence continued for a further distance of 190 ft. in an easterly direction, and terminating with a curved pier-head; the total length of this pier, to be known as the West Pier, will therefore be 1,380 ft. The second pier, called the East Pier, will commence at the south end of the existing pier at Carrickfergus, and extend in a south-south-westerly direction for a distance of 590 ft., terminating with a curved pier-head. Powers are given to the Commissioners appointed to carry out these works to dredge and excavate the shore and bed of the sea, and to divert the Killycost stream and construct such sea-walls, roads, and other works as may be necessary to render access to the piers complete and convenient. This scheme will immensely increase the facilities for the embarkation and landing of passengers and merchandise at the harbour. If the works are not substantially commenced within two years from the passing of the Act, or if they are suspended for twelve calendar months consecutively, the powers of the Act are to lapse.

The harbour of Macduff, in the county of Banff, is to be improved by the construction of the following works:—

A pier or breakwater connecting the existing east and north piers, commencing 57 yards from the end of the former, and ending at the extremity of the latter.

An opening in the existing east pier, commencing at a point 124 yards from the end of the pier, and about 12 yards wide, in order to afford a communication between the existing east harbour and the harbour or basin to be formed by the construction of the intended pier or breakwater above described.

An inner jetty commencing from the east quay of the east harbour, and extending 32 yards into the harbour.

An inner jetty commencing at the south side of the east pier, 109 yards from its extremity, and extending 3 yards into the harbour.

A circular harbour and basin will then be formed, which is to be excavated and deepened as far as required.

Any such bridges, gates, wharfs, roads, tramways, &c., as may be required for the maintenance and improvement of the harbour are also authorised, and the quays, piers, and jetties can be "altered and improved" from time to time.

The same limit of time for the commencement of the work is stipulated for as in the case of Carrickfergus.

Rosehearty Harbour, near Fraserburgh, Scotland, is to be improved by the extension of the Port Rae pier to a point 67 yards south of the beacon near Damar Rock; by the extension of the east pier of the harbour from a point 40 yards from its extremity to the Port Rae pier; and by the construction of a quay-wall along the shore between the two piers. The harbour and its approaches are to be deepened and extended.

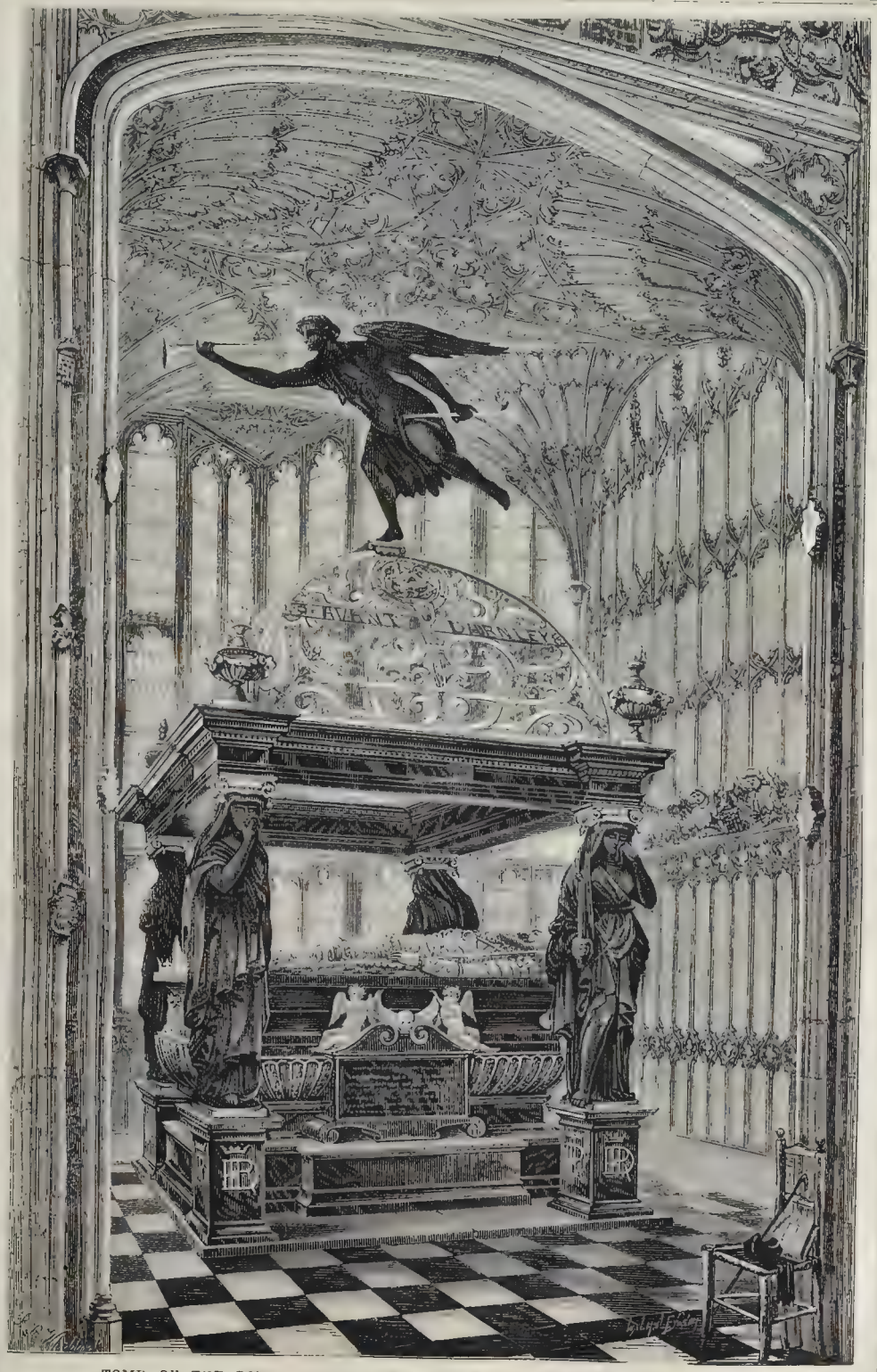
THE "SUNDERLAND ARMS," SACKVILLE STREET, PICCADILLY.

THIS house has just been rebuilt from the designs, and under the superintendence, of Mr. J. T. Wimperis, of Sackville-street. The old house was erected just 101 years ago, and was of the very poorest description and not worth repairing. An extension of lease was procured from the Sutton Estate office, who are the ground landlords, and the tenant, Mr. Hawes, at once made up his mind to pull down and rebuild instead of attempting to patch up the old building. The great difficulty was the narrow piece of ground with which the architect had to deal (being only about 17 ft.), and the accommodation required on so small a space; the difficulties, however, have been mainly overcome, and an important frontage has been made in Sackville-street, which gives the house the appearance of considerable size, though it only contains about two rooms and staircase, with conveniences, on each floor. The materials used for the fronts are white Suffolk bricks and Portland stone, and the framings forming the shop-front are entirely of wainscot, polished, with embossed plate glass in doors and windows, and polished red granite pilasters, with blue granite columns by the side of the principal entrance, and red Mansfield stone frieze.

The builder was Mr. Chas. Fish, of Pimlico; the ornamental ironwork is by Hart, Son, & Peard, of Wych-street; the stone carving by Anstey, of St. John's-wood; and the granite work by Messrs. Macdonald, Field, & Co., of Aberdeen. The interior fittings on the ground-floor are in mixed woods, mahogany, pitch pine, and wainscot, with parts ebonised and gilded, the whole polished, and are designed to harmonise with the exterior of the building. Business has been carried on during the whole of the rebuilding, which has of necessity hindered to some extent its progress. It is proposed to put up the name on the stone fascia with bronze letters, and so avoid all glass fascias and the usual accompaniments of houses in this line of business; the idea throughout being to keep the building as quiet and unobtrusive as possible, and to make it a pleasing addition to the architecture of the street, in which the architect has certainly succeeded.



TAVERN ARCHITECTURE: THE SUNDERLAND ARMS, SACKVILLE STREET.—MR. WIMPERIS, ARCHITECT.



TOMB OF THE DUKE OF RICHMOND, WESTMINSTER ABBEY: AS RESTORED.

RESTORATION OF THE TOMB OF THE DUKE OF RICHMOND IN WESTMINSTER ABBEY.

THE tomb of Ludovic Stuart, Duke of Richmond, and of his wife, Frances, daughter of Lord Howard of Bindon, of which we give a view, has just undergone much necessary repair and considerable restoration. This eminent nobleman lived in the reigns of Elizabeth and James I., being a second cousin of the latter. He succeeded his father, Esme Stuart, as second Duke of Lennox, and obtaining the favour of James, then king of Scotland, he was made High Chamberlain and Admiral of Scotland. When James succeeded to the English throne the Duke became Master of the Household, First Gentleman of the Chamber, Ambassador to France, and Knight of the Garter, and upon him were bestowed successively the titles of Earl of Richmond, Earl of Newcastle, and Duke of Richmond. Dying in 1623 without issue, the Scottish titles fell to his brother Esme, and the English titles became extinct, although they were afterwards revived in the same family. The last who bore them died in 1672, when the titles and estates reverted to the Crown. Both, however, were soon afterwards bestowed by King Charles II. on Charles Lennox, one of his natural sons by Louise de Queronaille, Duchess of Portsmouth.

The costly erection in Westminster Abbey was made by the widow of Ludovic Stuart. It appears to have been in good preservation in 1723, for Crull and Dart, the historians of the Abbey, describe it as "stately and sumptuous." Dart gives a fine plate of it in his first folio volume. He omits, however, to show the metal ornamentation of the frieze, and also the sword and wand, which evidently once belonged to the monument, though they had probably then disappeared.

The monument may have even then shown signs of the decay going on because of the original faultiness of the construction, but since that time some of the principal parts had become seriously dilapidated. In consequence of the use of iron cramps and bars, many parts of the black marble were burst into fragments; the whole of the table on which the effigies rest, was lifted a full inch, and a corresponding quantity of iron corrosion was found within. [The destructive and dangerous effects of this corrosion are now manifest in many monuments, more particularly in those of Queen Elizabeth and Queen Mary in Henry VII.'s Chapel, and those of Kane and Coote in the North Transept.] Still more damage had been done to the Duke of Richmond's monument by the wilful spoliation of the bronze metal work, which must have taken place chiefly since 1723. An examination of the monument, with the help of Dart's valuable plate, led to the discovery of there being 230 pieces of metal work missing.

Upon a suggestion made by Dean Stanley, the Earl of Darnley, a descendant of the Stuart Dukes of Richmond, has had the monument restored by Messrs. Henry Poole & Sons, of Westminster. The details given by Dart have been faithfully adhered to, except in the addition of the sword and wand, and the George and coat of arms at the head. Concerning these there is no direct information in Dart; but the sword and wand are warranted by contemporaneous authority, and the coat of arms, with the shield surrounded by the garter, the ducal coronet, and two wolf supporters, have received the sanction of the Royal College of Arms.

The bronze effigies of the Duke and Duchess (his right hand holding her left) rest upon a massive moulded table of marble. The robes and tasselled cushions are elaborately wrought with embroidery and fur work, the duke's armour being diapered. Supporting the table is a very large fluted and reeded sarcophagus, of black marble, with a richly-moulded pedestal. The flutes are filled with husk-work in gold. At the sides are golden figures of winged boys, upholding drapery, and exposing two skulls. At the ends are two coats of arms, one at the foot (as plainly shown in Dart) with the lion and the ox as supporters, the other at the head (as already described). At the feet of the duke is a gilded crest of the cumbent lion seated on a chapeau, bearing a ducal coronet, and tongued with flame. At the corners, on pedestals of black marble, are the life-size effigies of Hope, Charity, Truth, and Prudence, as caryatides. These are of plain bronze. They stand on gold bases, and on their heads are golden cushions and gold Ionic capitals. Upon these rests a richly-moulded entablature of black marble. The latter has lost several rich ornaments of gold. At the angles of the corners are four large urns, ornamented with festoons. From the top of the entablature the space beneath is spanned with a square vault of plated gold, embellished with crests, mottoes, monograms, foliage, and scroll-work. The mottoes are, "Avant Darnley," "Distantia jungo," "Quod vide vis esto," "Constantia coronat." On the summit of the dome is a flying figure of Fame, in bronze, holding two golden trumpets, and its toe just touching the pedestal.

One curious feature deserves notice. In the inscription the date of the year of the Duke's death is apparently omitted, though the month and day are mentioned. The year, however, is given in what is called a chronogram. The Latin translation of the verse in the Bible, "Know ye not that a Prince and a great man has this day fallen" (the words uttered by David in his lament over Abner), contains fourteen Roman numeral letters, and these being elongated into capitals are MDCVVVIIIIIIII., which give the date 1623. It is remarkable that words so appropriate to this nobleman should contain the numerals for this identical year, and it shows much ingenuity on the part of the writer of the inscription that he should have discovered it.

This richly-wrought tomb with its jet black highly polished marble and beautiful goldsmith's work, must have been very magnificent when new, and notwithstanding the wear and decay it is still remarkably handsome. The artistic workmanship was the best of its kind then, and even now could hardly be surpassed.

The northern side of the enclosure is a dwarf wall, being the ruined basement of an open screen, 15 ft. high, long since destroyed. On its inner side is what is called a "mourner's seat," by stepping on to which one may see the faces of the effigies.

Those who care to realise the improvement effected by this restoration, may do so by observing the degraded state of the almost contemporaneous monument of George Villiers, Duke of Buckingham, on the opposite side of Henry VII.'s Chapel. This monument has been of even greater splendour than that of Ludovic Stuart. The tarnished and corroded surface of its metal work entirely conceals the goldsmith's work, while the black marble is chipped, dislocated, and corroded. This neglect, mutilation, and the spoliation of nearly 250 metal ornaments, fairly represent the recent state of the Richmond monument.

The engraving represents the view of the tomb looking south-west, showing also the beautiful "fan tracery vaulting" of the chapel. The low screen wall mentioned previously has been purposely omitted by the artist in order to give an uninterrupted view of the tomb.

DR. HERZEN'S PROCESS FOR THE PRESERVATION OF MEAT.

A CORRESPONDENT from Florence writes,—I can justify all you have said as to Dr. Herzen's process. It seems to me a wonderful discovery. Patents have been taken out in all the countries of Europe: so the ingredient is no secret, but is so simple and innocuous one wonders it has not been found out before. The meat can be preserved in quarters of carcasses: it is put into wooden barrels just after the animals have been killed, and the preparation put in. The boon it would be to our navy is inconceivable. It would also be a solution of the question, now agitating on the subject of the transit of the poor animals. They could be killed and transported with saving of expense and cruelty. When the Prince of Prussia was here, Dr. Herzen took a specimen of the meat to him, and he was so struck with the advantages that might accrue to the country, that he promised to call the attention of the Government on his return. The Italian navy and army authorities have given orders for certain quantities. One of the advantages over other inventions is this: a barrel of meat thus preserved can be opened, part removed, and the rest covered up and left till wanted, without the meat suffering. It is *not closed hermetically*. I have no *interest* in it, but know intimately most of those who have put down their money to test the affair, and set it going. Without some trick is played with the patent, I have no doubt of the success of the affair.

One of the shareholders has gone out to La Plata, and his letter, which arrived a fortnight since, is full of the brightest accounts. Oxen can be purchased there so cheaply that the hides and hoofs cover the cost of the meat; therefore, if to be had in sufficient abundance, the meat could be sold at the cost of transport. In a few days will arrive the first cargo from La Plata, when we shall see for how much it can be sold per pound. The first, I think, will be landed in France. The barrels contain a quarter of a beast each. Signor Conti gave a dinner to a number of naval officers at Buenos Ayres, of meat, poultry, &c., he had brought from Europe, all found to be *quite* fresh and excellent. I cannot help thinking of the benefit to so many in getting cheap meat, enabling our soldiers and sailors to eat fresh instead of salted meat, and above all, the saving of so much cruelty to animals. *We* do not expect the English to take up this invention for a long time, because they are prejudiced; but they must do so ultimately, I feel sure.

ON THE STRENGTH OF THE MATERIALS OF CONSTRUCTION.*

ARCHITECTURAL ASSOCIATION OF IRELAND.

AMONGST architects there are many and contrary opinions as to the benefits to be derived from studying the theory of the strength of materials employed in construction. Yet it must be admitted that the subject is intimately connected with architecture, for the highest order of artistic taste in designing beautiful structures is correlative with the utmost skill in arranging their materials according to their properties. We know that much saving of material might be effected if the limiting dimensions (consistent with safety) of the various members of the structure could be accurately determined, and much weakness of parts might also be avoided.

It will again be apparent that an architect possessing a knowledge of materials is less hampered with such difficulties as economising area or height when confined spaces are to be dealt with, or in reducing the cost of structures when the outlay is limited and materials scarce or expensive.

The science is, however, wide and difficult to master, and it is not hard to understand that a student, to whom other subjects of the profession are more attractive, would be likely to find the study of this one tedious and uninteresting. He ought not, however, be deterred by such prejudice, but should make himself thoroughly acquainted with the science; so as to be able to apply its principles readily and accurately in his every-day practice.

In the following paper I propose to give you only a few well-established facts connected with the strength of some of the materials used in ordinary construction, and to mention a few examples of their applications in practice. The strength of a material is the resistance it offers to fracture, in whatever manner that fracture may be brought about. The theory of this strength or resistance involves that of molecular mechanics, from which it borrows. "The principles on which are based rules of construction simple enough to be of general application, and yet sufficiently exact to be used with confidence."† It will, however, be convenient to divide the subject into two parts: first, with relation to the *inherent strength* of materials; and, secondly, with relation to what may be termed their *constructive strength*.

1. The *inherent strength* of a material is the amount of the resistance which its component particles offer to the disturbance of their equilibrium by direct force.

2. The constructive strength of a material is the amount of effective resistance it exerts when employed to transmit or oppose force in a structure.

We learn the theory of the inherent strength of materials chiefly by experiment, and their constructive strength partly by experiment and partly by combining the results of experiment with the theory of mechanics; and under the head of constructive strength three other matters must be considered, viz., the expansion and contraction of materials, the margin of strength which should be allowed in structures, and the durability of materials.

INHERENT STRENGTH.

You will observe in the definition I have given of inherent strength that the resistance of

* The following paper, by the hon. secretary, Mr. H. C. Brett, C.E., "On the Strength of Materials," was read at the general meeting of this Association, held May 27th, the president (Mr. W. M. Mitchell) in the chair.

† J. Gaudard, Min. Proc. Inst. C.E. Vol. xxviii.

materials is dependent on their texture or molecular constitution, and also upon the nature of the direct force to which they are subjected. The different molecular conditions that materials may assume are reducible to the following classes :—

1. *Fibrous materials* in which "the texture is uniform in all directions perpendicular to the fibres, but is quite different to the direction of their length." (Gaudard.) Wood, ropes, and wrought iron are examples of materials which come under this head.

2. *Amorphous materials*, in which the texture is assumed to be practically homogeneous, as in stones, bricks, &c.

Properly speaking, there should be a third class, embracing crystalline bodies; "but their molecular condition is too complicated to enter into the formula of strength, and such substances should be treated as amorphous, attributing to them co-efficients of a mean practical value." (Gaudard.)

We have now to consider the forces to which materials may be subjected. These, I have said, tend to alter the equilibrium of the component particles of the bodies on which they act, and are usually termed strains. Now, to determine a force, three things must be known: its direction, magnitude, and place of application; and these, it is needless to say, may vary without limit. The magnitude of a force is usually expressed by stating in numbers its ratio to a certain unit or standard of force, which is generally the weight of a known mass under particular conditions. In this country the pound avoirdupois is the unit; but in the investigation of the strength of materials the results are so large that it will be more convenient to express force in tons. In considering the place of application, a force is represented as distributed over a small area, such as a square foot or a square inch. The direction of force may be divided into two classes:—1. Those tending to bring the particles closer together by crushing. 2. Those tending to completely separate the particles by tearing them asunder. But for greater convenience these classes have been subdivided as follows:—

1. *Tensile strains*, tending to tear asunder the particles or fibres of the body, as in the case of tie-beams, tie-rods, &c. The tensile strength of a material is usually assumed to be in direct proportion to the area of the cross section, the stress being supposed to be applied uniformly on all points of the section and its resultant to pass through the centre of gravity.

2. *Compressive strains*, tending to crush the particles or fibres, as in the case of columns, struts, shores, &c. The first point to be noted is that the resistance of a material subjected to strains of this nature is not always proportional to its sectional area. For example, long columns, in which the simple compressive strain is complicated by a tendency to flexure, which, when the ratio of the height of the diameter is very great, may be the ultimate cause of failure. On the contrary, a very short column, of a ductile metal, will bear a very great weight, while the resistance of a flat disc is simply enormous. The effect, then, of compressive strains may be either to destroy by crushing, or by flexure, or by a combination of both these actions. Pillars which, under compressive loads, would fail by crushing only, are termed short columns, and it has been found that the weight necessary to crush short columns of any given material is proportional to the sectional area, and that it does not vary much provided the height of the column is not less than 1½ diameter nor more than 5 diameters; and by *crushing* strength of a material is meant the weight sufficient to crush a short column of that material whose base is 1 square inch. Those columns which, under compression, fail by the combined action of flexure and crushing are termed *medium columns*, and those which would fail by flexure alone are termed *long columns*. The laws relating to the strength of medium and long columns of the various materials I shall consider under the head of constructive strength.

3. *Transverse strength.*—Tendency to produce rupture in a direction perpendicular to the length of the body, as in the case of joists. It may be shown by mechanical principles that, with reference to the three dimensions of rectangular bars, the breaking weight may be expressed by the following formula:—

$$w = c\frac{bd^2}{l} \qquad (1)$$

b and d being respectively the breadth and depth (and are usually expressed in inches), l the length in feet, c a constant deepening on the material being the breaking weight of a bar of that material, 1 ft. long, 1 in. wide, and 1 in. deep. The consideration of the value of c for the different materials will come under the head of inherent strength, but the various applications of the principles of transverse resistance will be considered under the head of constructive strength.

4. *Shearing strains*, or strain of detrusion, when the force tends to cause the particles to slide along the plane of fracture. The ends of a tie-beam into which the foot of a rafter is mortised afford an illustration of where this force comes into play. Bolts and rivets are also subject to this strain. Like tensile strains, shearing is generally assumed to be proportional to the sectional area acted upon.

5. *Torsional strains*, tending to twist or wrench the body in a direction perpendicular to its length, as on the axles of wheels. These constitute the different kinds of strains to which materials may be subjected; but, in addition, there are other properties which must be adverted to in considering their strength. These are elasticity, ductility, toughness, brittleness, and set.

Elasticity is the property by which a body tends to return to its normal volume, and form on removing a force to which it has been subjected; and when we speak of elastic stiffness and elastic flexibility, we mean the greater or less force of the elastic reaction of the fibres of elastic solids, independently of the strains to which such reactions are due. On the laws of elasticity depend those of deflection of beams and girders and the adjustment of the co-efficients of safety.

Ductility is the property by which a body tends to *retain* permanently the change of form produced by a force to which it has been subjected.

Toughness is the union of ductility and tenacity, and *brittleness* is the uncertainty of a material to sustain rapid changes of form.

Finally, as all (solid) bodies are more or less ductile, and none perfectly elastic, when a material has been subjected to great strain, it will be compressed or extended to a certain degree, and when the force has been removed will not return to its normal dimensions. The difference between the normal and altered dimensions is termed *set*.

We have now to consider the resistances which various materials employed in architectural structures offer to the strains enumerated above, and, as these are numerous, it will be only possible to describe a few. The following is a table of the strength of some of the principal materials, taken from some recent works on the subject:—

TABLE OF THE STRENGTH OF MATERIALS.

Materials.	Tensile Strength. Tons.	Compressive Strength. Tons.	Shearing Strength. Tons.	Transverse Strength. Tons.	Weight per Cubic Foot.
STONES.	sq. in.	sq. in.	sq. in.		
Granite	..	1·86	...	0·03 to 0·2	166
Limestone	...	3·43	...	13 to 0·28	160
Sandstone	...	2·31	...	02 to 0·47	146
WOODS.					
English Oak	1,464	2·85	...	0·72	48
Red Pine	5,337	2·40	...	0·53	36
Yellow Pine	...	2·40	...	0·53	32
METALS.					
Wrought Iron	21	16 to 20	20	4·60	485
Cast Iron	7	38 to 42	8 or 9	2·85	450
CEMENTS.					
Portland (neat)	0·16	1·7	...	...	87½
Roman*	0·21	...	...	...	100
Lime Mortar	0·04	0·19 to 0·35	...	...	100

STONES.

It is only in exceptional cases that the resistance to crushing of stones need be considered. The transverse strength needs most attention, as the low resistance of stones when subject to this strain renders them wholly unfit to resist, when unsupported, direct weight. Examples of the effects of disregarding this fact you have doubtless frequently observed. The characteristics of durability and hardness of the different stones are as follows:—In granites, the more quartz and horneblende predominate, and the less the quantity of felspar and mica, which are more weak and perishable ingredients; smallness and lustre in the crystals of felspar indicate durability, largeness and dulness the reverse. In limestones, compactness is the great criterion of their durability, and, generally speaking, when the stone is very compact it is most lasting, but when porous, perishable.

Sandstones.—You are aware there are two kinds of sandstones; those in which the grains of sand are cemented by lime, and those in which the cement is nearly pure silica. It is well to note that when lime is the cementing material of the particles, the stone is very perishable near towns where coal is burned. A strong and durable sandstone is characterised by sharpness of the grains, smallness of the quantity of cementing material, and a clear shining surface. Rounded grains and a dull mealy surface characterise a perishable stone.

CEMENTS.

I have classed under this head Portland cement, Roman cement, and mortar. With reference to Portland cement, its strength will depend on the manipulation it undergoes in the process of manufacture. The surest means we have of knowing a good cement are by its weight, tensile strength, and its fineness. A good cement ought to weigh not less than 112 lb. to the bushel, or 87½ lb. per cubic foot in the dry uncompressed state of powder; its tensile strength should not be less than 350 lb. per square inch of section of a briquette of neat cement which has been immersed in water for seven days, and its fineness should be such that only 10 per cent. will be rejected by a sieve the meshes of which are not more than 1-50th of an inch in diameter. The strength of Roman cement is only about one-third that of Portland cement, and this cement is very ill-adapted for mixing with sand. The results of experiments made by Mr. Aitcheson indicate, he considers, that if the mortar has too much lime it will be about half the strength of mortar mixed in the proper proportions; and, if the mortar is too poor, the strength from ⅓ to ⅛. But what he considers proper proportions is not stated. In any case these experiments want confirmation, being made on cubes measuring 1 in. on the side.

METALS.

The strengths given in the table may be taken as the mean strength; but there are special circumstances connected with the resistance of these metals which should be noted.

Cast Iron.—It has been proved by experiment that thin castings are relatively stronger than thick, and that quick cooling, repeated meltings (up to a certain number), and certain arrangements of mixtures are also favourable to strength. Also that cold-blast iron is stronger than hot-blast, but I believe not necessarily so.

Wrought Iron.—The strength of this material depends on the selection of pig-iron for its manufacture, and on the care and judgment which have been exercised in the process of conversion into wrought iron; but, speaking generally, the more workings it has gone through the greater will be its strength. It is needless to say that with architects it is almost impracticable to stipulate for the particular brands or qualities of iron. Their best course when they desire to place the strength of any piece of iron beyond question is to stipulate the test it must be submitted to before being erected. This test should include a trial of the amount of elongation as well as of tensile or compressive strength. Cast iron of a good quality will, when recently fractured, have a bright and crystalline texture, and if struck smartly on its edge with a sledge-hammer a slight indention will be produced. Wrought iron should have a clear grey colour, with a high metallic lustre, and a fibrous appearance; when the texture is either laminated or crystallised, the metal is defective.

WOODS.

The strength of timber will depend on its age, seasoning, and on the soil on which the tree has grown. Speaking generally of two pieces of the same timber, that specimen will be the stronger which has grown the slowest, and this is shown by the narrowness of the annual rings. There are some other indications of strong timber which should also be remembered:—1st, the medullary rays (when visible), should be hard and compact; 2nd, the fibrous tissues should adhere firmly together, and should show no woolliness at a freshly-cut surface, nor should loose fibres clog the teeth of the saw; 3rd, if

* Neat.—Six months immersed in water.

the wood has colour, darkness of colour is a general sign of strength and durability; 4th, the freshly-cut surface of a wood should be firm and shining, and should have somewhat of a translucent appearance; a dull chalky appearance is a sign of bad timber. This closes the remarks I have to make on the inherent strength of materials, and I will, therefore, proceed with the consideration of constructive strength.

CONSTRUCTIVE STRENGTH.

This I have above defined as the amount of effective resistance a material exerts when employed to transmit or oppose force. And as there is almost endless variety of forms into which materials may be shaped to this end, it will only be possible to mention cases which occur most frequently in practice. These are walls, arches, columns, girders, and beams. The crushing strength of good coursed rubble masonry is, according to Rankine, about $\frac{4}{10}$ that of single blocks of the stone; but the resistance of common rubble masonry is not much greater than that of the mortar. In determining the thickness of the walls an architect has only to consider the effects of crushing when designing very heavy vaults or high towers. In architectural buildings there is more liability to the walls being overturned than to their being crushed by actual weight, especially in storms, and their stability will mainly depend on their thickness, structure, and bond.

Walls. — The following convenient rule for determining the thickness of the walls of ordinary houses having stories from 20 ft. to 10 ft. high may be found useful:—"First, take a thickness of $\frac{1}{10}$ or $\frac{1}{12}$ of the total height of the external wall, reduce it in the ratio of a line drawn from its top to the bottom of the opposite wall, to which it is tied by the roof or floor, whether this is an external or partition wall: let this be the thickness of the wall for the lowest story. Calculate the thickness of the walls of the next story in the same manner from its floor, the height being, of course, lessened by that of the lowest story; and so on for each story separately,—taking care that the walls of the highest story are not so thin as to become crushed or crippled by the weight of the roof, and some allowance must also be made for the force of the wind or storms at this height."* Thus for a building 36 ft. high and 24 ft. wide, divided into three stories of equal height:—

Lowest story,—

$\frac{36}{10} = 3{\cdot}6$, then $\frac{3{\cdot}6 \times 24}{\sqrt{36^2 + 24^2}} = 2$ ft. nearly.

Middle story,—

$\frac{24}{10} = 2{\cdot}4$, then $\frac{2{\cdot}4 \times 24}{\sqrt{24^2 + 24^2}} = 1$ ft. 9 in. nearly.

And for the upper story,—

$\frac{12}{10} = 1{\cdot}2$, then $\frac{1{\cdot}2 \times 24}{\sqrt{12^2 + 24^2}} = 1$ ft. 2 in. nearly.

In designing enclosure walls it should be remembered that by throwing a part of their substance into counterforts much additional strength is gained, and there is, moreover, some saving of material effected.

One of the principal objects of "bond" in a wall is to enable it to resist forces tending to tear asunder horizontally. This is due to the mutual friction of the overlapping portions of the beds or horizontal faces of the stones or bricks, and it may be proved that this is increased by increasing the ratio of the length of overlap to the height of a course. This may be effected by increasing the length of the stones or bricks or diminishing their depth; but in either case the limit is fixed by the liability of the materials to break, which occurs when the length is more than a certain ratio to the depth, usually about 3. The longitudinal strength of English and Flemish bond may be taken as the same, and their transverse strength is double the longitudinal. But in the case of a wall consisting entirely of stretches the longitudinal tenacity is doubled, while the transverse is reduced to nothing. "In brickwork, therefore, in which the longitudinal is of more importance than the transverse tenacity (as in the case of furnace chimneys), a sufficient amount of tenacity is to be preserved by having courses of headers at intervals."†

Arches.—The different forms of arches we may class as follows:—Semicircular, semi-elliptical, and pointed; and with the different methods of drawing them you are all familiar. We have first to consider the proportion of the rise to the span. This, *cæteris paribus*, depends on the weight to be carried, and on the structure of the arch. The semicircular is best adapted where great strength is required; but the segmental is more generally useful, the pointed being only suitable for buildings of a decorated character. When arches are loaded (as in bridges), the proportion of the rise to the span is from $\frac{1}{4}$ to $\frac{1}{7}$, increasing with the span. The thickness of the arch depends on the rise and the weight to be supported, and on the material of which the arch is composed. The following are some proportions:—Palladio, thickness $\frac{1}{13}$ of span; Sertio, thickness $\frac{1}{17}$ of span; Alberti, thickness $\frac{1}{12}$ of span; Perronet, thickness $\frac{1}{10}$ of span. The French rule is $\frac{1}{30}$ of the span $\div$ 1·1 foot. The most preferable rules are Rankine's.

For single arches..... $T = \sqrt{\cdot 12R}$. (2)

For a succession of arches $T = \sqrt{\cdot 17R}$. (3)

R being the radius of curvature at the crown of the arch in.

For segmental arches..... $R = \frac{r^2 + s^2}{2r}$

For semi-elliptical arches $R = \frac{s^2}{r}$

r being the rise and s the half span.

Brick arches should rarely be less than 18 in. thick, and 18 in. will be sufficient for arches up to 36 ft. span. Invert arches are used for the purpose of distributing pressure. For ordinary purposes two half-brick rings will be sufficient, but for heavy goods three half-brick rings; and the arc of the curve should not exceed 180° nor be less than 45°.

In constructing arches, it should be kept in mind that, as in semicircular and segmental arches the joints should radiate, and in semi-elliptical arches each joint should be perpendicular to the tangent of the intrados, at the point thereon from whence the joint starts. In stone arches the voussoirs being cut to the shape required by the curve, the jointing presents no difficulty. In the case of brick arches, however, if the mortar-joints are continuous, they will be thicker at the extrados than at the intrados; and as the crushing-weight of mortar is very small, the work will be liable to excessive settlements. This may be remedied by building the arches with gauged bricks; but this is a costly expedient; or by building the arch in concentric rings, each ring of bricks having their lower edges touching. This method should not be practised in arches over 36 ft. span, as there is the danger of the concentric rings settling unequally, throwing the whole strain on one ring.

"The best plan, therefore, except in very flat arches, in which the length of extrados and intrados differs but little, is to build the arch in concentric rings, separated at short intervals by blocks of brick built as solidly as possible, or with bricks specially gauged."*†

* Roorkee Treatise on Civil Engineering. Vol. ii. p. 9.
† Rankine's Applied Mechanics, p. 224. Ed. 1858.

* Roorkee Treatise on Civil Engineering. Vol. i. p. 233.
† To be continued.

THE PARLIAMENT OF ENGLISH WORKMEN.

THE artisans and labourers of Great Britain are too often challenged with unthriftness, but the annual meeting of the chief friendly or provident societies that took place, according to custom, on Whit-Monday, gave evidence against the charge. It should also be considered that our mechanics, in a great measure, are affiliated to trade unions; and their weekly subscriptions to provident and trade societies absorb about 5 per cent. of their earnings if in constant work; but, taking into account loss of time, it would be a fair average to state 6 per cent. Apart from this,—and particularly so in the building trades,—there is scarcely a "pay-table," but a generous subscription from pence to silver is the cheerful rule for mates in unmerited difficulties, or their widows.

Foremost amongst the friendly societies is the Manchester Unity of Oddfellows, and their "oddness" consists in banding no fewer than 502,000 members, with a rest of 3,706,336*l*. Of all building trades, the stonemasons are chiefly affiliated here, and the Oddfellows are wise enough not to expend their funds in tomfoolery dresses, pageants, and what is properly designated "monkeys' outings."

Two other orders of Oddfellows, the "Grand United" and the "National," also held their "Parliament" in Whitsun week, and their statistics for the year show that they are growing. The "Grand United" totals up 94,224 members, with a capital of 430,000*l*. The "National" counts 41,364 members, and 94,302*l*. of accumulated funds.

The "Druids" met at Darlington, and number in England and Wales 58,852, and out of England they calculate 20,000 members more.

The city of Bristol welcomed the "Shepherds," who muster in their fold 60,517 "crooks," with a capital of 74,000*l*.

The "Free Gardeners" had a conference at Newcastle, and this society is going ahead, for during the past year they have added 2,000 to their garden, and enjoyed the rich produce of 41,303*l*., from which they have been enabled to bank for the year 5,000*l*.

Besides these widely-ramified benefit societies, many others of a kindred character have met, and each is in a good state of health.

Then, again, there are the parochial clubs, slate clubs, whip clubs, accident clubs, burial clubs, dispensary clubs, and many others that comprehend working men; and even the women and children of the sons of toil have penny clubs for clothing.

In the aggregate, we find congregations of workmen devoting the little leisure they find to hand at Whitsuntide to the nobler purposes of making for themselves and others a provision for illness, or the wear and tear of toil and age.

ASSOCIATION OF SANITARY INSPECTORS FOR SCOTLAND.

THE first annual meeting of the above Association was held on the 2nd inst., at the Old Council Chambers, Broad-street, Stirling, under the presidency of Mr. Kenneth Macleod, of Glasgow. The Association, which has only been in existence since February last, numbers 102 ordinary and 73 honorary members. Representatives from the principal cities and towns in Scotland were present.

After the transaction of some routine business, followed by an address from the Chairman, Mr. Welsh, of Perth, read a paper on the "Removal of Waste or Foul Water from Dwellings, and the Cleansing of the Surface of Streets." In the course of his remarks he alluded to the great mortality resulting from typhoid or enteric fever, said to be generated by the escape of foul sewage-gases into imperfectly constituted dwellings, and reminded the Association that, could they succeed in devising means whereby this unseen deadly agent could be satisfactorily overcome, they would to a great extent have fulfilled the object of their organisation. After showing that the old system of open sewers was not really a remedy for the evil, and expressing the opinion that if some improvements were made, the underground drainage was the best for the removal of soil-water, Mr. Welsh proceeded to describe his plan in detail. Assuming that a city had its drainage system complete, he asked, how could the drains be kept from becoming foul by the decomposition of animal and vegetable matter, and the consequent generation of sewage gas? His reply was, "Let cisterns be placed at as great an elevation as possible,—say in the attic of the properties, at the extreme end of the side-drain, and let them be capable of holding 100 gallons of water. Have pipes of as large a diameter as possible, so as to approach or be of the same size as the side-drains, and let them form the connexions between the cisterns and the drains. Let the valves be of a size equal to the connecting-pipes, and let the cisterns be discharged into the drains twice a week, or oftener if need be. With such a quantity of water, and discharges at an elevation of 20 ft., 30 ft., or 40 ft., the presumption is, that it would be impossible for any matters, either animal or vegetable, to resist such a current, coming with such a force from either of the fore-mentioned elevations, or remain in a drain so operated on." Supposing circumstances favoured the adoption of the plan, Mr. Welsh entered into a calculation to show that with the payment of wages and the cost of water this system of flushing might be carried out at an annual cost to each proprietor of only 10s. In very many cases, too, it would be much less, as in the more densely-built parts of a town it frequently happened that the properties of two or more proprietors were drained by the same side-drain; consequently, the greater the number the less each would have to pay. In considering the subject of the surface cleansing of streets, he advocated the water-jet as the best means of doing the work,—not alone, but by the aid of the broom. He pointed out that

the pest places in which fever originated, and from which it spread to other more healthy localities, were the spots in which the jet, and not the broom, could have any effect in the matter of cleanliness. The scavenger's broom, in places such as he had described, where oftentimes 150 or 200 human beings were crowded together,—not to mention the large percentage of cats and dogs,—by partial removal only made matters worse. Nothing but the jet could make the desired improvement in such places, and improvement it really did make, as evidenced after the operation by the paving stones appearing as clean as the day they were first laid down. The good effects of washing out closes and narrow streets were not confined to the mere cleaning of the surface, for the filth having been washed away, the exhalations which formerly arose from it ceased to enter the houses, and consequently the air was much purer, and an improved state of the public health must be the result. Mr. Mackieson, of Dundee, followed with a valuable paper, entitled "General Observations bearing on Public Health in Towns," in which he alluded to the advantages of hospitals in preserving the health of communities by the collection, isolation, and cure of infectious diseases. He also suggested co-operation in sanitary work between the authorities in different districts, expressed his ideas on the subject of ventilation, and pointed out the beneficial results of public baths, and similar places, whereby habits of cleanliness might be inculcated among the children of populous cities. Votes of thanks were tendered to the readers of the papers, and Perth was fixed upon as the place for the next annual meeting.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THEN: AND NOW.

TUESDAY, the 15th of June, was the fortieth anniversary of the opening general meeting of the Institute in 1835, Earl de Grey, as president, in the chair. The society then consisted of fifty-three fellows and fourteen associates. Of these fellows only six now survive,—Messrs. Blore, D. Burton, Donaldson, Poynter, Railton, and Thomson; of the associates only two survive,—Messrs. A. Burton and H. E. Kendall, jun.; and also G. Godwin, who was the first medallist, for his Essay on Concrete. There were then six honorary fellows, two honorary members, and sixteen honorary and corresponding members, *all* of whom are dead.

The Institute now consists of 296 fellows, 12 honorary fellows, 8 honorary members, 69 honorary and corresponding members, and 291 associates, making in all 877 members in 1875, instead of 91 in 1835, with the addition, at present, of 9 contributing visitors, and 34 students. In 1848 the first royal gold medal was awarded, and of this there have been 27 recipients, of whom 11 are dead.

T. L. D.

BUILDING ON IMPROPER FOUNDATIONS.

WE have often taken occasion to condemn the practice on the part of a certain class of builders of removing the gravel or sand from sites on which they are about to build, and supplying its place with any rubbish that may be obtainable, oftentimes rotten and decomposing matters which afterwards fill the houses built over them with dangerously injurious gases. The Hackney *Gazette* points attention to instances of this practice in its own locality:—"We paid a visit the other day," says the writer, "to one of these places—situated behind some dwellinghouses in Albion-road, Stoke Newington—and found the state of things fearfully disgraceful. Dust, decaying vegetable matter, and fish offal had been shot by wholesale into the hollow, and the stench was literally intolerable; indeed, it could scarcely be expected that the locality, with such a fever bed in its midst, should remain a day free from disease. Upon inquiry, we ascertained that the refuse had been brought into the district by a dust contractor from Clerkenwell and Islington. Surely, this is too bad. We have dust, house refuse, and offal enough in Hackney without having them imported from neighbouring districts; and it does seem a scandalous thing that we should be compelled to receive *nolens volens* the materials of *disease*-production which properly do not belong to us. The nuisance has become so utterly intolerable that the inhabitants of the adjoining houses have, we are glad to learn, memorialised Dr. Tripe, our Medical Officer of Health, on the subject; and we are watching to see whether, and when, the injurious matter will be removed. And on such heaps of accumulated rubbish, highly charged with fever germs, houses are to be built, and the people are expected to be healthy even though the most simple sanitary conditions are neglected by those who ought most scrupulously to regard them. Nor are these heaps of rotten cabbage and fish to be found at Albion-road, but in South Hackney, Clapton, and elsewhere, whilst refuse of all descriptions is to be seen, especially after the Saturday marketings, strewn in nearly every street in the entire district."

THE METROPOLITAN RAILWAY COMPANY'S NEW STATION IN BROAD STREET.

THE new station of the Metropolitan Railway Company at the angle of Broad-street and Liverpool-street, opposite the large new City terminus of the Great Eastern Company, is now fast approaching completion, and is intended to be opened for traffic about the 1st of July, simultaneously with the opening of the Great Eastern Company's Liverpool-street terminus, which is also now almost finished. The Broad-street terminus of the Metropolitan Company is one of the largest along the line, and the station building is a bold-looking structure, harmonising with the several buildings of a similar character in the immediate neighbourhood. With the completion of the Metropolitan Company's terminus there are now four leading stations in Liverpool-street and Broad-street, in immediate proximity with each other—namely, those of the London and North-Western Company, the North London, the Great Eastern, and the Metropolitan Companies. The principal elevation of the station building is in Broad-street, where there are two entrances, with an exit passage, together with another entrance at the angle of Broad-street and Liverpool-street. All these several entrances are 7 ft. in width. The Broad-street frontage is 88 ft. in length, and 46 ft. in height, containing the ground-floor and two stories above, with an ornamental Mansard roof at the corner of Broad-street and Liverpool-street, 58 ft. in height, and surmounted by a cresting of ironwork. The return elevation into Liverpool-street is 56 ft. in length, and uniform in its general architectural features with the Broad-street frontage. There is also a frontage to the railway corresponding, to a certain extent, with the Broad-street elevation, but plainer in its character. The several frontages are faced with brick and Bath-stone dressings, and the range of windows in the ground and upper floors are all arched. The entire area of the ground-floor will be set apart for the Company's purposes, and will contain a spacious booking-office, 50 ft. in length, and 30 ft. in width, with clerks' offices, and waiting-rooms. The upper floors will be let as offices, with an entrance at the north end of the Broad-street frontage.

Flights of stairs on each side of the booking-offices lead down to the railway level and the station area. It is 78 ft. in width, with an extreme platform length of 390 ft. It is covered in for a length of 190 ft., by a roof consisting of iron and glass, supported on one side by strong retaining walls, and on the other by iron columns and girders, with a lattice girder at the east end. In addition to the roof the station is also covered in to a length of 95 ft. by Broad-street, and the station building, under which the railway passes. Broad-street is carried over the line by massive iron girders, and the station building likewise rests upon girders of a similar character. There are two platforms, the one being 24 ft. and the other 18 ft. in width, with a length, as above stated, of 390 ft.

The whole of the works, including the station buildings, have been designed and carried out under the superintendence of Mr. Edward Wilson, the engineer to the company, the contractors being Messrs. Kelk & Lucas.

Langton Maltravers.—A new church in this village is in course of erection, at an estimated cost of 3,500*l*. The walls are just beginning to rise from the ground, and on May 24th a memorial-stone, of polished Purbeck marble, was laid at the east end, by the Countess of Eldon. The work is being carried out by Mr. T. Gerrard, under the direction of Mr. G. R. Crickmay, architect.

LONDON TREES.

UPON the principle of remembering to lock the door after the steed is stolen, I prognosticate that at some future time our metropolitan gardens will be furnished with an underground network of water service-pipes, just as a large building is often pervaded with gas tubing, leading to a multitude of points where supply is needed. By the illustration of the steed being stolen, I mean to hint at the death of all the finest trees through drought,—an evil which might be warded off if such systems of water service to the roots were established in due time.

In practice in my own garden of a quarter of an acre, I establish cisterns not too soundly water-tight in different points, the lower supplied from the higher by small gas tubing at 2d. per foot. If required, water can be dipped out with a watering-pot in the neighbourhood of any small pet plants which the gardener may take an interest in; meanwhile, whether the gardener takes any pains or not (he will almost, as a matter of course, neglect the big trees), the leakage is insensibly,—or rather I may say, in the long run, *sensibly*,—preserving the general health and verdant appearance of such vegetation as is of larger growth than a cabbage.

G. M.

A ROYAL RESIDENCE IN IRELAND.

MR. STACPOOLE intends to move on Friday next, June 25th, in the House of Commons, "that an humble address be presented to her Majesty humbly representing to her Majesty that it would conduce to the advantage of the Crown, and tend to promote universal satisfaction in Ireland, if her Majesty had a permanent residence in that country; and that this House, feeling deeply its importance, will cordially co-operate with her Majesty in any step she may be graciously pleased to take to carry out so desirable an object." In reference to this subject we may add that a rumour is afloat to the effect that a residence is to be purchased in Ireland for his Royal Highness the Duke of Edinburgh.

SANITARY STATE OF THE MINING VILLAGES.

AMONG the "notices of motion for which no days have been fixed" in the House of Commons' book, is one in Mr. Macdonald's name, "to call attention to the sanitary condition of the mining villages of England, Scotland, and Wales, and the tenure by which the houses are held by the workmen, and to move a resolution on the subject." The state of many of these villages is a subject well worthy the attention of Parliament and the country, as we have often pointed out.

RE-BUILDING OF THE ROYAL ASYLUM OF ST. ANNE'S SOCIETY.

IT is stated that, in consequence of the schools at Streatham of the Royal Asylum of St. Anne's Society being now too small for the number of pupils, and there being a difficulty in providing further accommodation, a new and much larger building is about to be erected on Banstead Downs, and that an eligible site has been obtained on favourable terms. Under the contemplated new arrangement, the present school buildings and ground at Streatham are to be sold, and as land in that locality is much increasing in value, it is expected that the proceeds of the sale will amount to a large proportion of the cost of the new establishment.

THE CHARLES KNIGHT MEMORIAL.

ON the 14th inst. some of the members of the Charles Knight Memorial Committee attended at the Windsor Guildhall, and presented a bust of the late Charles Knight, by Mr. Durham, to be placed in the Town-hall of the borough, of which Knight was a native. It stands between the two lower windows of the council-chamber, on a pedestal a little over 3 ft. high.

"A Subscriber" writes to us expressing his surprise that he was not informed of what was going to be done. He will be less surprised, perhaps, when we tell him that some members of the committee even were kept entirely in the dark as to the progress of the affair, and had no intimation whatever as to the day of presentation. Under proper management a much more worthy demonstration would have been made.

ASSESSMENT OF DULWICH COLLEGE.

THE parish officers of the Camberwell Vestry have just increased the assessment of the new Dulwich College buildings and grounds from a ratable valuation of 2,000*l.* to 3,750*l.*, or nearly double the former assessment value, which it is said will very seriously cripple the College, more especially if the proposed new scheme should be adopted, under which 1,400*l.* annually is all that is allowed for the rates, taxes, insurance, and all the general expenses of the establishment. Taking the average rate per pound, payable on the assessment in the parish of Camberwell, at 5*s.*, the College liabilities under the new assessment, will amount to about 940*l.* a year for rates alone, leaving only 460*l.* to pay for the whole of the other expenses, should the new scheme come into force.

"THE SALE OF SERJEANTS' INN."

SIR,—The *Manchester Guardian* put forth a strange fancy, to which you have been induced to give currency in your paper of June 12, namely, that "the Judicature Bill (Act) has abolished the title of Serjeants-at-law." The Judicature Act has done nothing of the sort. It merely declares (sec. 8) "That no person appointed a Judge of either of the said Courts shall henceforth be required to take, or to have taken, the degree of Serjeant-at-Law." The sale of Serjeants' Inn, and the division of its proceeds among existing Serjeants, are, therefore, odd, and not well warranted, anticipations. Was "the wish the father to the thought"? SERVIENS.

THE WORKS OF THE LATE MR. PUGIN.

SIR,—In your list of the works of the above, I notice St. Joseph's Retreat, Highgate. This is a mistake. The only buildings erected there under the superintendence of an architect are a small chapel on the west side of the church, and the monastery, now in course of erection, both from my designs. The church was built some years ago, by Mr. Bird, the builder, without professional superintendence. FRANCIS W. TASKER.

COLOURING STONE.

I AM building a house in the country of brown stone, with window-cills, mullions, chimneys, &c., of white, or rather drab-coloured freestone. Can you kindly tell me in the columns of your paper how I can best colour the freestone *otherwise* than with paint, which, of course, I do not wish to use, so that it shall be of the same shade, and harmonise with the rest of the building; for I do not at all like the contrast between the two stones, and am not content to wait for time and weather to do the work.

HUSSAR.

ARLESEY SCHOOLS ESTIMATES.

THE SEQUEL.

1,925*l.*

THE King has since the job declined,
'Cause in his price he cou'd not find
A profit suited to his mind.

2,185*l.*

But Twelvetrees, ever sure and true,
The work has since agreed to do,
For three pounds over eighty-two.

Arlesey Asylum. LUNATIC.

ONE BUILDING OR TWO?

IN the Court of Exchequer last week, the British and Foreign Bible Society objected to the assessment for inhabited house duty of half their premises in Queen Victoria-street. The whole building was assessed at the sum of 3,200*l.* By the requirements of the Building Act, in consequence of the magnitude of the structure a party wall was made, which ran from the top to the bottom and from the back to the front of the building. In one portion, Mr. Ackerstein, the secretary, resided with his family, and the Society did not dispute their liability in respect of that half. On the other side the building was occupied as warehouses solely for the purposes of trade, but there was communication between the two halves by an iron door, which was closed at night. The contention on the part of the Society was that, as this building was separate and distinct, they were exempt from duty in respect to it. On the part of the Crown it was urged that, being one block of building, duty must be paid on the whole.

The court agreed with the Society, and reduced the assessment by one half.

Acton Local Board.—The surveyor's salary has been increased 50*l.* a year, in consequence of his long service.

CHURCH BUILDING NEWS.

Charlton (near Tetbury).—This church, which is dedicated to St. John the Baptist, is in the Early English style, and consists of a nave, from the south-west corner of which rises a square tower containing five bells, a chancel, and chancel-aisle. The edifice being much dilapidated, Mr. M. Wyatt, of London, architect, was communicated with, and he made plans for the restoration, and the work was entrusted to Messrs. Wall & Hook, builders, of Brimbscombe. The principal feature in the church is the row of pillars dividing the two aisles, which together form the body of the church; these, together with the arches, have been cleaned of the whitewash, &c., and the stones shown in their natural state. The pulpit has been removed from the north wall of the nave, and an unused doorway, which was in the wall behind it, has been opened, and forms one of the entrances to the church. There has been one new west window. The roof-timbers have been cleaned of the whitewash, and shown in their proper colours; the old pews have been replaced by modern oak benches, and the aisles have been paved with red and black tiles in squares. The chancel has been restored and embellished. On the south side originally stood a doorway which was unused; but this has now been opened, and forms the entrance to a new vestry about 7 ft. square, which has been added to the building. Under the vestry is a heating apparatus, by Haden, of Trowbridge. Between the chancel and the chancel-aisle there originally was a large buttress, and a monument to the memory of Sir Henry Knyvett and his wife; but the buttress has been abolished and the monument removed back against the north wall, their places being taken by the springing of two arches to carry the roof. The old two-light east window has been replaced by a stained glass window, containing three lights. The chancel-aisle contains the seats for the choir, and the old Early English east window has been filled with stained glass.

York.—The church of St. Martin-cum-Gregory, at the foot of Micklegate-hill, was re-opened on the 20th ult., after a thorough internal restoration. The church has an Early English nave, with Perpendicular clearstory and chancel, and some Decorated windows. There are also traces of a crypt, and in the west wall is a rude piece of Roman sculpture. The old square pews have been removed; the old gallery in the west tower, with the organ, taken down; and the whole of the area of the church cleared. The floor has been taken up, levelled, and laid down in concrete, with red and black tiles placed diagonally. All the columns and the arcades and the walls have been scraped and cleansed, and repaired where decayed. The central roof of the nave, which is divided into panels, is renovated, the woodwork being painted oak, and the spaces within coloured blue, the bosses being picked out in gold. The new seats are of pitch-pine, open with square ends, and are ornamented with carved Maltese crosses within a circle. Book-boards are provided. The old hexagonal pulpit of oak has been denuded of paint and varnish, and the carved work made apparent. Gas standards have also been fixed in the church, from the establishment of Mr. Dovery, of Manchester. The church will be warmed by two of Gurney's patent stoves. The cost has been about 1,000*l.* Messrs. Atkinson, architects, of this city, prepared the plans and drawings for the restoration, and under the personal supervision of Mr. Demaine the works have been executed by the following tradesmen of this city:—Mr. Clark, mason and builder; Mr. Coulson, joiner; Mr. Michael Varvill, plumber and glazier; Mr. Knowles, decorator; Mr. Hewitt, and Mr. Pearson, painters.

Stoyumber.—This parish church, a specimen of the Perpendicular style peculiar to Somerset, having undergone restoration, was re-opened on the 28th ult. It consists of a nave, north and south aisles, two south-west and east chapels, a chancel, and north and south porches. The restoration includes a new roof to the south aisle, a facsimile of the old. The old roofs of the nave and north aisle have been retained so far as it was possible to do so. The walls have been stuccoed, and the windows reglazed with cathedral glass. All the seating, which, with the exception of a small portion, is ancient work, and the stall-ends, in varied designs, have been refixed. The old floors have been removed, and the vaults underneath filled up. New floors throughout the church, lowered to the original level, have been laid with encaustic tiles. The chancel was rebuilt some few years since, but new encaustic tile floors have been laid down. The Halsway Chapel, on the north side, has been restored, with new oak seating and tile floor, and a stained-glass memorial window, by Clayton & Bell, in the east end; and new open-work roof, with moulded ribs and carved bosses at the intersections, a copy of the old work. The Notley Chapel, on the south side, which is Early English work, is being restored by Mrs. Notley, of Combe Sydenham. The cost was about 2,400*l.* The works have been carried out by Mr. Henry Davis, builder, of Taunton, aided by his son, Mr. A. P. Davis, who acted as resident superintendent under the direction of Mr. J. D. Sedding, architect, of Bristol.

Brodsworth (near Doncaster).—This church was re-opened, after restoration, on the 24th ult. From the discoveries of Saxon masonry made during the restoration, it is evident that a church existed here as far back as the Saxon era. The date of the erection of the present edifice has been fixed as about 1120,—and the building was in the Norman style. The works comprise the rebuilding of the south of the nave and chancel, with a new south aisle and porch, and a south chapel to the chancel; the restoration of all the old work, and new fittings. The tower has been heightened, a new west window inserted, and the bells re-hung. The old stone-work of the nave and chancel arches has been cleared of colour-wash. A large number of incised and raised crosses, of various dates, were found built into different parts of the old walls, and these have been built into the walls of porch, vestry, &c. The old carved oak pulpit of 1692 has been erected in the north-east corner of the nave. The pavement is of tiles, by Godwin, of Hereford. The church is heated by hot water, on the system known as Perkins's patent, by Mr. R. R. Gibbs, of Liverpool. The bells were re-hung by Mr. Thomas Mallaby, of Masham. The edifice has been newly roofed with pitch-pine, and seated with stalls of the same material. It has sittings for 200 hearers. The cost of the restoration has been about 2,500*l.*, borne chiefly by Mr. C. S. A. Thellusson, of Brodsworth Hall. The architect was Mr. C. Hodgson Fowler, of Durham, and the contractors were Messrs. Longmire & Burge, of London.

Monkwearmouth.—St. Peter's Church has been re-opened for divine worship, after having been closed for three years, during which it has undergone a complete metamorphosis. Some portions of the old walls are retained, and form a striking contrast to the other parts. At the end of the last century the arcade separating the nave from its aisle, together with the chancel-arch, were destroyed, a low-pitched roof was put on with a flat ceiling, and the church was fitted up with pews and galleries, whilst the churchyard was overlaid with 6 ft. or 7 ft. of ballast, and a fresh stratum of burials took place over the whole area. The church thus became damp and neglected. In 1866 it was decided to bring back the church as far as possible to the arrangement it presented in the fourteenth century, after the addition of the north aisle, chancel, and chantry, to the original Saxon fabric. The south wall of the nave has been rebuilt on the old foundations, and the arcade and chancel-arch have been reconstructed on the old lines. Vestries are built at the east end of the aisle. The church will hold about 600 worshippers, and the principal entrance is by the north porch, in which the fourteenth-century doorway has been built up again, the old stone roof being put on. The roofs of the church are high-pitched, that of the nave following the old lines given by the remains of the Saxon fabric. They are all open-timbered except that of the chancel, which is polygonally boarded. The expense of the restoration has been about 7,000*l.* Mr. R. J. Johnson, of Newcastle, was the architect. Mr. Hudspith of Newcastle, was contractor for mason's work, his representative on the spot being Mr. Birkett. Mr. Caldcleugh, of Durham, executed the carpenter's work; and the other contractors were—Mr. Preston, for slating; Messrs. Wilkinson, for plastering; Mr. Gibson, for plumbing; and Mr. Morrison, for painting and glazing. The stained glass and painting of the roof were the work of Mr. C. E. Kempe, of London.

Elgin Joiners.—After a strike of three hours' duration, the joiners of Elgin have had their wages raised from 4*d.* to 6*d.* per hour, and the master-joiners have intimated that in consequence of this rise they will raise their charges by 5 per cent.

Books Received.

The Law and Practice relating to Letters Patent for Inventions. By W. FISCHER AGNEW, Barrister-at-Law. London: Wildy & Sons, Lincoln's Inn-archway.

MR. AGNEW has included in his volume notices of the Patent Laws in force in the principal foreign States, and gives in an appendix the statutes in full. Those who in the present disturbed state of the question desire to know exactly what is, in order to compare it with what may be proposed, will find this book useful. The endeavours which are being made on various sides to damage the position of inventors require to be met earnestly.

Engineering Papers. By C. GRAHAM SMITH, C.E. Spon, Charing-cross. 1875.

THIS little volume comprises three papers by Mr. Graham Smith, read at the Institution of Civil Engineers and other societies, the subjects being "Mortar," "Practical Ironwork," and "Retaining Walls." The author takes a clear-headed view of his subjects, and conveys succinctly a considerable amount of useful information.

The Wedgwood Handbook: a Manual for Collectors. By ELIZA METEYARD. London: George Bell & Sons. 1875.

MISS METEYARD has thrown herself so fully into the life, works, and time of Wedgwood,—has devoted so much attention, acumen, and, we fear we must add, money, to rightly illustrating them,—that she was well fitted to produce such a handbook as that now before us. And a very useful handbook it is: it treats of the marks, monograms, and other tests of the old periods of manufacture, and includes the catalogues with prices obtained at various sales, together with a glossary of terms. The author does not claim too much when she says, that the major part of the book "is the result of study, of observation of the finest collections, and of materials gathered from original documents." A much-needed want has been well supplied; and we trust that those who are interested in such subjects will show their appreciation of Miss Meteyard's industry and knowledge by buying the book. They will not regret doing so.

Miscellanea.

The Windsor Drainage.—Mr. Acock, the contractor, has commenced within the last week or two the works connected with the Windsor drainage, by sinking two shafts in the Albert-road, where it is proposed to carry the drain through a tunnel at a depth of 40 ft. below the surface. The work about to be constructed consists of an outfall sewer from Brook-street to the Ham, the contract for which has been taken by Mr. Acock, for about 17,000*l.* The sewer will be circular, 4 ft. 6 in. in diameter, and will be constructed of stock bricks in lias lime cement, and will have a fall of 3 ft. to the mile. In places there will be three rings to resist extra pressure of subsoil water. To defray the cost of the works the Sanitary Authority proposes to borrow about 30,000*l.*, which it is estimated the works will cost. The Local Government Board have given permission to borrow 10,000*l.* for works within the borough, that is from Brook-street to near the Wheatsheaf, Old Windsor, and the Public Works Loan Commissioners have granted a loan to that amount to be repaid in thirty years, in equal payments of 540*l.* The remainder of the money will, no doubt, be granted upon the same terms, and according to a statement made at a recent meeting of the Board, the repayment of the 30,000*l.* would amount to a rate of sixpence in the pound.

Conversazioni.—The President and Council of the Royal Institute of British Architects will hold their annual *conversaziones* on Wednesday evening, the 23rd inst. On the same evening there will be an informal gathering for conversation of the Royal Society, Burlington House. The Society of Arts' *conversazione* will take place at the South Kensington Museum on Friday, the 25th. There will be a vocal concert in the Lecture Theatre on this occasion. The next *conversazione* of the Society for the Encouragement of the Fine Arts will be held on Thursday, the 24th, at the South Kensington Museum.

The Dwellings of the Poor.—On the 9th inst. the occupiers of a number of small houses in Wood's-place, Coppice-row, and Vinegar-yard, Clerkenwell, were served with notices by the agent of the Marquis of Northampton to give up possession forthwith. The houses, as a rule, afford accommodation for several families in each, and the announcement that they were required to leave caused a great deal of excitement and consternation in the locality. In Back-hill and Somerset-street the material of 150 houses has been announced for sale preparatory to their demolition to make room for street improvements, and the occupiers—nearly all poor Italians—are under notice to leave. The Metropolitan Board of Works has given notice of its intention to acquire possession of a block of buildings known as the "Rookeries of Clerkenwell," in order to form a new street, but they will in this case give reasonable time for the inhabitants to remove. The contemplated demolition of so many houses in an overcrowded neighbourhood will cause much inconvenience and distress to the working classes in the district.

London and Middlesex Archæological Society.—A general meeting of this Society was held last week in the Great Hall of Christ's Hospital, the Rev. G. C. Bell, head-master, in the chair. Mr. H. C. Coote, F.S.A., read a paper "On the Charters and Records of Christ's Hospital." The lecture was illustrated with a number of old records of the institution. At the conclusion, Mr. Alfred White, F.S.A., read his paper "Upon Newgate-street and the Neighbouring Wards." He maintained that the Romans did not occupy Newgate-street, as had been stated by Mr. Black and others. With regard to the old wall of London, he did not believe it was of Roman construction, it being of a later period than the Roman era. The Rev. T. Hugo contended that the wall to which Mr. White had alluded was of Roman construction. Mr. Crace next gave a short account of the early period of Christ's Hospital, and the chairman delivered a short address on the present building and other interesting details connected with the institution.

Brussels International Exhibition, 1876. An International Exhibition will be held next year in Brussels, under the patronage of his Majesty the King of the Belgians, and the presidency of the Comte de Flandre. The Exhibition, the initiative in which has been taken by the Belgian Société Royale de Sauveteurs, will include all matters relating to the saving of life, and the lessening of suffering under every circumstance, whether arising from war, fire, or shipwreck, accidents by machinery, railway, locomotion generally, or in mining operations. In addition to the above, the programme, which is very comprehensive, and invites the co-operation of men of science and philanthropists, comprises all matters relating to the preservation of health, including the proper construction of public buildings, factories, &c., and the improvement of the dwellings of the working-classes generally. A Congress will be held in connexion with the Exhibition for the discussion, by representatives of all nations, of the subjects coming under each section of the programme.

King Arthur and Knighthood.—A paper on these subjects was read by Dr. Phené on the 10th at the Royal Historical Society, Chandos-street. The lecturer considered that there were evidences to warrant his concluding that the term "Arthur" was one under which various chieftains and petty knights embarked in the new Christian chivalry, which convert kings were obliged to assume in defence of their new faith. That probably the first in order, or the chief of these kings bore that name,—if, indeed, it were not borrowed from a more ancient source;—that it was used to indicate an order, and to avoid invoking the more sacred name; that the "round tables" were of two kinds, the first consisting of chiefs and kings, which seldom met, and then only to arrange uniformity of action; the second consisting of a king or chief, with his knights and followers. We do not find ourselves able to go with the lecturer in this view. The paper included some curious matter.

Accident to Houses in Birmingham.—On the 7th inst. an accident of a rather serious kind happened in Loveday-street. The roofs of two houses, Nos. 32 and 33, suddenly collapsed, endangering the lives of several persons. Complaints as to their unsafe condition had frequently been made, but the premises had never been effectually repaired.

Loans to Sanitary Authorities.—The Local Government Act, 1858, which authorised local boards to procure provisional orders whereby the Lands Clauses Consolidation Act, 1845, could be set in motion, has caused extensive street improvements to be carried out in many provincial towns, and for this purpose loans to a considerable amount have been necessary. To repay these sums in the maximum period of thirty years, when the improvements were good for all time, especially where wide streets have been substituted for narrow and inconvenient ones, was considered a hardship on the present generation of ratepayers. The borough of Derby felt it to be so two or three years ago, hence the Council originated a movement for getting the law altered, so that sixty years might be given instead of thirty. The Local Government Board have, after considering the application of the Derby sanitary authority, now granted an extension of time to sixty years from the original date of borrowing, in respect of a balance of nearly 50,000*l.* for widening streets.

The New Gaol, Odiham.—At a special meeting of the Town Council, on the 1st inst., the Mayor presiding, the Gaol Committee recommended that 1,000*l.* be paid to the contractors for building the new gaol on receipt of a certificate from the architect that 1,250*l.* worth had been done. Alderman Hellard, in moving the adoption of the recommendation, expressed regret that more satisfactory progress had not been made in the building of the gaol. Mr. Cunningham seconded, observing that the plant had cost a large sum, and that the contractors understood that they were to be paid for it. Alderman H. Ford and Mr. Nance contended that the restrictions placed on the contractors were very hard, and tended to delay the satisfactory progress of the works. Mr. Newland thought they should strictly adhere to the conditions of the contract, and if it was a hardship on the contractors it was a pity they contracted. On a divison, the resolution was carried by a large majority.

The Late Mr. Richard Burchett.—The public lost a long-tried, faithful, able, and zealous servant when this artist died in Dublin the other day, in the fifty-seventh year of his age, having been considerably more than a quarter of a century Head Master of the School of Design, at South Kensington, or in an analogous position to that one, and in effect the principal conductor of the whole of that scheme of technical education in drawing and in decorative art which works under the Art Department. Mr. Burchett was born in Brighton, and came to London with no advantage, either of education or position. It was about 1841 that he entered the School of Design, then established under the Board of Trade in Somerset House, and occupying the rooms built for the Royal Academy. He studied here, and distinguished himself so considerably by industry, intelligence, and especially by his attainments in geometry, that he became a sort of unofficial master before he took office at all.

Important to Masons and Others.—At the Edinburgh Small-Debt Court on the 7th inst., Messrs. Boyd & Donald, justices of the peace, on the bench, Catherine Small, James Craw, John Farrell, Thomas Vallance, and Robert Edmunds, occupiers of tenements 1 and 2, Dunbar-street, sued David Thornton, mason, 11, Spittal-street, for 5*l.* each in respect of damage done to food, clothing, and furniture, in consequence of defender having failed to give pursuers sufficient warning that he, or those for whom he was responsible, were about to repair a chimney stack of said tenement, whereby a quantity of rubbish came down their chimneys. After an explanation had been given as to the amount and nature of the damage, the Bench awarded Small and Vallance one guinea each with expenses and the other pursuers half a guinea each with expenses.

The Rebuilding of the Marylebone Workhouse.—On the 11th inst., at the meeting of the Marylebone Vestry, Professor Marks asked if a report that had appeared in the newspapers stating that it was the intention of the Guardians to rebuild the Workhouse at an expense of 30,000*l.*, was true. Mr. Boulnois said it was true that the Guardians do intend rebuilding the Workhouse, but he doubted whether the work could be done for 30,000*l.* He would say that the work would be proceeded with very slowly and what they did last week was simply to resolve upon a further extension of the building operations.

Opening of the Lewes School of Art.—The first building erected as a school of art in Sussex, and we believe in the southern counties, was opened recently at Lewes. The work has been some time in progress, but at the present moment the building stands a finished monument to the persevering energy of those gentlemen who some years ago determined that the Lewes School of Art should have a local habitation, instead of being distributed about the town in rooms lent by other institutions. The building has been furnished throughout with every necessary appliance and convenience; and on the occasion of the opening, a selection of works of the pupils, to which prizes and certificates have been granted, was exhibited in the two principal apartments.

The late Mr. W. Scott, Contractor.—After having been laid aside by illness for some time, Mr. W. Scott, contractor, died on Friday week at his residence, near Glasgow, in the sixty-fifth year of his age. A native, we believe, of Kilmarnock, Mr. Scott began life as a joiner. By dint of energy and perseverance he by-and-by found himself in a position to enter upon railway contracts. Among other railway works which he subsequently executed were a portion of the Biggar and Peebles line, and certain sections of the Highland line. He has more recently been extensively employed in the construction of docks. It was he who executed the Albert Dock at Leith, completed about five years ago, and he has since been engaged upon a graving-dock on the Clyde.

An Infirmary in want of Water.—The St. Olave's (Southwark) Guardians having erected an infirmary at Rotherhithe, find some difficulty in opening the building, in consequence of being unable to obtain a sufficient water-supply. They require water on the second floor at a height of 30 ft. The Southwark and Vauxhall Water Company confess that they are unable to give the supply at the height named, but offer a good one on a level with the ground. The Guardians, finding that the Company's Act requires them to provide a supply at a height of 30 ft. have appealed to the Local Government Board to compel them to provide water for the new infirmary, in accordance with their requirements.

Loan Exhibition of Railway Models and Appliances.—There is at present at the Crystal Palace an interesting collection of railway models and appliances lent for exhibition by railway engineers, inventors, manufacturers, companies, and others. In addition to the models, there are a number of pictures and drawings of engines, bridges, stations, carriages, wagons, and a complete portrait-gallery of men eminent in the history of railways, exhibited by Messrs. H. Graves, the Crystal Palace Company, and others. It includes portraits and busts of Brunel, G. Stephenson, James Watt, Sir J. Hawkshaw, T. Brassey, and C. Vignoles, C.E. The exhibition is held in connexion with the *fête* in aid of the Railway Benevolent Institution.

Margate.—The works for the extension of the jetty have been commenced. They are to be finished in about thirteen months. The aquarium sea-wall, which has cost about 8,000*l.*, and is 630 ft. long, was finished on the 9th inst., the last stone being laid by Mr. Mark Sanderson, the chairman of the directors. This wall reclaims about three acres of land. The skating-rink has been commenced, and it is to be completed in about five weeks. It will be 164 ft. by 55 ft, and will be finished with Claridge's Seyssel asphalte. A bridge will be thrown from the jetty to the sea-wall, if the Pier Company give their consent. The wall is constructed of 27 blocks, weighing on an average about seven tons each.

Another "Light" Explosion!—A gas explosion occurred on the 10th inst. in the vaults of Messrs. Lafittan & Co., wine and spirit merchants, in Apple Tree-yard, York-street, St. James's-square. The cellarman unlocked the door and struck a match, a violent explosion followed, knocking him down, burning him severely, blowing out the doors, and seriously injuring a coachman who happened to be passing. Both men were conveyed to Charing-cross Hospital. Their injuries are not expected to prove fatal.

An Aquarium for Rothesay.—The foundation-stone of the first aquarium in Scotland was laid at Rothesay on the 5th inst. by Mr. Charles Dalrymple, M.P.

The Relics from Hissarlik.—We learn from Athens that Dr. Schliemann has handed over to Photiades Bey, the Ottoman minister, the sum of 2,000*l.*, which it had been agreed the explorer should pay to the Turkish Government as an indemnity for those antiques which, in violation of his contract with the Porte, he carried away to Greece. It is also known, says the *Levant Herald*, on the best authority, that the Porte has now positively refused to allow Dr. Schliemann to complete his excavations at Hissarlik.

Strike of Masons at Ruabon.—A serious strike has taken place among the masons at the quarries of the Cefa Freestone Quarry Company, Ruabon. The men applied for an advance from 7d. to 7½d. per hour, and required to leave at noon on Saturday. These demands being refused they struck work. From this quarry most of the stone used for ornamental purposes in public buildings in North Wales and the north-west of England is taken, so that the consequence of this cessation may be serious.

Widening of Upper Thames-street.—The Commissioners of Sewers at their meeting, on the 8th inst., resolved, after some discussion, to offer the sum of 4,000*l.* for the ground required to widen Upper Thames-street, in front of All-hallows church. It was also agreed to offer 2,200*l.* for the leasehold interest in the White Hart Tavern, which will have to be pulled down in order to carry out the contemplated improvements.

Paving Works in St. Pancras.—At the meeting of the St. Pancras Highways, Sewers, and Works Committee, on the 7th inst., tenders were received for the execution of paving works in Manchester-street, Argyle-square, Charles-street, Clarendon-square (south side), Phœnix-strret, and part of Great College-street. The amounts varied from 11,210*l.* down to 10,790*l.*, and the latter, that of Mr. C. D. Sewell, was accepted.

Sewerage Works at Wisbech.—A meeting of the united Board of Health was held at the Town-hall, Wisbech, on the 4th inst., under the presidency of the Mayor. The sum of 1,000*l.* was ordered to be paid to Messrs. Jas. Neave & Sons, the contractors for the sewerage works. It was stated that the cost of the sewerage works up to the present time is 46,000*l.*

Completion of a Large Viaduct.—After four years' incessant labour at the Smardale Viaduct, the Midland Railway Company can now cross the North-Eastern Railway, at an elevation of 136 ft. It is a stupendous, difficult, and expensive undertaking; and Mr. A. Wodiwiss, the contractor, has had an army of workmen engaged in the erection, who are now mostly released and engaged on other jobs.

Assistance to Architects.—The establishment which has been opened by Messrs. Foster & Riley, in London-wall, and which is constantly mentioned in our advertising columns, seems calculated to be of use to architects and others at moments of pressure. The principals appear to know what they are about, and can give useful help.

Corot.—Messrs. Cottier & Co., in their rooms, No. 8, Pall-mall, have an interesting collection (perhaps the largest ever made in England) of the works of the recently deceased French Master, Corot. It affords a good opportunity to study the characteristics and qualities of this very eminent master.

Not Wise.—We understand that the Ryde Town Council have decided that in future it shall not be obligatory on those who build semi-detached houses to carry party walls up through the roof.

Restoration of Chippenham Church.—The tender of Messrs. Smith & Light, builders, of this town, has been accepted for the enlargement and restoration of the parish church.

Burton-upon-Trent.—The building of the proposed new post-office has been let to Messrs. Lowe & Sons, whose estimate amounted to 4,800*l.*

Rochester Cathedral.—The re-opening of Rochester Cathedral took place on the 11th inst. The restoration of the interior is now completed.

Arbroath.—A new church, for the East Free Congregation, Arbroath, has been opened at Brothock Bridge. The building is divided into nave and side-aisles, and is seated for about 630 persons. Mr. W. Aitkenhead was the architect.

TENDERS

For the erection of four warehouses, in Barbican, for Messrs. Tubbs & Lewis. Mr. Coutts Stone, architect. Quantities by Mr. W. A. Dixon:—

Holland & Hannen	£13,320 0 0
Newman & Mann	13,176 0 0
Brass	12,947 0 0
Patman & Fotheringham	12,888 0 0
Browne & Robinson	12,878 0 0
Shurmur	12,393 0 0
Mark	12,160 0 0
Scrivener & White	12,161 0 0
Sharpington & Cole	11,997 0 0
Moreland & Nixon	11,995 0 0
Sewell & Co.	11,968 0 0
Coleman	11,965 0 0
Oliver	11,900 0 0
Crabb	11,900 0 0
Bangs & Co.	11,700 0 0
Elkington	11,357 0 0

For villa residence, West Drayton, for Mr. Thatcher:—

Dexter	£1,977 0 0
Taylor	1,960 0 0
Wearley	1,797 0 0
Garratt & Wilkinson	1,600 0 0

For new farm-stead, cottage, &c., at Northern Woods Wooburn, Bucks. Mr. Arthur Vernon, architect:—

Walter	£760 0 0
Taylor	740 0 0
Hook & Oldrey	737 0 0
Webb	733 0 0
Banghurst	730 10 6
Child	690 0 0
W. H. Spicer	665 0 0
Hunt	658 10 0
Sexton (accepted)	638 10 0
Bagley	616 0 0

For new free Methodist chapel and alterations, Penn, Bucks. Mr. Arthur Vernon, architect:—

Sexton (accepted)	£320 0 0

For alterations at the "Standard," Stockbridge Terrace, Pimlico. Messrs. Drury & Lovejoy, architects:—

Godden	£279 0 0
Hockly	277 0 0
Shurmur	267 0 0

For erection of villa residence at Shepherd's Bush for Mr. Joseph Woodger, jun. Mr. Alfred C. Bean, architect:—

Downs	£2,040 0 0
Warr	1,837 0 0
Eyles	1,748 0 0
Johnson	1,625 0 0
Johns & Cockell	1,200 15 6

For drainage works at Isle Grange, Hertford, for Col. Robertson. Smith & Austin, engineers:—

Potter (accepted)	£127 10 0

For schoolhouse and residence at Aberystwyth, for the Rev. Llewelyn Edwards. Messrs. Szlumper & Aldwinckle, architects:—

Davies	£2,450 0 0
David Jones	1,867 0 0
David Jones	1,700 0 0
John Jones	1,650 0 0
Williams	1,570 0 0

For new workhouse at Lampeter, Cardiganshire. Messrs. Szlumper & Aldwinckle, architects:—

Jones & Allen	£2,795 0 0
Williams (accepted)	2,370 0 0

For school and residence for the School Board, Llanychaiarn, Cardiganshire. Messrs. Szlumper & Aldwinckle, architects:—

Evans (accepted)	£1,050 0 0

For building agent's house, farm premises, and four cottages, on the Lynford Hall Estate, for Mrs. Lyne Stevens. Mr. J. M. Anderson, architect. Quantities by Mr. S. J. Thacker:—

		Concrete and Seysell Asphalte.
Bromwich	£13,890	£415
Saunders	12,418	555
Andrews	12,404	580
Hubbard	10,797	200

For the erection of a new warehouse and printing works at the corner of Moor-street and Albert-street, Birmingham, for Mr. Frederick Grew. Mr. W. Tadman Foulkes, architect. The quantities by Mr. W. A. Phipson:—

Smith & Son	£3,562 0 0
Cresswell & Son	3,360 0 0
Matthews	3,297 0 0
Davies Brothers	3,265 0 0
Sapcote & Son	3,249 0 0
Brooks	3,200 0 0
Hughes	3,190 0 0
Horsley Brothers	3,111 0 0
Twigg & Fowke	3,104 0 0
Steele	3,100 0 0
Bloore	3,080 0 0
Parton	2,999 10 0
Lidzey	2,989 0 0
Hartley (accepted)	2,787 0 0

For farm buildings at Blunham, Beds, for Mr. Powers. Mr. Usher, architect:—

Twelvetrees	£453 10 0
Hull	379 0 0
Lilley	355 10 0
Knight & Boston	352 10 0
Spencer (accepted)	349 10 0

For erecting a detached villa residence, at Wimbledon, for Mr. John Lockton:—

Tunewell (Islington)	£850 0 0

For erecting seven small houses on freehold land, Church-row, Kensington, for Mr. George Hunt. Mr. Gordon Stanham, architect:—

Adamson & Sons	£3,200 0 0
Hockley	3,089 0 0
Stimpson & Co.	2,969 0 0
Thomas & Butland	2,876 0 0
Lucas & Son	2,600 0 0

For additional story and other works at the Devonshire Arms, Moreton-street West, Pimlico, for Mr. Hallet. Mr. George Legg, architect:—

Heath	£188 0 0
Timewell (accepted)	420 0 0

For stables and cottages, Hargwyne-street, Clapham, for Mr. Herbert Clarke. Mr. John Groom, architect. Quantities by Mr. B. A. C. Herring:—

Mills	£2,889 0 0
Deacon	2,837 0 0
Thompson	2,837 0 0
Turner & Sons	2,825 0 0
Scrivener & White	2,759 0 0
M'Lachlan & Son	2,725 0 0
Kelly Brothers	2,723 0 0
J. Crbab	2,610 0 0
J. Marsland	2,575 0 0

For erection of new school and residence at Kingston, Cambridgeshire, for the School Committee. Mr. George Eraut, architect:—

Laughton	£749 0 0
Taylor	736 0 0
Warboys	687 0 0
Ellis	644 0 0
Thoday	611 0 0

For erection of new schools at New Wimpole, Cambridgeshire, for the School Committee. Mr. George Eraut, architect:—

Taylor	£557 0 0
Laughton	550 0 0
Thoday	530 0 0

For repairs, Whittington Cottage, Highgate, for the governors of the poor of the parish of Clerkenwell:—

		Extra Plastering.
Smith	£287 0 0	£26 0 0
Smith	240 0 0	
Ebbage	193 0 0	25 0 0
Kerry	189 17 8	14 17 0
Willcock	179 0 0	22 10 0
Sargent	155 0 0	28 0 0

For new concert hall and committee rooms for the Montague Hall Company, Worthing. Messrs. Newman & Billing, architects. Quantities supplied by Mr. Lee:—

Foster	£4,797 0 0
Downs & Co.	4,711 0 0
Stevenson	4,669 0 0
Softly	4,647 0 0
Coles	4,619 0 0
Bruton	4,559 0 0
Smith	4,398 0 0
Slewing	4,101 0 0
Patching	4,048 0 0

For new schoolroom, laundry buildings, dining-room, lavatories, &c, at the Girls' Reformatory Schools, Hampstead. Messrs. Spalding & Knight, architects. Quantities by Mr. Fleetwood:—

Burford (accepted)	£2,533 0 0

For building new wing at the London Hotel, Bournmouth, Hants. Mr. H. J. Newton, architect. Quantities by Messrs. Lamb & Church:—

Hockley	£2,341 0 0
Dove Brothers	2,295 0 0
Dooke & Green	2,283 0 0
Shurmur	2,043 0 0
Galton & Dashwood	1,992 0 0

For alterations to the "George" public-house, Waterlooroad. Mr. H. J. Newton, architect:—

Cooke & Green	£539 0 0
Godden	562 0 0
Hockley	545 0 0
Shurmur	477 0 0

For alterations to the "White Hart" public-house, Greenfield-street, Whitechapel. Mr. H. J. Newton, architect:—

Shurmur	£333 0 0
Wells	330 0 0
Taylor	319 0 0

For addition to the "Compasses" Public-house, Mountstreet, Grosvenor-square. Mr. H. J. Newton, architect. tities by Mr. Budd:—

Cooke & Green	£450 0 0
Hockley	370 0 0
Shurmur	342 0 0

For alterations and repairs to Egypt House, West Cowes, Isle of Wight, for the Earl of Hardwicke. Mr. George Eraut, architect:—

Ball	£387 0 0

For erection of new school at Whaddon, Cambridgeshire, for the School Committee. Mr. George Eraut, architect:—

Warboys	£380 0 0
Symons	355 0 0
Reavell	350 0 0

For erection of new school at Wendy, Cambridgeshire, for the Wendy and Shingay District School Committee. Mr. George Eraut, architect:—

Saggers	£594 0 0
Symons	430 0 0
Willmot	366 0 0

For painter's work, &c., at the mansion stables, Wimpole, for the Earl of Hardwicke. Mr. George Eraut, architect:—

Thoday	£361 0 0

For new schools in Paradise-street, Gray's-inn-road, for the Home and Colonial School Society. Mr. Charles J. Shoppee, architect. Quantities by Messrs. Sydney Young & C. Herbert Shoppee:—

Patman & Fotheringham	£3,455 0 0
Jackson & Shaw	3,418 0 0
Brasher & Son	3,400 0 0
Conder	3,397 0 0
Merritt & Ashby	3,397 0 0
Campion	3,330 0 0
Bayes & Ramage	3,300 0 0
Brass	3,294 0 0
Ward	3,184 0 0
Macey (accepted)	3,156 0 0

For sundry painting works at Nos. 17 and 17½, Watling-street, for Messrs. J. Young & Son. Mr. George Barnes Williams, architect:—

Hayward & Son	£220 0 0
Mansfield & Son	187 10 0
Pitman & Cuthbertson (accepted)	164 5 0

For the erection of two houses at Harrow. Mr. Chas. Deshon, architect:—

Cox	£2,230 0 0
Board, Jopling, & Co.	2,075 0 0
Dover, Son, & Co	2,039 0 0
Hurst	2,058 0 0
Miskens	1,989 0 0
Kindell	1,798 0 0
Warr	1,797 0 0

For the erection of Rodmersham Vicarage House. Mr. W. Barber, architect:—

Cornelius	£1,947 0 0
Staines & Son	1,886 0 0
Dover, Son, & Co.	1,856 0 0
Naylar	1,850 0 0
Shrubsole	1,835 0 0
Messrs. Whiting	1,812 0 0
Harnett	1,809 0 0
Siagar	1,798 0 0
Fond	1,600 0 0

For the finishing four villas at Southend, for Mr. Venables. Mr. J. W. Dennison, architect:

Dover, Son, & Co.	£3,450 0 0
Stainey & Bowell	3,397 0 0
Morley	2,950 0 0

For Grove-lane sewers for St. Giles's, Camberwell. Mr. Reynolds, surveyor:—

Wigmore	£3,650 0 0
Batch	3,200 0 0
Goodhem	3,097 0 0
Harris	2,987 0 0
Dover, Son, & Co.	2,935 0 0
Wainwright (accepted)	2,749 0 0

TO CORRESPONDENTS.

Mr. B.—A. A.—Thomason College.—W. W.—A. V.—T. L. D.—J. T. W.—W. G. S.—C M. H.—J. T.—H. F—J. G.—T. H—F. B.—E. M.—T. W. A.—C. F.—J. W. G.—C. E. F.—J. T. M.—G. L.—H. C. N.—C. L.—G. R.—R. G. R.—J. B A.—W. T. F.—Mr. V.—J. U.—E. M.—Mr. O.—J. R.—R. S.—H. M.—T. & B.—St. V. M.—H. J. N. N. & B.—Mr. S.—M. J. L—Z. A. (no) —Mrs C H. S. (next week)—Annoyed (if it overhangs his ground it might be prevented; take advice on the spot)—T. W. P. (inform the insurance office; query, nuclet as a nu'sance").

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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The Builder.

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The Cyclopædia of Costume.

SOMERSET HERALD'S early works on costume did good service, and are well known; but his new "Cyclopædia," commenced at a time of life when most men are thinking of taking rest, will far exceed them in value.* It is fully illustrated, and is in a handsome but not cumbrous quarto size. In its complete form it will be preceded by a general history of costume in the principal countries of Europe; the body of the work, however, being confined to the illustration of the art of dress as developed in this country. Under the head of costume are included, as usual, weapons and other articles of use, both for warlike and pacific ends; the sword and the fan alike receiving due illustration.

Turning over the pages of the numbers at present issued (I. to V.), we find a considerable space, of course, devoted to the heading "Armour"; and, indeed, one cannot but be struck with the very offensive and defensive part assumed by the lords of creation in a work exhibiting the history of their costume. Man is, and has always been, in one sense or another, a fighting animal; at present his warlike appetite is often satisfied with the more civilised but not less deadly onslaught of the pen, wielded with the coolness and concentration which, as Hallam said, "enables a skilful reviewer, like a good sportsman, to bring down his game"; but we need only go a little way from our own time to find the tools for cutting and carving each other ostentatiously displayed, as an important ornament, when not put to their more important use; and in the rather older periods which a dictionary of costume is specially bound to illustrate, as those of which records and illustrations are not easily attainable, the whole man seems to become a mere outward sign of a "cut-and-thrust" condition of life. In this condition he is more interesting to the painter and the seeker after the picturesque than in his coat-and-hat type; nor is it at all an anomaly that this should be so. The picturesque deals with the outer visible development of things. As life becomes more studious and thoughtful, more inward and less outward, it naturally presents less of decorative material for the artist. He is driven from the study of outward glitter and gorgeous effect to the higher study of expression and character. Yet there is still something nobly symbolical in the armed figure of the Middle Ages, or perhaps still more when the heavier panoply gave way to the more delicate and "genteel" array of the Italian renaissance; and when we look at some of the portraits of Titian (such as that magnificent figure in chain armour to be seen in the Winter Loan Exhibition three years ago) in which the noblest and most chivalrous cast of countenance is combined with the pictorial effect of an armed costume, we can hardly help feeling that the outward manifestation of man in painting reached its highest and most impressive form in these productions.

The history of costume constantly presents instances of what anatomists would call the "survival of types," which have lost their original use or meaning; instances of which may be traced, in some of the transitions from armour dress to more modern costume. The shoulder defence called *aillette*, for example, introduced at the end of the thirteenth century, of which ten illustrations are given on Plate II. of the Cyclopædia, must certainly be regarded as the prototype of the modern "epaulette," which is out of the chronological limits of the book; though in his paragraph upon the older "epaulette," the author admits that it cannot in some cases be distinguished from the *aillette*. But the naval officer's epaulette had very recently degenerated from an important defence against an over-hand "lick" with a sword into a mere ornament, worn, in some grades of the service, on one shoulder only, so that in a well-known nautical novel the hero endeavours to extract from his adored a promise that she would show him favour "if he could get the 'swab' mounted on the other shoulder"; *i.e.*, rise from the rank of lieutenant to that of commander. And sometimes there seems to have been the same kind of imitation of dress by armour, or *vice versâ*, as we see in architecture, where the forms of stone are imitated in wood. The author mentions one curious instance under the heading "doublet" (p. 171), where, in regard to a figure "*temp.* Edward IV.," he observes, "I must specially call the attention of the student to the plaiting of the backs and little skirts of these doublets (if doublets they be), and point out how faithfully they are represented in the steel back-plates of this period, an example of which is engraved at p. 54, *ante*." As to whether the doublet or the back-plate is the original of the form Mr. Planché expresses no opinion; but our conclusion would be that the steel dress was copied from the cloth one. Another specimen of a revival, rather than a survival, may be traced in the "knuckle-duster" with which the Yankee captain performs upon his crew when "on the high seas"; and which, formidable as it is, can scarcely come up in viciousness to the knuckle-spiked "gauntlett" of the reign of Edward III. figured on p. 200. Before quitting these (very) offensive weapons, we may notice the singular and provident ingenuity, not without a certain artistic effect, in the twisting of the complicated edges and spikes of the weapon called the "bill," so celebrated in Shakspeare, though dating from days much anterior to his. If the breechloader kills its thousands, as against the tens of Mediæval warfare, it is at least a more gentlemanly sort of death; the old cry of "bills and bows" must have preluded a style of operating as disagreeable as can well be conceived.

Leaving armour out of the question, the contrast between the older and the modern styles of men's costume forces itself on the notice whenever the subject is touched upon, even in spite of the absence of any modern examples from the plan of the present work. Viewing the subject artistically, what strikes one is the stiffness and want of flow in modern costume. Not only is there an absence of anything to produce breadth or dignity of line,—so that the modern sculptor can hardly make anything of a portrait statue in everyday costume, but must bring dressing-gowns or cloaks to his aid,—but there is an entire absence of what we may call the *dégagé* element, the easy and apparently unstudied character, which does so much to give artistic effect to costume. The comparative simplicity of modern dress (we are still speaking of masculine costume only) is to a certain extent in keeping with the usual law by which outward decoration and ornament are subdued in proportion as civilisation advances. But the charge against modern male costume is that it is altogether devoid of character; everything is straight up-and-down, stiff, and symmetrical. That there have been absurd extravagances in the past,—as in the heavy stuffed doublets of the Elizabethan era, and in the dress of the Charles II. period, in which show and a kind of braggadocio of dress were carried to excess,—is true enough. But in the dresses of the later Tudor and Elizabethan periods, we find costume designing itself at least with some reference to the construction of the figure. It was recognised that people had knee and elbow joints, and that the formation of the lower half of both arm and leg was essentially different from that of the upper half. The modern sleeve and trouser reduce all legs and arms to the same model; each limb is enveloped in a cloth funnel, a concealment and not a display of the anatomical design. Modern dress is a leveller, and takes no account of either good or bad figure. Another thing which strikes one in older costume is the amount of "go" in the composition of it. Instead of everything being cut out precisely and rigidly alike on both sides, there is an easy sway of line; the cap, like the well-known one in the portraits of Henry VIII., and in others of the same period, falls off gracefully to one side; the cloak is susceptible of constant changes of fold and fall according to its wearer's attitude. The want of flowing and oblique line in modern dress is evident from the immediate effect produced by the presence of such an addition as an "Order" ribbon, which at once conveys a degree of picturesqueness quite foreign to the every-day costume of a modern gentleman. An example of the picturesque effect which the cloak almost naturally falls into, without anything like display or over-dressing, is seen in the figure of a "Spanish nobleman," given on p. 108, and which we have seen almost in its precise form in one or two of the best-dressed representations of *Don Giovanni*: indeed, it is one of the many

* The Cyclopædia of Costume; or, a Dictionary of Dress: including notices of Contemporaneous Fashions on the Continent, and preceded by a general history of the Costumes of the Principal Countries of Europe, with numerous Illustrations. By James Robinson Planché, Esq., Somerset Herald. London: Chatto & Windus.

claims of the stage to our gratitude, that it still affords the opportunity of looking at picturesque costume. The preponderance in width given to the shoulders and upper part of the figure by the short cloak, in contrast with the thin appearance of the tightly-clad leg, may be open to criticism, perhaps; among some of the Henry VIII. figures, and almost always in that of the monarch himself, this is so marked that we are tempted to think it an exaggeration of Holbein. It is particularly noticeable in the portrait of Sir Thomas Wyatt at Hampton Court, given by Mr. Planché as an illustration, but which is even more extraordinary in its apparent breadth of shoulder in the original than in the woodcut in the book. Of the colour of the modern gentleman's dress what is to be said? Colour has departed from it; and even the military and naval gentlemen who have a right to it avoid the uniform on all occasions when duty and etiquette do not prescribe it. We have heard it suggested that the solemn funereal hue of our evening costume is encouraged and kept up by the ladies, as a background and foil for their own brighter dresses. At any rate, that is the best defence of it that can be named. It is possible, however, to get good combinations of tone and texture, if not of colour, with the modern morning dress; and then in certain seasons the buttonhole flower comes in as the one point of colour, effectively enough. Even this we have heard objected to as a dandyism or affectation, though it might have been thought a flower at least was a natural and pardonable source of ornament. Then, when such a decoration is used, it is rarely that the English gentleman considers whether the particular flower he chooses harmonises or contrasts well with the colour of his scarf. We were forgetting the scarf, by the way, which is the one piece of artificial colour left to the modern European. In this, however, the wearer can hardly exercise his own choice; he must generally take what is the fashion and what the shopman chooses to set before him; and here again the effort to escape from colour is continued, and a reduction effected to combinations of grey, brown, black, and white, &c.; and the favourite colour (when decided colour is admitted) with the scarf manufacturer, is a predominant blue, about the poorest and least effective of the decided colours, for such a use. Among fashions which have died out within tolerably recent times is that of the three-cornered cocked-hat, which was a really picturesque head-dress, with a little piquancy about it. Its military form, which still survives, is less to be admired; it is too heavy and mountainous in appearance. The only picturesque head-dress which survives is the university cap; which however is not altogether convenient. It may be conceded, probably, that no form of head-dress so absolutely ugly as the contemporary "chimney-pot" has ever been invented: even its ugliness is not characteristic, not thorough ugliness; it is a kind of negation of everything; it will yield to no treatment. The attempt to give expression to it by tipping it on one side of the head only results in imparting a declared aspect of impudence and braggadocio to its owner; and if he is particularly desirous to look like a simpleton, he has only to place it well on the back of his head: in this manner it has been made use of on the comic stage. Yet, strange to say, there is no article of modern dress to which the "genteel" oling so lovingly as this same hat. Nor indeed are we disposed to recommend in lieu of it anything now in use, excepting for undress.

Advancing civilisation does not seem to act upon the ladies' dress as upon that of men. The fair sex have always kept what may be considered their prescriptive right to brilliant and effective costume; and the comparison of modern with ancient fashions is by no means so much to the advantage of the latter, in their case, as in that of the other sex. On the contrary, none of the extravagances of fashion which have afforded opportunities for the satire of *Punch* are so utterly silly and outrageous as some of those which a history of past costume must illustrate; such as the monstrous "wheel farthingale," which gave the figure the appearance of "standing in a drum," or the helmeted coiffure of a later date, more preposterous in its altitude than anything even in the recent despicable chignon development. At present we may congratulate our lady friends on having attained, after some very absurd and ridiculous extremes, a greater degree of elegance, taste, and good sense in dress (when not overdone) than has been seen among us for some little time. One of the most important requirements in dress which claims to be artistic is that it should appear to spring naturally from the leading lines of the figure, to develop and accentuate these. The neglect of this is the cause of the absurdity and awkwardness of most of the worst fashions which have obtained currency. The drum farthingale above referred to (illustrated p. 187 of the "Cyclopædia") is monstrous because it sets out lines at a right angle from the figure instead of combining with the contour of the latter. The straight up-and-down "sack" which enclosed the forms of our grandmothers or great-grandmothers was false in another way, because it fell in one straight line from just below the bosom, entirely ignoring the shape of the body, or the characteristic beauty of the feminine form in the fine curve at the hips; becoming of course loose and baggy where it should be close, and *vice versâ*. The specimens of the *modiste's* art which are at present to be seen in society have in general design a good deal of what is correct and artistic; the skirt is not too full, and it is full where a good figure requires that it should be, and goes off with an easy sweep behind that is very effective and adds not a little to the dignity of a good carriage and manner. The "train," even in its slighter development, is not suited to outdoor exercise on foot; but, in moderation, the sweep of a train-dress in-doors has a fine effect; it has always been admired, and we believe always will be,—in moderation: indeed, any transgression of the bounds of moderation in dress defeats its own object and becomes unsightly. The deficiency of contemporary ladies' dress consists principally in the still far too great tendency to pinched waists. In regard to this, the make of the body of the dress seems to require a radical change. There has always been a tendency, in post-Mediæval times, to contradict nature in regard to the shape of the body, and to make the dress come in a taper from the bosom to the waist. There is a certain elegance in this, even in the exaggerated form which it assumes in such a figure as the well-known portrait of Lady Hunsdon (given also on p. 187 of the "Cyclopædia"); but it is a conventional, not a natural elegance. As a contrast, perhaps no dress could be named of more real grace than that Mediæval costume with the close-fitting body, which Mr. Planché believes to be the one to which the term *côte-hardie* was applied. The little sketch from Viollet-le-Duc, given (p. 118) in illustration of this, is perfectly charming, with the lithe figure clearly defined by the close-fitting upper part of the dress, and then losing itself modestly among the folds into which the costume naturally expands, without any marked belt or break, below the waist. Perhaps its only defect is that, according to modern ideas, it would be a little too realistic; but it is really in much more becoming taste than the very low evening dresses recently in vogue; and it is at all events in harmony with nature, which the tapering tight-laced waist is not. And in the ladies' dress as well as the gentlemen's, we seem to want a little more flow, a little more of the *dégagé* element. We do not altogether agree with Herrick in liking—

> "A cuff neglectful, and thereby
> Ribbons to flow confusedly;—

there is a touch of untidiness in that, which is always unsatisfactory; but look at the sketch given by Mr. Planché (p. 144) of Madame la Duchesse de Lude "en Steinkirke," and see what a picturesque effect is given by the "cravat" so named, twisted loosely round and tucked through a ring or brooch; and yet a picturesqueness quite in keeping with the best "style." Herrick again hits off the thing finely in his next two lines,—

> "A wiuning wave, deserving note,
> In the tempestuous petticoat;—

and Ben Jonson is in the same key, who likes—

> "Robes loosely flowing, hair as free."

In this respect the *modistes* and the poets are too much at variance; and we can scarcely doubt which is likely to have the truest taste in such matters. We can hardly say that the perception of colour harmony is much better among English ladies than it has generally been, where positive colour is used at all; but the combinations of neutral tones which have recently become common, especially the "harmonies in brown," of which we have seen so much this season and last, are many of them very pleasing in effect, though not presenting much in the way of design. A good deal of the monotony in types of dress and of colour-arrangement arises from an unfortunate preference for expensive materials, as such,—for silks which are manufactured in certain stock tints, which soon become familiar to the eye, and offer little opportunity for delicate combinations of colour. This form of vanity has been pointed at on the French stage, in "*Frou-frou*," but our own poet, before quoted, has touched it very brightly:—

> "When as in silks my Julia goes,
> Then, then, methinks, how sweetly flows
> That liquefaction of her clothes.
>
> Next, when I cast mine eyes and see
> That brave vibration each way free,
> Oh, how that glittering taketh me!"

So it is, we presume, with "Julia" herself; "that glittering taketh her," and she will make sacrifices, if necessary, to procure it. Now if Julia will look at such a harmonious bit of colour as Mr. Leslie's "School revisited," in the Academy, she may discover that most of the delicate charm of the colouring is due, not to the young lady's rich costume, but to the print dresses of the school-girls. We do not propose to condemn Julia to print-dresses; but we only point out that an almost unlimited range of really artistic effect is to be obtained in dress by combinations of coloured materials by no means of a costly nature, and that the most artistic dress may be sometimes the cheapest rather than the most costly. The mere glitter of silk scarcely comes into the category of artistic effect.

Before quitting the subject of feminine costume, we cannot forbear quoting an amusingly frank definition, itself quoted from the "Ladies' Dictionary" (published in 1694), by Mr. Planché, under the head of "*Assassin*, or *Venge-moy*,"—"signifies a breast-knot, or may serve for the two leading-strings that hang down before, to pull a lady to her sweetheart." In the modern fashion, the "leading-strings," lately in vogue, hung down behind, and not before, and received among our lively neighbours the title of *Suivez-moi*. Of the two, the old English explanation, naïve as it is, is in reality both prettier and in better taste.

We have taken the new "Cyclopædia of Costume" rather as a text for remarks than a subject of criticism; if the author of it does not understand the subject, no one in England does. We noted one apparent omission, which may be supplied. Under the heading BADGE, it is pointed out that this is not to be confounded with either the *crest* or the *device*, as it differs from both; and a parenthesis adds, "see CREST and DEVICE"; but the latter heading, by some oversight, is not in the book at all. Enough in regard to an unimportant omission in a book which, so far, is remarkable for the care and completeness with which it illustrates the subject dealt with. The plates and woodcuts illustrating the different headings are numerous and very interesting; indeed, the mere turning over of the book is full of suggestion and entertainment for the student of costume; and the literary interest which its author has imparted to it, both by the ease of his own style, and the extent to which he has laid English literature under contribution in quotations from contemporary poets and other writers in regard to many of the objects described, remove the book quite out of the category of the "dry" dictionary order, and make it one as much for amusement in the drawing-room as for reference in the library. The "Cyclopædia" is coming out in monthly parts, of which the fifth, the last out, gets us into the letter "G"; so the process of production will not be so interminable as in some serials of the kind, which have wearied out the patience of subscribers.

ANNUAL CONGRESS OF FRENCH ARCHITECTS.*

As in the preceding years, Thursday was devoted to an excursion without the walls of Paris. Versailles, its palace (part of which is at present tenanted by the National Assembly), the two *Trianons*, the *Swiss Village*, &c., detained the members of the Congress for nearly ten hours, the proceedings being diversified by a *déjeûner*, at which more than fifty members were present, between the visit to the part of the palace reserved for the Assembly, and the rest of the Château and its environs. M. de Joly, architect to the National Assembly, contrived to interest his hearers very much in the description he gave them of the very ingenious modifications which he had been obliged to make in respect to the Versailles of Louis XIV., and especially

* See p. 544, *ante*.

the *Salle de Spectacle*, in order to install in the latter, if not in the best manner in the world, at least in a very acceptable fashion, the National Respresentative Assembly of France. M. Joly also made his *confrères* acquainted with his design, adopted by a recent decree and already in course of execution, for a *salle des séances de l'Assemblée Nationale*, so disposed that it can easily accommodate, in case of a *réunion de Congrès* (the "National Assembly" and the "Senate" in combination), three hundred persons in addition to the number which it ordinarily provides for in regard to the National Assembly. The various studies made by M. Joly for the warming, ventilation, *acoustique*, the instantaneous lighting by gas, and, in fine, the general *modus vivendi* of a Parliamentary Assembly, gave both pleasure and profit to his professional brethren, who parted as much impressed with his profound practical knowledge as with his facility in giving expression to it.

The afternoon was decidedly one of relaxation, and was passed partly under the pleasant shades and in the elegant saloons of the two *Trianons*, partly in the State-rooms of the palace. In the absence of M. Ch. Questel, architect, who was confined to his room by illness, the honours of this part of the day were done by M. Savier, his principal assistant. On Friday, the 11th, in the morning, some of the architects of departments met at the rooms of the *Société Centrale* to renew those relations between early student friends which are always so agreeable to those who have grown old in the profession. The afternoon *séance* at the *École des Beaux-Arts* was presided over by M. Mallay, president of the Society of Architects of the ancient Province of Auvergne. M. Paul Sedille, assistant secretary of the *Société Centrale*, and in that capacity charged with the direction of its monthly conferences, treated, with a certain severity of study which did not exclude elegance of style, of *French Architecture of the Nineteenth Century*, and was not the less applauded for his treatment of the subject, in that he has also practically illustrated it with great success. After him, several speakers treated of some of the commemorative monuments still existing in France, and among these latter we may mention, as brought forward by the energetic Society of Architects of the *Département du Nord*, the commemorative monument of the siege of Lille in 1792, the pyramid of Cysoing, raised in honour of the victory of Fontenoy in 1744, and the *Porte de Paris* at Lille, an actual "triumphal arch," erected by Louis XIV. in 1682, after the conquest of the town. M. Ducat, in the name of the Society of Architects of the *Département du Doubs*, subsequently exhibited the remarkable drawings made by him to accompany the archæological studies of M. Castan on the Roman monuments at "Vesontio" (the "Besançon" of to-day). M. Chas. Lucas, in presenting to the Congress, in the name of its author, M. Ruprich-Robert, a very fine work on the *Church and Monastery of Val-de-Grace, at Paris*, drew the attention of his *confrères* to that vast edifice, dating from the early days of Louis XIV., a genuine "commemorative monument" of the birth of that prince, and which the Congress was to visit on the following day. Near the president's chair, at this *séance* of Friday, was seated M. Le Comte Sérurier, president of the *Conferences Internationales de la Croix Rouge* in 1867, and who is concerned in the management of the approaching International Exhibition, and of the Congress for the Promotion of Sanitary and Life-preserving Schemes (*hygiène et sauvetage*), to be held at Brussels in 1876. This devoted philanthropist has endeavoured to induce architects to interest themselves more actively in this work of humanity, which demands, in regard to many points, and especially those connected with the sanitary condition of dwellings, the frequent co-operation of the architect. Before separating, the members of the Congress, unanimously, on the motion of MM. Duvert, Sedille, & Chas. Lucas, charged the Committee of the *Société Centrale des Architectes* to make the necessary application to the Administration in order to realise the double wish expressed in 1871 and 1873 by that society, that the names of *Felix Duban* and *Victor Baltard* might be given to two streets of Paris, one adjoining the *École des Beaux-Arts*, and the other the *Halles Centrales*.

The formal sitting of Saturday, the 12th, was, like the opening one, presided over by M. Henri Labrouste, assisted by M. Albert Lenoir, secretary of the *École des Beaux-Arts*; M. P. Montareau, secretary of the Operative Masons and Stonecutters' Club; M. Janvier, architect of the Abattoirs of La Villette; and by the three secretaries of the Congress.

The morning was devoted to a visit to the Church and Abbey (now converted into a military hospital) of Val-de-Grâce. M. Ruprich-Robert, architect of the *Commission des Monuments Historiques*, and charged with the work connected with the restoration of this edifice, did the honours of the occasion, and particularly called attention to the numerous details which, in the general style and decoration of the building, gave it a Transitional character, in a taste and style thoroughly French, presenting great liberty of treatment, and offering a strong contrast with those erected later, in the reign of Louis XIV. The members much appreciated the interesting restoration, made by this conscientious and able architect, of the high altar with a double front in the church, which originally served not only for saying mass and administering the Sacrament to communicants of the outer world, but also to the nuns of the adjoining abbey, who received it through a grille which formed the enclosure of the apsidal chapel.

The afternoon *séance*, the closing one of the Congress, was in part devoted to the distribution of the prizes awarded by the *Société*. M. C. Lucas, secretary of the jury for awarding the prizes, read the different portions of the report, which he had had to draw up, in consequence of the illness of M. Vaudremer. The jury was composed of MM. Henri Labrouste (president), Ch. Questel (vice-president), Abadie, Ballu, Dac, and Lefuel; all six members of the Institute; and MM. Bailly, Rolland, and Vaudremer, reporters.

The medals which the *Société* decrees every year for domestic architecture have been awarded this year to M. Destors, of Paris; to M. Bourrens, of Paris; and to M. Bourgerel, of Nantes; and we have picked out, in the report of M. Lucas, the following passage, which it may be as well to note here:—"Among the qualities which should distinguish French domestic architecture, we must place above all the attempt at a judicious employment of new materials; the alliance, becoming every day more close, between construction and decoration; the more comfortable disposition of the interiors, whether they be for luxury or only for use; and, lastly (a primary quality belonging most fitly to the genius of French architecture, and a valued heritage from a long line of venerated masters of the art), a true relation between the dispositions of the principal features of the plans, and a happy concordance between these dispositions and the aspect of the various façades; in one word, the French architects, or at least those whom their talent places at the head of their profession, and renders worthy of these prizes, seem to be called upon specially to search after *truth*, without losing *elegance*; and while at the same time attaching the greatest importance to sanitary considerations; which is, in regard to domestic architecture, the best application of the admirable motto of the *Société Centrale des Architectes*,—'Le beau, le vrai, l'utile.'"

After the award of these three medals the *Société Centrale* had, for the first time, and thanks to a ministerial resolution passed the evening before, a fourth to award, under the name of the *Prix de la Société Centrale des Architectes*, to M. Daupbin, pupil of the first class of the *École des Beaux-Arts*, who, in 1872 and 1874, carried off the highest honours of that school in the "Concours d'Architecture." A fifth had to be recalled, as having been given a little while before to a pupil of the class of ornament in the *École Nationale de Dessin* at Paris. Lastly the silver and bronze medals were delivered to a master mason, M. Morin, and a decorator (*appareilleur*), M. Lhermitte, both engaged, under the superintendence of M. Millet, on the restoration of the Château St. Germain-en-Laye, and to MM. Thiebaut and Carrière, workmen attending the classes of the *Cercle des Maçons*, and who had obtained the prizes for stone-cutting and practical geometry.

This arduous *séance*, very well attended, and in recording which we must notice the vote of thanks passed to M. Destors and M. Montareau in the name of their pupils, was terminated by a brilliant discourse from M. Albert Lebegue, an old member of the *École Française* at Athens, who explained the "actual state of the Acropolis at Athens and of the ruins at Delos," with the erudition of an expert and the easy conversational style of a young lecturer (having come last year from Athens, where he had shared the direction of the work there with M. Burnouf, director of the *École de France*), which much interested every one, and amply justified the complimentary thanks which M. Labrouste addressed to him in the name of the Congress Committee, and which were ratified by unanimous applause.

Before separating, the Congress decided to include in its order of proceedings for next year two subjects,—one proposed by M. Duvert concerning "the *personnel* of the building art" (*le personnel du bâtiment*), "its past, present, and future"; the other proposed by M. Ch. Lucas, and having for its title, "The Organisation of Societies of Architects in Europe and America."

In the evening, a banquet brought together at the Grand Hotel a hundred members of the Congress, and the *Société Centrale* had prepared for its guests an agreeable surprise, in the shape of an excellent concert, at which were heard Mdlles. Heilbron and Marx, and MM. Pagans, Garcin, and Marx; and which prolonged till past midnight a day that closed worthily the third session of the "Congress of French Architects."

We may return to the doings of this session when we receive the pamphlets, in course of printing, containing the proceedings of the Congresses of 1873 and 1874, as well as that of the present year.

RAILWAY MODELS AT SYDENHAM.

THE exhibition at Sydenham of railway models and appliances, principally intended for the protection of the travelling public, has not been without its interest or its importance. It is possible to observe of this, as of all competitive displays, that they contain much which is stale, and an equal amount of that which may be thought impracticable. But the general aim of the exhibition is to hold in view,—chiefly, as we have said, with regard to the passenger traffic,—the essentials of safety, celerity, comfort, and cheapness. There are, instead of sixty, as the daily press has said, nearly 200 challenges to the ingenuity and to the memory of the world. Irregularly and unsystematically as they are arranged, we may, with a little care, distinguish them into groups, and this, perhaps, may be the best means of leaving a record of the exhibition. In the front rank stands the question of construction; that is, of the permanent way. Very little novelty is suggested in this respect. We have the model chairs of Messrs. Bond & Co.; Meakin's patent compound rail, claiming merit on account of its perfect joints, economy, and ease to travellers; Seaton's "saddle-rail"; and so forth. It will be evident, however, that the problem of construction has not been thought a difficult one, and that the matter is one far less of making than of working. The idea, probably, may occur that, supposing a track well and duly laid, the next necessity is that of providing an adequate and trustworthy rolling stock. It will presently be seen whether this is the next necessity of the case; yet inventors—a crowd of them—are in the field, or on the hill at Sydenham, to dispute the palm in this respect,—the London and North-Western Railway Company, with its unsurpassable passenger and goods locotives; the Fairlie Company, which threatens to drive its engines through more rocks and wildernesses than even John Martin or Gustave Doré ever imagined; and other advocates of systems more or less in consonance with the prevailing theories of the present day. Next in order, naturally, to the machinery, comes the carriage, for whatever class intended, or, indeed, for whatever burden. We have miniatures of luxurious saloons upon wheels, and, indeed, a variety of ideas, bearing in the same direction; but the comfort of passengers is easily provided for, when the management is at once liberal and sagacious. That of swiftness, again, is equally facile. There is not a single illustration in this Exhibition of an attempt to attain a higher speed upon railroads, in any part of the world, than has already been mastered. A mile in a minute appears to content even the *carpere viam* hunger of the nineteenth century. But, allowing the passenger to have been properly lodged, for his few hours or many, in the railway carriage, the clouds of anxieties arise. Conceive his vehicle to be on fire, a crash occurring in a tunnel, a murderer seated opposite, or anything else incredible (though it sometimes happens), and the largest meaning and uses of the Sydenham Exhibition are opened to us immediately. Apparently superficial, yet not unconnected with many sinister incidents which have occurred during recent years, is Mr. Gold's apparatus for locking and unlocking the doors of railway carriages while the train is in motion. It will be remembered how, not long ago, a company prohibited its season-ticket holders from possess-

ng or using private keys, and how this regulation bitterly aggravated the memorable disaster at Abergavenny. Again, numerous casualties arise, to children especially, from their not actually knowing whether the door of a carriage is securely fastened or not, and, to this end, the spring latches, invented by Mr. Robert Maxwell, of New-cross, seem useful. Still, this is not the most overbearing cause of complaint, from within, which is the complicated method in vogue of communicating between passenger and guard. Under the Act of Parliament, passed in 1868, not amended since,—after, and in consequence of, the murder of Mr. Briggs, by the German, Müller, it was made law that every train travelling more than twenty miles without a stoppage, should be fitted with such facilities of communication,—a provision which excluded from the operation of the law the very line,—"Danger lives along the line," wrote Shakspeare,—that had provoked legislation. Since then, almost countless contrivances have crowded the Patent Offices, but the electric principle predominates. That it is liable to abuse cannot be doubted, yet a sufficient penalty will deter all except the stupid and reckless from creating delay or alarm by a wanton or thoughtless sounding of electric bells, the touching of springs, the tightening of purposely-slackened ropes, or the foolish warning of danger where there is none to be apprehended. A plain precaution against this most reprehensible form of practical joke is that which fixes the signal in the carriage whence it has been given, so that there can be no possibility of evading whatever responsibility attaches to an individual who, for his own amusement, or, in other words, the indulgence of his egotism, creates a superfluous panic. Mr. C. F. Walker, of Tunbridge, must be credited with several excellent suggestions upon this point. Mr. Pinkerton, too, of Londonderry, whose experience has been large, has an apparatus by means of which he attracts, simultaneously, the driver's eye and ear; every carriage is fitted with small flag-stands, connected with a handle inside, by pulling which a whistle is sounded, a little pennon is mounted above, the people on the locomotive know that an appeal is coming from a particular compartment, and only a few minutes can elapse before the true state of affairs is ascertained. Next, perhaps, in importance to this—the signalling between passenger and driver—is the signalling between train and station. If these perils multiply, or continue as they are, it is through no default of invention, though whether all the ingennity exemplified at Sydenham be capable of practicable development cannot be asserted without practical experiment and experience. There are Barrow's patent hand-signals, worked from the signal-box, by a system of levers and rods; the same inventor's junction-signals, superseding the existing plan, under which so many men are killed; and his gong and fog-horn, though it must be said that no fog-horn of any sufficing power has ever yet been employed in England. We have several compensating "notions," however:—the "optional audible signal" of the Messrs. Burn; Mr. Goldstone's contrivances for keeping lights, semaphores, clocks, and levers, in consistent order; Mr. Walker's single-stroke and index bells; and the British Telegraph Company's wonderful arrangement by a perpetual current, keeping a uniform time along every line of railway, however protracted, or in whatever degrees of climate. To the illustrations of the well-known block system no very extended allusion is necessary beyond, it may be, a remark upon the ever-fertile application of Mr. Spagnoletti's mind to a science which he, if any man could, would have made his own. His latest discovery, set forth at Sydenham, is that of a single needle unmagnetisable coil obviating the disturbing action of lightning upon instruments fitted with it. To Sir David Salomons is due the belief that "every engine should be a signal in itself"; but the verification of this idea is somewhat complicated, and all the more so by the model, notwithstanding its elaborate workmanship and ample proportions. Messrs. Saxby & Farmer, and Mr. Edward Sears, of course, are in the same field, with the same ambition; but it is time to notice the proposals regarding brakes, and here a special observation must be made. It is not generally known how far the Board of Trade Department is indebted to the German Railway Association for information upon this topic. That society, not long ago, forwarded to the British Government for translation a document which was found invaluable, and in which improvements were advised, visible now on the railways of Germany, Belgium, Russia, Canada, the United States, Buenos Ayres, and Brazil. In nearly every respect the exhibition has been complete; yet it was to be noticed that there was not a solitary hint at an improved turn-table. A much more vital interest was touched, nevertheless, in respect of points and switches, the "fathers of fatalities," as a Welsh coroner called them. They are scarcely to be judged of at present, because a series is in progress of experiments conducted between Newark and Thurgasten, under the supervision of the Duke of Buckingham, one of which went very near throwing a train off the rails, wherein all are to be tried; but of one set of patentees it may be noticed that they claim, through their invention, to eliminate the element of human fallibility from the control of a railway station. Surely such an assertion was not needed to demonstrate the virtues of that which appears really to be a novelty of at once a simple and useful kind. Among the miscellanea, though not, upon that account, of inferior interest, are models of goods trucks, intended for the higher rates of speed,—100 miles an hour, we are told; cattle-vans, with humane arrangements for water, food, room, and ventilation; some of these deserving every attention; an improved form of coupling-irons, to prevent jolts and breakage; and railway stations made so as to be pleasant rather than abominable,—endurable rather than places of wretched suspense. A thoroughly comfortable and commodious railway station is scarcely to be found in the United Kingdom; and if not, why not? It must be confessed that the question received no answer at the Sydenham exhibition. This, however, was not a main object in view. The exhibition answered a most useful purpose from nearly every point of view. It was historical in a particular sense, with its models and paintings of railway bridges over the Tamar and the Tay, its portraits of Watt, Brunel, the two Stephensons, Sir John Hawkshaw, Mr. Vignolles, Mr. Fowler, Mr. Bidder, and the other engineers, and its illustrations in photograph, of railroad annals. It may be, nevertheless, that few objects deserved better attention than Mr. Neville's apparatus for the safe carriage of gunpowder. The event of October last has not hitherto been forgotten, and it would almost seem as though some of our own suggestions, made at the time, upon a knowledge of foreign systems, had been adopted. The powder-barrels are placed in a water-tight case of wood, lined with thin sheet-copper, and this case is put into a tank, so constructed as to allow a water film of an inch or more to surround it; and it is further covered with thick felt, in order that it may remain damp for a considerable period after removal, to guard against danger. For all purposes, the internal receptacle remains unaltered, the external tank alone being modified to suit the requirements of various methods of carriage or storage. The important point of the invention is, apart from any pretence on the part of the inventor, that, from the moment of leaving the magazine, the powder is completely isolated, by means of an unbroken water-film, of an inch or more in thickness, which entirely surrounds it. The drawings exhibited show designs for the construction of the internal water-tight cases to carry a maximum of 600 lb. of gunpowder in barrels; compartmented carts, barges for use on canals and rivers, and in harbours; fireproof tanks, for retail traders' premises, and recess for submersion of cases at canal wharfs. The compartmented carts are provided with means for lowering and raising the water-level in the tanks, to allow the opening or transfer of the cases. The details following are particularly worthy of remembrance, bearing in memory the unhappy episode,—unhappy for many others than those who appeared at coroners' inquests and assessments for damage,—by not a few whose lives and properties are still imperilled by the looseness of the law. The law is a slow machine; humanity, however, goes on from day to day. With interest, therefore, if not with "satisfied satisfaction," to quote a French turn of language, we examine the details of the proposed gunpowder-boats. They are to be built entirely of iron; to be divided into water-tight compartments, by means of iron bulk-heads, into which sufficient water to cover the formidable case is immediately pumped; and, when thus unused, they may, without harm or risk to any one, be employed for purposes of ordinary cargo. For the storage of powder at gunsmiths' and other retail dealers, and at mines, quarries, and railways, a form of tank is used of galvanised iron, self-supplying with water, into which the case is lowered. This tank is provided with folding sheet-iron covers, hinged to the sides, and, in order to obtain access to the powder, these covers must be thrown back; and, in doing so, by a simple arrangement the small lever projecting from one of the hinges grows a waste-pipe, and shuts off the supply, "the result being that the water-level is reduced some few inches below the lid of the gunpowder case." No doubt, this is not an ordinary incident of railway traffic, but it is always an important, and might, any day, become a serious one. It represents, however, no more than a small part of the practical ideas that are crowded, and, in a manner, embodied at Sydenham. The promoters do not go too far in telling their own story, when they say, with reference to the locomotives,—"every detail in the machinery by which so mighty a machinery is worked must be of importance, and the inauguration of what, it is hoped, will be an annual Exhibition of Railway Models and Appliances, cannot surely fail to command the interest of both scientific men and manufacturers, and the general public." Certainly the "general public" have an interest in the questions involved far above that to which any special class can pretend; but, on the other hand, it is the special class which has to comprehend this interest, and to meet its requirements.

THE ARTISANS AND LABOURERS' DWELLINGS IMPROVEMENT ACT.

THE Artisans' Dwellings Bill has been read a third time in the House of Lords and passed, so that it is now virtually the law of the land, and we have no doubt will enable wise men to do good things. On the occasion of the third reading the only alteration made was a proviso introduced by Lord Redesdale, in connexion with the power given by clause 12 to the "Confirming authority" to "permit the local authority to modify any part of an improvement scheme authorised by the confirming Act which it may appear inexpedient to carry into execution in accordance with such Act." The following is the amendment introduced:—

"Provided always that if such modification or alteration shall require a larger public expenditure than that sanctioned by the former scheme, or the taking of any property otherwise than by agreement, or shall affect injuriously other property in a manner different to that proposed in the former scheme without the consent of the owner and occupier of any such property, it must be made by a provisional order to be confirmed by Act of Parliament in the manner provided in section 6 of this Act on the completion of an improvement scheme."

The settlement of claims for compensation is still left with an arbitrator to be chosen by the "confirming authority," with power of appeal to a jury by either party when the amount awarded exceeds 500*l.*; but as the clauses now read they do not seem so likely to lead to that step as was the case in the Bill as it first stood.

We have no doubt that the measure will lead to good, and we cordially congratulate the Government on their achievement.

THE MADRID MARKETS.

THE new markets were opened by the King and Court on the 11th inst. There are two markets, one on the Plaza de la Cebada, in the most crowded part of the city, and the other in the Plaza de los Mostenses. The structures, which are of iron, were made by Andrew Handyside & Co., of Derby and London, and erected by them in Madrid. The Cebada Market, which is the largest, covers an area of 60,000 square feet. It is comprised of four regular pavilions, each 119 ft. long and 79 ft. wide, three irregular pavilions, and a large central dome. The other market is composed of three rectangular pavilions, each 127 ft. long and 90 ft. wide, connected by covered ways, and covering altogether an area of about 40,000 square feet. Below the markets the space is utilised for cellars. The markets generally resemble those in Paris, but are more elaborate in design. Nearly 4,000 tons of cast and wrought iron were used in the construction.

The London Building Trade.—The London building trade is upon the eve of again being thrown into an unsettled state by the action now being taken by the carpenters and joiners in reference to what is technically known as "the grinding question," the men requiring two hours' notice on being discharged from any firm, so that they may, before leaving, sharpen and put their tools in order before going to another job.

THE FRENCH IN GREENWICH.

AN HISTORICAL OBLITERATION.

THE razure at Greenwich within the last few weeks of one of the few remaining, once numerous, Walloon and Huguenot places of worship in the United Kingdom, in which the service was originally conducted and the sermon preached in the Dutch, or French language, suggests, ere the waters of oblivion close over the relics, a retrospect of the circumstances connected with the establishment of these little foreign temples.

Less than two centuries has sufficed for the complete transfusion and commingling of the blood of the refugees with that of the people of their adopted country. For generations past France and Flanders have been to the descendants of the exiles foreign countries, and their languages foreign tongues. The family motto of the Earl of Radnor, a lineal descendant in direct line from the Walloon family of Des Bouveryes,—*Anglicè* Bouveries,—"*Patria cara, carior libertas,*" "My country is dear, but liberty is dearer,"—may now be held by the descendants of the Walloons and Huguenots, without reservation, under their transferred allegiance. Sooth to say their "country," whether it was France or French Flanders, had given them but scant cause for its being held "dear." *This* is now their country, in which their supreme love of liberty of worship has full scope. Huguenot blood runs, mixed inseparably, in the veins of the Queen of England, and of members of almost all ranks of her subjects. Sophia Dorothea, wife of George I., and mother of George II., an ancestor of the Queen, was granddaughter of the Marquess d'Olbreuse, a Protestant nobleman of Poitou, who took refuge in Bradenburg after the Revocation of the Edict of Nantes in 1685.* The refugees included many of the French noblesse, and the descendants of not a few of them now occupy exalted positions among the nobility of the United Kingdom, and notably, as we shall see presently, descendants of the noble family to which the founder of the Huguenot chapel at Greenwich belonged.

The religious persecutions in Flanders in the sixteenth century, under Philip II., of Spain, Flanders being at that time subject to Spain; the murders, massacres, and assassinations, instigated by the Duke of Guise; and the merciless dragonnades of the relentless Duke of Alva, had driven forth many of the Flemish and French Walloons long before the Edict of Nantes was even promulgated. A considerable proportion of these found a refuge in England, where they introduced many important industries. Wherever a small community of these refugees settled, they formed themselves into a congregation for the exercise of the privilege denied to them in their native countries,—freedom of religious worship. Thus it was that refugee churches were established in Austinfriars, and in Threadneedle-street, London; at Winchelsea, Glastonbury, Canterbury, Southampton, and other places. The French churches at Canterbury, where the remnant of the community still meets, we believe, in the crypt under the choir and high altar of the cathedral, and at Southampton, are still in existence.

In the succeeding century—the seventeenth—Louis Quatorze, of France, instigated by his ambitious and cruel paramour, Madame de Maintenon, the tool of the Jesuits, after treading under foot the persecuted, maltreated, fined, flogged, hanged, or sabred Huguenots, with a view to their "conversion" to acceptance of the doctrines and practices of a church they detested, revoked, on the 22nd of October, 1685, the Edict of Nantes, promulgated by Henry of Navarre in 1598, by which comparative liberty of conscience and freedom of worship were allowed to the Huguenots, after they had borne sixty years of relentless persecution. Before the revocation almost as many of the Huguenots as had power to do so fled from their "converters," Maintenon's minions, who had plenary powers, of which they made unbridled use, to torture or slay with impunity. Recusants had dragoons billeted upon them, and they all knew when threatened what that meant,—"conversion," or capine and death. Many of the old and weak were coerced, rather than submit to the infliction of nameless atrocities, to make a Galileo-like abjuration of their religion. The military missionaries reported large numbers of these conversions.

The revocation extinguished the last spark of the Huguenots' hope of relaxation in the persecutions to which they had been subjected. Many of them had been executed, assassinated, and persecuted to the death, but not a few had escaped prior to the revocation. Now they knew that if they fled their property would be confiscated, and if they remained without recanting their religion and "conforming" they would be tortured or killed. Notwithstanding the difficulties attending deportation, the exodus to England and other refuges was on a large scale. Frontier guards were increased, and the peasants invited to join them in preventing the escape of the fugitives, many of whom were captured, and marched in heavy chains to the galleys,—men of gentle blood, magistrates, officers, pastors, peasants, &c., to mix with thieves and murderers. Many of those who escaped, did so in a penniless and destitute condition. Louis "the Great" was enraged at their escape; he had sense enough to know that he was losing the flower of his population,—the springs of riches in his kingdom. He wanted their "conversion," and abject submission, not depopulation. The escape of so many of the Walloons from Flanders in the preceding century had, in like manner, greatly incensed the King of France and Philip II. of Spain. They formally demanded the extradition of such of the exiles as took refuge in England, but Queen Elizabeth was their steadfast protector. The Pope, 1570, fulminated a bull of excommunication against Queen Elizabeth, and the Courts of France and Spain, Pope Pius V. concurring, agreed to promote a matured plot against her. Then followed the Sacred Armada, 1588, that was to inflict summary vengeance on England. Lord Burleigh circumvented the intending assassins. Drake, Hawkins, and Howard, spoilt the symmetry of the Armada, and the elements completed its destruction.

The forces of repulsion and attraction combined to depopulate France of its best citizens: repelled by persecution for conscience' sake from their own country, they were attracted to others where they hoped to enjoy freedom of worship. As an almost uniform rule, they were men deeply imbued with religious feeling and sentiment. Bishop Jewel, in defending them from the Pope's denunciations, referred to the exiles as having "either lost or left behind them all that they had of goods, lands, and houses,—not for theft, or treason, but for the profession of the Gospel. It pleased God here to cast them on land; the Queen, of her gracious pity, hath granted them harbour. Is it so heinous a thing to show mercy?" The bishop applies the "reproof valiant" by asking his Holiness whether, in harbouring 6,000 usurers and 20,000 courtesans in his own city of Rome, he is to be allowed to entertain "servants of the devil," and the Queen of England to be denied the liberty of receiving "a few servants of God. They are our own brethren; they live not idly. If they have houses of us, they pay rent for them. They hold not our grounds but by making due recompense. They beg not in our streets, nor crave anything at our hands, but to breathe our air and to see our sun. They labour truefully; they live sparingly. They are good examples of virtue, travail, faith, and patience. The towns in which they abide are happy; for God doth follow them with His blessings."

Few of the refugees brought any money with them, but many of them brought qualities of greater than money value,—industry, skill in numerous industrial arts, high moral virtues, unswerving religious principles, accomplishments as scientific men, and as teachers by tongue and pen of the highest order. France could have better spared, man for man, double the number of persons taken from any or all other classes of the population remaining than the persecuted Walloons and Huguenots. England could not possibly have received a more valuable contingent to its civilising influences than in the multitude of "gentle and profitable strangers" who forsook their own God-forgotten country to adopt ours, which they have done so much by their virtues and talents to enrich and elevate.

The revocation and the settlement of the refugees in England was quickly followed by the establishment of a large number of French churches in London and throughout the country, in addition to those already in existence. Places of worship sprang into existence, or were hired or lent, for the use of the refugees, in the Savoy, Spitalfields, Piccadilly, Soho, at Hungerford market, in Leicester-fields, and numerous other localities in or near London. Also at Norwich Yarmouth, Dover, Jersey and Guernsey, Maidstone, Stamford, Thetford, Bristol, Plymouth, Dover, Stonehouse, Dartmouth, Exeter, Barnstaple, Thorp-le-Soken, Essex, and many other places. At Sandwich, the old church of St. Peter was specially set apart for the use of the refugees. At Rye they were allowed the use of the parish church during part of the day until a place of worship could be provided for their accommodation.

A number of the refugees settled at Greenwich, among whom, probably, was an ancestor of Sir John Vanbrugh, architect and dramatic author, whilom of Vanbrugh Castle, Greenwich. Another gentleman, well known and highly-respected in the district, is certainly of Huguenot descent, and whose exiled ancestor settled at Greenwich, namely, Mr. Seymour Teulon, of Limpsfield, Surrey, a member of the council of the Society of Arts, and a director of the South-Eastern Railway Company. Other members of the same family are Samuel Saunders Teulon and William Milford Teulon, Fellows of the Royal Institute of British Architects. The Teulons, or Tholons, are descendants of an ancient family of Nismes.

The religious community of the Huguenots at Greenwich was formed in the year 1686, the year following that in which the Edict of Nantes was revoked, and proceedings were taken for the erection of a small place of worship, that is now among the things that were. While their own place of worship was in progress the congregation were allowed, after morning service, the use of the parish church, which is in the immediate vicinity of the spot upon which the French chapel was built.

The exiles were brought together, and the chapel built mainly through the influence and exertions of the Marquis de Ruvigny, a distinguished Huguenot chief, who had rendered most important services to France in the several capacities of general in the army, Councillor of State, and especially as an able ambassador and diplomatist, in which capacity he was several times accredited as the envoy of France at the English Court. Macaulay bears high testimony to the character of this venerable nobleman. He says:—"Had the Marquis chosen to remain in his native country, he and his household would have been permitted to worship God privately according to their own forms. But Ruvigny rejected all offers, cast in his lot with his brethren, and, at upwards of eighty years of age, quitted Versailles, where he might still have been a favourite, for a modest dwelling at Greenwich. That dwelling was, during the last months of his life, the resort of all that were most distinguished amongst his fellow exiles. His abilities, his experience, and his munificent kindness, made him the undisputed chief of the refugees. He was at the same time half an Englishman, for his sister had been Countess of Southampton, and he was uncle of Lady Russell. He was long past the time of action; but his two sons, both men of eminent courage, devoted their swords to the service of William III." For distinguished military and diplomatic services, Henry de Ruvigny, second marquis, and son of the venerable settler in Greenwich, was ennobled by William III., and raised to the dignity of the Irish peerage under the title of Earl of Galway. In 1693 Lord Galway was English ambassador at the Court of Turin. He died at Rookley, near Southampton, September 3rd, 1720, aged seventy-two. He was the founder of a Huguenot settlement at Portarlington, in Ireland, where the service was conducted in the French language in the Huguenot Church down to as late as 1817.

Rachel de Ruvigny, Countess of Southampton, left two daughters, one of whom married the Earl of Gainsborough, the other Lord Vaughan first, and afterwards "the patriot" Lord William Russell, whose son became second Duke of Bedford, and whose two daughters married, one the Duke of Devonshire, and the other the Marquis of Granby.

In consideration of his eminent public services the venerable marquis was generously (?) permitted by Louis Quatorze to expatriate himself and leave France without molestation! Louis afterwards, however, on some pretext, confiscated the family property.

The refugees long continued to inhabit the district and to hold together as a distinct community. It may be mentioned that a contingent to the rank and file of the little congregation of refugees was probably furnished by the French and Flemish workmen employed at a glass manufactory then in operation at Greenwich, at which goods of a superior class were produced.

Evelyn, in his diary, records a visit to the French church at Greenwich in 1687. He states

a

* Much interesting information respecting the descendants of the Walloon and Huguenot families in England may be obtained from "The Huguenots: their Settlements, Churches, and Industries in England and Ireland. By S. Smiles. Third Edition. Murray."

that in the sermon the preacher "pathetically exhorted to patience, constancy, and reliance on God, amidst all their sufferings." The Ten Commandments, in French, were displayed in panels on each side of the pulpit, and remained legible till 1814, when they were painted out. After the refugees had become absorbed by the ordinary population and the descendants of the original founders had become much more English than French, they felt the incongruity of conducting their religious services in a foreign tongue, and the community, which had been gradually diminishing, was ultimately dissolved. M. Severin, transferred from Thorpe-le-Soken, Essex, was the first pastor of the Huguenot Church at Greenwich.

After the dissolution of this French congregation, the chapel was in the occupation for a considerable time of a society of Baptists, and after them, by a succession of sectaries of various kinds, each with his unappreciated "mission." The congregation embraced occasionally, four or five persons, the preacher inclusive, but rarely reached to ten or a dozen.

The place had no architectural pretensions whatsoever, and in its last days presented no indication, in decoration or otherwise, of French taste, but it had long passed out of French hands. Whether from economic considerations, or because they had become habituated to shrink from observation in their religious worship, we know not, but the building presented no frontage. It was entered by an ordinary door from the trottoir in London-street, and reached by a passage between shops, with street frontages on each side. The entrance presented no indication of the vicinage of a place of worship. It was pewed for the accommodation of about 100 sitters, and was lighted by two large windows looking out upon a back yard. Whatever it may have been in its early days, in its last days it was a grim, dusty, and dreary little place, with neither beauty nor utility to plead for its continued existence. It stood on the line of the new direct Greenwich and Woolwich Railway, which necessitated its removal.

In connexion with the abounding labours of Sir Christopher Wren, the period at which the Huguenot Church in Greenwich was established, is peculiarly interesting. The parish church in which the French exiles worshipped was not the present St. Alphege's,*—one of Wren's works,—as is erroneously supposed. Deptford and Greenwich have now between them dozens of churches and chapels belonging to various religious denominations. At the end of the century the only places of worship in the two towns must have been the venerable St. Nicholas's Church, and St. Paul's (one of Wren's churches), Deptford; St. Alphege's parish church, Greenwich; the Huguenot Chapel; and a meeting-house of the Society of Friends, that was attended occasionally by Czar Peter the Great, after his interview with William Penn, who came from Stoke Pogis to visit him at Sayes Court, where the Czar played such sad havoc with Sylva's (John Evelyn) grand impenetrable holly-hedge, 400 ft. long, 9 ft. high, and 5 ft. thick; and where Peter trundled a wheelbarrow in all directions across the walks, borders, and flower-beds.

At that time Wren had probably many other churches in hand. He was certainly occupied with St. Paul's Cathedral, 1673–1710, finished when he was seventy-eight years of age; and with the completion of the Royal Naval Hospital at Greenwich, into which the first pensioners were admitted in 1705. Temple Bar he had disposed of thirty years before the close of the century; and "The Monument" between 1671 and 1677. The towers at the west front of Westminster Abbey, Chelsea Hospital, Marlborough House, and many other works, were probably by the end of the century well out of the hands of the great architect.

The Royal Academy Conversazione will be held on Wednesday, June 30th.

* Greenwich Parish Church of our day was built from the designs of Mr. John James. Its erection was necessitated by the collapse of the old church, the roof of which fell in, Nov. 29th, 1710. In the *Gentleman's Magazine*, vol. 75, p. 422, the writer denounces the practice of burying in churches as defacing and often undermining them. The writer says,—"I have known the whole building demolished, and thrown into a heap of rabbish, by the digging a grave too near the foundation of a pillar, so that, being undermined, great hath been the fall thereof Thus fell the ancient church of Greenwich a few years since, but, by the providence of Heaven, no person was therein." The old church contained Norman elements that are partly preserved in the lower part of the tower of the existing church.

THE "HEART OF AFRICA," AND ITS ART TEACHINGS.

APROPOS OF ZANZIBAR.

THERE is certainly one phase of history which has been but little, if at all, dwelt upon; and yet it is, if we come to think attentively about it, one of the most singular. History, if we may venture to define it, is the record of events, and of human progress, from its commencement, as far as we can see into it, to the present time; and tells generally of that gradual advance from a state of "barbarism," to adopt that somewhat vague term, to that advanced civilisation which we see about us. It is a subject well worth some further and searching analysis. It is this record of events which generally goes by the name of history, and it is what the world understands by the term. But there is another phase of it which has hardly had the attention which it so well deserves. It is that phase of it which may be with some convenience termed,—past history in the present,—as, to give an example, it is to be found at the present hour in the interior of that vast continent, Africa. There, as we may see clearly, from every fresh account, the ways of the most distant *past* are *now* in active operation; and men live, as we read they did live, thousands of years ago! It is the past in the present, and is worth a glance,—artistically at least. It may even enlighten "Art School" proceedings, remote as it may seem to be at first sight from such advanced matters. There is here, indeed, much worth noting, but we confine ourselves to the *Art* section of the matter, for art of some sort or other is everywhere, and has always been, no matter how far back in time we go.

There is, says De Quincy, a sort of poetic and magic charm in the very names of such mighty rivers as the Ganges or the Euphrates, none can doubt it; but there is even a yet mightier spell around the very name and existence of the African Nile. Until lately, as all know, its course and very source were alike unknown. Not only this, but its historic memories seemed to stretch further back into the remote past than all others. The civilisation of the ancient Egyptian on its banks is among the first things which history has recorded. We cannot see into the beginnings of it, and its remains on the banks of this Nile river are still the most imposing on the earth's surface. But the marvels of the Nile do not cease with the things to be found at its mouth, they follow it to its remotest beginnings and most obscure sources. It is here that we may see a little into the "Heart of Africa," and into the depths of the remotest time as well. That intrepid traveller, Schweinfurth, has found, within a few hundred miles of the equator, and described for us, a nationality and a state of things artistic and otherwise,—the Niam-niam,—which, as he says, may serve as common ground for all ideas pertaining to the "primitive condition of man." Artistically looked at, they are of infinite interest, for they have a system of *ornamentation* of their own, and of building, and house putting together, from which something might be learned perhaps even here. It may be observed, in passing, that, as our traveller notes, these primitive people are "*untainted* by Islamism," so that what they do and have is at least their own, and unborrowed from any more civilised or advanced source.

Let us in the first place note a somewhat curious fact worth the noting, and well reflecting on by those who are interesting themselves so deeply in the subject of education, and art education more especially. The New Zealanders when first discovered were in a sufficiently primitive if not savage state, and certainly never heard of or had any communication with the antique Greek, or his way of work. But in their way of work and in their special power of inventing and working out their peculiar method of ornamentation and carving, they, according to the testimony of Mr. Owen Jones, a very capable judge of such matters, sometimes even rivalled the antique Greek himself in perfection of design and careful finish. There was a difference, indeed, between the Greek, the most perfect man, perhaps, the world has yet seen, and the savage and primitive New Zealander, but yet were they akin. Put either one of them to a bit of wood or stone carving and their separate and individual tastes and skill equally manifested themselves. And it is the same here, in the very heart of Africa, at this very hour, and the untutored taste of the primitive man is found to manifest itself in ways not a little remarkable. Some of the ornamental details both in the huts and on the ordinary utensils in daily use are noteworthy, and the author we are quoting tells us that the taste displayed in *coloured* decoration is at times so too. The forms of the vases and drinking-flasks are noted by Mr. Schweinfurth as really artistic in form and ornamentation.

Artistically looked at, this is not a little striking; and if for nothing else, from the strange fact that the simple and primitive system of ornament found in this remote spot is to be met with nearly all the world over. It would seem to be inherent and instinctive in human nature, and to be confined to no special country or race, or time. It is to be seen as often as not in our modern reproductions of what is termed "Norman," and many a modern carver of to-day here, surrounded by all that a high civilisation can afford, is actually employed in doing the self-same species of work which is being done in the central regions of equatorial Africa, and was done some thousands of years back. It would be a most interesting and instructive addition to the British Museum "Ethnological Collection," or to that at South Kensington, to collect together examples of this primitive ornamentation as it has, unknown to each other, sprung naturally and instinctively from the brains and finger-ends of so many and diverse nationalities. Ample materials exist for such a collection; they need only to be looked out and put side by side. A more instructive art-show could hardly be, for those who would be at the trouble of studying it. Such collection would evidence the *sameness*, if we may use the term, of the human mind, and how, when left to itself, it repeats the same acts and draws the same lines, finding a pleasure and delight in the zigzag, in cross hatching, in evenly distributed dots and small circles, in squares side by side (as in a chess-board), in simple notches, and, indeed, in all regular and repeated simple figures and geometrical forms. It is a world-wide language, and is worth the knowing a something about.

Be it observed that we are not here referring solely to *carvings* by hand on the flat surface of wooden objects; but to coloured patterns on textile fabrics as well, and perhaps to these more especially at the present juncture; for we have had opportunity lately of inspecting a series of objects from Zanzibar, a place where the primitive African and the more advanced Arab come strangely together. It is really surprising to find how universal is the instinctive love of simple ornament, and how universal and widespread the language of it, and how deep into time it carries us. Not only in *form* is this so, as we have said, but in *colour* too. Looking at these things in philosophic mood, one might almost agree with that theory of the late Archbishop Whately,—that all civilisation, even in its very earliest beginnings, must have need sprung from *one* centre, so much alike are these things: a universal language and primitive language familiar to all men all the world over. Greek and Gothic are sufficiently unlike each other, and cannot be supposed to be of the same origin and growth. The architecture and ornamental art on it of the Hindoo, is unlike enough to the art of those who succeeded in subduing him, and importing into India a new style of architecture and art; but the primitive forms we have named may be found in all of them, and the growth of one from the other is not difficult to trace. India, Arabia, the islands of the Southern Ocean, Mexico and Peru, Europe (North and South), the British islands,—all of them, without knowledge of each other's existence, have left, and still work out, records of this instinctive love of simple ornament.

But there is again a yet more singular fact,—for a fact it is, strange as it may seem,—connected with this primitive condition of things. It is that it is not merely difficult beyond measure to copy or reproduce this simple art, but it is, it may be safely affirmed, impossible to do so. It is instructive to watch the efforts of the many industrious and earnest students who are put at times to the task of copying, for practice and instruction's sake, any one of these simple and primitive forms, especially if the example be a *coloured* one. We may usefully cite one or two cases in point. It is one, and not the least, of the problems of our "Indian policy" to imitate as closely as possible some of these native *textile* fabrics, and thus, both in form, texture, and colour, to reproduce them cheaply for the Indian market. No pains or cost or power of machinery is spared to accomplish this feat; but, as we are told by those who are well capable of judging, with but the very meagrest success, for such wares do not satisfy the native races for

whom they are done. The secret is that they know their own work too well, and have a keen instinctive idea and insight into their own special work. Let any one compare the native work,—a genuine example of it,—with the most industrious and laboured copy of it, whether by hand or by machinery, however costly and improved; or, let him, which is still more convincing and instructive, *compare* the native fabric, with all its shortcomings, with some elaborate and laboured copy of it executed within the walls of a school, and with everything to further and complete the work. No second glance is needed.

It would be difficult to overestimate the historical and practical importance of these phases of art-work. The present position of art all over Europe is not a little complicated and puzzling. All styles of art are in vogue, now one and then another; and, what is more, as we may see all about us, they are not unfrequently to be seen strangely enough mixed together, defying in great measure all analysis, and pointing, it would seem certain, to a condition of things hardly at present to be in any way realised. But the facts cited go far to show that the foundations of art are ever and always the same, and that the love for simple forms and arrangement of colours is common to man all the world over, and in all times; and that education, however artificial and complicated, and advanced it may be, does not eradicate this simple liking for simple and obvious forms, but may be only *refines* on them. It does not always even do that, and when it does so, it is not always to the advantage of the work. The great secret lies, after all, in the personality, if we may use the term, and individuality, and strict *nationality* of the work, whatever it may be. In the very heart of Africa, where books certainly have no existence, and where man is still in a primitive state, and where he designs and works out his thoughts in the simplest way, and without borrowing or copying, we see, as Dr. Schweinfurth has so well shown, that his mind, untutored as it may be, can guide his hand to fine artistic work. It is a wonderful lesson to man, and shows how much is yet needed, in the way of art analysis, before we can get at the true and primitive source of artmotion. Even the "heart of savage Africa" may teach a something!

PROGRESS IN EDINBURGH.

THE progress and character of architectural and monumental works in this city are as various and uncertain as in any other. Some are pushed forward with rapidity, while others seem as if they never would be accomplished. The Albert Memorial is of the latter class; the pedestal still stands unoccupied. Mr. Steel, the sculptor, seems to be possessed of a similar idiosyncrasy to that of his late brother artist, Mr. Stevens. In the former class of works is the new theatre, the erection of which is being pushed on by Mr. Gowans with that energy which is a trait in his character. But although the work proceeds rapidly, it is not done superficially, for with a set-off against the baste with which the walls arise, stones of the largest size procurable are being used, so that the walls, when even in a green state, are able to sustain great pressure; and, withal, it will be an almost marvellous feat if the building is completed in autumn as proposed; for, besides its extent there is much under-building required. One thing in its favour is that Mr. Gowan's "geometrical" detail can be executed rapidly. It will be a public building of no other, and its progress will be watched with interest.

The cathedral, again, proceeds slowly; here, the walls, although of considerable thickness, are composed of comparatively small stones, and there is no necessity for haste. Some beautifully-carved detail already begins to appear in the interior.

The Palmerston-place United Presbyterian Church, which is close to the cathedral, is now occupied. The interior is neat and elegant, semicircular in form, and thorough as to material and workmanship; granite pillars and stone dressings being used, and the woodwork excellent both as to quality and execution.

At Dalry-road a Nonconformist Church is nearly completed, from the designs of Mr. John Henderson. It is somewhat of a Lombardic style, but the architectural treatment is confined to the front elevation, the remaining sides having only tiers of common square-headed windows.

The United Presbyterian Church at London-road, designed by Mr. Starforth, has been occupied, although not yet complete. It is one of the best designed buildings of its class in the city. Gothic in style, the exterior effect has not been sacrificed to the interior requirements, and yet within there is nothing that even Mr. Spurgeon could object to, the galleries being supported upon iron brackets riveted into the buttresses, and an inner ceiling having been formed, leaving only the rafters visible.

Adjoining this, the Abbey Church, designed by Mr. Moreham, is roofed in, but the spire is not yet completed. This is also a Gothic building, with galleries, the exterior, although good in parts, does not possess the same breadth and congruity as its neighbour.

Mr. Anderson's Catholic Apostolic Church is now being roofed in. The remarkable character of the design continues to manifest itself, and can only be properly judged of when complete; but still what is already done is sufficient to show that the effect, both externally and internally, will be *sui generis*.

At Hope-terrace, Newington, a new Nonconformist church is to be erected after an Italian design.

In Princes-street some progress has been made with the new Clarendon Hotel, which is to be combined with an arcade,—a feature which Edinburgh does not yet possess. The site is a good one for the purpose. The front elevation is to be in the Italian style, having windows with enriched pilasters, carved trusses and cornices, flanked at each end by large oriels. The cornice is to be balustraded, and the roof broken up by dormers. Mr. Beattie is the architect.

The new offices for the Union Bank, in George-street, designed by Mr. Bryce, which have a frontage of upwards of 100 ft., are built up as far as the sills of the ground-floor windows. The building will have three entrances, the principal one in the centre is flanked by double pilasters, and surmounted by a semicircle, filled in with carved enrichment, and in advance of this is a portico, supported by coupled Ionic columns. On either side of this entrance are three square-headed windows, with massive piers between each, and at the ends of the block are entrances similar to that in the centre, but on a smaller scale. On the first-floor are nine windows, having pilasters on each side, with carved capitals supporting triangular pediments, the one in the centre being more boldly treated than the others. The second-floor windows have moulded borders and projecting sills, supported on brackets, and the wall-head is finished by a bold cornice resting on brackets, and surmounted by a balustrade. The central entrance is appropriated to the bank offices, and gives access to a hall, around which are the various departments, including a telling-room, 80 ft. by 50 ft., which is lighted principally from the roof. The other two entrances lead to two commodious dwelling-houses, provided for bank officials.

It is with deep regret that we observe the use of cement in exterior decoration is gaining ground in this city. Not only is this the case when additions are made to existing buildings, but at the present moment an entire frontage of this sort is in progress at the west end of George-street. No architect who has the amenity of the city at heart would lend himself to such a proceeding; if it is carried much further Edinburgh will lose that character for substantiality and absence of clap-trap work for which it was celebrated.

At West Coates, a new terrace facing the north is in progress; it is simply a repetition of a very poorly designed one adjoining it. The same kind of thing is being done at Queensferry-road, but at East Coates some dwellings of superior design and with greater variety have been erected.

Merchiston, a south-western suburb, laid out for villas, is rapidly being taken up; some of these are evidently designed by architects, but the majority evidently emanate from the offices of the builders. Operations have been commenced for the erection of a new Episcopal church for this neighbourhood; Mr. H. J. Blent, architect.

ON THE STRENGTH OF THE MATERIALS OF CONSTRUCTION.*

COLUMNS.

I HAVE before called your attention to the different modes in which columns may fail, and have stated the method by which the strength of short columns may be determined. For calculating the strength of long columns, the following formulæ by Professor Gordon are useful

$$f = \frac{a}{1 + b\,r^2} \qquad (4)$$

f being the breaking weight per square inch of cross section, r the ratio of the diameter to the length, a and b constants depending on the material and form of cross-section; and for the following materials are:—

	a	b	
Cast iron.....	36	$\frac{1}{400}$	hollow or solid round pillars.
Wrought iron	16	$\frac{1}{8000}$	rectangular.
" "	19	$\frac{1}{900}$	angle, T, or channel iron.

Example.—What is the breaking weight of a cast-iron column 15 ft. long, whose external and internal diameters are 6 in. and 4 in. respectively?

Here $r = 30$, $a = 36$, $b = \frac{1}{400}$,

then $f = \frac{36}{1 + \frac{1}{400}\,900} = \frac{1440}{130} = 11$ tons nearly.

Area of cross-section = 20 square inches $\therefore$ 11 × 20 = 220 tons, the breaking weight of the column.

For timber columns, Rondelet gives the following rules:—

Taking the force that would crush a cube as unity, the force that would break a timber pillar with fixed ends when the height is,—

12 times the thickness.....		$\frac{5}{6}$
24	" "	$\frac{1}{2}$
36	" "	$\frac{1}{3}$
48	" "	$\frac{1}{6}$
60	" "	$\frac{1}{12}$

Timber does not fail by flexure until the height is about ten times the lateral dimensions.

The strength of a *cast* or *wrought iron* column of medium length is arrived at by first calculating it as a short column, and then as a long column, and taking the mean given by the following equation:—

$$w = \frac{c\,W}{W + \frac{2}{3}c} \qquad (5)$$

in which w is the breaking weight of a column of medium length, c the crushing weight of a short column having a similar sectional area, and W the breaking weight of a long column. In cast-iron columns both ends should be quite flat, for if the ends are rounded the strength is reduced to one-third; and if one end is rounded and the other flat, the strength is a mean.

With reference to columns of other section than those mentioned above, it has been proved that, representing the strength of a hollow column by 100, the strength of a pillar of H shape will be 75, and that of a + shape 44, all being of equal length and weight.

A slight inequality in the thickness of hollow cast-iron columns does not injure its strength; but in Mr. Stoney's* opinion the excess of want of thickness should not exceed 25 per cent. of the specified average thickness.

Solid wrought-iron pillars are stronger than those of cast-iron when their length exceeds 15 diameters, and in the case of tubular pillars of wrought iron "whose length does not exceed 30 times its least breadth, and whose greatest breadth does not exceed 30 times the thickness of the plates, will sustain a breaking weight of not less than 12 tons per square inch."†

In the case of stone columns, Vicat found the strength of a monolithic prism, whose height h being represented by unity, we have the strength of prisms:—

Of 2 courses and of height	$h = 0{\cdot}930$
" 4 " " "	$2h = 0{\cdot}861$
" 8 " " "	$4h = 0{\cdot}834$

without the interposition of mortar. From which he concludes that the division of a column into courses, each of which is a monolith, with carefully-dressed beds, does not seriously diminish its resistance to crushing.

BEAMS AND GIRDERS.

The modes in which transverse strain most frequently occurs in architectural practice are probably the following:—

1. A beam fixed at one end and loaded at the other.

$$W = c\frac{bd^2}{l} \qquad (6)$$

* By Mr. H. C. Brett, C.E. See p. 556, *ante*.

* Stoney on Strains. Ed. 1873, p. 257.
† Ibid., p. 270.

2. Beam fixed at one end and loaded uniformly.

$$W = c\frac{2bd^2}{l.} \qquad (7)$$

This formula also may be used when the load acts at the centre of the projecting strength:—

3. Beam supported at the ends and loaded uniformly.

$$W = c\frac{8bd^2}{l.} \qquad (8)$$

4. Beam fixed at the ends and loaded uniformly.

$$W = c\frac{12bd^2}{l.} \qquad (9)$$

W in all cases being the breaking weight in tons; c, the constant for the material, also in tons; b and d, the breadth and depth of the beam respectively, in inches; and l, the clear length in feet.

As it is on the upper and lower parts of a beam that the strains of compression and tension are chiefly felt, these are therefore the parts most needing to be strengthened, whilst a comparatively slender connexion between them will be sufficient. This is the principle which led to the introduction of flanged girders. Timber beams are mostly of a rectangular section, but in the case of wrought iron and cast iron, to which a great variety of forms may be given, and with which it is desirable to effect as much saving of material as possible, the flanged shape has been universally adopted. In designing girders of this class, it must be remembered that the greatest strength will only be obtained when the relative areas of the flanges are inversely proportional to their ultimate unit strain.

For cases similar to those mentioned above, the formulæ by which the horizontal strains in flanged girders may be determined are:—

Girder fixed at one end and loaded at the other.

$$S = \frac{Wl}{d} \qquad (10)$$

Beam fixed at one end and loaded uniformly.

$$S = \frac{Wl}{2d} \qquad (11)$$

Beam supported at the ends and loaded uniformly.

$$S = \frac{Wl}{8d} \qquad (12)$$

Beam fixed at the ends and loaded uniformly.

at any point $S = \frac{w\,r}{2d}(l-r) - \frac{w\,l^2}{12d}$ (13)

$$\text{at the piers } S = \frac{W\,l}{12d} \qquad (14)$$

In each case, l = clear span; r = distance of any point from one pier; d = depth of girder; W = total concentrated load; w = equal load per lineal unit; S = direct strain on either flange.

The different forms of plan and longitudinal section necessary for uniformity of strength of beams whose breadth is constant and whose depth varies, *vice versâ*, you will find in any text-book on strains.

EXPANSION AND CONTRACTION.

There are numerous examples in architectural construction of the influence of expansion and contraction of materials, such as the swelling and warping of timber, if not properly seasoned; and when it is considered that if the temperature of a bar of iron 10 in. long be raised from 32° F. to 113° F., its length will vary by $\frac{1}{100}$ of an inch, and if fastened will exert a strain of 50 tons, the necessity of making allowance for the expansion and contraction of girders will be apparent. The following application of this force may be interesting. It occurred at "a gallery of the Conservatoire des Arts et Métiers, in Paris, the walls of which had begun to bulge outwards. Iron bars were passed across the building, and screwed into plates on the external surface of the walls. Each alternate bar was then heated by means of lamps, and when the bar had expanded it was screwed up. The bars being then allowed to cool, contracted, and in doing so drew the walls together. The same operation was performed on the other bars." (Ganot's Physics, book vi., cap. 2.)

CO-EFFICIENTS OF SAFETY.

I have explained to you that the inherent strength of each material is ascertained by experiment, but in practice it is necessary to keep within these values. "The great difference," says Gaudard, "between the co-efficients admitted in practice and that which produces rupture is demanded, not only by what has been said concerning the limits of elasticity, but also by the possibility of concussions or unknown vibrations, by the thousand small hidden defects of the substances; and, finally, in order to cover the defects in the theory itself." "The immense variety of nature renders the task of experimenters very indefinite. Every isolated trial has only an absolute value for specimens identical with that tried. The discussion is delicate, and it is only possible to give approximate mean values as general results. The origin of dimensions, the mode of manufacture, the annealing, the age, the humidity, and many other circumstances, influence the strength." This ultimate strain is usually termed the co-efficient of safety, and is the ratio of the working load to which we may safely ascribe to the weight which would produce rupture. As the modes in which loads may affect structures vary considerably, so will the co-efficients also vary. There is, for instance, in the case of a column, the dead weight of the structure itself; there are the strains arising from the concurrent action of dead weight "live or moving" loads; and there is also the maximum strain due to the united action of the dead weight of the structure and the greatest load possible in practice.

Foundations.—Rankin states that the greatest intensity or pressure on foundations in firm earth is usually 3,500 lb. per square foot, "and that the intensity of the pressure on a rock foundation should at no point exceed one-eighth of the pressure which would crush the rock."

Masonry.—There appears to be considerable difference of opinion as to the co-efficiency of safety for masonry, but the following remarks of Dr. Downing are valuable. After mentioning the pressure to which the masonry of different structures are subjected, he says:—"From all that has been now given we may deduce the rule that masonry, of any material, should not be permanently loaded above $\frac{1}{10}$ of its ultimate resistance to compression. It has been well remarked that the weakest stone, and even inferior brick, are seldom found really crushed in buildings. But in the actual practice of construction we must remember that structures are liable to various occasional and accidental pressures and to others of a permanent kind resulting from settlement and other causes, of which no previous account can be taken, for which allowance must nevertheless be made. The pressure on the beds of each course may not be uniformly distributed; and if the resultant should approach the external surface, some flushing, as it is called, or vertical cracks and splinters, begin to appear especially if the beds of mortar have been too thin, and the stone of one course has come in contact with that next to it. However well the beds of stone, even of ashlar work, may be dressed, the contact, if there be no cementing material between them, takes place in some few small portions or points only at which, under severe pressure, crushing must begin, and if these be near the outer edge vertical cracks or splinters chipping off soon make their appearance. In fact, the true office and utility of a bed of mortar must be to take complete impressions or seals of the two contiguous surfaces of the stone, and effectually separate them, though by a very thin bed, transmitting the pressure from one to the other at every point of the surface, and obviate the danger above mentioned." * Dr. Downing, of course, refers to cases where the resisting pressure is perpendicular to the plane of the joint.

Metals.—The usual co-efficients of safety for wrought iron and cast iron are as follows:—

Wrought iron:—	
Pillar not subject to vibration	$\frac{1}{4}$ of B wt.
„ subject „	$\frac{1}{6}$ „
„ subject to direct and sudden shock	$\frac{1}{10}$ „
Beam or girder subject to vibration	$\frac{1}{4}$ „
„ not „	$\frac{1}{6}$ „
„ subject to violent and sudden shocks	$\frac{1}{8}$ „
Cast iron:—	
Pillar not subject to vibration or impact	$\frac{1}{6}$ „
„ subject to vibration or impact	$\frac{1}{10}$ „
Beam or girder subject to sudden shocks and vibration	$\frac{1}{8}$ „
Beam or girder not subject to vibration and impact	$\frac{1}{6}$ „
Beam or girder not subject to vibration	$\frac{1}{4}$ „

* Elements of Construction. Part I., 55, 323.

These are the usual co-efficients, but much depends on the quality of the iron, and special care must be exercised in the selection of a co-efficient when the work will have to sustain unusual strains. Great care is also necessary to see that the workmanship is properly executed, in the case of wrought-iron work, that the joints fit well together, and that no excessive strain is thrown on any part; and in the case of cast iron, that the castings are uniform in thickness and show no inequalities.

Timbers. — The co-efficients of safety for timber in permanent works may be taken at $\frac{1}{10}$ of the breaking weight, and in temporary works $\frac{1}{8}$ to $\frac{1}{6}$. A great deal will, however, depend on the quality of timber and its seasoning, for it will be remembered that wet timber is only one-third of the strength of dry. The age of a timber, also, must be considered in determining its working load, and that the safe load of timber at right angles to the grain of only one-third of the load in the direction of the grain.

Cements.—The co-efficients of safety for good lime mortar and of good Portland cement may be taken at $\frac{1}{10}$ of their crushing strengths. And as the crushing weight of lime mortar, eighteen months, is only about one-quarter that of Portland cement mortar (1 cement 2 parts sand) made three months, it is obvious that when great strength is necessary the latter should be employed.

DURABILITY OF MATERIALS.

On this subject the opinions of an eminent engineer (Mr. Edwin Clark, M. Inst. C.E.) are worthy of consideration.* "The list of materials used by the engineer is but small. It includes stone and timber among natural productions, and bricks, cement, and the metals among artificial products. There is, perhaps, no better illustration of the difficulty of laying down any rigid rule in engineering than the attempt to state, even approximately, the positive life of any of these articles. In certain situations it may, indeed, be estimated by geological periods. The most delicate fossils exist unchanged even in the oldest rocks; while, under other conditions, the hardest stone requires perpetual renewal. The durability of any material thus depends not only on its own inherent properties, but principally on the agencies to which it is opposed. As an example, the soft calcareous tufa blocks of the temples at Pæstum, not only as regards those parts of the structures that remain standing, but also as regards the ruins that lie half buried in the sand, present no appearance of decay, or even of great age; and yet their antiquity is so great that Pliny, who wrote eighteen centuries ago, states that even then he was wholly unable to obtain any reliable record of their origin, on account of their great age. While far more evident symptoms of decay are apparent in the masonry of the new Houses of Parliament, not yet (1868) complete. Again, the ruins of the marble temples at Athens appear totally unaffected by time, the tool marks are still sharply defined, the colour is as unblemished as though just removed from the quarry; while here, the same material loses all its beauty in a few months, and the Marble Arch in Hyde Park shows far greater signs of age than the Temple of Minerva. In these cases the difference is due principally to the effects of climate. The varying durability of galvanised zinc roofs in different localities is similarly well known, and several kinds of timber, such as beech, which under ordinary circumstances possesses no durable qualities, have been found sound after being buried for centuries in water. Nearly the whole of the buildings in Geneva, including the Cathedral, are covered with ordinary sheets of tin; while at St. Peterburg the city is almost entirely roofed with extremely thin sheets of wrought iron, wholly unprotected by any coating except occasionally a coat of paint; and yet thin plates of tin and iron, which in the atmosphere of London would be riddled with holes in a single winter, are there found to be extremely durable." And here Mr. Clark calls attention to the freedom from decomposition with which even animal matter, in some situations seems to be endowed, and proceeds:—"On examining all these facts, and seeking some common characteristic, it is found that among all these causes of decay humidity holds the first rank, and it is to this subject special attention will first be devoted. The decaying influence of humidity is evidently dependent on other coincident circumstances. The mere presence of water, or even of a saturated atmosphere, is not

* Min. Proc. Inst. C.E., vol. xxvii.

sufficient to induce rapid decay, which appears to be caused by humidity only under peculiar conditions. One of these conditions is well known by the popular title of dampness. The decay caused by dampness, as in the case of dry rot, is as effectually arrested by the presence of water as by a constant current of air, whether perfectly dry or saturated to any degree of humidity. Damp, therefore, is not the mere presence of moisture in the ordinary form in which it is held in solution by the atmosphere. If a hygrometer be placed in a damp situation it simply indicates perfect saturation; no evaporation takes place, but the cotton covering of the wet bulb is speedily covered with a peculiar mould, well known by its fungus-like odour, and in a short time it is converted into an impalpable powder or ash. Under similar circumstances timber, leather, paper, and all like materials, undergo the same rapid decomposition; vegetable gums and oils, that are insoluble in water, and even dry hard paints and varnish, become soluble and liquid. Massive timbers are rapidly disintegrated to the core, entirely losing their weight, though still retaining their form, and often totally free from apparent moisture, although at times dotted externally by drops of brilliant water. Damp spots are, moreover, peculiarly hygrometic, indicating atmospheric changes with remarkable precision; and temporary desiccation in no way disturbs this process. The peculiar odour which always accompanies this condition is one of the best tests of its existence, and the expression that a room smells damp is strictly correct. The effects are, within certain limits, intensified by increase of temperature and absence of light, and arrested by poisons destructive to vegetable life. If this phenomenon of decay be more closely examined, the process will be found to resemble in many respects a slow combustion. The ultimate results of combustion and decay are strikingly similar, the union with oxygen is slowly effected, and the residue is more or less diluted with foreign substances; but whether the bodies be burnt or decayed, the remains in the ashes are substantially identical. Decay may thus, to a great extent, be looked upon as a decomposition resulting from the slow chemical combination of oxygen with the matters decomposed."

Mr. Clark then enters into the question of the way in which damp can promote the absorption of oxygen, and gives the following valuable deductions:—"Whatever may be the cause of decay, moisture is an indispensable element. Dry air is incapable of decomposition. Water is a carrier of oxygen in a potent form; and it is only from water, and more especially in the form of vapour, that the oxygen necessary for decay can be obtained. The durability of metals, like that of organised substances, depends mainly on the resistance they offer to combination with oxygen, and thus their decay may also be regarded as a slow combustion. But their durability further depends on the character of the oxides formed on their surface. Iron exposed to moisture is soon coated with rust, in the form of hydrated peroxides; and as these oxides do not adhere to the surface on which they are formed, additional flakes constantly form and fall away, until the whole mass is destroyed. As wrought iron is now so extensively used, its durability is a matter of special interest. In a pure dry atmosphere it suffers, practically speaking, no deterioration whatever in any lapse of time. It is also extremely durable in distilled water, free from air; but it is slowly oxidised in a moist atmosphere, and with fatal rapidity in air or water containing free acids or other corrosive agents. It is, however, efficiently protected from such agents by paint, which adheres to clean iron with great tenacity. It is also a remarkable fact, and not satisfactorily accounted for, that its oxidisation appears to be to a great extent arrested by vibration. It is evident from the foregoing remarks that the painting of wrought-iron girders and roofs, more especially in the neighbourhood of smoky towns, is a precaution of the utmost importance. Every care should be taken to expose the iron as freely as possible to the air, to leave no hollow where water can collect, to avoid the contact of damp earth, and especially of vegetation, and to throw the material into the form of heavy bars rather than thin plates. Painting is more economically performed and more effectual, when constantly attended to, than under the vicious practice of laying on three or four coats, and then leaving the work for years till it all peels off with a layer of rust attached to it. Cast iron, when exposed to the action of sea water, slowly decomposes, the iron being dissolved, leaving a graphite or plumbago. . . . . In fresh water it suffers no such deterioration, and under ordinary circumstances its durability in a pure atmosphere appears unlimited."

The foregoing extracts are sufficient to show the valuable character of the information contained in Mr. Clark's paper on the durability of materials. I have selected only a few paragraphs, but the whole essay is replete with interesting matter. And as the subject is intimately connected with that of the strength of materials, it must be considered.

RESTORATION OF ELY CATHEDRAL.

THE decoration of the lantern and octagon of Ely Cathedral, by Mr. Gambier Parry, having been completed, the occasion was marked a few days since by the assemblage of a number of visitors to examine the new work. Sir Gilbert Scott, Mr. Rowe, the cathedral surveyor, and Archdeacon Emery explained the construction, and gave a history of the octagon and its decoration, and the Archdeacon read a statement respecting the work. The ornamentation is in the style of the fourteenth century, and has been carried out under the direction of Mr. Gambier Parry, who designed the whole and painted the chief figures. The central boss of the lantern groining is a half-length figure of Christ in glory, considerably above life-size, and with the conventional clouding around it. It is boldly carved in oak. The right hand is raised in the attitude of blessing, and with the left hand the inner garment is drawn open to exhibit the wound in the right side. Around this figure is painted a galaxy of seraphims, on a grey-blue ground. The panels of the window-hoods are painted red, marking the distinction already made by the architectural construction, and in them are painted cherubims and golden stars. The windows of the lantern were filled some years ago with coloured glass in memory of the late Dean Peacock. The colouring of these windows is harsh, and in strong contrast with the mellow and rich painting of the woodwork, and very injurious to the general effect. Below the windows are thirty-two openings, surmounted with rich tracery. They are filled by panels, on which is painted an angel choir. The figures are composed in groups of four under each window, and are represented playing Mediæval instruments. The two eastern and two western bays are intended to be severally grouped together, forming distinct series of eight figures. The instruments in the hands of the figures are the psaltery and citern, the regale, tabret, lute, violin, bagpipe, and trumpets. Below the range of figures are smaller panels simply ornamented with the monogram, the cross, and the crown, resting on a richly-carved cornice, which forms the base of the lantern. The groining of the octagon forms eight hoods, four above the windows and four above the great arches of the choir, nave, and transepts. Beneath these last are remarkable statues of the four Evangelists about life-size, seated in the attitude of writing with a pen in one hand and a long scroll in the other. A writing-table by the side of each figure with the inkhorn attached to it by a strap, and another loop to hold the pen, is very complete. The space between the great arch and the groining of the choir is filled with rich tracery, on the central panel of which is painted the Crucifixion, with angels holding the chalice and palm branch on the right and left. The long spandrels of groining are painted with the conventional scrollage with the architecture. The monogram and crown of St. Etheldreda are found in several parts of the ornamentation. There were little or no visible precedents for colouring found to guide the present work when the woodwork of the lantern and octagon was cleared of whitewash. Some remnants of red and blue were found in the hollows of mouldings, but exhibiting no principles of artistic arrangement. There was no ornamental coloured design anywhere, unless a sham Gothic tracery on a green ground which covered part of the octagon groining could be considered as such. The greater part of this being weak modern work was not thought worthy of repetition. An account of the painting of the whole of the woodwork, the colours used and their prices, the name and wages of the chief workman, "Walter Pictor," is found among the archives of the cathedral. To judge by the colours the work must have been very rich. They were vermilion, orpiment, azure, verdigris, oyster or dragon's blood, red lead, white lead, gold colour, and silver and gold leaf. His work was executed between the years 1335 and 1346. His wages were eightpence per week. The statues required to complete the set of apostles for the octagon are now to be added, the Dean having commissioned Mr. J. F. Redfern, the sculptor, to proceed with the work at once.

COST OF RECENT BOARD SCHOOLS, LONDON DISTRICT.

AT the meeting of the London School Board, on the 16th inst., the committee reported the cost of the undermentioned permanent schools. The Board have authorised the committee to sanction an expenditure not exceeding 10 per cent. on the contract, and the following table shows where this limit has been exceeded. All the schools included in the table were designed by the architect of the Board, with the exception of those in Turin-street, Bethnal-green; Harper-street, Lambeth; Westmoreland-road, Walworth; and Brewhouse-lane Wapping; in each of which cases the name of the architect is given.

The average cost per head over the whole of the twenty-three schools is 8*l.* 18*s.*

Accommodation.	School.	Expenditure authorised by Board.	Extras authorised by Committee.	Excess of 10 per cent. authorised by Board.	Cost per child.
		£. s. d.	£. s. d.	£. s. d.	£. s. d.
304	CHELSEA.—William-street, Hammersmith	3,369 0 0	Deductions from contract amount 78 4 9	—	10 15 10
1090	FINSBURY.—Angler's-gardens, Islington	8,698 0 0	918 4 2	48 8 2	8 16 5
569	GREENWICH.—Lewisham Bridge	1,703 0 0	309 13 11	84 4 4	6 18 5
		2,236 5 10			
783	Duke-street, Deptford	5,589 0 0	206 2 2	—	7 8 0
383	HACKNEY.—Pritchard's-road	3,500 0 0	88 17 6	—	9 7 4
726	Tottenham-road, Kingsland	6,130 0 0	183 13 10	—	8 13 10
1631	Turn-street, Bethnal-green (Mr. G. F. Bodley)	10,822 and 1,238 0 0 for additional works.	2,049 13 6	843 13 6	8 13 0
567	LAMBETH.—Vauxhall-street, Lambeth	5,185 0 0	738 6 4	219 16 4	10 8 11
1036	Victory-place, Walworth	8,743 1 0	1,341 8 7	467 2 7	9 14 7
1164	Harper-street, New Kent-road (Mr. R. W. Edis)	6,881 0 0	549 16 5	—	6 7 2
785	Albany-row, Camberwell	6,394 0 0	604 18 2	—	8 18 3
1036	Westmoreland-road (Messrs. Jarvis & Son)	8,740 10 0	673 3 0	—	8 13 4
1087	New-road, Wandsworth-road	6,430 0 0	506 0 3	—	6 7 7
758	MARYLEBONE.—Henry-street, Hampstead-road	6,861 0 0	739 14 5	53 12 5	10 0 6
1016	Aldenham-street, St. Pancras	7,279 0 0	172 12 7	—	7 6 8
1092	Camden-street, Camden-town	9,566 0 0	1,316 18 1	360 6 1	9 19 3
1059	Haverstock-hill	9,269 0 0	2,640 1 4	1,713 3 4	11 4 10
1073	SOUTHWARK.—Belvedere-place, Borough-road	6,977 and 547 10 0	2,276 17 3	1,524 9 3	9 2 8
782	Laxon-street, Bermondsey	5,770 and 1,852 9 for foundations	618 1 4	—	10 13 16
1067	Roll's-road, Old Kent-road	7,718 and 2,177 1 8 for foundations, &c.	1,553 17 10	564 7 8	10 14 7
386	TOWER HAMLETS.—Brewhouse-lane, Wapping (E. C. Robins)	3,832 3 6	238 13 4	—	10 5 7
603	Lower Chapman-street, St. George's-in-the-East (exclusive of enlargement)	5,344 0 0	97 19 3	—	9 0 5
767	Cayley-street, Limehouse	5,279 0 0	625 13 2	97 15 2	7 13 11

GUNTHORPE BRIDGE, NEAR NOTTINGHAM.

THIS bridge was opened for traffic on the 18th inst. It is situated almost exactly half-way between the Trent Bridge at Nottingham and the bridge over the Trent at Newark, and is about eight miles from Nottingham. The company was formed in 1869, and application was made to Parliament in the session of 1869-70 for the necessary powers to establish a bridge, to extinguish the old ferry, and to take the necessary tolls. The Act was obtained in 1870, and the estimate for the work was 7,500*l.*, but at that time the enormous rise in the price of iron took place, which put the building of the bridge entirely beyond the power of the directors. The land requisite on the south side was, however, purchased, and the undertaking stood still for about two years. On the demolition of the Old Trent Bridge, at Nottingham, in the latter part of 1872, by Mr. Smart, the contractor, a contract was made between the company and Mr. Smart, for the building of the abutments of the Gunthorpe Bridge with the old and well-tested sandstone from the Trent Bridge, and the abutments were built accordingly. The foundation-stone of the bridge was laid on May 16th, 1873, with some ceremony, by the Right Hon. Earl Manvers, and by the winter of 1873 the abutments and hauling-path for the Trent Navigation Commissioners were completed. Iron still being very high in price, it was impossible to proceed with the superstructure, and the company were reluctantly compelled, on the advice of their engineer, to modify the construction of the bridge, so as to bring the cost within the powers of the shareholders. The width was reduced from 20 ft. to 16 ft., and it was decided to use timber piers instead of iron screw-piles, for the smaller spans of the bridge.

The building of the four timber piers was next proceeded with, and by the spring of 1874, they were completed. The bridge works then stood for some time, until a favourable contract could be obtained for the ironwork. During 1874 the price of iron fell considerably, and in the autumn the directors were enabled to enter into a contract with Messrs. Handyside & Co., of Derby, for the completion of the bridge. The work has therefore been completed a little time within the period fixed by the Act of Parliament.

The bridge crosses the Trent, at right angles, near the village of Gunthorpe, and connects East Bridgeford and the south of the county with Gunthorpe and the north. The bridge is built on the site of the ancient ford, and the north approach and abutment occupy the site of the old public highway, set out under the Lowdham Award. No deviation whatever in the position of the bridge has been made from that proposed and indicated on the Parliamentary plans. The total length of the bridge, including the approaches, is 610 ft., and the clear width throughout is 16 ft. The north and south abutments and wing-walls are of Derbyshire rock-faced sandstone (from the old Trent Bridge) The hauling-path on the north side is constructed of timber piling, securely braced and bolted together, except next the abutment, where the road is carried on strong iron brackets. The foundations of the whole masonry are carried down through the Trent gravel into the red marl rock, which lies from 8 ft. to 9 ft. below the bed of the river, and all the masonry is built in ground lias lime and washed Trent sand. The embankments of the approaches are pitched at the base to prevent scour, and the roadways are metalled and fenced with timber. The clear waterway between the abutments is 356 ft. which is divided into six bays or spans. There are five spans of 50 ft. each, and one span of 106 ft. (including the cylinders) for the navigation; the latter is next the northern bank of the river. The small spans are formed of wrought-iron plate girders, 4 ft. deep, one on each side of the bridge, but all these are bolted together, and form two continuous girders, each 250 ft. long. These rest on the abutment at one end, and on a pair of iron cylinders at the other, and are intermediately supported by four piers constructed of timber. Friction rollers and frames are used on every bearing, and every provision made for expansion and contraction. The large span consists of a pair of bowstring girders, 12 ft. deep in the centre and 4 ft. deep at the ends. These are of careful design and excellent workmanship, and are supported at one end by the north abutment, and at the other by the pair of cylinders above mentioned. The bowstring girders are entirely of wrought iron, the top boom is 2 ft. wide, and 1 ft. 9 in. deep, and the bottom boom 2 ft. 6 in. wide and 2 ft. deep; the bracing and vertical pieces are of tee and angle iron. All the transverse girders are of wrought iron, 12 in. deep, and have cambered surfaces to receive the roadway, which is formed of Memel timber 6 in. in thickness, viz., 4-in. longitudinal timbers, and 2-in. transverse wearing-plates. The channels are of angle iron, and cast-iron grates receive the surface water.

The pair of cylinders forming the large pier are of cast iron, 6 ft. in diameter, sunk by means of divers into the solid red rock, and filled with Portland cement concrete, upon which teak bed-plates are bolted down to receive the ends of the girders. The total height of the cylinders is 28 ft. The four smaller piers are formed each of six large timber piles, driven down into the rock, and framed and braced together with timber and iron, and protected from scour by granite pitching.

The toll-house is at the north end of the bridge, and consists of a building of a Gothic character, built of brick and stone, and having a tiled roof. There are four rooms, with other conveniences, above the basement floor.

The bridge was originally designed with three large spans or waterways, with ornamental bow-string girders, each 120 ft. wide in the clear, and two iron cylinder piers in the river; but this design, as before stated, was obliged to be modified, on account of the great and sudden rise in the price of iron and other materials. The present design, however, provides a strong and substantial bridge, and forms a pleasing object in the landscape.

The engineer to the company, from the time of the Parliamentary application to the completion of the bridge, was Mr. M. O. Tarbotton, M.Inst.C.E.; and the contractors have been as follow:—For the stonework, masonry, and timber piers, Mr. Wm. Smart, of Nottingham; for the ironwork, Messrs. A. Handyside & Co., of Derby; for the toll-house, Mr. D. E. Lynam, of Nottingham.

The chairman of the company, Mr. H. Martin, J.P., opened the bridge with the following lines:—

> Firm in our purpose, true to our intent,
> With this our bridge at length we span the Trent.
> With you, Tarbotton, Smart, and Handyside,
> The dangers of the flood we may deride.
> To try a passage o'er it we invite,
> And guarantee you safe by day and night.
>
> Advance, my friends, this day is Waterloo,
> Eighteenth of June,—it is our opening too;
> Open I now proclaim the bridge to be,—
> To-morrow we take toll, to-day you're free.

ST. MARTIN'S CHURCH, LEWES ROAD, BRIGHTON.

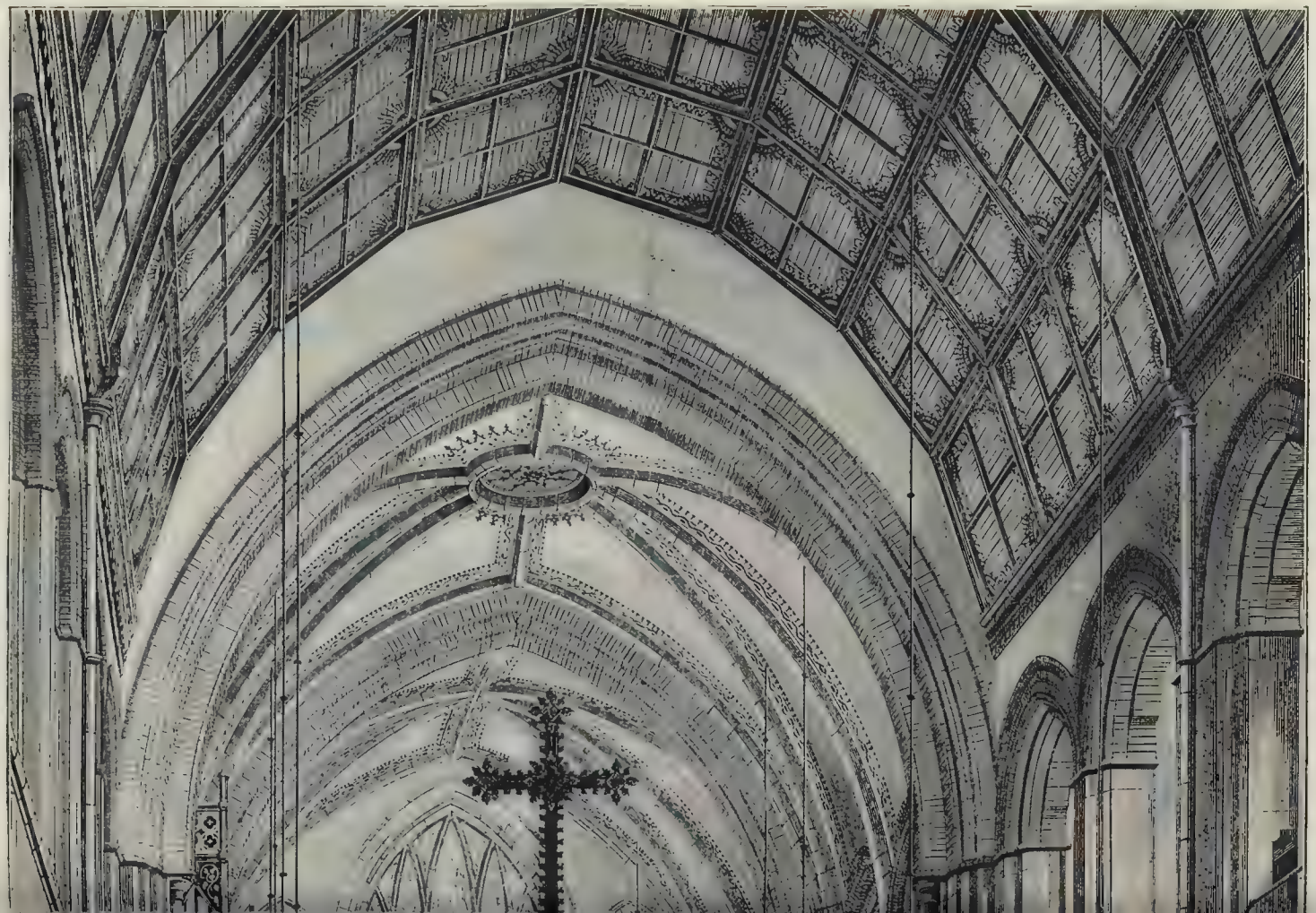
THIS church, which was consecrated on the 1st of May last, has been built by the sons of the late vicar of Brighton, the Rev. H. M. Wagner, to the memory of their father. The architect is Mr. Somers Clarke, jun., and the building is of unusual size for a modern parish church, being 174 ft. 4 in. in length internally, and 69 ft. 6 in. between the aisle walls. The clear width of the nave and chancel is 40 ft. The height from the nave-floor to the ridge of the ceiling is 70 ft., and to the ridge of the roof 83 ft. The tower will be oblong in plan, 50 ft. by 26 ft. 6 in. It will stand over the chancel, but at present is only built up as far as the roof. When complete, it will be about 150 ft. in height. The church is built of brick, with constructive features in Darley Dale and Portland stone, the internal wall-surfaces being plastered. The most notable feature in the interior is the high altar, with its approach of ten steps, and lofty reredos, shown in our view. The reredos is of wood, enclosing large oil paintings, which combine into two groups, the lower symbolising the Incarnation, the upper the Atonement. The pictures are by Mr. H. E. Wooldridge, and the carving, both of the reredos and the rood and its beam, are by Mr. J. E. KNOX. The woodwork of the reredos is gilt. The furniture of the chancel is of mahogany. There are the usual choir-stalls, and above, on the right, is a gallery for a band, and on the left will be the organ, which is now being made by Messrs. Hill. The top of the low screen and several other parts of the chancel are of Sussex marble. There is a second altar-table in the small chapel on the right of the chancel. The present fittings of the nave are temporary, except the font, which is of Sussex marble, enriched with agates and other stones, the gifts of various friends. The font stands on a raised platform, and is surrounded by a rail. Over the principal entrance is a group in terra-cotta, by the late J. B. Philip. The church, as it now stands, has cost about 15,000*l.*

The following is the artist's description of the reredos:—"It is divided into twenty compartments, arranged in two rows, one above the other, and two smaller panels on each side of the altar. In the upper row of compartments the subjects are as follow:—Centre: figure of Christ on the Cross, not in agony (as the usual way of representing this subject is), but triumphant in expression, and crowned with a king's crown; below him stand St. John and the Blessed Virgin as witnesses, with their faces turned to the people; above, on the left, are St. Mary Magdalene and Mary the wife of Cleophas, and on the right the good centurion and the penitent thief. Then, in the first panel to the left, we have St. Mark, in yellow and green, and St. Matthew; and in the next and outermost the other two Evangelists, St. Luke and St. John; and, behind, St. Paul, with Phœbe and Priscilla. The first panel on the right of the centre contains Adam and Abel, the next Abraham, Moses, Elijah (a bronzed half-naked figure with a green drapery), Isaiah, and Ezekiel. The centre panel of the lower row is occupied by the Adoration of the Magi, with St. Joseph and St. Anna. The panels on the right of this are devoted to the chief personages of the old dispensation not represented in the upper row,—1st, Judges: Joshua, Gideon (with his cloak and lamp), Deborah; 2nd, Priests: Samuel, Aaron, and Eleazar; 3rd, Kings: David, Hezekiah, Josiah; 4th and 5th, minor prophets. On the left will be found personages notable in Church history,—1st, the Fathers: St. Jerome (in his traditional cardinal's dress), St. Gregory (wearing a mitre, as Bishop of Rome), and St. Ambrose; 2nd, monastic characters: St. Francis of Assisi and St. Thomas Aquinas, the great founder of the system of theology still taught in the universities; 3rd, Royal persons: St. Elizabeth of Hungary, St. Margaret of Scotland, St. Louis of France, and King Charles I. of England. In the 5th panel we come down to modern times, with the missionary bishops, founders of the six chief colonial churches; and in the 6th are represented modern worthies and benefactors of the Church Bishop Wilberforce, Mr. Keble, Mr. William Gibbs; also three persons in whom the people of Brighton will feel an interest: Mr. Joshua Watson, Mr. Mitchell, and the late Vicar, Mr. Wagner. The four smaller compartments below contain the chief champions of truth against Paganism,—on the left, St. George, St. David, St. Andrew, and St. Patrick; and on the right Judas Maccabæus, Judith, and the three Holy Children, Shadrach, Meshach, and Abednego. The upper row of figures, while they are divided into panels by the carved work which surrounds them, are more or less connected by a landscape, the horizon of which runs across the whole width of the reredos. In the lower row the same result is obtained by means of the dark curtain upon which the coloured figures are relieved."

INJURY TO BUILDINGS BY LIGHTNING.

DURING the last fortnight scarcely a part of this country but has suffered severely from the effects of lightning. Houses and barns have been burnt down, church-steeples and high chimney-stacks have been struck, lives have been lost, and cows, sheep, and pigs have been killed wholesale. Indeed, scarcely a provincial paper but chronicles some fatality from the electric fluid. Our electricians have in vain proved that copper lightning-conductors, if not absolutely preventive, are in the main a great safeguard against the danger; for owners of property and others still neglect providing their dangerous buildings with conductors. As regards churches it would, perhaps be a fair estimate to state 80 per cent. as unprotected.

One singular property of the electric fluid, not hitherto observed, is, that leather boots are a great attraction,—in many cases the lightning actually tearing them off men's and women's feet. This year the same fact is recorded; and in one case the owner of the boots escaped without injury. This incident might be followed up to advantage by electricians. At Hackney Marshes, a man was killed, his boots stripped, and two holes in the ground were found where the boots were struck.





ST. MARTIN'S CHURCH, LEWES ROAD, BRIGHTON.——Mr. Somers Clarke, Jun., Architect.

THE RESTORATION OR REBUILDING OF WORCESTER GUILDHALL.

A SPECIAL meeting of the Town Council to consider the question of repairing, restoring, or rebuilding the Guildhall, and to make orders thereon, was held on the 15th inst. The minutes of the last meeting having been confirmed, the Mayor read the following letter which he had received in reference to the business which the Council were about to consider:—

"Understanding that the question of rebuilding or reconstructing the Guildhall is to be brought before the Council on Tuesday, I write to say that I still rely on their good faith to employ me for the work, since I was awarded the principal premium in the competition. And I also wish to mention, having the highest opinion of the professional skill and experience of your city surveyor, Mr. Rowe, to whom, if the competition is to be ignored, the execution of the work would ordinarily be entrusted, and who has consented to act with me, I shall have great pleasure in carrying out the work conjointly with him.

I cannot but express my regret that any professional gentleman, when a competition was invited, instead of fairly entering the lists, and so submitting his design, should *subsequently* bring it forward; and I think in honour it should be rejected. And as regards the only plan for the reconstruction submitted in competition, as its author has himself abandoned it by submitting new designs, I think it should be considered as withdrawn.

Will you please lay this letter before the Council?

CHRIST. G. WRAY, F.R.I.B.A., Architect."

Some other letters having been read, Councillor Airey moved the following resolution:—"That in any plan that may be adopted for rebuilding, re-constructing, or otherwise altering the Guildhall, the Council is of opinion that the present front should be retained." In moving this, Mr. Airey expressed his earnest hope that deference would be paid to the recently-declared opinion of Sir Gilbert Scott with regard to the retention of the present front of their hall. He (the speaker) wished to retain the two Charleses, and he believed that the Corporation would incur the odium of many gentlemen of taste in the town, if the present front was destroyed. Mr. E. L. Harrison seconded. On being put to the vote it was lost. The following, on the motion of Alderman Edward Webb, seconded by Councillor Williamson, was declared to be carried:—"That for the purpose of more fully considering the question of rebuilding and reconstruction of the Guildhall, the Chairman of the various committees be added to the Survey, Building, and Property Committee, and that they have power to call in professional aid if they think it necessary, and to report thereon."

THE WATER SUPPLY OF LIVERPOOL.

IN the *Builder* of the 17th of April, we referred to the present water supply of Liverpool, and to two alternative proposals of Mr. Bateman, C.E., for a further supply from Bleasdale and Wyredale, in the neighbourhood of the rivers Wyre, Brock, and Calder, and also for obtaining a supply from the Cumberland lakes.

At the request of the water committee of the Corporation, Mr. Bateman has just furnished the committee with a second lengthened and elaborate report, in which he makes several important and highly-interesting statistical statements as to the future required supply of water for the increased population and trading necessities of the town. The committee desired Mr. Bateman to give his opinion with respect to the Wyredale and Bleasdale projects, more especially with reference to the cost of a reservoir of sufficient capacity to compensate for twelve millions of gallons of water per day from Wyredale, and the cost of conveying that quantity of water per day from a store-reservoir, including the cost of the requisite filter-beds. The committee also desired him to report as to the cost of supplying eight millions and three-quarters, and thirteen millions and a quarter of gallons per day respectively from the Bleasdale, or Brock and Calder sources. In complying with this request, as will be seen below, Mr. Bateman makes some interesting comparisons between the Wyredale and Bleasdale, and the Cumberland lake projects, intimating a continuance of his preference for the latter.

Mr. Bateman goes into a detailed statement to show that the Wyredale project, complete and independent, including a compensation reservoir, and the site and construction of the Liverpool store-reservoir, would cost 1,340,000*l.* for 12,000,000 gallons; and that the Bleasdale project would involve an outlay of 1,376,000*l.* for 13,000,000 gallons of water per day. The two schemes combined would supply the town with about 25,000,000 gallons per day, for a gross outlay of 2,716,000*l.* He adds, however, that to this must be added the cost of filtration, which must be capitalised at 4 per cent. in order to compare the cost of these schemes with that from the Cumberland lakes. Filtration of the whole quantity, taken at 250*l.* per annum on each million gallons per day (which was a low estimate of the cost) represented a capital sum of 155,000*l.*, making the total cost, for the purpose of comparison with the Ullswater scheme, 2,871,047*l.* for 25,000,000 gallons of water per day.

Adverting to the Ullswater project, he remarks that the cost of the first 10,000,000 gallons of water per day, should that scheme be carried out jointly with Manchester, would, in equal proportions, be 1,815,256, including interest on outlay and other expenses. The cost of the second 10,000,000 gallons would be 605,417*l.*, making a total of 2,420,703*l.* for 20,000,000 gallons per day. From this point every succeeding 10,000,000 gallons up to a total of 40,000,000 gallons per day would cost from 600,000*l.* to 700,000*l.* In comparing the cost of the Bleasdale and Wyredale projects with the Ullswater scheme, he had omitted all cost of filtration in the latter, because the water would be collected in the purest possible condition, and would require no outlay for filters, nor any annual cost in filtration, as no process of that nature could possibly improve the water. The water supplied to Glasgow from Loch Katrine was not filtered, but was strained through fine copper-wire gauze before it was finally passed into the pipes which delivered it to the inhabitants.

He next refers to the water now at the command of the corporation being 17,000,000 gallons per day, from the Rivington sources and the wells together, and states that Mr. Deacon, the borough water engineer, estimates that this will be the quantity from all sources in 1884. He next shows from a conclusion recently arrived at by the water committee themselves, that, looking to the increased population and demand for water, 3,140,000 gallons per day, in addition to the 17,000,000 gallons which the town at present possesses, will be required in 1884. Assuming the committee's calculations to be relied upon, that 3,140 gallons per day of an additional supply will be the most that will be required in 1884, he admits that the Bleasdale and Wyredale projects together would be sufficient for the wants of Liverpool for many years to come, and probably last as long as it would be prudent to look forward to. Mr. Bateman, however, doubts the soundness of the conclusions at which the committee have arrived, and estimates the future requirements of the town at much more than those set down by the committee. He observes that he has always been a consistent advocate of a constant supply of water, and at the same time of its economical distribution, but that experience has taught him how difficult it is to suppress waste, and to keep down the water-supply of a town to its legitimate dimensions. But beyond this, there was an undoubted increase in the quantity of water properly consumed. Baths, water-closets, personal ablution, house cleanliness, garden-watering, and the use of water for public purposes, all contributed to swell the demand for water beyond that which formerly existed. These causes, as well as the demands for trade, were constantly on the increase, and must be taken into account in looking to the future. Mr. Bateman then goes on to show that from the increase which is now going on in the consumption of water in Liverpool, the consumption in 1884, when Mr. Deacon, the water engineer, estimates the population at 856,000, will be 25,000,000 gallons per day, including what will be required for the purposes of trade, which must increase, and that after 1884 the probable annual increase will be from 800,000 to 1,000,000 gallons per day. Under these circumstances he asks what will be their means of meeting this demand? The Wyredale and Bleasdale projects completely carried out, which would add together 25,000,000 gallons of water to their present stock, might be expected to last out their wants for about twenty-five years, but long before that time they must have gone far to get any additional supply, and they might, therefore, expect little or no rest for the next generation in their endeavours to meet the wants of their constituents. "If," says Mr. Bateman, "you are satisfied that twenty-five years are as long a period as you are justified in looking forward to, then your most economical course is to carry out the Bleasdale and Wyredale projects. If you think it your duty to look beyond that time, and to secure an abundant supply of excellent water for a much longer period, then I must recommend you to go to Ullswater, from which district you will obtain upwards of 20,000,000 gallons per day for an outlay of 2,420,000*l.*, while you will get the same quantity from Bleasdale and Wyredale for 2,320,000*l.*, being a difference of 100,000*l.*, a sum which is utterly insignificant when compared with the advantages of the larger scheme."

Referring to the views held by those who believe that there is plenty of water to be obtained by pumping, Mr. Bateman says he understands that an opinion is held by some inhabitants of the town that none of these expensive schemes are necessary, but that they had under their feet an abundant supply of excellent water in the new red sandstone rock, which might be extracted by deep wells and pumping-stations. In opposition to this opinion, Mr. Bateman shows, from a report made on the subject, in 1850, by the late Mr. Robert Stephenson, that the sandstone generally is pervious, and that there is no probability of obtaining the required supply. He also proves by figures that the cost of wells and pumping-stations would be greater than that of any of the other schemes, and that as the water supplied would be in the immediate neighbourhood of Liverpool, and come from the surface, it would carry down with it the pollution caused by the sewage of the town and the manure of the country, and deteriorate the quality of the water extracted.

Mr. Bateman's report is now under consideration, and it is expected that one or other of the schemes recommended will be shortly adopted.

METTLACH TILES FOR FLOORING.

IN a communication to the *Sprechsaal*, the organ of the German glass and pottery industries, it is stated that mosaic tiles as made in England have not the perfect angularity possessed by those made in Germany, especially by those manufactured in Mettlach, in the Rhine Province, and that the former, although well burnt, lack the metallic hardness of the latter, which, on being struck with a flint, emit sparks. It is further asserted that the layer of colour put on English decorative tiles is very thin, and soon wears off. Large quantities, it is said, of German tiles are annually exported to England, America, &c.,—a sure sign that they are appreciated in those countries. The best kinds of German tiles are those made at Mettlach. They are manufactured of clay which, when well burnt, renders them porcelain-like; they are of various colours and designs, and are used for flooring, decorating façades, and other ornamental work. They were first introduced by Villery & Boch, of Mettlach, and have since then become widely known as "Mettlach tiles." They are stated to be constantly increasing in favour, attributed to their excellent quality, and the prettiness and pleasing effect of design. A second manufactory was established at Mettlach several years ago, and they are now also made in Belgium, and at Dresden. In 1871, another manufactory was set up at Sinzig, on the Rhine. As the demand greatly exceeds the supply of these tiles, it is surprising that the manufactories are not more numerous.

The causes of this scarcity may be sought for in the difficulty of the manufacturing process, as also in the qualities necessary to form a good tile. Well-made tiles should be perfectly straight and rectangular, should have no smooth surface, but, at the same time, should be perfectly level, and none of the laid-in coloured parts should be higher or lower. Tiles should also be of the same size and thickness; there should be no difference in colour; they should not absorb any water, or only very little; and, lastly, they should be lasting.

To prevent as much as possible their bending during burning, Mettlach tiles are made by the dry process. An hydraulic press, served by two men for plain tiles, and producing 1,000 tiles per day, has been made expressly for their manufacture. The moulds, of cast iron, in which they are pressed, are somewhat larger than the size intended, to allow for shrinking in burning. For common tiles, of one colour, used for paving trottoirs, the mould is simply filled with the pulverised clay mass, and the latter pressed. In making coloured tiles, moulds producing depressions, marking out the design intended, are put in before pressing the mass. The number of workmen employed at the press differs with the number of colours to be laid in; great care and extreme accuracy being of course necessary in the manipulation.

As dry-pressed clay tiles do not possess the required density and firmness, even if a good plastic clay is used; and as, on the other hand, they do not shrink in the same degree as the colours put on, a porphyry-like feldspar is added in the manufacture of Rhenish tiles. The amount of flux added depends upon the descriptions of clay used, which are generally those occurring at Vallendar, near Coblenz.

The coloured masses are prepared in a similar manner, by adding a colouring matter. For light shades, white or grey burning clays are employed, which are shaded by the addition of protoxide of cobalt, chrome-green, or other fire-proof oxides; for yellow descriptions, those turning yellow in burning; for red, those containing oxide of iron; for black, the latter, with an addition of manganese. Beautiful blue, as well as pure yellow, shades are most difficult to produce. These colouring matters should have the same shrinkage as the clay mass.

The pressed tiles are put together, six or eight in a seggar, like those used in burning plates of stoneware and porcelain manufactories. They are burned in furnaces with back-draught. The burning process lasts generally sixty hours, the temperature being gradually increased, the cooling likewise taking place gradually.

BARRACK BUILDING.

THE War Office have delayed year after year building new barracks, in the expectation that the cost of labour and materials would decline. Government now finds that, instead of a diminution in wages, each year *that* "article" is rapidly rising, and that the longer they wait the worse off they will be; and, what is more, good masons, bricklayers, and carpenters prefer to work in the metropolis, and will not take country jobs unless tempted.

The engineers are now, however, hurrying on the contemplated heavy works, and an official from the War Office visited the city of Durham last week in quest of a suitable site for the new barracks for the northern district, and has selected a large area of ground. The barracks will be required to afford accommodation for two regiments of the line, and the Staff of the North Durham and South Durham militia. The proposed barracks are now to be commenced with all the speed of siege-works.

The War Office has just issued specifications to a select number of contractors for the erection of barracks and other premises required for the accommodation of the troops to be assembled at the double military centre at Pontefract, where a site of about eleven acres has been obtained. The tenders must be sent in before the end of the present month, and the contract completed by August, 1877. It is roundly estimated that the cost of the work will be 70,000*l.* or 80,000*l.* Accommodation will be provided for 700 or 800 men.

NEW GRANGE TUMULUS.

THIS ancient relic, four miles west of Drogheda, in Ireland, was discovered A.D. 1698, by a person named Campbell. During the ensuing year, Mr. Edward Lloyd inspected this cave and its passage, which Dr. T. Molineux described in vol. xxvii. of the "Philosophical Transactions," according to Mr. Lloyd's description. The passage was low at and near the entrance, but gradually higher towards the cave, which Mr. Lloyd deemed to be about 20 ft. high, having a deep cell, or recess, on each side, and one northward, opposite to the entrance. Each of the cells on the right and left side then contained a large stone bason. Mr. Lloyd stated that bones of animals, and part of a stag's head were found in this cave, and that a coin of the Emperor Valentinian was picked up on the tumulus. Dr. T. Molineux subsequently asserted that two human skeletons were found in this cave, in an eastward position. "The London Archæologia," vol. ii., 1770, and Higgins's "Celtic Druids," contain the description of this relic, by Mr. Pownall. Sir R. Hoare, in his "Irish Tour," 1807, described this relic, with an engraving of the cave entrance. These authors and Mr. Lloyd deemed it to have been a place of ancient sepulture, and the author of "Beauties of the Boyne" believed that it was rifled by the Danes, A.D. 862. The tumulus, formerly surrounded by large high pillars, some of which I saw extant, A.D. 1869, was stated by Mr. Pownall to cover about two acres of land in a curvilinear form, its highest altitude being about 72 ft. The author of "Beauties of the Boyne" stated the height of this cave to be 19 ft. 6 in., and 18½ ft. long south to north, by 22 ft. east to west, including the cells, the passage being 63 ft. long, and on an average 3 ft. wide, but narrower near the entrance, and varying in height from 2 ft. at the entrance to 6 ft. and 8 ft. nearer the cave, where the two stones forming the adit to the sacellum are 7½ ft. and 7 ft. high. The passage is composed of twenty-stones on the right, and of twenty-two stones on the left side, which vary in height from 2 ft. to 7 ft., being 2 ft. to 2½ ft. broad. On these stones are large supporters of masonry, one of which is 17 ft. long and 6 ft. in width. The cave is an octagon; but Sir R. C. Hoare stated that it contained an area of a circle about 17 ft. in circumference. The northern recess was floored with a stone 6 ft. 8 in. long, and 4 ft. 11 in. broad. The eastern recess is 8 ft. deep, 9 ft. high, and 7 ft. broad. The two other recesses are smaller. The average width of the passage is 3 ft.; but only 26 in. wide at 13 ft. from the entrance. The roof of the cave is similar to that adopted in early buildings, before the principle of the arch was adopted in architecture. The author of "Beauties of the Boyne" suggests that "were we to strip the chamber and passage of the mound, to remove the domed portion of the cave, and to replace the outer circle where it is deficient, we should have presented to us a monument not unlike Stonehenge."

In "Vallencey's Coll. Reb. Hibernica," vol. ii., p. 211; in Wakeman's "Archæologica Hibernica," in Ledwich's "Antiquities of Ireland," in the "Kilkenny Archæological Society's Journal," and in the "Archæologia," vols. ii. and xxx., this relic is described, with engravings of the sculpture, &c., on the stones. It is to be regretted that the interior of this relic is not as accessible as that of Gav'r Innis is to visitors. It merits notice whether the access to the cave at New Grange might not be rendered more accessible and easy. CHR. COOKE.

FROM WOLVERHAMPTON.

A NEW vicarage has been erected for St. Mark's parish, at a cost of 2,000*l.*, exclusive of the site. The amount has been raised by voluntary contributions of the congregation and their friends. The building is of red brick, with Bath stone dressings, the roof being covered with brindled Broseley tiles, and contains dining-room, 22 ft. 6 in. by 16 ft.; drawing-room, 19 ft. by 15ft.; library, 15 ft. by 15 ft., with separate entrance for parishioners; kitchen, 16 ft. by 14 ft., with china and service pantries, larder, scullery, and the usual out-offices. On the one pair floor are:—Boudoir, five bedrooms, bath-room, w.c., and linen-closets; in the attics, two large bedrooms, and box-room. The entrance-hall is spacious, and laid with tiles. Near the garden entrance is a lavatory; and next the parishioners' entrance is a servants' staircase.

The works have been carried out by Mr. H. Lovatt, contractor, from designs and under the superintendence of Mr. Veall, architect, both of Wolverhampton.

THE LATE JOHN SEVERN WALKER.

WE hear with much regret of the death of Mr. John Severn Walker, of Stuart's Lodge, Malvern Wells. Mr. Walker was seized some time ago with an attack of paralysis, and he gradually sank under it. Mr. Walker was sprung of an old yeoman's stock in this county. According to the *Worcestershire Chronicle*, he was educated under Messrs. Lea & Perrins for a chemist and druggist, which business he carried on for a period. But having inherited a competence, and being possessed of a strong love of architectural and archæological pursuits, he retired from business, and in retirement devoted himself, with great energy and application, to these studies, which were truly a labour of love with him. With the aid of his attached and sympathetic friend, Mr. W. J. Hopkins, he had begun to build, at the time he was stricken with his fatal malady, a Gothic house for himself, after his own heart, at Malvern Wells. The deceased gentleman filled, for many years, the office of secretary to the Worcester Diocesan Architectural Society, of which he may be said to have been the animating spirit. His reports on the subjects of church restoration and re-edification will be remembered by their always honest and candid, if sometimes over severe, criticism. His acute exposition of the incongruities, eccentricities, and defects in style and taste of the premiated design for a new Guildhall, and his earnest plea for the retention of the front of the existing edifice first operated to divert the local public from running after idols. For this the Worcester public are indebted to the late Mr. Severn Walker; and by the mouth of Sir Gilbert Scott, R.A., the correctness of his views as to the preservation of this front has since been fully established.

JAMES DOWLING.

A FEW artists and friends were last week gathered around the open grave of one who was lately bright and at work amongst them,—the grave of James Dowling, one of the old school of miniature-painters, whose portraits were successful as likenesses, while their high finish and careful drawing command for them a superior place in that now much neglected style of art. He has died deeply lamented, and his memory will be held dear by numerous friends who will long retain a vivid recollection of his high principles and integrity, combined with much refinement of nature, which never showed to greater advantage than when he was full of wit, song, and anecdote in general society.

THE METROPOLITAN BOARD OF WORKS AT LAW.

DISPUTED LIABILITY.

AT Lambeth Police-court, the Rev. J. F. Lingham, rector of St. Mary's, Lambeth, was summoned for having neglected to pay 1*l.* 15s. and 38*l.* 8s. 2d., the cost of surveying and shoring up a structure known as the wall of St. Luke's Churchyard, Norwood. Mr. Biron, barrister, appeared in support of the summons, and Mr. Meadows White, barrister, on the part of the defendant.

The application was made under the Dangerous Structures Act, and the contention was that the defendant was liable to pay the expense of the survey, and also of the hoarding and shoring of the wall of the churchyard of St. Luke's, which was certified to be in a dangerous state. About twelve months since a summons was taken out at this court, and Mr. Chance made an order that the work should be done, and, in default, the Metropolitan Board of Works be empowered to carry out the same and recover the cost. The Board had the work done, and now sought to recover the same from the rev. defendant, on the ground that in law he was "the owner of the churchyard" and responsible for it being kept in proper repair.

Mr. Biron cited authorities in support of his proposition. The district was created in the 58 Geo. III., and the church established in 1823, in consequence of the increase of the population. At a vestry meeting in 1819 it was resolved to build four new churches known as St. John's, Waterloo-road; St. Mark's, Kennington; St. Matthew's, Brixton; and St. Luke's, Norwood.

Mr. Meadows White did not dispute that the sum claimed had been expended, but he submitted that St. Luke's was distinct from the mother church of St. Mary, and that the incumbent of St. Luke's was responsible. It would be very hard indeed on Mr. Lingham that, being the rector of the parish church, he should be made liable for all the four churches as well as the mother church.

Mr. Ellison said he was of opinion that the defendant was not responsible, and dismissed the summons. If it was desired he should go through the Acts of Parliament he would do so, and would adjourn the case for that purpose.

Mr. Biron said he did not desire it, and would accept the decision of the Court.

An application was made for costs on the part of Mr. Lingham, and Mr. Ellison ordered Mr. Lingham to be paid 5*l.* 5s. for costs.

The Board of Works seem often to be very unfortunate in their legal affairs. But what about the poor Rector? We hear that he had to expend 50*l.* in the defence, and the magistrate could only award him 5*l.* towards it!

THE SUGGESTED UNION OF THE INSTITUTE AND ASSOCIATION.

SIR,—Your last impression contains mention of the message sent to the Architectural Association from its committee, as to the suggested amalgamation with the R.I.B.A. The remarks made subsequent to Mr. Lewis's paper give the key to the negative tone adopted by the sub-committee.

The student-members of the profession, finding their masters continually breaking faith both in the letter and spirit of their "articles," naturally have no confidence in the future of an Association in which the masters' voice might by any chance be the ruling influence.

This is no doubt somewhat justified by circumstances; but if pupils who feel themselves aggrieved would make, say a shilling subscription, they could readily obtain an authoritative legal decision as to how far an architect is bound to *teach* his pupil under the usual form of inden-

ture: this would effectually set the question at rest, and in future "articles" both parties could make the necessary alterations to suit their purposes, and those under existing terms would know their legal position and rights.

The question is, therefore, I am afraid, looked at from one side only: take another view.

It is granted on all sides that it is most desirable the profession of architecture should have a thoroughly representative society at its head, somewhat similar to the Law Society. In the new council of this reconstructed institution, there is no reason why the junior members of it should not be as thoroughly represented as they are now in the committee of their own Association.

The ordinary meetings of both societies are now very nearly equal in all respects, and could continue to be of the same character.

The various classes of design, construction, &c., could go on without any change.

The circulating library could be much increased, while the more bulky and valuable works could be for reference only.

Under these circumstances, neither the Institute nor the Association would individually lose much; while the gain to both, and the profession at large, would most certainly warrant the necessary little sacrifice of pride, and so on.

If you consider it worth while to insert this letter I should, with your permission, have pleasure in submitting detailed regulations calculated to embody the wishes and suggestions, and I hope meet the approval, of both societies.

R. E. P.

THE RYDE TOWN COUNCIL AND PARTY WALLS.

SIR,—I am much pleased to read in your valuable journal that you consider the recent resolution of the Ryde Town Council "*unwise*," and I may say, judging from the local papers, that there is great dissatisfaction on the part of the leading ratepayers upon the course the Corporation have adopted. I see that a local correspondent, signing himself "Safety," does not mind telling them plainly what he thinks of their doings, and in concluding expressed a wish that a letter should be written to the *Builder* to expose their wrongdoings. Although I do not happen to be a ratepayer, I am closely interested in property there, and in the good of the town, and it grieves me to find a Corporation encouraging the erection of "unsafe" houses, for such a course brings discredit upon a town.

From what I can learn it appears that there have been very hard quarrels at Ryde, and a few years ago, the majority of those *now in the Council* were called upon to resign, and *did so*, in connexion with a matter as to the purchase of the gas works. Well, it appears that up to that period the bye-laws which required that *all* party walls should be carried up through and *above* the roofs had *not been enforced*. At this time a new council was elected, composed of several of the leading gentlemen of the place, and a new surveyor was also elected, and a better state of things was inaugurated; in fact, the bye-laws *were* enforced, and after a few summonses, the builders settled down comfortably to carry them out. Unfortunately the newly-constituted council retired last November, and the old ones managed to get in again, and afterwards the new surveyor left, having obtained a better appointment, and the person who formerly filled that office was again elected; the consequence being, that at a small meeting the other day, where nearly half of the majority for *not* enforcing the bye-laws were, it is stated in the local paper, "*either builders, dabblers in brick and mortar, or supporters of jerry-built houses*," the resolution in question was carried. It is suggested that (the present corporation being unpopular) this course is adopted with a view to getting the builders of these gingerbread houses to "vote right" next November. It is therefore very clear that it is a *party-wall* question in an election point of view only, instead of structural.

Now, sir, is it not a scandalous shame that such matters should be left to the discretion of an *utterly incompetent* body of men? The mayor is a surgeon, and great professor of sanitation, but he always votes with his "party," and there were but three men present to oppose this "invitation to break the law," and all for what purpose?

One of the three gentlemen is an architect of very many years' standing, and all honour to him for the resistance he offered to the passing of the resolution; but it all went "in at one ear and out at the other" of those who had attended purposely for undoing a good work.

Sir, in Ryde, in consequence of the neglect of the council in former years, there are hundreds of what are termed "jerry-built" houses, having *4½ in. party-walls only, with no walls through the roof, and totally insecure against fire*; and does not this recent action of the Council make one wish that an Act of Parliament should be passed making such works compulsory, the same as vaccination, registration, &c.?

AN ADMIRER OF THE "BUILDER."

A COTTON MILL, SOWERBY BRIDGE.

PROSPECT MILL, burnt down in 1873, has been re-erected in a substantial manner, and is again partially at work. It is an immense structure, being 55 yards long and 31 yards wide, whilst the rooms are all lofty, well lighted, and well ventilated. There are fourteen windows on each side of the building, and ten at each end, and as these are some 8 ft. by 5 ft., a great volume of light is poured in, and even in the middle of the rooms, which are of such great width, there is ample light for the workpeople to perform their most delicate operations. The architect for the building has been Mr. T. W. Helliwell, of Brighouse, who has built a great many mills in the neighbourhood, and his designs have been carried out by Messrs. Gledhill & Turner, masons, Sowerby Bridge. In each story, and running in line with the window-heads entirely around the building, are ashlar throughs, which give a solidity to the whole structure. Another improvement has been introduced into the new mill, and one which will not only be a great convenience, but will conduce materially to the safety of the workpeople, in case another fire should unfortunately break out. This is the construction of a second staircase from top to bottom. When the mill was destroyed by fire, there was but one staircase, at the south east-end of the mill, and this was left intact after the conflagration. A second one has now been made, completely of iron, at the north-west corner, so that there is ample provision for the safety of those employed. The two lower rooms of the mill are fireproof, whilst those above are underdrawn and whitewashed, the pillars and beams throughout being painted light blue. Between each bay, in every room, are ventilators, covered on the exterior with lattice-work. These are provided with doors, and can be opened or closed at pleasure. The rooms are about 13 ft. 6 in. high, so that they present a marked contrast to many of the old-fashioned mills of the neighbourhood, and must be considerably more conducive to the health of those employed in them. On the north side of the mill are the south and cotton rooms, which are fireproof from base to roof, and separated from the main building by two thick walls and a staircase. Iron doors are also applied on each floor, instead of the wooden ones formerly in use. There are a hoist and well at the south-east corner of the building, and on the north side there is a ventilation shaft, into which is drawn all that loose material which flies off cotton when in course of manipulation. This is accomplished by means of a fan-exhauster, attached to openings in the floor of each room. In the former mill the boilers were under a portion of the fabric, but now this is not the case, and they occupy a house to themselves. In this provision has been made for three boilers; but only one has been placed. It is an ordinary two-flued boiler of 40-horse nominal power, working up to a pressure of 80 lb. to the square inch if necessary, made by Messrs. Pollit, of Bolton. Some Galloway tubes have been placed in it, and it is fired by one of Vicar's patent smoke-preventers. Messrs. Ramsden have also adopted Green's Economiser, in which water can be heated to 300 degrees before it has passed into the boiler.

Lincoln Diocesan Architectural Society. This society held its annual gathering at Grantham on the 16th and 17th inst. At ten o'clock an excursion party of the members of the Society started from the Church Trees, to visit the following places:—Somerby, Ropsley, Humby, Lenton, Irnham (where lunch was provided and partaken of), Corby, Burton Coggles, Bitchfield, and Boothby. The Ven. Archdeacon of Stow acted as the cicerone of the party, and as each place was visited described the principal features of the buildings, ecclesiastical and lay, which were inspected.

NEVER TOO LATE TO MEND.

It is gratifying to chronicle that the great landowners of the North of England are at last sensible that the cottages on their estates have been, from time immemorial, a disgrace to civilisation; and that the day has arrived when, if they do not improve on their own account, legislative measures will compel them to abolish their uncleanly pigstyes and hovels.

The Duke of Northumberland was one of the first to set the good example, and during the past week the Duke has personally inspected the tenantry on his estates at Whitley, Culvercoats, Tynemouth, North Shields, and Percy Main. So far, certain portions of land are to be laid out in sites, and offered specially for building about 300 workmen's cottages; whether any are to come down or be improved is not yet known; but it is a good beginning.

MONUMENTAL.

The Joseph Evans Memorial at Worsley.—The monument designed to perpetuate the name of Joseph Evans, botanist, of Boothstown, was uncovered on the 12th inst. It is placed over the remains of the deceased, in the burial-ground attached to St. Mark's Church, Worsley, near the west end of the church, and is composed of polished red granite from Peterhead quarries, and stands 9 ft. high, on a polished red granite plinth 2 ft. 10 in. square, upon which stands a moulded base; above this base is the plain part of the monument for the inscriptions, which are four in number, one on each side, deeply cut and gilt. Above this part is a moulding, from the top of which the monument is carried from a square to an octagonal form, from which rises a spirelet forming the upper part. The spirelet is ornamented at its base with four gablets, and terminates with an ornamental cross on a moulded base. The monument will be surrounded by a blue stone coping, and planted all round with flowers. The design is by Mr. Samuel Derbyshire, of Worsley, by whom also the work has been executed.

The Carmichael Statue for Dundee.—The full-sized model of this statue has now been finished, and consigned to the hands of Mr. Hutchison's founders, who have undertaken to produce the work in bronze within about four months. Though the figure, which is in the sitting posture, has a height of 11 ft., the whole will be turned out at one casting, with the exception of the head, which will be cast separately, and sent to the artist for careful retouching.

Memorial of the late Rev. Wm. M'Clure, Derry.—In the vestibule of the First Presbyterian Church, Derry, there has been erected a mural tablet in memory of the late Rev. William M'Clure, who for nearly half a century was the pastor of the congregation of First Derry. The memorial is Classic in style, harmonising with the architecture of the building. The background is of black Belgian marble, about 8 ft. high. The base is heavily-moulded Sicilian marble, carried on carved brackets, surmounted by a panel bearing the inscription, having on each side trusses of white statuary marble, with a moulded cornice of Sicilian marble. The upper part of the tablet is composed of blocking, with raised centres, bearing the crest of the deceased, supported on each side by carved trusses, above which stands an urn of white statuary marble. The work was executed by Mr. Robert Kell, sculptor, from a design by Mr. William M'Elwee, architect, both of Londonderry.

Statue of the late M. Van de Weyer.—The *Louvain Gazette* says that the jury to whom was entrusted the decision upon the merits of thirteen models sent in for competition for the memorial of the late Belgian Minister, have decided that the statue and pedestal by M. Charles Geefs is worthy of being erected, and that the statue and pedestal by M. Vanderlinden, of London, has merited the prize of 1,500 francs.

A New Wesleyan Chapel at Windsor.—The Wesleyan Methodist body at Windsor are about to erect a new chapel, at a cost, including the purchase of the land, of about 7,000*l*. The site of the building is the corner of the Alma and New roads. The building will be in the Gothic style, and will provide accommodation for 650 persons. There will also be rooms for conducting the Sunday School. The architect is Mr. Morris, of Reading.

THE KNIGHTSBRIDGE BARRACKS NUISANCE.

AGAIN and again, in years gone by, we have called on the authorities to rid the Knightsbridge-road of this nuisance, eyesore, and damage. All agree that it ought to be swept away, and yet there it remains. On Saturday last the Knightsbridge Improvement Committee, consisting of residents of Prince's-gate, Queen's-gate, Belgravia, and Knightsbridge, waited upon Lord Henry Lennox, First Commissioner of Works, at Whitehall-place, for the purpose of securing its removal.

Lord Alfred Churchill introduced the deputation, and read a memorial from the residents in the districts of Prince's-gate, Queen's-gate, Belgravia, and Knightsbridge, to represent the constant annoyance and disgust they felt at the discreditable condition of the Kensington-road in proximity to the Knightsbridge Barracks. They suggested that the plot of ground on which the barracks stand would, if vacant, obtain an enormous sum, probably sufficient to purchase ground in a less valuable spot and pay the cost of new barracks, and also pointed out that there is no spot in London where an improvement has been so extensively and influentially sought, and where the grand result would be so conspicuous and satisfactory.

Mr. Lowe, M.P., said the last Government had determined that the barracks should be cleared away.

Many objections to the continued existence of the barracks were urged by the different speakers, and in reply Lord Henry Lennox promised to do his utmost to press upon the Government the necessity of the removal of the barracks.

The barracks have been, for many years past, condemned both by military and medical authorities, and, at the present time, scarlet fever has manifested itself among the troops, and the children of the soldiers spread it in the locality.

STEALING BRICKS.

GEORGE THORN, 35, bricklayer, was indicted at the Middlesex Sessions, on the 18th inst., before Mr. P. H. Edlin, Q.C., assistant judge, for stealing 2,278 bricks, the property of Mr. Thos. Andrew Walker, trading as Messrs. T. & C. Walker, contractors, of Victoria Chambers, Westminster.

The prosecutor is the contractor for the East London Railway, in the construction of which a large number of bricks are required, which are conveyed by carts from Free Trade Wharf to Wapping. The prisoner, who is a builder in a small way of business, lives in a street on the line of route between the two places, and one of Mr. Walker's workmen, named William Vincent, having seen another workman named Brown, *alias* Hoppy, emptying a cart-load of bricks at Thorn's house, communicated with his employer. A search was made by the police, and the number of bricks mentioned in the indictment was found in the prisoner's cellar.

Mr. Montague Williams said that unfortunately the prisoner had yielded to a sudden temptation, and as this was the first time in which he had been placed in so painful a position, he trusted that the Court would deal as leniently with him as possible.

The Assistant Judge said that it was a most serious offence to tempt servants to rob their employers, and he should therefore pass sentence of six months' imprisonment with hard labour.

MASTERS AND MEN.

MR. FELIX WALKER, builder, of Leatherhead, appeared to a summons at Lambeth, for refusing to pay William Norman, a carpenter, the sum of 3s. 5d. alleged to be due to him for wages. This was a case which very greatly interested both master and servant. The complainant was a carpenter, and commenced work for the defendant on Tuesday, the 1st inst. Nothing was said as to what wages were to be paid. On the following Saturday he received one hour's notice to leave, and defendant offered him 8d. per hour for the work he had done. The complainant refused to accept such a rate, and demanded 9d. per hour as being the usual wages for carpenters.

Mr. Chance asked complainant if he had any arrangement with defendant about wages before commencing to work, and he said he had not. Mr. Chance said according to that admission complainant commenced work and went on until the end of the week before complaining as to the price he was to receive. He then demanded 9d. per hour, which defendant refused to pay as his terms were 8d.

The defendant said he could see complainant was not worth even 8d. per hour, and called two witnesses to bear out that statement as well as to show that others employed were not paid more than 8d. per hour. It was also shown that complainant had been told before the Saturday that the rate was 8d. per hour.

Mr. Chance said cases of the kind were lately being brought before him, and it was extraordinary that men prior to commencing work did not inquire what rate of wages was paid. It would be very hard upon masters to have such demands made. He dismissed the summons.

West Wittering Church. — The ancient parish church of West Wittering, near Chichester, is undergoing thorough restoration.

BELL, BUOY, AND LIGHT.

FROM earliest days, I remember well the historical story, "The Inch Cape Bell"; moored off the Cape, to warn mariners of old, by ocean's perpetual motion 'twas tolled. Whether storms raged, or light breezes fell, unceasing the dong from the Inch Cape Bell. What was useful and merciful, would be a boon now. Not to be deemed silly, to moor one off Scilly, I trow. A lamp could be added,—a brilliant red light,—ears and eyes appealed to each cloudy night. Should a ship foul this beacon, no harm to deplore, the light would be blighted; bell ring as before. In Humanity's name, yea up, dare, and do; devise and contrive to save ships and crew. Lives, precious lives, fast sink 'neath the waves; men not to be spared find too early graves.

R. T.

THE ENFORCEMENT OF CHARGES FOR PAVING.

THE apportionment among owners of houses of the expenses of paving streets is frequently the cause of disputes between the authorities and the persons called upon to pay. The local authorities have power,—in the Metropolis at least,—to summon any persons refusing to pay their proportion of the cost, before a magistrate, but the discretion of the magistrate in such a case has not hitherto been defined. A decision in the Court of Queen's Bench (Nesbit, appellant, *v.* Board of Works for the Greenwich District, respondents) has just been given, ruling that the magistrate before whom such a case is brought has no power to decide whether such a claim is just or not.

The appellant had been summoned before a magistrate for refusing to pay 21*l.*, the amount to be contributed by him towards the paving of a street in which a house, his property, was situated. The expenses had been estimated by the Surveyor to the Board at 447*l.*, and the appellant objected that the apportionment was not correctly made, and that its principle was not right and fair. The respondents urged that the magistrate had no power to go into the question of the principle on which the apportionment had been made; and the point was reserved for the superior court.

The Court, comprising Chief Justice Cockburn, and Justices Blackburn, Mellor, and Field, ruled that whether the apportionment was right or wrong, the magistrate could not review the principle on which it was made.

STAINED GLASS.

Edinburgh.—The filling in of the third of the series of stained-glass windows for the choir of St. Giles's Cathedral is completed. The window is in the north aisle, and has been erected to the memory of Robert Stevenson, the engineer of the Bell Rock Lighthouse and other similar important undertakings, the inscription being:—"In memory of Robert Stevenson, F.R.S.E., F.G.S., Engineer to the Northern Lighthouses; born at Glasgow, 1772; died at Edinburgh, 1850. Erected by his sons, 1875." The three main upright lights are subdivided by a transom, and terminated at the top with flowing tracery. Throughout the three upper compartments the design is illustrative of "The Entry into Jerusalem." The triumphant crowd, bearing aloft their palm-branches, and strewing the ground with their garments and flowers, form, with the calm central figures of our Lord and his attendant Apostles, an effective composition. In the tracery are angels bearing scrolls, with the prophecy of Zechariah, "Behold thy King cometh unto thee. He is just, and having salvation, lowly, and riding upon an ass." The three under compartments contain respectively representations of Christ purging the Temple, Christ preaching daily in the Temple, and Christ commending the poor widow at the Treasury. As in the former windows, the design is in accordance with the general plan of the Restoration Committee, which is to have in the choir windows a complete illustration of the life of our Lord. The whole has been carried out under the direction of Mr. Robert Herdman R.S.A., by Messrs. James Ballantine & Son George-street.

Oundle.—An additional stained-glass window has been placed in St. Peter's Church, over the west door. Viewed from the chancel, it presents, in the left-hand light, a full-length figure of St. Peter, surmounting the text,—"Feed my lambs." In the right-hand light is the figure of St. Paul, representing the apostle's conversion. The window, executed by Messrs. Clayton & Bell, has been erected as a thankoffering by the Rev. John Creeser, who was formerly curate, in 1870, to the late vicar of Oundle.

Worksop.—The first of a series of stained-glass windows has been put in the new Church of St. John by Mrs. Watkin, widow of the late Mr. Robert Watkin, of London. The window is on the south side of the chancel, and has been erected as a memorial. The two principal figures are, Our Saviour standing with the Book of Life in His hand, and with the print marks on the nails on His feet; and of St. John leaning on the breast of Christ. Underneath are two medallions representing Mary coming to the Sepulchre, and finding the Saviour missing; and St. John and our Saviour. The artists are Messrs. Lavers, Barraud, & Westlake, of Bloomsbury. The east window has also been filled with characters, representing the leading traits of our Saviour's life (occupying three panels) at the expense of Mr. C. G. S. Foljambe, underneath which is the memorial inscription.

Stalybridge.—A stained-glass window, executed by Messrs. Mayer, has been erected at the east end of Dukinfield chapel, near Stalybridge. The window is divided into three lights, and represents the following parables:—The Prodigal Son, the Sower, the Good Samaritan, the Wise and Foolish Virgins, the Pharisee and Publican, and the Talents.

Horncastle.—A stained-glass window, to the memory of the late vicar, has just been placed in the west end of the north aisle in St. Mary's Church. The subject is taken from the life of St. Peter, and is divided into three compartments, with suitable texts beneath each panel. The south-west light represents the "Call of St. Peter,"—"Fear not, from henceforth thou shalt catch men." In the centre is the "Charge,"—"Thou art Peter, and upon this Rock I will build My Church." In the north-west is "The Deliverance from Prison,"—"Arise up quickly." The dress of St. Peter is of dark green, with a lilac mantle, and is the same in the three subjects. In the window-head tracery on each side is an angel bearing a scroll, with the texts, "Feed My Sheep," "Feed My Lambs." In the centre is a half-size figure of our Saviour lifting up His hand in blessing. At the bottom of the window, in gold-coloured letters, on a dark ground, is the inscription. Mr. Preedy, of London, supplied the window.

Leeds.—A stained-glass window, in memory of the late Mr. Edward Rooke, who was one of the patrons of the Leeds Parish Church, and of his widow, has just been placed at the west end of the north gallery of the church by the members of his family. The whole window is new, the old mullions having been replaced by work of a somewhat lighter character, although the general style of the former window has been retained. The glass has been supplied by M. Capronier, of Brussels. The new window is divided into three principal compartments, the smaller lights above being filled in with figures of angels in various attitudes of praise, and scrolls. The chief centre compartment represents our Lord in the act of his Ascension, and the scroll in connexion with it contains the passage, "Ye shall receive power after that the Holy Ghost is come upon you." To the right the Resurrection is depicted. An angel in white raiment is sitting on the opened tomb, and the scroll contains the words, "He is risen: He is not here." To the left our Saviour is addressing some of his followers, and the words on the scroll are, "I am the Resurrection and the Life."

Freemantle (Southampton).—A coloured window has recently been added to the west end of this church, through the liberality of Mr. Robert Ingram, one of the churchwardens, by Messrs. Bailey & Mayer, of London. In the upper light is represented the trial of Abraham's faith in the offering up of Isaac. In the four lower openings are the prophets Isaiah, Jeremiah, Ezekiel, and Daniel, an illustration of an event in the life of each of them being depicted underneath. Several of the stone pillar capitals, bosses, and corbels, in the interior of the church have recently been carved in floral devices, by Mr. Munday, of Freemantle.

Belton (Lincolnshire). — A stained glass window has recently been placed in the north side of this ancient church, making the fifth in the same edifice. It is erected to the memory of the late Mr. R. R. Dixon, J.P., and is the gift of his widow, Mrs. Dixon, of Beltoft. Groups of figures represent the question of the tribute-money (Matt. xxii.). On the top portion of the window are two monograms, containing the letters, "R. R. D.—R.R.L.D.," and the whole is surmounted by a representation of the family coat of arms. The work has been executed by Messrs. Wailes, Son, & Strang, of Newcastle.

Taunton.—A memorial stained-glass window has been placed in the east end of the Cemetery Episcopal Chapel, Taunton, by the Rev. H. G. Rogers, formerly senior curate of St. Mary's, Taunton, and now vicar of Cranbourne, Dorset, to the memory of his father, Mr. George Rogers,

late of Roughmoor, near Taunton. The window is of Flemish workmanship, having been executed at Bruges, and consists of three lights, or compartments, the subjects illustrated being the Crucifixion, Resurrection, and Ascension.

Towcester.—A stained-glass window has been erected in this church by Miss Drayson, of Pattishill House, in memory of her brother, Mr. Thomas Drayson. It is placed on the south side of the chancel, and its subject is the Ascension. The window is of three lights, the centre light being occupied by our Saviour, and three disciples; with figures of the eight other disciples filling in the side lights. The base is filled in with three angels holding scrolls, bearing the words,—"The same Jesus which is taken up from you into heaven shall come in like manner as ye have seen him go into heaven." Messrs. Ward & Hughes, of London, were the artists.

Long Sutton.—A memorial window of stained glass, in memory of the late Mr. Adderley Howard, has just been erected at the east end of the nave of the parish church. The window is divided into five compartments, each division representing two types or passages from the Old Testament. The artists were Messrs. Ward & Hughes, of London; and the architect, Mr. J. W. Smith, Adelphi, London; the masonry being completed by Mr. W. Brown, of Lynn. The cost is about 600*l.*

CHURCH BUILDING NEWS.

Appleton Wiske (near Northallerton).—This ancient church has been restored and reopened. The original walls, south doorway, and chancel arch (the latter Early Norman work) are in good preservation; but the modern roof, gallery, windows, pews, and flooring were very dilapidated. The ground outside having gradually been raised above the plinth-course, and the old church being neither spouted nor drained, the place was damp and cold. The old walls are of Osmotherley stone, 3 ft. thick, dressed facework inside and out, and some curious mural inscriptions were discovered on removing the plaster, which are now made visible. The old gallery has been taken down, the dilapidated roof, windows, and pews removed, and the ground outside lowered. A new traceried open-timbered roof of pitch pine, and new traceried windows of Early English character, glazed with obscured white quarries, have been introduced. The seats are open benches of pitch pine, varnished. The gables have been raised, and a new bell-turret added, the old bell, dated 1621, being re-hung. Much, however, yet remains to be done. Mr. W. Stead was the architect.

Dudley.—The corner-stone of a new church has been laid at Dudley with full Masonic ceremonial. The church is to be erected in the place of the iron church, which has for some time inadequately supplied the requirements of the crowded neighbourhood of the Docks and Wellington-road. Messrs. Davies & Middleton are the architects, and Mr. W. Nelson is the builder.

Bracebridge.—The restoration of the Parish Church has just been completed. The improvements consist in new roofs, floors, and seats throughout; cleaning and pointing the east side of the tower; new arcades and aisles to north side of the nave and chancel,—the latter for the organ-room and vestry, the usually monotonous line of lean-to roof being broken by a small gabled transept, containing children's seats. The roofs are tiled, and have stone copings and crosses. The ridge tiles are copied from those originally used. The doors, desk, screens, vestry fittings, and chancel stalls are of oak, the remaining fittings of deal. The alleys are paved with 4-inch red quarries; the chancel with ornamental tiles. A new three-light window is inserted in the east end. Cathedral rolled glass, in small squares, in varied tints, is used for the glazing. The pulpit and reredos are of stone. A new base, shafts, and caps, have been added to the stem of the font, and the whole fabric has been thoroughly cleaned, repaired, and pointed, except three sides of the tower, which are deferred for want of funds. The inner surface of the walls and the spaces between the rafters are plastered. The warming is effected by Porritt's underground stove in the nave, with pilot stove in the vestry. The work has been executed under the direction of Mr. J. T. Pearson, of London, who is architect to the Dean and Chapter of Lincoln. Mr. R. Young, of Lincoln, was the builder employed, and Mr. Samuel Chivers the clerk of the works.

Hennock (Devon).—This church, some two miles from Bovey Tracey, has been re-opened after restoration. About a year ago Mr. James Wills, of Teignmouth, formerly a resident in the parish, undertook to restore at his own cost the inside of the church. The works consisted of new windows, floors, seats, pulpit, reading-desk, re-plastering the walls, repairing and restoring the ceilings, removal of galleries, opening out the tower arch, and substitution of low seats for high pews. After the moulded oak ribs of the aisle ceilings had been repaired and cleaned, the poor and bare appearance of the nave ceiling, induced Mr. Wills to direct the introduction of new moulded oak wall-plates, circular and longitudinal ribs and carved bosses to correspond with those of the aisles. A small portion of the nave ceiling retains a specimen of ancient work, consisting of gilded raised stars and other ornaments, arranged in diaper on a blue boarded ground; this portion of the work has been repaired and the new gilding and colouring made to harmonise with the old. The tower is now divided from the body of the church by a low glazed screen and the lower portion of the tower has been appropriated for a vestry. The walls of the tower, of good ashlar work, were left in their original state, but devoid of plaster. In the south wall of the church were discovered two doorways, one over the other, the lower giving entrance to and the upper exit from the staircase to the rood-loft. These doorways have been opened out and their jambs cleaned. The seats are of English oak, the ends moulded and cut, and the reading-desk and tower screen carved by Mr. Hems, of Exeter. Mr. Wills has placed a stained-glass window in the south aisle in memory of his two sons, and has also borne the expense of repairing the bells and their cage. Mr. John Chudleigh, of Exeter, was the architect, and Mr. R. Collings, of Chudleigh, the contractor.

Farley (Wilts).—Through the munificence of the Hon. Mrs. Fox Strangways (mother of the present Earl of Ilchester) a reredos has recently been erected at All Saints' Church, from the designs of Mr. Ewan Christian, architect. The church itself, constructed of brick, is interesting as being one of the few erected in this country during the seventeenth century. The new reredos occupies the whole of the east end (some 22 ft.), the extreme height of the central part, or reredos proper, being about 9 ft., and of the wings or sides some 5 ft. 6 in. The material used in the constructional part is Caen stone, but polished Devonshire marble, alabaster, and mosaic have been largely used in its embellishment. Over the altar are three panels, in which are mosaics from Signor Salviati's studio. These are flanked by pilasters of polished Derbyshire alabaster, and the whole is surmounted by a cornice, taking a semicircular shape in the centre, and having carved *paterœ* underneath. On either side of the altar-table are panels of inlaid Torquay marbles. The wings are panelled with Devonshire polished marble, in dressings of Caen stone, against which and supporting the same are alabaster columns, surmounted by capitals, ornamented by *paterœ*. The reredos has been made and placed *in situ* by Mr. Harry Hems, of Exeter.

Walsall.—The new church of St. George has been consecrated by the Bishop of Lichfield. The building is in the Early Decorated style. It is arranged to accommodate 677 adults, and consists of a nave, with clearstory, 98 ft. 9 in. long, 54 ft. high to the apex, and 29 ft. 6 in. wide, divided by five arcades for aisles, north and south, each 9 ft. 3 in. wide, and making the total internal width 53 ft. The chancel is 40½ ft. long, and 20 ft. wide, with an organ-chamber on the south side, divided from the chancel by a carved stone screen, and vestries on the north side. Entrance will be obtained by a doorway and porch on the south side of the nave, and an entrance and porch, surmounted by a tower and spire, 165 ft. high, on the north side; but the erection of the north porch, tower, and spire is, for the present, deferred. The exterior is built in coursed rubble work, with local limestone, with facings of Codsall and Penkridge stone. The interior faces of the walls are of local bricks, banded into the stone and plastered, with the exception of the plinths and a few bands of bricks about 1 ft. wide, which are of pressed bricks, pointed; as are also the relieving arches over the arcades, windows, &c. The internal facings are in Bath stone, except the piers to the arcades, which are of York stone, the capitals being carved. The floor is paved with encaustic tiles, excepting beneath the seats, which is wood. The roofs are of pitch pine, that of the nave being open timbered, and that of the chancel boarded and painted. The whole is covered with red Broomhall tiles. The windows are glazed with cathedral glass of several tints. The internal fittings are all open benches of pitch pine. A heating apparatus has been put in by Haden & Son, of Stourbridge. The structure has been erected by Mr. James Adkins, of Walsall, from designs and under the superintendence of Mr. R. Griffiths, architect, Stafford. Its cost, exclusive of the tower and spire, and the site, which was given by Lord Hatherton, is upwards of 7,000*l.*

Shedfield.—The foundation stone of the new church to be erected here was laid on the 24th ult. by Mr. Frederick Townsend, late of Shedfield. The church, which will be in the Gothic style of architecture, is to seat 1,000 people, and it is estimated that when completed it will cost little short of 4,000*l.* At present, however, only the nave and chancel will be built. The architect is Mr. John Colson, of Winchester; and the builder Mr. T. R. Knight, of Wickham. When the new church is taken into use, the old one will be pulled down, and the materials devoted to the erection of a parsonage-house on an adjacent site, which has been given by Mr. Townsend.

Luddington.—This little church has been reopened after renovation, the expense of which has been borne by the Duke of Buccleuch. The church is dedicated to St. Margaret, and consists of nave, chancel, south aisle and porch, with a west tower and spire. The architecture is chiefly of the Tudor style, dating from the fifteenth century, but there are the remains of thirteenth-century work in the buttresses at the west end of the nave, and in the windows of the chancel. The tower is a small one, and upon this a new spire has been erected. The roofs are all new. The gurgoyles have been restored, and also the parapets. The seats are chiefly new, and the old ones still in use have been restored. The floor has been taken up, and re-laid with Yorkshire stone, and the windows have been restored and newly glazed. The exterior stonework has also been re-pointed and that in the interior of the building has been restored. The old chancel, which was of modern construction, but in a dilapidated condition, has been taken down, and a new one erected. The old windows have been re-inserted, and an east window has been erected to harmonise with the whole. The floor of the chancel is laid with encaustic tiles, and there are new seats, pulpit, and reading-desk, carved English oak having been used generally. The altar is surmounted by a reredos, painted by Mr. Daniel Bell, of London, representing the Crucifixion. The work has been carried out from plans prepared by Mr. Carpenter, of London, by Mr. H. F. Allen, builder, of Leicester, at a cost of about 2,500*l.* Mr. Lucas was the clerk of the works.

Willoughby.—This church, dedicated to St. Mary, having been restored, has been re-opened by the Rev. Dr. Ryan, vicar of Bradford, formerly Bishop of the Mauritius. While the former architectural character of the building is still retained, internally a great change has been effected. The chancel has been entirely rebuilt from the foundations, the walls of its predecessor having been only 9 ft. high, with regular barn roof, flat plastered ceiling, with wooden east window. This has given place to a light and airy chancel, with a "cradle roof" of stained pitch pine, and a four-light east window, with stone mullions and tracery; the only relics of the past that have been retained being the sedilia and piscina, which have been refixed in the south wall. An organ-chamber has also been added to the chancel, occupying the site of what was formerly used as a vestry. A doorway on the south side and a belfry door have been stopped up, and the plaster which formerly covered the outer walls has been taken off, and the granite work re-pointed. Several of the windows have been restored with new mullions and tracery. The planking and leadwork of the roof of the nave are new, as is also the roof of the north aisle. The high-back pews have given place to low open pews of stained pitch pine, and the floor of the nave and chancel has been laid with flagstones, bordered with black and red Minton tiles. A carved oak pulpit and reading-desk have been placed on the south side of the chancel arch. The restoration has been carried out at a cost of 1,500*l.* Mr. Smith, of John-street, Adelphi, London, was the architect; and the contract was let to Messrs. Osborne, Bros., builders, Leicester.

West Derby.—The memorial stone of the "Thornton" chancel and chapel, in enlargement

of St. James's Church, West Derby, has been laid by Mrs. John Chorley Reade, of The Elms, West Derby. The additions will consist of the entire reconstruction and extension eastward of the chancel arch of the present church, viz.:—A chancel 41 ft. by 22 ft.; a north aisle, 26 ft. by 15 ft.; a corresponding aisle on the south side, appropriated as the organ-chamber and large vestries for the clergy and choir. The chancel arch will rest on two massive red marble pillars, and will be flanked with smaller arches into the aisles, the whole embraced by the wide single span roof of the nave of the church. The chancel will unite with the aisles on either side by means of a triple arcade resting on red marble pillars. The ceiling of the chancel is to be finished in wood graining, with moulded ribs and carved bosses, with a cornice and frieze. A quintuplet window fills up the eastern gable. This window will be filled in with stained glass, by Wailes, of Newcastle. Below the window will be a reredos of Caen stone, alabaster, and marble, in five panels. The benches for the choir will be of oak, carved and moulded. Besides the work at the east end of the church, the west end will be entirely remodelled. The designs have been prepared by Messrs. W. & J. Hay, architects. Messrs. Jones & Sons are the contractors, Mr. Barker doing the mason work, Mr. Holt the plumbing, &c., and Mr. Rogerson the carving.

DISSENTING CHURCH-BUILDING NEWS.

Dorchester.—The Wesleyans of Dorchester having decided upon building a new place of worship, consequent on the smallness of the old chapel in Durngate-street, plans were prepared by Mr. W. S. Allardyce, of Fordington, architect; and the contract of Messrs. Davis & Son, of Dorchester, builders, was accepted, their estimate amounting to about 3,000*l.* The site of the building, which is of the Italian style of architecture, is in South-street, where it has a frontage, one side of the structure running for some distance parallel with Durngate-street. The front is composed of Bath stone, in which is introduced an admixture of Ridgway stone. Over the entrance is a carved arch, and here a fine triple-light window is inserted, filled with plain glass. The seats, which are open, are constructed of pitch pine, stained and varnished, and there is accommodation for 400 worshippers, the children being seated in a gallery over the entrance. The floor of the chapel is laid with Portland stone, bordered with tesselated tiles from the Poole Pottery Company. The pulpit is of oak, carved. The building is very light, the windows, with the exception of an oriel window at the end of the building, being all filled with plain glass. A school-room is attached, with various other rooms for the teachers, meetings of classes, &c.

Liverpool.—The foundation-stone of a new church, intended for the use of the Welsh congregation, now worshipping in Arkwright-street, Everton, has been laid by Mr. Richard Davies, M.P. The site of the new building is at the angle of Shaw-street and Stony-hill, fronting the grass plot in front of Everton Toffee-house. The ground-plan comprises a nave 60 ft. long and 33 ft. wide; two transepts, 16 ft. by 7½ ft.; organ chamber, 13 ft. by 6 ft.; vestibules and entrances, 8 ft. wide, with an end gallery over the same, projecting 9 ft. into the body of the church. The interior of the roof will be wagon-headed with moulded pitch-pine ribs and beams intersecting below the plastering. Accommodation will be provided for 450 persons. The pews and other internal fittings will be of pitch pine, worked clean and varnished. All the entrances will be laid with tiles. The windows will be glazed with cathedral glass having coloured borders. The roofs will be covered with Bangor slates in two colours. The walls will be built of brick; the front and one side will be lined externally with Yorkshire parpoints, and all the dressings will be of Stourton stone. Most of the windows will have two lights, with quartrefoil between at the heads. The transepts will have large triple windows. The front elevation will have a central gable and two wings, the junction of the two presenting a bold buttress on one side, and on the other an octagonal turret carried up into a spirelet 70 ft. in height. The school-room will be 47 ft. by 33 ft., and 11 ft. in height; and there will also be a classroom and caretaker's cottage. The building will be enclosed with a low, battlemented wall and iron railings. The style adopted is Geometrical Gothic. The architect is Mr. Richard Owens. The estimated cost, exclusive of land, is about 3,000*l.*

Macclesfield.—On the 1st inst. the new Trinity Wesleyan Chapel here was opened. The site of the building is the highest part of the ground facing the west wings of the Infirmary in Cumberland-street. The style is Gothic; the material used is Tegsnose and Hollington stone. The tower and spire at the north-west corner are a height of 130 ft. In the front central gable, which adjoins the tower, and rises to a height of 62 ft., is the principal entrance, which has moulded jambs, columns and carved capitals, moulded and carved arch, and vestibule windows on each side. One of the gallery entrances also forms a feature to the front, the other gallery entrance being under the porch at the base of the tower. Over the principal entrance is a five-light window, with traceried head and stained glass border. At the back are vestries and school-rooms, forming side gables. The length of the interior (exclusive of orchestra recess at one end, and children's gallery at the other) is 76 ft., and the width 50 ft.; the chapel affording accommodation for 1,000 worshippers. The roof is formed of pitch pine beams and supports, having a semicircular ceiling in the centre. The outlay has been about 8,000*l.* Mr. George Roylance was the principal contractor, and the subcontractors were:—Mr. Firth, for the stonework; Mr. Davis, the plumbing; Mr. Wood, gas-fitting and ironwork; and Mr. Williams, the varnishing. The decorative work has been carried out by Messrs. H. & S. Chandley, Warrington. The architect was Mr. C. O. Ellison, of Liverpool.

Wakefield.—Seeing the necessity for a larger school and place of worship, the members of the United Methodist Free Church some time ago resolved to erect a new chapel and school at a cost of about 2,700*l.*, to be conducted on the voluntary principle—all sittings free. A site at the corners of Hatfield and Saville streets was secured, and on the 5th inst. the foundation-stone was laid. The main entrance to the building will be by a broad flight of steps from Saville-street. The body of the chapel will be 68 ft. long and 39 ft. wide, and will seat about 450 adults; at one end will be a gallery capable of seating 200 children, making a total of 650 sittings. Advantage has been taken of the rapid fall of Saville-street to place under the body of the chapel five class-rooms, large school-room, kitchen, heating-chamber, and other rooms, water-closets, &c., which are entered almost on a level with the school-room floor from the doorway at the lower end. At each end of the building from this floor extends a staircase to the chapel floor, the one at the left hand being continued to the gallery. The minister's vestry is placed on the mezzanine floor. The style of architecture is Gothic, adapted to the requirements of the plan. The roof will be of moderately high pitch; part of the principals, exposed to view, will be dressed and varnished, and will rest upon stone moulded corbels. The building will be faced with red pressed brick outside, with half stone dressings and blue Staffordshire brick string-courses. The seats will be radiating on plan. Mr. F. Simpson was the architect; and the work has been let to the following contractors:—Brick, Messrs. Flower, Brothers; joiner, Mr. Charles Squires; plumber, Mr. Brooke; slater, Mr. Rycroft; plasterer, Mr. Charles Driver; and painting, Mr. George Strafford.

New Wortley (Leeds).—On the 31st ult., Mr. Charles Watson laid the foundation-stone of a new Wesleyan Chapel at New Wortley. The new edifice, the site for which adjoins the present one, will be built of brick with stone dressings, the style adopted being the Early Gothic. Accommodation will be provided on the ground floor for 534, and in the galleries for 391, making a total of 925 sittings. The chapel will have an open-timbered roof, boarded, stained, and varnished, and will be well lighted. The present building is to be made into schoolrooms, and will be connected with the new one by a corridor, giving the scholars direct communication to the galleries without going through the body of the chapel. The building is to be inclosed by a boundary wall and palisades, and the outlay is estimated at 3,800*l.* Messrs. W. Perkins & Sons are the architects.

Reading.—A new Primitive Methodist Chapel, erected on a portion of the site of the late Union Workhouse, in Thorn-street, has been opened. The building is raised about 8 ft. above the street level, so as to obtain space for school and class rooms under the chapel. It has thus been necessary to excavate only about 4 ft. or 5 ft. The chapel is 32 ft. wide by about 50 ft. long, and will accommodate about 290 to 300 persons, and galleries can readily be placed, if necessary, at the sides and end. The chapel is fitted up with open seats, and a rostrum or raised platform for the minister having open ornamental balustrades in front, and a reading-desk. The exterior of the building is of a Romanesque character, and is faced with red brick, with white brick and Bath stone dressing. The cost was about 1,200*l.*, exclusive of fittings of school and class-rooms. Mr. Charles Smith, of Reading, was the architect; and Mr. Reavell, of Windsor, the builder.

Great Sampford.—The old Baptist chapel here was a very uncomfortable place. The walls were of lath and plaster; it had a double roof running from side to side; its width was 38 ft., length 32 ft. Inside was a flat ceiling, 16 ft. from the ground-floor. Two wooden pillars stood in the centre, to prevent the roofs from falling in. A gallery, containing four rows of seats, ran along three sides of the building. In the early part of last year the front wall was observed to be giving way, and it was therefore resolved to build a new chapel. Mr. J. Ward, of Saffron Walden, architect, accordingly prepared plans of a chapel, with 350 sittings, and a schoolroom behind for eighty children. This chapel will be 33½ ft. wide by 47 ft. long, the sides red brick with white rustics, the front white brick with red rustics. There will be two entrance-doors in front. The walls are to be 20 ft. high. It is to have a gallery across the front, and the roof open to the collar-beam. Facing the gallery will be the minister's platform, with baptistery in front, raised 18 in. above the ground-floor. The builder is Mr. G. Whiffen, Saffron Walden, whose tender is 795*l.*

Abingdon.—On the 28th ult., the Wesleyan Trinity Church, in the Albert Park, and which, during the last eighteen months, has been in course of erection, was formally opened for public worship. The building, upon which about 700*l.* have been expended, is in the Gothic style of architecture, and contiguous to it a school and a chapel-keeper's residence have also been built. The church consists of nave, transepts, chancel, organ-chamber, minister's vestry, tower and spire at the north-west corner and south porch. The clear length of the nave is 72 ft., and the width 37½ ft.; the width across the transepts is 66 ft., and the chancel is 34 ft. by 17 ft. The height to the ridge of the nave is 48 ft. The walls are built of native rag stone, with Bath stone dressings, and the spire is also of Bath stone, and rises to a height of 128 ft. All the timber work and fittings are of pitch pine, and the heating is with Woodcock's patent apparatus. The school-room is 65 ft. long, 22 ft. wide, and 28 ft. high. There are also two infants' galleries, and two class-rooms, with the usual offices. The work has been carried out under the direction of Mr. W. H. Woodman, architect, Reading, by Mr. King, of Abingdon, and Messrs. Symms & Co., of Oxford, builders; and Mr. W. Rogers, plumber, Abingdon.

The Law of Master and Apprentice.—At the monthly Petty Sessions at Easingwold, on the 15th inst., before Mr. F. Swales, Captain Waite, and the Hon. Payan Dawnay, a youth named Thomas Smith was summoned for having absented himself from the service of William Rymer Belt, builder and stonemason, Crayke, near Easingwold. The defendant had been in the employ of the complainant for three years, the master being under the impression that Smith was his apprentice. Defendant thought differently, however, and on the 26th of May last left his work and refused to return. Mr. Watson, who appeared for the complainant, said that it would be necessary for the bench to decide whether a certain writing (produced) was an indenture of apprenticeship or an agreement for service for the time being. Mr. Crumbie, in defence, contended that the document was an ordinary apprentice's indenture, that instead of bearing a stamp value 2s. 6d. it had only been stamped with a sixpenny stamp, and that unless the complainant would consent to pay the penalty of 10*l.* his case must fall through. The magistrates, being of opinion that the agreement was an indenture of apprenticeship, and invalid without the stamp, dismissed the summons. It transpired during the hearing of the case that large numbers of apprentices in the district, having been similarly "bound," could at once leave their masters with impunity.

UNSANITARY DUBLIN IN 1875.

DUBLIN improves in public buildings in a few of her leading thoroughfares, but the domestic architecture of the old city in its once fine business and private streets is woe-begone. Streets that half a century since could boast of a wealthy gentry and a sprinkling of nobles, are now from end to end let in tenements. Even twenty-five years since several of the streets to which we allude, on the north and south sides of the city, flanked on each side with well-built red brick five-story mansions, were inhabited by merchants, prelates, lawyers, and renowned public men, and the hall-doors of these mansions now swing ajar from early morn till night to accommodate the outs and ins of a dozen of families, who crowd their floors from basement to attic. The tenement lodger having invaded the finest streets, is preparing to shoot round the corners of the grand old public squares, and as we looked upon the palatial dwellings there a few days since, we almost concluded that melancholy, and something worse, had marked them for her own. Dublin is a semi-deserted city, the streets and pathways are never crowded as they were once, and save some public incident of note is occurring, one wonders how the host of small shopkeepers and business people live, for their business seems of a dead-alive sort. To be sure, the publichouses and taverns have a look of noisy trade and garish show, but the heart of Dublin is broken and hollow, and the keen wail of her many miseries is heard upon the winds. In a word, Messieurs, the capital of Ireland is municipally murdered,—her traders are pressed to the earth with the weight of taxation, and her working population in front and back streets, lanes and alleys, are poisoned by foul air, and encompassed by fouler dirt. We boldly challenge a denial. We have traversed the city, north and south, east and west, and her outlying townships, which now contain what should be the inhabitants of the city, but who have fled from it to escape taxation and dirt; and everywhere we have visited within the city we have met with similar pictures of decay, neglect, and dirt. Nuisances abound, and obstructions block the way; projects are rife, but sanitary action is almost *nil*, or, at best, make-believe effort. The street that is boasted of as the finest in Europe had tons of dirt on its surface; it is in a bad state of repair, full of ruts, and, when not seen enveloped in blinding dust, it is found covered with mud and muddy pools, under the action of a storm-shower, or the watering-carts of its corporate custodians. Leaving its streets, we passed into the council-chamber for hall of the rulers of the streets on a meeting-day, and, as a visitor, we saw the same want of order and business in the proceedings as we witnessed in the management of the city without. The purification of the Liffey and the main drainage questions were the questions before the house, but there was "no house"—not sufficient to constitute a quorum—until an hour after the appointed time. When business commenced at last, it was evident that there were hobbies to be ridden, and more than one party and spokesman of a party were determined to have matters their own way. In fact, the town-council meeting was a meeting for edification of the few and the disgust of the many; and it ended, as many meetings end in that hall, by references back, amendments, and adjournments. Thus has the subject of the purification of the Liffey been bundled and bandied about for years by the cross-purposes of men personally interested in their party moves, and utterly oblivious as to the lives of the inhabitants.

The present thrice-amended main drainage scheme, which the Corporation cannot carry out now without an amended Bill, is utterly beyond the power of the city to carry successfully through, under its present weight of taxation, which amounts to nearly 10s. in the pound. Were the interception of the sewage effected by parallel sewers, even then the health of the city would be far from what is needed. Before the intercepting sewers are constituted, the house and street drainage of Dublin need looking to. It may with truth be said that hundreds of the streets and thousands of the dwellings of the people are in a far worse sanitary condition than the Liffey, and the state of the latter is bad enough indeed. How can it be otherwise? The drainage connected with many of the old houses in Dublin lead nowhere or are choked up, and the house drainage of some of the modern cheap buildings in the skirts of the city is a mere make-believe. In the back-streets and lanes slops, refuse, cabbage-leaves, stable manure, and worse nuisances are to be found upon the streets, not lying for hours, but sometimes days, before they are carted away by the few scavengers employed. Many of the men who sweep the streets we found to be utterly broken-down creatures, scarcely able to hobble along with their brooms and shovels, and naturally trying, whenever opportunity afforded, to kill time as softly as they could. We repeat that many of these sweepers are long past their labour, and it is questionable indeed if it be a charity to employ them at the ratepayers' expense at the kind of work they are unable to perform.

The sewers that discharge their volume of filth into the river are not the only nuisances that pollute the Liffey. On either side of the river we witnessed the tumbling in of solid matter. Day and night hawkers of fish and vegetables pitch their offal into the river, watching a favourable opportunity for getting rid of it. At night much more refuse from premises along the line of the river is quietly got rid of, and winked at.

Any person who walks down the line of quays on either side will notice steaming water of various hues issuing from some of the sewers. When the tide is low, this hot water, which comes from some manufacturers' works, falls on the thick oozy mud uncovered on the foreshores, and up issues a thick fœtid or pestilential par-boiled stench, indescribable and perfectly staggering and suffocating. The tributaries of the Liffey,—the Camac and Poddle—empty hourly into the former an untold amount of the most foul and variously commingled filth; and from above Island-bridge, and between it and King's-bridge, sundry foul discharges from privies and other structures are cast or find their way into the Liffey. Added to this, there are other nuisances not taken cognisance of,—those which are discharged from some hundreds of vessels and boats in the harbour at a time when the tide is coming up the river. There should be a port and docks regulation in respect to ship nuisances, and the time and way for casting them out. It will be absolutely necessary whenever the intercepting sewers are completed; for if ship-nuisances be allowed, it only ought to be at the time of the receding tide. The Liffey, though much narrower than the Thames, has been, for long years, for nearly three miles of its length an embanked river. This work, however, was executed during the time of the old Corporation; but since the "reformed corporation" came into office under the Irish Municipal Reform Act, thirty-four years ago, the sanitary condition of the city and the river has not improved. The state of the river between Carlisle-bridge and King's-bridge has yearly grown worse and worse, and the water, which was pleasant to boat upon once, and tolerably transparent even in the heart of the city, is muddy and sickening now to the sight and smell.

The provision of public abattoirs or slaughter-houses was agitated more than a dozen years since, and recommended by the engineer of the Corporation, but they are still unprovided, the local body still continuing to perpetuate the old private licensing system, and at this moment slaughter-houses are being established at the back of some of the busiest thoroughfares. The markets, with one or two exceptions, are unfitted for their purposes, and are without proper sanitary appliances. The localities of some are decayed and dirty, and the markets partake of the same character. Indeed, some of the old meat and other markets were deserted altogether long since, and butchers, poulterers, fishmongers, and greengrocers are scattered all over the city and suburbs. The public squares of Dublin, whose opening we advocated in these pages some years ago, are still exclusive of the people as a body. St. Stephen's-green, the largest and finest, if opened for all would be a great boon, and daily admittance for the children of the poor of the overcrowded purlieus of Cuffe-street, South King-street, Stephen-street, and other adjacent localities, would help to win back the colour to their cheeks, and give strength to their weak lungs. With good public squares north and south of the city, the Corporation was some time ago moving in the matter of a people's park. The squares should be opened first, for, with the exception of the Phœnix Park, really a magnificent one, though rather out of town, there is no free park handy for the masses. Swimming-baths are wanted badly north and south of the city, and the Corporation have been afforded an opportunity of providing them by allowing the old city basins or reservoirs to be converted into swimming-baths, but this movement they opposed. Their excuse, unlike the old reservoirs, would not hold water. The gas supply of Dublin for a considerable time past has been very bad, and when occasionally a little better it is not uniform. The price charged recently to the consumers was exorbitant, and led to much angry feeling and newspaper protests. The Dublin Sanitary Association, a volunteer body, have performed some useful labour these two years past, by the visitations of their officers and their sanitary reports, but the Public Health Committee of the Corporation have thrown every obstacle in their way instead of aiding them and thanking them for their voluntary labour. The sanitary staff of the Corporation is partly made up by police constables or sergeants of police, who are said to be in some instances the owners of some of the worst tenement rookeries in Dublin; vile manure-depots are still maintained by the Corporation in different parts of the city, which are in themselves sufficient to foster a plague. It can hardly be for the profit made out of the sale of the manure that they are still retained, despite repeated remonstrance. The water of Dublin is fairly good, but the poor often suffer for the want of a continuous supply, and in many of the tenement houses the receptacles for holding it are small or out of repair, and often in a foul state.

To sum up, the sanitary condition of Dublin is bad as a whole; the greater portion of the old city is in dirt, and fast hastening to ruin; a third, perhaps, of the city is on the improve as far as public buildings and shop architecture are concerned, but the outlying townships possess the larger part of the gentry and others who would have contributed to the wealth and fashion of the city, had Dublin been municipally better ruled. This, then, is a slight picture of unsanitary Dublin of to-day. Of her improvements in an architectural and building direction, we may speak again, and of her appearance and progress under other aspects. She does not lack resources. There are genius, science, art, and skilled handicraft in her possession, but she moves slowly at best. Her own sons will not give her health, because her councils lack a right spirit, and the commonweal seems sacrificed to self.

PROPOSED SCHOOL FOR IMBECILE CHILDREN.

AT the last meeting of the Metropolitan Asylums Board, the Hampstead and Clapton Asylums Committee reported that they had under consideration the steps to be taken for obtaining designs and estimates for the erection of the proposed school for imbecile children at Dartford, and they now recommended that these be obtained by a competition of six selected architects, and that the following be invited to send in designs, viz.: Messrs. Pennington & Bridgen, Messrs. Giles & Gough, Messrs. A. & C. Harston, Messrs. Wyatt & Salter, Messrs. Lee & Smith, and Mr. Henry Currey. The report was adopted, on the motion of Mr. E. H. Currie, and the Board afterwards adjourned.

SERIOUS FIRES.

SHORTLY before midnight, on the 16th inst., the joinery establishment of Messrs. Dryden & Son, Gallowgate, Newcastle, were discovered to be on fire. On the Gallowgate side the workshops are only separated from two rows of dwelling-houses by a single wall, and when the fire began to assume an alarming appearance the tenants there at once removed their furniture into the street. Women and children ran about half-naked, presenting a scene of great confusion. About half-past twelve o'clock the roof of part of the workshop fell in, and the firemen then prevented the flames spreading to the adjoining workshops.

A fire broke out, on the 17th inst., on the woodwork of the new bridge across the Tyne, between Newcastle and Gateshead. The bridge has been building for several years past, and it was expected to be completed in two years' time. It has cost more than a quarter of a million. Sir William Armstrong & Co. had got up half of the ironwork for the swing portion of the bridge, which was supported by a wooden staging 200 yards long, and it was feared that when the staging was completely burnt the massive ironwork would fall into the river and endanger, if not pull down, the temporary

bridge. We are glad to learn, however, that the iron of the bridge has not been damaged, and little delay will take place in its completion. The damage is estimated by the commissioners at not more than 8,000*l.*, a considerable portion of which is covered by insurance. One man fell from a height of 95 ft. and was killed.

The Excise Board Stores, Dublin, and about fifteen houses adjoining, caught fire on the 18th inst., and the entire of Chambers-street was consumed. Several barrels of whisky were seized by the mob, and the military and police had to be called out to protect the property. A large quantity of whisky on fire ran along the streets. At the least estimate, 300,000*l.* worth of property has been destroyed. Four deaths have arisen from the excessive drinking.

On the 22nd inst., a weaving mill, situate in Newhall-lane, Preston, worked and owned by Messrs. Emery & Dyson, cloth merchants, of Manchester, was burned down between four and five in the morning. The damage, which is covered by insurance, is estimated at 20,000*l.*, and a hundred hands will be thrown out of employment.

DEMOLITION OF DOCTORS' COMMONS.

THE musty old buildings on the south-west side of Knightrider-street, known as Doctors' Commons, will be cleared away within the next ten days or a fortnight, when the former depository of untold "last wills and testaments" will be a tenement of the past. On Tuesday Messrs. Horne, Eversfield, & Co. sold the building materials of the houses and premises until recently occupied as part of the principal registry of the Court of Probate. The buildings consist of four houses in Knightrider-street, and one at the rear of them, abutting upon Queen Victoria-street, together with another separate structure in the rear, containing the strong room, in which, for so many years past, the documents containing the bequests of our forefathers were safely and securely deposited. The materials were divided into seventy-nine lots, and the aggregate produce of the musty and tumble-down old structures was a little more than 600*l.*, which was perhaps beyond the real value. As soon as the site,—which extends in a southward direction from Knightrider-street to Queen Victoria-street,—is cleared, it will be immediately sold for building purpcses, and, it is expected, will realise a considerable sum, in consequence of there being a frontage to Queen Victoria-street as well as to Knightrider-street. In the erection of the new buildings Knightrider-street will be materially widened and improved, the frontage being set back 8 ft. beyond the present line of elevation. Already several new blocks of substantial buildings have just been completed at the east end of the street, extending to the boundary wall of the old Probate Court buildings about to be removed; and it is understood that the new structures to be erected on the site to be cleared will be uniform with them.

THE DESTRUCTION OF COUNTY BRIDGES IN CHESHIRE.

NICHOLLS *v.* MARSLAND.

THE Court of Exchequer gave judgment in this case on the 12th inst. It was an action brought against the owner of an estate in the neighbourhood of Macclesfield to recover damages for the destruction of some bridges which were carried away by the overflow of water from ornamental lakes on the property during heavy rains. It was tried at the Chester Assizes some time ago, when a verdict was entered for the plaintiff, who represented the county authorities, the amount of damages awarded being 4,000*l.* Subsequently a rule *nisi* was obtained calling on the plaintiff to show cause why the verdict should not be set aside. The case was argued some time afterwards, and the Court now gave judgment in favour of the defendant.

Baron Bramwell (by whom judgment was delivered) said, he held the view that the defendant had done nothing wrong and infringed no right, and that she could no more be held liable for the destruction of the bridges by the bursting of the banks under the circumstances, than, as counsel had said, she could have been held liable for their destruction by an earthquake.

The other learned judges concurred, and the rule was made absolute, judgment being given for the defendant.

THE INSTITUTE SOIRÉE.

THE annual *soirée* of the Royal Institute of Architects took place on Wednesday last at the rooms in Conduit-street. There was a large attendance, and in the upper rooms as good a display as usual of objects illustrating various classes of design connected with architecture. Among furniture specimens was a buffet from the design of the secretary, Mr. Eastlake, and one or two good specimens of the same class of furniture were sent by two or three well-known firms. Messrs. Minton contributed some fine specimens of artistic pottery, and the art of Salviati was beautifully illustrated in some small but really artistic specimens of glass work. Japanese stuffs were rather in force, and one or two very fine specimens of this work were to be seen. Among the drawings lent for the occasion we noticed some of Mrs. Marrable's clever and artistic architectural subjects in water colour, and some good little drawings by Miss Thornycroft, especially "China Mania." Mr. Blomfield exhibited a series of ecclesiastical embroidery designs for a church in process of restoration.

Visitors were received by Sir Gilbert Scott, the president, in the up-stairs rooms; the rooms below being occupied, as usual, for refreshment and promenade. The band of the Coldstream Guards played a selection of music during the evening, under the conductorship of Mr. F. Godfrey.

PRESERVATION OF NAILS.

SIR,—Having a very large malt-kiln, I am desirous, through the medium of your valuable paper, of ascertaining the safest means of preserving the nails which fasten the laths and slates on the roof. The sulphur from the drying-kilns is acting to such an extent on the nails as to eat them entirely away, leaving the laths and slates quite loose. I was thinking of plastering underneath with weather lime as a preventive. If you can inform me of any better remedy I shall esteem it a great favour.

J. S. P.

COLOURING STONE.

SIR,—In answer to your correspondent of Saturday last, "Hussar," I beg to say that the "petrifying liquid" or "solution of silica" will serve his purpose. One cwt. will cover from 120 to 150 square yards,—three coats.

M. M.

SCHOOL BUILDING NEWS.

Cinderford.—New national schools, in connexion with a mission-room, erected by the Vicar of St. John's Church, have been opened in this parish. The larger room has been so arranged that Divine service can be held therein, and the Bishop has licensed it for that purpose. On the day of opening only the main room was completed, the class-room being uncovered. The building has been constructed of native red brick, relieved with Bath stone dressings. The main room gives a clear space of 70 ft. 6 in. by 18 ft., with separate porches for girls and boys, this being a mixed school. An infants' room has been provided, 30 ft. by 19 ft. 8 in., and is arranged at right angles to the larger room. At the end of the first mentioned is a recess with raised floor, having a convenient arrangement of shutters by which it can be closed off from the large room during the week, and form a chancel on Sundays. The architect was Mr. J. E. Jones, of Gloucester, and the builder Mr. J. Heavens, of Cinderford. The contract was 848*l.*, exclusive of extras. Accommodation has been provided for 221 children.

Chalvey (Slough).—A new infants' school is being built in the yard at the back of the present schools, to accommodate 100 children. Very little alteration to the present buildings will be involved, merely a few improvements being made in the ventilation, and some of the out-houses pulled down and rebuilt. The play-ground will be divided by a wall and gate into two portions, one for the girls and infants, and the other for the boys. The new building will be constructed of grey stock brick, with Bath stone and red brick dressings to the windows, and it will be made to assimilate as much as possible with the present schools. The existing boys' and girls' schools together were capable of accommodating 162, the average attendance being 138, viz., 75 boys and 63 girls. There were on the books 94 infants, and the only accommodation for them, separate from the girls' school, was a class-room capable of accommodating 45 at the most, and into which were crowded 70. The architects are Messrs. Edgington & Summerbell, of Windsor; and the builder is Mr. H. Liddiard, of Slough, whose contract is 445*l.*

ARCHÆOLOGICAL EXCURSION TO WALLINGFORD AND DORCHESTER.

THE Newbury Field Club and its sister society in the county—the Berkshire Archæological and Architectural Association—having selected the same route for their outing this month, a joint excursion to the above places was made on the 16th inst. The Newbury Field Club comprised some fifty ladies and gentlemen, who left Newberry at 9.33 a.m. by a train which, on arriving at Reading, was attached to a special train occupied mainly by the members and friends of the "Berkshire" Association, who numbered about forty, and proceeded to Wallingford, where Mr. Kirkby Hedges and other local gentlemen gave a cordial reception to the visitors. Mr. Hedges then conducted the party through the town to his residence, Wallingford Castle, which occupies a pleasant and elevated position. Here refreshments were served. Mr. Hedges then led the way to a small building in the grounds appropriated as a museum, the contents consisting chiefly of Roman and British antiquities found at various times on the site of the Castle and its surroundings. The party were next conducted to a ruin described as the site of the College of St. Nicholas (or King's Free Chapel), founded in 1327, the history of which was given. Mr. J. Parker, of Oxford, then addressed the assemblage at considerable length on the antiquity of the Castle and of Wallingford. Mr. Hedges next pointed out the ruins of a building known as the "Queen's private Chapel." The company then walked to St. Leonard's Church, with regard to which a few words were said by the Rev. W. Milward, who pointed out the marks of the fire during Cromwell's time, as presented in the stone-work. The party then proceeded to Dorchester, and alighted at the Abbey Church, on which the vicar (the Rev. W. C. Macfarlane) read a lengthy paper; after which Mr. Parker described its chief architectural features. A paper was also read by the Rev. J. Adams, on St. Birinus, with whose name the old church was associated. An excellent dinner was provided by Mr. Staples, of Newbury, and the party returned to Reading about 7.20 p.m.

Miscellanea.

Warrington Hospital, Infirmary, and Dispensary.—The ceremony of laying the foundation-stone of a new hospital, infirmary, and dispensary for Warrington, was performed on the 5th inst. by the ex-mayor, Mr. J. B. Pickmere. The new building is estimated to cost about 7,000*l.* Accommodation will be provided for between thirty and forty patients. Mr. Hatton, of Hatton, has endowed the institution with a sum of 10,000*l.*, and two of the principal donors to the building fund are Mr. Greenall, M.P., and Mr. Peter Walker, each of whose names appears in the subscription list for 1,000*l.* The plans have been prepared by Messrs. Pierpoint, Hughes, & Pierpoint, of Warrington and Widnes, and were sent in to the building committee in competition with other architects. The builders are Messrs. Gibson & Son, of Warrington. The style of architecture will be plain Elizabethan. The plan has been considered under four heads,—viz., 1. The hospital, or indoor patients' apartment; 2. The dispensary, or department for outdoor patients; 3. The administrative or part of building devoted to cooking and domestic purposes; and, 4. The wash-house, laundry, drying-stove, &c. The peculiar shape of the land has had much to do with the form of the buildings, and rendered it somewhat difficult to give to the divisions their proper aspect. However, by adopting the pavilion plan for the hospital, the other portions fell into their proper places better than they otherwise would have done.

A Wesleyan Chapel in Rome.—The Dissenters in Rome have apparently determined to beard the lion in his den, the Douglas in his hall. It will be recollected that a Baptist chapel was very recently opened under the shadow of the Vatican, and following upon this, it is stated that the Wesleyans are also going to build a new chapel there. The plans have been selected and the site is fixed, and, according to a Scotch paper, the structure is to be a very handsome one.

Elwes's Safety Slate.—The improvement in slate pavement, patented by Mr. Elwes, is designed to obviate some of its few drawbacks. It consists in cutting grooves or channels in the surface of the slabs, by appropriate machinery, arranged in different patterns, according to the positions in which the slabs are to be laid. These channels give a firm foothold in all weathers, whence the name, "Safety Slate"; they allow rain-water to run off as fast as it falls, thus providing a *dry* pavement, even during rain, and by breaking up the surface, produce a play of light and shade, which entirely relieves the dull deadness of common slate paving; and, by the due arrangement and adaptation of various patterns, may be made to yield a highly ornamental and artistic result. The grooves are made of various sections, V-shaped, trough-shaped, segmental, &c., and deep or shallow as may be desired. They are also arranged in a variety of different ways. Thus the centre of a courtyard may consist of a boss, ornamented with a series of intersecting circles, resembling the engine-turning on a watch. This may be enclosed in a square of plain slab, surrounded by a border of the lozenge pattern, alternating with strips of plain slab, and so on. In fact, the invention opens up quite a new field in "decorative paving," at a cost much below that at which similar effects can be produced by other materials. Slate slabs possess great advantages, and Mr. Elwes has certainly increased them.

The Late Mr. Elihu Rich.—An earnest worker and much esteemed man has passed to his rest. Mr. Rich was one of those who wrote and laboured much without his name appearing, but still he has written several works in his own name, the last being the history of the late war, entitled "Germany and France: a popular History of the Franco-German War of 1870-71," published by Cassell, and he was engaged at the time of his illness in preparing a life of Wilberforce. He worked twenty years for the firm of Smith & Elder, and edited their Monthly Circular for India. The list of his various contributions to periodicals, besides editorships, would be too long to give here. One of his more important labours was the voluminous index to the "Arcana" of Emanuel Swedenborg, which has been truly called a digest rather than an index, and Professor Bush characterised it as a grand work, and an enduring monument of judgment and diligence. A severe and distressing illness, causing suffering day and night for eight weeks, cut short Mr. Rich's career, and he expired on the 11th June, at Margate, where he was taken as a last hope of recovery. He was born on the 8th of October, 1818, and leaves a widow and nine children.

London and Middlesex Archæological Society.—At the evening meeting of this Society on the 17th inst., Mr. Waller in the chair, the Rev. F. C. Cass read a paper on "The Church and Parish of South Mimms." Mr. Cornelius Walford read a paper on "Measures for Protection against Fire in London in Early Times." Mr. Walford also entered into the history of fire insurance companies and various proposed patents for fireproof buildings. Around the walls were illustrative drawings and prints lent by Mr. John E. Gardner. Some of them are well known, but among the curities were original drawings of the destruction of the Houses of Parliament, taken on the spot, October, 1834; drawing of the destruction of the Old Custom House, 1814; drawings of fire-engines and fire-escapes, 1748; Hollar's views of the 1666 fire; the fire in 1769 of Covent-Garden Theatre, showing the burning of that part of the piazza never rebuilt; a drawing (1834) of the fireman's dog who used to run from one station to another to arouse the men; and drawings showing the old scarlet uniform of the fire brigade. We have before now spoken of Mr. Gardner's remarkable and interesting collections.

The Victoria (Philosophical) Institute.—A full meeting of this Institute was held on Monday evening, at the house of the Society of Arts, instead of the Society's apartments, 10, Adelphi-terrace. The Rev. Isaac Taylor, M.A., read a paper on "The Etruscan Language." After stating the causes which had made this language so long a mystery, the lecturer gave an account of the origin of the Etruscan alphabet, and of the information as to the nature of the language which is supplied by the bilingual inscriptions. He then gave an account of the inscribed dice, which he held to be the key to the Etruscan secret.

Northern Architectural Association.—The annual meeting of the Northern Architectural Association was held in the Old Castle, Newcastle-upon-Tyne, on Tuesday evening, the 15th inst., Mr. Gibson Kyle in the chair. The secretary (Mr. Olliver) read the annual report, which showed that the number of members was now fifty-seven, being an increase on the previous year. The financial position of the society was stated to be most satisfactory. Some correspondence from kindred societies was read, suggesting that all the provincial Architectural Associations should unite with the Royal Institute of British Architects, so as to form one united body, each association, however, still retaining its local powers. The correspondence was referred to the committee to bring up a report as soon as possible. The secretary reported, in reference to correspondence with the Corporation of Newcastle as to their surveyor's accepting private practice, that the town-clerk had informed him that the Town Improvement Committee and the Finance Committee had given notice to their respective surveyors, namely, Mr. Fulton and Mr. Lamb, that for the future neither they nor their assistants were to take any private practice whatever.

Withdrawal of the Ancient Monuments Bill.—In the House of Commons, on the 17th inst., in reply to Sir John Lubbock, the Chancellor of the Exchequer said that last year he stated, on behalf of the Treasury, the objections they entertained to the Bill then introduced by the hon. baronet. When the hon. baronet this Session introduced a Bill, which was substantially the same, he (not being able to be present) asked his hon. friend, the Secretary to the Treasury, to repeat in substance the objections which he urged a year ago. He could not hold out any prospect to the hon. baronet of his being able to support the Bill in its present form, but considering the interest which had been expressed on the subject, and having regard to the vote taken on the motion for the second reading, he should be ready to consult with his colleagues in the autumn in order to see whether the object of the hon. baronet could in any way be attained. Sir John Lubbock said that after the statement of the right hon. gentleman he would not persevere with his Bill in the present session. He, therefore, moved that the Order for Committee on the Bill be read and discharged. This was done and the Bill withdrawn.

Earthquakes.—Mr. Percival J. Brine, M.A., says,—"On my return from Mount Ararat, I stopped at Cairo and the Pyramids, to witness the Transit of Venus, on Wednesday, December 9, 1874. Ten days *before* the event, whilst living at Cairo, I predicted to some people there, and to whom reference can be made if necessary, that there would, in consequence of the Transit, *certainly* (observe the word *certainly*) be an earthquake at half-past seven o'clock on the same evening (the Transit itself was over at a quarter to nine in the morning), and that it would be felt at Alexandria as well as Cairo. The whole affair came to pass, and I *saw* and *felt* it myself; the only thing in which I made the least mistake, was in the hour. I predicted half-past seven, and the shock really took place at half-past eight o'clock. . . . . Earthquakes (which are but thunderstorms underground) are caused by the action of the *atmospheric* gases upon the gases of the *earth*, and the passage of Venus across the sun would naturally cause a chill or *contraction* of those gases. Here we have the earthquake."

The Manchester Carpenters and Joiners.—The questions in dispute with the Manchester and Salford carpenters' and joiners' trades are settled. The award of the umpire, Mr. S. Pope, is that the working hours are reduced to fifty-two during ten months of the year. The former working hours during that period were, from the 20th of February to the 20th of October, fifty-four hours and a half; from the 21st of October to the 20th of November, and from the 20th of January to the 19th of February, fifty-two hours. The rate of wages is increased from 8d. to 8½d. per hour, winter and summer. The old rule in respect of overtime remains unchanged.

Traffic in Tooley-street.—Mr. D. Munro, the inspector of nuisances, reported to the St. Olave's Board of Works last week, that 38,059 vehicles had passed Tooley-street in one week at the top of the street, and 21,840 near the Grammar School. The stoppages at the top of the street amounted to six hours and 16¾ minutes, and at the other end 62 hours and nine minutes.

Plants in the Soil.—At the Salford County Court, on the 15th inst., before Mr. J. A. Russell, Q.C., judge, William Henry Bird, of 18, Albert-street, Manchester, sued John Taylor, brick-maker and builder, Urmston, for the sum of 8*l.* 15s., the value of three vines. On the 9th March last there was a sale by auction at the defendant's house in Urmston, and the plaintiff purchased, just as it stood, the greenhouse and its contents. When he came to take the plants, flowers, &c., away he found that the vines, instead of being planted in a box, as he had imagined, were embedded in the soil, and the landlord refused to allow him to remove them. Hence, he sought now to recover from the defendant the value of the vines. The judge said that the law was thus:—Whatever was planted in the soil became part of the soil, and could not be removed. The plaintiff would be non-suited, and would perhaps be wiser in the future not to purchase at a sale anything which could not be removed.

Costs of School Buildings.—From a Parliamentary return which has just been issued, we gather that the following sums respectively represent the estimated cost of school-buildings for each child (including sites) in the places named:—London, 15*l.* 7s. 2½d.; Liverpool, 12*l.* 10s. 0½d.; Manchester, 13*l.* 2s. 1½d.; Birmingham, 11*l.* 9s. 11½d.; Bristol, 7*l.* 15s. 0¾d.; Newcastle, 12*l.* 13s. 2½d.; Sheffield, 9*l.* 14s. 2½d.; Leeds, 11*l.* 0s. 11½d.; Brighton, 12*l.* 3s. 8¾d.; Bradford, 22*l.* 14s.; Huddersfield, 12*l.* 16s.; Leicester, 9*l.* 19s. 0¾d.; Halifax, 11*l.* 16s. 0¾d.; and Nottingham, 9*l.* 12s. 10d. In London and Bradford the purchase of sites increased the cost per child by about 5*l.*; in the other towns the additional expense averages 2*l.* 3s. per head. Up to the 30th of April last the number of Board schools for which loans from the Public Works Loan Commissioners had been sanctioned was 941; and the total amount so expended on school buildings in Board districts to the same date is 4,021,418*l.*

The Masonic Buildings Company, Northampton.—This company, formed of members of the Pomfret Lodge of Freemasons, having purchased the remaining portion of the site of the old Saracen's Head, more recently known as the Temperance Hotel, Abington-street, have determined to erect thereon a Masonic Hall and other buildings. The building will consist in the first instance, of two houses and shops in front, opening to the street, with centre corridor, 7 ft. wide, between the two shops, leading up to the Masonic premises in the rear. It is intended to make the lodge-room a handsome apartment. The walls will be decorated with Masonic devices. The total cost of the whole, including the purchase of the ground, the fittings and decorations of the hall, it is estimated, will be upwards of 3,500*l.* The buildings will be erected from designs by Messrs. E. F. Law & Sons.

Horton Church (Windsor).—The restoration of the chancel of this interesting little church, which was commenced by the late rector, has been nearly completed. The style is Early English, the material used being grey Kentish ragstone, with Bath stone dressings. The memorial stone over the grave of the poet Milton's mother has been raised and paved round with tesselated tiles. The work has been carried out by Mr. G. W. Harley, builder, of Slough, from plans prepared by Mr. R. Brandon, of London. Milton came to reside at Horton in 1632, after taking his degree as master of arts at Cambridge. The Comus, in 1634, and the Lycidas, in 1637, were written by Milton at Horton; and there is reason to suppose that the Arcades, L'Allegro, and Il Penseroso were also composed there.

A Royal Sculptor.—Count Gleichin, the Queen's cousin, who has taken up sculpture as a profession, is now engaged on a statue of Alfred the Great, which is to be erected at the king's birthplace, Wantage, by Colonel Lloyd-Lindsay, M.P. The figure will be of colossal size, and has one hand resting on a battle-axe, the other holding a roll of parchment. The Count, being of a royal lineage, has the privilege of using as a studio a building which forms a part of St. James's Palace.

Laying the Foundation of a Temperance Hall at Bishop Auckland.—On the 15th inst. the foundation-stone of a Temperance Hall, Victoria-street, Bishop Auckland, was laid by Mr. Arthur Pease, of Darlington. The building, when finished, will cost about 3,000*l.*, exclusive of land. The architect is Mr. James Garry, of West Hartlepool and Bishop Auckland.

Building Materials in Algeria.—Among the various mineral substances used as building materials found in Algeria the most remarkable is the translucent alabaster, or so-called onyx, of Aïn-Tekbalet, in the province of Oran. The quarries of Filfila, near Philippeville, yield several varieties of marble, of which one is comparable with the finest specimen from Carrara. Magnificent *brèche* is found at Chennonah, near Cherchell, several species of white, grey, black, yellow, green, and red marbles are met with in other parts; and lastly, green serpentine occurs at the Oned Madrage. At Cap de Fer, in the Gulf of Stora, porphyry is found, a specimen of which, the pedestal of Marshal Bugeaud's statue, may be seen at Algiers.

Penalty for Illegally Acting as Town Councillor.—An important case, under the Municipal Corporations Act, was decided on the 15th inst. in the Bradford County Court. Mr. Israel Thornton, a member of the Town Council, was proceeded against by Mr. Hope, architect, for having acted as councillor while disqualified from so doing by reason of his having an interest in certain profits and employments under the Corporation. Mr. Thornton is a contractor, and it was proved that he had received payments for allowing the Corporation to deposit rubbish on land belonging to him. The Judge held that the defendant was disqualified from being elected last November, and inflicted a penalty of 50*l.*

Failure of the Hesket Water Works.—At the meeting of the Wigton Rural Sanitary Authority, on the 15th inst., under the presidency of Mr. W. Banks, the principal business was the report of the committee appointed at a previous meeting to examine the Hesket Newmarket Water-works. The chairman, in stating the conclusions of the committee, said that the works are an utter failure; that at the present time there is not water at the source of the supply for an individual, without waiting a considerable time, much less for a village, and that the inspector is not to blame, inasmuch as he acted under the advice of the local committee in endeavouring to supply the village from this source.

Drainage of Bournemouth.—A complete system of drainage has been pressed upon the Commissioners by the Local Government Board. The question of expense is a serious one, but the Commissioners are considering the subject, and Mr. Creeks, the surveyor, has submitted a "device and details," which have for their object, first, that only filtered sewage should by any possibility reach the outfall; secondly, that both the intercepted residuum and the effluent sewage shall be deodorised; thirdly, that the deposit shall be retained in such a portable deodorised condition that it can be removed with the utmost facility and safety; fourthly, that the filter-station shall be without prejudice or suspicion to adjoining property.

Damage by Lightning.—A thunderstorm of exceptional severity passed over the neighbourhood of Southampton on Saturday morning and did considerable damage, including the destruction of a tall chimney at the London and South-Western Company's engine-station at Northam, and the partial demolition of the spire of West-end Church, about four miles from here. The spire was an octagonal one of brick and stucco. The lightning took it on the south angle, and laid the whole side completely bare, leaving the rest in such a condition that the whole will probably have to come down. The nave and aisle roofs were considerably damaged by the falling rubbish.

Chimes and Carillons.—The Corporation of Manchester have decided upon having a great clock and carillons for their magnificent new Town-hall, and have selected Messrs. Gillett & Bland, of the Clock Factory, Croydon, to carry out the work. The clock is to strike the hours upon a bell of 7 tons, and to chime the four quarters on eight bells, the time to be shown upon four 16 ft. illuminated dials. An automaton gas-apparatus will be fitted to the clock for turning the gas up and down, and so constructed as to suit all seasons of the year.

A New Bank at Bournemouth.—The Wilts and Dorset Banking Company have erected a banking-house on property formerly known as Ashley-villas, Bournemouth. It has 33 ft. frontage to the Christchurch-road, and about 100 ft. to the return front. Mr. C. C. Creeks was the architect, and Mr. Saunders, of Southampton, was the builder.

Sheffield Architectural and Archæological Society.—On the 17th inst. several of the members of this society made an excursion to the village of Compsall, near Doncaster, to visit the old church, now in course of restoration. The vicar, the Rev. C. H. Hamilton, conducted the party round the church, pointing out the chief objects of interest, and Mr. Shilitoe, the contractor, gave his assistance. The tower retains most of its original Norman features, and a good many remains of the old Norman church may be traced in various parts.

Accident in Seel-street, Liverpool.—About four o'clock on the 17th inst., whilst a number of men were at work in the cellar of a building at the corner of Hanover-street and Seel-street, which belongs to Messrs. Evans & Co., wholesale druggists, five of the arches of the cellar gave way, the result of which was that three men were buried in the *débris*. Their fellow workmen succeeded in a very short time in digging them out.

Opening of New Sunday School-rooms, Halsted.—During the week services have been held at the North-street (Baptist) chapel, to celebrate the opening of new Sunday school and class-rooms in connexion with that place of worship, built to accommodate about 300 scholars. The contract was taken by Mr. John King, Halsted, for 379*l.*, but the total outlay will be nearly 600*l.* The plans were prepared by Mr. C. Pertwee, of Chelmsford, architect.

Proposed Public Hall for the East End of Reading.—A preliminary meeting was held on the 15th inst., in St. Stephen's Schoolroom, with reference to a proposal to erect a new Public Lecture Hall near Victoria-square, between King's-road and London-road. The hall, which will be about 60 ft. by 40 ft., is intended to hold from 400 to 500 persons, and will have the usual offices and rooms in connexion with it. Resolutions were adopted in furtherance of the object.

Taunton Castle.—A new side entrance to Taunton Castle, now the property of the Somersetshire Archæological Society, is to be made out of North-street by way of Mill-lane, at a cost of about 300*l.* There will be an arched entrance with stone steps leading into the castle grounds, and it is hoped to make this complete by the show week of the "Royal." Mr. W. E. Surtees, of Kingston, has promised to bear the expense.

A New Public Hall for Worksop.—The plans for the erection of a new public hall for Worksop were passed a few days ago by the Local Board of Health, and the buildings in connexion with it will shortly be commenced. The public hall will be 80 ft. in length, and its breadth 35 ft. It will be fitted with every convenience for the holding of public meetings, and with appliances by which public dinners can be provided, even to the cooking, on the premises.

Mr. E. W. Pugin's Works.—We received a letter last week (too late for insertion) from Mr. Charles Hansom, of Clifton, pointing out that the Training College for Schoolmasters, at Hammersmith, mentioned amongst Mr. Pugin's works, was erected from his, Mr. Hansom's, design. The haste with which the list was compiled by Mr. Pugin's family will doubtless account for the mistake.

Restoration of Ancient Documents to a Dean and Chapter.—It will interest local antiquaries to learn that a number of ancient documents relating to the Monastery of Worcester have been lately restored to the custody of the Dean and Chapter. Possibly the will of King John may be considered as one of the most interesting. There is also a charter of Bishop Wulstan.

Society of Arts Prizes.—H.R.H. the Prince Consort's prize of twenty-five guineas has been awarded to Henry Beer, aged 24, of the City of London College, clerk, who has obtained the following first-class certificates during the specified period:—1873, Logic, Political Economy, English Language (with the first prize of 5*l.*); 1874, Theory of Music; 1875, Arithmetic, Bookkeeping.

Fall of a Music Hall in Oldham.—On the 15th inst., part of the New Adelphi Music Hall, now in course of erection at Oldham, fell in with a loud crash. At present half of the westerly wall of the building occupies the ground in the centre of the building. Broken beams and iron pillars are projecting here and there from the ruins.

Fall of a House in Salford.—During the night of the 12th inst., the gable end of the house No. 1, Eliza-street, Liverpool-street, fell down, but no serious consequences ensued. The cause of the giving way of the wall was owing to the excavations which were being made for a new building adjoining the house.

The Drainage of Maiden Newton.—On the 17th inst., at a vestry meeting for this parish, Mr. William Vernon in the chair, it was decided by a large majority of owners and occupiers of property present to make a rate of 6d. in the pound, to carry out the long-talked-of drainage of the village.

The Goodwood Prize, 1875.—The group, in silver, representing "The Defeat of the Saxons by King Arthur," produced for the present year's prize by Mr. Emanuel, is a fine piece of work and does credit to Mr. Henry Owen Hale, by whom it was designed and modelled.

West Bromwich Hospital.—The governors of this Institution have under their consideration the question of adding another wing to the hospital, as the existing accommodation is inadequate for the requirements. The cost of the proposed alteration is estimated at about 3,500*l.*

Tenbury.—On the 17th inst. the corner-stone of a new Church of England school for this parish was laid by Miss Isabel Winifred Miles, second daughter of the late esteemed rector, the Rev. Lomax Miles, who died about three months since.

Lord Carlingford on Art Loan Exhibitions.—On the 15th inst., Lord Carlingford, Lord-Lieutenant of Essex, presided at the opening of an Art Loan Exhibition on a large scale at the Shire-hall, Chelmsford, and addressed a large company.

Malvern.—A new Congregational Chapel is being erected in Malvern. Mr. Tait, of Leicester is the architect; and the tender of Mr. Meredith of Gloucester, amounting to 3,839*l.*, has been accepted.

Farringdon-road Goods Station.—The general contractors for the work are Messrs. Kirk & Randall, not Randall, as stated in our notice last week.

TENDERS

For shop front and repairs to No. 64, Rye-lane, Peckham, for Mr. J. Greenaway. Mr. A. J. Rouse, architect:—

Turner & Enderson	£250 0 0
Blenkarn	245 0 0
Lise	199 0 0
Toogood (accepted)	160 0 0
Colebrook	148 14 9

For two hop warehouses, Talbot Inn-yard, High-street, Southwark, for Mr. Stephen Soames. Messrs. Wadmore & Baker, architect. Quantities supplied:—

Gammon & Sons	£4,748 0 0
Dove Brothers	4,445 0 0
Brass	4,340 0 0
King & Son	4,288 0 0
Clarke & Bracey	4,236 0 0
Kirk	4,131 0 0
Browne & Robinson	3,956 0 0
W. & F. Crosker	3,854 0 0
Downs & Co.	3,840 0 0
Scrivener & White	3,839 0 0

For rebuilding 282, High-street, Poplar. Mr. Brace, bridge, architect:—

Atherton	£705 0 0
Tanner	702 0 0
Watts	698 0 0
Riddle	690 0 0
Abrams	648 0 0
Johnson	596 0 0

For rebuilding 284, High-street, Poplar. Mr. Bra[illegible] bridge, architect:—

Watts	£627 0 0
Atherton	610 0 0
Tanner	6[illegible] 8 0 0
Riddle	597 0 0
Abrams	571 0 0
Johnson	570 0 0

For construction of adits, reservoir, filter beds, and other works at Warwick. Mr. Pritchard, engineer:—

Anwell	£9,481 4 11
Lucas	6,672 0 9
Clark	3,946 2 9
Hart	3,484 16 1
Smith (accepted)	3,070 11 3

Accepted for new strong room and alterations to offices, Reading, for Messrs. Sutton & Sons. Messrs. J. & J. T. Brown & F. W. Albury, architects:—

Bricklayer's Work.

Searle	£100 0 0

Carpenter's and Joiner's Work.

Sheppard	£185 0 0

For additions to the George, at Bray, Berks, for P. S. Langton. Messrs. W. & J. T. Brown & F. Albury, architects:—

Sever & Sons	£384 0 0
Mickley	378 0 0
Cox (accepted)	369 10 0

For new offices at Reading, for Messrs. Blandy & Hawkins. Messrs. W. & J. T. Brown & F. W. Albury, architects:—

Sheppard	£835 0 0
Barnicoat	830 0 0
Woodroffe	825 0 0
Filewood (accepted)	812 0 0

For the enlargement of the Green-lane Schools, Battersea, Surrey. Mr. W. White, architect:—

Adamson & Sons	£1,487 0 0
Lathey Brothers	1,473 0 0
Carter	1,450 0 0
Gregory	1,430 0 0

For additions to St. Mary's Parochial Schools, Newington-butts. Mr. Cutts, architect. Quantities supplied:—

Downs & Co.	£297 0 0
Lathey Brothers	287 0 0

For the erection of Swan and Horse Shoe public house, Gray's-inn-road, for Mr. B. Sudell. Mr. W. J. Worthington, architect. Quantities by Mr. E. W. Parker:—

Crabb & Bracey	£2,769 0 0
Cowland	2,744 0 0
Hoare	2,625 0 0
Hyde	2,616 0 0
Elkington	2,600 0 0
Bridgman	2,590 0 0
Langmead & Way	2,569 0 0

For reinstating Dover House, 110, Blackman-street, Borough (destroyed by fire), for Mr. James Davenport. Messrs. Ingram & Hollands, architects:—

Waldram & Co. (accepted).

For warehouse, Type-street, Finsbury. Mr. J. Wimble, architect:—

Rudkin	£4,219 0 0
Kilby	3,832 0 0
Mortar	3,800 0 0
Falkner	3,765 0 0
Browne & Robinson	3,703 0 0
Newman & Mann	3,695 0 0
Kelly Brothers	3,670 0 0
W. & F. Croaker	3,678 0 0
Hoare & Son	3,605 0 0
Scrivener & White	3,568 0 0
Stoner	3,566 0 0

For builders' work in erecting cottage, tank, lime, purifying, meter, and retort houses, stores, &c., for the New Gas Works at Wallingford. Mr. A. Penny, engineer. Quantities supplied by Mr. R. Carpenter:—

Reavell (accepted)	£1,075 0 0

For residence at Ash, near Guildford, for Mr. R. Wilson. Mr. T. Wonnacott, architect. Quantities by Mr. R. Carpenter:—

Martin, Wells, & Co. (accepted)	£1,195 0 0

For rebuilding the Plough Inn, St. John's-hill, Wandsworth, for Messrs. Young & Bainbridge. Mr. G. A. Young, architect. Quantities by Mr. Morgan Young:—

Parsons (accepted)	£2,453 0 0

For new stabling at the Spread Eagle, High-street, Wandsworth, for Messrs. Young & Bainbridge. Mr. G. A. Young, architect. Quantities by Mr. Morgan Young:—

Thornton	£1,695 0 0
Tilley	1,676 0 0
Parsons (accepted)	1,409 0 0

For alterations to the Plough, Hornsey-road, for Mr. Holtman. Mr. John Viney, architect:—

Godden	£138 10 0
Toop	150 0 0
Hawkes	147 15 0
Shurmur	138 0 0

For alterations to the Castle Tavern, Shouldham-street, Cavanstone-square, for Mr. Copeman. Mr. John Viney, architect:—

Toms	£591 0 0
Asherton & Latta	445 0 0
Shurmur	430 0 0
Godden	415 0 0

For painting and decorating at the Eyre Arms, St. John's-wood, for Mr. F. C. Mouflet. Mr. John Viney, architect:—

Macintosh	£641 10 0
Godden	583 7 0
Hayward & Son	565 0 0

For alterations to the Queen's Head, Bethnal-green, for Mr. R. Colman. Mr. John Viney, architect:—

Shurmur	£178 0 0
Pringle	153 0 0

For pulling down and rebuilding Nos. 151 and 153, Curtain-road, for Messrs. Wallace & Co. Mr. E. C. Gomer, architect:—

Griffiths	£1,280 0 0
Tibbett	1,177 0 0
Bangs	1,150 0 0
High	1,142 0 0
Dabbs	1,120 0 0
Shurmur	1,093 0 0
Sheffield	1,073 0 0
Goodman	1,047 0 0
Wood	1,044 0 0
Potter	1,018 0 0
Staines & Son (accepted)	986 0 0
Crabb (withdrawn)	965 0 0
Vaughan	873 0 0
Warr	848 0 0

For alterations and repairs, &c., to the Cock Tavern, Somers Town, for Mr. Howland. Messrs. Bird & Walters, architects:—

Lachlan	£1,595 0 0
Lawrence	1,590 0 0
Ebbs	1,570 0 0
Newman	1,560 0 0
Mark	1,553 0 0
Williams & Son	1,525 0 0
Anley	1,370 0 0

For erection of a house in Trinity-road, Tooting, for Mr. M. H. Hawes. Mr. Keith D. Young, architect. Quantities by Mr. Morgan Young:—

Osborne & Johnson	£1,182 0 0
Parsons	1,155 0 0
Oxford (accepted)	1,097 0 0

For proposed villa residence at Goddington, Kent. Mr. H. E. Cooper, architect. Quantities supplied by Mr. Plimsaul:—

Colls & Sons	£5,555 0 0
Andrews	5,542 0 0
Cobham	4,990 0 0
Stiff	4,916 0 0

For the erection of a manufactury and various works to Nos. 138, 140, and 142, Spa-road, Bermondsey, for Messrs. B. Noakes & Co. Mr. F. Haysom, resident clerk of works. Quantities by Mr. J. Leaning:—

Coleman	£1,595 0 0
Mark	1,593 0 0
Kent	1,582 0 0
Tarrant	1,494 0 0

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I. O. U. (yes).—W. C. (readers of the *Builder* know that we are forced to decline "post" notebooks and giving addresses).—T. W. H.—F.—M. T.—D.—C. J. S.—N. W.—C. D.—W. M.—J. A.—C. G. S.—F. L.—W.—J. H.—J. V.—W. A. W.—S. A. C.—R. S.—E. R. S. E.—W. & F. C.—*Pro Bono Publico.*—M. M.—M. Y.—R. L. (look to the Act and Bye-laws).

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SAM. GEO. JOHNSON, Town Clerk.

Municipal Offices, Nottingham 18th June, 1875

CHESHIRE LINES COMMITTEE.—To BUILDERS, RAILWAY CONTRACTORS, and OTHERS.—The Committee are prepared to receive TENDERS for the CONSTRUCTION of a GOODS STATION, and the EXTENSION of the existing MINERAL STATION at Portwood, Stockport. Plans and sections can be seen, and specifications obtained, on and after the 14th instant, at the Office of Mr. W. G. SCOTT, the Committee's Engineer, Central Station, Liverpool. Sealed Tenders, endorsed "Tenders for Goods Station, &c. at Stockport," to be in the hands of the undersigned at the Great Northern Railway Company's Boarding House, King's-cross Station, London, at not later than HALF PAST NINE a.m. on WEDNESDAY, the 21st of JULY.—By order,

EDWARD ROSS, Secretary.

London-road Station, Manchester, 9th June, 1875.

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The Builder.

VOL. XXXIII. No. 1691. SATURDAY, JULY 3, 1875.

ILLUSTRATION.

A Vision of the City of London, Constructed on the Plan left by Sir Christopher Wren.—Drawn and Engraved by Mr. Worthington G. Smith, under the Direction of Mr. Godwin 598, 599

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London: as Arranged by Sir Christopher Wren.

IT desire of King Charles II., Sir Christopher Wren, in the year following the Great Fire, prepared a report with plan on the best mode of rebuilding the City. The plan is well known. In some of our earlier volumes we have commented on the advantages it offered, and in one published an engraved outline of it. Wren sought in his plan to avoid the deformity and inconveniences of the old town, by enlarging the streets and lanes, giving main thoroughfares north and south, and east and west, by placing all the churches in conspicuous positions, and insulating them; by forming the most public places into large piazzas, the centres of eight ways; by uniting the Halls of twelve chief companies into one regular square annexed to Guildhall; and by making a commodious quay on the whole bank of the river, from Blackfriars to the Tower.

In making the plan he arranged that the streets should be of three magnitudes; the principal, leading through the City, and one or two cross streets, to be at least 90 ft. wide, others 60 ft., and the lanes about 30 ft., excluding all narrow dark alleys without thoroughfares, as well as all courts. The Exchange was to stand free in the middle of a piazza, and be, as it were, the centre of the town, whence the 60 ft. streets, as so many rays, should proceed to all the principal parts of the City; the buildings to be contrived after the form of the Roman Forum, with double porticos. Many streets were to radiate to the bridge. The streets of the first and second magnitude were to be carried on as straight as possible, and to open into piazzas. On the banks of the Thames was to be formed a spacious and convenient quay, with some large docks. He proposed that the churches should be designed according to the best forms, for capacity and hearing, adorned with useful porticos, and with lofty towers and steeples in the greater parishes. All trades that use great fires, or yield noisome smells, were to be moved out of the town.

In placing the plan before the King, and the House of Commons, Wren himself thus explained it:—

"From that part of Fleet-street which remained unburnt, about St. Dunstan's Church, a straight street, 90 ft. wide, crosses the valley, passing by the south side of Ludgate Prison, and thence in a direct line ends gracefully in a piazza at Tower-hill; but before it descends into the valley where now the great sewer (Fleet-ditch) runs, about the once middle of Fleet-street, it opens into a round piazza, the centre of eight ways, where at one station are these views—first, straight forward quite through the City; second, obliquely towards the right hand to the beginning of the quay, that runs from Bridewell Dock to the Tower; third, obliquely on the left to Smithfield; fourth, straight on the right, to the Thames; fifth, straight on the left, to Hatton-street and Clerkenwell; sixth, straight backwards towards Temple-bar; seventh, obliquely on the right to the walls of the Temple; eighth, obliquely on the left to Cursitor's-alley.

Passing forward, we cross the valley, once sullied with an offensive sewer, now to be beautified with a useful canal, passable by as many bridges as streets that cross it. Leaving Ludgate Prison on the left side of the street (instead of which gate, was designed a triumphal arch to the founder of the new City, King Charles II.), this great street presently divides into another as large, which carries the eye and passage to the south front of the Exchange (which we leave as yet for a second journey), and before these two streets, spreading at acute angles, can be clear of one another, they form a triangular piazza, the basis of which is filled by the cathedral church of St. Paul. But leaving St. Paul's on the left, we proceed, as our first way led us, towards the Tower, the way being all along adorned with parochial churches.

We return again to Ludgate, and leaving St. Paul's on the right hand, pass the other great branch to the Royal Exchange, seated at the place where it was before, but free from buildings, in the middle of a piazza, included between two great streets: the one from Ludgate leading to the south front, and another from Holborn over the canal to Newgate, and thence straight to the north front of the Exchange."

The practicability of this whole scheme, without loss to any man, or infringement of any property, is said to have been demonstrated, and all material objections answered; the only—and, as it happened, insurmountable—difficulty remaining, was the averseness of great part of the citizens to alter their old properties, and to recede from building their houses on the old ground and foundations; as also the distrust in many, and unwillingness to give up their properties, though for a time only, into the hands of public trustees or commissioners, till they might be dispensed to them again with more advantage to themselves than otherwise was possible. A grand opportunity in consequence was lost of making the new city the most magnificent, as well as commodious for health and trade, of any existing.

More than three years ago,—that is, in March, 1872,—Mr. Edwin Chadwick, C.B., who was proposing to read a paper at the Society of Arts on what engineering art and architectural art, under the guidance of sanitary science, could do for the building of new cities and the rebuilding of old ones; and had arranged to re-introduce Sir Christopher Wren's plan for the rebuilding of the City, to show what his diagonal lines would have done for external ventilation, and what he would have done by excluding blind courts and alleys, and providing a better order of dwellings; suggested to us that a sort of bird's-eye view of the City, produced on Wren's lines, would form, if published in our journal, an interesting accompaniment to his lecture. The drawing was made and engraved very rapidly, in order to be ready for the occasion, but circumstances led to the postponement of the lecture, and from that time to this we have retained the engraved block. We follow out the original arrangement to some extent by publishing it in our present issue* in connexion with a report on the City thoroughfares, wherewith Mr. Chadwick has been mainly concerned, and portions of which we print on another page.

The author of the well-known "Critical Review of the Buildings of London," writing of this plan, says "Wren had planned a long and broad wharf or quay, where he designed to have ranged all the Halls that belong to the several companies of the city, with proper warehouses for merchants between, to vary the edifices, and make it at once one of the most beautiful and most useful ranges of structures in the world. But the hurry of rebuilding, and the disputes about property, prevented this glorious scheme from taking place." We do not find, in Wren's own report, confirmation of this statement as to the arrangement of the Halls on the quay, nevertheless we have followed it in the view we give. We will only add at present that Wren's plan is full of suggestiveness, both from a sanitary and an æsthetic point of view.

THE VERY "GREAT METROPOLIS."

IT is as difficult for the ordinary Londoner to tell where London commences and where it terminates as it is to point out the precise line of demarcation between the divers colours of the rainbow. The suburban townlets and hamlets blend so insensibly into the cities and liberties of the urban boroughs and bailiwicks, that one might as well attempt to define the particular point at which the fresh water gets to be salt at the mouth of some estuary as to say where the capital ends and the environs begin.

Moreover, the generality of Cockneys have hardly any clearer ideas concerning the extent of the huge metropolis in which they live than the Atlantic fishes have of the vastness of the ocean in which they swim. Indeed, even the best disciplined intellects can but form the same hazy concrete notion as to the collection of units which serve to make up large aggregate numbers as they never fail to entertain respecting the multiplicity of square yards or acres which go to compose inordinate dimensions in space. Does it give a person any real sense of the enormity of this enormous wilderness of bricks

* See p. 598.

and mortar which we style the British Capital to be told that its buildings cover an area of nearly 120 square miles?—that the houses huddled together upon it amount in round numbers to half a million—and that the great swarm of working bees frequenting the huge hive is made up of some three millions and a half of busy honey-seeking creatures? What mind can comprehend the *forty thousand millions!* of silicious shells of insects which the great microscopist Ehrenberg assures us are contained in every cubic inch of the fossil slate of Bilin? What brain is helped to compass the aqueous immensity of the sea by being informed that the total area of the several oceans amounts to not less than 145,000,000 of square miles of water? or that the capacious saline pond contains, altogether, dissolved in it as many as 6,441 *billions!* of tons of common salt? (*Ansted*).

The first and main difficulty in the way of forming a comprehensive conception of London in its integrity, is that there are as many different Londons as there are divers modes of dividing the current coin of the realm in Germany. And thalers, florins, and güldern—silver-groschens, kreutzers, and stivers, are not more perplexing to the traveller, nor the several thermometric scales of Fahrenheit, Centigrade, and Réaumur, more troublesome to the chemical student, than are the various metropolises which it has pleased the various official Boards to invent and prescribe. Not only has the metropolitan police a special metropolis; but the Registrar-General has another with a more circumscribed area, and widely-dissimilar boundaries. Then, again, the Post-office has its particular London, and the City Mission also a London of its own peculiar manufacture; and so on, until there are nearly the same number of diverse British capitals as there are "real original" Eaux de Cologne fabricated in the native town of the veritable Jean Maria Farina—and each, too, compounded in a wholly different manner.*

Is there, then, no Metropolis proper?—no definite palatinate which can be mapped out as the special county of Cockaigne?—no precise territory, hemmed in by a topographical ring-fence as it were, to which the name of London, *in propriâ terrâ*, can be strictly applied? Or is the horizon which seems to gird the capital with a silver zone from the top of St. Paul's a mere illusion?—like the visionary atmospheric vault which appears to concentrate within its ever-varying bounds the very boundlessness of the ocean itself.

Let us see. But first let us take a cursory glance at the limits of "Police London," for this will serve to rest the eye for a while, instead of keeping it continually on the statistical strain.

Well, the police metropolis covers a circle whose circumference is very nearly a hundred miles in extent,—the radius from Charing-cross being just upon fifteen miles long. Hence, the entire domain watched over by the Metropolitan "Force" comprises, in round numbers, half a million statute acres, or exactly 688¾ square miles,—an extent of territory that is about one-tenth the size of the entire Principality of Wales, and very nearly twice the magnitude of the entire island of Madeira.

The extreme boundary of this same police metropolis includes, on the North, the parish of Cheshunt, in Herts, and South Mimms (near Enfield); on the South, Epsom, in Surrey; on the East, Dagenham and Crayford (near Dartford), in Kent; and on the West, Uxbridge and Staines, in Middlesex.

Such constitutes what is termed the "Metropolitan Police District,"—the entire district being divided into an "Inner" and "Outer" one; and the smaller, or inner district, having hardly one-seventh the area of the outer, since it comprises somewhat less than 100 square miles. Indeed, the Inner Police District, as it is called, is nearly equal to that included within the tables of the Registrar General,—the former being rather more than 90 square miles, and the latter not quite 120 in extent.

Now this same "Registration District" must be regarded as constituting the metropolis proper, or *London as regulated by law*. For, in the year 1852, it was found necessary to pass a special Act (to wit, the Burial Act, 15 & 16 Vict., cap. 85), in order to let Londoners know how far London extends into the country,—as well as to define the exact limits of the "Great Metropolis," according to Act of Parliament. This, however, was a feat of legislation very much of a piece with that performed by the renowned progress-hating King Canute, at the beginning of the year 1000; since it is quite as absurd for would-be rulers to say, "Thus far shalt thou go, and no farther," to the metropolitan bricks and mortar, as to the waves of the ocean. Indeed, the celebrated bean-stalk planted by the aspiring Jack in the nursery story was hardly more rapid in its growth than has been that of this giant mushroom of a British capital of ours. At the commencement of the year 1600 the legal limits of London, "within and without the walls," were but little better than two square miles in extent, or hardly bigger than the tiny island of Gibraltar; whereas, in the next century, the metropolis, according to law, had swollen to rather more than thirty square miles. Then, at the beginning of the present century, the area was further enlarged to just upon fifty square miles; after which, in 1837, it was again increased to sixty odd square miles; and latterly, in 1852, as we have said, it was still further extended by special Act of Parliament to nearly double the size it was fifteen years previously; so that it now has a superficies of exactly 117¾ square miles. And who can say but that, at its recent rate of expansion, the huge brick-and-mortar fungus may not by the end of the present century spread into a civic toadstool, of even double its present dimensions?

Nevertheless, in the Burial Act it is expressly laid down that the term "metropolis" is to be understood to mean and include "the cities and liberties of London and Westminster, the borough of Southwark, and the parishes, precincts, townships, and places," thereinafter duly specified and recorded. And, accordingly, we find that London by law is made to extend into Middlesex as far north as Hampstead, and into Surrey as far south as Tooting; whilst it stretches into Kent as far east as Plumstead, and thence back again into Middlesex and Surrey as far west as Hammersmith on one side of the Thames, and Barnes on the other.

These, then, are the extreme legal limits of the metropolis proper. From east to west it ranges on the Middlesex side of the river almost from Blackwall to Brentford, and on the Kent and Surrey side from Woolwich to Wimbledon; whilst north and south it runs very nearly from Crouch End to Clapham. Moreover, so directly connected are these diametrically-opposite points of the compass of the capital that there is one continuous street of houses joining the several metropolitan polar regions, and measuring about fourteen miles in length from Chiswick to Stratford, and about thirteen miles from Highgate to Dulwich. So that this same inner circle of urban London (as contradistinguished from the larger outer disc of the suburban metropolis, guarded by the police of the capital) is found to have a radius of just about 8¾ miles, whilst its circumference is within a fraction fifty-five miles in extent; and thus the one gigantic town is made to cover a territory which is very nearly as large as that of the *entire county of Rutland!*

Now this immense monster of a city, which is as big as a county, country-people delight to call ironically the "little village." But though we may gain some notion of its size from learning that the ground on which London stands is just about as extensive as the whole area of the Isle of Wight,—still what can impress us with a sense of the seemingly-countless crowd of houses which are packed within its boundaries almost as close as figs in a "drum"? A coral reef hardly consists of a more solid mass of habitable walls; nor do the ant-hills of India teem with a denser or busier swarm of living creatures. Were it possible to count the grains of sand in the Sahara, the infinite host of numerals representing the sum of the collective particles would no more give one an idea of the Great Desert, than the fact that the enormous habitable honeycomb of this huge hive of a town is made up of some half a million of distinct domiciliary cells all walled together in the close contiguity of geometrical compactness.

Such numerical statements, however, are the mere sawdust of statistics,—the pedantic foppery of figures. How can the mind possibly comprehend half a million in one simple thought? It is as difficult to grasp large numbers as it is to clutch water.

How, then, can we conjure up an adequate conception of the mighty multitude of buildings with which this bricken county of a capital is covered? Well, if we have but a misty idea of mass in its integrity, at least we can arrive at a clearer sense of length in its continuity. Spin an ounce of platinum, which would hardly fill a nutshell in the lump, into a thousand miles of wire as fine as a silkworm's thread, and the wondrous extent of the fibre will give one a more or less vivid notion of the original bulk of the metal. Now, half a million houses having an average frontage of five yards each would form an unbroken line of buildings which would be just upon 1,300 miles long; and 1,300 miles of dwellings would be nearly sufficient to form one continuous row right round the entire island of Great Britain, from John o'Groats to the Land's End, and from the Land's End to the North Foreland, and from the North Foreland back again to John o'Groats. Or, what is more striking still, such a line of buildings would be more than enough to make one long street stretching right across Scotland, England, France, and Switzerland, from Dunnet Head in Caithness, to the banks of the Mediterranean.

If, then, such be the mere length of the aggregate houses in London, it may be readily conceived that the streets of the monster metropolis which, on looking at the map, seem to be a perfect maze of highways and byways,—a closely knitted network of thoroughfares,—should be some thousands in number: and accordingly we find that there are upwards of 10,500 different streets, roads, lanes, gardens, and parks; squares, ovals, polygons, crescents, circuses, and terraces; villas, buildings, rows, and places; particularised in that voluminous civic cyclopædia, the "London Post Office Directory." Many of these thoroughfares, too, are of no inconsiderable dimensions. The New-road, for instance (exclusive of its City appendage) is very nearly three miles long; Oxford-street, more than a mile and a quarter; and Regent-street, from Langham Church to Carlton-terrace within a few yards of a mile in length; whilst the two great lines of thoroughfares running parallel to the river,—the one extending from Bayswater along Oxford-street, Holborn, Cheapside, Cornhill, and Whitechapel, to Mile-end, and which is really but one continuous street with different names; and the other stretching from Kensington, along Knightsbridge, Piccadilly, the Haymarket, Pall-mall East, the Strand, Fleet-street, Cannon-street, Tower-street, and so on by Ratcliffe-highway to the West-India Docks, are each, from one end to the other, just upon ten miles in length.

Indeed, the gross extent of the London streets, small as well as great, is almost incredible; for by a return made by the police as far back as the year 1850, the aggregate length of the metropolitan thoroughfares, in the "inner" police district alone, amounted to not less than 1,750 miles; while those within the boundaries of the "Registration District," or metropolis proper, made up as many as 1,820 miles. In 1861, however, they had increased to 2,100 miles; whilst in 1871 these same collective thoroughfares of London as regulated by law had become extended to 2,500 miles. So that not only are they now a third of the earth's diameter; but would, if stretched into one long line, just about *span the Atlantic*, and reach from Liverpool to New York!

But prodigious as this vast amount of roadway may seem, it dwindles down into the mere dimensions of a rope-walk in comparison with the total length of streets patrolled by the Metropolitan Police; for by a recent return which has been specially prepared for us by the kindness of Colonel Henderson, we find that the aggregate extent of the thoroughfares included within the *entire* Police District amounts to not less than 6,612 miles, or more than one-fourth of the earth's circumference! Hence, it would appear that the roadways of this same Police District, which were hardly more than 3,500 miles long in the year 1850, have been nearly doubled in length within the last quarter of a century.

* "It is a peculiarity of the administration of this country," says the Registrar-General on the Census Returns for 1871, "that nearly every Public Authority divides the country differently, and with little or no reference to other divisions. Each authority appears to be unacquainted with the existence, or at least with the work, of the others. The Metropolis is an example. It consists of parts of three counties. The city of London stands on 668 acres (1·075 square mile) in its centre. The London within the Tables of Mortality differs from the London within the limits of the Local Management Act; and both differ from the London of the Central Criminal Court, which also differs from the London of the Metropolitan Police; while the London of the Metropolitan Parliamentary Boroughs is unique. Then the subordinate divisions of these several Londons seldom agree . . . . Moreover, besides these Londons there is the Diocese of London; and other Londons have been constituted by the Post-Office and by other Departments—each having its own preconceptions and administrative views, without any reference to the order and harmony of the whole. Each London, too, has generally its special administrative body or executive officers."

And who can wonder? seeing that the same return informs us that between January 1st, 1864, and December 31st, 1873, there were as many as 133,708 houses built within the Metropolitan Police District, comprising 27 new squares and 2,952 new streets! So that, as this is just about one-third of the gross number of houses there were in all London at the time of taking the last census, it follows that at such a rate of expansion the monster Metropolis,—monstrous as its present dimensions may appear,—will assuredly be twice the size it now is by the end of the present century.

ELEMENTARY BUILDING CONSTRUCTION.

THIS well got-up anonymous treatise* is the first part of a work to be completed in three parts, and to form a text-book "to assist students in preparing for the examinations in building construction, held annually under the direction of the Science and Art Department at South Kensington," with the authority of which Department it is therefore, we presume, issued. Something of the sort was very much needed; for though of course there are able and complete treatises, on a larger scale, in regard to all the important branches of building construction, an exhaustive study of them can hardly be expected from a student, and a book distilling the substance of larger works, and putting the outlines of constructional science together in a small compass, is a very important aid to students, who may afterwards supplement from larger treatises their study of the particular branch of construction to which circumstances or inclination most attract them.

The present volume is intended to fit the student for examination in the first or elementary course. Part II. will contain further instruction in the same subjects, and also include those mentioned in the Syllabus of the Science and Art Department for the second stage, or "advanced course"; and Part III. will contain instructions regarding "the nature of stresses to which the different parts of simple structures are subjected, the nature, application, and characteristics of the materials used in buildings, together with notes on foundations, timbering, excavations, scaffolding, travellers, &c." So far as regards these practical subjects, the third part is intended to qualify for the "Honours" Examination of the Science and Art Department, but, as it is pointed out, "the art of designing buildings from given conditions, and the problems involved in the theory of construction, must be studied in works specially devoted to those subjects." How far "examination" can be conducted at all in regard to the former of these subjects is a question: what to one judge appears evidence of a knowledge of artistic design, to another will not; and certainly what pleases the South Kensington authorities in design has not always pleased the rest of the world.

To return, however, to our immediate subject. Part I. goes pretty minutely and exactly through the details of the various branches of work included in ordinary house-building operations, under the headings of "Walling and Arches," "Brickwork," "Masonry," "Carpentry," "Floors," "Roofs" (timber and iron), "Slating," "Plumber's Work," and "Joinery." The brickwork section is much better and less empirical than the treatise by a practical bricklayer which we noticed a little while since (in Weale's series). The intricacies of bonding in different positions, are very fully illustrated, sections of each style of bond being given through its strongest and its weakest parts, calling attention to deficiencies of bond which the superficial examination of the brickwork hardly suggests to the student. The writer leans, correctly, in favour of the so-called "English bond" which has been so long thrust out of sight by the no more rightly-named Flemish bond, weaker in almost every way. The mysteries of angle bond and "king closers" and "queen closers" are here very fully illustrated, and the student may arrive at the conclusion that the apparently simple process of laying bricks together to make a wall is really one involving a considerable amount of calculation. Wholesome warnings are given, at the same time, against the lapses which the British workman is liable to: for instance, in gauged arches, bricklayers frequently "carefully rub only the portion of the joint near the face, cutting the back part right away, so that the arch does not bear equally, except just on the front edges of the bricks. This leads to the arch bulging forward, or to bricks dropping out of it altogether." It is an instance of the value of general education in regard to special trades that, although it is perfectly true that a practical working at the materials gives a knowledge of them in one sense that nothing else will give, yet the uneducated operative who has been all his life handling bricks, or stone, or wood, will commit the most utter absurdities in putting them together, from mere habit and want of reflection; and that such cautions are by no means superfluous all who have dealt with workmen are aware. It is in regard to the relation of construction to architectural expression that we generally find treatises of this kind deficient. It is vexatious to see, even as a casual illustration, such a representation of the most wretched style of regulation street house, as in fig. 4, and to read that "the plinth is a projecting base to the wall, intended to give an appearance of stability, *and thus form an ornament.*" The plinth is a matter of real stability, and if it were not it would give no appearance of stability; and as to its forming "an ornament," we only wish that word were struck out of the dictionary, for the misuse made of it in such books as this, and the false idea which it conveys as to the nature and process of architectural design. The same elaborate design is again referred to (p. 51), with an explanation that the corbels under the window-sills are also "only for ornament."

The masonry section illustrates usefully, among other things, various ways of building with rough stones under the general head of "Rubble," but the remark that "the higher the class of masonry, the more regular are the stones, and the more easily are they built," may lead to misconception, and it really depends on whether we choose to consider that the highest class of masonry, or not. The writer had better look at some of the towers of Suffolk churches (Lavenham, for instance), built of broken flints, and say whether that is not a "high class of masonry." The use of metal in cramping masonry is made of rather too much importance; there are situations where it cannot very well be dispensed with, but these are also where it can easily be got at for replacement when rusted and decayed; but, in general, to put metal in the interior of a wall is to plant a destructive agent, as it were, in the heart of the citadel; paintings and galvanisings cannot be depended upon for long.

"Carpentry" commences with a very full description and illustration of the various forms of joints in timber work on a large scale, prominence being given to those methods of joining in which iron is dispensed with, or which at least depend most upon the fitting and cutting of the wood; though the useful and neat old "trenail" fastener scarcely receives sufficient notice. We should look with some little doubt upon the assertion that "square holes and pins are better than round ones, as they are less liable to split the wood." Are there statistics to show this? The supposition would be that the square hole was the most liable to do so in the process of forming it; moreover, the square pin, tightly fitted in a square hole, is, in case of any settlement or displacement of one of the timbers which it holds together, subjected to a cross strain, with a very heavy leverage tending to tear or twist it,—a danger which does not affect the circular pin in the least. The circular joint is (p. 72), to our thinking, a little too hastily dismissed, considering the high authority of Tredgold in its favour (for large work), and the unquestionable fact that it is less liable to "opening" at one point from disturbance or settlement than the angular joint. It is no doubt more troublesome to make. A contradiction between theory and practice is signalized in the naïve admission (p. 77) that the operation of "draw-boring,"—drawing up the timber to its utmost stretch with an iron pin before inserting the oak pin,—"is condemned by most writers, as it produces a constant and objectionable strain upon the pin and tenon; *but it is nearly always resorted to in practice.*"

In the chapter on "Floors," the writer does not seem to know his own mind quite on one point, as he enumerates among the disadvantages of single floors, that "the joists bear equally on all parts of the walls, and thus the jars upon the floors are communicated to the wall even at its weak points"; while on the next page we read that double floors "are in many ways a complicated and bad form of construction, that the ridging joints are burdens on the binding joints" (what else are they intended to be?), "and these in their turn transfer the whole weight of the floor and its load to a few points on the wall, instead of distributing the pressure." This is rather an absurd contradiction to find on two opposite pages. In practice, the question is only of importance (as to stability) when the weight to be carried by the floor is considerable in proportion to its area and to the strength of the walls; and in that case there cannot be a shadow of doubt that the double floor is the more scientific construction; always supposing that the binding joists are really brought on to the most solid parts of the walls. The adoption of some kind of corbelling is rightly recommended in preference to the almost universal practice, in ordinary structures, of building the joists into the walls, by which the latter are not only weakened in the first instance, but the tremors and sounds of each floor much more intimately connected with the wall and (consequently) with each other. "Pugging" should not have been mentioned without a warning against the danger of rot which it entails by hindering circulation of air. We have known cases in which the whole floors of a large building had rotted away to a state of absolute insecurity from this cause, and might have actually come down before any external sign of the state of things was manifest.

The principal forms of wooden and iron roof construction are adequately illustrated, and the chapters on slating and plumber's work give all the information necessary to the student. The unscientific and unsafe method of nailing slates near the top ought not to have been mentioned without its decided inferiority to the other practice of nailing at or near the middle being more distinctly pointed out. It is curious and instructive, in the section of the gutter and cornice, p. 161, to note the complicated and at the same time defective arrangements entailed by the useless blocking course, with the lead gutter low next the slates, and raised much higher on the "blocking" side; really a contrivance for overflowing the water under the slates in heavy rain. The really honest and architectural use of the cornice as a hollowed stone gutter lined with lead, is, on the other hand, treated as a mistake, and there are practical difficulties in working the lead; it would be quite possible to succeed with cement as a lining. At any rate, the stone gutter, whether treated with lead or otherwise, is a common-sense affair, and is at the worst a far more scientific and architectural treatment than the "blocking" gutter. The section on "Joinery" contains useful and pretty full illustrations of the methods of putting together door and window frames. There are one or two points open to comment: for instance, the counter-sinking under the bottom rail of a sash, so as to lap over the throating of the sill, is only given as an optional method "sometimes" employed; it is, or ought to be, done in all work that claims to be good; the section of bottom rail and sill shown as the normal one in fig. 317, would be both a wet and a windy one, if exposed to any driving rain. The old prejudice against casement windows is kept up here also; they are not "difficult to render watertight" if you go the proper way about it. The joint on figure 324 will not do it, certainly; what it wants is a vertical shoot or groove to let any water run down that is driven in; unless the water has that channel of escape, of course it will be forced by a strong wind round the joint sooner or later. The paraphernalia of boxing and glueing, and ropes and pulleys, of the old sash-window, are a much more serious drawback than anything connected with the casement-window; giving rise, as they do, to shaking and rattling, and to undesirable hollows backed up with rubbish, leaving a channel for draughts to find their way through, and a harbour for rats and mice, and affording opportunities generally for gimcrack joinery. The necessity for the weights is done away with by one or two recent inventions by which the sashes can be worked much more conveniently (a modification of one of which, we are glad to observe, is being applied to railway carriage windows, instead of the time-honoured strap and button), and between these and casement-windows, the sash-cord, pulley, and weights, with all its bandbox accompaniments, ought to be doomed.

In spite, however, of some old-fashionedness of the kind we have touched upon, this is a very useful little book, and the whole series, when

* Notes on Building Construction, arranged to meet the Requirements of the Syllabus of the Science and Art Department of the Committee of Council on Education, South Kensington. Part I.: First Stage or Elementary Course. Rivingtons: London, Oxford, and Cambridge.

published, will be a great boon to young students in the profession, and teach them some of the things which their masters, under the present pupilage system, very seldom do teach them.

REMINISCENCES OF FOLKESTONE.

THE visitor approaching the town from the railway station would little imagine Folkestone to be the beautiful place it is found to be on more extended acquaintance. First impressions from a look at the old town as we walk down the hill are pleasant as one after another prominent objects on the distant rising ground, spires, and public buildings, come into view. But as we advance along new thoroughfares towards the old harbour, past unfinished houses, and shops closed, with shutters up, and draped in dust and cobwebs, seemingly an air of settled gloom depresses the street. The fisherman has lost for the time his wonted blitheness as he saunters along with hands buried deep in the pockets of his capacious nether garment, in the midst of his day-dreams; and the smoke idly rises from his short pipe in slow whiffs, as if he too felt the dulness. A glance to the left at the most opprobrious barn-like church imaginable, heightens the disfavour conceived as we ramble along. Like its near neighbour, Dover, the history of Folkestone, or Folcestane, is an old one. In fact, it became in early times associated with other places in contributing as "limbs" towards the national navy, which it was the duty of the cinque ports at one period to entirely furnish and man. Not much historical knowledge has descended to us of the earliest days of the locality, but the town appears to have existed during the Roman occupancy, as a watch tower and beacon were erected on the cliffs for guidance of the imperial ships; whilst the fragments of pottery and urns found just below the land surface,—some of them during the last few weeks,—with many other relics and remains brought to light in former days, point to its original importance; and the traces of field-works lying on the high downs just outside the borough indicate a military station of some note. There are few extensive ruins full of antiquarian lore to delight the reflective mind, although once there were well-known ecclesiastical establishments, of which now remain but few traces. About the year 640, St. Eanswith, a daughter of Eadbald, a Saxon king, or Thane of Kent, after her father's conversion to the new faith, founded a nunnery,—one of the very earliest known,—whose site is supposed to be not far from the parish church, but more to seaward, of whom many legends were made known far and wide, of miraculous things, as was customary in those times; amongst others, the feat of providing water for the nuns, which she caused to ascend the cliff from the low land below, but which we moderners are inclined to think was more probably accelerated by hydrostatic pressure beyond than by the spiritual aid of the Saint.

This place, after a century or two, was destroyed by the Danes,—those remorseless ravagers of church property, during one of their raids upon this coast. After lying in ruins for a long period another religious structure was built upon its ground, with part of the old materials, by De Munville, soon after the conquest, who founded a priory; but this, too, did not enjoy a long existence, for within half a century, from the wasting away of the foreshore and cliffs by encroachment of the sea, it was soon destroyed. Somewhat later on a new house was given in lieu to the monks by Sir William de Averanches, Lord of the Manor in the twelfth century. It is now only a few years ago since the final portions of the monastery, which was restored in the third Edward's reign by Sir John de Segrave, were improved away during some municipal alterations by the corporate body. As an instance of the antiquity of the custom of granting pensions on retirement from office, it may interest the Civil Service and others to state here that Thomas, the last Prior of Folkestone, was granted an annuity by Henry VIII. on abolition of his post, at the general dissolution, which amounted to about a fourth of the net revenue. Although not often referred to now-a-days, it was a general thing to grant retiring allowances to the chief officials of the disestablished monastic institutions, probably met by fixed charges upon those to whom the lands and privileges were given. When the grand Armada attempted its descent upon England, great preparations were made by the people here to resist the threatened attack. A place of *rendezvous* from which the present street of that name probably originates, was appointed where the town and country folk were put into training and drilled; guns were mounted, and ammunition laid in; whilst the sailors and fishermen manned their five-and-twenty ships, with which they performed glorious deeds under Howard and Blake.

Dark days, however, were in store for the Folkestonians, for their town dwindled away as trade fled, and storms destroyed the feeble protections to the harbour and landing-places. Notwithstanding repeated appeals to the country for aid, and the expenditure of much capital upon the works, no advancement was made until the era of the South-Eastern Railway in 1843, when the place leaped with new-born vigour from its dormancy into the broad wakefulness of commercial energy, and now thrives under the advantages of one of the great highways into the kingdom, combined with the pleasures of a charming sea-side sanitarium. The construction of valuable harbour works and piers gives free ingress and egress for the hundred thousand passengers annually crossing the Channel from this port, conveyed by the fine fleet of swift steamers owned by the Railway Company, and to the large amount of commerce thus attracted, the present prosperity is undoubtedly in a great measure due.

A few years since, in erecting a new low-water pier, in connexion with the railway, which was extended to the east side of the south quay, so that Continental passengers could be transferred direct to the vessels, a useful, if novel, idea was adopted in its formation by the engineer in utilising the disused permanent-way metals of the South-Eastern system, of which the pier is primarily built. Abundant accommodation is provided for the travellers who sojourn here, by the many excellent and well-appointed hotels and inns,—some in the quaint old streets, streets that seem as if they were formed before the era of vehicles, from their narrowness, now crowded with well-filled shops, where the luxuries and necessaries of life are temptingly displayed to the passer-by. Some are upon the beach or adjacent thereto, handy for rail and boat; whilst within convenient distance are palatial bath-houses, fitted with every appliance meeting the requirements of the invalid or timid, combined with reading-rooms, amusements, and lounges; and on the beach the more robust and the swimmer will find good bathing-ground and capacious machines.

The public buildings, from the hilly nature of the position, stand out conspicuously to view; amongst them are several well-built churches, belonging to various denominations, the work of a local architect, who also designed the prominent and pleasing bathing establishment, on the shore, near the Lees. The most noted, however, of all is the picturesque old parish church, built upon the cliff overhanging the sea-coast. The earliest part of it dates back to the twelfth century. Its site, however, had been a place of worship and sepulchre for at least 500 years before, and quantities of human bones and remnants of implements of warfare are generally found on every disturbance of the surface in its vicinity. Leland, contemporary with Henry VIII., refers to the fact, in his day, of considerable discoveries of human remains hereabout. During recent years various restorations have been made to the church, adding to the comfort and convenience of the worshippers, although detracting from the quaint appearance of the interior. Numerous objects of interest,—tombs, monuments, tablets, and brasses may be found within relating to local magnates. Quite lately a stained-glass window has been furnished to the west end of the church, in memory of the physician, Dr. William Harvey, of world-wide renown, who was born here A.D. 1578, the revolutioniser of medical science by his discovery of the circulatory action of the blood.

The south side of the town is clearly the "west end,"—that is, it is the abode of wealth and fashion. On the high plateau above the cliffs beyond the old church has sprung up within recent years quite a new town of good streets and roads, containing elegant mansions and villas,—not stuffy, poky, Barking-like structures, but substantial Belgravian residences. Some of these, built on the Lees, command magnificent sea and inland views. To the front, as the sun shines brightly, may be seen fleets of ships transporting the commerce of the world as they sail gaily along the Channel up or down; while the background is filled by the outline of the French coast, looming in the distance dark and sombre, or light and bright, as the sun strikes down his rays, or they are absorbed by fleeting clouds. In the rear, rise up the rolling downs of chalk hills, tinged in rich golden ruddy hues, and we trace the odour of flowers and the sweet scent of new-mown hay, borne by the soft air flowing from the land. If the wind blows gently off the water carrying forth in his wings minute traces of saline matters, we feel its invigorating effects. Whether this may be due in some degree to the more entire absence of effete matters in such air, our philosophy has not yet divined; suffice it that the most subtle tests in chemistry have not revealed the nature of that active principle pervading the balmy shore breeze, so readily traceable by the nerves of the delicate nostrils, and expressively if commonly called "freshness."

It is a healthy sign of the times, of the advancement made in recent years by the general public in seeking a knowledge of sanitary affairs, when a member of Parliament rises in his place in the House and refers to the shortcomings of local authorities and the lax administration of laws relating to health; a proceeding attended with immense benefit which we should like to see recur now and then, for there is occasion in far too many of our urban and country places, where the great thing as to sanitary reformation seems to be how not to do it. When Lord Robert Montagu startled the country by his tirade in St. Stephen's upon the slums of Folkestone, good no doubt resulted, although the picture was said to be overdrawn and the statistics misunderstood. It woke up the authorities to a sense of the duties and responsibilities attending the office of sanitary administrators and guardians of the public health. In a town enjoying repute as a healthy, pleasant seaside resort, possessed of natural attractions in abundance aided by art, the utmost heed ought at all times to be taken that its fair name is not tarnished by blemished spots in out-of-the-way and half-hidden places. Inasmuch as the strength of a structure would be prudently adjudged by the practised builder in estimating it as a whole, not by that of its more imposing and stronger, but rather by that of its weakest parts; so would the sanitary reformer base opinions upon the state a town presented to his view by examination of the minutiæ of administration—as the appearance of courts and alleys, back streets and yards, the perfection of scavenging arrangements and rigidity of inspection; the quality of water supply at its source and as consumed, with an eye to the various appliances; on the mode and rapidity of conveyance of drainage water away from the houses and town and its final disposal; the state of the sewers and drains if clean or foul; the cleanness of the air breathed, and the numerous details necessary to be known in a sanitary inspection, which to the general public are perhaps out of sight and mind;—and less to the fine appearance of broad streets and to the magnitude of the buildings or their splendour. If in answer to these various points our investigation were not always quite satisfactory, we still affirm that the town is to be congratulated on its fair sanitary condition as a whole; indeed, we do not hesitate to place it high on the list of well-managed boroughs. There was, however, an evident want of thought in the noisy condemnation and strictures passed upon Lord Robert Montagu in public meeting recently held; for as the honourable member's outspoken words did them no harm, but ultimate good, so did the splutterings of the assembly and wholesale censure upon the critic damage their cause. The town whose municipal arrangements are good need not fear adverse criticism. If inquiry demonstrates that the excellence is not so perfect as was preconceived, the town may still gain.

The sewerage system is that of stoneware glazed pipes and culverts, with generally good gradients, conveying the sewage and rainfall by gravitation into the sea by the east cliff some distance away from the town. The sewers in the upper roads and districts are well ventilated through trapped gullies furnished with charcoal trays. The "closets" are in many instances ventilated from the soil-pipes, and the house-drains are cut off from direct aërial connexion with the street sewer. To the lower parts of the town in the old places by the harbour, and in the flat and smaller streets, mere ventilation ought certainly to be given in the sewers and closets as early as possible, for in these parts there is a redundancy of foul air penetrating the houses that is very undesirable. Considering that the higher portions of the town's system are well ventilated, it seems singular that the foul air should not be carried there, but no doubt these lower sewers are often tide-locked and the air

cannot descend the branches to flow up the mains; whilst the foulness is increased by the destructive action of salt water on raw sewage, whereby more gas is generated than ordinarily. Hence provision is required for carrying it off more certainly and rapidly, and not into but away from dwellings. In a few houses by Harbour-street and the Strade, the nauseating odour of sewer air was found peculiarly powerful even for this kind of matter. Certain parts of the Strade, Radnor-street, Dover-street, Mill-bay, and the Narrows are confined in space and require some attention; there is nothing radically wrong about their condition, but the scavenging arrangements demand constant attention. Fishy offals, somewhat plentiful here and there, are subject to become nuisances if not speedily removed. Ill-paved court-yards demand application of the water-hose occasionally to scour them, and a sprinkling of disinfectant; although the fresh sea air is all-powerful as nature's destroyer of polluted air, these close places are not easily penetrated by it, and the atmosphere about them stagnates. In the older neighbourhoods indicated it would seem desirable to cut off the sink slop-pipes from the drains by delivery upon a trapped grate or into a gutter on the exterior to prevent ingress of sewer air when the sink grid is removed, a common habit by the way, and practice not by any means confined to Folkestone. Fortunately, the town possesses few of those pernicious shallow yard wells and pumps; nor did we observe many old-fashioned privy and slop cesspits still so commonly used in certain towns in Kent,—indeed, so prevalent in districts we know of, and may possibly refer to hereafter, that every house possesses at least one of these abominations either at the front or rear within a few feet of the walls, from which evil putrescible gases and odours readily permeate to the interior.

The glazed stoneware pans mostly used in the closets of small house property were found clean and well kept; they should, however, be ventilated. The system is unquestionably in advance of the old necessaries, yet might be improved greatly by a judiciously arranged water-supply, which they now lack. The principle is not a good one that calls upon the numerous occupiers of small tenements to flush these pans, for that which ought to be everybody's business is really performed by none, except in periods of panic and alarm, and under extraordinary inspection. It is not enough that the garbage and ashes be removed by the dustmen from the bins periodically, but the yards might be swept and scoured at very little additional public expense. Such localities of which Millbay and the Narrows are specimens, being beyond the public gaze, are apt to enact towards the whole community the part which the lucifer-match has performed towards the corn-rick, and in originating grand conflagrations as foci of possible contagion: hence it would be sound financial policy to provide for their maintenance in good sanitary condition at a little cost, which need not be burdensome, and under thorough inspection. The thoroughfares in this town are well tended, and formed with good sound materials. As pavement, concrete slabs are extensively used, prepared of small clean-washed gravel and Portland cement, which, thoroughly mixed and made with first-class articles, the chief ingredient consisting of well-washed gravel having clean surfaces and sharp angles, perfectly free from vegetable and clayey matters, furnish durable and economical paths. It is singular that, in so few instances, seaport towns and watering-places, possessing abundance of saline water, easily procurable and at nominal cost, employ it in allaying dust on macadamised roads, for which application it is much superior to the more expensive and commonly-served fresh water from the town service. As the water evaporates from the ground surface, little saline crystals form nuclei around which particles of dust are attracted by the hygroscopic nature of the salts, thus acquiring sufficient volume to resist the carrying action of every puff of wind. A few passages of the water-cart distributing sea-water along a road suffice for a length of time; and it is by no means necessary, or even advisable, to keep up a continuous application, as is usually made with ordinary water.

Like many Kentish towns built upon cretaceous formations, Folkestone is provided with a pure and wholesome water derived from wells and springs flowing from the chalk and greensand rocks at the base of Cæsar's-hill, and distant some two miles or so from the borough, under the management of a public company. The waters issue from the springs, and are pumped from the wells into open reservoirs, of which there are two with a capacity of 7½ millions of gallons.

From the service-reservoir at Cherry-gardens, the water is delivered to the inhabitants intermittently, which, at the time of our visit, was at the almost prohibitory rate of one hour per day. These waters, as they proceed from the springs or wells, are of very pure and wholesome quality, containing mere traces of organic matter; but of unusual hardness, which is provoking when performing ablutions, as proved by successive generations of visitors at hotels and lodging-houses vainly endeavouring to realise a lather from the fragments of air-baked yellow soap furnished in the lavatories.

It is well known that moderately soft water, such as flowing rivers, gradually lose the organic matter with which they may be more or less tainted, however slow the process; but Dr. Frankland has demonstrated clearly that hard spring-water ought never to be exposed to sunlight, as it rapidly deteriorates by absorption of organic matter, and by confervoid growths. Indeed, in the case of the water under report, the organic elements had increased threefold in the reservoir during the passage of the water, and had contracted organic impurity to that extent chiefly from exposure to light and air, as certified to by analytical examination of the affluent water flowing into the reservoir, and again of the effluent water as it passed out to the main.

Now, the evils attending an intermittent water supply, to say nothing of the inconvenience arising from the partial supply, long known to those versed in the subject, and of late demonstrated beyond cavil to every one, ought surely to induce the sanitary authorities to provide covered storage reservoirs, and a constant high-service supply to the inhabitants, either by arrangement with the Water Works Company, or perhaps preferably by taking the management into their own hands. Although instances of the unpleasantness, loathsomeness, and possible risk attendant upon the inconstant and household storage system of water supply are of common occurrence, we may mention that at this moment we have in view an important public establishment where the water supply is of the purest and most healthful character possible, and abundant; but from the custom of furnishing it intermittently and storing for daily consumption in cisterns, the water not only has deteriorated much by imbibing foul matter present in the air, but living organisms are found in numbers, many of them of considerable growth, and visible to the naked eye. To all who are in search of a pleasant, healthy, sea-side residence, or desire to go as sojourners for a limited time, we commend Folkestone as promising health for the weak, and recreation to the wearied mind.

THE OPPOSITION TO THE PROTECTION OF RIVERS.

WE are to have, it seems, a fight for our rivers. Probably even worse,—the surrender of our forces. The advocates and effecters of river pollution are in arms. They form two distinct bodies, arrayed under very different banners, but cordially supporting one another. First, there are the open and avowed opponents of legislative interference with the subject. These men have taken the bull by the horns, and met the proposals of the Government by a distinct negative. The rivers, they say, are prescriptively their own; at the mercy, by the common law, of any one who likes to make use of them for the discharge of any obnoxious or putrescent substance. They will use them as they like, and as they have for some time done. The other party of opponents is more insidious, and, possibly, more formidable. They are headed by men who place themselves in front of the crowd, in order that, by walking very slowly, or by merely beating time with the feet without advancing at all, they may effectually check advance. As far as the press goes, the former party have been most energetic and outspoken, and we owe them thanks for the fact. Within the walls of Parliament, the latter party have been more eager; actually having to be called to order by the Speaker of the House of Commons for attempting to attack a Bill which was under the consideration of the House of Peers.

With regard to the straightforward advocates of river pollution, we have little doubt that they can be met, foot to foot, on the broad ground of the principle underlying the unwritten law of England. But it may save time, and cut short debate, to take a different course. The great geometrician who first gave to science the forms of exact demonstration, proceeded, at his choice, by one of two different methods. He either endeavoured, step by step, to add truth to truth; or, admitting for a time the assertions of his adversaries, he showed, by the same inflexible logic, to what results those assertions would lead. And he showed that those results involved self-contradiction. In social matters there is also a *reductio ad absurdum*; although in that case the absurdity may lie, not in self-contradiction, but in contradicting the broad instincts of humanity.

It is thus very pertinent to inquire as to what will be the condition of England by the time when our grandchildren have taken the places we now hold if the rivers are left as unprotected as they now for the most part are.

Unless plague, pestilence, or famine interpose a check to the actual normal increase of our population, the England and Wales of our grandchildren will contain upwards of 40 millions of inhabitants; so that the proportion of residents to the area of the soil will be less than four-fifths of an acre per head (our working men, it should be remembered, are now asking for four acres apiece). The London of that date, supposing always no sudden or violent change, will contain some ten to twelve millions of people. The natural effect, on the one hand, of a thickly-scattered rural population, on the other hand of the dense centres of urban life, on water-springs, land percolation, and all the subsidiary feeders of our rivers will thus be something like that produced in the Thames valley some ten or fifteen years ago. But to this we have to add the enormous rate at which manufacturing processes extend their powers of mischief. Forty years ago the effect of the presence of a paper-mill on a stream was unfelt, even in the immediate vicinity. We can remember catching trout, perch, and pike in the Colne, in Hertfordshire, indifferently above the head, or rather, in the rush of the mill-pool of the paper-mill known as Hamper Mills, two miles from Watford, and at the very mill-tail of that establishment. Loudwater-mills shed no taint on the bright trout-stream which drove their machinery. Old anglers, in all parts of England, can confirm our testimony. What is the case now in rivers where, as in the Wey, paper-mills throw the refuse of their process into the stream? For how many miles do we find a turbid flood replace that first requirement of the valley, a pure river of water? In many places it is much worse. Like the Nile, when smitten by the rod of Moses, of how many an English and Scottish river may it now be said, "and all the fish that was in the river died, and the river stank"?

This process of pollution must either be stopped or not. If it is allowed to continue, what will be the result? By the time to which we have referred, it would be difficult, if not impossible, to find not only a limpid stream, but a glass of pure water, in the greater part of England. For if it be of right that manufacturers, or miners, or the followers of any noxious trades whatever, can make use of the rivers as sewers, it is a universal right. If we are now unable to stop the mischief, we must regard it as irremediable. Every river, stream, and brook throughout the country may be poisoned by any one through whose vicinity it runs, if he find convenience in so doing; if, as the advocates to whom we are replying urge, it is good for trade. So that if London be driven by the pestilent state of her natural sources of water-supply, the Thames and the Lea, to seek for water from Wales or from Westmoreland, her respite will be but short. The magnificent schemes which have already floated before the imagination of enterprising engineers, for bringing the Welsh or the Westmoreland water to London, were estimated to cost from 9,000,000*l.* to 11,000,000*l.* sterling. Perhaps it is not too much to say that our experience of railway estimates, as compared with railway cost, is such as to lead us to put the ultimate expense of such works at from 25,000,000*l.* to 30,000,000*l.* sterling. The quantity of water which this canal was calculated to convey was 230,000,000 gallons per diem: at 30 gallons per head per diem, which is a low proportion for a good urban supply, this would provide for a population of 7,666,666 souls; which may be anticipated as the future population of London by about the year 1925. But supposing this great work effected,—of what permanent utility would it be? "Sauce for goose is sauce for gander." If the Hertfordshire or the Surrey millowner, or

manufacturer, is at liberty to do as he will with his own stream, so is the Westmoreland or the Monmouthshire capitalist. If the Thames may be poisoned, from the Seven Springs to the Nore, so may the Severn, or the Wye, or the Dove, or the Eden. Nor is it only a matter of *may*. It is one of *must*. It is inconceivable that, if it be once admitted that private advantage is to overrule public policy in the matter of the use of river channels, the most far-lying streams will long escape the effects of commercial utilisation of their flow. The result may be attained, faster or slower,—but, if the case of the manufacturers be admitted, it is ultimately certain. That some stop, whether by an outburst of public indignation, or by an enormous reduction of the population of the country by pestilence, would be put to the progress of contamination before the third generation should look around in vain for potable water, we think, indeed, is not to be doubted. But on such an interference with the course of events, even our opponents would hardly be contented to rely. We speak of the result of an uninterrupted course of action such as that which they insist they have a right to carry on, and we say that the result of such a course would be the poisoning of the whole natural water supply of England.

It is not, therefore, a mere sentimental question, as the manufacturers' advocate urges. It is not merely the loss of one main feature of the beauty of the island that we deprecate. It is not only the loss of what may be rendered a very considerable element in the supply of wholesome food; it is no less than the permanent habitability of the kingdom. If any man has the right to foul the smallest brook,—to render it unfit for human use, and the carrier of disease, instead of the source of health,—to man, beast, bird, and fish, there is no safety for our rivers and lakes. And not only is there no safety as a matter of law; but what has been done in many instances shows that there is the most urgent practical danger.

Without affecting a knowledge of the common law of England such as is special to the legal profession, we yet entertain a profound conviction that no one has a legal right to foul a stream. We need not go back to first principles. *Salus populi suprema lex*, is a maxim that lies at the very foundation of human society. The maxim which must be established, if the opposition of the manufacturers to the measures of the Government for the protection of rivers fail, is, *Lucrum privati suprema lex*. The matter is reduced to this simple issue: Is public safety or private gain to carry the day?

We are very far from admitting that the national wealth is increased by those practices of which we complain; increased, that is to say in the best and most profitable manner. We hold an opposite opinion. First, we have the profound conviction, we may say the professional knowledge, that a wise and provident care of all the river-courses of the country would result in an augmentation of the natural produce of the country, to an extent in comparison with which the mere profit of the manufacturers on what they manipulate would be very small. The use of river fish as an article of diet may possibly be over-valued. It is certain that much of our river fish, such as chub, dace, and roach, is hardly worth the trouble of cooking. On the other hand, trout, carp, pike, eels, gudgeons, and some other fish are delicate and nutritious food. But we must not forget what would be the result of a very few years of such a supervision as we require on all those rivers which were formerly accessible to salmon. To how many brooklets would this king of fish ascend, if Thames, Severn, Dee, and their affluents opened ready access to the sea? The degree to which this noble fish formerly supplied food for those who dwelt on the banks of Welsh rivers may be estimated from old documents. In Pembrokeshire, in the indentures of apprentices not very long ago, a clause was inserted to the effect that the boy was not to be made to dine upon salmon more than so many times (three or four, as the case might be) in a week. This shows how much reliance was placed on the rod or the creel for providing animal diet.

The scientific utilisation of our river water for the purposes of irrigation is, however, a subject of incomparably greater magnitude than the supply of fish. It may be said that this is a subject altogether apart from the prevention of the pollution of rivers. But such a remark only shows the prevalence of those limited and contracted notions which have served to paralyse the action of sanitary reform, under the powers, or rather the weaknesses, of the Public Health Act. The measure introduced by the Marquis of Salisbury is the first intimation that the administration has given serious attention to the subject. It is the first evidence afforded that our statesmen have arrived at the knowledge of the elementary fact, that hydraulics form a branch of the special study of the engineer. The power to form watershed districts, which is given by this Bill, is the first rational step towards a systematic solution of the whole great question of water-supply, drainage, and health. The protection of the purity of the streams is one link in this chain. The application of these waters to the production of food for man and for beast, as well as for the supply of drink, and for the purposes of cleanliness, is another.

We suppose that we should be far within the mark if we assume that one-fifth of the area of England and Wales lies within river valleys and basins which might be copiously irrigated at will, if properly engineered for that purpose. In the absence of the proper sources of information, which do not exist, we must put this forward as a guess; but we think it is a guess that errs on the safe side. We are not going at all beyond a deduction from evidence which is familiar to most of us, if we declare that the produce of this area might very readily be doubled by such works as those to which we refer. We should be justified in saying trebled, but let us take the lower rate. What is the result in figures?

To double the produce of one-fifth of the acreage of the United Kingdom would be equivalent to the addition, in round numbers, of 8,000,000 of statute acres to the island. To England alone the addition would be a little over 3,250,000 acres. Considering the quality of the land thus added,—reclaimed, not from absolute, but from relative, waste,—this would be equivalent to an addition to the national wealth of 480,000,000*l.* sterling. It would be equal to the investment of that large sum in the most permanently remunerative form. It would be a boon to the country equal to perhaps the entire sum that was usefully laid out upon our railways. It would be a set-off against the National Debt, that would reduce taxation for the purpose of dividend to a fleabite. And it would not be only a gain in result, but a gain in the course of effecting the work. The stimulus given to labour, to skill, and to all that circulates wealth and comfort in the country, would be of a value hard to estimate. Not a spade could be struck into the soil, in the execution of such a plan, without ample return for the toil. But the arguments now urged against the Bill for the Preservation of Rivers would, if successful, render such a development of the agricultural wealth of England altogether impossible.

We are convinced that, merely as matter of law, the river-spoilers have not a leg to stand on. They rely for immunity on the want of unity in their opponents. The interest of one man to destroy a river is so great, that it defies the infinitesimal interests of a hundred thousand men to protect the stream. Supposing that a manufacturer saved 10,000*l.* a year by the absolute contamination of a great river. To say that 10,000 persons were endamaged to the extent of a pound each per annum might be difficult to prove, but is a very conceivable supposition. But whether it were ten, or twenty, or a hundred thousand people,—each of whom suffered this positive injury, say in cost of bringing pure water from a distance, in failure of crops, or in any other mode,—the individual interest of each would be so small, in proportion to the individual interest of the manufacturer, that he might safely count against their combining to fight him. For the fight would not be a matter of right, but a matter of purse. To establish the common right, fought from court to court up to the House of Peers, would involve an expense as to the incurring of which the manufacturer would feel quite safe against the community. The mischief must be very grave before the mass would move. From one it must run to two, three, ten, or more pounds of damage per head before this would be the case. In any case, it would only be when one or two individuals, resident proprietors, mayors of towns, candidates for public honours, or the like, were driven to bell the cat, and to call on the public to support them in the contest which they commenced, that the great foulers of the streams would have any cause to fear that they must actually confine themselves within the limits of undoubted legal right.

As to the fact that no man can have a legal right to foul a river, we think it cannot be gravely contended that such is the case. The utmost that can be urged is, that a prescriptive right has been allowed to grow up. For so many years, a man may argue, I and my predecessors have thrown our rubbish into this river. We have laid out large sums of money on our works, on the understanding that this practice should be continued, and now you have no right to stop us.

We do not say that it might not be possible, under some circumstances, to make out some claim to compensation on this head. In the case of such a use of the water as does not poison it, as, for instance, in mills driven by water power, no doubt the prescription holds. When our river valleys are properly drained and irrigated, the mill-owners will have to be compensated. As much as this was admitted by certain provisions of the first Public Health Bill of 1872, although they were subsequently withdrawn. But as to absolute fouling of the stream, so as to render it unfit for the use of people lower down its course, we cannot believe that any length of time for which the practice has been unabated can justify the nuisance. It is a very ancient legal maxim, *nullum tempus occurrit regi*,—that is, no prescription of time holds against the crown. The Crown may be regarded as the natural conservator of our rivers. The Thames is the king's highway as much as the Dover-road. We cannot conceive that any bench of judges should rule that it was within the range of individual privilege to destroy the one any more than the other.

The principle that nuisances are not to be tolerated underlies all our social legislation. The only question allowed to be open is, what constitutes a nuisance. It is probable that this question has been complicated by legislation. It may prove that the definition by Act of Parliament, of certain nuisances, may be held to condone the commission of offences not so defined. We are far from saying that such is the case. We think that an able and experienced lawyer would hesitate to give an *ex cathedrâ* opinion on the subject. But it is in the chapter of possibilities. Of course if such a legal immunity has been unintentionally created, the power that has done the wrong must find the remedy. The breadth given originally by the common law to the term nuisance must not be narrowed by trick.

With regard to the second and more insidious party of the opponents of the Bill, it is probable that their opposition will be limited to such criticisms of detail as would wear out the time or patience of the Legislature, or render the Bill, if passed, practically inoperative. One important point has been indicated, which, of course, can be readily met in the definitions attached to the Bill. That is, that the placing of rubbish so near to a stream that by floods, wind, or any other accidental causes, it may be swept into the stream, must be brought clearly under the penalties of the Act. Another insidious mode of opposition is to raise the cry of "No centralisation." That means, as far as engineering operations are concerned, "No efficient improvement." So long as each petty union or parish is left to its own devices in matters of great national importance, and the proper management of which depends on the knowledge of the physical and geological character of great natural districts of country, so long nothing useful will be done. The friends of health, wealth, and decency are in the minority; of that there can be but little doubt. It is only by organisation that they can be able to bear up against the crushing weight of reluctant inactivity. All our experience of the Public Health measures is definitive on this point. In detail, the health inspector, or the sanitary engineer, will everywhere be beaten, unless it be made clear that each special case is a constituent part of one great whole. As each sewer, or series of sewers, forms but a portion of the channel through which a great watershed sends its rainfall to the sea; as each affluent is a component part of the river system which it feeds; as the freedom of each union from pestilence is the condition of public safety; so is the conception of the entire question of water supply, water distribution, and water outfall as a whole, and the intelligent legislation for, and administration of the subject as a whole, the object of all those who have any intelligent care to promote the health and the wealth of England.

A New Asylum for the Sick Poor, erected on the site of the old Strand Union Workhouse, in Cleveland-street, Fitzroy-square, at a cost of upwards of 32,000*l.*, has been opened.

THE MAMERTINE PRISON: ROME.

THE investigation of the Mamertine prison, undertaken in 1870—1871, has somewhat blunted the point of Juvenal's well-known verses, in which he refers to those happy times under the kings and tribunes when one place of confinement was sufficient for all Rome:—

"Felices proavorum atavos, felicia dicas
Secula, qui quondam sub Regibus atque Tribunis
Viderunt uno contentum carcere Romam."

For it now appears that instead of containing two small chambers only, as for many ages it has been supposed to do, this "one prison" included a vast system of dungeons, the extent of which can never now be thoroughly explored. And, worse than this, there seems to have been little need of any large place of durance, for there has now been brought to light a passage in direct communication with the Cloaca Maxima, along which the strangled corpse was dragged to be whirled out of the city beneath the dark arches of the sewer.

In fact, this gaol was nothing else but a gate of death, through which the wretched passed. In it the Decemvirs Appius Claudius and Oppius committed suicide; Jugurtha, after having been led in the triumphal procession, was left to die of starvation; the Gallic chieftain Vercingetorix was barbarously murdered by order of Julius Cæsar; the accomplices of Catiline were strangled by command of Cicero; Sejanus and his innocent daughter were put to death; and countless others were butchered during a thousand years of Roman tyranny.

The Roman historians assert, and modern discoveries have, in general, borne out their statements, that the building was commenced by Ancus Martius (B.C. 640), from whom it received the name Mamertine, Mamers being an older form of Mars and Martius; and that it was enlarged by Servius Tullius (B.C. 578); but they give no indication of the extent of the structure.

What first attracted the attention of the antiquary, and led to the rediscovery of so great a part of the old prisons, were the arches of tufa with springing stones of travertine, which are to be seen in the Vicolo del Ghettarello, and which Canina supposed to be the remains of shops round the forum of Julius Cæsar. Getting, then, on the inside of these arches, which are formed of large blocks in the style of the time of Servius Tullius, a man descended into a vaulted chamber dark as night, formerly a butcher's storehouse, and thence through an opening in the floor to a lower and still more loathsome dungeon; here was a trapway in the floor, and beneath it was darkness. He went not down, but passed on to another chamber, in form a trapezium, and having gone through a gap in the brick wall thereof, was in a corridor passing in two directions, and arched over by a semi-hexagonal stone vault. Making his way, then, over ground saturated with water, and stooping low under the ponderous vaults of this horror-striking place, he reached a spot where three passages meet, and turning round a sharp angle he stood before a low iron door, which opened upon the deepest prison of St. Peter. Retracing his steps he followed the passage until he heard before him the gurgling of the cloaca; then he returned to the light, having seen many other chambers also.

Research has demonstrated that some of these chambers are comparatively modern subdivisions; but the original construction of large blocks of tufa clearly distinguishes the original walls from the additions. The prison in this part consists of a series of chambers 40 ft. by 14 ft., two of which have a triangular apse at one end, divided by a wall of partition, which runs into the centre of the triangle. The arrangement is suggestive of torture. Beneath the corridors run drains to the Cloaca Maxima, which, owing to stoppage, had overflowed the passages, so that when the present explorations were commenced, and the archway closed with Mediæval rubblework (since replaced by an iron door) was broken through, the stench which issued forth drove both priests and people from the church above. Along the main corridor are seen branches, probably leading to other chambers, for no external wall has been found.

The prison of St. Peter, which has hitherto been supposed to constitute the whole of the Mamertine Prison, stands at the north-east corner of the Forum Romanum, and since 1598 has been hidden beneath the Church of San Giuseppe dei Falegnami, and its crypt, the chapel of the Crucifixion. It consists of two chambers, the one over the other, built in the most massive style of Etruscan architecture, and separated by a vault of travertine, with an opening in its centre, through which the prisoners were let down into the lower den. This vault is not constructed with voussoirs, but has been formed by corbelling out the circular wall, so that it is in shape a cone truncated by the pavement of the upper chamber; this mode of construction, which we see in the monuments of Cære and the Pelasgic remains of Greece, proves the very high antiquity of the work. The lower chamber is circular, with a diameter of 20 ft., and is partly excavated in the tufa rock, and partly built of large blocks of tufa. Here is the iron door mentioned above, and the spring which sprang up to enable St. Peter to baptise his gaolers and forty other men. It is fitted up as an oratory. The upper chamber is oblong, 30 ft. by 22 ft., and about 16 ft. in height, and is constructed with large masses of stone of the time of the kings, without cement. It has a vault of travertine. On the cornice, in front of this chamber, is an inscription, with the names of the consuls of the time of Tiberius, recording the fact of its having been rebuilt; but the walls of the lower chamber, being considered as foundations only, were not altered. A very uncomplimentary insinuation as to the thickness of St. Peter's skull is made by "the Church" when she points out a deep indentation on the stone-work of the prison as having been made by the head of the Prince of the Apostles, when thrust against the wall by a brutal gaoler.

Rome.

COINS: MEDALS.

"THE Fifth Annual Report of the Deputy-Master of the Mint" has lately appeared, and a glance at its pages leads us to deplore the still-delayed provision of commodious premises, and adequate machinery, for supplying the ever-increasing demand for fresh coin in this country and the colonies. It is nothing less than a disgrace to England that its Mint has "machinery more obsolete and inefficient than that of any mint in Europe, not excepting that at Constantinople"; and that, "whereas foreign countries with large metallic circulations, such as France and Germany, possess many mints, the United Kingdom and the Colonies depend for Imperial coinage on the London Mint alone, aided by its branches at Sydney and Melbourne, from which gold coin only is issued."

One result of this has been that, "in September last it became necessary to suspend the operations of the department for a period of six weeks, in order that the machinery might be again put under repair, notwithstanding that a similar suspension, for twelve weeks, had taken place in the previous year." In consequence of this, a large supply of pence and half-pence being required for the London district, it was found necessary to have recourse to Messrs. Heaton & Sons, of Birmingham, for help; and a contract was entered into with them for a hundred tons of coin, of which the nominal value was 41,962*l.*, involving, of course, a great increase of expense, from having to put out the work.

We may remark, incidentally, that the coins struck at Birmingham, under this contract, bear the Mint-mark, "H," on the reverse, under the date, to distinguish them from those made at the Mint; and this confirms the belief which most persons entertained, that a confession of forgery of these "H" marked coins, which appeared in the papers some time since, was a hoax.

The present arrangements of the machinery at the Mint render it impossible to strike at one time more than one kind of metal, or one denomination of coin. The supply of silver coin during 1874 was quite inadequate, and explains why one had as much difficulty in finding six-pence as the woman with the broom in Mr. Millais's picture.

In a tract of *eighty* pages, exactly *two* are devoted to a "History of Medals," the deputy-master, no doubt, viewing the subject with an economical rather than an æsthetic feeling. The notice of medallic art ranges from a Syracusan coin representing Philistis, wife of Hieron II., to those now being struck for the troops engaged in the Ashantee war; and in covering so vast an era with so brief a notice, we could hardly look for a very exhaustive account. Still, in any notice of British die-sinking, at least one line should have been given to a mention of the remarkable series of twenty-two medals already produced, at a cost of more than 5,000*l.*, by the Art-Union of London, commemorating the most famous painters, sculptors, and architects of England; which is still going on, and which will favourably compare, in design and execution, with any specimen ever produced of the medallic art. Of the existence of this truly national work, the deputy-master could scarcely be ignorant, seeing that the Wyons—father, son, and nephews—and G. G. Adams, at different times employed by the Mint, have been, one or other of them, continuously at work on the medals of the Art-Union for five-and-twenty years, and would hardly fail to show at the Mint, from time to time, proofs of the works they had in hand.

THE DISCOVERIES IN THE TROAD.

ON Thursday, the 24th ult., Dr. Schliemann read a paper at a meeting of the Society of Antiquaries, on "The Discovery of Homeric Troy," and was most warmly received. He gave a general outline of his investigations, with which our readers have long been familiar. At the close of his most interesting account,

The Right Hon. W. E. Gladstone, who was present, was invited to open the discussion, and in the course of an admirable address said, I think our debt, as regards Dr. Schliemann, is really independent of the correctness or incorrectness of his opinions. We owe a debt to him for his devotion and for his example—a debt which could never be cancelled even if he were to fail in the proof of any of his conclusions. But I must also say it appears to me, endeavouring to look calmly at the matter, that Dr. Schliemann's main conclusion is exceedingly difficult to shake. I myself have for many years been very strongly what may be called a believer in Homer and the Homeric poems, as far as regards their poetical unity and as far as regards their historical character, in the highest sense of history—that is, as regards the manners and institutions of mankind. But with respect to the question of the facts of the poems as distinguished from the manners, the institutions, and the characters described, on this matter my mind has been altogether open, and, I think, to some extent impartial. I am bound to say, also, I have always had the impression—I do not know whether Dr. Schliemann shares it or not—that it is extremely difficult as to certain details to reconcile the topographical features of the Plain of Troy, as it now exists, with the topography described in the "Iliad." I have never been able fully to embrace the opinion current until quite recently that Bunarbashi was the site of Troy; for it was quite impossible to reconcile that site with the distance from the sea and to bring together the natural features of the place with the described features of the poem. But I do not see by what arguments are to be met the proofs adduced by Dr. Schliemann in favour of Hissarlik. He has shown indubitably that at a great depth below the surface he has found the remains of a city of a certain size and a certain advance in civilisation—a city which underwent a sudden and violent destruction by means of fire,—and so far he is in entire and indubitable accordance with Trojan and Homeric traditions. Looking further into the details of Dr. Schliemann's discoveries and the details of the Homeric poem, in almost every point on which I have had the opportunity of instituting a comparison there is a wonderfully precise correspondence between the facts of the poem and the evidence afforded by the objects which he has discovered in the recesses he has unveiled. One of the most important pieces of evidence is that which relates to the use of metals, and in this great department the discoveries correspond with the representations of Homer. It is undoubted that Dr. Schliemann has discovered objects manufactured of copper, while, on the other hand, he has not found a trace of iron in Troy. I am not quite certain from my recollection of the text now, but do not think Homer ever speaks of the use of iron at Troy. He speaks of iron in his own time, but as a thing so extremely rare and valuable as to approach in character the precious metals. Again, with respect to its non-appearance among Dr. Schliemann's objects, we must bear in mind that it is an extremely perishable metal when exposed to the influence of corrosion, and it would not, therefore, be surprising, if every foot of the site were turned up, that no iron relics should be discovered. Then, again, with regard to pottery, Dr. Schliemann tells us that in this third pre-historic city, which he takes to be the city of Priam, the pottery was generally hand-made, but that he found in that city a certain number of plates, which were made by the potter's

wheel. If that is so, it is evident that the potter's wheel was just beginning to be used, and we may assume that it had not yet been employed in producing works of art. This, I think, is in precise correspondence with the stage of the potter's art as we find it in Homer, who only just mentions the potter's wheel, but does not refer to any work of art, or even any object—certainly to no important object—of pottery. There are a large number of points to which it is impossible now to refer; but I am bound to confess that I do not think it will be possible to thrust back the period of the existence of Troy to an antiquity so remote as that suggested by Dr. Schliemann. First, the evidence of the poem is against it. One of the principal of Homer's genealogies—which really conveys his idea of history, for he had no knowledge of chronology—is that of the family of Priam; and this gives Dardanus as the founder six generations before Priam and the Trojan war. Consequently, six generations before that war there was no Troy. Now, Dardanus's name is found in Egyptian inscriptions, whose chronology has now attained a considerable degree of fixity, of the time of the nineteenth Egyptian dynasty, which may be stated to have begun somewhere about the fifteenth century before Christ. The accession of Rameses II. may be placed about half a century afterwards, or say at the beginning of the fifteenth century before Christ. That, however, will not be quite long enough for the purposes of Dr. Schliemann. It is a curious fact that, according to the Egyptian inscriptions, the time of the reign of Sesostris, or Rameses II., was the time when there was a strong combination of the Assyrians and Khita, or Hittites, which included the Lycians, Mœsians, the Dardanians, and the people of Asia Minor, to check Egyptian power. Therefore, in the fifteenth century before Christ the name of the Dardanians still was in possession of the plain of Troas; and Troy did not yet exist, because afterwards their historical names are blended. It is therefore quite plain that you cannot undertake to throw back the Troy of Priam to such a remote antiquity as Dr. Schliemann is disposed to claim for it, and I think if he gets an antiquity of 1,300 or 1,400 years before Christ he ought to be very well satisfied.

THE RATEABILITY OF OXFORD UNIVERSITY LANDS.

AN Act of Parliament is in progress declaring that all the land and buildings within the University of Oxford, which are now by law exempted from being rated to the relief of the poor, shall in future be rateable to the relief of the poor in the same way as any other rateable property within the University; and for this purpose Christ Church College is to be deemed to be one of the colleges of the University. The University, with its colleges, halls, and lands, whether such lands are in the occupation of the University, or of any member, or professor, or officer of the University, in right of such membership or office, is to be deemed to be a separate parish.

IMPROVEMENTS AT BRADFORD.

BY the demolition of the buildings in and around Union-passage, one of the few remaining links that connected new with old Bradford will be removed, and in a very short time New Darley-street, with its spacious frontages and commanding architecture, will have obliterated all trace of this ancient landmark.

At the bottom of New Darley-street is about to be built the Bradford Liberal Club-house, and shops and other business premises. The plans of the new buildings have been prepared by the architects, Messrs. Lockwood & Mawson, who have also in hand the plans for the shops to be erected on the adjoining plot of land, belonging to Mr. Varley and Messrs. M. Rhodes & Son. By this means arrangements have been made by which the whole of the buildings on the plot of land bounded by Kirkgate, Queensgate, New Darley-street, and Hustlergate will be of a uniform style of architecture. The plans which have been prepared for the Liberal Club show a neat elevation in the Italian style, without any great amount of ornamentation, except at the frontage to Hustlergate and Bank-street, and at the principal entrance to the Club-house in Darley-street, at both of which places something more pretentious in the way of architectural beauty is to be attempted.

An immense pile of warehouses is in course of erection by Mr. Thos. Taylor, woolstapler, Bradford, and Mr. Geo. Hargreaves, jun., Shipley, on the site of the old Union Foundry, Manchester-road. When completed, the various blocks will represent an amount fully equal to 250,000*l.* The construction is being carried out by Messrs. Taylor & Hargreaves themselves, who make their own bricks from clay got on the spot, prepare wood, dress stone, grind mortar, and do a great deal of this work by steam-power. Mr. E. Atkinson is the clerk of the works; Messrs. Jackson & Longley are the architects.

KURRACHEE BREAKWATER.

IT is said that a serious rift has recently disclosed itself in this famous breakwater. The outer portion reaching nearly half across the pier, or mole, has parted from the inner half of the structure, which remains quite firm. The rent thus made varies from 2 in. to nearly 1 ft. wide, and it is reported that the detached outer portion may be seen to move with the heaving tide or swell outside. Steps have been taken to arrest the possible outshoot of the concrete. Certain gaps or interstices were originally left in the 27-ton concrete blocks of which the mole is built, and strong teak piles have now been driven into these holes, and are connected by chains with the inner and secure portions of the pier. As far as the cause of the disaster is concerned, it is supposed by some that the force of the surge, or the suction of the ground swell that sweeps round the coast, has drawn away a great part of the rubble base on which the concrete blocks rested. Others imagine that the action of the tides and currents has been of a sufficiently scouring nature to fetch away the sand or shell *débris* on which the rubble was thrown. The former supposition is more probable.

DISPOSAL OF TOWN SEWAGE.

THE Local Government Board, wishing to obtain recent and reliable information as to some of the modes of dealing with town sewage now in use, have directed special inquiries into the practical efficiency of prominent systems of sewage disposal in operation—namely, sewage farms and sewage irrigation, sewage filtration through land, and sewage clarification by treatment with chemicals, and deposition in tanks,—selected works which have been in operation some time will be examined and reported upon. Mr. Clare Sewell Reed, M.P., Parliamentary Secretary; Mr. Robert Rawlinson, C.B., Chief Inspector to the Board; and Mr. S. F. Smith, Assistant Inspector, have been deputed to the work. The inspections and inquiries will be extended through the autumn, the return being completed as soon as practicable.

It may be hoped that we shall now obtain some definite information.

A NEW STREET FROM HOLBORN TO THE STRAND.

THE Strand District Board of Works are taking steps to secure the construction of a new street between Holborn and the Strand. The subject was discussed at their meeting last week, when it was urged that the proposed new street could be made at a comparatively small cost, and would be a great improvement by clearing away a great number of crowded and unhealthy dwellings in the neighbourhood of Clare-market. The following resolution, proposed by Mr. Fowler, was carried unanimously: "That in view of the completion of the new Law Courts, and no provision being made for a direct line of street from Holborn to the Strand, and the growing necessity for such communication, the Metropolitan Board of Works be memorialised to construct a new line of street either through Gate-street, Lincoln's-inn-fields, Clare-market, or some other desirable route, and carry the same out as a metropolitan improvement, and that the St. Giles's and Holborn District Boards be requested to co-operate with this Board to attain this important object."

Land in Berkshire.—The Barton Court Estate, near Hungerford, Berks, comprising about 2,500 acres, and yielding an annual revenue of 5,000*l.*, has been purchased for 120,000*l.* by Sir Richard Sutton, bart., of Benham Park, Newbury, who is the proprietor of neighbouring property.

THE ROADS AND PAVEMENTS OF LONDON.

THE conditions of the surface formation, paving, and cleansing of the streets of the metropolis, as influencing the cleanliness and health of the population, its circulation of passengers and goods, and the extent to which those conditions may be improved by the application of sanitary engineering and mechanical science; have been the subject of inquiry by a committee appointed by the Society of Arts.

The first course of inquiry was to ascertain the intrinsic qualities of the works required to be done; the next to determine the character of the agencies required to do them. They have just now made their report, and from it we will take a few passages. The results of earlier inquiries are first related:—

"The domestic fire acts as a pump, which draws in the air of the street, and with it the filth of the street, for deposit on the person, clothes, and furniture. A lady living near the drive in Hyde Park stated that she could write her name twice a day on the dust on her piano; that is to say, in summer time, when there are comparatively few fires and little soot. The rate of accumulation on the skin may be observed by well-to-do people, who have to wash their hands and faces two or three times a day to maintain cleanliness; and as to clothes, by an increased rate of expense of washing. The estimated washing bill of the metropolis is upwards of 5,000,000*l.* per annum. As to the special sanitary effect of the chief ingredient of the filth of the street, it is found that the gaseous products of putrid and decomposed horse-dung partake in a greater or less degree of the pernicious character of those from the human fæces. In urban districts, which have been well drained, with proper self-cleansing sewers, and freed from emanations from them, fever, nevertheless, has been found to lurk in those quarters where the surface paving and the surface cleansing is bad, especially amongst the children who are much out in the streets, and who, from their habit of playing with street dirt, and their lower stature, are more within the influence of low surface emanations than adults. On the other hand, the extension of impermeable paving alone, other conditions as to drainage, &c., remaining the same, has been attended with a marked reduction of malarious disease. The greater part of the dirt deposited on the skin, which constitutes the visible filth and squalor of the lower class of the population in towns, is considered to be chiefly composed of street or road mud, or of pulverised dung. The effect of the deposit of dirt on the skin is displayed by the effect of its effectual removal by regular ablutions with tepid water. This has been marked in the instance of some ragged schools, where the assemblage of dirty children created an atmosphere so offensive, and attended by so much illness to the teachers as well as to the children, that for their protection, as well as for the protection of the teachers, it was found necessary to have recourse to ablution with tepid water as a means of prevention, and thus the condition of the atmosphere was considerably freshened, and the health of the children and of the teachers considerably improved. As a rule in sanitary science, the death-rates of children are considered the most important tests of general local sanitary conditions, as children are the least affected by occupation, and the most kept within those conditions.

The effect of skin cleanliness on health has been most marked on numbers, in children's institutions, where sanitary results may be the best discriminated. In some of these institutions, in old buildings, the death-rate had been regularly for years about 12 per 1,000; but a removal of cesspools, an improvement in the drainage, and better ventilation, producing what may be called comparative air cleanliness, were attended by a reduction of the death-rate to 8 per 1,000. The next step in sanitary improvement was to effect skin cleanliness by the introduction of regular, complete head to foot ablution with tepid water, and this was attended by a further reduction of the death-rate from 8 to 4 in the 1,000. Other instances gave as high a value as one-third as the result due to the sanitary efficiency of complete skin cleanliness as a preventive."

"People who are nice in the air they breathe, as well as in outward personal cleanliness, will let as little as possible of street-air enter their houses, except through screens of the finest wire-gauze,—as window blinds,—as did our late

member, Mr. Appold. He stated that in the City he found it necessary to have his screens washed every day, to prevent their being clogged up, and that, on foggy days, they were choked up in three hours. Parliament, for its own protection against the common street air, has had recourse to science to free that air, as well as might be done, from its grosser impurities. The late Dr. Reid, to whom the task was first confided, proposed to avoid the street air by drawing down less impure air from the superior strata at the top of the two towers, the Victoria and the clock tower; but he found, even then, that at times Parliament might be exposed to polluted currents from the tall chimneys of manufactories in the neighbourhood: one a bone-boiling manufactory, another a muriatic acid manufactory. Being driven back for a supply to the street air, he resorted to various contrivances to screen it, and at times to wash it."

"The importation of granite is upwards of 600 tons per annum, to supply the abrasion and wear of the streets, besides large quantities of flint and other cheaper stones obtainable near London.

The special effects of insoluble matter as detritus are the most clearly distinguishable in Continental towns, where there is very little traffic, and little dung-dust; but where there is a great deal of sand or inorganic dust, the excess of this condition is attended by an excess of disease of the respiratory organs. The influences of particular sorts of street and road dust are instanced by the effect of constant exposure to them in highly concentrated states;—as of abraded granite, by the diseases of the constant workers in granite in Scotland; of abraded iron (which is found in considerable proportions in streets of great traffic), by the diseases of the Sheffield knife-grinders and metal-workers;—of powdered flints, which are extensively used on metropolitan suburban roads, by the special effects of constant working in flint dust in the potteries, where it is known that it cuts short the lives of robust persons in an average of twelve years. Dr. James Sutherland, the Army Sanitary Commissioner, thus describes the production of flint spiculæ, which are peculiarly irritating. In certain districts of the metropolis 'the road-making consists of emptying and spreading ordinary flints, one of the most brittle of all materials. The first heavy cart which passes over it fractures the flint, and with moderate traffic—as, for instance, on the roads leading up to the Crystal Palace—the pulverising of the flint is so rapid that a layer rarely lasts above three weeks, and the entire mass is then scraped off and used by builders instead of sand. The spicular flint particles are wafted about by the slightest wind, and enter all the houses, and are breathed by all passengers. The cost to the ratepayers must be very great, while no one object of a really scientific and healthy road is attained.' The dry days of March, when winds and dust predominate, are, as medical men are aware, attended by numerous affections of the mucous membranes of the throat and frequently of the eyes. Foul air leads to the disagreeable habit of expectoration."

"In addition to the marked evils noted as arising from the movable matter on street surfaces—dung, dust, and abraded stones—there is great sanitary evil arising from the emanations of immovable absorbed matter between the stones of the pavement, and excrementitous matter retained beneath them. Excrement-sudden soils are distinguished as seats of epidemic disease amongst populations."

"The coarseness and want of refinement in the common local administrations is displayed not alone by the filth of the streets under their charge, but by the disregard of the production of pain and other evils by the noise of traffic over different sorts of paving of the carriage-ways."

"Double-paned windows exclude much noise and save much warmth; but the annoyance caused by the vibration of the buildings continues where the roads are rough. Relief is provided for the wealthy by covering the roadways before their houses with straw, but the great majority of persons and the poor cannot afford the expense of such relief. It is estimated that in urban districts there are always about 10 per cent. of cases of 'bed-lying' sickness amongst the population. In a mile of public thoroughfare there will be constantly between fifty and a hundred ailing persons whose sufferings will be specially aggravated by such conditions of noise and vibration as those described."

"The general conclusion arrived at is that, as a rule, all loud noise from vehicular transit in the streets,—all grinding and rumbling of wheels, and jolting and banging of carts and carriages,—all vibrations of the houses and shaking of doors and windows,—denote a greater or less waste of force, and a low state of science and knowledge on the part of those who are charged with the construction and maintenance of the public thoroughfares. To the same ignorance may be charged the greater proportion of all dust, dirt, and mud, and all bad smells on street surfaces, as well as of the dirt on clothes and on the person from the dirt and dust of the street, and the nervous agitation, restlessness, and sleeplessness at nights from the noise of carts and carriages in the streets.

Loss of Tractive Force by Bad Road Construction and Bad Cleansing.

The loss of traction force, even from small elevations, such as those occasioned chiefly by bad cleansing, is stated by Sir Henry Parnell's work on roads as the result of experiments. The draught is stated to have been:—

On a paved road	2
On a well-broken stone road in a clean state	5
On the same covered with dust	8
On the same wet and muddy	10
On a gravel or flint road, clean	19
On the same road, wet and muddy	32

The effect of small elevations of surface in occasioning loss of force, may be observed in the retardation of the heaviest railway trains by scattering gravel on the railway.

It was shown by experiments with Sir John M'Neill's "road indicator," that by a granite tramway, on a slope of 1 in 35, the power required to draw a ton, was reduced from 29¼ lb. to 132 lb.

"The losses occasioned by differences of conditions of the surface are aggravated by frequent unnecessary differences of inclines. Assuming the surface pavement of the streets to be smooth, and as good as the surfaces of iron railways, the loss of force from street inclines will be as great as it is demonstrated to be on railway inclines. The late Mr. Butler Williams, C.E., formerly engaged on the Ordnance Survey in Ireland, and afterwards professor of geodesy at the College of Civil Engineers at Putney, gave some evidence on this subject before the Health of Towns Commissioners in 1844. He displayed a study of the plan of Sir Christopher Wren for the rebuilding of the City of London after the Great Fire.* He presented that plan as displaying the enormous loss, by ignorance or by the absence of science in the directing minds of local public works. He showed the gain in distance by direct lines, as well as the gain from avoiding the losses of force by bad gradients. To illustrate this loss, he got a survey of two lines, one from Holborn to Cheapside, and the other from Fleet-street to Cheapside, and taking the then traffic over these two lines, he showed that the loss of time and power entailed by the defective gradients and increased distances could not be less than 100,000*l.* per annum. Such losses of force from defective gradients, it will be perceived from a view of any contour map, were more or less entailed over the whole area, from setting aside Sir Christopher Wren's plan of rebuilding the city as nearly as possible on a level plane. It may be mentioned, in the way of illustration of administrative principle, that Sir Christopher Wren would have excluded blind alleys and inferior dwellings, and also graveyards and noxious trades, and yet have given to every owner the same area, though perhaps in a different, and invariably in a better, position, with frontages in wider streets, with better sweeps of winds and ventilation. The plan was approved by the king and the most instructed minds of the day; but the corporate, or what may be called the vestral, minds of the day prevailed in retaining the same old lines, the old gradients, and the old structures, and, in doing so, it is estimated by sanitary authorities, they entailed upon the population, besides the loss upon the traffic, a death-rate greatly in excess of what there would have been under the rudimentary sanitary conditions which Sir Christopher Wren's plan would have achieved.

The Professor observed,—'With respect to old districts, improvements of importance might be accomplished without interfering with the convenient access to houses, and at very moderate cost, by taking advantage of the repavement of streets, to level or reduce by a few feet the mere surface irregularities, such as may be noticed in many of the thoroughfares of the metropolis. In the repavement of the streets, as generally conducted at present, the old curves following the existing irregularities of the surface are retained, whereas, not unfrequently, an excavation of even as little as 1 ft. or 2 ft. at one point, and a corresponding filling up of 1 ft. or 2 ft. at another point, would remove irregularities which, as far as they go, are objectionable. Every foot reduced in the rise of a thoroughfare open to great traffic produces a corresponding saving of power by no means unimportant.'

After adducing various examples of the wastefulness of ignorance, Professor Butler Williams observed, 'They show that, for amendment, you must have men of extended views, capable of embracing all the elements that combine to produce the results that ought to be obtained, and that it can scarcely be expedient in most cases that men of limited education should be called upon to decide on important sanitary matters.'

The Distinct Provision for Wheel Tracks and for Horse Tracks in Roadways.

The first conclusion arrived at by the General Board of Health for the improvement of the pavement of the metropolis was that provision must be made of smooth tracks for the wheels, distinct from the provision for the track and the foothold of the horses. This distinct provision had, indeed, long been made and successfully applied in the cities of Northern Italy. Lord Palmerston once called public attention to it, and expressed a hope that so luxuriant and excellent a system might be introduced into this country. Mr. A. Stevenson, C.E., calls attention to it in his article on road construction, in the 'Encyclopædia Britannica.' Mr. P. Le Neve Foster, jun., the son of our respected secretary, a civil engineer in practice in Italy, has been so good as to give us sketches and a report descriptive of the method in which the principle is applied in Milan and other cities, together with the costs in detail. On wide thoroughfares, as at Milan, there are three or four lines of wheel-track of this description. On some, however, the horse-track is paved with Dutch clinker bricks. The principle of the Italian roadway described has, indeed, been applied by stone trams as wheel-tracks, on a part of the road to the Commercial Docks, at the East End of London, in several narrow streets in the City of London, at Holyhead, and in other places. Some experiments made by Sir John M'Neill on the granite tramways at Holyhead, and others on the granite tramways near the Commercial Docks, demonstrated that by their use a saving of more than half the horse-power, as compared with the common roads, was effected. It was shown that whilst the horse retained his rough foothold, considerable gain in force is obtained by the tramways in ascending inclines. On an incline of 1 in 20, the power required to draw a ton was reduced from 295 lb. to 132 lb. An incline of 1 in 35 might be ascended at a good rate of speed, and descended at twelve miles an hour without risk. In passing over these granite tramways, horses will have two feet on the roughened foothold; they do not fall, and generally there is no more slipping on them than on the common granite roads in the common conditions as to cleansing. When they were first laid down in England, each wheel-track had kerbs; but in recent constructions they are dispensed with, and vehicles may freely move from one part of the road to another."

After observations and particulars as to street cleansing, the committee arrive at the following—

Primary Conclusions.

On the whole, it will be found that there have been established, as standing demonstrations long made, but existing fruitlessly, during nearly the last quarter of a century, for the guidance of local administrations, viz.:—

First, that the cleansing of the surfaces, and the preservation of the subsoils immediately beneath them, from putrid animal or vegetable matter in suspension or solution, is an important branch of sanitary art and science, powerfully affecting the health of the population, which ought, for the safety of the health and the lives of the population, to be placed under the responsible supervision of sanitary officers and special engineers.

Second, as regards the surface pavement of the carriage-ways of streets such as those in the metropolis, by the right application of engineering science and art in the improved levelling and paving, the tractive force required for persons and goods may be reduced more than one-half,

* A view of the City constructed on the lines of this plan will be found in our present number.—ED.

with a proportionate reduction of street dirt and dust.

Third, by the application of special engineering and mechanical art in hydraulic and drainage arrangements, the time and expense of the surface cleansing of streets may be reduced more than one-half, and injuries to goods and furniture, and clothes, as well as excessive dirt on the person, and serious injuries to the health, may be prevented.

Mal-Administrative Conditions Productive of Public Insecurity and Waste.

The mass of direct evils, annoyances, and inconveniences fall, not upon the 200 or 300 owners of shops on the line of Cheapside, but upon the owners of the 12,000 vehicles passing daily along it. They fall not upon the shopkeepers, but upon the passengers, who are estimated at three-quarters of a million, a ten times greater number passing through the City daily than the total number of its inhabitants.

"In answer to inquiries as to the experience on this line, one of the shopkeepers in Cheapside stated that he believed that asphalte was less slippery than the granite pavement. When the pavement was of granite, the falls of horses before that shop were about three a day, whereas since the asphalte there had only been about two in a day,—that is to say, out of some fifty accidents daily along that line. But as to those three or those two regular falls daily, had he made no representation to the local authorities, or to those who had charge of the roads? No, he had not. The horses were not his, and so neither he nor other shopkeepers appeared to have been moved by the scenes of daily animal suffering to make any effort for its prevention. Very recently it appears that the slipping along that line on account of its "greasy" condition, occasioned an outcry for better cleansing, when this outcry was met in a manner which, if it were culpably clumsy, might be malice, for the street was so flooded with water as to make the entire roadway "a slop." The security to the horses was, however, at once complete; but there was an inconvenience to the shopkeepers from that "slop," and on a petition from them it was discontinued; that is, the safety of the passengers and the horses were sacrificed, and continued excessive cruelty to horses was maintained, and a most valuable material, discredited, on account really, as it would appear, of a mere ignorance of administration and inaptitude in cleansing.

The great vehicular interest, and the far greater interest of foot-passengers whose lives and property are exposed, and who are subjected to continued terrors and annoyances, are evidently unrepresented, and left without effective protection.

The case will be found to be clear for a wider and more skilled representation on the part of the public, and for a competent and more general responsibility than is practicable by non-scientific bodies like the overseers or vestrymen. Some of the surveyors and other officers appear to be in advance of their work, but when amendments have been suggested to them they have declared that it was of no use to propose them, as it was beyond the capacity of their boards to entertain them. But the administrative areas are in conditions of mere barbarism and ignorance as to road formation, *cleansing*, and maintenance, and in such small and fragmentary patches as to preclude economical applications of science and art requisite for the purpose."

The incoherent and obstructive condition of the local administrative arrangements of the metropolis will appear on consideration of a tabular view, presented by Mr. Sharp, showing the division of the main thoroughfares amongst independent vestries or other local authorities.

As a summary,—from Hammersmith to Bow is about 10 miles, and is under 10 authorities; from Hammersmith to East India Docks is about 11¼ miles, and is under 13 authorities; from Stamford-hill to Tooting Graveney is about 10 miles, and is under 9 authorities; from Highgate to Tooting Graveney is about 11 miles, and is under 6 authorities; from Highgate to Norwood is about 10 miles, and is under 9 authorities; from Upper Clapton to Roehampton-gate, Richmond Park, is about 13 miles, and is under 14 authorities; from Cricklewood to Putney Bottom is about 12 miles, and is under 7 authorities. That is to say, 77 miles of thoroughfare are under the charge of 68 vestries or independent local authorities.

Some of these parochial or vestry jurisdictions divide the streets longitudinally, and one half of a street is paved at one time, and the other at another time, and sometimes by a different method; one half is swept at one time and the other half at another time, to the detriment of both operations. Sir Joseph Whitworth found that he would have no less than four distinct authorities to deal with to effect the cleansing of the Strand by his machine. Having other things to attend to he was compelled, by the fragmentary condition of the administration in the metropolis, to abandon the attempt to deal with it.

The Committee call attention to the information collected, specially in respect to the new materials and to the chief new methods of pavement lately introduced and tried in London.

It is to be borne in mind that the essential qualities for our urban pavement are perfect impermeability, cleansibity, smoothness, and tenacity for wheel-traction; granulated, roughness for horse-traction, and noiselessness.

The committee arrive at a very favourable opinion as to asphalte:—

"The absence of any returns of the traffic on the lines paved with the Limmer and other asphaltes, prevents the like comparison being made in respect to them, but they each present examples of durability greatly in advance of the granite. At the same rate of wear as the granites, so far as they could be compared, the chief specimens of the asphaltes would have disappeared. The astonishing relative durability of the chief of these materials is accompanied by a relative reduction of the amount of abraded dust such as is ground off the granite, and especially from the Macadam roads on Westminster Bridge, to the extent of upwards of four inches annually, producing that dust which is so peculiarly irritating and injurious to the respiratory organs. This tenacity of the material is accompanied by a feeling almost of elasticity to the tread of the foot, and yet a great non-conductibility of vibration or of sound. There is less of 'sonority' than in the granite tramways; the noise of the wheels is suppressed, and only a clack of the horses' shoes is heard."

The conclusions of the Metropolitan Sanitary Commission as to the drainage works of the metropolis, appear to be applicable to its street and road works:—"The more the investigation advances, the more is it apparent that the progressive improvement and proper execution of this class of public works, together with the appliances of hydraulic engineering, cannot be reasonably expected to be dealt with incidentally or collaterally to ordinary occupation, or even to connected professional pursuits, but require a degree of special study, which not only places them beyond the sphere of the discussion of popular administrative bodies, but beyond that of ordinary professional engineering and architectural practice. In justification of this conclusion, and to show the evil of the perverted application of names of high general professional authority, we might adduce examples of the most defective works which have received their sanction. All the improvements which the public have yet obtained in this branch of public works have been the result of the special and undivided practical attention of well-qualified paid officers; and it appears to us that further improvement must be sought by the same means, and that one of the chief objects of future administrative arrangements must be to secure, protect, and encourage the zealous undivided attention and efficient labour of such officers."

Strong allegations are rife as to the predominance of the sinister interests of contractors at local boards, making them intrenchments against improvements. It may be so, and in the absence of effective securities for a correct expenditure of the public rates, it is very likely to be so; but we have not the means, nor have we deemed it our province, to inquire as to the foundation for such allegations. Moreover, we have the conviction, that however pure may be the expenditure in intent, an efficient and economical administration is impracticable in such narrow areas as those to which it is left unaided and unguarded by any fitting experience.

The following are the

General Conclusions arrived at.

"On a review of the information collected by the Committee on the common methods of forming, paving, maintaining, and cleansing the surfaces of streets and roads in the metropolis, in respect to the science and art conclusions herein before stated, namely, that they powerfully affect the health of the population to an extent heretofore unknown and disregarded, and ought to be brought within the cognizance of sanitary officers, that the street and road formation might be so far improved on a long-tried principle as to reduce the tractive force needed for traffic by more than one-half, and that a threefold amount of street cleanliness was obtainable by improved machinery, without any augmentation of the usual rate of expense for hand-cleansing; we find that from want of science and art instruction, from ignorance and apathy, these demonstrations have been of little or no avail, and that the general condition of the streets, in excessive filth, and noise, and disorder, are the reflex of the general condition of an expensive local administration;—that the common defective conditions of the greater proportions of the surface, formation, paving, and cleansing of the streets, with the increasing traffic of the increasing population of the metropolis, occasion much filth, consisting chiefly of pulverised horsedung and granite dust, to be deposited on the person, clothes, furniture, and houses of the population; that the filth so deposited is highly injurious to health, especially to an extent hitherto unregarded of the children of the wage classes of the population, as well as the adults of those classes, who have little means of frequently washing themselves to remove it; that such aggravations of the conditions of personal filth and squalor, besides being detrimental to health, have a pernicious effect in lowering the self-respect and the moral status of the wage classes of the population; that the excessive noise occasioned by vehicular traffic over the common pavements is a cause of suffering to invalids, occasions doors and windows to be shut to keep it out, and ventilation to be obstructed. We find, moreover,—

That on an average upwards of two hundred persons are annually killed, and upwards of ten times that number maimed or injured in the streets of the metropolis, the greatest proportion of which injuries occur on what are called 'greasy days,' or days of excessive slipperiness, occasioned by defective cleansing;

That such conditions of bad cleansing and defective methods and bad paving are the occasion of excessive cruelty, accidents, and injuries to horses, and fractures to vehicles;

That the best means of preventing such accidents, by better applications of supplies of water for cleansing the streets, are the same that are needed for the better protection of life and property from fire in houses;

That the economical and efficent application of art and scientific means of relief is frustrated by the conditions of the fragmentary areas of independent, obscure, and virtually irresponsible local administrations, under which the metropolis is placed; which give, for example, one main thoroughfare from east to west to fourteen vestries or independent authorities, of which the Corporation is only one, and another line from north to south to thirteen parishes, each being charged with only one mile of the line; which divide some streets longitudinally between different parishes, one cleansing or paving the street at one time, and one at another, in a manner detrimental to both; and

That the first and essential step to any effective and economical improvement is to get rid of these disorderly and discreditable administative conditions—which exist at the expense of life and limb, and health, and comfort of the population, and the freedom of traffic of the metropolis,—and to place the whole area under unity of administration by a specially competent and responsible authority;

That the attention of her Majesty's Government be solicited to these conclusions and to direct a more full examination of the facts on which they are based.

Unity of administration is the declared object of the agitation for a metropolitan municipality, which it may be assumed would include the administration of the roads. Without entering into that question, there can be little doubt that several years—four at the least—must elapse before that object could be obtained, and so large a body be got into working order. Such delay, it appears to us, would be unnecessary and injurious, and that a special provincial commission, or general metropolitan road trust, properly constituted, and giving its individual attention as it ought to the service, might get the streets in a fitting condition without the sacrifice of health, waste of life and property, and perpetual fatigue and annoyance. Any such general organisation as that contemplated could be reasonably expected to be constituted long before that time."





A VISION OF THE CITY OF LONDON, CONSTRUCTED ON THE PLAN LEFT BY SIR CHRISTOPHER WREN.

Drawn and Engraved by MR. WORTHINGTON G. SMITH, *under the Direction of* MR. GODWIN.

Streets.

A A A. Old London Wall. B. Cheapside. C. Cannon-street.
D. Farringdon-street. E. Barbican. F. Bishopsgate-street.
G. Cripplegate. H. Moorgate-street. I. Holborn.
J. Leadenhall-street. K. Tower-hill. L. London-bridge.
M. Ludgate-hill. N. Fleet-street. O. Newgate-st. P. Aldgate.

Public Buildings, &c.

Q. Tower. R. Trinity House. S. Custom House. T. Billingsgate.
U. Bank. V. Mint. W. Post Office. X. Goldsmiths' Hall.
Y. Post Office. Z. Excise. 1. Insurance. 2. Royal Exchange.
3. Monument. 4. Guildhall. 5. Market. 6. Wood-market.
7. Public Halls. 8. Newgate Prison. 9. Bridewell Dock. 10. Queenhithe.

Churches.

11. St. Paul's Cathedral. 12. St. Benet's. 13. St. Clement's.
14. St. Margaret's, Fenchurch-st. 15. St. Michael's, Cornhill. 16. St. Mary Woolnoth.
17. St. Botolph's. 18. St. Stephen's, Walbrook. 19. St. Mildred the Virgin.
20. St. Margaret's. 21. St. Stephen's, Coleman-st. 22. St. Alban's, Wood-st.
23 St. Lawrence, Jewry. 24. St. Mary-le-bow. 25. St. Martin's, Ludgate-hill.

ON BUILDING IN CONCRETE.*

CONCRETE is composed of two distinct kinds of material.

1. The aggregate to be concreted or held together.

2. The matrix, or cementing material, mixed with the aggregate to hold the whole together in the homogeneous state called concrete.

The second is evidently the most essential and important, and there is no known material so valuable for this purpose as Portland cement.

Besides Portland cement, there are other valuable cementing materials. Lias and other hydraulic limes have been much used for foundation concrete, and even for building walls, but their use for this latter purpose has always been limited, and in modern times has almost ceased, because of the length of time required for setting and gaining strength. But the recent large increase in the cost of Portland cement led to experiments, and to the use of the best limes for wall-building concretes, with greater success than hitherto.

Selenitic cement prepared from lias and other hydraulic limes used together with a small proportion of Portland cement, has been found to make good wall-building concrete at a cheaper rate, and almost as quick setting, strong, and good in other respects as entire Portland cement concrete.

In districts where the best lias is found, it has been used without the selenitic process; but, together with Portland cement, producing very strong, excellent, and cheap walls. But the use of these limes in combination with Portland cement should only be attempted by those who thoroughly understand and know chemically and practically the exact conditions, proportions, and application necessary for successful use.

Portland cement, however, is now so well and honestly made, by so many good manufacturing firms, is so easily tested, and its correct treatment and use are so well and widely known,—and there is, besides, such a wide margin of strength in its favour, as commonly applied in concrete building,—that only ordinary care and intelligence are required to ensure success in its use for all purposes of concrete building.

The various well-known mechanical and chemical tests are very valuable when it is required to ascertain the exact strength and qualities of a sample of cement for a certain special purpose, or to prove a suspected cement. The best and most easily applied working test is to make up into concrete, in the proportions that are to be used in the actual work, some of the cement and aggregate that are upon the site for use. A few hours are enough to enable an experienced workman to detect if anything is wrong in the mixture, and if any defect is suspected the cement should at once be subjected to the usual mechanical and chemical tests. But at least a week is required for these rough concrete test blocks to prove to engineer, architect, or employer that the concrete is quite good and dependable, and in the meantime the blocks should not be handled or disturbed in any way. Much harm is done, time wasted, and annoyance caused by the habit of inexperienced persons in picking and poking at cement samples before they have had time to get strength. To such persons quick-setting, light-weight cements would appear to promise good results; but it is now well known by every one practically acquainted with the use of cement, that the well-burned, heavy, finely-ground, slow-setting cements are the best for concrete purposes.

Respecting the mechanical tests of neat cement, it has been found that some of these showing the highest results when tested for resistance to tensile and transverse breakage strains, have shown very inferior results when made into concrete, and tested for the same strains in comparison with cements that gave inferior results when tested neat, but which proved very superior in concrete. Neat cement reaches its full strength in a much shorter time than a mixture of cement and sand, or gravel. Simultaneous tests, with varying proportions, now in favour of the largest proportion of cement, but the concrete mixtures gradually gain upon the neat cement, and ultimately reach and even surpass it in strength.

The aggregates useful for making concrete are very various, and easily obtainable in almost every locality. The economy of concrete is chiefly due to the facility it gives for utilising almost whatever material can be most easily obtained, and to the fact that some of the best concrete aggregates are mere waste, useless for any other purpose, or even troublesome and expensive to dispose of.

Pit and river gravels, with their coarse sands, beach shingle and sand, burnt clay ballast, broken stone, quarry waste, flints or pebbles, broken bricks, tiles, and waste pottery ware, broken slag, clinkers, and mill cinders,—all of these have been largely used, severely tested, and fully proved to be fit materials for making good, substantial walls, floors, roofs, and stairs. The best aggregates are those which can be most readily made into a concrete resembling in texture and structure the natural conglomerate stones,—that is, it should be of all sizes and forms, angular and coarse fractured, so as to fit well together, and having all spaces between large pieces filled with smaller particles, and leaving no interstices.

The materials most readily fulfilling these conditions are old bricks, tiles, and pottery, rock and quarry refuse, slag and clinkers all broken by Drake's patent stone-breaker, which, having been designed expressly for this purpose, produces fragments of various sizes from about 1½ inch cubes down to particles the size of coarse sand. With this material only a *minimum* of cement is required, sufficient to form a thin coating around every particle, and give continuous adhesion, thus making the strongest possible concrete without waste of cement, and leaving no interstices for percolation of water through the concrete.

Old pottery and tiles and vitrified fire-bricks, old building bricks, and stones that break with rough fractures, make the strongest concrete, as broken, proved by Mr. Grant's, Mr. Kircaldy's, and numerous other tests.

Flints and other stones breaking with smooth fractures, and also slag, make concrete a little strong, but still stronger than rounded gravel concrete. A fragmentary slag is produced at the Middlesbrough iron work, by running the molten slag as it leaves the furnaces on to revolving discs, upon which jets of water play, thus causing the slag to break up into small pieces about the size of almonds and Spanish nuts. With this fragmentary slag, we have constructed some of the most satisfactory concrete buildings yet done. New master's houses at Marlborough College (Mr. Street, architect) were built with broken flint, concrete, and lump chalk packing. Many stones too soft and liable to decay, if used as ordinary building-stones, make excellent concrete, the cement protecting them from the influence of weather; and many of them containing metallic oxides and large proportions of soluble silica appear to unite chemically with the cement and form almost indestructible hydro-silicates.

Next in order of merit, after broken bricks, I place burnt clay ballast. It has the same advantages of tough surfaces, absorbent nature and variety in sizes; but before using this material it is necessary to prove that it is thoroughly well burnt. Stiff clays may be burnt with about five pecks of coal to the yard cube of ballast; but light, loose, and shaley clays require more coal; some can hardly be burnt with double the quantity of coal. That most excellent concrete can be made with burnt clay, you can see by examining some pieces before you, which have been cut from the concrete of my house during alterations. The cost of making clay ballast is from 1s. to 2s. 6d. per cubic yard. Land, water, or sea gravels are the most extensively used of all concrete aggregates; although, for reasons stated, I hold them to be inferior to some other aggregates, they all make exceedingly good concretes.

The flat and angular land gravels, from not being so much rounded and polished by attrition, make the soundest concretes, provided they are free from loam or clay. The addition of a sufficient quantity only of clean sharp sand, to fill the spaces between the larger rounded pieces, makes the best gravel concrete; but care must be taken, that too much sand is not used, otherwise the distribution of cement is so much greater that a larger proportion is required. Care must also be taken that very fine sand be not used at all, for this is simply an adulteration of the cement, that will cause very poor concrete. Where sand cannot be easily obtained, good and strong concrete is made with round gravel only. The cement, uniting the particles of gravel only, is not diluted or over distributed by sand, but uniting the particles of gravel at their points of contact only. This kind of concrete has been proved by testing to be capable of resisting much greater crushing force than ordinary bricks. But surface cementing is necessary to prevent water from entering and running through between the particles of this kind of concrete.

Respecting every kind of aggregate it is of the greatest importance that it should be free from dirt, dust, or earthy matter of any kind, and any defects of this sort must be removed by washing.

Respecting the correct proportions for mixing, it will be seen that a considerable variation is possible, from the varying nature of the aggregates, and I have used from one-third to one-twentieth of cement, but the proportion which has been found sufficient to give a coating of cement to each particle of ordinary gravel concrete is one-eighth, and this is the proportion that is almost invariably used. For roofs, floors, stairs, and other special work, one-fifth or one-sixth cement is used, in order to induce a more rapid setting and strengthening, to ensure a thorough coating to every particle, and that there may be no unfilled spaces; one-eighth of cement is sufficient for wall building. A larger proportion may be considered waste.

A few months ago a piece of concrete was shown to me as a sample of good rich concrete. The joint of cement between the pieces of gravel was from ¼ in. to 1 in. in thickness. I could only remark that if the best concrete is a solid mass of neat cement, then the adulteration by means of gravel has not been carried to a great extent in this sample. The water used for mixing concrete should be clean. It is possible to destroy much of the strength of cement by using dirty or polluted water. Sea-water has not been found injurious, but is supposed to delay the setting. Respecting the quantity of water to be used there is more danger to be apprehended from using less than from using more than the right quantity. The correct quantity of water is of course sufficient to convert the cement into a thin paste that shall completely coat and cause to adhere all the particles of the aggregate. With absorbent aggregates extra water must be used, or the absorbent materials should be watered before mixing with cement begins. Allowance must be made for evaporation in hot weather.

I have seen concrete that had apparently sufficient water when mixed utterly spoiled by rapid evaporation under a hot sun. Unless so much water were used as to wash away the cement, or make it so thin as to cause it to run through the aggregate (which is almost too absurd to consider possible with some workmen), the only danger from too much water is to delay the setting, because the cement must first exude the excess of water not required for hydration. I prefer concrete mixed by hand, as it is important to have the materials all mixed dry before mixing with water. Crystallisation or setting begins at once with the addition of the water, and as little time as possible spent in thoroughly mixing and placing into the mould or apparatus after water has been added. There are many various concrete-mixing machines, most of them being unnecessarily complicated, the best being a plain revolving cylinder working horizontally. Concrete mixed in machines is generally over-mixed after the addition of water. For the same reason that the concrete should be at rest, in the place it is to occupy permanently, as soon as possible after mixing, no ramming should be allowed. At once on being placed into the mould it should be prodded and compacted to the surfaces, around and between packings, around flues, &c., and should then be left undisturbed to take full advantage of the setting powers of the cement. Where ramming is used, not only is the setting interfered with, but the adhesion is destroyed, of the comparatively new concrete.

There remains one other point to notice respecting materials, viz., "packing" or "core-filling." This consists in the placing of large pieces of hard materials—stones, slag, old brick, &c., into the midst of the concrete in the walls when building. The object of using packing is economy. In walls made of concrete only, the proportion of cement to the whole bulk of the wall is one-eighth. But in a packed wall, where, say, one-third of the more costly concrete is dispensed with by packing, the proportion of cement to the bulk of walling is reduced to one-twelfth. There is also economy in labour; the quantity of mixed concrete being less, very little care is required in the use of packing to ensure as firm adhesion between the packing and concrete as between the particles in the concrete itself. It is probable that in a thick wall with packing the concrete sets and hardens sooner than if the wall were all concrete.

* From a paper by Mr. Charles Drake. Read at a meeting of the Civil and Mechanical Engineers' Society.

The care required in the use of packing consists in having it free from dust and dirt, and when absorbent materials, such as old bricks, are used, these must be made damp enough to secure adhesion, otherwise the dry packing will absorb moisture from the adjoining concrete, and thus prevent adhesion, and weaken the concrete. Care should also be taken to place the pieces of packing at least 1½ in. apart and in from the face of the wall, so that each piece shall be surrounded and made to adhere to each other by concrete. The perfect adhesion between packing and concrete and the strength of packed walls have been abundantly tested and proved, and I presume it is not necessary to occupy time in stating cases.*

LIBELS UPON CONCRETE BUILDING.

SIR,—In the *Builder* of the 12th ult. a report is given of a discussion at the Institute of Architects containing statements so entirely misleading and calculated to injuriously affect a successful and deserving business, that I beg you will allow me, in the interests of truth and justice, to challenge some of the statements reported:—

Mr. Aitchison is reported to have said:—"With regard to concrete walls they are apt to split perpendicularly, and great fissures are thereby caused; they also shrank very much."

I desire most distinctly to challenge both these statements, and deny that any proof whatever can be given to support them. During eight years past I have carefully watched the construction of several hundreds of concrete buildings, and have examined every concrete building, old or new, that I could hear of, and I have never seen a crack that could, without a wild stretch of imagination, be called a great fissure.

I have seen great fissures in brick and stone walls caused by shrinkage of stiff clay subsoil, and by settlements of heavy stonework, where sufficient concrete foundations have not been laid, and I have seen a very few small cracks in concrete walls, but certainly smaller in number and degree than is the general case with stone or brick walls, and the few cracks I have seen have all been easily traceable to defective foundations, construction, materials, or workmanship; and although I have heard a shrinkage asserted, I have never seen or heard the smallest reason or proof for such a theory.

Often a small settlement will be unseen in brick or stone walls, through being distributed over a considerable area, a great number of joints giving away, each a little, but without a crack showing. The same settlement occurring in a concrete building would most likely be concentrated at one point; and there a crack would appear, but the stability of the structure would no more be affected in one case than in the other.

Mr. MacVicar Anderson "did not think it was possible to make concrete withstand water," and some other speakers, appear to have agreed in this opinion. Upon this point permit me to quote from a paper of mine already published:—

"5th. The non-absorbent qualities of concrete are considered by many to be its most valuable quality. Good cement concrete is practically damp proof. The best proof I can give of this is to refer to the owners of the numerous houses that have been built under my patent during the last six years. In September last Lord Ashburton's clerk of works, writing of his five years' experience of concrete houses built with our apparatus, said, 'Lord Ashburton is much pleased with his concrete buildings; in fact, among all the new ones, they are the only ones that keep out the wet. In many concrete buildings the cisterns are formed over outbuildings, by carrying the side walls a few feet higher, the bottom of the cistern being the same piece of concrete that forms the ceiling of the room under the cistern; the only thing necessary to render the concrete absolutely watertight being to lay on one coat of Portland cement trowelled smooth. Flat roofs and roofs of bay windows are made perfectly watertight in this way. However, it must not be considered that the various rough concretes used for wall building will ensure a perfectly dry building without cementing the surface. In the majority of cases it will do so, but sometimes rough rounded aggregates are used that produce strong good walls with good key to take surface cementing, but having small interstices through which water would find its way if the surface were not cemented. This, however, does not alter the fact of the non-absorbency of concrete walls."

I have lived in a concrete house where the concrete bottom of the cistern formed the ceiling of the closet under, and where the concrete roofs over bay windows formed parts of the ceilings of drawing and dining rooms. I have seen water running over the tops of parapet walls of the bay windows (through stoppage of the rain-water pipes) but no dampness has appeared.

It is doubtless possible to build concrete walls that will not keep out water, but these are the very rare exceptions, and may in every case be accounted for as already shown, or by bad cement or workmanship.

To many architects these facts are well known and appreciated, but my complaint is against those who invent theories of their own, without practical knowledge; who make general statements based on isolated facts capable of widely different explanation; who dogmatise and lay down as rules matters which are the merest exceptions. And others, worse, who, fearing to grapple with the requirements of a new material or method, endeavour to put it aside by inventing defects for it, or by seizing or magnifying small defects, to which other systems are equally or more liable, but which in these other systems are considered venial, and matters of course.

Respecting the capacities of concrete for building purposes, the samples for testing exist in hundreds of buildings in all parts of the United Kingdom erected under my patent during the last seven or eight years, and in a paper read only a week ago, and which I hope to see published in the *Builder*, I have made statements which are not mere matters of opinion or theory, but which are capable of the practical test of works done and extant. If my statements are true they are worthy of the consideration of the architectural profession. If untrue they deserve to be exposed at once, because concrete buildings are making converts rapidly. All I ask for it is thorough and impartial examination. CHARLES DEAKE.

* To be continued.

TIVERTON SANITARY AFFAIRS.

SIR,—The following is an extract from the *Devon Weekly Times*, Sept. 5, 1874, containing the result of an advertisement inserted by the town council of Tiverton, in the *Builder* twice, and in certain West of England papers three weeks.

If this is the manner in which the duly-qualified sanitary inspectors under the Sanitary Acts are appointed, how need you wonder at the state of affairs there? Furthermore are added the duties of borough surveyor, which contain the superintendence and maintenance of ninety miles of streets and roads, and all for the large salary of 80*l.* per annum.

This is not sufficient, but this energetic ex-councilman has been allowed to employ a deputy at 70*l.*, to perform his arduous duties.

This is a novel way of retiring from town councils; and if such is the way in which the Sanitary Authority of Tiverton manage, we need not wonder if the people are killed.

PRO BONO PUBLICO.

"A special meeting of the Town Council was held on Wednesday. Applications for the office of borough surveyor and nuisance inspector, fifty-one in number, were opened; and Mr. Besley, a member of the Council, who for the last year has gratuitously fulfilled the duties of Surveyor, was appointed at a salary of 80*l.* per annum. Previous to the appointment Mr. Besley, resigned the office of councillor, and paid the fine of 30*l.*, incurred by such resignation. A motion was afterwards carried to remit the fine, if possible, and Mr. Besley was informed that his duties would commence at Michaelmas next. Mr. Crabbe preferred a claim for compensation on account of being deprived of the office of inspector of nuisances, for which he had latterly received 18*l.* per annum, and he was instructed to bring his claim before the next meeting of the Finance Committee."

CONSTANT AND INTERMITTENT WATER SUPPLY.

THE Whitechapel medical officer of health, Mr. John Liddle, in his last quarterly report, says:—"I can state that a very large number of houses, and nearly the whole of the courts, on the north side of Whitechapel, which are in the district of the East London Company, are now supplied with water upon the constant service; and I am informed that the whole of the houses, with the exception of those from the east of Baker's-row to the boundary of this district, will be so supplied by the end of the summer; but I regret that I cannot report so favourably of the progress made in the extension of the constant service by the New River Company; for in Love-court, Whitechapel, in which there are thirty-eight houses, thirty-three of them are supplied with water by the New River Company, and five by the East London. Those houses which are supplied by the New River have an intermittent supply, while those supplied by the East London are upon the constant service. The New River Company having cut off the supply of water to the houses numbered 1, 2, 3, 4, Love-court, owing to the fittings being defective, they informed me of the fact, when I immediately directed the inspector to serve a notice on the owner to forthwith reconnect the pipes and put up proper fittings, or proceedings would be taken under the provisions of the Nuisances Removal Act to compel him to supply the houses with water. In this instance the company, instead of insisting that the fittings should be made suitable for receiving water on the constant service, directed that cisterns should be erected, and the houses are again supplied on the intermittent service; although the owner stated that he was anxious to have the water on the constant service, in a similar manner to that of his two other houses, Nos. 5 and 6, in the same court, which are supplied by the East London Company. The New River Company, however, declined to accede to his request; and their officer, when spoken to by your inspector on this and some other cases, said that the company were unwilling to put the owners of *such* property to the expense of so altering their fittings as to adapt them for the reception of water on the constant service. If this statement be confirmed by the directors of the company I shall be sorry for it; for, in my opinion, it is just this kind of property which should be supplied with water direct from the main, without the intervention of butts or cisterns. The water companies have the power, under the seventh section of the Water Act, to supply all the houses in their respective districts with water on the constant service, which, in crowded neighbourhoods, ought to be done; for the appearance of the water which is usually found in the receptacles now in use in such localities is repulsive, and is unfit for dietetic purposes. I suppose there can be no difficulty on the part of the New River Company supplying all the houses in their district with water on the constant service; for it appears from the observations of Mr. Baxter, who attended with a deputation of the Metropolitan Water Companies to the Local Government Board, that the companies would do so, as soon as the houses were ready to receive water on the constant service. If, however, they wait until the houses are made ready for that purpose by the voluntary act of the owners of tenements, it will be a long time before such a plan is carried out. So fearful are the New River Company of the poor inhabitants wasting water, when supplied on the constant service, that they do not afford them a sufficient supply for domestic use; for the company have determined to permit only a recently-invented apparatus to be erected, which in several cases does not allow more than a quart to flow at each turning of the key, and sometimes not even that. From the experience I have had in this matter, I am decidedly of opinion that unless the pressure of public opinion be put on the New River Company to furnish water on the constant service, and then to give a better supply, such as can be obtained by the use of the screw-down tap, which is really the best, and I believe the cheapest contrivance, the complaints of the poor will become more general. It is really most disheartening to see how our efforts to obtain water on the constant service in the poor localities of this district are thwarted by the New River Company."

APROPOS OF COSTUME.

IN the course of our article in last number, suggested by the new "Cyclopædia of Costume," we recommended more attention, on the part of ladies who desired to dress tastefully, to the artistic combinations to be attained, in regard to colour as well as form, from what it is the fashion to consider as the commoner materials of dress. From a paragraph in the *Pall Mall Gazette* of the same date as our remarks, it would seem that in Paris dress fashions are just taking that very course, in rather too decisive a manner. We read that, to reach the height of Parisian elegance at present, "it is necessary to have something quite new, and, novelty thus taking the *pas* of all other considerations, an ordinary material may be found to render good service and be as capable of affording an eccentric combination as the most expensive and delicate fabric. There is a rush for 'sensational costumes,' and these, it is stated, may be made of linen or barège, as well as China crape or satin. Even some of the 'most elegant chapeaux' are made of the commonest kind of plaited grass and straw. The Parisian dressmakers justly argue that when *grandes dames* adopt the peasant apron or the shepherdess hat, there is no reason

why they should not borrow also the fabric of which they are made."

It need hardly be said that what we wished to see was not what could be described as "sensational" costume; but that an attempt to make an artistic use of materials of less sumptuous description might be attended with much more pleasing results than an extravagant expenditure for rich materials, merely on their own account. The fact that fashionable Paris is, apparently, giving its approval to this use of plainer materials even for the best dresses, is a sort of corroboration of the opinion we expressed, though, unfortunately, Paris goes about it in the wrong spirit. The desire for sensation and novelty, merely for the sake of novelty, is just what a true taste would tend to suppress. Another feature of the Paris movement is still more characteristic:—"It must not be thought that this eccentric simplicity brings financial relief to the husbands of the *grandes dames*. The dressmakers charge nearly, if not quite, as much for a toilette, of whatever it may be composed, and therefore lose nothing, but on the contrary gain much, by the simple tastes of their customers."

That is the result when such things are governed merely by fashion, or the desire to out-do one's neighbours, instead of by the cultivation of an individual taste on genuine grounds. Fashion is always costly; good taste need by no means be so.

THE NEW BANK PREMISES IN PETERBOROUGH.

THE Stamford, Spalding, Boston, and Peterborough Bank, in Church-street, in this city, is near completion. It is a two-story building, of Ancaster stone front and return angle. The ground floor comprises eight semicircular windows, divided by deep rusticated piers, enriched caps, with bold architraves round the head, terminating in enriched cusps, the spandrels between having basso-relieved foliage. The plinth and base mouldings are of deep finely-tooled grey Aberdeen granite, with Ancaster stone panels and sunk picked faces; the piers having large deep flutes, raised on stile. The string-course and window-sills are of moulded Aberdeen grey granite. The eight windows lighting the bank and manager's rooms will each consist of one pane of British plate-glass, 9 ft. 6 in. by 4 ft. 6 in.; the lower portion of it will be embossed with the name of the banking company. The bank-room, one large compartment, 35 ft. 6 in. deep by 27 ft. 6 in. wide, is approached through a spacious doorway, the jambs being deeply coved and moulded, polished, red granite, with mahogany swing-doors at the entrance. The floor consists of encaustic tiles in front of the counter. The building is warmed by hot-water pipes. The manager's room, 15 ft. high, 25 ft. by 15 ft., faces the street. The waiting and book rooms, not omitting the strong-room, which is enclosed with strong walls, and arched with brick and fire-brick, with the lavatories and retiring-places for clerks, are placed at the back. Mr. Nightingale, of the Albert Works, London, is the contractor; the architect being Mr. Eve, of London. The clerk of the works is Mr. Jno. Duncan. The carving is from the hands of Mr. Matthews, of Grantham.

QUESTION AS TO "CUSTOM" IN THE BUILDING TRADE.

BARKER *v.* CULLUM AND OTHERS.

THIS was an action in the Clerkenwell County Court last week to recover the sum of 2s. 7½d., balance of wages due. Mr. Boydell appeared for the plaintiff, and said that although the amount was small, yet the question involved was one as to the "Trade's custom."

The plaintiff said that he was a bricklayer, and had worked for defendants for about nine weeks. He had absented himself during Whitsun week, excepting on the Saturday, when he returned to his work at six o'clock in the morning and worked till eight o'clock, when the foreman told him that his master had given orders that he (the plaintiff) should not be taken on again. He did not presume his work, but requested to be paid for the time he had worked, when the foreman replied that he could not pay him as he had not any money, but that he must wait. He was paid 9d. an hour, and at twelve o'clock, when the other men were paid, he was paid up to eight o'clock and not up to twelve. It was, he said, the custom of the trade when a man was discharged to pay him there and then, or to receive an order to fetch the money, and charging what is called "receive money" time. Plaintiff waited till twelve o'clock, and when the foreman settled with him for the two hours he asked for some remuneration for the time he had been kept waiting, but the foreman declined giving him any remuneration.

Evidence on both sides having been given,—The judge said that the plaintiff, after working for two hours, was discharged, and when he asked for his money, he was told to wait till twelve o'clock. However wrong the plaintiff may have been in not returning to work during the whole of the week, it had nothing to do with the case, and therefore he considered that he was entitled to the 2s. 7½d.,—it was the custom of the trade. If he had been informed of his dismissal prior to beginning to work, the case would have been different.—Judgment accordingly.

CHARING CROSS APPROACH TO THE EMBANKMENT.

AT the meeting of the Board of Works last week, tenders were received from the following firms for the formation of the Charing-cross approach, the amounts of the respective tenders being as stated, viz.:—

Wigmore & Co.	£24,700 0 0
Stevens & Co.	24,000 0 0
Turner	22,500 0 0
Botterell & Co.	21,750 0 0
Webster	21,650 0 0
Downs & Co.	20,399 0 0
Nowell & Robson	19,950 0 0
Pearson	19,099 0 0
Jay	18,900 0 0
Carey	18,000 0 0
Williams	16,953 0 0
Oliver	16,900 0 0
Ferry & Co.	16,800 0 0
E. & H. Beaver	16,750 0 0
Mowlem & Co.	15,750 0 0

On the motion of Mr. Richardson, seconded by Mr. Freeman, Messrs. Mowlem & Co.'s tender was accepted.

CHARING-CROSS AND THE EMBANKMENT.

SIR,—I have been a constant reader of the *Builder* since the first number, and always look to it for early information relative to the improvements in London. There is a great improvement about to be commenced at a large cost, viz., the new street through Northumberland House gardens, of which some information is needed. In the Act enabling the Duke of Northumberland to sell his house, there was a clause inserted that all plans should be submitted to "the Royal Institute of British Architects." I do not know whether this would include a plan for "laying out" the street. The tenders for the formation of the roadway ranged from 24,700*l.*! to 15,750*l.*! This difference, to an outsider like myself, is quite incomprehensible. Are we to conclude that the tender of Messrs. Mowlems,—which was accepted,—means that the street is to be pitched with granite? I hope not. But it is of the greatest importance,—as to the beauty of the proposed street,—that the direction it takes should be the right one, and of this the public have had no intimation. If it be placed in a direct line with Cockspur-street, then the north traffic,—from St. Martin's-lane,—will not reach it, or the traffic from Piccadilly and Leicester-square through the new street I hope to see before long from Leicester-square to King William-street, as first suggested, I think, by the *Builder*. Drivers will not turn back to get into the new street; and the uniformity, such as it is, of Trafalgar-square will be much interfered with. When we consider what this street will cost, I think the public should have ample notice of these matters,—the cost will come entirely out of the pockets of the London ratepayers.

The street is to be 90 ft. wide (10 ft. less in width than the Embankment) and about 900 ft. long, and to cost just upon 16,000*l.* for the "roadway" alone. The Duke of Northumberland received 500,000*l.*, and other property and interests will cost probably, with Messrs. Mowlems' bill, 50,000*l.* more. The old materials will barely realise 7,000*l.* Suppose there are 100 sites for building let at, say, 100*l.* a year each ground-rent, making 10,000*l.* a year,—at thirty years' purchase, these may produce 300,000*l.*,—the street even then will cost at least 300,000*l.*: so it ought to be "an ornament" to London.

IGNORAMUS.

Proposed Addition to Mitcham Parochial School.—At the meeting of the Holborn Guardians on the 23rd ult., plans of the proposed two additional wings to the schools at Mitcham, to serve as probationary wards for fourteen children, at an estimated cost of 650*l.*, and of the arrangements for converting the infants' school, at an estimated cost of 2,500*l.*, were submitted by Mr. Snell, the architect. After some discussion as to the cost, it was resolved to refer the plans to the School Committee for consideration, and that Mr. Snell be requested to attend.

PETER THE GREAT'S "FURNITURE."

IT may interest some of our readers to know that there is now "on view" in London some noteworthy articles of furniture, said to have formerly belonged to the great Czar, Peter of Russia. They consist of a *sideboard*, fully carved, partly, as affirmed, by the great Czar himself; a *bookcase*, and an *iron chest*. These are now the property of a Russian nobleman, M. Gregorio Ischertkoff. They are further noteworthy from the fact of a *notice* of them which appeared in the *London Gazette* of Monday, February 6th, 1698. They afford a glimpse into the way of life of the great Czar, and are worth a visit. They are now, for a time, at 39, Great Russell-street, Bloomsbury, previously to their removal to St. Petersburg.

AT THE SOIRÉE.

DEAR MR. EDITOR,—Do you know Edwin took me last week to the Annual *Soirée* of the Architects, "to introduce me to the profession," as he said; but that was a joke, you know. Only, you see, I am just married to Edwin, who papa says is one of the most rising young architects in the profession (and I am sure he must be, because, do you know, the other day his design for the new church in our neighbourhood was picked out as the best out of *ever* so many others, some of them by very distinguished architects; papa was chairman of the committee, so he knew all about it); and so he thought I should like to go with him to the professional entertainment. And it was all very nice, and we found things to look at, pictures and sideboards, you know, and large jars, and Japanese embroidery (Oh, those dear Japanese!), and one or two designs by Edwin himself, which I thought beautiful; and it was so interesting, you know, all the heads of the profession being there, to see the celebrated architect who restored my uncle the Archdeacon's church so beautifully,—Oh! so that you would never have known it again,—and the clever man who is going to turn that shabby old St. Paul's inside out, and make it all as handsome as can be; and all those sort of people. Only I must say I do not think the architects' wives seem to dress in any better taste than other people, as I should have thought they would. However, I was going to tell you, that after looking at the things upstairs a little, we heard there was to be music downstairs, and as I am very fond of music, we went down; and there, instead of anything nice to listen to, there was a regimental band in the middle of the room, playing so loud, close to one's ears, and playing just the same sort of things that they play in the parks and in the squares for the nursery-maids to listen to. Really, you know, I began to feel quite vulgar, as if I was a crowd in the park. And it seems to me if the architects, who are artistic people, give an evening party, they should do it in the same way that other artistic people would. I am sure Lady Satsuma Ware, who has such a mania for old china, and gives what Edwin calls "æsthetic" parties (I do not know what that means, but I hope it is not slang), would never have a brass band in to play polkas, and whatever other trash they liked, for her guests to listen to. And Edwin says he saw in the *Builder* that when the French architects had a dinner together the other day, they had a nice little concert, all properly arranged, and with superior performers, afterwards, so that people could listen to it like sensible beings, and have something worth listening to. And why can't they do that at the architects' *soirées* here; and have a little singing or playing that one would enjoy listening to, when people had done walking about and talking, instead of having a band making such a noise you can't hear yourself speak, and all about such a wretched selection, you know?

To be sure, dear Edwin says many of the visitors there would not care for anything better. Poor things! But that *can't* be true, can it?

ANGELINA.

Dover Pier and Harbour Bill.—In reply to Mr. Freshfield, on the 25th ult. in the House of Commons, Sir C. Adderley said the strong expression of the Committee upon the Dover Pier and Harbour Bill rendered it necessary for Her Majesty's Government to reconsider the whole plan. At the present period of the session it was impossible to do so, but it would be considered during the recess and brought up next session.

DISCHARGE WITHOUT NOTICE.

WATTS *v.* CROKAM.

THIS was a claim in the County Court, Bridport, for 3*l.* 7*s.* 8*d.* Plaintiff said he was written to by defendant as to taking a situation, his duties being to superintend the laying of the pipes in connexion with the waterworks at Litton, Dorchester. He (plaintiff) was in London at the time, and he wrote, sending testimonials, &c., and subsequently agreed to go at 38*s.* per week. The amount claimed was for a week's wages and his expenses from London when he accepted the situation. He had been discharged without any notice, and that was the reason he sued for a week's wages.

Defendant, who was the contractor for the Bridport waterworks, said the plaintiff was employed by him as a skilled workman, and not as foreman, and was in his service from the 27th of March till 12th of May. On the 13th of April at the works at Coombe he noticed that the plaintiff was very slow at his work, and told him so; and plaintiff replied, "If that is the case I can go." He had been a contractor for fifteen years, and it was his opinion that plaintiff was not competent to do the work he undertook.

The Judge said it appeared to him that the plaintiff having been employed so long as he was, showed that he was not so incompetent as was attempted to be made out. The issue turned on as to whether the plaintiff ought to have had notice; he (his Honour) considered he ought, and he should give judgment for the week's wages, 38*s.*, claimed, but he could not allow the amount claimed for plaintiff's journey from London when he undertook the work.

Plaintiff said he had come down from London on purpose to be present that day.

The Judge allowed 2*l.* for plaintiff's expenses, and also the cost of a witness from Salwayash.

SCHOOL BOARD SCHOOLS.

Irthington. — Lately, Mrs. Dacre, of the Glebe, Irthington, laid the foundation-stone of a new school and schoolmaster's residence to be erected by the School Board at Irthington. The school has been designed by, and will be erected under the supervision of, Mr. John Stewart, architect, Carlisle; and will accommodate 120 children. The contracts for the several works are undertaken as follows: — Masons' work, Mr. Robert Irving, Newtown; joiners' work, Mr. Burgess, Laversdale; slating, Mr. Bell, Irthington; plumbing, Mr. Johnstone, Carlisle; painting, Mr. B. Slee, Carlisle. The estimated cost is 1,200*l.*

Wrexham.—The first of the new schools in course of erection by the Bersham United District School Board, viz., Tabor-hill Infants' Schools, is now completed, and is temporarily used by the girls during the time occupied by considerable additions being made to existing schools. The building is of Pen-y-Gelli free-stone, and consists of schoolroom and two class-rooms, with a floor area of 2,460 superficial feet. The architect is Mr. W. Turner, of Wrexham; and the contractor, Mr. Sept. A. Clark, of Denbigh. The cost, exclusive of site, has been about 1,500*l.* The accommodation is for 315 infants.

CHURCH-BUILDING NEWS.

Stutton.—In 1862 this church was restored and enlarged by the rector, the Rev. Thomas Mills, at an expense of about 700*l.* Towards the end of last autumn some ominous cracks made their appearance in the walls of the chancel, and an examination showed that the structure had become unsafe. The venerable rector at once determined to rebuild the chancel, and to enlarge the church by the addition of a north chapel or chancel aisle, opening on the west to the new transept, and on the south to the chancel. The arches by which the chancel aisle communicates with the transept and the chancel are new; they spring from corbels carved to represent foliage. The Perpendicular window which formerly occupied the east gable of the chancel is now placed in a corresponding position in the chancel aisle; it is filled with stained glass, by Clutterbuck, and represents the rCucifixion. The chancel chapel is furnished with five long open benches stained and varnished in character with those in the nave, and having poppy-heads. These give additional accommodation of fifty sittings. The walls of the chancel are faced externally with flint pebbles, with stone quoins, and internally are stuccoed; the roof is of pitch pine, in three bays, and has been executed by Mr. Wagstaff, builder, Freston, who has also carried out the other work of the restoration, with the exception of the stone-work, which has been executed by Mr. Chinnock, Ipswich. The new east window is the work of Messrs. Hughes & Ward. The tiles within the communion-rails were supplied by Messrs. Malkin, Edge, & Co., Newport Tile Works, Burslem. The rest of the chancel is paved with tiles from Messrs. Minton, Hollings, & Co. The restoration has been carried out under the superintendence of the Rev. W. F. Francis, curate of Great Saxham; and the cost, amounting to about 1,200*l.*, is wholly borne by the rector.

Brighton.—Under the title of St. Luke's Church, the building in Prestonville-road, known by the name of Prestonville Church, has been opened. The site of the new church is at the point where Prestonville-road bisects the Old Shoreham-road, which, previously to the construction of the present brick and stone building, was occupied by an iron church. Although erected for temporary purposes, that edifice had a short career; for some children who were amusing themselves with matches in the field outside the church, set it on fire, and it was utterly ruined. Unappalled by this casualty, the Rev. Mr. Robinson set on foot a project for a new building of a permanent character, and steps towards the construction of the present edifice were taken. The work proceeded briskly up to a certain point, and the major portion of the main building was erected, when financial difficulties put a stop to it. After various other obstructions, a committee was formed, and the church completed. It is built of brick and stone, with a slated roof, and an ornamental spire. A course of red bricks lines the springing of the arches, which are supported by iron columns, painted brown. There are large windows on all four sides. The artificial lighting is by gas standards. The church has three entrances, the principal one facing south, and the others east. The floor is tiled. The total accommodation, which is all on the ground-floor, is for upwards of 500 persons, the seats being open wooden pews, half to be left unappropriated. Mr. J. Hill was the architect.

Leicester.—The memorial stone of the Church of St. Saviour, now in course of erection on the Spinney Hills, the gift of the Rev. Frederick George Burnaby, formerly rector of Barlestone, was laid by the founder on the 7th of June. The edifice is being erected from designs by Sir George Gilbert Scott, R.A. The style will be Early English, of the thirteenth century, and the building will seat about 1,000 persons. It will be mainly constructed of brick, with Bath stone dressings. The plan includes a nave and chancel, 152 ft. in length by 54 ft. wide, with aisles, north and south transepts (the width across the transepts being 68 ft.), and a tower at the south-west corner, terminated by a lofty stone spire. The tower is carried up to the height of 78 ft., and the spire 72 ft., the total height to the top of the vane being over 150 ft. At the intersection of the nave, transepts, and chancel, will be a groined dome, 52 ft. high, supported upon four columns of granite from Westmoreland. The roof will be high-pitched, open, on the tie-beam principle, and constructed of stained Memel deal. The chancel roof will be groined in wood, and the apse it is proposed to dome in brick. The seats will be of stained deal, and the heating will be on the Haden principle. The ground surrounding the church, owing to its sloping position, will be arranged in terraces, the principal entrance to the building being at the west end on the St. Saviour's-road. The contracts for the building alone will amount to 11,500*l.* The contractors are Messrs. Osborne Brothers, and the clerk of the works Mr. G. Wood. In addition to the church, Mr. Burnaby intends to erect a parsonage-house and schools.

Cambridge.—The new church of St. Giles, Cambridge, has been consecrated by the Bishop of the Diocese. The accommodation in the old church, now superseded, after being used for divine worship for about eight centuries, being inadequate to the requirements of the parish, steps were taken by the late incumbent, the Rev. J. S. Jackson, and a number of the leading parishioners, to supply the defect. The new church has been erected next to Castle-street, contiguous to the old one, some small portion of the latter being incorporated with it. The style is English Gothic. The materials used are white bricks, with Doulton stone dressings, covered with Westmoreland slates. It is proposed to erect a tower when the funds permit. The structure consists of nave, aisles, chancel, north and south transepts, and open roof, boarded under the rafters. It is 113 ft. in length, by 64 ft. in width, and will accommodate about 900 persons. The seating has not yet been fitted up, and various other portions of the work remain to be finished. The cost of the building and ground is over 8,000*l.* Messrs. T. H. & F. Healey, of Bradford, are the architects, and the works have been carried out by Mr. J. Loveday, of Kibworth, Leicestershire, under the superintendence of Mr. Cooper, his clerk of works.

Taunton.—The service on the re-opening of St. James's Church tower was held on the 16th of June. The tower, which has just been rebuilt, is a reproduction of the old tower, and is faced with red sandstone, from the neighbourhood of Williton, Ham-hill stone having been used for the dressings, and Bristol Pennant for the tower steps. The tower is divided into four stages, that at the base measuring 33 ft. 6 in. from the floor to the centre piece, and it is occupied on the west side by a recessed doorway with carved foliated spandrels, and by a stained-glass window, in the fourteenth-century style of architecture, by Heaton, Butler, & Co., of London. There are two niches near the ground, one on either side of the doorway, for statues. The next two stages are nearly equal to each other in height, and are divided by a moulded string-course. Each contains a window of two lights. On the south side of the third stage are two niches, containing statues of St. James and St. Mary Magdalene, sculptured by Mr. Boulton, of Cheltenham. Above this stage is the belfry, which slightly recedes from the face of the wall, as do also the other stages below, having two windows of three lights each. Above the belfry is a bold cornice moulding, a pierced parapet, and large angle pinnacles. There is an octagonal staircase turret at the north-east angle carried up the whole height of the tower, finished with a spire, battlements, and pinnacles. The height of the tower from the ground to the top of the battlements is 105 ft., and 116 ft. to the top of the pinnacles. The walls at the base are 4½ ft. thick, and the tower is 14 ft. square within the walls. The cost has been about 4,000*l.* The contractor was the late Mr. John Spiller, the completion of the work having fallen upon his son and successor, Mr. H. J. Spiller. Mr. Frost executed the carving; and the bells were re-hung by Mr. Cattle, of Bradford. Mr. William Biss was clerk of the works. Mr. J. Houghton Spencer was the architect. Considerable improvements to the interior of the church have also been carried out by Mr. H. J. Spiller.

Clayworth (East Redford).—The parish church of St. Peter's, Clayworth, has been re-opened by the Bishop of Lincoln, after restoration. The expense was about 3,000*l.*, towards which the late rector (the Rev. Thomas H. Shepherd) left 1,000*l.* to be spent within three years from the time of his decease. The stonework of the exterior has been renewed; the stone mullions of the windows are now sharply defined, and filled with new lead casings and stanchions. In the interior, several of the arches having been bricked up are now re-opened, so that more than half of the north aisle has been restored to the church. New oak roofs have been placed on St. Nicholas's Chantry and on the chancel, while those of the aisles have been renewed. The oak seats of the Jacobean period have been replaced; in fact, the whole inside of the structure has been remodelled. New choir-stalls, of carved oak, have been placed in the chapel, and a new pulpit of the same material has been provided. The floors are laid with black and red paving tiles. The contractors were Messrs. Parkinson, of Clayworth; and Cawthorne, of Retford. Mr. John Scott (son of Sir Gilbert Scott) was the architect; and Mr. James Willis, of the staff of Sir G. G. Scott, acted as clerk of the works.

Chute Forest (Wilts).—The little church built for the inhabitants of Chute by Mr. Thomas Everett Fowle, of Chute Lodge, has been consecrated by the Bishop of Salisbury. It consists of a nave, chancel, and south transept, and will contain the whole population of the district. The exterior walls are of brick and flint; the interior walls are of red brick, with black courses, all made on the estate and of superior quality. The tower is situated over the south transept, and above it rises a lofty spire. The two pillars which support the nave arches are of stone, the arches being turned with red brick. The chancel is paved with Minton's glazed tiles, and above the altar is a carved reredos, comprising the figures of our Saviour and the four Evangelists, in stone. The east window is of stained glass, the main subjects in the three lights being the "Agony in the Garden," the Crucifixion, and the Resurrection. The other windows are all of opaque glass. The pulpit and chancel screen from the nave are of stone; the chancel stalls and open seats are of oak; and the roof is of foreign deal. The belfry contains a peal of six bells, placed there by the founder of the church, at a cost of 333*l.* There is also an improved chiming apparatus, by means of which the bells can be chimed from the church.

Colaton Raleigh (*Devon*).—The Church of St. John the Baptist, Colaton Raleigh, recently partially re-built, was re-opened on the 22nd ult. by the Bishop of Exeter. The old church, which had become fearfully dilapidated, consisted of two aisles of equal length, divided by an arcade of five pointed arches. At the north-eastern extremity of the north aisle was a small building, 21 ft. 8 in. by 12 ft., inclining much to the south, with a two-light east window, and a two-light square-headed window on the south side, both of Perpendicular date, and the whole covered with a cradle-roof. A flat four-centred arch, 9 ft. wide, opened from this building into the north aisle. The latter, also the nave, had cradle-roofs of the usual Devonshire type. A gallery at the west end blocked up the tower arch. The church provided accommodation for 217 people. On excavating at the western end of the north aisle, the foundations of the old wall of the lean-to aisle of the original early church, coëval with the arcade, were found; so it was decided to rebuild it on what was (as far as could be made out) the original plan. The new walls are built of stone from Ladram, and from some old houses lately pulled down at Exmouth. The windows, piers, and arches are of Ham-hill stone, and the roofs, screens, &c., of pitch-pine. The old stone-work has been repaired where necessary. The passages are laid with Webb's tiles, with some of Maw's encaustic tiles in the chancel. The walls have been picked out in patterns in sgraffito work, by Mr. Vickery, of Barnstaple (from drawings, &c., under the direction of the architect). The carving was executed by Mr. Harry Hems, of Exeter. The windows are glazed with differently tinted cathedral glass, except in the chancel and tower, where the painted glass from old memorial windows has been used. The church-yard has been lowered and enlarged, and a boundary-wall and gates added. Mr. R. Medley Fulford, of Exeter, was the architect. The total cost is about 1,800*l.*

HASTINGS NEW TOWN HALL COMPETITION.

WE understand the premiums are to be awarded to the three designs chosen by the Town Council at the last monthly meeting, provided that the conditions mentioned in the "instructions to architects" be fully complied with by their respective authors.

It will be remembered that we pointed out several fatal defects in the plans recommended for the first premium at the time the designs were submitted to public inspection, and we cannot see how the Council can excuse themselves if they adopt a design that does not fulfil the terms of the instructions.

We are in no way inclined to change or modify our expressed opinions as to the Council's proceedings: on the contrary, further consideration of the facts has tended to strengthen and confirm them.

RAILWAY ACCIDENTS IN LONDON.

AT various times you have done good service in your paper to residents in London, by calling attention to the insufferable railway whistle and its cause—viz., the whistling down of danger-signals and the neglect of the block system. Special attention has more than once been directed to this damaging nuisance at the North of London, on the North London Railway, and the inhabitants near the Newington-green-road consider it entirely due to some of your remarks that more signals are now used on the dangerous part of the line between Dalston and Canonbury. The signals are, however, together with the block system, not uncommonly ignored on this line, and reports of accidents seldom appear in other than the local papers.

On Friday, June 25th, at 7·30 p.m., a luggage train slowly passed the *Builder* signals near the Newington-green-road, and, a moment or two afterwards, an express train, full of passengers, rushed by *on the same line*, with all the breaks suddenly put on. Then, between Dalston and Canonbury, came a dangerous collision, in which the guard's van of the luggage train was smashed to pieces, one truck thrown on to the bank, the express engine thrown on to its hind wheels and disabled, and the line stopped. It will be seen from the above that the block system was totally ignored, for an express train full of passengers was allowed to leave Dalston before the lumbering luggage train on the same line of rails had got halfway to the next station. When the block system is at length used on this line, and the signals are attended to, the insufferable and damaging whistle can be dispensed with. A.

THE VENTILATION OF SEWERS.

MIGHT I trespass upon your valuable space in drawing attention to a very simple yet effective invention for thoroughly ventilating sewers of their poisonous gases?

The system to which I refer is that known in this part of the country as "Stott's patent ventilator," a most useful and inexpensive apparatus, and one which might easily be adopted in all manufacturing towns.

An air-tight sheet-iron door is fixed to the ash-hole of a boiler, and connected with the drain by stoneware pipes: the fire is thus fed by the noxious gases, and a continual flow of air drawn from all the adjacent sewers.

For the last few years I have advocated open grates to admit the fresh air into the sewers; however, during long droughts these are objectionable, for unless the sewers are properly flushed with water, the gases generate, and escape into the streets, to the annoyance of those who live in the neighbourhood: this is at once obviated by applying "Stott's ventilator" for the untrapped gullies and openings (within a reasonable distance) become inlets for fresh air, instead of outlets for sewer gases.

It is, however, necessary, in order to limit the number of ventilators, to trap all the openings within a radius of 300 or 400 yards; thence to the extent of the district the gullies might be open to admit air to fill up the partial vacuum formed by exhaustion.

I have already four fixed in this town, and up to the present time I know of no system that, for simplicity, efficiency, and economy, at all equals Mr. Stott's invention.

A model has been sent to the Manchester Exhibition, where I hope it will be carefully examined and considered by many of my professional friends.

EDWARD R. S. ESCOTT,
Borough Engineer and Surveyor.

Halifax.

THREATENED STRIKE IN THE LONDON BUILDING TRADE.

LAST week the men in the employ of Messrs. Manley & Rogers, and also those in Messrs. Elkington's, left work until the two hours' notice grinding-time was conceded. In the case of Messrs. Manley & Rogers, the firm yielded the point, and the men returned to work, but we are informed that Messrs. Elkington refuse to comply with the terms demanded by the men, and that the latter are now on strike. We learn that during last week and the present the men in different parts have held district meetings, at which the two hours' notice has been insisted upon, and that a general aggregate meeting, with the same object, is shortly to be held, with the view of compelling the different firms of employers to concede the point; and that in the case of those firms who refuse to do so, the men will strike. It is to be hoped, however, that a few days will serve to settle the matter amicably between the employers and employed, and thus prevent a step which can only end in disaster.

"THE GRINDING MONEY" QUESTION.

SIR,—There have been announcements in your paper, as also in the daily newspapers, of an impending strike in the building trade on account of "grinding money," and it has been generally asked what can be the meaning of a strike on such a trifling matter. Now, sir, it has always been acknowledged that a joiner or carpenter on being discharged should have proper time allowed him for sharpening and putting his tools in order for another job. In former times it was considered that two hours was a fair time to be allowed for this purpose. A joiner had to provide a larger number of mortise chisels, planing-irons, &c., which are no longer required in shops where machinery is applied. Moreover, in former times the grindstone could only be moved slowly by hand, whereas now grindstones are kept constantly revolving by machinery, so that a joiner at the present day has his tools always in order, and only needs a very short time to clean and pack them up on being discharged. The practice has varied of late in the building firms of London. Most of them have not admitted any fixed time at all for grinding. Some shops allow one hour, and some of the oldest shops still allow two hours. But two hours being quite unnecessary in the majority of cases for grinding, &c., the Carpenters' and Joiners' Union have now, on the foundation of this old custom, attempted to build up what they call "the two-hours' notice movement." By this movement it is required that every workman shall be entitled to two hours' notice of discharge, and on receipt of such notice he is to be allowed to cease work, and to pass the two hours in any way he pleases.

The master builders are unable to see the justice of giving two hours' pay on discharge to a carpenter or joiner any more than to any other artisan, and have declined to discuss the question, at the same time fully admitting that the carpenter and joiner should be always allowed sufficient time for grinding his tools. I trust you will allow this explanation to appear in your paper in order that all interested may clearly understand the position.

A MEMBER OF THE
ASSOCIATION OF LONDON BUILDERS.

WANTED! THE METROPOLITAN BUILDING ACT.

CORRESPONDENTS lament that they cannot now obtain copies of a Pocket Edition of the present Metropolitan Building Act, and ask us to suggest that some able, practical, and experienced man should undertake a new edition, like that edited by Sweet & Baxwell, with the clauses taken from the Metropolitan Local Management Bill, and reports of the many cases heard in the Police-courts, the judgments given by the magistrates, and the various instructions issued by the Metropolitan Board of Works. It does not seem likely that any remodelling of the Act will be attempted for some time to come, and a new edition is required for builders and professional men engaged in building operations.

THE GASES FROM CEMENT KILNS.

SIR,—Some few years ago I wrote to you, stating what we had done relative to consuming the gases and fumes arising from Portland cement kilns, and making use of the waste heat for drying the slurry, thus doing away with coke ovens.

Now we, of late, have had much fuss and talk, leading the inhabitants in our neighbourhood to believe that some parties wished to shut up cement works. They say that there are no scientific means in existence for effectually consuming the gases arising from cement kilns. I will respectfully lay before your readers what I have done, and what manufacturers can do themselves, just as simply as a man ploughing a field. A great heat is got from consuming the gases; then pass them through flues under tiles for drying the slurry before being burnt in the kilns; and to effectually consume the gas I place three furnaces made of a zigzag form. I then bring all the smoke and fumes to a point,—or say centre,—of six kilns; here I place these furnaces, over and through the fires of which the gases and fumes have to pass, and directly these leave the last furnace they pass through a shower, similar to rain, falling on them from a tank there placed. Should there be any chance of the least particle escaping, it would be thoroughly destroyed before it passed up a large heated flue, which is placed directly after the water-tank or shower process, and this 100 ft. of heated flue before it reached its chimney-shaft.

So you see the gases pass over the fires, then the shower process, then up this 100 ft. of heated flue, and on the top of this flue I dry the slurry before it is burnt in the kilns. This, I think, is a simple fact, and if any of your readers do not know how to consume the gases from cement-kilns, what I have here stated is the practical working experience of many years. There is but one shape of furnace in which these gases will burn, which I have well tested. A great heat is obtained and a great saving of fuel; because, if you dry slurry with the waste heat from the kilns, it proves there is the saving. Some may say "My ground is not suitable to dry with the kilns and consume my smoke." I say they effectually can. First build arches, any number; place the drying-floor on the top or roof of the arches; under the arches they can make warehouses, shops, or use them for any purpose re-

quired. In conclusion, I would say, in consuming the gases, a 25-ton kiln takes four days to burn off; whereas, if you let the kiln be open at the chimney-top, and let the gases escape directly into the air without being destroyed, the kiln takes but forty-eight hours. Thus you simply require six kilns to do the work of four; but, if so, see what is saved by doing away with coke ovens, and effectually consuming the gases, so that cement works really shall not cause a nuisance.

Northfleet. W. MAY.

Books Received.

Technological Dictionary (English - German-French). By A. & L. TOLHAUSEN. Leipzig: Tauchnitz. London: Sampson Low & Co.

THIS is a triple dictionary, giving the equivalents, in the three languages indicated, of "about 76,000 technical terms and locutions employed in arts, trades, and industry in general." The original editor is Herr Alexander Tolhausen, translator to the Great Seal Patent Office; and the book is revised by Herr Louis Tolhausen, French Consul at Leipzig. To those who have much to do with practical books in different languages, or work in different countries, this dictionary should be most useful. The trouble experienced in translating descriptions of building operations, or of mechanical problems and processes, out of a foreign language, is increased by the fact that the ordinary dictionaries often give no help at a critical point, as this class of subjects brings into use so many purely technical expressions, or arbitrary meanings attached to words, which a general dictionary of the language can scarcely be expected to take account of. The present volume is the second of a series devoted to the same three languages, of which the first (French-German-English) has appeared, and the third (German-French-English), which completes the series, is to appear in the course of the present year. The labour gone through in compiling a dictionary of this kind is, as may be supposed, very considerable; and the second part bears evidence, as far as such a book can be judged of by a general examination, of the care with which it has been edited. A supplement gives such words as have "turned up" while the work was going through the press, and a list is added of *errata*, "unavoidable," as the editors may fairly say, "six revisions notwithstanding." The dictionary ought to be very useful to many in the three countries whose languages it comprises.

Miscellanea.

Metropolitan Drinking Fountains.—Under the presidency of the Duke of Westminster, the annual meeting of the Metropolitan Drinking Fountains Association was held at Willis's Rooms. Mr. John Lee, F.R.G.S., read the report, which stated that in the last twelve months the committee had established no fewer than sixteen large cattle-troughs and twenty-one drinking-fountains, with dog-troughs attached. They had also taken over and repaired, and in some cases taken down and reconstructed, eight cattle-troughs and twenty-four fountains, which had been put up by private benevolence. The total number of erections at present was as follows:—276 fountains and 72 large cattle-troughs, besides 199 small troughs for dogs and sheep, the fountains extending over an area of more than 300 square miles. For the first time in the history of the society the fountains had been kept running all through the winter, and it was found that a very large number of animals availed themselves of the water supplied them. The noble chairman having briefly addressed the meeting, Cardinal Manning moved the adoption of the report, which was seconded by the Hon. A. Kinnaird, supported by Mr. S. Morley, M.P., and Sir. T. F. Buxton, and carried unanimously.

Memorial Fountain at Wormhill.—Last week, the members of the Phœnix Lodge of St. Ann, of Buxton, with several brethren from other lodges, met at Wormhill, to assist in laying the foundation-stone of a fountain to the memory of James Brindley, the engineer, who was born in the parish, at Tunstead, about a mile from Wormhill. The plans show a stone structure for the springs near the centre of the village, and which, in the most droughty summers, were never known to fail. The architect is Bro. Robert Griggs, of Gray's-inn-square, London.

A Warning as to Ladders.—Mr. Danford Thomas, the deputy-coroner, held an inquest at the University College Hospital, on the 26th ult., on the body of William Glass, aged forty-seven, a painter, of 7, Clarence-road. On the 22nd ult., the deceased was engaged painting the front of the Prince of Wales Tavern, Ferdinand-place, and ascended nearly to the top of a very high ladder, fastened his paint-pot in the usual manner, and held on to the ladder with his right hand, his right leg being twisted round the uprights. He reached over to paint at the extreme length of his left arm, when his weight caused the ladder, which was not fastened to the top parapet, to glide sideways, and he fell on to the stones below, the ladder falling across his body. The jury desired to express their opinion that if builders' workmen were to take the usual precautions while at work, many scaffold and window accidents would be avoided, it having come to their knowledge that this was the third inquest held on builders' workmen in Central Middlesex during the day, in each instance families being plunged into grief through the carelessness of the deceased men. The jurors trusted that these disasters, if noticed by the press, would act as a warning to those belonging to the trade.

Building Operations in South Gray's-Close, Edinburgh.—Extensive clearances of old property have been going on for some time past in South Gray's-close, High-street, with the wholesome result of adding another and much-needed lung to that densely-populated portion of the Old Town. What was a short time back a dark and narrow close has by these operations been almost entirely opened up to the dimensions of a respectable modern street. The clergymen of St. Patrick's Roman Catholic Chapel, some time ago, and in view of the operations of the Improvement Trustees, resolved to pull down their old chapel-house,—formerly known as the Earl of Selkirk's house,—and build a new one on a site immediately to the east of the old building, and partially on ground purchased for the purpose from the Improvement Trustees. The plans of the new building, which is now rapidly approaching completion, have been designed by Mr. R. Morham, junior, city superintendent of works, and are in the old Scotch style, so far as Mr. Morham thinks it to be consistent with modern notions of light and air.

Ventilation on Board Cattle Ships.—In a very fine iron screw steamship, *Royal Dane*, Capt. Webster, recently built by Messrs. J. Wigham Richardson & Co., Neptune Shipyard, Low Walker, on the Tyne, for the Tyne Steam Shipping Company, and intended for the trade between Newcastle and Copenhagen, arrangements are specially made for the cattle trade, the company to whose order she has been built having contracted to carry from Copenhagen to the Tyne no less than 500 head of cattle and sheep every week all the year round. The decks upon which the cattle will be berthed are lofty and spacious, and provision for supplying the animals with fresh air has been made by means of a large number of ventilators, and also by a double hatchway, through which a constant current will be maintained from one end of the ship to the other. When in port, ventilation will be provided by means of a steam-engine. The latter provision is rendered necessary by the deficiency in the accommodation at present provided at Newcastle Quay for the landing of cattle, so that vessels have frequently to be at the quay for twelve hours and upwards after arrival before they can discharge their cargoes.

A Singular Accident.—A few weeks ago an accident of a very serious nature, though in itself trivial, occurred to Mr. Poynor, foreman of the engineering department of Messrs. Kirk & Parry, Sleaford, who, in crossing the chamber floor, trod upon a needle sticking upright in the carpet, which penetrated the sole of his foot. Dr. Jacobson and Dr. Bissill were called in, but their joint efforts were unavailing, and a fatal termination took place on the 17th ult. Deceased was greatly respected; he had been in the employ of Messrs. Kirk & Parry for about twenty-two years. The funeral took place on the 19th ult., and was attended by eighty of his fellow workmen, headed by Messrs. Kirk, Parry, and Knight.

The Westminster Aquarium.—We are told that nearly five millions of bricks have been used in this building, the greater part of them having been supplied by Mr. W. T. Wiseman, of Southwark.

The Proposed Municipal Buildings, Newbury.—On Tuesday, the 22nd ult. the Town Council selected the design of Mr. James H. Money, of Speenhamland, which was recommended by Mr. Joseph Morris, the County Surveyor, whose opinion upon the various designs had been solicited. The new buildings will cover the site of the present public offices adjoining the Town-hall, and also that of the houses now occupied by Mr. H. Ford and Mrs. Perry. Mr. Money's plan comprises a frontage of about 80 ft. The ground-floor arrangements consist of a police-court, 37 ft. by 27 ft., with an elevation to the Market-place. In connexion with the court there will be a separate entrance for the public, a waiting-room for witnesses, 15 ft. by 12 ft., and a magistrates' retiring-room, 20 ft. by 14 ft. 6 in. The principal entrance to the Town-hall will be through a porch in the tower, opening into a vestibule and grand staircase. On the first-floor will be a council-chamber, 37 ft. by 27 ft., with retiring and committee-rooms, most conveniently placed; and the new approaches and rooms connected with the Town-hall.

A Spire struck by Lightning.—The shattered condition of the spire of West End Church, Southampton, struck by lightning a fortnight since, has attracted large numbers of persons to inspect it, and wonder has been expressed at the destructive power of the electric fluid. There is little doubt that had the spire been provided with a conductor the catastrophe would not have happened. A meeting, to consider the condition of the fabric, was held at the National Schools, on the 22nd ult., the incumbent, the Rev. Dr. Hatherell, in the chair, when it was resolved that the spire be taken down; that the general urgent repairs to the church be executed; and that a temporary roof be placed on the tower, at an estimated cost of 150*l*. Mr. Colson is the architect, whose estimate for the thorough repair of the church is 452*l*.

The Princess Mary's Village Homes.—The 26th of June was a great day at the Princess Mary's Village Homes, Addlestone, Surrey. Two new homes were opened, and two foundation-stones were laid. The institution, which is an offshoot of the Prison Mission, has been established for the purpose of protecting and training in virtuous living female children of persons in penal servitude, and other girls who are sent to it either under the Industrial Schools Act or as voluntary pupils. It is conducted on the cottage system. In each cottage or "home," as it is called, there are about ten children and a "mother" who has the charge of them. There is also a school building which serves, besides, for a place of worship; but the present accommodation being insufficient, and contributions towards the cost having been made, it has been determined to build an additional wing.

Floods in France.—The continued heavy rain has caused disastrous effects in many parts of France. At Toulouse the Garonne flooded the quarters of St. Cyprien, Port Garaud, and Tonnis. The bridge of St. Pierre, leading to the arsenal, and the suspension bridge of St. Michel have been carried away, while the bridge of Empalot is reported as being in danger. The floating baths and wash-houses have been destroyed, and many houses have fallen and are falling. The hospitals of Maison Dieu and La Grave have been evacuated, and the railway service on the line between Foix and Montrejeau has been stopped. The damage done is immense, and most of the houses in the Quartier St. Cyprien are destroyed. At Verdun, in the Department of Airège, more than fifty houses have fallen.

Morris's Measuring Instrument.—This ingenious instrument is intended to perform those services for which the measuring tape is now employed, with the advantages that it does not necessitate the employment of two persons, and that it registers to 100 ft. instead of 66 ft. The instrument has the appearance of a watch, and, to use it, it is merely necessary to advance the wheel along the surface to be measured, when the large hand will indicate the inches and fraction of an inch, the smaller hand the feet, and the third hand the tens of feet. We quite agree with the inventor that Morris's measuring instrument will be especially useful to builders, timber merchants, and upholsterers.

Assistant Draughtsman, Director of Works Department, War Office, London.—Mr. John Michelen Rogers has been appointed to this office. He has practised as an architect in Bristol, and was formerly a pupil of Messrs. Pope, Bindon, & Clark (now Pope & Son).

Opening of the Swansea Corn and Flour Stores and Bonded Warehouses. — The opening of the spacious premises situated in Little Wind-street, Swansea, known as the Swansea Corn and Flour Stores and Bonded Warehouses, just erected for Messrs. B. R. Harvey & Fish, will prove of importance to the trade of the town and port. The new buildings consist of five stories, with spacious lofts, capable of holding immense stores of flour and corn, whilst the equally spacious cellars underneath will be utilised as bonded warehouses, for wines and spirits. The architect was the Rev. Thomas Thomas; and the builder, Mr. Thomas Lees.

The New Opera House.—Mr. Boord gave notice, in the House of Commons, last week, on behalf of Colonel Beresford, that on July 23rd he would call attention to the intended encroachment on the Thames Embankment by the erection of the New Opera House, and would move,—"That, in allowing the building frontage on the Thames Embankment to be advanced within 30 ft. of the roadway, the Metropolitan Board of Works is acting in contravention of the policy intended to be affirmed by the resolution of this House of the 8th of July, 1870, whereby the Embankment was secured as an open space for the use of the people."

Sale of an Ancient House in Dumfries.—The venerable building in South Queensberry-street, Dumfries, known as the "Amisfield Lodging," has been sold to the Co operative Store Company—one of the tenants—for 750*l*. The company intends to erect on the site a new building, from plans by Messrs. A. Crombie & Son, architects. The Amisfield Lodging is nearly the last of the remaining town houses which the knights and lesser barons of the South-west Border had in Dumfries, and in the sixteenth and seventeenth centuries was a residence of the Charterises of Amisfield, whose ancient tower is still in fair preservation five miles north-east of Dumfries.

The West Cliff Improvement Scheme, Whitby.—A meeting of the committee selected to manage the preliminary matters in relation to this scheme was held on the 22nd ult. Though no canvass of the town has been made, and no prospectus issued, 2,000*l*. have already been guaranteed, independently of Sir George Elliot's subscription of 7,500*l*. The amended scheme, which Sir George Elliot has himself proposed, consists of removing the site of the proposed company's gardens and hall to the extreme western boundary of the estate, which is next to Argyle-road or Cinder-lane. In this scheme there is obtained a grand terrace of some 430 ft. in length by 120 ft. in depth.

Caution to the Builders of Stands.—Duncan Brown, the lessee of the Rutherglen-bridge Recreation Grounds, near Glasgow, where on the opening day the grand stand fell, causing various injuries to a large number of its occupants, was tried before the sheriff and jury at Glasgow, on a charge of culpable recklessness and neglect of duty. The allegation of the public prosecutor was that the stand was constructed of unsound material, and not in a substantial manner. The jury returned a verdict of guilty, and Brown was sentenced to four months' imprisonment.

St. James's Hall Company.—On Saturday evening in last week the St. James's Hall Company entertained at dinner the contractors, foremen, and workmen employed by them in erecting the additions which are being made to the hall, and which comprise a handsome frontage in Piccadilly, a restaurant, and a suite of dining-rooms. Mr. John M. Howard, C.E.,—under whose superintendence the works are being executed from the designs of Mr. Emden, architect,—occupied the chair; and Mr. Bowes, as representative of Messrs. Lucas, the contractors, was vice-chairman.

Increase in the Price of Slating.—Architects and contractors will have reason for the future to substitute tiles, zinc, or even lead, for roofing if slates are to run up month after month in price. At a recent meeting of a number of master slaters of the North of England, held at the Queen's Hotel, Middlesbrough-on-Tees, it was unanimously resolved to advance the price of slating 5 per cent. on account of the advance in the prices of slate at the quarries.

Glanvilles Wootton Church.—The estimated expense for restoring this church, exclusive of the chancel, is 850*l*. Mr. Dale is restoring the Glanville chantry at his own expense.

Keble College.—Two persons who do not wish their names to be known have offered to the Warden and Council of Keble College to defray the cost of the library and hall, which will probably not fall short of 26,000*l*. The chapel built by the late Mr. W. Gibbs will be opened on St. Mark's Day, 1876, the birthday of Mr. Keble, and exactly ten years since the plan of the college was put on foot. One hundred and thirty rooms for undergraduates have been built, and the success of the college in the schools has exceeded the anticipations of its warmest friends.—*Church Herald.*

The Chichester Waterworks. — Messrs. Hassell & Co., of Felixstowe, Ipswich, the contractors for the Chichester Waterworks, have been compelled to suspend payment, and have filed a petition for the liquidation of their affairs. It is said that the liabilities of the firm are sworn at 3,000*l*., and the assets at 6,000*l*., exclusive of a claim of 13,500*l*. due to them for materials supplied and breach of their Orwell Railway and Pier contract, a contract on which they were for some time engaged and which has resulted in litigation.

Opening of a New Wesleyan Chapel at Low Spennymoor.—On the 23rd ult., a chapel erected by the Wesleyan body of Spennymoor was opened for public worship. The new edifice adjoins the Wesleyan day schools at Low Spennymoor, and is built of stone blockers from the Tow Law Quarries, the stone having been given by the Weardale Iron and Coal Company. The building is of "semi-Gothic architecture." Accommodation has been provided for 700 people. The cost is estimated at 2,000*l*.

Monuments for Sarawak.—The *Sarawak Gazette* of January 5th, says:—"Two monuments arrived by the last steamer: one is to be erected on the Astana grounds, to the memory of the children of their Highnesses the Rajah and Ranee; the other to be placed in the European cemetery, over the grave of the late resident, the Hon. Henry Skelton. The monuments are of white Sicilian marble, and of choice workmanship. They are by Mr. Thomas Tyley, senior, of Bristol."

Workmen's Club Journal.—The Council of the Club Union have established a special organ for the publication of information, suggestions, facts, and experiences. It is intended to contain information on all matters relating to the detail of club management, such as the recreation, amusements, literary and scientific pursuits of its members, as well as on subjects connected with various organisations for the improvement of their social position.

Enlargement of Fisherton Church, Salisbury.—The tenders for the erection of a new north aisle, porch, &c., to this church have been sent in. The lowest amounted to 1,806*l*., and adding to this for extras (viz., pulpit, desk, lectern, gas fittings, repair of organ, Communion cloth for table, &c.), the sum of 500*l*., the cost of the proposed improvements will not be less than 2,300*l*.

A Memorial Cross at Holy Rood Church, Southampton.—A brass cross—provided by Messrs. Lankester, has been set in the pavement, opposite the south door of Holy Rood Church, to permanently mark the spot where the large stone ball fell from the north-west corner of the tower among a crowd of people, without injuring any one, on the occasion of the opening of the Hartley Institution.

Buxton Shakspeare Hotel.—This hotel has been purchased by a company, at a cost, it is stated, of 10,730*l*. for the lease of fifty-one years and the goodwill; 4,500*l*. for fixtures, furniture, carriages, and horses; 2,000*l*. for stock in cellar; 500*l*. for cigars. The whole of the valuations have been made by Mr. T. W. Brittain, of Fairfield, for both sides, and the valuations have been accepted without challenge.

Skating Rink and Recreation Ground for Swansea.—A new skating rink and recreation ground has been opened at Swansea during the past week. It is situate at St. Helen's, in a beautiful spot overlooking the bay. The skating rink is composed of French asphalte, smooth and glassy. This latter is the design and work of Messrs. Bradshaw & Co., of Totterdown, Bristol.

Paving St. Paul's Churchyard.—The Commissioners of Sewers, at their meeting on the 22nd ult., resolved to pave the remaining portions of the carriageway on the south and east sides of St. Paul's Churchyard with wood, at an estimated cost of 2,105*l*.

The New Cemetery at Evesham. — The Church portion of the new cemetery was consecrated on the 25th ult. by the Bishop of Worcester. The chapels, which are in the geometrical style, are built with local stone, with Red Bromsgrove and Bath stone dressings. The cost is about 2,500*l*. The architects are Messrs. Sansome & Lunn, Birmingham. The builder is Mr. Alfred Espley, Evesham.

The new Church at Awbridge, near Romsey.—The first step towards the erection of this edifice was taken on the 21st ult., when the Rev. T. H. Tragett, assisted by the architect, Mr. J. Colson, of Winchester, set out the foundations of the building, the first plug being driven by Mr. Tragett, and the works have now been commenced. The contract has been taken by Mr. John Crook, of Northam, Southampton.

The New Road across Hyde Park Corner. The model showing the proposed approach to Grosvenor-place by a sunken road to be carried under Piccadilly and the Green Park from Hamilton-place is now on view at the House of Commons. It is stated that the road is to be sufficiently wide to admit of two carriages abreast, with side-walks for foot-passengers.

Gymnasium at Bradford Grammar School.—A spacious gymnasium, erected in connexion with the newly-organised Bradford Grammar School, was formally opened last week by the Mayor of Bradford (Mr. H. Mitchell). The building has been erected by public subscription, at a cost of nearly 3,000*l*.

Bricklayers' Wages, Middlesbrough.—The Middlesbrough bricklayers have sent in a notice to their employers demanding 3*s*. per week increase of wages, and a reduction of hours. The men now commence work at six, but propose to commence at half-past six. The demand will be a serious matter for contractors to deal with.

Fire near Gateshead-on-Tyne.—On the 25th ult. a fire broke out on the extensive premises at Dunston, near Gateshead-on-Tyne, the property of Messrs. Palmer, Hall, & Co., consisting of saw-mills, timber-yard heavily stocked, and other buildings. It is estimated that the loss will exceed 20,000*l*.

Closworth Church.—The nave of the church is to be restored, at a cost of about 800*l*. The plans for the restoration were furnished from the office of Mr. H. Parsons, Viscount Portman's estate agent, and the work will be carried out under his direction. The contractor is Mr. F. Cox, of Yeovil.

Institution of Civil Engineers.—There has been an increase in the last three months of 1 honorary member, 12 members, 40 associates, and 20 students, the numbers of these several classes being now 16, 832, 1,463, and 333,—making together 2,644 of all grades.

Foundation-stone Laying at Wingate.—The populous place of Wingate, midway from Durham to Hartlepool, was the centre of great attraction on Saturday last, on the occasion of a foundation-stone laying for a Workmen's Literary Institute.

Society for the Encouragement of the Fine Arts.—The seventeenth session of this Society was brought to a successful termination by a *conversazione*, held at South Kensington Museum, on June 24th.

Opening of a New Unitarian Chapel at Glossop.—A Unitarian Chapel, erected at the sole cost of Mr. E. Potter, of the Dinting Print Works, Glossop (late M.P. for Carlisle), was opened at Glossop on the 19th ult.

Society for Improving the Condition of the Labouring Classes. — The thirty-first annual meeting of this Society was held on the 24th ult. We may give an account of the proceedings in our next.

Sanitary Inspector of Lichfield.—We are informed that Mr. E. Coxell, inspector for the Worcester Rural Sanitary Authority, has been appointed sanitary inspector to the city of Lichfield, at a salary of 150*l*. per annum.

Penzance Reservoirs.—The tender of Mr. William Robbins, of Penzance, to execute the improvements to the reservoirs of that town for 4,500*l*., has been accepted by the Urban Sanitary Authority.

Architectural Association.—The closing general meeting was held on the 25th ult., when a paper on the "Decoration of Churches" was read. We reserve our report.

TENDERS

For the erection of a church at Awbridge, near Romsey, Hants. Mr. John Colson, architect. Quantities by Mr. J. B. Colson :—

Stainer & Sons	£4,716 0 0
Godbolt	3,050 0 0
Hagon	2,652 0 0
Barnes	2,600 0 0
Maslin	2,434 0 0
Newman	2,498 0 0
Crook (accepted)	2,250 0 0
White	2,190 0 0

For alterations at the Black Horse Tavern, 6, Rathbone-place, Oxford-street, London, for Mr. E. C. White. Mr. W. F. Potter, architect :—

Perkins	£163 0 0
Burningham & Co.	161 0 0
Sabey & Son	158 0 0
Blott (accepted)	140 0 0

For alterations and additions to offices, 10, Idol-lane, for the Trustees of the parish of St. Dunstan-in-the-East :—

Peto Brothers	£1,628 0 0
Longmire & Burge	1,595 0 0
Foster	1,555 0 0
Wood	1,546 0 0
Ashby Brothers	1,532 0 0
Bankes	1,500 0 0
Brass	1,457 0 0
Heath	1,445 0 0
Bayes & Ramage	1,418 0 0
Potter	1,410 0 0
Ellis	1,259 0 0

For alterations, repairs, painting, &c., to premises, 43, St. Paul's Churchyard, for Mr. P. D. Kain :—

Johnson & Co. (accepted)	£275 0 0

For Wesleyan Schools, St. Peter's-street, Tiverton. Mr. Amos Crisford, architect. Quantities by Mr. R. Carpenter :—

Hamlin	£947 5 6
Grater & Pyle	800 0 0
Williams	783 7 10
Stratford	729 10 0
Cole, Willis, & Pratt (accepted)	721 5 8

For tavern, Jewin-street, City. Messrs. Herbert Ford & R. Lempriere Hesketh, architects :—

Kirk & Randall	£5,421 0 0
Smale	5,166 10 0
Adamson & Sons	5,125 0 0
Lawrence	5,121 0 0
Killby	5,109 0 0
Scrivener & White	5,085 0 0
Perry & Co.	5,077 0 0
Brass	4,985 0 0
Ashby Brothers	4,899 0 0
Merritt & Ashby	4,798 0 0
Downs & Co.	4,751 0 0
Crabb (accepted)	4,406 0 0

For two warehouses in Hamsell-street and Jewin-street, City, E.C. Mr. Herbert Ford, architect :—

Smale	£5,215 0 0
Ashby Brothers	5,097 0 0
Kirk & Randall	5,011 0 0
Merritt & Ashby	4,986 0 0
Perry & Co.	4,876 0 0
Adamson & Sons	4,815 0 0
Lawrence	4,807 0 0
Killby	4,798 0 0
Scrivener & White	4,782 0 0
Brass	4,751 0 0
Downs & Co.	4,620 0 0
Crabb (accepted)	4,455 0 0

For alterations and additions to Brewery, Lower Norwood. Messrs. Bird & Walters, architects. Quantities supplied :—

Wallis	£935 0 0
Ward	868 0 0
Burtwell	789 0 0
Nightingale	765 0 0
Deacon	760 0 0
McLachlan & Son (accepted)	720 0 0

For rebuilding Seaford House, Seaford, Sussex, for Mrs. Holland. Mr. Stephen Salter, architect :—

Cheeseman & Co.	£3,280 0 0
Moreling	3,090 0 0
Berry	3,050 0 0
Vidler	2,994 0 0

For new schools at Garndiffaith, for the Trevethin School Board, Monmouthshire. Mr. E. A. Lansdowne, architect :—

Stephens & Bastow	£3,312 0 0
Everal	3,184 0 0
Love	2,721 0 0
Jones	2,697 0 0
Burgoyne	2,670 0 0
Williams & Sons (accepted)	2,599 0 0

For erecting warehouse buildings, White Horse-lane and Friendly-place, Mile-end Old Town, for Mr. Stapleton. Messrs. H. S. & C. A. Legg, architects :—

Hearle	£1,065 0 0
Hunt	881 0 0
Webb	877 0 0
Wood	873 0 0
Judd & Hawkings (accepted)	620 0 0

For constructing about 1,310 ft. run of 12-in. pipe, and 30 ft. run of 3 ft. 9 in. by 2 ft. 6 in. brick sewers, in the Mall and Mall-road, Hammersmith, for the Fulham District Board of Works. Mr. Alfred C. Bean, engineer. Quantities by Mr. Alfred J. Bean :—

Thompson	£570 0 0
Chapel	550 0 0
Wilson	548 0 0
Nowell & Robson (accepted)	496 10 0
Wigmore	475 0 0

For schools and master's residence, at Lane-end, for the Cheriton School Board. Mr. T. Stopher, architect :—

Fielder & Son	£875 0 0
Jacob & Marsh	860 0 0
Puzey	840 0 0
Crook (accepted)	769 0 0

For rebuilding a warehouse, Aldermanbury, City. Mr. Herbert Ford, architect. No quantities :—

Bostel	£1,197 0 0
Sharman	1,145 17 8
Boyce	1,011 0 0
Crabb	1,002 0 0

For sundry alterations and new shop-front at 185, Blackfriars-road. Quantities by Mr. E. Morfee :—

	Alteration.	Shop-front.
Blott	£725	£150
Woodward	650	165
Langmead & Way	639	173
Bayes & Rammage	645	155
Lawrance	631	169
Tarrant	617	153
Outhwaite & Son	628	138

For new buildings for the Estates Association, Limited, on land in rear of Drapers' Hall, Throgmorton-street. Mr. Robert Walker, architect :—

Rider & Son	£110,260 0 0
Lucas Brothers	108,595 0 0
Macey	107,775 0 0
Brass	104,434 0 0
Ashby Brothers	103,295 0 0
Trollope & Sons	102,059 0 0
Scrivener & White	100,530 0 0
Ennor	98,832 0 0
Sewell & Son	99,621 0 0
Simpson & Son	98,786 0 0
Ashby & Horner	96,483 0 0
Kilby	94,198 0 0

For alterations to the Station Hotel, Camberwell New-road, for Mr. Simms. Mr. George Treacher, architect :—

Andrews	£369 0 0
Batley (accepted)	318 0 0
Simpson (too late).	

For alterations to the Raymond Arms, Jamaica-level :—

Day (accepted)	£160 0 0

For alterations to the Trevor Music-hall, Knightsbridge, exclusive of glass work and pewtering, for Mr. E. G. Chapman. Mr. George Treacher, architect :—

Day (accepted)	£1,050 0 0

For new whiting manufactory at St. John's Wharf, Surrey Canal, for Mr. Bewlay. Mr. George Treacher, architect :—

Thompson	£622 0 0
Palmer	599 0 0
Smith	493 0 0
Deavin (accepted)	445 0 0

For new club-room at the Lord Hill Tavern, Peckham, for Mr. Lewis Wakely. Mr. G. Treacher, architect :—

Cooper	£328 0 0
Shapley	310 0 0
Terry	287 12 0
Willes	268 0 0

For rebuilding the main building of the Lord Hill Tavern, for Mr. Wakely. Mr. G. Treacher, architect :—

Willes	£1,326 0 0
Batley	1,159 0 0
Macey	1,075 0 0
Palmer (accepted)	1,025 0 0

For new tavern, Mayall-road, Brixton, for Mr. E. G. Chapman. Mr. G. Treacher, architect.

Macey (accepted)	£1,500 0 0
*Bar Fittings.**	
Macey	320 0 0

* Exclusive of glass and pewtering.

For new bar fittings, exclusive of glass and pewtering, to the Red Cow Tavern, Mile-end-road, for Mr. A. Billinghurst. Mr. G. Treacher, architect :—

Macey	£347 0 0

For alterations to the Dolphin, Whitechapel-road, for Mr. Wm. Woolley. Mr. Treacher, architect :—

Steed	£297 0 0
Palmer	279 0 0
Hunt	246 0 0
Judd & Hawkings (accepted)	217 0 0

For new bar fittings to the Sir William Gomm Tavern, Bermondsey, for Mr. Scotts. Mr. George Treacher, architect :—

Macey	£350 0 0
Day (accepted)	275 0 0

For alterations to Lilliput Hall Tavern, Jamaica-road, Bermondsey, for Mr. E. Goodman. Mr. G. Treacher, architect :—

Lugg	£397 0 0
Palmer	475 0 0
Batley (accepted)	445 0 0
Bar Fittings.	
Batley (accepted)	255 0 0

For erecting Infants' School and teachers' residence, at Patcham, for the Patcham School Board. Mr. G. Tuppen, architect :—

Dancy	£930 0 0
Patching & Webber	900 0 0
Lockyer (accepted)	855 0 0
Still	850 0 0

TO CORRESPONDENTS.

Chas. L., Paris (we shall be glad to receive article).—R. C. G. (we are not able to look back).—N. W. (Mr. Robert Stephenson was the engineer. Letter as to Letter Boxes declined).—R. E. P.—R. M. F.—R. R.—D.—J. H.—G. T. C. H. H. J. F.—S. E.—C. H.—H. S.—C. B. A.—J. L.—J. H.—R. C.—E. R.—F. H.—R. M. F.—A. W.—W. P. M.—Artisans' Dwelling Society.—J. H.—J. B.—S. & L.—J. & H.—Prof. H. L.—S. V. M.—F. H.—E. A. L. G.—T.—R. J. C.—R. M. B. (next week).—S. O. (next week).—F. N. (next week).—E. S. E. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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The Builder.

VOL. XXXIII. No. 1692. SATURDAY, JULY 10, 1875.

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London Streets and their Travellers.

IF the total length of the London streets (2,500 miles) is astonishing, the gross amount of traffic continually going on in them is absolutely astounding; and, even so, if the attempt to form a concrete conception of the aggregate number of inhabited houses in the metropolis somewhat confuses the mind, the endeavour to frame to ourselves an idea of the collective crowd of their inhabitants positively confounds it.

The entire number of houses ("inhabited, uninhabited, and building") which at the time of taking the last census, were concentrated within the 117¾ square miles forming the area of "London according to Act of Parliament," amounted to rather more than 455,000; so that, adding the average annual rate of domiciliary increase (7,500), there must be now some 30,000 more, or 485,000 dwellings altogether. Hence, we shall be not very wide of the truth if we say that, in round numbers, the metropolitan houses at the present time amount to nearly half a million; and that they are consequently sufficient, with an average frontage of five yards, to form, as has been already shown, one continuous row of buildings right round the island of Great Britain, from the Land's End to John o'Groat's (600 miles), from John o'Groat's to the North Foreland (540 miles), and from the North Foreland back again to the Land's End (320 miles) = 1,460 miles altogether. Now, according to the same Government authority, the population of the metropolis was a fraction more than two millions and three-quarters of "persons" in 1861, and a little above three millions and a quarter in 1871; and, therefore (the rate of increase being about half a million per decenniad), the number of people at present located within its legal boundaries may be taken in round numbers, at three millions and a half of males and females in the aggregate.

But who can have an adequate notion of three and a half millions of souls "in the lump"? Some ingenious *savant*, with a considerable amount of spare time on his hands, and no end of patience in his constitution, has counted the number of distinct *ova* in the milt of a codfish; others have summed up how many millions of pores there are in the hundreds of square inches of epidermis which go to make up the human skin; others, again, of an egotistic turn, have reckoned the gross number of *i*'s contained in the Bible; whilst others, maybe, have gone so far as to estimate even the collective motes in a cubic foot of sunbeam. But, surely, all this is the very *delirium tremens* of statistical intoxication. The sense of magnitude and number is merely relative: an elephant is but a tiny sucking-pig in comparison with a mammoth; even as the myriads of decomposing animalcules, which are said to give rise to the phosphorescence of the sea on a summer's night, are little more than a knot of fireflies in proportion to the infinity of Suns composing the "star-dust" which bespangles the Milky Way. Let us, then, give over grasping at the flimsy shadow of large numbers, and endeavour to seize the substance of solid facts which are more readily comprehensible by the mind.

Well, the population of London is the 1·210th part of that of the entire world! (which Balbi, in his "*Bilancia Politica del Globo*," estimates at about 736¾ millions of individuals); it is, moreover, according to the data of the same authority, 1·111th of all the people in Asia, 1·65th of all those in Europe, 1·17th of all in Africa, and just about 1·11th of the aggregate population of the enormous continent of North and South America; whilst it is as nearly as possible treble the whole of the persons in the whole of Australia. Further, there are close upon the same number of individuals in the metropolis as there are in the entire Netherlands, almost half as many again as in the aggregate Republic of Switzerland, and rather more than twice as many as in the kingdom of Denmark.*

Such, then, is the population of the metropolis proper, as compared with that of other territories. Let us now regard it relatively to that of other cities. Well, London is nearly twice as thickly peopled as Pekin (which is said to be one of the most densely populated capitals in the world); but then, on the other hand, it contains almost thrice as many persons as Jeddo, and just treble the number of males and females that are located in Paris; more than four times as many as there are in New York; nearly seven times as many as St. Petersburg; eight times as many as Vienna, Madrid, or Berlin; nine times as many as Naples, Calcutta, Moscow, or Lyons; thirteen times as many as Lisbon, Grand Cairo, Amsterdam, or Marseilles; not less than twenty times as many as Hamburg, Mexico, Brussels, or Copenhagen; and very nearly thirty times as many as Dresden, Stockholm, Florence, or Frankfort.

Further, in comparison with our own large cities, it contains nearly eight times as many people as the united towns of Manchester and Salford, and the same proportion as regards Liverpool; nine times as many as Glasgow; twelve times as many as Birmingham; fourteen times as many as Dublin; and upwards of twenty times as many as Edinburgh; while compared with the four constituent portions of the United Kingdom, the number of people located in the metropolis is about one-sixth that of the entire population of England; two thirds that of Ireland; rather more than the aggregate population of Scotland; and nearly thrice as many as the whole of the people in the whole of Wales.

And now let us see by what simple means we can arrive at a sense of this immense crowd of human beings *collectively*; so that the mind may be able to take in the entire mass at a single glance, or, as it were, to have a bird's-eye view of the whole. Supposing, then, each person to occupy a space of 2 ft. by 1½ ft., or 3 square feet of ground altogether, and every half a dozen persons to be thus packed within the compass of 2 square yards, we have the following simple proportion, viz.: 6 : 2 :: 3,500,000 : 1,166,666·66, for the entire number of square yards of ground which the gross population of London, under such circumstances, would cover. Now 1⅙ million of square yards = 241 acres, or upwards of one-third of a square mile; so that it would require an area considerably larger than that of the entire city and liberties of Westminster (216 acres) to contain the compressed multitude, and a district just about as large as that of St. George's-in-the-East (243 acres) to afford even standing-room for the whole of the immense crowd.* Moreover, it was computed that on the day of the Duke of Wellington's funeral there were a million and a half of people out in the streets to witness the procession, and that they covered the pathways all along the line of route for a distance of three miles. Accordingly, it follows that, were the whole of the metropolitan population ever to be congregated in the public thoroughfares at one and the same time, they would form a dense mass of human beings exactly seven miles long; for 1·5 : 3 :: 3·5 : 7. Or, to put the matter still more strikingly: if the entire people of the capital were to be drawn up in marching order, two and two, and each couple to be 2 ft. apart from the next, the aggregate length of the great army of Londoners would be not less than 662 miles, or long enough to reach from London to Inverness; while, supposing the file to move at the rate of three miles an hour, it would take more than nine days and nights for the aggregate troop of the metropolitan population to pass by. Who can wonder, then, that a babe is born within the London boundaries every five minutes throughout the year? or that very nearly 220 Londoners die every day in the course of each twelvemonth?

Maitland tells us that London, a century ago, had absorbed into its body one city, one borough, and forty-three villages; and yet the ravenous maw of the metropolis continues daily devouring suburbs, and swallowing up green field after green field; for the builders still go on raising houses where the market-gardeners, a little while back, raised only cabbages,—further house-room

* The preceding as well as the following calculations have been made from the tables given in the "*Almanac de Gotha*."

* As a convenient guide for estimating such magnitudes, it may be mentioned that Bedford-square occupies an area of just about 6 acres (reckoning the entire quadrangle inclosed within the walls of the surrounding houses), Russell-square, 10 acres, and Lincoln's-inn-fields, 15¾ acres.

being required every year (what with the influx of "little strangers" and the accession of immigrants from the country and abroad) for half a hundred thousand new-comers at least. Hence the capital now embraces not only the county and episcopal city of London itself, as well as the episcopal city and liberties of Westminster; but it includes the two great boroughs of Southwark and Greenwich, besides the towns of Woolwich, Deptford, and Wandsworth, together with the *quondam* watering-places of Hampstead, Highgate, Islington, Acton, and Kilburn; the old fishing-town of Barking; the once-secluded and ancient villages of Ham, Hornsey, Sydenham, Lee, Kensington, Fulham, Lambeth, Clapham, Paddington, Hackney, Chelsea, Stoke Newington, Newington Butts, Plumstead, and many other places, which were once far away in the country. It comprises, moreover, the jurisdiction and lieutenancy of the Tower and Tower Hamlets, and of the Hospital of St. Katherine, as well as the lordship of the Duchy of Lancaster in Westminster. Well, therefore, might M. Horace Say, the celebrated French economist, exclaim,—"*Londres n'est plus une ville: c'est une province couverte de maisons!*" Indeed, the monster metropolis comprehends at present within its boundaries, as regulated by law, the territories of what were formerly four Saxon commonwealths and kingdoms,—viz., the dominions of the Middle Saxons, East Saxons, the South Rick, and the Kentwaras, who once ruled over its surface; while buried beneath the houses and the pavement are the remains of streams which are now made to do the duty of a common sewer, but which at one time were of sufficient capacity to be the scene of many a naval engagement. For Stowe, in his "Survey" records that at the beginning of the fourteenth century (35 Edw. I.), Henry Lacy, Earl of Lincoln, complained to the Parliament then holden at Carlisle, that "whereas in times past the course of water running at London, under Oldborne Bridge and Fleete Bridge, into the Thames, had been of such breadth that *ten or twelve ships' navies at once, with merchandise, were wont to come up to the aforesaid Bridge of Fleete, and some of them to Oldborne Bridge as well*, now the same course, by reason of the filth from the tanners, as well as by diversion of the water made for the mills standing without Baynard's Castle, and from divers other impediments, is sore decayed; so that the ships cannot enter as they were wont, and they ought."

Having, then, given the reader as comprehensive a sense as possible, not only of the size and population, but also of the number of houses and the length of the streets composing this consummate capital of ours,* we shall now proceed, in due order, to set forth the aggregate amount of traffic which is continually traversing its thoroughfares.

The streets of London are, assuredly, the grandest and most remarkable of all the sights that London contains. Not that this is due to their special architectural beauty, though at the West End, and even in some of the new parts of the City, there are highways which are long lines of palaces; nor yet is it owing to the magnificence of its shops, gorgeous, nevertheless, as some of them may be with the richest products of the world; neither is it referrible to the broad green fields of its prairie-like parks,—those vast aërial reservoirs (great sylvan tanks, as it were, of oxygen) for the supply of pure air, health, and spirits, to the walled-up multitude; neither, again, is it to be ascribed to the extent of its capacious docks at the East End, where the surrounding streets have all the maritime grotesqueness of an amphibious Dutch town from the intermingling of the many mast-heads with the chimney-pots, and where the sense of the aggregate wealth stored within the neighbouring warehouses is positively overpowering to contemplate. But these same London thoroughfares are, assuredly, the finest of all sights,—in the world, we may say,—on account of the never-ending and multiform varieties of life to be found in them at all hours of the day. Beyond doubt, the enormous multitude for ever sweeping along the principal metropolitan highways strikes the first deep impression upon the stranger's mind; and we ourselves never contemplate the roar of the mighty human tide without feeling that here lies the real grandeur of the colossal colony,—the one distinctive feature that gives a special sublimity to this giant town.

Travellers speak of the awful magnificence of the great torrent of Niagara, which is the broad unbroken fall of an entire river over a vertical precipice, and where the cataract of descending water is nearly 1,500 yards wide, and the average quantity of liquid for ever pouring over the rocks in one immense and terrific flood is said to amount to as much as 700,000 tons weight, or very nearly 157,000,000 gallons a minute. Still, what is even this enormous cascade in grandeur to the vast human flood, the stupendous living torrent of thousands upon thousands of restless souls, each quickened with some different purpose, and ever hurrying along the great thoroughfares of this "very great metropolis"? And if the roar of the precipitated waters of Niagara at once bewilders and affrights the mind, assuredly the riot and immensity of the London traffic not only stun but appal the brain of those who hear it for the first time. There is no scene in the wide world which can impress the mind with such a sense of indomitable labour and perseverance as is inspired by the seemingly never-ending and never-tiring industry of the torrents of people and conveyances perpetually pouring along the metropolitan streets. If the Desert be the very intensity of the sublime from the almost-tragic feeling of loneliness which the scene induces,—the awful stillness and bareness of the vast arid ocean of desolation encompassing the traveller,—surely, this mighty modern Babylon is equally sublime,—though, for the opposite reason: from a sense of the infinite multitude of human beings with which we are continually being surrounded, and yet our comparative friendlessness and isolation in the midst of such a vast concourse of our fellow-creatures.

Let the visitor from some quiet country or foreign town behold the City, or even the Strand, Oxford-street, Regent-street, or Piccadilly, at five in the day, and see the people crowding the great lines of thoroughfare like a flock of sheep in some narrow rural lane, with the vehicles packed full of human beings and jammed as compactly together as the very stones of the pavement itself. (As many as 800 carriages are said to pass along Pall Mall, by her Majesty's Theatre, every hour of the day during the season.) Let him find, moreover, that go which way he will through the City, there is the same long dense commercial train of human beings, cabs and omnibuses, carriages and carts flooding every one of the leading thoroughfares,—the same black throng of "bread-winners" (some hurrying in hot haste after the "nimble ninepence," and others plodding along steadily, but surely, in quest of the "slow shilling,") pervading each of the principal streets almost as far as he can travel before nightfall; let him find, too, every one of the great civic arteries pouring its life-stream into the mighty heart of London, each charged with its thousands of human globules, and all busy, as they circulate through the bricken ducts sustaining the vitality, energy, and well-being of the land; and assuredly he will allow that the world has no wonder, among the whole of its far-famed seven, in any way comparable to this.

Let us, however, descend to particulars, and endeavour to set forth the actual amount of traffic which daily goes on in these same wondrous streets of London. According to a return made by the Inland Revenue Office in 1850, when the mileage duty, as well as the tax on horses and carriages, was still in force, the number of horses at that time within the metropolis was upwards of 20,000, and consisted of 10,000 carriage, job, and cart horses, 5,700 cab horses, and 5,500 omnibus horses. But there were then not quite 3,000 cabs, and rather more than 1,300 omnibuses in London; whereas, according to the returns of the Metropolitan Police (who have had the licensing of these vehicles since the year 1870), the number of cabs in 1872 had increased to very nearly 8,000, whilst the number of omnibuses had declined from 1,350 to 1,289; so that reckoning two horses to each cab, the number of "hackney-carriage" horses cannot be less now than 16,000, and eight horses at least to each "short-stage," the number of omnibus horses must be upwards of 10,000, so that the gross total of such animals at present in the Metropolis (including the 10,000 private-carriage job, and cart horses) must be rather more than 36,000, instead of 20,000 some quarter of a century ago. To this number, moreover, must be added the horses which come up to the Metropolis daily from the surrounding districts and these are said to amount to as many as 3,000 or more. Consequently, the total of the London horses at the present time may be safely set down, in round numbers, at somewhere about forty thousand.

And now for the amount of "travel," as the 'bus-people term it, performed by this united cavalcade. The average journey of each omnibus is said to be six miles, and this length of ground is, in many cases, gone over as often as twelve times in the course of the day, or, as it is styled, "six journeys there and six back." Some 'buses, however, perform the journey only ten times, and some (though they form but a small minority of the whole) do so even less. Estimating, then, the average distance travelled by each of the London omnibuses at between sixty and seventy miles *per diem* (and this, we are assured, is rather under than over the usual amount), and computing the number of such vehicles running daily through the London streets at 1,200, we have an aggregate of 70,000 to 80,000 miles per diem, or upwards of twenty-five million miles *per annum*,—a distance which is more than one fourth of that of the earth from the sun. And that this estimate, large as it may seem, in no way exceeds the truth, is proved by the fact that the money paid for mileage duty for the 1,350 short stages, in the year 1849–50, averaged just about 10*l.* per 'bus per month, and amounted altogether to 162,000*l.*; so that this, at the rate of 1½*d.* per mile, would give a gross amount of annual mileage which is rather more than the total above mentioned.

The distance travelled by the collective cabs in London may be estimated as follows:—Each driver has to pay to the proprietor of the vehicle from 12*s.* to 15*s.* per diem; so that, there are just upon 8,000 cabs in all London, and these, one with another, may be said to run twenty miles each daily, in order to earn (what with long and short fares, extra persons, &c., rather more than the sum the drivers have to take home to the owner for the hire of their conveyances, it follows that their aggregate daily travel must amount to 160,000 miles, or in round numbers, to upwards of fifty-eight millions of miles in the year.

Thus, therefore, we arrive at the conclusi

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* The following table is given in the Police Returns printed in the year 1872:—

Table showing the Number of New Houses Built, as well as the Number and Length of the New Streets and Squares formed within the Metropolitan Police District between the years 1848–71.

Periods.	Number of New Houses built.	Number of New Streets and Squares formed.		Length of New Streets and Squares.		Annual Average Number of New Streets and Squares.		Annual Average Length of New Streets and Squares.		Annual Average Number of New Houses.
		Streets.	Squares.	Streets, in miles.	Squares, in yards.	Streets.	Squares.	Streets, in miles.	Squares, in yards.	
1849-54	11,713	1,233	9	237	1,239	257	1½	47⅜	247⅝	8,148⅔
1854-62	52,949	1,613	25	239	953	189	3⅛	21⅜	119⅛	6,618⅔
1862-64	35,163	835	10	164	1,321	412½	5	82	66 ¼	17,581⅓
1864-67	18,205	787	12	127	1,037	262½	4	42⅜	345⅝	16,1s-¼
1867-68	15,983	491	4	88	1,490	491	4	88	1,490	15,983⅓
1868-70	31,939	927	7	171	1,569	463½	3½	85½	784½	15,969⅔
1870		220	1	42	1,059	220	1	42	1,059	9,6s2
Feb-Dec 1871	9,682	226	2	38	722	226	2	38	722	8,693
Total..	243,897	6,277	70	1,106	9,370	285 3/5	3 3/5	50 5/5	425 19/22	11,077 7/5

Number of New Houses being built in 1871, =3,598.

By the above table it will be seen that in the twenty-two years, from 1849–71, there were constructed annually on an average 11,000 new houses and fifty miles of new thoroughfares, consisting of 285 new streets and three new squares. It will also be found that the greatest number of new houses was built in the years 1862–64, when more than 17,500 were erected annually, and the smallest number in the years 1849–54, when only 8,148, or less than half that number, were constructed. And also that the greatest number of new streets was formed between 1867 and 1868, when the average number reached 491, and the average length of the new thoroughfares formed in the course of those years amounted to eighty-eight miles; whilst the fewest new streets were made between 1854 and 1862, when the average number was only 189 per annum; and the average length of the whole just upon thirty miles.

hat the 25,000 omnibus and cab horses in London travel somewhere about 250,000 miles per diem! What distance the remaining 15,000 carriage and cart horses,—as well as those which come up from the country,—journey in the course of each day, there are no authentic records to enable one to form an accurate estimate. But, supposing each animal to go only five miles on an average, the total length of the ground travelled in the day by the whole of the remaining troop would amount to another 75,000 miles; so that we land at the following result, viz.: the gross amount of London traffic by the collective 40,000 London horses is at the very least 300,000 miles per diem, or about as far in the course of the year as it is from this globe to the sun!

The total length of the London streets we have already shown to be 2,500 miles; hence it is a simple rule of proportion sum to demonstrate that each mile of pavement throughout the metropolis must be traversed 120 times during the day, or about a thousand times a week, by some vehicle or other. Nor is this very wide of the truth; as, indeed, the observations which have been made as to the actual amount of traffic going on in different parts of the City at different periods of the daily working hours, tend indisputably to prove. For, according to an elaborate table prepared by Mr. Haywood, the well-known City surveyor,* there appear to be two tides, as it were, of locomotion flowing daily through the great highways of the City,—the one coming to the flood, as it were, at eleven o'clock in the forenoon, up to which time the number of vehicles goes on gradually increasing, and that at so rapid a rate that there are nearly twice as many in the streets an hour before midday as there were at nine in the morning (see table given below). After eleven a.m., however, the tide of the City traffic begins to ebb, and the number of vehicles to decrease regularly from that time till two p.m., at which hour the sum total of the conveyances in the streets is about one-sixth less than it was three hours previously. Then, at two in the afternoon, another change sets in; and the crowd of omnibuses and cabs, carriages and carts, commences swelling again, and continues doing so till five in the evening, when there are some few hundreds more vehicles in the leading thoroughfares than there were at eleven in the morning. Finally, after five p.m., the locomotive current begins to ebb once more; nor does it attain its next flood till an hour before noon the next day. And so the mighty tide of traffic goes on, ebbing and flowing day after day, and wearing away the stones of London in its course,—the same as if it were the torrent of Niagara itself, pouring its 700,000 tons of water every minute over the rocks in its path.

Moreover, by the table before referred to we find that the total number of vehicles traversing the principal streets of the City in the course of twelve hours amounts to the prodigious sum of 125,000 or one-eighth of a million. Many of these, however, it must be borne in mind are reckoned more than once in the same return; nevertheless, if we take merely the number appearing in such distinct lines of thoroughfare as Holborn and Fleet-street, Blackfriars Bridge and London Bridge, Leadenhall-street, Bishopsgate-street, and Finsbury-pavement, even then the amount of the City traffic reaches nearly 60,000 vehicles passing and repassing through the principal streets between the hours above mentioned.

Still, the thoroughfares within the City of London are only one-fifth the length of those without them; and as there are two distinct lines of streets traversing London from east to west, each six miles long, and four distinct highways stretching north and south, which are respectively five miles at least in length, it will be found that at five p.m., when almost the whole of these main ducts may be said to be filled with the flood of the day's traffic, there is nearly one continuous stream of omnibuses, cabs, and carriages, carts, and vans, as well as foot-passengers, sweeping through London, at one and the same time, which is more than thirty miles long altogether!

* The subjoined table gives the data upon which the above statement is based:—

Return by Mr. Haywood (the City surveyor) showing the Number of Vehicles passing in the course of Twelve Hours (from 9 a.m to 9 p.m.) through twenty-four of the Principal Thoroughfares in the City of London:—

London Bridge	13,099
Cheapside (by Foster-lane)	11,053
Poultry (by the Mansion House)	10,274
Temple Bar-gate	7,741
Holborn (by St. Andrew's Church)	6,906
Ludgate-hill (by Pilgrim-street)	6,829
Newgate-street (by the Old Bailey)	6,375
Leadenhall-street	5,930
Blackfriars Bridge	5,262
Cornhill (by the Royal Exchange)	4,916
Gracechurch-street (by St. Peter's-alley)	4,687
Bishopsgate-street Within (by Great St. Helen's)	4,812
Aldgate-street (City boundary)	4,754
Finsbury-pavement	4,460
Bishopsgate-street Without	4,110
Eastcheap (by Philpot-lane)	4,102
Fenchurch-street	3,642
Smithfield-bars	3,108
Tower-street (Mark-lane)	2,890
Aldersgate street (by Fann-street)	2,597
Upper Thames-street	2,331
Lombard-street (by Birchin-lane)	2,228
Threadneedle-street	2,150
Lower Thames-street (Botolph-lane)	1,382
Total for twenty-four thoroughfares	125,859

Table showing the Ebb and Flow of the Traffic in the City of London in Twenty-four of the Principal City Thoroughfares for each Hour of the Day from 8 a.m. till 9 p.m.

Total Number of Vehicles passing along the principal City Thoroughfares:—

From 9 a.m.	6,576	At 3 p.m.	11,068
To 10 a.m.	9,751	At 4 p.m.	11,351
To 11 a.m. *(morning flood)*	12,208	At 5 p.m. *(evening flood)*	12,543
To 12 a.m.	11,686	At 6 p.m.	11,242
To 1 p.m.	11,408	At 7 p.m.	9,757
To 2 p.m. *(afternoon ebb)*	10,466	At 8 p.m. *(evening ebb)*	7,694

Average—10,488 vehicles per hour.

Comparative Return by M. D'Arcy as to the Gross Amount of Traffic in the Seven Principal Thoroughfares of Paris in the course of Twenty-four hours:—

Boulevards des Italiens	10,759
Boulevards des Capucins	9,070
Boulevards Poissonnière	7,720
Boulevards St. Denis	9,699
Avenue des Champs Elysées	8,859
Avenue des Filles du Calvaire	5,856
Rue du Faubourg St. Antoine	4,300

Average—2,386 vehicles per hour.

"SEMI-GOTHIC" ARCHITECTURE.

A CAUSTIC correspondent once described the style of a new building, in these columns, as "Lunar Gothic." The phrase does not represent badly some of the extravagant and laboured whimsicalities, which the desire for what is thought picturesque has given rise to from time to time. This eccentricity of modern Gothic is less noticeable of late; partly that it has really been modified by the prevalence of a better and quieter taste, partly perhaps that we have got more used to eccentric architecture, and are less disturbed by it than we were fifteen years ago. But the modifications of Gothic practised at present, by those who do not profess to be purists, tend rather in the opposite direction, and consist not, like "Lunar" Gothic, in an exaggeration of all the points of the style, but in the softening and losing of these, by blending them with details proper to other styles, or by altering the character of Gothic detail till it assimilates to something else. This method of dealing with it has been practically carried out for some time; and the fact of the frank employment of the term "semi-Gothic," to describe one or two new buildings recently carried out, only shows how much this kind of half-and-half style is taking its place as a distinct element in the architecture of the day.

The aim is the same in both cases,—novelty, and on the whole the semi-Gothic system is unquestionably more philosophical and suggestive than the other. Exaggeration, and consequent want of repose, are entirely at variance with the true spirit of architecture. The multiplied chamferings, the disproportioned openings, all arch and no jamb, which seemed to be considered with many practitioners the necessary elements for producing what may be called "go" in modern Gothic, are tending to fall into disrepute again, as oddities of any kind always do before long. The opposite tendency, the attempt to combine in new forms the elements of Gothic and Classic architecture, is so far in vogue that with not a few designers it has become almost matter of course. It is a deliberate repetition, on principle, of what was done unconsciously and naturally by the Elizabethan architects; though the results of the experiment are different enough in some ways.

There are two or three different principles on which semi-Gothic architecture may be evolved. One is that on which Pugin always said the Houses of Parliament were designed—"Gothic details on a classic body"—in other words, a Classic arrangement of plan and mass, with Gothic ornament. This, however, is not a very distinctive source of novelty, for there have been various buildings, during the true Gothic period, arranged and planned with the symmetry of a Greek temple, and affording a practical contradiction to the idea that irregularity is in every way of the essence of Gothic—an idea which was the foundation of Pugin's criticism of the structure alluded to. There has, however, been evident in recent buildings of decidedly Gothic design an effect of solidity and squareness of character at variance with the spirit of English Gothic, and which is almost entirely due to the influence of French Mediæval architecture, where the Romanesque influence predominated so much more, and retained its hold so much longer than in this country. This, however, may be carried out without in the slightest degree mixing the Gothic character with anything derived from opposite schools of architecture. But it is probable that the style of the French Gothic capital, with its square abacus and large angle foliage directly descended from the "Composite" capital of Rome, suggested the intermixture of style in the treatment of this feature, which has been so prevalent in English work of late. We meet with capitals in Gothic buildings which are much more Classic in feeling than anything for which English Gothic could show a precedent. Still more, in the other direction, do we meet with capitals and other carving in professedly Classic buildings, which are essentially Gothic in feeling and treatment. It is becoming recognised that the effect of detail of that sort largely depends on conditions of light and atmosphere; and the natural result of this is to induce a certain similarity of detail in buildings otherwise remote enough in style. The old delicate and symmetrical Classic capital is rarely seen now in buildings by any English architect of talent and originality, however professedly Classic may be his style and sympathies: it is falling into neglect as a form not only grown hackneyed by repetition, but as ineffective and tame in this climate.

The essence of the "semi-Gothic" movement, however, consists in more marked and important variations from rule and precedent than are shown in this generalising of the style of carved ornament. It is shown in the combination in the same building of features derived from different structural systems and different principles of architectural expression. This may take the form either of the introduction of Classic features into a building mainly Gothic, or the reverse process. The latter has not been so much attempted as the former; and naturally, for it is usually a complete failure. The most common instance of it is the introduction of the buttress form into Classic architecture. This has been attempted not infrequently, but the introduced feature always appears like an interloper. The square and precise forms of Classic design will not tolerate the intrusion of the sloping lines of the buttress; and there is a more innate kind of incongruity in it, too; for the buttress emphasises structural dynamics in a way which the statical repose of Classic architecture shrinks from. The combination of the spire with Classic architecture has been attempted with more success; the typical example being, of course, Barry's Halifax Town-hall, the original of several less refined imitations. The opposite process of engrafting Classic features upon Gothic is in part formed by reversing the two processes just hinted at; by substituting the pilaster where the buttress would be expected, and by discarding the tapering spire for something of the campanile form. This latter process has really given rise to some new combinations in design, of a very successful kind; and, indeed, the Italian campanile in its finest and most striking forms has more affinity with Gothic than with Romanesque or Renaissance architecture. The substitution of the pilaster for the buttress, and of the square pier for the Gothic-shafted pier, in a pointed-arch building, is the most marked form of "semi-Gothic," and is the most marked feature, usually, in any building which can be so denominated. And in structures where there is no large-span roof to exercise a powerful thrust on walls not tied in by cross-walls, there is really nothing illogical or un-architectural in this combination. Our notions of Gothic architecture are too exclusively derived from the study of buildings in which these conditions were present, and of course affected the design in a most important manner. But in modern Gothic, of a civil or domestic class,—wherever, in short, there are not large areas to be crossed by heavy roofs, the buttress is a far less essential element than it is often considered to be. The omission of it, and the substitution of a flat wall treatment in combina-

tion with pointed arches and Gothic detail is, in such a case, merely an admission that the structural influences which were the chief creative agent of the fully-developed Gothic style are absent or modified, and the architectural treatment and expression are modified accordingly.

The style of "semi-Gothic" which we certainly do not like, however, and for which little reason can be given but the attempt at novelty, is that which we have observed to be very prominent of late among designs for Dissenting places of worship. It is difficult to define the exact characteristics of this manner; but it seems to consist in a combination of some of the qualities of Classic and Gothic style respectively, which are most incongruous when united. A heavy, low, pedimented gable, for instance, is combined with pointed arches, or round-arched openings with heavily panelled soffits are combined with tracery far too light to assimilate with the framework in which it is set. These are two instances of a kind of nondescript and heterogeneous treatment which is exhibited also in other forms, which readers may recall, though it is not easy to define their specialities without the actual object before one's eyes. The sort of thing we mean is also very prevalent in shop architecture at present, in which we sometimes see a jumble of pilasters and shafts, round windows in one story, pointed windows in another, with apparently no object but that of cramming together a number of heterogeneous architectural elements, apparently in the hope that some originality of style will be attained. But style never was attained in that way,—nothing that is deserving of such a title. For "style" means the combination of details which appear to have a common origin and a common intention in regard to effect. These "semi-Gothic" structures, consisting of features which are contradictory of each other, spring from opposite structural conditions, and aim at combining opposite artistic expressions. Their combination, however, results only in a negation of style altogether. Although we have compared the modern semi-Gothic, to a certain extent, with Elizabethan, the class of designs last named have no affinity with that at all. For the Elizabethan, though a corrupt style, was a "style" in its own way. In employing together features borrowed both from Classic and Gothic, it modified each to such an extent as to harmonise them in a great degree, and to produce a whole which was not by any means disagreeably or absurdly incongruous in its result, though obtained in a rather anomalous and, we might perhaps say, accidental manner. This latter epithet possibly explains to some extent the cause of the difference between this and the modern semi-Gothic style. The Elizabethan was not a deliberate effort to make something new, but an almost natural result of the course of architecture at the time. It is, therefore, though corrupt, not displeasing to the taste, as everything is in which the desire to surprise by novelty is evident. The old semi-Gothic, in short, was refined; the new is vulgar; for every conscious and undisguised effort to attract by singularity is vulgar, in whatever form of art; and there is none in which vulgarity, when existent, is more pronounced and more offensive in its expression than it becomes when thrown into the form of pretentious and ill-considered architectural design.

THE COURTS AND ALLEYS OF GRAY'S INN LANE AND THE NEW ACT.

THE first report on the application of the Artisans' Dwellings Bill has been made (not by the medical officer as prescribed, but) by the Surveyor to the Board of Works for the Holborn District, Mr. L. H. Isaacs. The area proposed to be dealt with may be described as a parallelogram, extending from Portpool-lane on the north to Holborn on the south, and from Leather-lane on the east to Gray's Inn-lane on the west. The length from north to south is 1,100 ft., and the width from east to west 550 ft., making a superficial area of 67,222 square yards, or nearly 14 square acres. A little to the north of this site will be found Liquorpond-street, which is to form an integral portion of the new thoroughfare from Oxford-street to Shoreditch, and which will be made 60 ft. wide; and, again advancing northwards, we come to Little Gray's Inn-lane, Tothill-street, and Laystall-street, all of which are to be widened. The inner portion of the area is cut up into courts, alleys, and streets, the mere enumeration of whose names forms a lengthy schedule.

Having set out various roads, Mr. Isaacs takes a depth of 50 ft. for building plots next Gray's Inn-road and Leather-lane, "as these frontages would command greater ground-rents than could be obtained for them if they were let for the purpose of erecting artisans' dwellings thereon;" and, with the exception of these two frontages, devotes the remainder of the space cleared to the object of Mr. Secretary Cross's measure.

He gives a schedule which shows the numbers of houses, families, and persons that would be affected by reason of the application of the Home Secretary's measure to this portion of the metropolis, or, more correctly speaking, the number of those for whom provision would have to be made in the artisans' dwellings proposed to be erected on the cleared site. According to that, out of the whole number of buildings to be demolished, 239 houses contain 1,019 working men's families, making a total of 3,661 persons!

It will be time enough to review the scheme carefully when it is actually promoted. In the meantime, one point strikes us as of very considerable and, indeed, dangerous importance. The surveyor has included a large amount of good, sound, and, in some cases, valuable property, with the view, very desirable most certainly, of widening roads. He takes, for example, the houses on the east side of Gray's-inn-road from Liquorpond-street down to Holborn. Is it supposed that this could be done under the clauses of the new Act, which declares that in settling the compensation to be paid for any lands or interests in lands proposed to be taken there shall be no "allowance in respect of the compulsory purchase of the same"? Any such endeavour would raise an irresistible storm of opposition.

ASSOCIATION OF MUNICIPAL AND SANITARY ENGINEERS AND SURVEYORS.

THE meetings of this Association were resumed on the 2nd inst. in the Mayor's Parlour, Townhall, Manchester, Mr. J. G. Lynde, the president, in the chair.

Mr. A. Jacob, Barrow-in-Furness, read a paper on "Stone-breaking by Machinery," and described Blake's stone-breaking machine, which, he observed, was the best known. Mr. Jacob also gave a description of a machine in use at Barrow, which breaks stone for macadamising at a cost of 1s. per ton.

A short discussion followed, in the course of which a general opinion was expressed that machine-broken stone was not so valuable as stone broken by hand.

Mr. H. Royer, of Hulme, described the stone-dressing machine of Messrs. Coulter, Harping, & Co., of Dewsbury.

Mr. W. H. Bailey, of Salford, read a paper on the "Prevention of Kitchen or Bath Boiler Explosions, and the Bursting of Water-supply Pipes in Winter," some portions of which we print.

Mr. E. B. Ellice-Clark (Ramsgate) read a paper on the "Increased Rate of Mortality in the Towns of England." He attributed the increased mortality not to the water-closet system, but to the imperfect manner which its details were carried out, to the indoor water-closet, to imperfect sewers—including the want of ventilation—to the modern dust-bin, to the general want of sanitary knowledge, both on the part of the officials and the public, and to the house connexions with the sewers. He recommended all public Boards to use their influence to do away with the indoor water-closet, to have a thorough examination of the sewers, and to ventilate them, to eradicate the dust-bin, and substitute the daily pail system.

Mr. R. Vawser (Warrington) read a paper on "Artisans' and Labourers' Dwellings." He contended that it was the duty of sanitary authorities to provide dwellings for the working classes when private enterprise failed to do so, in order to prevent overcrowding. The attenuated houses which were run up by jerry builders were now the order of the day; scamped work in every direction; outside walls through which an ordinary breeze drove a passing shower; party walls which would not prevent tenants in one house hearing everything that was said by their neighbours; untrapped drains communicating directly with the house,—these were by no means exceptional peculiarities of modern construction; and until a Building Act was passed, making it compulsory to erect houses consistent with the necessities of the age, and arming the surveyor with power to enforce its provisions, these anomalies would continue.

Mr. T. A. Skelton (London) read a paper on "Street Lighting," and Mr. Fowler, borough engineer of Salford, on the main drainage of Salford and the progress of the work of laying the main trunk intercepting sewer.

Votes of thanks were passed to the readers of papers, and to the Mayor; and various places in the city were visited. A vote of thanks to Mr. Lewis Angell, the retiring president, was also passed; and the member dined together as usual.

THE FATHER OF THE DISTRICT SURVEYORS.

ON Wednesday, the 7th inst., Mr. Henry Baker completed his fiftieth year of office as district surveyor of St. Pancras. In our volume for last year, under the heading, "Official Longevity," we gave some notes of the appointment of himself and the late Mr. Gutch then living, to their respective offices under the original Metropolitan Building Act, on the retirement of Mr. Crunden at the age of eighty-four. Had Mr. Baker been in the service of the State he would now be entitled to retire with a good pension. If he were, to-morrow, to send in his resignation to the Metropolitan Board of Works he would receive an official acceptance of it, and, probably, not a word more,—that is, as we may judge from their proceedings in a case of similar kind not long ago. Courtesy and kindly feeling are not always amongst the virtues exhibited by modern popular bodies. Anyhow, we will not let the anniversary pass without offering to Mr. Baker our congratulations and good wishes.

A CONCRETE CHIMNEY.

AT the last meeting of the Civil and Mechanical Engineers' Society, Mr. R. M. Bancroft, vice-president, gave the following particulars of a concrete chimney executed for the River Wear Commissioners, Sunderland.

The foundation of this chimney is of concrete 12 ft. square by 6 ft. deep, on forced or "made" ground consisting of sand and town rubbish tipped on the sea beach. The base of the chimney is carried up 7 ft. 6 in. square for a height of 24 ft. 9 in., being 4 ft. square inside with fire-proof lining. The base moulding is 1 ft. 9 in. in height. The octagonal shaft is 30 ft. high, 1 ft. 3 in. thick at bottom, and 9 in. at top. The total height from floor of boiler-house to summit is 56 ft. 6 in. The concrete in base was mixed in the proportion of 1 of Portland cement to 8 of shingle and sand, and for the octagonal shaft, 1 of Portland to 5 of gravel and sand. After the concrete was mixed in these proportions, rubble stones were packed in promiscuously. The rate of building was 1 ft. 6 in. per day.

The outside of the chimney was coated with ½ in. of cement, mixed in the proportion of 1 of cement to 1 of sand, and divided into ashlar.

The engineer from whose designs this chimney was erected is Mr. Henry H. Wake.

ARCHITECTURE AT UNIVERSITY COLLEGE, LONDON.

THE following is a list of the students who obtained prizes in the classes of architecture at University College, at the annual distribution on the 23rd ult.:—

Architecture: Professor T. Hayter Lewis, F.A.S., F.R.I.B.A. Fine Art Senior Class.—Prize, J. Howard Ince, of London. Junior Class.—Prize, J. Howard Ince, of London. Certificates, 2, O. C. Wylson, of London; W. Murray, of Carlisle. Construction, Senior Class.—Donaldson Silver Medal, J. Howard Ince of London; Certificates, 2, equal, P. R. Bedlington, of Aberdare, W. Murray of Carlisle. Junior Class.—First Prize, J. Howard Ince of London; Second Prize, O. C. Wylson, of London.

Engineering and Mechanical Drawing: Professor Alex. B. W. Kennedy, C.E. Mechanical Engineering.—Prize, Herbert Pearce, of Maidenhead. Civil Engineering.—Certificate, 1, P. R. Bedlington, of Aberdare. Mechanical Drawing, Section A.—Prize, Thomas Bolton, of Cheadle. Certificate, 2, F. L. Muirhead, of London; L. P. Boyce, of London. Section B.—Prize, Herbert Pearce, of Maidenhead. Surveying.—Certificate, 1, P. R. Bedlington, of Aberdare; 2, James Chester, of Real de Monte.

ENGINEERING ON THE DANUBE AT VIENNA.

THE great engineering works, to which we eferred in a previous volume,* at the occasion f the Vienna Exhibition, having for their object he diversion of the Danube into a more conenient channel, closer to Vienna, have at last een successfully completed. It was originally roposed that the first ship passing through the new" Danube should have on board his Iajesty the Emperor Francis Joseph, but this ttention had for some reason to be abandoned, umerous ships having passed freely since the st dam keeping back the waters of the old ver was cut through, in the middle of April. ut the achievement of the great undertaking as nevertheless celebrated on May 30th, by a ip by the Emperor on the new stream, from ie Radlau Bridge, in the Prater, as far as ussdorf, near the Kahlenberg. This excursion as designated in the official programme the Solemn opening of the navigation of the regu-ted Danube, under the auspices of his Majesty e Emperor." It was at first feared that the ematurе cutting of the dam was a mistake, pprehensions being felt that the opening of this st barrier to the entry of the stream into its w bed would cause destruction to the protect-g shore works, not then quite completed; but e damage done by this early opening was in-gnificant, and soon repaired. Indeed, favoured propitious circumstances, Nature came to the ssistance of Art, and the great work, much cried by its opponents, is accomplished. It is rth while to cast a retrospective glance at the story of its execution.

It may almost be said that the course of the nube is prescribed by the formation of the ntry, above the city by the narrow gap tween the Kahlenberg and the Bisamberg; low Vienna, by that between Hainburg and eben. The river, which comes down from ssau, between mountain slopes, with a con-erable fall and great rapidity, brought with it, d especially formerly, considerable masses of vel and stones, which during inundations deposited in the valley in which Vienna is ated. Left to its own course, it continually med new arms. In times of considerable ings, it dug new beds, caused by the deposit resh accumulations of stones and gravel, which re changed almost yearly, bringing with them ding and destruction to miles of formerly ible country. It was this capricious course of Danube which has hitherto prevented Vienna m taking that rank amongst the cities along mighty river to which it is entitled by son of its geographical situation, by reason of vast increase as the capital of a great empire, by reason of its being the central point of Austrian railways. The constant changes of great water highway made the construction permanent quays and wharfs, the erection of ehouses, &c., a matter of impossibility, and rded the natural development of the city. nna, the great "Kaiserstadt," had to be con- with wooden bridges, exposed every winter lestruction by drift-ice, which meant inter-ion of the traffic with the northern shore, and odical disturbances in the provisioning of the . It was compelled to seek its extension, the elopment of its industry, in the southern rbs, instead of spreading along the Danube. is not surprising, therefore, that already in last century the necessity of change was re-ised. Plans were continually designed and mitted; protecting works were constructed, o decisive practical result followed, in conse-ice of the divergent opinions prevailing, until rds the close of 1867, with the advent of w and energetic government, the matter seriously taken in hand. The then minister e interior, Dr. Karl Giskra, submitted the ot of a rational regulation of the course of Danube to the Emperor, who gave his tion in 1868, with the direction to begin the s at once. An imperial commission was inted, which met for the first time on h 17, 1869, under the presidency of the ster of the interior. It consisted of nine bers, three representatives of the govern-, three delegates of the North Austrian es, and three members of the municipality enna. The commission was invested with itive powers, while to it was associated a of engineers having a consultative voice. Gustav Wex, councillor of the ministry, harged by the commission with the imme-diate working out of detailed plans, as well as with the superintendence of the regulation works.

Two rival projects had to be considered. The first, by Pasetti, suggested to leave the stream in its present bed, and to regulate its course by constructing engineering works securing this object; the second proposed to bring the principal arm of the Danube by means of a cutting in a slightly-curved, concave line nearer towards the city, joined to which proposal was the plan of laying dry and filling up the beds of the smaller branches of the river, with the sole exception of the Vienna Danube Canal, and of concentrating the whole water volume in one bed. Herr Wex adopted the second, newer, plan, and worked it out with the assistance of his colleague, Herr Wamek. After it had been submitted to the approval of Herr Hofrath von Engerth, the eminent engineer, and the estimated expenditure of 2,460,000*l.* had been sanctioned, the means for carrying out the works were raised in equal proportions by the imperial government, the estates of Lower Austria, and the municipality of Vienna, by a loan redeemable within fifty years.

We find full particulars of the undertaking in a lecture delivered by Herr Wex before the Austrian Institute of Civil Engineers and Architects, and printed in the organ of the Association, its *Zeitschrift*. It is an elaborate scientific essay, giving a lucid history of the efforts made during the last hundred years towards carrying out the project and the ultimate conclusion of the negotiations. The lecture attracted the attention of engineers no less than it served the non-professional man as a guide. From it we learn that the regulated Danube comprises a length of 30·344 kilomètres (18·855 English or four geographical miles), beginning at Kahlenbergerdörfel, opposite the Bisamberg, and ending at Fischamend, above Hainburg. Two cuttings had to be made; one close to Vienna, of a length of 66·38 mètres (217·79 ft.), the other below the city, 25·48 mètres (83·6 ft.) long. The latter offered few, the former the greatest difficulties. Some idea may be formed of the magnitude of the undertaking when it is stated that along the whole length of the new river bed a breadth of 284·5 mètres (933·4 ft.), with a depth in mid-stream of 3·16 mètres (10·37 ft.), representing the total contents of 12,277,787 cubic mètres (or 433,609,059 cubic feet), had to be raised or dredged—a work which has never been equalled by any other similar undertaking for the regulation of European rivers. It was next found necessary, in order to give protection to Vienna against inundations caused by high water or the breaking up of the ice, to raise the level of the right shore of the river 20 ft. above zero level; of the latter the bank was however raised only 12 ft. above that point, the ridge of the protecting dam being at a distance of 600 ft. from the river, so that the cross streets of the new "Donaustadt," to be built along the stream, have a slight fall towards the quay of 1½ in. for every 6 ft. This new quarter of Vienna will possess a quay 13,276 mètres (14,300 yards, or over eight English miles) long, and 62 mètres (203·4 ft.) wide, and be provided with wharfs for the several navigation and railway companies; along it will be laid down a double line of rails, and it is further projected to erect in the new city a central terminus for the different railways. By the filling up of the bed of the "Kaiserwasser," the principal branch of the numerous arms of the old Danube, along with its shores, 734,000 square klafters (267·6 hectares, or 661·3 English acres) of building land have been obtained and sold, in which quantity is, however, not included the land reserved for streets, squares, and public gardens. The projected principal street, running parallel with the river, is to have a length of 8,000 yards (over 4½ English miles), and as it is to have a width of 90 ft., an idea may be formed of the scale to which the works are planned. Of the minor arms of the old river, only one, that known by the name of the Danube Canal, running close to the inner city, and supplying with water several populous suburbs, was considered of sufficient importance for its preservation, on account of the facilities it offers for the traffic from the upper regions of the river to the city; and it was decided to utilise it and to improve it by deepening it in mid-channel to a depth of 2·21 mètres (7·25 ft.) under zero level. At the same time it was determined to construct a floating gate at its junction below Nussdorf, after the plans of Herr Engerth. This lock is as peculiar as it was difficult to construct, being adapted to be lowered or raised according to circumstances, and to be drawn across the canal by means of chains, so as to close the channel when required. Although since the completion of this floating barrier in 1873, no exceptional exigencies for its use have as yet arisen, its practical utility has already been tested, and it will no doubt prove of great service in time of need.

Between the lengthened Danube Canal, near its outflow at the lower end of the new Danube and the latter, a winter harbour, with an area of 115 Austrian jochs, 66·17 hectares, or 163·51 English acres, having quays of a total length of 9,673 mètres (10,579 yards, or 6 English miles), will be formed in the bed of the old river; to this must be added the quays on both sides of the regulated canal, of a total length of 13,270 mètres (14,513 yards, or 8¼ English miles). Provision is made along the new stream for the erection of wharfs, docks, warehouses for the storage of grain and corn, &c. It is also intended to utilise part of the old stream, originally intended to be filled up and built upon, for the formation of two basins for harbouring ships.

If we now add together the works along the shores of the main stream, the canal, and round the three harbour basins, we obtain a total length of 47,414 mètres (51,854 yards, or 29½ English miles), with an area of 315 Austrian jochs (181·27 hectares, or 448 acres).

Five bridges, of stone and iron, serve for the uninterrupted communication, in the first place, with the flat country on the opposite shore, and, next, with the northern parts of the Austrian Empire. Massively and artistically built, they are an architectural ornament of Vienna. Three of them are railway bridges, belonging respectively to the State, North, and North-West Railways; while between them one, the beautiful Franz Joseph Bridge, has been erected at a cost of 260,000*l.*, near the old Tabor; and a second, the Reichsstrassen Bridge, in the direction of the Praterstrasse and Schwimmschul-Allee, for direct communication with the fertile Marchfeld, is nearly completed.

Thus the great question of the commercial development of Vienna is thought to have been satisfactorily solved. The new city will arise on a regulated river, no longer exposed to destructive inundations. Great hopes have been raised by this undertaking. Provided with safe and numerous means of communication by land and by water, the "Kaiserstadt" will gradually but steadily go on increasing both from commercial and industrial points of view. One good effect has already been felt; Vienna is no longer subjected to the periodical inundations which brought misery and disease in their train. Everything done since the extension and improvement of Vienna to make the city—already favoured by its situation—by the hand of man a jewel among Continental capitals, finds in the regulation of the Danube its crowning point. The great work will remain a lasting monument to the reign of the Emperor Francis Joseph.

* See *Builder*, 1873, vol. xxxi.

BURMESE HOUSES.

As Burmah may perhaps become a battle-ground between China and our Indian empire, a few particulars concerning its domestic architecture may be acceptable. Among the many tribes in this immense district the Karens occupy the most prominent position, and being a representative race, have a superior claim to notice.

The dwellings of the natives are constructed of timbers set in the earth, with lighter pieces fastened transversely. The frames so formed are never set on stone or brick pillars. The sides are covered with mats or with thatch, which is fastened down with laths of rattan. Thatch is the usual covering for the roof, and is fastened on so ingeniously as to defy both wind and rain. One kind of thatch is composed of strong grass, about 7 ft. long, bent over a thin strip of cane, 4 ft. long, and stitched on with rattan; but a better sort of thatch is furnished by the large leaves of the attap or dennee trees, which are laid on like wide boards, lapping over each other, in the manner of tiles, from 12 in. to 18 in.

The floors are constructed of split cane, raised a few feet from the earth, whereby ventilation and cleanliness are secured; but the open crevices between the slots often invite carelessness by suffering garbage and foul fluids to pass through, so that, among the lower ranks, the space under the building is a muck-midden,

swarming with vermin. The doors and windows are of mat, strengthened with a bamboo frame, fastened at the top. Chimneys there are none. The whole house can be constructed in from two to three days, at a cost of from 60 to 100 rupees. The houses of the wealthy, in large towns, are constructed of wood, with plank floors and panelled doors and window-shutters, but neither lath, plaster, nor glass is employed in their construction.

These houses, with all their capabilities of shade and ventilation, are not without their disadvantages. They afford a refuge for spiders, centipedes, and other vermin. The centipedes are poisonous, but the effects of their bite last only for a few days.

On the architecture of the dwellings of the upper classes much attention is bestowed, and the architects and builders, if they deviated from the conventional rule, would be severely punished. These buildings are distinguished from those of the lower classes by the hips or stages in the roof, as in the case of the Zayats. Zayats are not exclusively religious buildings. Some, indeed, do contain idols; but the majority are intended for the resting-places of travellers, an inestimable boon in a country not possessed of inns, and where every house contains its complete complement of inmates. All of them are built in a far more durable and expensive style than even the residences of the wealthy. Many of them in the neighbourhood of the large cities are exceedingly beautiful. Not only are the pillars and the ceilings carved in an elaborate manner, but they are also gilded all over; and the floors, though constructed only of stucco, possess a hardness and polish equal to marble. But to judge rightly of the architectural skill of the Burmese, attention must be directed to their temples, which are truly magnificent. If the people were permitted, they would erect for themselves substantial buildings of stone or brick. Lieutenant-Colonel Symes, in his "Embassy to the Kingdom of Ava in 1795," says, notwithstanding that well-formed arches of brick are still to be seen in many of the ancient temples, yet Birman workmen can no longer turn them"; but Malcom, who followed in his footsteps nearly half a century after, writes,—"I have seen many fine arches of large span evidently erected within a few years, and some not yet finished, constructed wholly by Burman masons." The stucco which covers every building is put on in a tasteful and durable manner; it is also, as already mentioned, used for flooring. The mortar is compounded of the best lime and sand, with a liberal mixture of jaggery (dark, coarse sugar, made of the juice of palms), but no hair is used. It is, however, round the City of Ava, or one of the ancient seats of government, that the finest samples of Burman architecture must be looked for. There the religious structures abound and excel in magnificence those in distant parts of the empire. The Burmans have not expended all their zeal on temples and pagodas, they have constructed tanks and other works of irrigation, and also bridges, all of which are grand and noble works. Malcom, speaking of a bridge at Mokesobo, states: "Across the little river at Ava, and the marsh adjacent, is a very long bridge, which I have not seen surpassed in India, and scarcely in Europe." There is, however, another side to the picture. The Bghai Tribes are perhaps the most savage in the empire. Each village is independent of every other village, and of all other communities, the chief being a king in his little territory, and each village has feuds with other villages, so that predatory warfare prevails incessantly. Each village consists of a single house, or at most two, built like a bazaar or arcade, with rooms on each side of the walks that pass through the building. Its size is estimated by the number of hearths it contains, every family possessing its own hearth. Some villages contain from seventy to eighty of these hearths. The houses are raised high above the ground, and in the space underneath are rows of pig-styes, and on the rafters above the fowls roost at their own sweet will. Luckily for the villages their olfactory nerves are in no way disturbed by this arrangement. The compound is usually enclosed by a high fence, some by a *chevaux de frise*, of pointed bamboos, and some by traps and pitfalls, and so any stranger visiting the village would require to be conducted by one of its inhabitants. With all these precautions many of the villagers live in such perpetual terror of their enemies that all the men sleep out of their house on the ground in order to repel a sudden attack, while the only access to the house is from a trap-door in the centre, at which a ladder is placed during the day. Each village or house is practically a fortress. It is a general practice for each village to build a new house annually, selecting a site as near as practical to cultivation. On the first occupation of the new house, a feast equivalent to a "house-warming," is made, and an ox or buffalo is killed, and an offering is prepared for the spirits that preside over the country. When all are seated around the food and drink, each one takes a draught of the spirituous or fermented liquors, and offers up a prayer to the Lord of the Waters, Lord of the Streams, of the Mountains, of the Hills, &c., to bless them and their village, and to curse their enemies. Such is the method of house-warming among a numerous race, which though within the confines of British rule, have for many years been unknown to the missionary or the traveller.

DECORATIONS, BANK HALL, CHAPEL-EN-LE-FRITH.

THERE has been on view during the past week in the upper room of the French Gallery, in Old Bond-street, a series of pictures designed, and for the most part painted, by Mr. Thomas Armstrong, for the decoration of the dining-room of a house at Chapel-en-le-Frith, Derbyshire, lately erected for Mr. Renshaw from the designs of Mr. W. Eden Nesfield. These pictures are upon canvas, and are painted in oil with zinc white. The method employed gives the painting a dead unreflecting surface, somewhat resembling fresco, but more luminous from the texture of the canvas presenting innumerable minute prominences to the light.

The conditions under which the pictures are seen at the French Gallery are not very favourable: the room in which they are exhibited is lighted from above, although it is evident from the manner in which the painting is executed, the lower portions being more carefully finished than the upper part, that they are intended for a room lighted from the side or end; while the want of some sketch of the room they are designed to decorate renders it a matter of some uncertainty to judge of the painter's intentions to their full, as well as of conceiving the difficulties attending the task imposed upon him.

The paintings exhibited are six in number, and are surrounded by a deep moulded margin of light oak; three of the panels are grouped together in one frame, and are apparently intended to occupy one of the longer sides of the room; two others appear intended to be placed on each side of the fireplace, and the sixth (which is much smaller than the others) is probably designed to go over a doorway. The main feature of the design is a high panelled dado of coloured marble, which is continued through the whole of the pictures, varying to some extent in design in each division, but forming a continuous band by which the whole composition is held together. In front of this dado, which is treated in a strictly architectural sense, and almost touching it, are placed the figures and animals composing the several groups, the upper part of the picture being filled in, in the case of the figure subjects, with an orange grove treated conventionally, through which occasionally are seen glimpses of distance; in the animal subjects, the background of one is formed by a *magnolia grandiflora* trained against a wall, and in the other by an open sky.

The artist has evidently aimed at producing the greatest amount of repose: there is only just sufficient incident in the composition to attract the mind without fatiguing it, the figures are represented in arrested or very gentle action, and a general impression of refinement and serenity is produced by the combined effect of the grouping and colouring, employed. The grouping is extremely simple and unaffected, and the colour, which is in a low key, the effect of which is increased by the method of painting, is remarkable for the self-restraint by which all crude and obvious contrasts have been avoided, and the patient way in which effects are produced by very subtle variations of tint. The detaching the light draperies of the figures from the marble background upon which they are relieved is of itself a remarkable feat, and has been accomplished without any apparent effort on the part of the painter.

We do not know to what extent the architect assisted in the choice and arrangement of these paintings, but it is noteworthy that their whole disposition is of an architectural character, and they are distinctly subordinated to the decoration of the room, instead of being treated (as is too often the case) as if they were pictures hung upon the walls. The treatment throughout is decorative rather than pictorial, and, to whatever influence it is to be ascribed, it is creditable at once to the judgment and self-restraint of the artist, the opposite method being the most popular with the generality of people and the most calculated to win the applause of the unthinking.

The animal subjects, with the exception of the kitten in one of the figure panels, and a group of wild ducks alighting, very charmingly composed, have been painted by Mr. R. Caldecott, in a way which harmonises with the general tone and intention of the decoration. A group of two swans pluming themselves after emerging from the water upon the steps of a terrace, and the companion group, of a stork by the side of an oleander, watched by a magpie, show a very unusual observation of the character of animals, and are painted in a very refined and unobtrusive manner.

THE BURSTING OF BATH AND KITCHEN BOILERS.

IN the paper on this subject read by Mr. Councillor W. H. Bailey, Salford, as elsewhere mentioned, before the Society of Municipal and Sanitary Engineers, at their recent meeting in the Town Hall, Manchester, the reader said,—

Every winter in this country there are many fatal accidents caused by the explosion of what are known as circulating or bath boilers; there is also a great amount of damage done to house property, and some domestic misery created by the bursting of water pipes, caused by the water freezing in them.

There seems to be among many people an impression that domestic boilers often explode through a deficient water supply. I believe this is not the case, and I think it will be very difficult indeed to demonstrate that any accidents have occured through this cause. A great number of boilers burst every year which are unreported, because not attended with fatal results. Of those which have been reported during the past six or seven years, half appear to have exploded through stoppage of the circulating pipes by ice, and the remaining half have been caused by the fixing of stop-taps in those pipes.

A few years ago circulating boilers were only in existence in comparatively few large houses and hotels, but now nearly all new houses of the value of 20*l.* per annum or more built in this country have bath boilers, and, unfortunately, the great majority are of cast iron, of the very worst form for resisting pressure. There are two slightly different modes of fixing these in this district, which I will endeavour to describe.

In one, the supply of cold water is received in a cistern at the top of the house, and conducted by the "down-pipe" into the boiler, having passed through this, and having become hot, and therefore of less specific gravity, it ascends what is called the "up-pipe" to the hot water cistern, from which it is drawn as required for use.

It will be seen that the pressure the boiler has to sustain when filled with water depends upon the height of the supply cistern above it; 2 ft. 3 in. of water in column being equal to a pressure of 1 lb. on the square inch, therefore 60 ft. high will give a pressure of 17 lb. per square inch on the boiler. As, however, most boilers are only about 30 ft. or 40 ft. below the cistern, we may consider that the average pressure at which the work will be about 10 lb. on the square inch.

In good houses in this district copper cylinders are fixed in connexion with the boiler, in order to give an abundant supply of hot water, and for preventing and rendering explosions impossible, that is, if we are to believe what is told us by more than one respectable tradesman of the district. In the second arrangement the hot water cylinder is used. It differs slightly from the plan I have already described, the hot water cistern being dispensed with, and a large cylinder generally of copper, being placed in the up pipe instead. A pipe is taken from the top of the cylinder, called the air-pipe, which is open to the atmosphere, and in which water ascends to the level of the cold-water supply cistern. The great advantage in using these cylinders is obvious, as the constant circulation which is always taking place causes the water when cold to descend into the boiler, and, when hot, again into the cylinder, absorbing all the heat possible for the boiler to give it, which is not the

ase in the simpler and less expensive mode of ixing.

Sometimes the hot water is drawn from the op of the cylinder, and sometimes from the air-ipe. In both these systems of fixing it will be een that the boilers are always full of water, nd, supposing the supply of water to cease, it would not be possible to drain them dry, causing he fire to make them red-hot, and thus create danger. The source of danger and death is to e found in the direction to which I have alluded; nd if there is one thing at all that creates stonishment in my mind, it is the fact that I tand here in this city of Manchester and state hat it is unsafe to work a boiler under pressure hich has not a safety-valve fitted to it.

With the best intentions many boilers have aps fitted in the up and down pipes, so that if ny accident occurs to the boiler it may be epaired or removed without fear of inundation. hese taps have caused many fatal accidents in ummer as well as in winter. If these taps are y any means closed when the boiler is at work, he water is sealed in the boiler, and nothing can revent pressure accumulating unless the fire be ut out. Only a few days ago I talked the matter ver with an architect of no mean reputation in is district, who informed me that he would not ink of permitting a good house to be fitted with boiler which had not these taps fixed. He had rdered several houses to be fitted with taps nder the copper cylinders. I am glad to say he tered his opinion when I explained to him the cility which he gave to ignorant or careless eople for creating a magazine of destruction.

The fixing of these stop-taps caused the death a young woman in January of this year. This known as the Eccles New-road accident. As occurred in my own neighbourhood, and in eedley Ward,—which I have the honour to present in the Town Council of Salford,—I ok more than an ordinary interest in it. I was e foreman of the jury convened to inquire into e cause of death. It appeared that the pro-ietor of the house, actuated by a proper desire make his house safe from inundation, con-lted a plumber, who informed him that the st way was to fix two taps, one in the up-pipe d one in the down-pipe of the bath boiler. ese were placed in the bathroom immediately der the cisterns, the boiler not having a copper linder; they were fixed where any mischievous d could have turned them at any time. A kage, during the thaw, of entirely different es, caused the proprietor to turn these taps , and having done this he ordered the fire out. plumber was sent for, and told to make all ht; the leaking pipe was soldered, he reported correct, but omitted to turn the taps on ain. The result was that an explosion took ce, which removed the ranges of the house d the one next door, making a breach in the vision wall sufficiently large for any one to lk through. The window was blown out, and e poor woman was blown halfway through it. will now proceed to those accidents caused rough the stoppage of the circulation by the ezing of the water in the pipes. These acci-nts appear to occur chiefly when houses are ered upon by the tenants in the winter time, rything being cold, the water in the pipes ng frozen. A fire is put under the boiler by new tenant, and an explosion takes place. very severe weather pipes have been known accumulate ice in one night, those boilers d without copper cylinders being most gerous. Not far from the scene of the Eccles w-road accident, about two years ago, a Mrs. vie was killed by an explosion from this cause. e water in the boiler had longer time than al to cool on the Saturday night, and Mrs. vie having got up late on the Sunday morn-, after the fire had been lighted a short time, boiler burst, and she was blown across the hen and down the cellar steps and killed.

Having endeavoured to show the two chief ses of these explosions, the natural question what is the remedy? what will prevent this truction of life and property? I have no itation in saying that if safety-valves had n fixed that every one of the accidents would e been prevented. And as the ordinary lever ty-valve would possibly become inoperative ourse of time, a little pendulous safety-valve, he Cowburn type, has been recommended, as likely to get out of order, by Mr. Fletcher, he Steam Users' Association; and if safety-es were fixed on the boiler, I think there is bjection to the use of taps in the circulating s, as they are undoubtedly useful in case of dent. Weak plates of white metal have been recommended instead of safety-valves, which would burst at a low pressure. I have made extensive experiments on these plates, and have burst a great number by actual steam-pressure; but I found that I never could get two alike out of the same mixture of metal. There are also many other objections to them which I will not occupy your time with.

A word about copper cylinders preventing explosions. Circulars have been issued by iron-mongers in which it is distinctly stated that these things render an explosion impossible. This delusion, which has such a firm hold in the minds of many people, demands some attention. A copper cylinder fixed to a boiler makes it safer from those explosions which are caused by ice in the pipes. It is just possible that the death of Mrs. Cowie, which was caused by the water freezing in one night, would have been prevented by one, as the hot water in the cylinder makes it a storage of heat, which resists the attacks of cold for a longer time than a small pipe full will do. A copper cylinder only delays the danger a few hours at most in severe winters, and its utility ends at that for preventing explosions.

GEMS AND GEM CUTTING.

THE MARLBOROUGH COLLECTION.

A WONDERFUL man is Mr. Agnew. "This magnificent collection of engraved and sculptured stones," said Mr. Woods in the rostrum the other day, "has been valued at 35,000*l.*, and that is the reserved price put upon it."

"What must be the bidding in advance?" says Mr. Agnew. "Guineas," replies Mr. Wood; "35,000*l.*, once!"

"Guineas," says Mr. Agnew. And after the ordinary formula down goes the hammer, and Mr. Agnew becomes the owner of the "gems" at 35,000 guineas, and sells them again, it is understood, the same afternoon, with probably his traditional 10 per cent. profit.

A careful examination of this magnificent collection of engraved and sculptured stones can hardly have done otherwise than call attention somewhat dismally, and, certainly, powerfully to the subject of gem cutting and designing as practised by the great artists of former and less enlightened days and our own. It is a subject which it would be very difficult indeed to exhaust; yet has it as yet excited, except among professionals and experts, but little interest. These objects are, it is true, looked at somewhat curiously and attentively and wonderingly, but more than that cannot be affirmed. But for all this there is nothing in fine art, and in its mode of production, more wonderful than a finely-cut gem; and nothing most surely evidencing the power of hand more exquisitely than the skill and power displayed in the cutting of it. A few thoughts, therefore, on gems, and on the special power displayed in the cutting of these adamantine stones, as exemplified in the "Marlborough Collection," may be of interest at the present moment.

In the whole range of art action there is nothing more surprising than the art, on so small a scale, of cutting into the substance of a hard fragment of stone. Not only, be it observed, is a clear and well-defined and absolutely correct outline of the "design" or subject to be accurately kept to, but the depths to which the stone is to be cut into are at the same time with equal accuracy to be observed, so as to get not only the outline of the object, whatever it may be, but the body or "round" of it as well. Not unfrequently the full half of a figure, say of the human form, is to be accurately and even expressively rendered, so that if two of these incised stones, of the same size, were to be placed together, and thus to form a mould, a perfect figure, in the round, would result on taking a wax or plaster impression from the matrix. We have been told that the highest triumph of human artistic skill and dexterity is to be found in fine oil-painting; and no doubt it is so, considering its extreme rarity in its full perfection. But it is hardly so surprising and marvellous as this art of fine gem-cutting. We need do no more than refer to a few of the specimens of gem-cutting in the Marlborough Collection, just now sold by auction for so large a sum, for proof of this, and would specially name those in which the human nude form was delineated, and not a little of the life and movement of the human body most admirably portrayed. And not this alone, but the very expression of the human countenance, small as it is, is most miraculously rendered.

It would be difficult to find, within the whole range of sculptured art, and it is a curious fact, so thorough an appreciation of the necessity of individuality of art power. The artist engravers would seem to have been proud of their work, and to have earnestly desired to be known as the executive *workmen* of their own work, as they so well deserved to be known,—none ever deserved recognition better than they. It is a pleasure to record some of the names. These gems, as it has well been said, form a complete encyclopædia of glyptic art, invaluable as a book of reference to students of art and history, and the writer might well have added, and as affording and perpetuating a goodly list of noble names of illustrious and right skilful working artists. The artist must in such case be personally gifted indeed with thought and feeling; and must have trained both his hand and eye to most marvellous exactness, and have acquired mastery over the most unyielding and resisting of materials. Many of the artists named by Pliny are here to be found named on gems; one of these an onyx intaglio, purchased by a former Duke of Devonshire, for 1,000 guineas. On this is simply represented a cow lying down, but it bears the letters ΑΠΟΛΛΟΝΙΔΟΥ, Apollonides, one of the best of these clever working men. Another gem bears the name of Hyllos; another, a beautiful sardonyx-cameo, has the name of Glycon; again, another, a carbuncle, measuring 1⅞ in. by 1⅛ in. oval in form, ⅜ in. thick, with a figure of Pallas, bears the inscription, "Eulyches Ægeai, of Dioscorides, *fecit*," a truly wonderful production of the hand of man. It would be quite possible to go on and give a goodly catalogue of names, and it would seem to be worth while to do this exhaustively, arranging the names as far as is possible in chronological order,—a useful work for any devoted wholly and enthusiastically to art of this kind. It would, of course, add infinitely to its usefulness, and almost make an art history of it, to refer in each case to the collection in which the works of each master now are. We know but little or nothing of the personality or *names* of those who so ably and so well cut the ornamental details in the walls of our cathedrals and churches all over Europe: more is the pity, but here we *may* read historic names!

It will not be thought the least curious part of the inquiry, in connexion with these gems and gem engraving, to ponder for a moment on the question of the relative cost or value of the materials out of which this magnificent artistic work is done, and the cost or value of the art labour itself in them, which so adds to the beauty and value of the raw and formless material. In the first place, it may be mentioned,—and the fact is a somewhat singular one, and worth a little further inquiry by the scientific,—that the materials out of which gems are wrought, are not, as it would seem, nowadays to be come at of the same quality and fineness as in former and less advanced and scientific days. The older gems, whether of antique or Renaissance times, are as mere fragments of nature-formed materials, of much rarer and more refined quality than that to be now obtained, and the latter is not so well fitted, therefore, for the special purpose for which it is used. We say, a strange fact this; for why should it be so? One single mine of gem-producing fame may be exhausted of its best stones, it is true, and then another, but surely there is no end of the earth's pro- ducing powers. All the diamonds, and jacinths, and emeralds, and carbuncles, are not as yet surely in the world's market? Science digs deeper and deeper into the earth day by day, and more is known, one would suppose, now than at any former time, of the best places wherein to dig, and how best to search for the precious fragments than at any former time, when neither geology, mineralogy, nor chemistry had existence. Knowledge is, and must be, judged of by its results, and, according to Bacon, by its practical "fruit." Why, then, does it fail here? We are almost inclined to hazard an answer to this puzzling question, venturesome as it is. May not a good deal be owing to the very power of machinery itself? Is not too much left in these days to the dead mechanism even here in the mere searching for precious fragments? Eye and hand both are needful in their fulness of power even here. Other causes there are doubtless, but this among them is worth scientific note.

We may next glance at the *labour* side of this gem question, and ask what proportion it bears in value to that of the most rare and precious material worked on, material from the far-famed

mines of Golconda or Pegu. Out of the substance of the dullest stone may the most marvellous of forms, and contours, and even life and action, within the compass of a sixpence, be wrought. We have but to look at the work of those whose names we have given to find this out, and to know then how the hand and intelligence of man can add to the beauty and interest and value of the unformed and rough material as dug out of the earth. No task can be more difficult than that of putting before any however skilful,—say a fine emerald or red ruby, or carbuncle, each so full of extremest beauty, and to demand that further increase of value be made to it. Such would seem an almost impossible problem, but it has here been solved most surely,—the skill of the workman has added not a little to the natural beauty of the material.

It is impossible, in looking through a collection of fine art work of this kind, to do otherwise than make comparisons, and to ask what is *now*, in these days of art-education, doing in this special line of work. We see in this collection, and in others elsewhere, examples of the brain and hand skill of the artists of past days,—both antique, to use that general term,—and of the Renaissance, or revival, more or less, of the older antique, and can but simply wonder at how they did their work so completely and so well. We can but wonder at what sort of tools they used, and long to see a little into their workshops, and to see them at their work. What sort of art education, again, did they go through? We can but speculate on these matters, and wonder more and more as we gaze on what they accomplished. We cannot, at the same time, do otherwise than contrast the state generally of the world,—say in Pliny's day,—with our own. How different the mechanical appliances for doing work of all kinds. No books, except for the very, very few. In art, wonderful to tell, no "precedent," as we have, from all the quarters of the globe, and from all times. All things, indeed, would seem to have been reversed. What we have, *they* had not; but, with all their wants, what wonders they accomplished; and what should we do without them and without what they have left us to study? This gem-engraving shows what the antique man could do. What we now do can be best seen in the shop-windows, the true and ever-open museums, the modern museums of a nation. Might there not be some interest, we would ask, in an exhibition of the gem-cutting and invention of the men now living, and at work as gem *engravers* and cameo sculptors? The Art Union of London, always to the fore in such matters, though this is little recognised, has endeavoured on several occasions to aid the production of finely-worked gems in England, but with only moderate results.

Before ending these few remarks on so fruitful and suggestive an artistic subject, we would express a hope that these noble examples of fine-art skill, of brains and hands, may be further available to the art-loving portion of the public. The nation ought to possess this magnificent collection. And while upon this phase of the matter may we hint, too, at the desirability of a somewhat better mode of exhibiting gems than that usually adopted, as at the British Museum, wherein the specimens of engraved and sculptured stones, small as they are, are exhibited in deep close cases or boxes, with, of course, glass covers, but with the gems so far from the eye of the spectator as to render it impossible to see clearly objects with details so small, and impossible to apply to them a magnifying glass which is so often needed. Cases should be specially contrived for these things, so that the gem may be seen as closely as may be, and always by the side of it there should be an impression in wax or otherwise of the incised subject. These are small things, it is true; but not the less noteworthy and instructive on that account, and they read to us moderns a most wonderful and important lesson, difficult as it is to appreciate fully the import of things artistic. The true, and the more than doubtful in art action is here in a most striking and singular way exemplified. Those antique men who thus wrought on the rough materials Nature gives for the searching for, must have been as proud of their work as the *ode*-writers themselves were of theirs. Poets at least do not hide *themselves*, why should the gem-cutters?

Hastings.—The third premium for the Town-hall plans (St. Michael) falls to Messrs. Lee & Smith, of Gresham-buildings, London.

ON BUILDING IN CONCRETE.*

THE next point to be considered is the apparatus, or the mechanical means employed, to cause the concrete to take the required forms of walls and other parts of the building to be constructed.

There are two distinct methods employed in the use of concrete for buildings,—the "concrete brick" or "block system" and the *monolithic concrete* system.

By the first method the concrete is made to take the form of bricks or blocks, by being placed, when mixed, into small moulds, and afterwards, when sufficiently hard, these concrete bricks are set into their places in walls, &c., with mortar or cement joints, by skilled workmen, with similar scaffolding plant and expenses precisely as for brick work or stone work.

By the second or monolithic method the concrete, on being mixed, is placed and moulded at once into its permanent position.

No time is wasted in waiting till concrete bricks are strong enough to build. No expensive bricksetting is required, all the wall-building work being done by unskilled labourers, and mortar joints are avoided.

The avoidance of mortar joints is a great gain in strength.

One writer in favour of the concrete block system claims, in his list of advantages of concrete building (amongst many other advantages that can only be secured by monolithic concrete), the avoidance of dust caused by bad mortar joints. Surely the block system has no such advantage. The same writer pleaded in favour of concrete bricks that they give time for testing the cement. But where is the advantage in this? because, as I have already shown, there is ample time for testing before using the cement in building; and a prudent builder would not risk wasting money or time by using doubtful cement in making concrete bricks any more than he would do so in building monolithic walls.

If, however, bad cement were supplied by the maker, and the builder's preliminary tests failed to detect it, there would be yet an important safeguard in using the patent apparatus, now so generally employed for building monolithic walls.

The newly-built walls have not only to carry the apparatus, which is raised from time to time as the walls are built, but have also to carry the scaffolds with men and materials. None but good cement can resist the strain thus applied, and walls successfully resisting this strain when only a few days old may be relied upon to resist any strains that can be put upon them after, when their strength is so much increased.

There are very few districts where concrete block building can be done so cheaply as ordinary brickwork, and in many places where block building would cost more than brickwork or stonework, monolithic concrete would cost much less. In fact, monolithic concrete building has such decided advantages over concrete block building that no amount of special pleading in favour of blocks will deprive the monolithic system of its due ascendency and present well-deserved preference.

It is next important to consider which is the best system of apparatus to be employed to secure all the advantages of monolithic concrete buildings. Wooden posts and boards for building monolithic walls have been used in all times, and in all countries. But only very small and unimportant buildings can be constructed with such apparatus, and the work produced is very inferior, crooked, and uneven, making interior plastering or exterior finishing more than ordinarily expensive. With nearly all the various modifications of wooden posts and boards, an independent scaffold has to be used, and the advantage of testing the walls as built is not secured.

Its cheapness in the first instance is, doubtless, the chief inducement to use wooden apparatus, but whatever is saved in first cost is very soon lost in extra labour spent in working clumsy, wooden contrivances in endeavouring to keep them in proper positions which (from the tendency of wood to twist and swell, and split with wet concrete on one side, and often a hot sun on the other side) it is impossible to do.

With the improvements in the manufacture of cement, commenced improvements in apparatus for building with it, the leading idea being, of course, to obtain a mould which could be moved up the walls stage by stage as these were built up.

A rather general delusion among would-be inventors of concrete building apparatus was that an apparatus could be made to slide up the face of the wall without being first detached from the guides or uprights, and many clever and complicated arrangements of gearing and spur wheels, and handles, for turning of screws working in the middle of the walls in the worm formed by them in the concrete that had set around them, were tried; but, of course, all failed completely.

The mould would not slide up except by carrying up the concrete wall with it, either in whole courses or broken, and the screws would not turn in the concrete till force enough was used to destroy the worm in which it was expected to turn. Therefore, the only workable apparatus were those which could be detached, and come directly away from the concrete when resetting of the mould was necessary. Then many attempts were made to counteract, or overcome the evils of twisting or swelling of wood, by various clever dispositions of it, and by framing it in various ways, and also by covering the wooden frames with zinc, tin, &c.

But none of these attempts succeeded completely, and were, besides, all hampered by more or less complicated fasteners, and by the use of the old-fashioned, time-wasting, easily worn-out bolt and nut.

The apparatus patented by myself in 1868 was the first in which the use of wood was entirely discarded. It is made entirely of iron. The fasteners are simple tapered pins, or rounded wedges, than which no fastener can work more easily. . . . .

Before offering any remarks of my own upon the subject of architectural treatment. I beg to premise that I have at various times read the opinions of architects upon the subject of concrete building generally, as published in reports of papers read, and discussions following, at various scientific and architectural societies.

Quotation might be given, but I must now proceed with the remarks I wish to offer on this subject of architectural treatment; and I propose to divide these under two heads:—1st, Constructional; 2nd, Artistic or Decorative Treatment.

The great adhesive and cohesive qualities of Portland cement, and its capacity for resisting enormous tensile and transverse strains, adapt it for use in such ways as no other material is capable of.

Corbelling, oriels, and similar works, to the extent even of impossibility in any other material may be done easily and cheaply in concrete. Arches may be built having no lateral thrust. Upper floors, and flat, or arched roofs, may be cast in place, requiring little or no iron in their construction for very considerable spans. Whole staircases are cast in place, with only light iron trusses cast in the midst, so that no iron comes in sight or under the influence of heat in case of fire.

Chimneys with projecting breasts may begin on upper floors, being hung out from the wall without the need of any supporting work under. Indents, hollows, and flues, may be formed in any part of the work by simply inserting casings or cores in the apparatus to exclude the concrete from spaces required. I would remark here that it has been erroneously stated that chimney flues require brick or tile lining to prevent disintegration of concrete through heat.

I can assert positively that no such thing can occur in any ordinary flue. If particles of concrete have come away in any case it has been through loose and bad work, and not from any disintegration through heat.

Openings may be formed anywhere in the walls without requiring lintels, arches, or other support for the walls over; a 10 in. thick wall has been built to carry itself in this way over a 14 ft. opening. Surely a material possessing such structural capacities should suggest features for architectural treatment suitable to its capacities. From being monolithic a broad and massive treatment seems to be suggested, and the capacity of cement for being moulded into ornamental detail should be kept in view. For the majority of dwelling houses in towns and cities no decorative finish is ever attempted, whatever the material used in their construction. Nothing can be more wretched-looking than the ordinary brick fronts of the poorer class houses. How much brighter and more wholesome these would appear if built in concrete with plain cemented fronts. B

* See p. 601, *ante*.

hitherto the cemented front has been reserved for our West-end squares, and for such towns as Brighton, where ordinary brickwork requires cementing to ensure dry walls.

The face of concrete, as it is left by the mould, is so plain, crude, and evidently unfinished, that it must be taken to be a rule, that it must have a finishing coat of some kind. Unfortunately, the cementing I have already alluded to has in times past been applied to brick and stone walls, not in the manner of a legitimate and necessary protecting coat, but has been made the vehicle of deception, by giving to both brick and stone buildings an imitative appearance of a superior class of substantial stonework, and moreover the work has been done, in many instances, with bad materials, and also with bad, wasteful, and ignorant workmanship; so that, besides being a sham, it has become unsightly and unsound through cracking and peeling off, and in consequence an unreasonable prejudice exists against the application of a finishing coat of cement to the exterior surfaces of concrete buildings.

It appears not to be known or understood that the objections and causes of failure to which plastering or cementing of exteriors of brick or stone building is liable, do not exist in the case of cementing on concrete. A finishing coat of cement upon concrete is simply its natural and right treatment. Concrete gives such a good key for the cementing to grip and adhere to, that it practically forms part of the same mass, and concrete does not absorb and hold moisture to be acted upon by frost and heat, thus forcing off the plastering, as is the case with brickwork or stonework. The only liability to defects in cementing on concrete walls, is where two coats are used, and when idle and ignorant workmen, to save themselves trouble, use too large a proportion of cement for the thin finishing coat, then in consequence of the variation in the contraction of the two coats, the outer one is liable to show fine surface or (as they are often called) sun-cracks, and even in some cases to peel off. Of course this liability being known can be easily provided against.

It is considered by many architects and scientific men, whose knowledge and judgment on this point are far superior to my own, that nothing more is wanted in addition to what is done, for instance, in the case of the block of houses built by my firm at the corner of Marlborough-place, Brighton, than the introduction of colour, either by building in terra-cotta or tiles, or by the use of coloured cement similar to that called "Frescoa," which should be used to a limited extent only, and according to right artistic design.

A very good effect is produced in certain styles of building, by finishing mouldings around doors, windows, &c., in good sand-faced cementing, and giving the remaining spaces of panels a coat of clean fine shingle thrown upon a coat of cement while moist (my own house is finished in this way). This has also been applied in a more limited way to the most artistically treated building yet erected in concrete: I refer to "Down Hall," the mansion of Sir H. Selwin-Ibbetson, Mr. F. Cockerell being the architect. The flat spaces are divided geometrically by bands of sand-faced cementing, the panels being shingled as before described. But the most important feature is in the panels of "sgraffito" work, to which I am anxious to call your attention.

Some brickwork architects, not satisfied with the advantages they have in colour, cause their brickwork to take the forms of plain, moulded, or blocked quoins, or of moulded strings and architraves. I leave to others more learned in architecture to say whether block quoins, &c., are legitimate treatment for brickwork, but surely very few will deny that running mouldings in brickwork are most hideous and unsatisfactory, for that running mouldings in cement are very much superior.

Stonework is much more liable to disfiguration by change of colour. No such discolouration occurs with good cement work, which never requires scraping, pointing, &c., as does stonework and brickwork. Nor does it require painting or colouring as is supposed by some, and if it is done in too many cases to hide and protect the usual wretched plastered brickwork. Some have proposed to face concrete walls with brickwork or stonework; but I trust such shams as these will never meet with much support.

It has also been suggested to cover the whole interior surface of concrete walls with encaustic tiles, and doubtless very effective decorative results may be obtained in this way; but I presume the cost and bad effect of glazed surfaces will prevent the adoption of this proposal.

My hope is that architects will learn to appreciate the full value of cement both as a constructive and decorative material, for in this direction lies the only legitimate treatment of concrete buildings, and here will be found a wider and more fruitful field for both structural and æsthetic result than has yet been found or dreamt of.

I will conclude by repeating a statement made in a letter of mine published in the *Builder* of May last year:—

"I am fully persuaded that concrete building is capable of high and legitimate treatment whenever architects of ability take it in hand. The subject demands and deserves a treatment more carefully considered and more vigorous than any it has yet received."

THE DOMESDAY-BOOK AND ANCIENT DEEDS.

A MODERN fac-simile reproduction of the Domesday-book has recently been finished under the superintendence of Sir Henry James, the Surveyor-General of the Ordnance, and a translation of the record is now being made under the authority of the Government.

The Domesday-book as reproduced is in two volumes, containing 1,663 pages, and is an exact fac-simile of the original documents, by means of the art of "photozincography," invented by Sir Henry James in 1860. The work forms a most valuable addition to the published histories of the kingdom, and its reception has fully justified the foresight of the Government, which allowed its publication to be commenced some twelve years ago by the production of the part relating to the county of Cornwall.

This portion is now being translated and republished in English, and will probably be followed by the translation of the other parts, or, at any rate, of those portions which have not already been so treated by various authors. Altogether the parts relating to eighteen counties have been already translated and published by different persons.

The completion of this fac-simile of the Domesday-book has been so successful that the Government has authorised the preparation, by the same method, of copies of the most interesting among our national records, which will not only make generally public the information, as it has been handed down to us, respecting important historical facts, but—the documents being arranged in chronological order—will show the changes which have been made in our language and our writing during the lapse of time.

A series of manuscripts has accordingly been copied, commencing with the Charter of London by the Conqueror, and ending with the despatch of Marlborough reporting the victory of Blenheim.

Scotch and Irish history have not been forgotten: some charters and important State papers relating principally to Scotland were next selected, and reproduced by this method; and a series of Irish manuscripts are now in course of being copied.

Even here this important work will not be ended. The Government have the intention of publishing a series of documents commencing with the earliest Anglo-Saxon records; and Sir Henry James has issued a copy of a charter of King Edgar, dated A.D. 974,—just 900 years old last year. This charter is the grant of three "manses," or plots of ground to Thane Alfhere, and is written partly in Latin and partly in Saxon. The writing is well preserved, and somewhat resembles the manuscript imitation of the ordinary type of the present day.

Altogether the Survey Department of the Government has a very important work in hand, the completion of which will add greatly to the general knowledge of the ancient history of our country.

It is satisfactory to learn that this work is remunerative, or, at least, self-supporting, and that the sales of the works published cover the primary expense of execution.

A New Lunatic Asylum for Surrey.—In consequence of the great increase in the number of pauper lunatics, the Surrey magistrates have decided on the erection of a new asylum for 1,000 patients.

THE ASSESSMENT OF SEWERS RATES IN THE METROPOLIS.

By section 163 of the Metropolis Local Management Act, 1855, sewers rates levied on land used as arable, meadow, or pasture-ground, or as woodland, orchard, market-garden, hop, herb, flower, fruit, or nursery ground, are to be assessed in the proportion of one-fourth of the net annual value of such land; and other kinds of property are also exempt from sewers rate, or entitled to a reduction in the rate. It is the practice of the Metropolitan Board of Works, in issuing its "precepts" for money to the different parishes, to make no allowance in respect of property entitled to exemption or reduction; and those parts of the Metropolis in which such property is situated are obliged to increase the sewers rate in order to meet these "precepts," to make up for the deficiency in the rate levied upon the exempted lands. The practice has led to considerable confusion, and a certain amount of unfairness, and a Bill is in progress through Parliament making it compulsory on the overseers and assessment committees acting under the Valuation (Metropolis) Act, 1869, to cause the totals of the gross and rateable value of the property so wholly or partially exempt to be inserted in the valuation list, for next year and in all future years; and the "precepts" of the Metropolitan Board of Works are in future so to be estimated that all parts of London shall be uniformly rated in respect of sewers rate.

A MASONIC TEMPLE.

THE Freemasons of New York City have built themselves a grand temple. It stands at the corner of Twenty-third-street and Sixth-avenue, the main front being 114 ft. on the former street, and the depth about 92 ft. on the latter, while the surmounting dome rises to a height of 165 ft. above the pavement. It is a building of five stories, the fifth being a mansard roof which is surmounted by a high quadrangular dome, giving a pyramidal form to the structure. The cornice is 94 ft. above the pavement, and above this the mansard pavilions rise 30 ft. and the dome 41 ft. further. The exterior is designed in French Renaissance, each story representing a subordinate order, beginning with the Tuscan in the lower story, above which is the Ionic, then the Corinthian, and lastly the Composite. Light blue granite is used, this being combined in the Tuscan story with bands of grainy syenite of a darker hue. On the main front the building is divided perpendicularly into a central columned pavilion 50 ft. wide, in which the granite work extending through the mansard story is surmounted by the dome, on each side of which are curtains containing niches for statues. At each angle there are pavilions 26 ft. wide, these being repeated on the Sixth-avenue front. The first story is fitted up for stores, the chief part being occupied by a Safe Deposit and Trust Company. The main entrance is in Twenty-third-street, and is approached through an elaborate Tuscan portico. Here stand the emblematical pillars, and between them the visitor enters into a large vestibule lined with parti-coloured marbles. Bronze sphinxes guard the stairway which ascends to the main corridor on the second story, which is decorated in the Ionic order, and is 20 ft. by 66 ft., and 28 ft. high. On one side of this corridor are the apartments of the grand officers, and on the other side the Grand Lodge-room. Over the central entrance, imbedded in the wall, is a piece of ashlar vouched for as having formed part of the foundation of Solomon's Temple at Jerusalem. The Grand Lodge-room is 85 ft. by 92 ft., and 28 ft. high, and will seat 1,000 persons. Its architecture is festooned Roman Ionic, a double row of columns running through it, these being a constructive necessity from the weight of the building above. The third and fourth stories are divided into smaller apartments. Each story contains a reception parlour, 20 ft. by 60 ft., opening into the Lodge-rooms. The Lodge-rooms on the third floor are the Tuscan-room, 27 ft. by 62 ft.; the Doric-room, 30 ft. by 62 ft.; the Ionic-room, 26 ft. 6in. by 63 ft.; and the Livingston-room, 21 ft. by 47 ft. These are surmounted on the fourth floor by apartments of similar size,—the Composite-room, the Corinthian-room, the Egyptian-room, and the Clinton-room. Of these, the Doric-room is upholstered in crimson; the Ionic-room in blue; and the Composite-room in orange. Seven of these apartments are Master Masons' Lodge-rooms, while the Egyptian-room is designed for the meeting of the Royal Arch

Chapters. The top story is to be used by the Knights Templar and Ancient and Accepted Rite, and is constructed for an asylum 41 ft. by 78 ft., and 21 ft. high, a council chamber, 21 ft. by 35 ft., and the other apartments necessary to these high Masonic degrees. The asylum is Gothic, and the council-chamber Saracenic. There is also a banquet-hall in Norman style, 27 ft. 6 in. by 55 ft., and an armoury containing 650 closets for the knights' equipments. Masonry is in the ascendant.

HOW NOT TO DO IT AT HONITON.

A QUARTERLY meeting of the Town Council was held last week, principally to consider the sanitary state of the borough, and to receive a report from Mr. J. Martin, C.E., in reply to instructions given by the General Purposes Committee.

Mr. Martin presented a voluminous and well-prepared report, entering fully into the sanitary state of the town; and, after pointing out its many serious defects, strongly advised the council to meet their difficulties at once by adopting a judicious water-supply, and replacing the old stone drains with glazed sanitary pipes, so as to ensure an efficient system of drainage.

Alderman Read then proposed "That a comprehensive scheme for the proper drainage of the town be at once prepared by Mr. Martin, and submitted to the council, and that the necessary funds to carry out the same be raised by a loan from Government, on the security of the rates, the repayment to spread over thirty years." He observed that it would be far better to meet the case boldly and decisively, than to go on as they had been for many years, simply spending every available sixpence, and yet making but trifling progress. Any unprejudiced person who would go over the town must say there was need of great reform, and, for his part, he was sick of the constant bringing up of the old story. He appealed to them to take the matter up at once.

The Mayor expressed a hope that the motion would receive the careful attention of the council, and observed that the report of the General Purposes Committee was honestly and carefully given, and not at all over-stated.

No other member of the council, however, supported the motion, which, consequently, was lost.

POLITICS BLENDED WITH RESTORATION OF CATHEDRALS.

SIR GILBERT SCOTT AND HIS CRITICS.

THE architect who has the fortune to be chosen to superintend the restoration of English cathedrals and churches has, in the present age, much unpleasant criticism to endure; but only up to the present time, it may be inferred, have politics been brought in to unsettle the plans of Sir Gilbert Scott.

A correspondent says,—From some inquiries and authentic sources, there is good reason to believe that the late paragraph in the *Times* charging the restorers of Durham Cathedral with intending to make alterations "utterly out of harmony with the massive grandeur of the building," is explained by the fact of the admitted writer of the paragraph being a strong antagonist to the Dean of Durham in politics, and who cannot forgive Dean Lake for his exertions at the late election for the city of Durham; for it now transpires that the writer to the *Times*, who is a member of the cathedral body, has all along been cognisant of Sir Gilbert Scott's plans, but until now he has not expressed the slightest disapproval of the "improvements" he so warmly denounces.

The Dean thus takes up the challenge for the architect and himself, and enters into some architectural criticism deserving attention:—

"The exaggerated statements with regard to the restoration of the cathedral, now in progress under Sir Gilbert Scott, are so full of inaccuracies that, though I seldom notice such attacks, I do so in the present instance lest the public should suppose that there is any ground for such an amount of misrepresentation.

I will take the opportunity of expressing my regret, in the first place, that the progress of the cathedral is necessarily slow. It was retarded, indeed, for nearly a year by the unanimous desire of the Chapter to obtain the services of Sir Gilbert Scott, then in Italy, as their architect, and this upon the ground that his experience was beyond that of any living architect in cathedrals, most of which he has restored, and that from his judgment and moderation he was certain to introduce nothing which would not be architecturally correct, and, if I may so express it, moderate and sensible.

It is needless to add that this fact shows at once how improbable it is that the design for our alterations should be open to the countless charges of 'jumble of architectural incongruities,' 'mongrel fane,' 'sickly sentimentalism,' and 'creeping approaches to Ritualism or Romanism,' which are applied to the Dean and Chapter, and to one of the first architects of the day.

And, with regard to any appearance of delay in the work, I will only add that all cathedral restoration is liable to take a longer time than was expected, and that anxious as I am to hasten the work, I shall beg our friends not to be impatient, if only on the ground that never have the services of the cathedral been more hearty, popular, and well attended, than they are now in the nave.

I find the attack to be not on one thing alone, but on every single point in Sir Gilbert Scott's plan, even down to an indignant protest that the old communion-rails, which, as every one knows, had become very unsightly, are to be replaced by a 'huge brass bar,' and the conclusion is, that the 'Norman Temple' is to become a 'jumble of architectural incongruities.' Now it may be as well to state what the alterations proposed are, viz.:—a very fine mosaic,—not, as is absurdly stated, a 'variegated pavement in the style of the Italian Renaissance': the advance of the stalls, which every architect would pronounce an architectural necessity, and by which we lose nothing except the curious boxes in which the ladies used to sit under the canopies of the canons; a pulpit to be placed in the nave, which will be one of the finest in England, and whose massive character will harmonise well with the whole building; and an open screen of three arches only, which will interpose no real obstruction to the view from one end of the cathedral to the other."

"There is, indeed, one change, and one only, as I venture to think, fairly open to temperate criticism; I mean the introduction of a screen. No one would more object to a screen than I should have done myself, if it had implied any division between the nave and the chancel other than is marked by the mere fact that they are distinct parts of the church, or if it would have interposed any bar between one part of the congregation and the other. But the proposed screen will be little or no bar at all, and I believe there is no point on which architects are more agreed than that a break in the long continuous vista of our cathedral will, instead of diminishing, increase its grandeur. I have never spoken with any eminent architect who has not assured me that the effect of Durham would be much increased by a screen. However, I am well aware that the question is one on which persons may reasonably differ; and I may frankly say that on this point my own opinion, and that of the Chapter, was mainly influenced by the very strong conviction of Sir Gilbert Scott that 'no cathedral suffered so much from the want of a screen as Durham.'

The writer to the papers, however, regards a screen almost wholly as a badge of 'sacerdotalism,' an insinuation which, in view of the fact that a screen is a distinctive feature of nearly all English cathedrals, is simply laughable."

THE MIDLAND RAILWAY COMPANY'S NEW COAL DEPÔT AT BRIXTON.

WITHIN the last fortnight the Midland Railway Company have commenced the erection of another large coal depôt at Brixton, on land immediately adjoining the Metropolitan Extension line of the London, Chatham, and Dover Company, and situate between that company's line and the South London section of the London and Brighton line. This makes the third spacious depôt of this character which the Midland Company have constructed alongside the stations of the Metropolitan Extension line, they having already large establishments of the kind at Walworth and at Wandsworth, the former of which is now being enlarged to nearly double its present area.

The Brixton depôt, which will be immediately in front of the Brixton Station, and approached at the west end from Atlantic-road, and at the east from Canterbury-road, is being erected on strong wooden piles, 14 in. square and 18 ft. in height, from the ground to the railway level above. These piles, fifty in number, rest upon a concrete foundation, 2 ft. in thickness, above which is a base of brick, 4 ft. in depth. The wooden piles are strengthened and tied together by strong cross-girders and iron rods. The railway level of the depôt has five lines of rails, forming that number of bays for the wagons containing the coal. These bays are 150 ft. in length, with an aggregate width of 100 ft.; in addition to which there are two traversing lines diverging from the London, Chatham, and Dover line, near Canterbury-road, by means of which the coal-wagons reach the depôt. At each end of the bays the depôt extends about 50 ft. in length, supported by strong iron columns and girders; and in front of this space, at each end, there are upwards of twenty shoots, by which the coal will be conveyed into the carts on the ground level from the depôt above. The entire area of the depôt is nearly two acres in extent.

The contractors for the structure are Messrs. Wall, Brothers, of Kentish-town, and the estimated cost is about 20,000*l.*

The Livingstone Monument. — Models were sent in by three artists chosen to compete. The selection of the committee has fallen upon the model sent in by Mr. John Mossman, Glasgow. The hon. secretary has forwarded to each of the unsuccessful competitors an honorarium of 50*l.*, as had been previously agreed upon.

THE ALBERT MEMORIAL CHAPEL, WINDSOR.

WITH the gracious permission of her Majesty the Queen, we give in our present issue a view of the interior of the Albert Memorial Chapel, adjoining St. George's Chapel, Windsor Castle. The view represents the chapel as seen looking east, with the cenotaph of his Royal Highness the late Prince Consort. Mosaics fill the interspaces of the groined vaultings, stained glass glorifies the windows; the wall-spaces under the windows are filled with subjects in inlaid marble, and the floor is paved with a mosaic of coloured marbles. The works have been going on for about ten years, under the direction of Sir G. G. Scott, as architect, and the result is unique not alone in this country.

We have already published an account of the works, with the names of the executants,* but will briefly recapitulate that the mosaic work has been produced by Dr. Salviati, from cartoons by Messrs. Clayton & Bell, who also executed all the stained glass. The marble work on the walls, and the cenotaph, including the recumbent figure of the Prince in armour, are the work of the late Baron de Triqueti, as is also the sculpture of the reredos, which represents the Resurrection.

NEW INDUSTRIAL DWELLINGS IN NEWINGTON.

RESTRICTIONS BY THE METROPOLITAN BOARD.

A BLOCK of industrial dwellings are about to be erected by Messrs. Sutton & Dudley in Pollock road, Newington, who a short time ago applied to the Metropolitan Board of Works to sanction their plans, according to which the buildings were to be 60 ft. in height, but the Building Committee declined to give their sanction to their being carried to that height, and the proprietors have in consequence modified their plans. At the meeting of the Metropolitan Board last week amended plans were submitted, the height of the proposed buildings being limited to 51 ft. 9 in., and the building committee recommended that these plans be sanctioned, the building to be constructed with a flat roof, so as to interfere a little as possible with access of light and air to the street and to the opposite buildings, and also on condition that other intended new buildings in Rodney-street be kept to the same height. Mr. Selway, in moving that the recommendation of the committee, sanctioning the new buildings be confirmed, said that originally the height was about 60 ft. in a roadway of only 44 ft. or 45 ft. in width, and the committee not being able to recommend that, the amended plans had been sent in, and the committee were favourable to the being granted, particularly as there was a neighbouring block of buildings where the applicants had the power to carry them up to the full height, in which the parties were agreeable to keep to the height of 51 ft. 9 in.

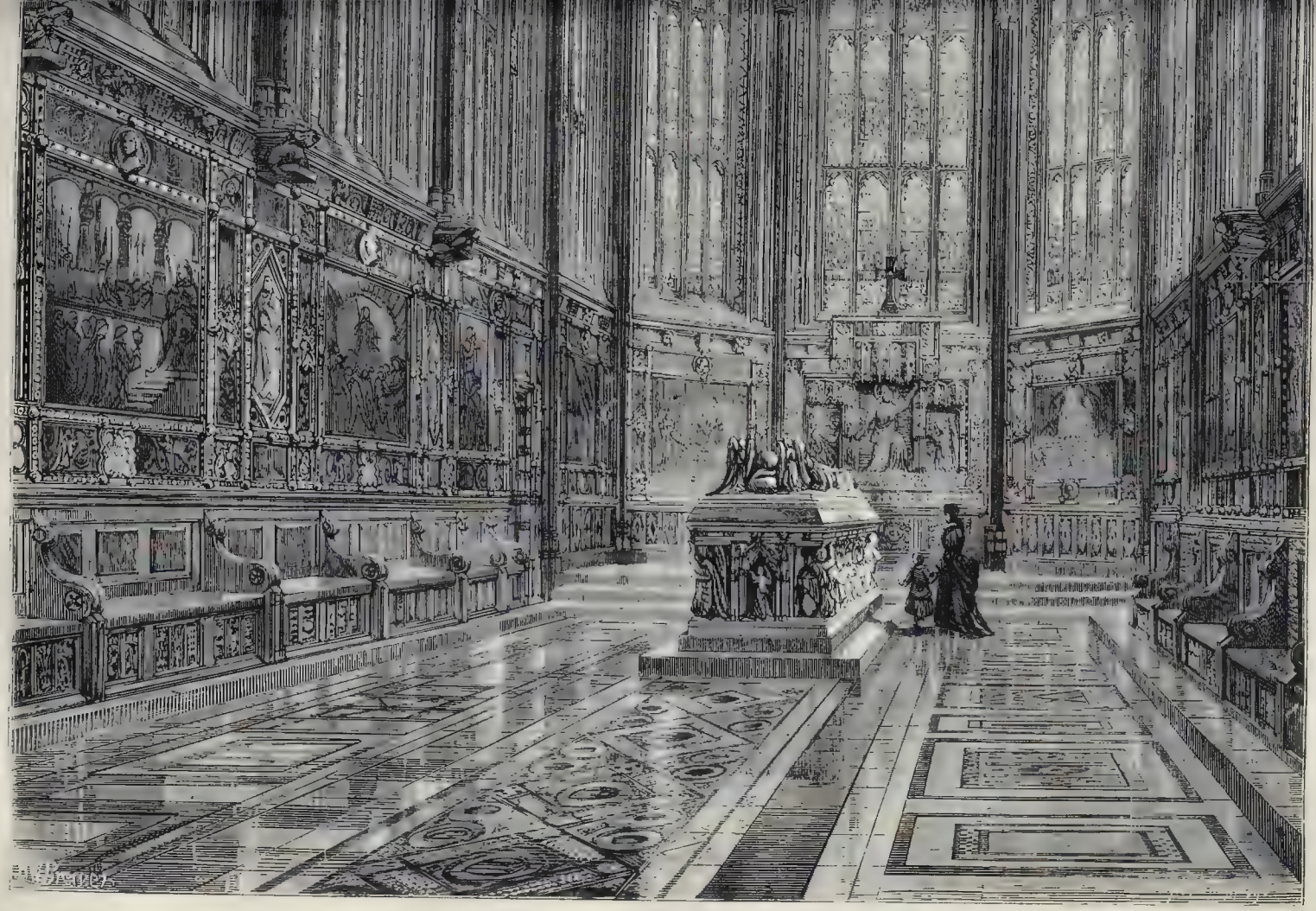
STATE OF COVERHAM ABBEY.

"A TOURIST" in Yorkshire writes,—I have been to Coverdale, and seen the ruins of Coverham Abbey. Had I not seen with my own eyes the disgraceful state—I use the word advisedly—in which this ruin is permitted to remain, I certainly could not have credited it, or believed that any owner of such property would have been so indifferent to its architectural value even if he had no regard to its historical associations. When I tell your readers that a portion of the building is converted into a cow-shed, that part of the south aisle of the church is made a receptacle for dung; and that a small archway leading from the church into the cloister is transformed into a 'petty,' I think I shall have said enough to excite their astonishment that such a thing could be said in this nineteenth century; and their disgust that the possessor of these interesting ruins has no more regard for decency. I do not know who owns the property, and I purposely avoided making the inquiry. Whoever he may be I trust the Architectural Society will bring their influence to bear upon him, so that such a standing disgrace may be once and for ever removed.

I may add that this abbey is a rich store-house of interesting archæological detail, and well worthy a visit, despite the obnoxious features above-named, and it can be readily reached from Middleham by a drive of about three miles over Middleham Moor, whence some pretty views of Coverdale may be obtained.

* See p. 560, *ante*.





THE ALBERT MEMORIAL CHAPEL, WINDSOR CASTLE.

SOCIETY FOR IMPROVING THE CONDITION OF THE LABOURING CLASSES.

THE Report read by Mr. Payne, the secretary, at the general meeting of this Society recently held, included these paragraphs:—

"The Artisans' Dwellings Bill of the present Session must be regarded as a step in the right direction. At the same time, Lord Shaftesbury (whose title to be heard, as the originator of the model houses, and the prime mover in the renovation of Tyndall's-buildings, and like haunts of the worst forms of vice and disease, is recognised on all sides) has pronounced the measure to be defective in not providing sufficiently for the re-construction of tenements from which the inhabitants are ejected. Nevertheless, it will be generally felt that the Artisans' Dwellings Improvement Bill of 1875 is a manifest advance from previous legislation. Professing to proceed 'entirely on sanitary grounds,' it is a measure for removing unhealthy houses with the smallest possible inconvenience to the occupiers. With regard to the rest, there is reason to believe that further enactments in the way of change or addition would be forthcoming on the necessity for such being fairly established. . . . . Your Committee are in a position to assert that this Society has served to initiate incentives to others, and has aided in calling out no small amount of corresponding effort, both at home and abroad. . . . . To maintain the metropolis stationary as regards wholesome dwellings would be, in itself, a very serious labour; it is only very great efforts that can mitigate the horrors of overcrowding, uncleanliness, and disease, amongst the poor.

The mortality throughout the houses is again in excess of the average, or slightly above 23 per thousand. The death-rate throughout the country is estimated at 22½; that in London at 24. But that comparatively favourable return embraces wealthy districts as well as poorer, a fact scarcely at all times, receiving the consideration it should. One thing, at least, in the opinion of your Committee, is certain, that dwellings occupied in defiance of sanitary laws, act with immense force upon bodily health, and the reflection is suggested that, allowing for the drawback of an unfavourable year, unless counteracting agencies were in operation, the mortality in numerous districts would be much more serious. Your Committee are gratified to state that the Medal of Merit awarded to this Society at the Vienna Universal Exhibition of 1873, has been received since the last annual meeting. This is the fifth occasion on which the Society has obtained such a distinction.

The amount received by the Society from all sources during the year was 5,689*l.* 18s. 4d., which, with a balance in hand at the beginning of the year of 490*l.* 12s. 11d., made a total of 6,180*l.* 11s. 3d. The current expenses of all the Society's houses (including repairs) amounted to 3,701*l.* 14s. 1½d.; interest on loans, &c., 867*l.* 13s. 9d.; special contracts and other claims, 401*l.* 18s. 11d.; printing, books, stationery, and advertising, 64*l.* 14s. 11d.; salaries and agency, 57*l.* 8s. 7d.; rent of offices, coals, cleaning, and all incidentals, 139*l.* 15s. 6d.; leaving a cash balance at bankers, and cash in hand, of 429*l.* 5s. 9½d. The property belonging to the Society is estimated as worth 34,974*l.* 9s. 6½d., and the general liabilities amount to 21,998*l.* 0s. 9d.; leaving assets to the amount of 12,976*l.* 8s. 9½d."

Mr. Kay-Shuttleworth, M.P., in seconding a resolution to adopt the report moved by the Hon. W. Cowper-Temple, bore testimony from personal observation to the excellence of the Society's work. Among the visits which he had paid to various parts of London, none, he said, had interested him more than those which he had paid in the company of the Society's secretary, Mr. Charles Payne, to some of the courts which had been renovated by that Society. The Society had not aimed too high in such cases. It had cleansed and improved without spending too much money. And now that Parliament was dealing with that question, it should not be forgotten how much that Society—and in saying that he referred especially to its noble president, Lord Shaftesbury—had done to promote the object. There was now greater need than ever of societies which would rebuild. The Artisans' Dwellings Bill did not require the Government itself to build houses, but it offered great facilities for that purpose, and it invoked the assistance of societies and private individuals in providing the necessary funds. He was glad to observe that the report spoke so favourably of the Government Bill; and they had the assurance of the Government that if that measure did not answer the purpose, other legislation would follow. He had been glad to learn from the Home Secretary, Mr. Cross, that he had received from the Corporation of the City of London and the Metropolitan Board of Works assurances of their intention to do their best to carry out the object of the Bill as soon as it had been passed.

Dr. Ross, Medical Officer of Health for the St. Giles's district, in supporting the resolution, said the Society's house in Streatham-street was built on the best principles, and the amount of sickness and mortality was exceedingly small. He did not believe the deaths were more than 10 or 12 per 1,000 per annum. He then alluded to the operations of the Society in Wild-court. The mortality of the locality generally was, he said, very great; but as regarded Wild-court, the returns respecting febrile diseases were extremely satisfactory. The Great Wild-street district was, in fact, a fever-haunted district; twenty-seven fever cases were sent thence to the fever hospital at Stockwell this year, and only one of them came from Wild-court. That was a specimen of the results of the work of that Society. From another court—Lincoln-court—a court of similar character to Wild-court, before the Society obtained a block of buildings there, eleven cases were sent to Stockwell during the same period.

Mr. George Godwin moved a resolution thanking Lord Shaftesbury for his unabated interest in the operations of the Society. Referring to a visit which he had lately paid to Tyndall's-buildings, he testified to the great improvement which the Society had made there in comparison with the state of things which he found to exist when he visited the same spot sixteen years ago, and he gave an account of its condition at that time from notes he had then written on the spot. The same class of people, he observed, were there now as before, but they were elevated. As regarded Lord Shaftesbury, Mr. Godwin observed that his lordship's life had been a most extraordinary one, devoted as it had been to the helping of those who could not help themselves. His lordship could, he added, have had no other object in view from the outset of his useful career than to benefit his fellow creatures. In commencing life he had all that other men struggled to obtain, and yet he had devoted himself energetically and continuously to advance the welfare of the whole community.

Canon Nesbit, in seconding the resolution, formally presented to Lord Shaftesbury the medal awarded to the Society at the Vienna Exhibition of 1873, adding that it was the fifth medal of that kind which his lordship had gained. Where wretched dwellings existed vice and immorality reigned; but there was strong and independent testimony to the moral elevation which had arisen from the operations of that Society. He concluded by eulogising the chairman as the friend of the factory children, the chimney-sweepers, the ragged school children, and numerous other objects of his philanthropic care and labours.

Lord Shaftesbury, in the course of a very interesting address, said it is exactly thirty-one years ago since a meeting was held to found this Institution, and now, after the lapse of thirty-one years, I am able to say that I have taken the chair at every anniversary. When we met here in the year 1842, this Institution was, I believe, the first of the kind that was ever formed. I am not aware, at least, that any institution had been formed previously simply for the purpose of improving the dwellings of the working classes. As you have been reminded in the report, the example set by this Society has been followed not only all over England, but also in America and in many parts of Europe. Within the last three months I have received several communications from Rome, from that grand old man General Garibaldi, imploring me to give him advice in reference to the providing of suitable buildings for working people in Italy, and asking for plans and engravings for his information and guidance; and only the other day I had a letter from him expressing the deepest gratitude for the assistance which we had afforded him. From this letter it appears that he positively gloated over the plans and views of Shaftesbury Park, the publications of the Labourers' Friend Society, and Mr. Roberts's book; and he says that he had derived from what he had received the greatest assistance in carrying on his own efforts. My friend, Mr. George Godwin, has been kind enough to speak of me in far more complimentary terms than I deserve. I must tell my friend this, that the long experience which I have had has led me to the conclusion that in these matters a man can do nothing by himself. I could certainly have done nothing if I had not had such men as Dr. Greenhill, Dr. Ross, Canon Nesbit, and many others of the same kind, to co-operate with me heart and soul, to work along with me, to give me assistance, and to contribute to the formation of that public opinion without which it would have been impossible for us to carry our efforts to a successful issue. Now, you know, we have attained success up to a certain point. The Bill which has been recently introduced by the Government must be praised as a grand and noble effort to meet and overcome one of the most frightful evils that ever prevailed in a civilised land. Whether it will accomplish its end is another question. I am inclined to think that it will want the motive power. I am inclined to think that it will lie dormant for a considerable time; but, nevertheless, we must give the Government credit for it, and the consummation of our desires would be the undertaking of the work of improvement by the responsible authorities. The work is, indeed, not yet anything like completed. You have all heard the description which Mr. Godwin has given of the state of Tyndall's-buildings some sixteen years ago, if I am not mistaken, it was at my request that that gentleman went there at that period. I myself visited Tyndall's-buildings a short time before that, and I believe that he has understated the actual condition of things. Anything more frightful I have never witnessed. I could not have stopped in the place longer than I did. On diving into one of the cells there, I saw a woman and five children breathing an atmosphere which was foul through filth. There was an open cesspool close by, with nothing to carry off what was there, and the mother and children were daily subject to such noxious influences. I was obliged to go away very quickly. In that very year, from Tyndall's-buildings alone, more than twenty-five cases of fever were sent to the hospital. What is the state of things now? There has not been one case of fever in the whole district for several years. That shows what may be done by the renovation of houses of the worst description. I am satisfied that we must direct our special attention to this question of renovation, that being the only way in which we can improve the domiciliary condition of the working classes. I mean of the poorer sort.

ON THE DECORATION OF CHURCHES.

AT the closing meeting of the Architectural Association, Mr. Pullan, as mentioned in our last, read a paper on the "Decoration of Churches." He said that before entering upon the consideration of the various styles of church decoration, and the modes of applying them, he wished to make a few remarks on certain misapprehensions which prevailed on the subject of polychrome generally, for notwithstanding the fact that of late years the public taste had so veered round in its favour that a large majority of men of all shades of opinion were advocating the decoration of their great metropolitan basilica, there still prevailed certain prejudices against the use of colour in their public buildings, and objections to its employment were often urged, even by architects of repute. These objections he thought it desirable to meet, and these prejudices, if possible, to overcome. Objectors might be divided into three classes:—1. Those who were altogether opposed to polychrome on the ground that they preferred to see the materials of which their buildings were constructed plain and unadorned, and, as they called it, undisguised. 2. Those who did not object to decoration, provided it be executed in the tertiaries or other indefinite tints. 3. Those who admitted of decoration of any kind—anywhere except in a place of worship. The opinions of the second of these classes were the most widely spread. He would therefore consider them first. They looked upon positive colours with distrust; they were inclined to regard them as *per se* gaudy, tawdry, and meretricious, and to consider the employment of them in dress and decoration as an indication of a vulgar taste. This idea was not confined to the uneducated, but, on the contrary, prevailed amongst those whose taste in other matters was most refined. It appeared to proceed from an inability to judge of the proper effect of colour, and a consequent predisposition to take refuge in a neutrality, or it might be the result of a natural timidity which prevented those who could really appreciate the beauty of brilliant colouring from admitting their admiration lest they should be looked upon as advocates of what was *outré*, and not in accordance with the present fashion. But they were, to say the least, strangely inconsistent; for while they preferred to clothe themselves and their surroundings in funeral black, sombre brown, or neutral gray, and while they would shrink with horror if it was proposed to them to use Pompeiian red on the walls of their dwellings, they tolerated, or even professed to admire, the glowing hues of the windows of Chartres or York, the azure and vermilion of Fra Angelico's paintings, or the pages of illuminated MSS. They looked with complacency on the red coat of the soldier, "the pink" of the huntsman; the bright blazonry of their coats of arms, and regard with pride the red and blue of "the flag which bravod a thousand years, the battle and the breeze." He (Mr. Pullan) would ask them if they thought the scarlet of the poppy amid the yellow corn, the

blue of the forget-me-not on Alpine pastures, or the golden buttercups in the green meadows, vulgar? And what was their opinion about the church decorations and vestments,—the veil of the Tabernacle and the robes of the priests, which, by divine command, were to be "of blue, of scarlet, and of purple." No, bright colours *of themselves* could ever be vulgar, but only become so when improperly assorted or wrongly juxtaposed,—in short, when put together in bad taste. To give an extreme illustration. A man dressed in a scarlet coat, light blue trousers, and an emerald green necktie might justly be pronounced vulgar, whereas the man in a scarlet hunting-coat, a bottle-green tie, white buckskins, and top boots would be said to be dressed in perfect taste. To give another illustration more to the point. If any one who had any perception of colour were to enter a church, the roof of which was light blue, with yellow stars, the groining ribs light green, the wall diapers blue on a red ground, without any admixture of black, white, or gold, the dado light green, yellow, or white, his susceptibilties of the beauty of colour would be so deeply wounded that his chief desire would be to get out of the building as soon as possible, not because the bright colours he believed were intrinsically gaudy, but because their vile and tasteless combination produced a discord which jarred against his sense of all that was harmonious and beautiful. If they turned over the pages of Owen Jones or Racinet, which contained the more faithful representation of the decorations of every school and every nation, they would find these bright positive colours predominated in the works of the Egyptians, Greeks, Romans, Byzantine, and those of the Middle Ages; or if they visited the best decorated buildings that remained, they would find bright positive colours employed throughout, and when necessary, the effects of secondaries and tertiaries produced the then combination. A second opinion, that of the first class, Mr. Pullan approached with some diffidence, because it was entertained by some amongst them who were gifted with the highest faculties for the appreciation of the beauty of form in architecture. Their naturally severe taste inclined them to regard with distrust a system of polychromy which they thought deteriorated buildings, instead of improving them by hiding sound materials, and by destroying their form and proportion. This distrust seemed reasonable; yet he would appeal against it to the only two authorities which were available,—nature and art,—to show that from the first colour had been the natural complement of form, and that until comparatively recent times, no building was considered complete unless it was polychromatised. On the day of creation every form, animal, vegetable, or mineral, was adorned with its appropriate colour. The primitive man soon perceived this inseparable connexion of form and colour, and attempted to beautify the sides of his cave or the rafters of his hut by daubing them with ochreous pigments. This decoration became allied to architecture, never to be separated from it until these later days. That the Assyrians aad Egyptians used polychrome there was sufficient evidence in the sculptures of the one and the temples of the other. It might be urged that these were semi-barbarous people, who thus manifested the savage tastes for gaudy colours; but the same could not be said of the refined Greeks, who, in the best period of art, used positive colours for the decoration of their temples, both internally and externally. That they did so he had had ocular proof, as, when excavating the ruins of the Temple of Minerva, at Priene, he found vermilion and blue, and patterns indicated by brown lines, on the architraves and other members, which had been buried at least 1,500 years. The houses of Pompeii, the Baths of Titus, and the painted tombs of the Via Latina showed that the Romans painted at least their interiors. Colouring of the most gorgeous description reigned supreme in the Basilican and Byzantine churches; and if they went into any Mediæval church of importance in any part of Europe that had escaped the destroying hand of the restorer, and scraped off the whitewash of the beautifier, they would find some traces of painting in either fresco or tempera. Finally, in England, notwithstanding the repression of oil in the time of the Commonwealth, all architects of eminence, up to the beginning of the last century, agreed in considering painted decoration essential to the completion of a building, otherwise they would not have had, amongst other things, what were called Sir Christopher Wren's suggestions for the completion of St. Paul's. Thus architecture and painting were from the first intimately connected, and it was reserved for others to separate them,—to pronounce polychrome meretricious, and to rejoice in whitewash. The third misapprehension which existed was fortunately not as general as the other two; that decoration was unsuitable to a place of worship. To those who held this view he would say,—Go to the catacombs, the earliest places of Christian worship in existence. Here, at least, was common ground on which all Christians could meet. What did they see around them? Upon the walls and ceilings in some of the chapels in which the faithful assembled were found simple representations of the types and figures of Scripture and symbols of the faith. They would see nothing that would offend the most tender susceptibilities,—no scenes of martyrdom, no bloodshed, no horrors, no three-headed devil, like the Dantesque demon,—

"Gorging and growling o'er carrion and limb,"—

but the Good Shepherd feeding his flock by the side of streams, under the shade of trees. They would see the Ark of Noah, an emblem of the spot in which they stood, where the primitive believer was for a time safe from the storm of persecution without. They would see plenty of flowers, fruits, garlands, and other pleasant pictures,—rude in execution, it was true, but touching as evidences of the faith of those who were living in constant expectation of martyrdom; and they would come away, convinced that if such decorations were executed under such solemn circumstances, it would be hypercritical to object to the principle of church decoration in the present day. Having endeavoured to meet some of the objections that were urged against polychromatic decoration, he came to the more immediate subject proposed for consideration, the styles of decoration. He might here remark that detached studies and sketches would never convey a correct idea of the general effect of a decorated building, and that many of the prejudices that were still entertained against polychrome would disappear if they had better opportunities of seeing decorated churches in their entirety. He was convinced that many of those who had derived unfavourable opinions of it merely from books or from the imperfect attempts that were to be seen in England, were to visit St. Mark's, at Venice, some fine summer evening when the sun's rays, entering at the west door, reflected from the pavement, lighted up every corner of the building, and brought out the rich tones of the marble column, the elaborate patterns of the soffits, illuming the apostles and prophets in the great dome, and shedding a glory around the Majesty in the apse, revealing the gorgeous colouring in its *tout ensemble*, they would be converted from opponents to warm supporters of polychromatic decoration. Believing, then, that drawings representing general effects, however imperfectly executed, would convey clearer ideas of the different styles of decoration than any number of sketches of details, he had prepared a series of drawings embodying the chief features of each succeeding period (which were on view and excited much attention). They were not actually copied from existing buildings, but were based upon observations made at various times during the last thirty years. His attention was first called to the subject at the time of the competition for the decoration of the Houses of Parliament in 1844, at which time he put in a design which he had brought that evening, as it tended as much as any other to illustrate the principle of the employment of positive colours, which was the chief point which he wished to advocate, and which he had endeavoured to show was the prevailing principle of all the best ancient work. Since that period he had seized every available opportunity of visiting both ancient and modern examples of polychromes. He had come back convinced that the most effective decoration was that executed in bright colours,—as at St. Sophia, Monreale, Assisi, the Arena Chapel, and the Library at Sienna. In preparing these rough drawings, to illustrate the various styles of painting, he had heightened the colours to what he conceived to have been their original brilliancy. As the paper was intended to bear a practical character, for the purpose of showing how colours should be applied in the present day, a mere description of ancient examples would be rather out of place. A brief consideration of the different features of each style, with some practical eductions and remarks on modern decorated churches, would, therefore, he felt, be more appropriate. In the basilican churches the pavement formed an important feature. It was generally of *opus Alexandrinum*, a mosaic of geometrical figures composed of serpentine porphyry and palombara, arranged in interlacing circles, encompassing slabs of rich marble and rich pavement, which were to be seen in various churches in Rome. Round the walls of the aisle ran a dado of marble slabs, and above it were pictures or ornaments, erected in mosaic or fresco. Above the architrave there was placed occasionally a frieze of processional figures. Other pictures or ornaments occupied the spaces between the clear-story windows, surmounted by a rich cornice. The roof was either flat, as in Rome, or open-timbered, as in Sicilian churches; in either case elaborately adorned with diapers. The triumphal arch was covered with apocalyptic subjects. Those who had visited Rome would have been able to realise how magnificent in effect, and how gorgeous in colour, the ancient basilica must have been. In the Byzantine churches the introduction of the dome gave increased splendour to the mosaics by affording reflections and cross-light, which heightened the effect of the gold grounds. Fortunately there were many churches in this style in which the decoration remained almost intact: the two finest of these were St. Sophia's, at Constantinople, and St. Mark's, at Venice. With these they were no doubt familiar, as they had been thoroughly illustrated by photographs and in books. There were also churches of minor importance existing at Ravenna, Salonica, and in the Greek Islands, in which many of the decorative features remained. The unrivalled Sicilian churches, the Cathedral of Monreale, and the Capella Reale at Palermo might be classed in this category, as the ornament in both had a decidedly Byzantine character. The general treatment was the same as in the basilica. The wall linings were, however, generally brighter, often carved to the springing of the arches and domes, as in St. Mark's, and fresco was discarded for mosaic,—at least until the twelfth century. About that period the rapidly-increasing number of churches requiring thorough decoration called for a more expeditious and less costly mode of adornment, and fresco entirely superseded mosaic, except for smaller works, such as pulpits and other articles of church furniture. As there was no existing example of a thoroughly decorated Lombard church, and but little painted ornament of that period, he thought it allowable to use Byzantine forms in the ornament of a church in the Lombard style which he had recently built at Baveno, especially as there was great affinity between the ornamental form of the two styles. In some of the churches in the North of Italy there were a few remains of the painting of this period; and in contemporary churches in France the wall paintings were more complete, and in them there was observable a falling off from the drawing and brilliant colouring of Byzantine times. But colours resumed their brilliancy in the hands of the Gothic masters of Italy. The walls of the Arena Chapel at Padua resembled pages from an illuminated MS. At Assisi St. Maria Novella, in Florence, there were frescoes which, though faded now, must have been originally of intense brightness. A similar system to that was adopted in earlier times. There was a dado with diapers or figures of dark tones, pictures in bright colours on walls, and a vault of blue, powdered with gold stars. Afterwards ornamental gave place to figure painting, and the artist renounced subordination to the architect, and therefore decoration being mere figure painting, did not come under the scope of this paper. Having thus briefly glanced at the peculiarities of the various sorts of decorated churches, let them see what practical deductions might be derived from the study of them. Good decoration consisted in the application of harmonious colour to appropriate forms; therefore the subject had to be considered under the head of form, with regard to style, ornament, and costume; and under that of colour, with reference to tone, harmony, and style of colouring which prevailed at certain periods. Up to the tenth century colouring did not vary much in either the Basilican or Byzantine churches. The almost invariable gold ground made it requisite that the draperies should be light in colour, or relieved by strong light, otherwise the brilliancy of the gold would attract the eye first, and render the figures dark spots. They frequently saw this effect in Renaissance work, where dark colours,

unrelieved by white, were used with dark shading. In all the best mosaics there was abundance of white in the draperies. The outlines were bold, and there was an absence of chiaroscuro. In Romanesque churches, ochres and browns, with blue and green, were chiefly used in the lower part of the building; purple and light blue in the upper; the figures were on light grounds. In the thirteenth century colouring increased in brilliancy; and the general tone of the pictures might be described as being umber and blue. In the fourteenth and fifteenth centuries colours became more broken, and greys, greens, purples, and blacks were constantly used; strong shadows were introduced, and the work began to lose the simple architectonic character it had in earlier times. In the sixteenth century the painter altogether abandoned his alliance with the architect, instead of making his work subordinate to the architecture; and wall-paintings, instead of being formally drawn and brilliantly coloured groups of figures, having, when seen from a distance, the effect of a rich diaper diffusing a general bloom over the whole interior, became detached compositions, often with dark backgrounds and forcible shadows projected from one point of light, so that churches became, so to speak, galleries for the exhibition of a number of separate pictures. Such a result would be almost inevitable in the decoration of a large modern building unless the guiding mind of the architect dictated the leading tones and general style of composition. Look at the frescoes in the Houses of Parliament, admirable as pictures, each work a small fortune if painted on canvas and hung up in a gallery; but as they were placed in corridors and other similar positions, in which it was impossible to get the right point of view—discordant with one another in tone and general character,—instead of furnishing examples for future imitation, they were simply illustrations of what should be avoided. The word tone had several significations. He employed it to signify the prevailing tint of the ground which gave the key to the whole composition. The Greeks saw the necessity for tone, hence they covered the marble of their temples and statues with a coating of wax to destroy the unpleasant glaze of purely white marble, and to unite and harmonise the various bright colours with which the effect of their edifices was heightened. A white ground should be abhorred and avoided. Imagine the effect of a building with whitened walls on which were painted figures and ornaments in brilliant colours. It would be in the highest degree tawdry and gaudy. The prevailing tone of Byzantine building might be broadly said to be of a greenish golden hue; of Romanesque building, of a yellow ochreish tint; and of Gothic, of a warm umber. For general purposes a tint like that of a vellum or cream colour afforded the best ground, and white should be used only in small quantities. Much might be said about harmony—such as harmony of contrast, of gradation, and succession; but he would confine his observations to one point. In all theories founded upon that of the prism, it was assumed, and with a great show of reason, that combinations of colours in the proportions which produced white light afforded the most perfect harmonies. For instance, three parts of yellow, five of red, and eight of blue, and so on, through the secondaries and tertiaries. If this be perfection it was evidently the end to be striven after; but if it were so, would it not have been seen at least dimly by the great colourists of the Venetian and other schools, or by those Eastern nations who were universally allowed to have produced the finest specimens of colouring? But could any one show amongst the thousands of shawls that came from India, enamels from China, carpets and pottery from Persia, or amongst the pictures of Paul Veronese and Titian, a single example in which this perfection was attained or even aimed at? Or could they, with all their boasted science, produce more beautiful combinations of colours than the semi-barbarous people of the East had produced by the exercise of their strong natural instincts, nurtured by the vivid colouring of natural objects,—of flowers, birds, mountains, and skies,—which they saw above and around them? No; he believed that a woman of the Turkoman tribe,—the most ignorant of the Nomads,—would, by the exercise of her natural taste, weave a carpet possessing a finer combination of colour than could be designed by the cleverest pupil of their great art manufacturing establishment, though thousands of pounds had been spent upon his education by the purchase of a magnificent library, and the most miscellaneous collection of works of art the world ever saw. That there were laws of proportion which governed colour as well as form there could be no doubt, but he questioned very much whether the law of proportion for the production of white light was that which ought to be implicitly followed. To apply it in the decoration of a church would be next to an impossibility. Let them suppose that the architect, after painful labour, had succeeded in devising a pattern for his walls, in which the exact proportion of the primaries was observed. He would find that when the figure-painter, who could not be supposed to make his pictures conformable to the same law, set to work, the result of his labours would be destroyed, and that the stained glass and coloured materials with which his building was constructed would all tend to neutralise his skilful composition. Correctness of form was as essential as beauty of colour to perfect decoration. The character of the ornament and costumes of figures must be regarded with reference to style. There were many amongst them who had reasonable longings for a more perfect style than that which they practised. Up to the present day, however, church architecture had been content to remain an imitative art. The best they could do was to reproduce, and that seldom accurately. It would be too much, then, to expect absolute correctness in decoration; still, it would be unpardonable, with the opportunities they possessed, to introduce Byzantine forms into a fifteenth-century church, or to decorate a Romanesque church with trefoils, quatrefoils, and other geometrical patterns, which were used at a later period. The utmost latitude that should be allowed was the use of the style of decoration employed in Italian buildings of the thirteenth and fourteenth centuries, and in churches of the same period in their own country, and that for the sole reason that the Italians of those days were masters of decoration, while contemporary wall paintings in English churches were but roughly drawn, and coarsely coloured. They should confine the foliated ornaments of their Norman buildings to conventional imitation of ferns and other plants used as models in Norman times. In thirteenth-century churches let them employ the lily and the rose; in fourteenth and fifteenth century buildings the vine, strawberry, oak-leaf, and other similar leaves that they saw in Third Pointed churches. In geometrical ornaments they should observe the progress in cuspidation that was visible in architecture. The same might be said with reference to costume. The representation of an event described in Holy Writ was at the best symbolical; attempts at realisation often ended in vulgarity. In viewing Fra Angelico's "Descent from the Cross," or Luini's "Crucifixion," it was the expression and power of execution and colouring that they regarded rather than the dresses of the figures. So that the story was well told, it was better that educated taste should be gratified by the accordance of the costume with the architecture than that it should be offended by futile attempts at realism. The subject of "Christ disputing with the Doctors" was better represented by Luini's pictures in the National Gallery, although the figures were in the fifteenth-century costume, than it would be by a representation of a Jew boy, surrounded by old Jews, studied in the streets of Smyrna and Jerusalem. One fault of modern decoration was that one uniform treatment of figures and draperies, though it was that of the best period—viz., of the time of Fra Angelico—was adopted for every church, whatever might be the style in which it was built.

Although there was no certain law to be followed in the combination of colours for decoration beyond the ordinary rules relating to contrast and harmony, a few maxims based upon the combined observation of those who had studied the subject might be useful for those who had to do with decoration of churches and other buildings.

1. The lines of the decoration should ever be made subservient to the lines of the architecture, and colour should be employed for the purpose of accentuating the construction. Thus, bands should encircle arches to give the appearance of strength, and should be carried horizontally or vertically, according to the principle of the style. Salient mouldings should be made to project, and hollows to recede by the use of warm or cool, dark or light colours. Breadth might be obtained by use of a monotone, by patterns in two shades of the same colour, or by an elaborate subdivision of the various colours.

2. The lower part of the building should be made more uniform in colour and darker in tone than the upper. Colours and patterns should increase in brilliancy and elaboration as they ascended. In the Basilican and Byzantine churches the dado was of a uniform colour, and was crowned by brilliant mosaics. In Gothic churches dados of sombre tints were surmounted by higher pictures and diapers, the whole crowned by a light blue vault, with gold stars; and in the Renaissance, ceilings as gorgeous as that of San Marcello, surmounted walls of a deeper tone. Those who had visited Damascus could call to mind the magnificent *lewans*, in which the walls of marble inlays, sobered in tone, were finished by ceilings of cedar, painted with vermilion.

3. Neither positive colours nor those dark in tone should be used in masses. Heaviness would be the result; and they learnt this from nature, in which bright colours were only seen in minute quantities.

4. The law of heraldry,—colour on metal, or metal on colour,—should be observed as far as practicable. Colours should be divided from one another by lines or masses of white, gold, or black, or, if it be necessary, to place one colour upon another, and if the ground be dark and the pattern light, the margin should approach white as nearly as possible,—black, if the ground be light and the pattern dark.

5. When colours were juxtaposed they should not be of equal force.

6. The greater the volume of light in a building, the lighter and brighter should be the colouring. Where there was neither stained nor toned glass, a partial decoration, confined to the heightening of mouldings, as in the roof of San Miniato, at Florence, was to be preferred.

7. The materials of which the church was built should give the key-note to the colouring. Pavements, walls, and columns of dark marble or stone necessitated corresponding depth in the colouring, and *vice versâ*. For instance, porphyry columns, together with light-red diapers on yellow walls, would produce a hot, unpleasant, garish effect; a yellowish-green or grey ground, with dark-red patterns, would be preferable.

8. Stained or toned glass was a desideratum in the polychromatised building, except when the direct rays of the sun threw rainbow-hues upon the walls, which was seldom the case if the glass be sufficiently thick. The light admitted through the stained glass enhanced the general effect by giving the whole a mellow tone. In the church of St. Germain des Pres, Paris, the paintings in the transept had a very crude appearance, owing to the light being admitted through plain white glass, while the nave was bathed in a warm yellow glow, which tended to soften violent contrasts, and to tone the colouring which otherwise must be found to be too forcible.

9. Every church should be designed with an eye to its future decoration. It should be remembered that a well-decorated interior was preferable to a showy exterior, and that wall-painting afforded a more effectual and more economical mode of adornment than external carving in stone. Durability was not the sole object to be kept in view. Art at present was in but a transition state; they were working on no fixed principles, and many of the buildings upon which they prided themselves might be regarded with a feeling akin to contempt by their successors, who would probably wish that they had perpetuated their ideas in plaster, instead of perpetuating them in massive granite or ponderous bronze. For such reasons he considered tempera or oil preferable to mosaic, for they had not reached that perfection in the art of decoration that would justify them in carrying out their designs in ineffaceable materials.

Finally, let them inquire how far true principle has been carried out in the decoration of modern buildings. The Basilica of St. Boniface, at Munich, was a fair revival of the ancient basilica as regarded its general features; but as regarded the decoration, although the drawing of the figures was excellent, there was a want of severity about the forms, and ornament, and tones of the colours which interfered greatly with the general effect. At St. Vincent de Paul, Paris, polychrome had been applied in a much more satisfactory manner. Above the architrave there was a deep frieze, with processional figures on a gold ground, and above the columns of the upper story a rich band of large and small medallions, with intervening figures in bright colours, evidently imitated from that at Monreale. He knew of no Pointed decorated church in Ger-

many, and must therefore confine the comparison to the modern French works, La Sainte Chapelle and Notre Dame de Paris. The former had a restoration of the ancient colouring by Lassus and Vitet; the latter was decorated by Viollet-le-Duc. There was no great difference in the dates of their buildings, but a striking contrast in the manner in which they were decorated. In one the colours were brilliant, the contrasts fine, and the patterns correct; in the other the colours were weak, laid often in great masses, relieved only by small patterns placed at equal distances apart, and the foliage was rather of the modern French school than like that of the Gothic of any period with which he was acquainted. The same might to a certain extent be said of the polychromatic decoration of St. Denis, though that was an improvement on Notre Dame. In their own country, decoration owed much to amateurs. The ceilings of Ely, commenced by Mr. Styleman L'Estrange, and finished by Mr. Gambier Parry, was a splendid monument of what could be accomplished by gentlemen of refined taste who devoted themselves to such a labour of love; the works of the latter at Gloucester Cathedral and Higham Church were well worth inspection, and the spirit which produced them well worth imitation. In conclusion, Mr. Pullam called the attention of the members to an attempt he had lately made to carry out correct principles in the church at Baveno. The plan was octagonal, partly because it was most suitable for the site, and partly because several Lombard and other Romanesque churches were built on the plan; amongst others that of San Tommaso, at Bergamo. The walls were of granite, of a warm tone, from quarries in the neighbourhood, with narrow courses of grey marble intervening. Internally, there was a dado of polished grey marble from Carrara. Considering that the general tone of the walls should be warm, he had them grounded with yellow ochre, cooled with a little raw umber, and covered with elaborate running patterns in reddish-brown. These two colours produced, when properly employed, one of the finest harmonies. In order to soften the contrast between the grey dado and warm wall, and at the same time to carry out the constructive principle, bands of grey ranging with the courses of marble of the exterior were carried through, separating the red lines of foliated patterns. These bands were relieved by white pateras, with spots of bright red in the centre. The soffits of the main arches were treated with geometrical patterns like those of Sta. Sophia and Monreale, and at the crown of each arch was painted a half-length figure of an apostle on a blue ground. Borders of floriated ornament strengthened the lines of the arches. The spandrels were filled with interlacing patterns on blue and chocolate grounds. The roofs throughout were covered with bold arabesques, the stems being chocolate, the flowers and leaves of bright positive colours. These stems of foliage were bordered with white and dark lines, and were heightened with white. The ground was the natural colour of the wood,—red Baltic darkened with oil, then varnished. This resembled in tone the gold ground of the Byzantine mosaics. The cornices were red, and blue in panel. There were twenty-four windows filled with stained glass in the clearstory; these, as well as the lower windows, had colonnettes of black marble, which tended to lower the colouring. The pavement was Veneziano, and the pulpit of Porto-Venere, with mosaic inlays. The organ and other furniture were painted, so that there was no part of the building uncoloured. In this church, and at the Church of St. John, Hawarden, which was decorated many years ago, not precisely as he directed,—for the incumbent, who was his own decorator, carried out his own views,—to a certain extent the general principles and maxims just mentioned had been followed.

The President said that Mr. Pullan had raised many interesting points in his paper, which was of especial value at the present day, especially as the subject of the decoration of churches was now an important question. Mr. Pullan had alluded to the church of Sta. Sophia, at Constantinople, which was a work of so much excellence that they might almost be excused for coveting the possession of it. In the course of their forthcoming excursion to France it was hoped that the members would meet with churches of the Byzantine type.

Mr. Penrose said that the subject of church decoration was one which of late years he had studied a good deal, and he envied the lecturer's extensive knowledge of the subject. From his earliest day Mr. Pullan had followed it up, and they might regard him as a master in the art of church decoration. Speaking generally, he agreed in Mr. Pullan's views, but there were a few points in which he would perhaps be disposed to take a somewhat different course, as he thought that Mr. Pullan had not quite given all the credit he might have done to the true value of the tertiaries. He (the speaker) thought that in this climate there was something more to be said in favour of the tertiaries than had been brought forward. In the magnificent climate of Italy and Greece, where the openings could be reduced to a very small compass, strong colours might be used to a much greater extent than in England, and in this country they must feel the propriety of adopting a somewhat lower key of colour. Even English birds were not so brilliantly dressed by the hands of the Creator as those in some of the southern parts of Europe. Altogether, he wished to plead for the tertiaries to a great extent, but, at the same time, by giving undue weight to the natural quality of the climate the colours might be toned down too much. He was extremely glad to hear from Mr. Pullan that the strong colours should be kept comparatively small, for that was quite in accordance with nature, the most brilliant points of colour being generally the heads and extremities. He had usually noticed that the most successful effect in colour was produced by bringing the work through a number of gradations to a high point, and then going off to a contrast; and this was a very important point to consider. With regard to colouring of Greek temples, a subject to which he had directed special attention, he believed that the columns and walls of the Parthenon had been toned down to something like a cream colour, as the brightness of the marble would otherwise have been insufferable. They had indications of the toning down of the colour in this building from various writers, but he thought only to a moderate extent. The effect of a landscape would be quite spoilt by a snow peak or glacier being brought close to the eye, as the snow was quite insufferable; but a white rock would be quite right, and not destroy the harmony, so that the difference between the rock and the snow peak or glacier was all that would be found essential to the toning of the colours. With respect to the employment of stained glass, this was a difficult point to settle at the present day in a building the walls of which were thoroughly painted. He was pleased to hear the lecturer pay tribute to the merits of Mr. Gambier Parry and Mr. L'Estrange for their works at Ely and elsewhere. In regard to the church at Baveno, Mr. Penrose said, in conclusion, that he had seen it when it was partly built, and was sure that it fulfilled its early promise. Of the decoration he knew little; but he heard that it was extremely beautiful, and gave immense pleasure to all who saw it.

Mr. H. Stannus did not think it within the province of the student to take up the gauntlet thrown down by such an eminent authority as Mr. Penrose, a man of world-wide renown. They were present merely as students to learn from the ripened judgment of one who had seen many, if not all, of the finest specimens of coloured decoration in the world. Reference had been made to the early Christian pictures in the Catacombs; they were all of a character to show that the religion of the early Christian was a hopeful thing, there being an absence of diabolical representations. He was disposed to think that in the treatment of colour the satisfactory method was to have the gold ground put on first, and then to paint up to it. He deprecated the manner in which Mr. Pullan had made allusion to the South Kensington Library, which he considered, in connexion with art, was the finest in the world.

Mr. Scott did not think that colour could be used in mouldings, its use in such case being very injurious. Their effect ought to depend on light and shade.

Mr. Ferrey inquired whether it was not as well in some cases to leave the ground of the ashlar in a ceiling perfectly exposed.

Mr. Pullan, in reply, said that in some cases it would spoil the ceiling to coat it with colour. In many cases, where they had a nice mellow warm tone in the ashlar, it was sufficient to put the diapers on the ashlar instead of covering it with a coating of colour. Mouldings in a certain position required to be relieved by colour, and a skilful decorator might produce an effect of depth in mouldings by means of colour, an effect which the architect had omitted to produce.

Mr. Payne took exception to the habitual depreciation of the colours of Nature in England. He had travelled in many countries, but on a fine day he believed that in many districts,—for instance, Dorking and other parts of Surrey,—the colours of Nature were as bright as in Italy.

Mr. Pullan, in reply, said that with regard to practical decoration by means of decorative materials, that would be very desirable if the materials were available, but until marble could be obtained at a reasonable rate they must fall back upon painting. Many looked with horror upon veneering in marble, but he might tell them that he had found veneers of marbles of the richest character while digging at the Baths of Caracalla. Considering that this was one of the finest buildings in the world in point of art decoration, and as veneers of the richest marbles were evidently employed, the fact ought to be borne in mind by any one who might be disposed to sneer at veneer decoration.

WATER-WASTE PREVENTERS.

Now that the extension of the constant supply system by the water companies necessitates the use of apparatus for the prevention of waste of water, additional attention has been directed to the various appliances in the market for accomplishing this object. The majority of those in use consist of small-supply cisterns of sufficient capacity to contain a charge suitable for flushing the water-closet (*i.e.*, one and a half to two gallons), fixed on the walls of the closet or urinal in any convenient position, and fitted inlet and outlet valves so arranged that when one is open the other is shut, thus preventing the discharge of a greater quantity than the contents of the supply cistern at one time. These are, however, open to the objection that, besides occupying considerable space, and forming unsightly excrescences on the walls against which they are fastened, they are liable to overflow and flood the room, from the inlet valve leaking. There is one manufactured by Messrs. Pontifex & Wood, of Shoe-lane, consisting of a cylinder furnished with a small four-way cock, which directs the water supply alternately against either side of a movable piston, thus expelling the full charge on the other side of the piston into the closet, which is free from the above objection. This apparatus is fixed under the seat of the closet, and worked by raising the handle that empties the pan; and while thus placed in the most convenient position, it has also the advantages of extreme simplicity and nonliability to derangement, and at the same time its construction renders it impossible for it to overflow and so cause annoyance and damage. This water-waste preventer has been in the market some little time, and we understand is giving satisfaction.

THE METROPOLITAN WATER SUPPLY.

AT a meeting held recently in Southwark, for the purpose of hearing from Col. Beresford, M.P., an explanation of the principles of the Bill now before the House of Commons, which proposes to rest the management of the metropolitan water supply in a Government Commission, the hon. member made some statements as to the extent and character of the supply. After observing that he had been induced to take action in the matter by what he had seen and heard of the distress and sufferings caused in Bermondsey, in 1872, by what was virtually a water famine, he stated that the evidence which had already been laid before the Committees of Parliament was to the effect that purity of water and security of supply could only be obtained by a constant instead of an intermittent supply. He then remarked that the object of his Bill was to take the supply of water to the metropolis out of the hands of private companies, and place it under the management of a commission, composed of able men, to be appointed by the Government, to secure a constant supply of pure water to every house, and to have hydrants, to which hose should be attached, and of which the police should have the keys, at distances varying from 50 to 100 yards apart. In Manchester, Liverpool, Berlin, Paris, Hamburg, and other places, the water-supply was now in the hands of the public authorities, and in every case was better managed and less expensive than when it was in the hands of private companies. He next made the statement that the official report of the inspectors showed that 110,000,000 of gallons were supplied daily by six of the water companies, and this supply was independent of the Kent and

New River Companies, who had made no returns. The number of houses supplied was 516,562, of which only 61,964 were on constant supply. The total number of persons supplied was 3,699,363. There were 516,562 miles of mains, 3,544 of which were in the Metropolitan District, and only 666 constantly charged with water. There were 2,542 hydrants, and the number of fire-plugs in 1873 (there was no return for 1874) was 43,666. He added that he expected to be opposed by the water companies, although not by the Government. The opposition of the water companies, however, would, he had reasons to know, be only in the hope of increasing the dividends they would receive if their properties were taken by the public; but this opposition would not be either a justifiable or a wise one, for the Bill provided that they should receive fair compensation.

A NEW ELECTRIC RAILWAY SIGNALLING APPARATUS.

A NEW electric interlocking and blocking signalling apparatus, which has been invented and patented by Mr. W. R. Sykes, an electric engineer in the service of the London, Chatham, and Dover Railway Company, has this week been introduced in working the traffic of the Metropolitan Extension of that Company's line, the apparatus having for some time been in course of construction at the Brixton works of the electric and signal department. It is claimed for the invention that whilst it will be the means of preventing collisions arising out of the present imperfect system of signalling between station and station, it will at the same time relieve, to a considerable extent, both the physical and mental labours of signalmen, and that by the electric connexion of the apparatus between station and station, the moving of levers, and starting or passing trains by mistake on the part of signalmen, will be rendered almost impossible.

A MODERN INDIAN PALACE.

THE new palace, which has been in course of erection for the Maharajah Scindiah of Gwalior, is fast approaching completion, and is expected to be finished in about three months. The public have been excluded from the precincts, so that there may be no hindrance to the progress of the work,—the cause of this haste being a hope that the Prince of Wales will visit Morar, and become the first guest entertained in the new structure. The *Madras Mail*, in describing the building, says that, as seen from a distance, it reminds one of the Tower of London, an edifice which we should scarcely have thought Indian architects would have selected as a model for reproduction in their climate. It is situated at the south-eastern end of Fortress Gwalior, adjacent to Scindiah's native city, the Lushkar. It is placed in the midst of handsome grounds, "abounding in tasteful landscapes of fell, lake, waterfall, and fountain, and is in the Italian style, in the form of a large quadrangle, with a beautifully laid-out garden in the centre." The entrance is on the southern side, and the central portion of this front rises like a tower above the rest of the building. The structure is surmounted by four turrets at the angles, but its apparent substantiality is merely a cloak for flimsiness, and it is far from rivalling in strength the old castle on the Thames. Exteriorly, "Scindiah's Palace" is beautifully done over with white stucco, but so flimsy is the masonry work underneath that a strong wind recently blew down some massive iron railings, that looked most firmly imbedded in the wall of an upper front verandah.

UNINHABITABLE HOUSES.

THE Home Secretary, in his late post of chairman of a quarter sessions in Lancashire, had, now it appears, every opportunity of becoming acquainted with the horrible condition in which the artisans' and labourers' families dwelt, in his own neighbourhood; for, at the annual meeting of the Manchester and Salford Sanitary Association, Dr. Morgan stated that, after trustworthy inquiry, he found there were no fewer than 80,000 people in Manchester and Salford living in uninhabitable places, by which he meant places where it was impossible to enjoy life. Indeed, to use the word "enjoy" in relation to these conditions of living was to be guilty of an absurdity. Such people hung on to life, as it were, by a very delicate thread.

THE COST OF OUR PAUPER CHILDREN

A RETURN ordered by the House of Lords has just been issued, showing the number of orphans and deserted pauper children boarded out in the different unions of England and Wales, and the average cost per week to the ratepayers of each child; together with the average cost per week of a pauper maintained in a workhouse in the various unions.

From this it appears that the highest average cost per child is incurred by the ratepayers of Dorking, Surrey, who pay 9s. a week each for three boys on board the *Goliath* training ship; and, next to them, by the ratepayers of Kingston, Surrey, who had, on the 1st of July, 1874, to pay 5s. 5½d. per week for each of five children boarded out; while the lowest weekly sum paid by any district is 1s. and a loaf of bread contributed to each of four children by the ratepayers of Droitwich. Northampton stands third highest on the list, with an average weekly cost of 5s. 2d. per child; and St. George's, Middlesex, is fourth, with 5s. 1d.

Taking the total number of children, irrespective of cost, boarded out in the different counties, we find the following counties in the happy state of not having had any charge to bear under this head at the date the return was made out, viz., the 1st of July, 1874:—Berks, Derby, Durham, Leicester, Monmouth, and Sussex. The union with the greatest number of such children is that of Glendale, Northumberland, with 120; Swansea, with 100, comes second; and Newtown and Llanidloes third, with 79.

Besides the children boarded out within the various unions, there were 1,153 in the Central London District School at Hanwell, costing on the average 9s. 1½d. each, and 682 at Anerley, costing 11s. 9d. each per week. The total number of children boarded out, in addition to the above, was 2,764, at an average cost of 2s. 8d. So that our pauper children cost altogether 1,298*l.* 10s. per week, or 67,522*l.* per annum.

In addition to this, the average number of indoor paupers in the metropolis, for the year ended Ladyday, 1874, was 39,164, the total cost of whose maintenance was, for that year, 488,798*l.*, or at the rate of 4s. 9½d. per head weekly. And the average number of indoor paupers in all England and Wales (*minus* the metropolis), for the same year, was 104,543; the total cost of their maintenance being 1,160,535*l.*, or 4s. 3½d. per head weekly.

Thus it appears that we spend 1,716,855*l.* a year in support of indoor paupers and pauper children, the relative cost being as follows:—

Average weekly cost of pauper children in Anerley and Hanwell District Schools.....	£0	10	1½
Do. do. boarded out in various unions ...	0	2	8
Average cost of paupers in London Workhouses	0	4	9½
Do. do. Provincial Workhouses	0	4	3½

CLEANSING WATER MAINS.

MR. E. DODDS, engineer to the Durham Water Company, has introduced a new self-acting instrument, termed a pipe-scraper. The water of many companies deposits oxide of iron on the inner surfaces of the main and distributing pipes, the effect of which is to reduce them greatly in size.

The mode of operation is this: the pipe is cut, the scraper is inserted, temporary joints are made, and the water is turned on at the highest pressure, which drives the scraper on at great speed. In the first experiment a distance of 300 yards of pipe was thoroughly cleansed in 2 minutes and 20 seconds.

VALUATION OF PROPERTY IN THE METROPOLIS.

IN the House of Commons, on the 2nd inst., Mr. Hubbard asked the President of the Local Government Board whether he could explain the cause of the general increase in the valuation of property in the metropolis, which had occasioned so much discontent; and whether the increased valuation had been occasioned by instructions from the Local Government Board, with or without concert with the Inland Revenue Office; and, if such instructions had been issued, whether he would lay them on the table of the House.

Mr. Sclater-Booth was not aware that there was a general increase in the valuation of property in the metropolis, but there had been an increase in many parts of the metropolis. The cause of that increase was that the quinquennial period had arrived when, in accordance with the Metropolis Valuation Act, a revaluation of all the property in the metropolis had to be made. This valuation would not come into effect until April 5th next, and in the meantime all parties injuriously affected by an increased assessment would have the opportunity of appealing. No instructions had been given by the Local Government Board, who had no jurisdiction in the matter, nor was he aware that any special instructions had been issued by the Board of Inland Revenue; but the Inland Revenue officer, jointly with the overseers of the parish, had a voice in the preparation of the lists which served as the basis of the assessment. His right hon. friend had sent him lists in which the valuations of property in a certain district and of the rents, as made by a private surveyor and the overseers, showed very great discrepancies in favour of the occupier, and these would, in his opinion, be good grounds for appeal.

THE SURVEYOR OF WORKS.

IN the House of Commons, on the 2nd inst., Mr. Dillwyn called attention to the mode,—partly by salary and partly by commission,—of paying the Surveyor of the Office of Works, and moved that such a mode of paying a public officer was undesirable. Neither should the holder of the office be allowed private practice, as instances might and had occurred wherein the two duties had clashed, and that probably to the disadvantage of the public.

Mr. Lowe, as the person responsible for the arrangement, complained that the hon. member had not given notice of the specific charges he had made, and which of them amounted to positive misconduct. Mr. H. A. Hunt, the present holder of the office, was consulting surveyor, and not an executive officer, and he quoted the report of a Commission appointed in 1869 to inquire into the duties of the office, recommending the mode of payment now adopted. Mr. Hunt was one of the very best officials he had ever come in contact with, and he could not divine what the sources were from which the hon. member had derived his information that he was not acting properly in his situation.

Lord H. Lennox vindicated Mr. Hunt, and said that during the last six years the country had been a clear gainer by the existing arrangement. Mr. Hunt took no business whatever which was antagonistic to the interest of the country, and he would be very glad to give up the commission and be paid by salary only.

Mr. Cowper-Temple bore testimony to the high character of Mr. Hunt, but did not think the existing arrangement as to the payment of his salary was a wise one, and one which could be justified, unless there were exceptional circumstances.

Mr. Hunt has reason to thank Mr. Dillwyn, for the discussion brought him golden opinions from all sorts of men.

REPAIRING A STEEPLE.

THE steeple of the parish church at Westend, Southampton, was struck by lightning on the 12th ult., and a considerable portion of it destroyed. A correspondent of the *Times* says,—"The fall of the remainder being imminent, the church could no longer be used, and it became necessary to pull it down. But how was it to be done? Architects and engineers were nonplussed, and experienced steeple-climbers altogether declined to set foot on the tottering edifice. It was reserved for local talent to design and accomplish the undertaking, which was most successfully carried out on Tuesday afternoon. Spars were lashed to the tower below the steeple which reached a height several feet higher than the steeple (itself 150 ft. high); to the top was fastened a pulley carrying a rope, by which means a noose was run up, and then lowered down till it fell over the top of the steeple; then, with a long and strong pull at the ropes to which the noose was fastened, the topmost portion of the steeple (consisting of a solid block of stone about 6 ft. high) was pulled off. Again the noose was raised and lowered over the truncated cone; but before taking another haul, it was necessary to weaken the ruin by sawing through beams and knocking out bricks on the side towards which it was intended to guide its descent. This most difficult proceeding was carried out most successfully, and at another pull the remainder of the edifice collapsed and fell with grand effect, without causing the slightest injury to any person or to the body of the church. The entire credit of the operation is due to Mr. Haines, builder, of Westend."

THE RYDE TOWN COUNCIL AND PARTY WALLS ABOVE ROOFS.

SIR,—In your last impression, "Admirer of the *Builder*" comments on the recent resolution of the Town Council of this borough on the above subject, and in the previous number you briefly expressed an unfavourable opinion of such resolution: I think it therefore right that your readers should be made aware of the reasons which guided the Council in coming to the conclusion which your correspondent so much condemns.

In Ryde fully 90 per cent. of the dwellings of the working classes are semi-detached, with projecting eaves, and a very large proportion of the houses of a superior class are also semi-detached; indeed, excepting in the business streets, not one per cent. of the houses which have been built since the passing of the "Ryde Improvement Act, 1854," have been erected in rows of three houses or more.

Now, it appears to me, in the first place, that in blocks of semi-detached houses, standing at least 7 ft. apart (there being always a side passage to each house and a division-wall between the passages), there does not exist the same necessity for structural precautions to prevent the spread of fire as in continuous buildings; at the worst, a fire taking place in one house can only extend to one other house, while in the other case whole streets may be burned: besides, the side passages afford ready means for the firemen to pass to the rear of the premises and to attack the fire from all points.

In the second place, all these semi-detached houses have eaves projecting 1 ft. or more; now, there is no power, either in the "Acts of Parliament" or the "Bye-Laws," to compel persons building to corbel out the party wall under the eaves so as to cut off the projecting portions of rafters, slate battens, and fascia; the carrying the party walls 1 ft. above the slates does not, therefore, isolate the combustible materials of each house, as is the intention, and is, consequently, of very little value as a protection against the spread of fire.

In the third place, the so carrying up the party walls materially increases the cost of buildings, *more particularly in the neighbourhood of the sea.* You, sir, as well as your readers who reside near the sea, are aware that the weather penetrates much more through brick and stonework at the seaside than it does in inland places; thus we never think of building dwelling-houses unless all the outer walls are either built with a cavity, or battened, and in order to prevent the wet drawing down chimney shafts, it is a very common plan to bed a piece of lead through the walls and withs of chimneys immediately above the flushing, the lead being turned up inside to catch the water which might penetrate to the inside above such level, and run down the flue; that being so, and in such party walls there being so large an exposed surface in proportion to the bulk of the brickwork, it is necessary to carry lead through the wall, turned down on each side to form step flushings. This, of course, is a considerable addition to the cost, and as the dwellings of the working classes are already much more expensive here than they are in a vast majority of towns, owing, not only to the extra cost of building semi-detached houses, but also to the additional space occupied (a pair having seldom less ground than a plot of 35 ft. frontage, and 100 ft. in depth), and to the fact that the rooms are generally larger, and the houses nearly always six-roomed; it does seem unwise to further increase the cost by a requirement which is of no value whatever from a sanitary point of view, whose value as a protection against the spread of fire in houses with projecting eaves very problematical, and which even if it answered that end perfectly, cannot be nearly so necessary in semi-detached houses as in houses built in continuous rows.

In the last place, I think it must be admitted that party walls carried above the roof in semi-detached houses with projecting eaves have a very unsightly appearance.

These are the reasons which led me to advise the Ryde Commissioners in 1855, and the Town Council during the present year, not to require the party walls to be carried above the slates in semi-detached houses, and they are also the reasons why the resolutions now owing of such relaxations were carried and have been acted upon during the whole of the intervening period, except for about two years, when a party was in power whose policy seemed to be to reverse all the actions of their predecessors.

In reference to the assertion that "there are hundreds of jerry-built houses in Ryde," I would merely say that I have, during upwards of thirty years' practice in my profession, seen a great deal of other towns in nearly all parts of England, and I have never seen a town where the houses, as a whole, are better built, nor any town where the houses of the working classes in particular are so well built.

With respect to the personal references to myself, which are evidently intended to slight and discredit me, I feel that such references made by an anonymous writer are only worthy of contempt, and as such I shall treat them.

Being a zealous advocate for sanitary reform in the days when the *Builder* took a leading part in advancing what was then an unpopular movement, I sought the not very lucrative appointment of surveyor to the town in which I was practising. I retained that appointment for upwards of eighteen years without any inconvenience being felt from my being also engaged in private practice. But at the end of the year 1872 a new party having come into power it was stated to be exceedingly improper to have a surveyor who was allowed to engage in private practice. A resolution was consequently carried to appoint a surveyor who should devote the whole of his time to the office at a salary of 150*l.* per annum; the then Mayor remarking at the time "that he did not suppose Mr. Newman would take the office subject to the conditions, or that there would be one he would prefer." Another leading member of the Council at that time made remarks to a similar effect. I was then, without notice, and before the party in power had any experience of the mode in which I discharged my duties, ejected from an office I had held for the period above stated, under the plea of requiring a surveyor to devote all his time to the duties of his office, and yet before the expiration of two years my successor was employed by the Mayor above referred to as his surveyor in a private matter.

At the annual election in November, 1874, the members of the Council who had resigned in 1872 (on the faith of a distinct pledge), from those who eventually became their successors, that steps should be taken to obtain a Provisional Order to establish the legality of certain proceedings alleged to be irregular, which proceedings have been reported upon by an inspector from the Local Government Board, and also by the eminent accountants, Messrs. Quilter, Ball, & Co., as having effected a considerable saving to the ratepayers, were returned to the Town Council by overwhelming majorities, the pledge to obtain the Provisional Order having not only been ignored, but obstacles thrown in the way of such an arrangement being effected by these "leading gentlemen," and the burgesses having apparently taken this mode of expressing their feeling with regard to such a gross breach of faith.

I may add that my re-appointment to the office of Surveyor to the Borough of Ryde has I believe given every satisfaction to the large majority of the inhabitants, who have no sympathy with many of the acts of the governing body during the past two years.

FRANCIS NEWMAN.

*** We have nothing whatever to say on the personal part of the question, but we cannot accept as a sufficient reason for not compelling builders to take the party wall through the roof, that the houses in Ryde are usually semi-detached, and that the omission is not so dangerous in this case as when the houses are built in rows! If the laws and bye-laws in force would not enable the Surveyor to compel builders to cut off connexion at the eaves they should be made to do so; and as to the admission of water by means of the wall, Mr. Newman knows very well how to prevent that.

PROGRESS.

SIR,—Although the liberal-minded throughout the world are familiar with the word "progress," perhaps there is not one person in a thousand who, if interrogated, could give other than a vague notion of what he means by it. As well as one can gather from those who do use the word, this would appear to convey to them a gradual and continuous improvement through time, continuous improvement without climax, without finality, without a goal.

If any progress be made under such hazy leading, it must be purely accidental, for he who has no definite end in view must be aimless, and can only by chance, by a fluke, hit the centre "right." It is on this account that, although the word progress is in almost everybody's mouth, there is so little real progress made in the world; for, paradoxical as it may appear, no sound progress can be made till men have those definite and right ends in view, beyond which, when attained, there can be no progress; when, in fact, the only possible change that can be made must be a retrogression, a falling back. Just as in life, there is a topmost height, which, once attained, the remainder must be a gradual descent, a going "down hill": so there are ultimate conclusions to be arrived at by right reason which incontestably demonstrate that rectitude, perfection, and beauty, are finite aims,—are qualities inhering in certain definite conditions, from which any departure must be for the worse, towards error, imperfection, and ugliness, so that when the world shall have attained to rectitude of life, perfection in work, and the beautiful in art, it will be unable to go farther without faring worse; it will either have to remain in the state to which it shall have attained, or to retrograde. To make sure progress, therefore, we must have clear and correct views in respect to those conditions in which these finite qualities inhere.

Although we might show that this haziness of view in respect to progress impedes progress in all departments of inquiry, there is no department which suffers more than art. For every artist and critic abreast of the scientific method in thinking, there are hundreds whose minds are in the nebulous state, and who resist all attempts to treat art questions in any but an impulsive manner. The consequence is that although there is no country in the world in which so much is and has been written about art, there is none in which art makes so slow progress; for criticism is, without method, illogical and contradictory, and being without method, it is too voluminous to be of any practical value.

Vapouring must be the rule till criticism gets back-bone, and imperfect, and haphazard work, till artists have distinct and right ends in view.

There is a prevailing notion that scientific definition derogates from the inspiration of the artist. He would attribute all success in art to the possession of the divine afflatus. Yet seeing how often, very often, this doctrine misleads him into very bad work and very great absurdities, we wonder that he has not long ere this had some misgivings as to its correctness. He ought also to have long since perceived that good work proceeding from intuitive promptings assumes definite conditions of form and colour, and that where these definite conditions recur there will be success. It matters little, therefore, whether the results are sequent upon intuition or conscious principle. Only seeing how seldom the artistic intuition leads aright, the painter and sculptor might try whether conscious principle would not lead them better.

But where shall the artist get his principles? that is the question. Assertion and counter assertion is not reasoning, nor does it lead to scientific enunciation. We shall get very little for our guidance while one-half of the artists and critics are declaring "it is," and the other half that "it is not"; or while artists and critics think that the right in art is an obvious thing requiring little or no effort of the understanding to determine, whereas the principles of art require the most subtle mental analysis for their determination, and are only to be enunciated by patient and deep study. In fact, we have to learn in England what "thorough" means in the study of art as in some other subjects; and till we thoroughly understand what "thorough" means, the country will be content with the position it occupies; but there will be no progress.

W. CAVE THOMAS.

THE DUOMO OF FLORENCE.

SIR,—Have the merits of the Cathedral of Florence been fully recognised by students of architecture? It is my impression that the Cathedral has been slighted while the beauties of its neighbouring campanile have been minutely and eloquently described. In order to perceive more clearly its many excellencies, the student could hardly do better than contrast the Florentine Cathedral with St. Peter's, at Rome. Greatly inferior in size to the world-famous creation of the Popes, the grandeur of the impression it produces is remarkable. The Duomo of Florence is sublime, because it is the perfect expression of a single lofty idea, unincumbered by any irrelevant connexions. However magnificent the dome of St. Peter's may be, its association with the enormous nave and transepts that it crowns is altogether arbitrary. If it dominates them when seen from an extreme distance, it is hopelessly lost in the midst of their mighty extension when it is viewed from any point sufficiently near to distinguish the different features of the church. This is by no means the inevitable result of mere vastness of size, and therefore not to be reckoned a fault at all. The church might have been twice the size that it is, and yet it would not have been necessary to retreat to the distant horizon in order to view it as a whole. The fault of St. Peter's is a fault of conception, and no dome, however magnificent, could give unity to the dissimilarity so evident in the vast building beneath it. On the other hand, the merit of the Florentine Cathedral is nowhere more conspicuous than in the strict subordination of its several parts to the great central feature. Instead of lessening in any way the value of the dome, either by want of connexion or undue prominency, they enable it with perfect effect, while crowning them, to unfold to the utmost the beauty of its lines. In this respect, I believe, that of all the buildings in Europe, the Cathedral of Florence alone does full justice to the dome. The student of architecture who has not stood long and often in that famous piazza of Florence, where, too, are the baptistery and the bell-tower of Giotto, is still in ignorance of the real power of one of the sublimest features of his art. Neither in London, nor Paris, nor Rome, but in Florence only is the dome beheld absolutely triumphant. The stranger who leans on the balconies of the Monte Pincio looks towards what he believes to be "the grandest church ever built by man painted on God's loveliest sky"; but he sees it from a great way off, and the dome of St. Peter's looks no larger than a distant balloon. Only let him hasten to examine it close at hand, and instantly he has to surrender the completeness of his distant image, and thenceforth only knows the church in fragments. He wanders round the vast structure, making futile efforts to catch a glimpse of the dome, ignominiously lost to sight behind the lofty roofs. The cathedral of Florence exemplifies many excellencies. It attains to astonishing grandeur of expression by the simplest means. It has not one extraneous feature. Beauty of detail and costliness of material have little to do with its effect. The variegated marbles might be stripped from its walls, but it would still remain in outline, mass, and proportion the same grand embodiment that it had ever been. Simplicity, dignity, and breadth are everywhere conspicuous. It can boast of elaborate detail in its exquisite doors and windows, but ornament is never suffered for a moment to disturb the supremacy of the above-named great characteristics. St. Peter's, if it astonishes the general beholder, offers little or nothing of value to the thoughtful student; while the Duomo of Florence, if intelligently considered, certainly becomes one of the most suggestive buildings ever reared by man.

S. D.

CHARGE OF FRAUD AGAINST A SEWER CONTRACTOR.

AT the last meeting of the Shoreditch Vestry, a serious allegation of fraud was brought forward. The circumstances, according to the statement made by the Vestry Clerk, are these. The London and North-Western Railway Company was required by Act of Parliament to make a new thoroughfare, Finsbury-avenue, in lieu of the old one that was stopped up and appropriated for their purposes, and to properly drain and pave the thoroughfare; and it appears that the engineer to the Company suggested that as the sewer was to be put in to the satisfaction of the Vestry, it would be better for the Vestry to put the sewer in themselves and charge the Company with the cost. It was resolved by the Vestry to carry out the work, and Mr. Griffiths obtained the contract at scheduled prices. The Surveyor gave Mr. Griffiths the order to construct this sewer, and after that to pave the thoroughfare; and the sewer was constructed, as was supposed. Mr. Griffiths not undertaking this sort of work, gave it to a man of the name of Potter, who is now carrying out a large contract for the Hackney Board of Works. Mr. Griffiths undertook to find all the material, and Potter undertook to dig the trench, find the timber for strutting the work, and go for the bricks to Mr. Griffiths's brick merchant, as he required them. The work was supposed to be done during the day, and it was superintended two or three times a day by the surveyor and the assistant surveyor; but for some reason or other the works were carried on after the usual hours till something like eight o'clock at night. The men seemed to know there would be no inspection then, and their plan it seems was to rush away with 4½ in. work and cover it in, leaving a ring of 9 in. work showing, so that the sewer is to a great extent 4½ in. work instead of 9 in. The ground has been opened, and the matter has been referred to the Paving Committee for inquiry as to who is responsible for passing such work. The trick was made known by a man who had been engaged on the work.

One member of the Vestry reasonably enough thought it strange that Mr. Griffiths had not noticed the number of bricks that had been used by Mr. Potter.

THE MANNERS MEMORIAL CHURCH.

THE designs of Mr. W. Oldham Chambers, architect, of Lowestoft, have been accepted for the church in Newmarket, to be erected in memory of the late Lord George Manners, son of the Duke of Rutland. The church will be commenced immediately.

WORKMEN'S CLUBS AND SOCIAL REFORM.

SIR, — The Council of the Working Men's Club and Institute Union, in whose name I write, are convinced by every day's experience that workmen's clubs and institutes, properly managed, are calculated largely to promote the welfare of the people of this country.

There could hardly be a more important aim than that of enabling the working population to deliver themselves from the evils of public-house resort, and at the same time to find opportunities for mental culture, for refined recreation, and for the judicious investment of their savings.

These objects are being accomplished by many of the institutions, the establishment and management of which the Working Men's Club and Institute Union seeks in various ways to promote throughout England. The Council, therefore, invite the co-operation of all social reformers and philanthropists of whatever class or profession. They offer copies of their publications, their advice, and their personal services, without charge, to every one interested in this work.

They particularly desire, through the publication of this letter, to obtain the services of "corresponding members" of their Society. In other words, the Council invite men of all classes, clergymen, laymen, artisans, and others, to keep the Council informed from time to time of any opportunities that may offer themselves for the establishment of workmen's clubs and institutes, or for the improvement of those already existing; also to acquaint them with the names of persons willing to take part in setting such institutions on foot.

I hope that many of those who may read this letter will communicate with us.

HODGSON PRATT, Vice-Chairman.

THE "GRINDING MONEY" QUESTION.

SIR,—Will you kindly permit me space in your journal to correct a few errors made by a person who signs "A Member of the Association of London Builders" in your issue of the 3rd instant. First. It states in former times two hours' notice was only given to carpenters when discharged. In those times we were paid by the day and always received two and a half hours' notice, which was never disputed by the trade. Secondly. He announces that "grindstones are now kept constantly revolving,'—that is only in shops where machinery is kept; not a word is said about those who are discharged from buildings and out-door jobs; certainly there is not the same convenience for them, and at the present time there are shops where the grindstones are in very bad order, and some with no means of grinding whatever. But this two hours' notice question does not not apply to grinding only, but to the putting in order of the whole of our *kit*, and when twenty or thirty men are discharged at one time, two hours is not sufficient. Thirdly. It is stated "the Carpenters' and Joiners' Union" have taken this case up. I assure you it is not a Union question, but is taken up by the trade at large, and, I am pleased to say, well supported by them. We have also the support and sympathy of every branch of the building trade. Fourthly. It is stated the master builders cannot see the justice of giving two hours' pay on discharge, and have declined to discuss the question. Now, it seems strange that the principal firms should give the two hours, and only the small and insignificant ones refuse to do so. I trust you will publish this, in order to give the public an idea how the question stands.

J. R. BOUTCHER.

Miscellanea.

New Asylum in Boulogne.—Lately the Maire of Boulogne laid the foundation-stone of the new Communal Asylum. The buildings now used for that purpose form a portion of the Hospital St. Louis, and are required by that establishment for legitimate hospital work. The want of a better asylum and of a convalescent hospital had been a question which successive municipal councils were unable to solve for want of funds until 1864, when M. Louis Duflos, a wealthy gardener, died, leaving to the town of Boulogne six acres of land situated at the corner of the Rue de la Paix and the Rue de la Colonne (since named the Rue Louis Duflos), and valued at 8,000*l.*, with the proviso that an establishment should be built thereon. In addition to this welcome gift he also left another piece of land and 400*l.* to build a free school for both sexes. The new asylum will contain large and airy accommodation for 240 infirm and aged men and women. The sexes will be in separate buildings, each of which will have its own garden, yards, &c. The estimated cost of the buildings, which will occupy nearly four acres, is 24,000*l.* The contractors have undertaken to deliver the asylum finished by the 1st of April, 1878. The remaining two acres are reserved for a convalescent hospital, which will be taken in hand later. So soon as the asylum is removed from the Hospital St. Louis, the latter is to be restored at a cost of 10,000*l.*

Restoration of St. Alban's Abbey.—Sir Gilbert Scott has just concluded his report to the Marchioness of Salisbury upon the above beautiful and venerable building, the restoration of which her ladyship has taken under her patronage. Referring to the Eastern or Lady Chapel, and the ante-chapel, Sir Gilbert Scott reports:—"When we come to consider the present condition of these charming chapels, once resplendent with architectural beauty, and replenished with objects of the highest interest and richness of decoration; their ceilings glowing with colour, and rendered instructive by the sacred subjects they illustrated; their windows filled with stained glass, their floors enriched with encaustic tile and marble, and made venerable by sepulchral brasses, while in the midst stood the beautiful shrine of the proto-martyr's friend, of rich stonework below and jewellery above; and around it, in the ante-chapels at least, five altars with their accompaniments, and further on, in the Lady Chapel, the high altar of St. Mary, with the smaller altar in the vestry dedicated to the Saviour and His transfiguration,—when, I say, we come to consider the present condition of this once lovely group, how melancholy is the contrast."

Mr. Docwra.—The Emperor of Austria has conferred the Knight's Cross of the Order of Franz Joseph upon Mr. Thomas Docwra, contractor, of London.

Jedburgh Abbey.—Operations are to be forthwith commenced with the view of putting these ruins in a satisfactory condition. The Marquis of Lothian visited the Abbey the other day in company with Mr. R. Anderson, architect, who has acted as his adviser in the matter, and an understanding was then come to as to the portion of the work to be first taken in hand. According to the *Scotsman*, the partition wall and roof will now be removed, so as to disclose the proportions of the original structure; and it will then be necessary to clear away a thick incrustation of paint and plaster in order to show the stone-work of the piers and arches. The next thing to be done will be to take steps for preventing the decay of the ancient walls. What Mr. Anderson now proposes to do is to remove the topmost course of masonry, to lay down a sheet of lead, and then restore the wall-head in such form as may seem desirable. In this way the interior of the walls will be effectually protected, except in so far as moisture may trickle in through the sills of the clearstory or the flag-stones of the triforium, and in the course of next winter several expedients will be tried with the view of ascertaining how this minor danger can best be obviated. When these more urgent improvements shall have been accomplished, the insecure condition of the central tower will claim attention.

Damage to the Parthenon.—A correspondent of the *Athenæum* writes:—"Those interested in ancient historical relics will be sorry to learn that the Parthenon at Athens is being shockingly wrecked and ruined. Tourists every season visit it, knock off limbs of statues, pull down portions of the frieze which Lord Elgin left, and, clambering up with hammer or stone, break off bits of the Doric capitals. These capitals, it will be remembered, are painted with rows of leaves, which are supposed to be bent double under the weight of the architrave, and relic-hunters seem to be especially fond of chipping this portion of the masonry. Not a fortnight ago a tourist knocked off the finger of one of the finest statues, as he wished to add to his private collection of curiosities at New York. The Greeks have determined to protect the building as much as possible, and to store up in a safe place the most interesting and valuable of the fragments of sculpture which lie all over the place, exposed to rude winds, 'and men more savage still than they.' They have almost completed a museum at the back of the Acropolis, but the work has come to a standstill for lack of money. This fact has only to become known amongst artists and art-lovers in this country, and doubtless immediate steps will be taken to preserve that noblest remnant of Greece in her glory—the Parthenon."

Presentation of Gas Standards to the Lincoln Cathedral.—On Saturday last the formal presentation to the Dean and Chapter of the gas standards which have been placed one on either side of the altar enclosure, and the cost of which has been defrayed by a private subscription among a number of the attendants at the cathedral services, took place. The standards, which have been manufactured by Messrs. Barkentein & Krall, of Regent-street, London, are between 16 ft. and 17 ft. in height from base to summit, the bases being 3 ft. 4 in. in diameter, each supported by four ornamental buttresses, terminating in lion's claws. The buttresses communicate with the centre shaft, which at its thickest is about 6 in. in diameter, by open fret work, and the shaft gradually narrows till it terminates in a cross with five lights branching above it. On each standard there are four collars or rings of lights, the largest of these collars being 4 ft. in diameter; and there are also twelve small branches of three lights each. The smallest ring of lights is 2 ft. 9 in. in diameter. The circular shafts are ornamented with flat pilasters, and the branches and upright pillars are also tastefully designed. The whole of the work is in burnished brass.

Fresh Water from the Sea.—An attempt to supply the pier refreshment-room at Cleethorpes with fresh water from the bed of the sea has just been completed successfully. Men have been employed under the pierhead 400 yards from high-water mark, boring through to the rock, with which they came in contact 72 ft. from the surface; and having penetrated into this chalk stratum 21 ft., a flow of pure fresh water was obtained, yielding 100 gallons per minute through a 2½-in. pipe, and forcing it 16 ft. above the ground.

Death of a Contractor.—Mr. Bedford held an inquest at St. Martin's Vestry-hall last week, upon the body of Mr. George Scott, aged sixty-six, a contractor. It appeared that on the morning of the 19th ult. the deceased was engaged in superintending the excavating work going on for the foundations of a new building at the corner of Tichborne-street, Haymarket. Several carts laden with bricks and earth were passing to and from the hole cleared out to receive the concrete, when, as two of these carts were passing each other, the deceased, from some unexplained cause, got jammed between the wheels of the carts. He called out for assistance, and some of the workmen came up and extricated him from his position. He was then insensible, and groaning very much. He was placed in a cab and conveyed to Charing-cross Hospital. Upon being examined by the house-surgeon it was found he was suffering from concussion of the spinal cord and dislocation of the joint of the right hip. Inflammation of the lungs set in, produced from the shock to the system from the injuries received, from which he died. A verdict of "Accidental Death" was returned.

Ardingly College Chapel.—St. Saviour's College, at Ardingly, where public school education is given on moderate terms to the sons of poor gentlemen, tradesmen, small farmers, mechanics, and others of limited means, advanced another stage last week, when the first stone of the chapel was laid by the Bishop of Chichester. The college of St. Saviour, of which the first stone was laid by Earl Granville in 1865, we have already illustrated. The chapel, to which the interest of those present on the occasion was especially attracted, will be 100 ft. by 35 ft., with a carved and panelled wooden roof, 54 ft. high inside. The nave will be divided from the chancel by a tower 123 ft. high from the floor. The lantern inside will be 85 ft. high. The eastern window will have seven lights, those at the side four lights. The style of the chapel is the Early Geometrical. There is to be a gallery running round three sides above the ante-chapel and nave for the accommodation of the infants and dames. Mr. Carpenter is the architect.

Temperance Hall, Guildford.—The Rev. Basil Wilberforce, rector of St. Mary's, Southhampton, laid the foundation-stone of a temperance-hall last week at Guildford. The site was given by Mr. F. Apted, Holmesdale; it will seat 300 persons, and cost 1,600*l.* The architect, Mr. Wonnacott, of Farnham, has to bear the reproaches of an old lady, who sent a cheque in aid of the work, that she thought the teetotallers "might have been satisfied with a building of less architectural pretensions." The Mayor (Mr. E. T. Upperton) was present, not on the ground that he liked teetotalism, to which he declared himself opposed, but because he had a horror of drunkenness. The Rev. R. Trimmer, however, declared emphatically in favour of the cause, and said the hall was to be a public-house but no drink was to be had in it. Nearly 70*l.* was raised, and we are told by Mr. Gill that some thought it down-right foolhardiness to think of raising 1,600*l.* in Guildford for a temperance hall.

New Public Garden for Manchester.—We hear that a scheme for forming a winter-garden, on a grand scale, and a good public garden generally, is now being developed at Manchester. The movement is directed by gentlemen who aim at creating an establishment at once instructive and elevating in its influences. According to the *Garden* its history is briefly this: Mr. Ellis Lever originally bought Mr. S. Mendel's establishment at Manchester, and then offered it to the Town Council for the same sum he had paid for it, offering at the same time 20,000*l.* towards making a public garden of this famous place, which should be in all respects worthy of the city of Manchester. The Town Council declined the offer, and since then Mr. Ellis Lever has himself taken the matter in hand, and, in connexion with a gentleman of much experience in like matters, is now engaged in carrying out the scheme we allude to, and of which we hope in due time to give further particulars.

The New Tyne Bridge at Newcastle.—The new bridge, which is being built by the River Tyne Commissioners across the river between Newcastle and Gateshead, was successfully swung on Saturday last. The operation was effected very easily, a single winch worked by hand-labour being employed, and the operation occupied only about an hour and a quarter.

Over-crowded Dwellings.—A very important question in reference to the over-crowding of private dwellings has lately been disposed of by the Court of Queen's Bench. It arose in the case of the Guardians of Rye Union, appellants, *v.* Thomas Paine, and the opinion asked of the Court was, whether a house proved to be overcrowded, but by only one family, so as to be prejudicial to health, as had been proved, was a nuisance within the 19th section of the 29 & 30 Vict., c. 90, having regard to the 14th section of that Act, and sections 8, 10, 12, and 29 of the 18 & 19 Vict., c. 121. The Court gave judgment in favour of the Sanitary Authority, and their decision will for the future relieve the justices of any difficulty in convicting in cases of overcrowding prejudicial to health, whether or not the overcrowding is occasioned by members of the same family.

Whaley Bridge Mechanics' Institution and Public Hall.—The laying of the foundation stone of a new Mechanics' Institution and Public Hall for Whaley Bridge, on Saturday, was made the occasion of public rejoicing. The designs have been prepared by Mr. Samuel Howard, architect, of Poynton. The structure will consist of a basement and two upper stories. The façade is in the Italian style. The ground-floor, to which access will be obtained by the main entrance, will contain library, class-room, committee-room, and reading-room, the latter being 17 ft. by 30 ft. The upper story will be used as a public-hall, and will be 56 ft. long by 30 ft. wide. The contractor for the building is Mr. Stafford, of New Mills, and the total cost of the structure is estimated at about 1,500*l.*

Burlington Chapel, Ipswich.—The plans for the alteration of Burlington Chapel have been prepared by Mr. Brightwen Binyon, architect, and tenders submitted upon them. The present schools will be thrown into the chapel and the roof raised 7 ft. so as to admit of galleries being put all round the building, which will make the sitting accommodation about 1,060 instead of between 400 and 500 as at present. The following tenders for the work have been received:—

Luff	£4,135 0 0
Connold	4,350 0 0
Girling	4,248 0 0
E. & E. C. Gibbons	4,210 0 0

The committee have not yet decided which tender to accept.

The Khedive's Geographical Society at Cairo.—The above society was inaugurated lately, by a first meeting, under the presidency of Dr. Schweinfurth. The president, in the course of his address, said,—The Khedive of Egypt has himself summoned us together. He desires, in the interest both of science and of his country, to found at Cairo a Geographical Society, similar to those which exist in the chief capitals of the two hemispheres, an institution that shall stand as a centre and starting-point for the efforts that are being made to complete our knowledge of the earth,—of Africa in general, and of the national territory in particular. To centralise and encourage these shall be our aims.

Terms of Agreement.—At the Hartlepool County Court, before Mr. E. J. Meynell (judge), the case of Wright *v.* Gill was disposed of. It was an action to recover possession of a house and shop, in York-street, West Hartlepool, under a written agreement. The evidence having been dealt with last court day, the Judge now gave his decision. It may be explained that the agreement in question bore date May 18th, 1874, the property being let from "quarter to quarter," for 5*l.* 10s. per quarter, the tenancy to commence on the 23rd of May, determinable by a written quarter's notice, and that such notice was given, to determine, on *May 13th*, 1875. It was also shown that the rent was always paid on the regular quarter days.—His Honour held that the notice given was insufficient.

New County Police Station Wycombe.—The new station which is to be erected at Wycombe, in place of the old station, in Newland, for the County Constabulary, will be built on a site belonging to Lord Carington, adjoining the Hughenden-road, and opposite the Temple Farm buildings. Mr. C. Carter, of Great Marlow, is the architect. The building will be of red brick and Bath stone, and will contain a court-room, 40 ft. by 22 ft., magistrates' retiring-room, witnesses' room, guard-room, and six cells. There will also be residences for a superintendent and inspector.

The New Cemetery, Wellington.—This new cemetery has been opened. It is situated on a plot of ground about 6 acres in extent, nearly one-half being consecrated. The two chapels are placed in the centre of the ground, and are connected by a covered carriage drive over which rises a tower and spire, 90 ft. high. Each chapel is 38 ft. long by 19 ft. 6 in. wide, and is furnished with benches, bier, desks, &c., stained and varnished. The buildings have been erected at a cost of about 2,500*l.* Messrs. Paterson & Sons, of Wellington, are the contractors. The laying out of the grounds has been carried out by Mr. Jones, of Wellington. The whole of the works have been executed from the designs and under the superintendence of Messrs. Bidlake & Fleeming, architects, of Wolverhampton; Mr. B. Shaw, of Wellington, being the clerk of the works.

The British Orphan Asylum, Slough.—The new wing to the building was opened last week. It was at the Midsummer meeting last year that the subject was prominently brought before the supporters of the institution, soon after which the work was commenced, plans having been prepared by Messrs. Edgington & Summerbell, of Windsor, the builders being Messrs. Fassnidge, of Uxbridge. The new building consists of two dormitories, each 68 ft. by 20 ft., and a play-room on the ground-floor of the same size, exclusive of bay windows. The cost has been about 3,000*l.* The new building is in the style of the older part of the building, and will give accommodation for about seventy children; but one of the main purposes of the wing is to relieve the other part of the building rather than to make a corresponding increase in the number of inmates.

Trade Dispute in Cornwall.—A very serious trade dispute broke out recently between masters and men in the great Cornish china-clay district, of which St. Austell is the centre. Of late the china-clay market has been overstocked, and the prices of the inferior qualities have had a serious fall. In consequence of this the employers gave notice to their men that instead of 2s. 6d. per day of eight hours, the amount at present paid, the wages would be reduced to 2s. 3d. The men threatened a strike, and last week upwards of 1,300 dropped work, raking out the fires in the clay-drying floors, and throwing about fifty works completely idle. The dispute has since been settled, the masters having consented to open their works on the old terms.

The Soldiers' Huts at Woolwich.—Since it was publicly notified that the soldiers' huts on Woolwich-common were undergoing repair, with a view to the return of their former occupants, or as many of them as might feel disposed to do so, the attention of the authorities at the War Office appears to have been called to the subject, and it has been determined to remove the cottages altogether. It is understood that their site will be occupied by six blocks of model dwelling-houses precisely similar to a number which have just been erected by the Government contractor at the Cambridge Cottages in Mill-lane. This will effect a great improvement.

The late William Mulready, R.A.—The Council of the Society of Arts, at the request of the committee for raising a memorial to the late William Mulready, have accepted the sum of 109*l.* 12s. 9d., which has been handed over to them in trust, to keep in repair the tomb of this illustrious painter in Kensal-green, and from time to time, as the interest unappropriated for this purpose may accumulate to a sufficient sum, to expend the amount in a medal to be awarded to that student in the Schools of Art in the United Kingdom who exhibits the best drawing from the nude figure, executed in black and red chalk, in the manner so successfully practised by Mulready. The money has been invested in India Four per Cent. Stock.

Increase of Salary for the County Surveyor of Shropshire.—At the meeting of the county magistrates at Shrewsbury for the Shropshire Quarter Sessions, last week, the chairman proposed "That the salary of the county surveyor be increased from 170*l.* to 220*l.* per annum, such increase to commence from the 15th of March last." Mr. Groves received 30*l.* as surveyor of the County Lunatic Asylum, and, with the additional 50*l.*, his salary would be 250*l.* After some discussion, Sir C. R. Boughton, Bart., moved an amendment that the increased salary should be granted from that day, which was carried.

The Middle Level, Isle of Ely.—Preparations are being made for erecting a new outfall sluice for the Middle Level drain. The syphons have become somewhat worn, and under all the circumstances it has been deemed advisable to erect a new sluice, from designs prepared by Sir John Hawkshaw. Mr. Webster has agreed to build the sluice at a cost of between 50,000*l.* and 60,000*l.* The plan proposed is to construct a new curvilinear branch drain southward of the middle level main drain, connected with it to the west of the syphons, and returning and emptying itself into the main drain about a furlong on the north side of them, so as not to necessitate any new outfall through the Ouse bank.

Relics in Derbyshire. — The Rev. J. M. Mello, F.G.S., has lately been exploring some caves in the Cresswell Crags, on the Duke of Portland's estate in Derbyshire. The principal cave examined penetrates about 50 ft. into the rock, and is very narrow throughout the greater part of its length. A layer of surface soil near the entrance, 6 in. or 7 in. deep, is succeeded by a bed of red sandstone found to be nearly full of bones. Among these are the molars of a mammoth. Several of the bones bore traces of having been gnawed by hyænas. There were also remains of birds and fish, some Roman pottery, and several somewhat rude specimens of flint implements.

Coroners' Court Houses.—On the 1st inst. Dr. Hardwicke, coroner for Central Middlesex, took possession of a spacious building which had been appropriated and fitted up as a coroner's court-house by the guardians of St. Pancras, to enable him to hold his inquests therein for that vast and populous district, instead of being compelled to hold them in various public-houses. The building in question is in the King's-road, closely adjoining the new vestry-hall, and was occupied as one of the relief offices. It is commodious, and is fitted up with a platform and a table and seats ranged round for the juries and accommodation for the press, a retiring-room, lavatory, &c.

The New Chapel at Kneesall, Newark.—On Tuesday afternoon the foundation-stone was laid of a new Wesleyan Chapel at Kneesall. The edifice will be built of brick, and the front will be stuccoed. The windows will be relieved by red brick arches and string courses, and the general appearance of the edifice will be neat and pleasing. The chapel is 41 ft. 3 in. by 16 ft., and the height from the floor line to the the ceiling will be 15 ft. 6 in. There will be a vestry adjoining 11 ft. 6 in. by 10 ft. The architect is Mr. G. Sheppard; and the contractors are Messrs. Whate Brothers, of Newark and Sutton, and Mr. Thomas Henderson is the joiner.

East London Hospital for Children.—The Duke of Westminster laid the foundation-stone of the new permanent building for the East London Hospital for Children and Dispensary for Women, at Shadwell, on the 30th ult. The new edifice is to be built upon the pavilion principle, having separate blocks. The first block will be for the administrative department; the second, a ward for forty-four beds, the third a ward for forty-six beds, and the fourth is to be the isolated ward for cases of infectious disease. The frontage will be 105 ft. long, and the depth of the building about 220 ft. The architects are Messrs. H. S. & C. A. Legg, and the builder is Mr. Ennis, of Commercial-road. The cost of the new building will be about 12,579*l.*

A Statue to Tyndale.—At the meeting of the Metropolitan Board of Works, on the 2nd inst., a letter was received from Mr. W. A. T. Amhurst, stating that several gentlemen were anxious to form a committee, to raise, by subscription, a statue to William Tyndale, the first translator of the Bible into English, and inquiring whether the Board would assist them in obtaining a site, as near as possible to the building of the Bible Society, whereon the statue might be placed; and whether the slip of land between Queen Victoria-street and Upper Thames-street, near Blackfriars Bridge, was available for such purpose. The communication was referred to the Works Committee for consideration and report.

New Wine Stores, Salisbury.—The commodious premises erected by Messrs. Richardson for their new wine-stores, at Salisbury, occupying a large space in the corner of Bridge-street and High-street, about 110 ft. long by 43 ft. wide, were inaugurated recently. The edifice was built by Mrs. Hall, of Salisbury, from plans furbished by Mr. H. Hale, of Doughty-street, London.

Memorial Statue to Richard Baxter.—On Wednesday, the 28th of July, the unveiling of Richard Baxter's memorial statue will take place at Kidderminster. The following is the inscription approved by the memorial committee:—"Between the year 1641 and 1660 this town was the scene of the labours of Richard Baxter, renowned equally for his Christian learning and pastoral fidelity; in a stormy and divided age he advocated unity and comprehension, pointing the way to 'the everlasting rest.' Churchmen and Nonconformists united to raise this memorial, A.D. 1875." The estimated cost of the statue, surroundings, palisading, &c., is about 1,050*l.*

New Police Station, &c., for Lancashire.—At the annual session of the county magistrates, at the Court-house, Preston, on the 1st inst., a sum of 1,200*l.* was granted, on the security of the public rates of the Manchester division, for the purchase of 400 yards of land, and the erection of a police-station thereon, at Harpurhey; and 500*l.* were granted for the purchase of land at Ulverston, and the erection of a police-station; 1,800*l.* for the erection of a new entrance-lodge and gateway at the Preston House of Correction, and for alterations within the prison.

National Monuments in Ireland. — In answer to Mr. Mitchell Henry, Sir M. Hicks-Beach said, in the House on the 1st inst., that Mr. Thomas Deane, an architect by profession, had been appointed to superintend the preservation of national monuments in Ireland. He could not state whether the instructions under which Mr. Deane was to act could be laid on the table, but perhaps his hon. friend the Secretary to the Treasury—this appointment was made not by the Irish Government, but by the Treasury—could inform the hon. member on that point.

The Archæological and Architectural Society of Durham and Northumberland. The second general meeting of this society for the present year took place on Wednesday last week, at Warkworth. The members proceeded to the church, and under the guidance of the Rev. J. W. Dunn, and the president of the society, Rev. W. Greenwell, of Durham, inspected the restorations. The party next visited the castle, and examined the ruins, including the keep; and finished with a visit to the Hermitage.

A Protest against the Expenditure of the London School Board.—The Vestry of Wandsworth have forwarded a resolution to the London School Board, stating that as the parish of Wandsworth is now paying a sum of 1,400*l.* per annum to the London School Board, for which they have received no benefit, inasmuch as the School Board have no school in their parish, and as the Vestry consider the expenditure hitherto has been recklessly extravagant, they, the Wandsworth Vestry, request that the School Board will be more careful in future.

Fall of a Mill Chimney in the Isle of Man.—A chimney which had just been completed at the works of Messrs. Dalrymple, Maitland, & Co., cloth woollen manufacturers, at Union Mills, about four miles from Douglas, recently fell on to the roof of the weaving-shed. One of the workmen, named Robert Green, and two boys, were buried in the ruins, and the man, on being extricated, was found to be dead, and one of the boys, William Clarke, severely injured.

The Talbot Inn.—Two new hop warehouses are about to be erected in Talbot Inn-yard, in Borough High-street, Southwark, for Mr. Stephen Soames, on a portion of the ground long occupied by The Tabard, of "Canterbury Tales" fame. Tenders for the buildings have been sent in, and range from 3,859*l.* to 4,748*l.* Messrs. Wadmore & Baker are the architects. Workmen commenced the work of removing the materials of the old inn on Tuesday.

The Value of Good Principals.—On the 2nd inst., Stiles, a mason, in the employ of Mr. J. Hawkins, builder, Dawlish, was working on some workshops in the course of erection in Balaklava-road, by Mr. J. H. Cox, builder, Weech, when the buildings suddenly came down, bringing Stiles, with the roof and partitions, to the ground. He was severely injured, and had to be conveyed to the Cottage Hospital. It is said the principals in the roof had been omitted.

Re-opening of All Saints' Church, Sandon.—The parish church of All Saints, Sandon, Hertfordshire, was re-opened on the 18th ult., by the Bishop of Rochester, after restoration by Mr. Ewan Christian, architect. The total cost of the restoration has been about 1,300*l.*

The Great Eastern Telegraph Award.—It is stated that the sum awarded by Mr. Russell Gurney, the umpire in the telegraphs arbitration cases, to be paid to the Great Eastern Railway Company by the Postmaster-General is 73,315*l.* and 200*l.* per annum. The payment of the former sum to be made on the 30th inst., and the annual sum to commence from that date. The Postmaster-General is to pay the costs of the company, and the costs of the arbitrators and umpire.

Exhibition in Vienna.—An official circular from the Imperial and Royal Austro-Hungarian Consulate General in London notifies that the Society of Manufactures and Commerce of Lower Austria and the Council of the Corn and Flour Exchange of Vienna have made preparations for holding a similar exhibition and sale this year, including machines, apparatus, implements, and other appliances used in breweries and distilleries.

Byron's Grave.—Under the presidency of Archdeacon Trollope, in the absence of Mr. Disraeli, a meeting of the Byron Memorial Committee has been held at Willis's Rooms, and it has been resolved to place a marble slab over the spot where Lord Byron lies buried, in Hucknall Torkard Church, and to invite further funds for the erection of a suitable memorial of the poet in London.

Electric Clocks for the Glasgow Post-office.—Messrs. James Ritchie & Co., of Edinburgh, have constructed a series of electro-sympathetic clocks for the new Glasgow Post-office. All these are controlled from one place in the postmaster's room, which is electrically connected with the Glasgow Observatory, the last being controlled by the Royal Observatory, Greenwich.

An Ancient French Mansion for Sale.—The historic Château de Vaux-Praslin, which formerly belonged to Fouquet, who entertained there his Royal master Louis XIV., is about to be sold by auction. It was built by Mansard, the architect of the palace at Versailles, and Le Vau, and decorated by Lebrun, and is probably the most magnificent building of the seventeenth century extant in France.

The Channel Tunnel adopted by the French.—The Submarine Channel Tunnel Bill (*projet de loi*) has been adopted unanimously, and without any material amendments, by the special committee of the French National Assembly, and the draught of M. Krantz's report has been communicated to the Minister of Public Works, previously to being lodged with the Questure.

New Schools for North Ormesby.—Mrs. J. S. Pennyman, of Ormesby Hall, laid the memorial-stone of the first school built by the Ormesby School Board at North Ormesby, Middlesbrough. Including the land, the school will cost about 7,000*l.*, and will accommodate 500 infants and 350 girls. A new wing is to be built to the Pennyman Board Schools at a cost of about 1,000*l.*

New Banking Premises at Mexborough. The rapidly increasing town of Mexborough has induced the Sheffield Banking Company, who has had an office there for some time, to erect a new and substantial building. The erection, which has been built by Mr. Ripley, contractor, of Rotherham, is so far completed as to permit business being carried on in it.

Fire.—On Sunday morning, shortly before one o'clock, a destructive fire occurred on the premises of Messrs. Hewetson & Milner, upholsterers, in Chenies-street, Tottenham-court-road. It broke out in a building of three floors, used as workshops and store-rooms. The first and second floors and the roof were destroyed, and the rest of the premises seriously damaged. The cause of the fire is unknown.

Loans to Local Authorities.—A return presented to the House of Commons shows upwards of 83,000,000*l.* as owing by the local authorities of England and Wales in respect of loans made to them. The return states that since 1869 the Metropolitan Board of Works have raised from the public 7,826,000*l.* at 3½ per cent.

The New Railway Station at High Wycombe.—We are informed that the new works at High Wycombe Station, which had been promised by the Great Western Railway Company, have now been commenced, and that when completed the public will appreciate the additional comfort afforded to them.

Accident at the Rev. Newman Hall's New Church.—As the workmen engaged upon the extensive works in connexion with Christ Church, now being built for the Rev. Newman Hall, were leaving for dinner, last week, an accident occurred, whereby a man was precipitated to the ground, a distance of 60 ft.

Arbitration in Wages Dispute. — Mr. Chamberlain, the Mayor of Birmingham, who undertook to act as umpire in the wages dispute between the Gloucestershire colliery-owners and their workmen, has decided in favour of a 10 per cent. reduction, instead of 15 per cent., as required by the employers.

Public Park for Sheffield.—A committee of the Sheffield Town Council have recommended that the town should purchase Meersbrook Park as a public park. Its extent is upwards of 100 acres, and the committee recommended that the town should offer 500*l.* an acre for it.

Elsley's Patent Sash Lever.—One advantage of this arrangement is that several sashes may be opened with one action of the lever, and that it can be applied to sashes either hung on centres or with hinges falling inwards. It is in use in many of the London Board Schools.

A Church Struck by Lightning. — The spire of St. Mary's Church, Birkenhead, which is about 150 feet high, has been struck by lightning, and the head of it shattered, the stones being hurled to the ground at a great distance.

A Railroad at Newfoundland.—Newfoundland is to have a railroad, to be built across the island, the length of which will be about 300 miles. The cost of the enterprise is estimated at from four to ten millions of dollars.

Tender for Stables for the Bristol Tramway Company.—The Tender of Mr. A. Krauss, builder, of Colston-street, has been accepted for the erection of the stables and car depôt of the Bristol Tramway Company.

Opening of the Cottage Hospital, Erith. The new Cottage Hospital for Erith, Crayford, Belvedere, and Abbey Wood, has been opened under very favourable circumstances.

TENDERS

For finishing the carcasses of seven houses and shops situate on Holborn Viaduct, for the Holborn Viaduct Land Company (Limited). Mr. E. N. Clifton, architect. Plot D:—

Patrick	£22,370 0 0
Macey	22,805 0 0
Ashby & Horner	22,709 0 0
Conder	22,593 0 0
Holland & Hannen	22,360 0 0
Ashby Brothers	21,825 0 0
Brass	21,725 0 0
Peto Brothers	21,264 0 0
Lawrence	21,072 0 0

For the first portion of a new church, exclusive of seats, heating, and lighting, at Earlestown, Newton-in-Makerfield. Messrs. Whitley & Fry, architects. Quantities by the architects:—

Rome	£6,457 0 0
Middlehurst	6,333 0 0
Winnard	6,170 0 0
Fairburst	5,739 0 0
Pennington	5,712 0 0
Yates	5,680 0 0

For alterations, decorations, &c., to St. Giles-in-the-fields. Mr. A. W. Blomfield, M.A., architect. Quantities supplied by Messrs. Gardiner, Son, & Theobald:—

Clark & Mannooch	£993 0 0
Patman & Fotheringham	833 0 0
Pitman & Cuthbertson	830 0 0
Warne	786 0 0
Holland & Hannen (accepted)	779 0 0

For painting and decorations at the Gresham Club, King William-street, E.C. Mr. T. E. Knightley, architect:—

Newman & Mann	£842 0 0
Kettell & Son	825 0 0
Pitman & Cuthbertson (accepted)	825 0 0

There being "a tie," lots were drawn, with the above result.

For the erection of a villa residence at Lancing. Mr. R. A. Came, architect:—

Miles	£1,525 0 0
Terry	1,490 0 0
Wells & Miles	1,364 0 0
Colwell	1,280 0 0
Eldridge (accepted)	1,143 0 0

For the erection of a villa residence at Lancing. Mr. R. A. Came, architect:—

Watson	£1,500 0 0
Terry	1,153 0 0
Oxley	990 0 0
Mighall	975 0 0
Eldridge (accepted)	950 0 0

For the erection of an entrance lodge, Luccenden:—

Longley	£290 0 0

For the erection of a villa residence, Horsted Keynes. Mr. R. A. Came, architect:—

Mighall	£1,233 0 0

For the erection of school and class-rooms at Chislehurst, Kent. Messrs. John Tarring & Son, architects:—

		Extra for quarried glazing in lead.
Roberts Brothers	£1,223 0 0	£22 0 0
Boden	1,196 0 0	15 0 0
Perry & Co.	1,150 0 0	20 0 0
Richards	1,131 0 0	12 15 0
Adcock	1,095 0 0	17 10 0
Grubb	969 0 0	13 0 0

For the erection of residences in connexion with the above:—

Richards	£939 0 0
Perry & Co.	930 0 0
Roberts Brothers	911 0 0
Adcock	901 0 0
Boden	895 0 0
Grubb	788 0 0

For the erection of six cottages at Hollacombe, Torquay, for the Torquay Gas Company. Messrs. J. Tarring, Son, & R. Stark Wilkinson, architects:—

Shaddock	£1,290 0 0
Sanders	716 0 0

For alterations and decorations to a villa residence at Erith. Mr. Herbert Ford, architect:—

Tongue (accepted)	£326 11 0

For alterations and additions to Byfield House, Barnes' for Mr. A. Nesbit. Messrs. Tress & Innes, architects:—

Carless	£747 0 0
Adamson	660 0 0
Sale	639 0 0
Sims	625 0 0

For erecting a detached residence, London-road, Croydon:—

Ridge & Kingsland (accepted).

For residence at East Harptree, Somersetshire, for Mr. C. A. Kemble, Harptree Court. Mr. E. T. Boston, architect. Quantities supplied by Mr. H. S. Benison. The stone, brick, lime, sand, and haulage, being supplied by the proprietor:—

Martin	£9,347 10 1
Stephens & Bastow	8,670 0 0
Bladwell	8,463 0 0
Hayward	8,378 0 0
Veals	8,150 0 0
Maggs & Chedsey	8,000 0 0

For villa residence, &c., at Market Harborough, Leicestershire, for Mr. G. Emery. Mr. F. T. Mercer, architect. Quantities supplied:—

Spencer	£1,670 0 0
Litchfield	1,660 0 0
Fletcher	1,650 0 0
Bassett	1,621 0 0
Palmer	1,595 0 0
Moore	1,501 0 0
Hall (accepted)	1,494 0 0

For house, shop, bakehouse, &c., at Kempston, Beds, for Miss Pestell. Mr. F. T. Mercer, architect:—

Haynes	£644 10 7
Lilley (accepted)	576 10 0

For the erection of three houses and shops in the Rendlesham-road, Clapton, for Mr. W. Davis. Mr. H. Shaw, architect. Quantities supplied by Messrs. Stoner & Sons:—

Stamp & Bowtle (accepted).

For alterations and repairs to the Prince of Wales public-house, Hyde-road, Hoxton, for Mr. W. Wooder. Mr. J. G. Needham, architect:—

F. & F. J. Wood	£391 0 0
Palmer	365 10 0
Terry	345 10 0
Hayworth	329 0 0
Judd & Hawkings	256 0 0

For Oxford main drainage. Contract No. 5. Mr. W. H. White, engineer:—

Bugbird	£36,000 0 0
Dickinson	33,999 0 0
Neave & Son	31,576 0 0
Acock (accepted)	29,500 0 0

For alterations and additions to the Market Hall, for the Corporation of Chesterfield, Derbyshire. Mr. S. Rollinson, architect:—

Fidler	£1,453 0 0
Forrest	1,420 0 0
Stevenson & Weston	1,393 0 0
Rollinson	1,380 0 0
Slim (accepted)	1,320 0 0

For proposed villa residence at Hampstead, for Mr. C. Kilburn. Mr. T. K. Green, architect. Quantities supplied by Mr. Chas. Poland.:—

Longmire & Burge	£2,886 0 0
Browne & Robinson	2,838 0 0
Newman & Mann	2,805 0 0
Scrivener & White	2,788 0 0
Dove Brothers	2,675 0 0
Manley & Rogers	2,627 0 0
Sharpington & Cole	2,547 0 0

For the erection of new buildings for Messrs. Sutton & Sons, Reading. Messrs. Wm. & J. T. Brown & F. W. Albury, architects:—

General Works.

Parnell & Son	£2,413 5 0
Simonds	2,291 0 0
Woodbridge	2,197 0 0
Searle	2,190 13 0
Strong Brothers	1,927 0 0
Filewood	1,898 0 0
Hunt	1,800 0 0

Roof only.

Parnell & Son	£1,440 15 0
Braby & Co.	1,389 0 0
Hunt	1,158 0 0

Entire Works.

Cook & Green	£3,289 0 0

For building vicarage house, Holy Trinity, Richmond, Surrey. Mr. R. Brewer, architect. Quantities supplied:—

Dove Brothers	£2,815 0 0
Newman & Mann	2,720 0 0
Sweet	2,670 0 0
Gascoyne	2,575 0 0
Sims	2,549 0 0
Carless	2,153 0 0

For house and studio, Steele's-road, Haverstock-hill, for Mr. C. E. Johnson. Messrs. Batterbury & Huxley, architects. Quantities supplied:—

Nightingale	£2,600 0 0
Newman & Mann	2,580 0 0
Greenwood & Sons	2,475 0 0
Manley & Rogers	2,377 0 0
Linsell	2,293 0 0

For new building, No. 10, Cornhill, City, for Mr. A. Parssell. Mr. Richard Roberts, architect. Quantities supplied:—

Baker	£5,580 0 0
Ashby & Horner	5,197 0 0
Ashby Brothers	5,118 0 0
Lawrence & Sons	4,885 0 0
Moreland & Nixon	4,837 0 0
Rider & Son	4,598 0 0
Hill, Higgs, & Hill	4,534 0 0
Newman & Mann (accepted)	4,328 0 0

For alterations at Lyncombe House, Battersea-rise Mr. E. C. Robins, architect:—

Pritchard	£296 0 0
Newman & Mann	256 0 0

For erection of new buildings, Mark-lane, in connexion with Dunster House, Mincing-lane, and for alterations to the existing buildings, for the City of London Real Property Company. Mr. Edwin A. B. Crockett, architect. Quantities supplied by Mr. D. Cubitt Nichols:—

Hill, Higgs, & Hill	£17,480 0 0
Elkington	16,100 0 0
Peto Brothers	15,923 0 0
Patman & Fotheringham	15,870 0 0
Trollope & Sons	15,840 0 0
Laurence	15,710 0 0
Holland & Hannen	15,680 0 0
Sewell & Sons	15,620 0 0
Macey	15,559 0 0
Lucas Brothers	15,340 0 0
Newman & Mann	15,146 0 0
Conder	14,992 0 0
Brass	14,863 0 0
Perry & Co.	14,346 0 0

For stabling, car-shed, &c., for the London Street Tramway Company. Mr. John Glenn, architect. Quantities supplied:—

	Stabling, &c.	Foreman's House.
Hart	£5,985 0 0	£588 0 0
Newman & Mann	5,915 0 0	586 0 0
Wilson Brothers	5,775 0 0	551 0 0
Lown	5,692 0 0	550 0 0
Kelly	5,676 0 0	550 0 0

Accepted for main drainage works in the district of Chesterfield Union, Derbyshire, for the Rural Sanitary Authority. Mr. S. Rollinson, engineer:—

	Staveley.	Shirland and Higham.
Pattinson	£2,232	£1,329
	Wessington.	Killamarsh.
Pattinson	£319	£2,012
	Hasland.	Tupton. Pilsley.
Frayne & Son	£1,116	£247 £216
	Unstone.	Brimington. Bolsover.
Frayne & Son	£1,672	£1,158 £1,267

For the erection of schools, at Feltham, for 300 children, and master's house, for the Feltham School Board. Mr. W. H. Powell, architect:—

Bartlett	£2,253 14 0
Garratt & Wilkinson	2,145 0 0
Linfield	2,093 0 0
Lodge (accepted)	1,911 0 0

For warehouse, Wood-street, City. Mr. Herbert Ford, architect:—

Browne & Robinson	£4,011 0 0
Scrivener & White	3,983 0 0
Perry & Co.	3,924 0 0
Ashby Brothers	3,886 0 0
Brass	3,852 0 0
Lawrence	3,794 0 0
Smale	3,752 0 0
Downs & Co.	3,714 0 0
Crabb	3,683 0 0
Hobson	3,444 0 0
Mark	3,201 0 0

For Union Chapel at Abingdon. Mr. A. Frere, architect. Quantities by Mr. R. Carpenter:—

King	£1,225 0 0
Hunt	847 0 0
Woodbridge	837 0 0
Cassell	778 0 0
Walters	776 0 0
Bishop	750 0 0
Willisms	723 0 0

TO CORRESPONDENTS.

Errata.—In the article on Building in Concrete (in our last number) for "tough" in the second column read *rough*, and for "some workmen," in third column, read *sane workmen*.

J. J.—M. M.—J. S.—H. L.—J. P. & Co.—Mr. F.—W. M.—L. H. I.—W. H. L.—Sir F. S.—J. M.—E. G. W.—E. W.—W. G. S.—R. C.—H.—Dr. B.—Major de W.—Mr. A.—J. W. & Co.—R. C.—J. O. S.—C. D.—W. O. C.—W. H. W.—W. W.—J. G. N.—S. & B.—C. J.—W. D. G.—C. M.—W. H. P.—H. C. T. (the proposal to get rid of sewage by burning it is not a new one).—H. S. S. (too late).—J. C. (in type).—R. E. P. (in type).—Peasant Farming (unavoidably postponed).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

The Builder.

VOL. XXXIII. No. 1693. SATURDAY, JULY 17, 1875.

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The National Training Schools and our Manufacturers.



THE important duty of selecting a head-master for the National Art Training Schools at South Kensington now devolves upon the Privy Council, as the late Mr. Richard Burchett, who has held the office since the year 1852, is dead.

All who knew Mr. Burchett must have respected him, both as a gentleman and an artist; and his dignified bearing and genial manners caused the students of the schools of which he was the head to regard him as a friend as well as a master; while the tutorial staff worked in the most perfect harmony with their chief, owing to the kind and brotherly treatment that they always received at his hands.

While full of regret at the loss of this gentleman, and while appreciating the merits of his teaching and the good work which he has done, it will not be considered as disrespectful to the memory of one who has left us if we say, that during the later years of Mr. Burchett's life the instruction at the South Kensington Schools has fallen short of what it might have been.

It is nearly forty years back that schools of design were established in England; but all who are acquainted with their history know that they were not valued till the year 1851. Prior to this time they existed only by sufferance.

To the Prince Consort England owes more than it is easy to understand. It was this prince who proposed and brought to completion the International Exhibition of 1851, and it was this Exhibition which enabled us to perceive that we were almost without knowledge of even the rudimentary principles of decorative art, while we were yet applying patterns to much of the produce of our vast manufactories.

This first of International Exhibitions has resulted in such an advancement in taste in England as could not even have been hoped for, and to the Prince Consort we are largely indebted for the present improved state of things.

The Exhibition of 1851 had revealed our ignorance of ornamental, or decorative, art, and Mr. Redgrave's excellent Report on Design tended much to point taste in a desirable direction.

Shortly after this first Exhibition a few leading manufacturers produced works, which, even if now regarded as poor in design, were then in advance of the taste of the day; but, unfortunately, few objects of superior pattern sold in such quantities as to render their production remunerative to their producers. The discouragement experienced by these pioneers of progress led to the belief that, in order to the appreciation of art objects, the public must be to an extent instructed in drawing. And it is a curious fact, that in learning to draw we learn also to see. What we see we may appreciate, while what we fail to perceive we cannot value.

The year 1853, if we remember rightly, saw a great extension in the duties imposed upon the old Schools of Design; for while the former institutions had only to educate designers, the new institution (now called the Department of Practical Art) was at the same time to instruct ornamentists, and educate all who would receive the proffered instruction in the art of drawing.

To the State it would be an advantage if every man could draw, for thereby power over the hand, and power of perceiving delicacies of form, are increased; but when the Department of Practical Art was established, under the advice of the Prince Consort, it was never intended that the art schools of London, and in the manufacturing towns, should cease to serve the manufactures, and raise the market value of our productions.

Engrossed with the idea of spreading a knowledge of drawing broadcast through the country, design and the study of decorative art, as applicable to the decoration of our domestic utensils, have been more or less neglected, and that this shortcoming of the Kensington schools has given dissatisfaction to a large class of manufacturers, and has caused them to begrudge the large annual grant which is voted to them by Parliament, is not to be disguised.

Perhaps we have erred more or less ever since the Department of Practical Art was instituted, in making even the central school (which is now at Kensington), and the large schools in the great manufacturing towns, too fully drawing-schools and too little schools of design; and this is certain, that the staff of masters at South Kensington consist of gentlemen who are masters of pictorial art rather than of ornamentation.

It is curious that, ever since the foundation of the first school of design, no great ornamentist has been connected with these schools as a professor or teacher; and even the art adviser to the Privy Council is a Royal Academician. Pugin never taught the art which led him to produce his beautiful ornaments within the walls of Somerset House or the South Kensington schools, and Owen Jones only explained, in five brief hours, at Marlborough House, the laws which led to his achievements in polychromatic harmony. Ornamentists, who are scholars having knowledge of the history and principles of ornamentation, and who at the same time are lovers of pattern-drawing, are not a numerous class; yet men are obviously wanted at South Kensington who can instruct youths in the principles of ornament and in the practice of design,—men who are acquainted with the requirements of the various markets in which our goods compete for sale, and who understand the technicalities of our various art-manufactures. Men having such knowledge, and being at the same time ornamentists in the higher and more scholarly meaning of the term, are those now required at South Kensington, if our art-manufactures are to continue that progress in which they have to a certain extent advanced.

The teaching of drawing will have to be fostered by the State for many years to come, and the head drawing-school may fitly find its home at South Kensington. The present excellent staff may still be retained with advantage as masters in the head drawing-school; but, now that a fitting opportunity presents itself, we ask that the desirability of forming a high school of decorative art, and of practical design, at South Kensington, in conjunction with the present drawing-school, be carefully considered, and that a staff of professors who are ornamentists in heart and in practice, and who are skilled and successful designers, be secured to instruct in the higher principles and knowledge of decoration those who may desire to aid our manufacturers in lending beauty to their productions.

PEASANT FARMING AND PEASANT GARDENING.

THE subject of what is called peasant farming has of late not only received a due share of attention, but has been treated as a subject of controversy. It is hardly needful, from our point of view, to dispute much on the matter, or to seek the aid of statistics to defend either the *pro* or the *con*. All that is needful, so far as we can make out, is to form a definite conception of what is intended, what is hoped for, and what are the natural limits of the case; and, it seems to us, if a clear and definite view of the matter be once fairly grasped, while we may feel that it is difficult to do that which is best, both for the peasant, as a class or as an individual, and for the country, of the population of which the peasantry forms an important element, there can be but little doubt of that at which we ought to aim.

The matter is complicated by the mixing up of two or three distinct issues. If they be separated from one another, and examined one by one, the haze will clear away from the landscape. Thus it is possible that that which is most conducive to the welfare of the peasantry, may not be equally advantageous to the nation. We do not assume,—far from it,—that such is the case; but it is a point for examination. Again, the welfare of the peasant is a subject which has a different meaning, as the term is used by writers of different schools. With some, the word is synonymous with wealth. It is so, if judged by the straightest sect of political economists. To those people who consider that the chief end of man is to buy in the cheapest market and to sell in the dearest; that is to say, that the *summum bonum* is to "make money," this definition is quite acceptable. To others, among whom we are not ashamed to rank ourselves, welfare means much more. It means the fullest and best proportioned development, both of mind and of body, suitable to the circumstances of the age, and to the mode of occupation in which the life of the individual is to be spent. It may so happen,—we believe it often does so happen,—that the purely economical advantage is one of the smallest that should be regarded in any just and large estimate of such a condition.

Nor must we close our eyes to the fact that great changes in habit, or in the condition and surroundings of any class, when they are not isolated, violent, and sudden, but wide-spread in their occurrence, and apparently spontaneous in their growth, are for the most part the accidents or outgrowth of that gradual revolution, in the relation which man bears to the planet on which he dwells, which has made such vast progress since the application of heat as a motive power. We may watch this revolution with more or less appreciation of its portentous nature. We may regard it, as our sentiments prompt us, with dread or with hope. But we must acknowledge our utter inability to arrest, or materially to divert, its course. It can no more be controlled by man than can the courses of the planets. True, even these at times appear to our eyes, and are spoken of by our lips, as retrograde. But the word only implies, in actual fact, that we are moving as well as they.

Thus, when we look back,—it may be with regret, it may even be with a feeling akin to anger,—to the state of things when it was within the province of the law-giver to decide on how small an area of land a house might be built, and how few acres, at the least, of arable and garden ground should be attached to every cottage, we must be conscious that these rules were only possible in a state of things different from that now around us. So long as man, with the aid only of the horse, the bullock, and the ass, had to supply the motive power requisite for the culture of the ground, for the winning of metals and minerals from beneath it, and for all those processes of fabrication and manufacture for which the fickle and uncertain power of the hand-mill, or the strictly localised power of the water-mill, were in appliance; so long as this was the case, a certain sparseness of distribution of mankind over the face of the earth was a natural condition. It was, in many respects, perhaps on the general balance of all considerations, a condition better than that which now exists. But it was a condition based on different facts. So soon as the employment of mechanical motor power became possible, a far-seeing eye might have detected the coming extinction of the ancient rural peasantry. On the one hand, the need of human fingers to act as a sort of slaves to powerful machinery, which might be multiplied to any amount, and driven night and day, as a veritable coining-mill for its owners, gave birth to the great towns. With every improvement in the steam engine, and in machinery driven by steam, the tendency to agglomerate human beings became more irresistible. Thus sprang up, street after street, those rows of houses, containing the smallest rooms, consisting of the thinnest walls, surrounded by the least possible area of breathing space, yard, or even roadway, and supplied with the very scantiest appliances for health, for decency, much more for elegance and education by the eye, in which it was possible for the spirit of economy to drive human beings to dwell. Who can visit certain localities in Liverpool, Birmingham, Oldham,—how many great centres of production may we not add,—without a deep sense of depression and of disheartenment at seeing how man has housed himself?

While the power of the steam engine, fixed on the soil, to attract around it a dense and cheaply housed population, was gradually attaining more and more development, a second impulse was given to the agglomerative tendency, by the application of steam to locomotion. Thus the glut, which would by degrees have limited the growth of manufacturing centres, was averted. Transport was provided of a kind competent to remove any accumulated products as rapidly as they could be produced. A second, and a very appreciable stimulus to the growth of our towns was thus supplied.

But still the demands of agriculture seemed to promise that, in rural districts at least, a certain proportion of inhabitants to area would be maintained. The average labour annually applied, per acre, to the soil, was a stable quantity, or a quantity only very slowly altered by the devotion of more skill and care to agriculture. At the present moment this feature is vanishing from the scene. By one of those extraordinary coincidences, which are far beyond the power of the statesman to control, or, it may be, fully to comprehend, we see at the same moment the science of the engineer supplying labour-saving machines to the agriculturist, and the changed attitude of the labouring classes giving the farmer every inducement to have recourse to machinery. The great necessity of having, in a village or hamlet, a resident population, of numbers sufficient to save the harvest, in the brief time during which our climate allows of this object being effected, is now either obviated, or in course of being swept away. Thus while the steam-mill and the locomotive tend to attract masses into our towns, the steam plough, steam reaper, steam elevator, and a hundred other agricultural labour-saving machines, tend to diminish the numbers of our villagers.

Disproportionate, then, as the numbers of the rural and the urban population actually are, it is hardly possible to take a dispassionate glance at the future without thinking that this disproportion is likely steadily to increase. The causes which tend to mass population together are active and unchecked. Each hundred souls that are added to a town population demand so many new builders, butchers, bakers, doctors—in proportion. Increase tends to exaggerate itself. On the other hand, there are reasons apparent why, in many places, the rural population would remain stationary, or even actually decrease. And the decrease will have a similar tendency to exaggerate itself.

Nor is there any economical reason to oppose to this evident tendency of the age. Economic reasons, no doubt, to a great extent underlie the actual phenomena. And with regard to the particular subject of our inquiry, the distribution of cultivation over the soil, economy is altogether,—with one important exception,—in favour of the concentration of land in the occupation of large farmers. For the costly machinery which is now so rapidly being turned out by our smiths and engineers, in all parts of the country, is inapplicable to any but large farms. Not only is it a question of capital, but a question of process. Not only is it only a large farmer who can afford the best, and therefore the most economical, machinery, but he finds that it can be most advantageously applied to large fields. The cost and loss of time of moving and fixing the engines bear so great a proportion to those of the actual work done, that small fields will disappear before steam cultivation. Thus the actual cost of cultivating a farm of twenty acres, will be very much higher, per acre, than that of a farm of 2,000 acres. And not only is this true as to cost, but it is no less true with reference to that feature of steam cultivation which is even more valuable than its comparative cheapness, namely, the great rapidity with which the crops can be cleared at the exact time of maturity, and with which the land can be prepared for the reception of fresh seed.

Against all the economical advantages of the large farmer, there has to be set one important advantage possessed, and often fully brought into play, by the small one. That is, that he is apt to make his little holding a sort of savings-bank for labour that would be otherwise entirely lost. The producing power of the peasant farmer is stimulated by the sense of property, and by the interest which he takes in his holding. Time that would otherwise be spent in listless idleness, or, worse, at [the public-house, is devoted, many a time and oft, to the loving culture of the garden. And thus it is that, while the spade cannot compete with the steam plough, as applied over a large area of land, spade husbandry has a rich harvest of its own; in which the comparative imperfection of the tool is more than compensated by the extra amount of labour which is called forth by the sense of ownership.

This serves to point to the fact, that a broad line is to be drawn between the field and the garden. For the spare labour of a man to be fully effective it must be applied to a limited area of land. The garden is, therefore, its proper locality. Whether we refer to the cultivation of culinary vegetables, to that of flowers, or, when favourable aspects are obtained, to that of standard, espalier, or wall fruits, the great question of scale must be kept in mind. We have a new spring of labour to apply,—that labour to which a man voluntarily devotes a portion of the time which is not occupied in his contract with his master. This amount is limited, and not only limited in amount, but, if wisdom rule, limited in the scope of its application. Thus if the united spare time and voluntary labour of twenty peasants were devoted to the cultivation in common of one arable field, there would be an economic waste. It is true that labour, otherwise unexerted, would be created; but if this labour is applied to an object that could more readily be effected by machinery, while we have a gain on the one hand, we have a loss on the other. Labour is created, but labour is misapplied. But to the garden, the labour-saving machinery is inapplicable. The earliest human toil cannot yet be performed by the "drudging goblin" of the steam-engine. If therefore, we not only encourage man to work, rather than to drink, but teach him how to apply that extra work to the most suitable end, we have undiminished gain, both to the peasant and to the country.

It thus seems to us to be undeniable that the gradual displacement of peasant farming, and of the cultivation of small farms, by the extension of those larger farms, consisting of very large fields, to which machinery can be with the greatest advantage applied, is one of the unavoidable consequences of the mechanical improvements of the age. If such be the case, it is, of course, idle to swim against the tide. The good results, which have undoubtedly been observed in some cases of peasant farming, may be traceable to two causes, neither of which can control, although they may occasionally modify, a tendency that has all the force of a natural law. These causes are, first and foremost, the fact that peasant farming tends, under certain circumstances, to the creation of labour, which is a positive gain to the country. The man works instead of being idle, and here is a fountain of wealth. In the second place, there are portions of soil which, either from their broken and rocky character, or from their small area and confined locality, are unsuitable for the broad sweep of mechanical agriculture. The application of hand labour to these plots is a direct economical advantage to the country. The creation of labour before noted is an advantage, but one that is diminished in value by the misapplication of the labour created. If the united extra labour of a village till a field which could be readily added to a large farm, that extra labour is applied at a loss. It produces a good result, but it does so in a wasteful manner. But if that newly-created labour be applied to land that would otherwise be uncultivated, we have a double gain. The land yields her increase, instead of lying idle; and the labour of the peasants does the same.

The simple outcome of the above line of inquiry is this: Peasant farming, when society has attained a certain stage of development, is, economically speaking, a mistake, and will prove, if artifically encouraged, a failure. Peasant gardening, on the other hand, is a double source of national gain, if wisely carried on. We now speak of these things as regarded from the economical point of view alone.

This, however, we think it cannot be too distinctly borne in mind, is the narrowest, lowest, most ignoble, and, therefore, most questionable point of view. We must regard, not the mere mechanical power of men to produce food, or to dig gold, or to add to the already enormous amount of the stored-up wealth of the country; but the direction of the national energy to raise the moral and physical welfare of its inhabitants, as well as to add to the physical comforts of the easy and well-to-do classes. It is for this reason, it seems to us, that it is chiefly important to understand the positive economical elements of any question like that which we are discussing. Good men, wise men, and all men who merit the title of statesmen, think and toil to introduce measures that may elevate the general condition of their countrymen. What is most important is, that this great and noble effort should not be wasted. This power,—the power of the helping hand of charity, in fact,—should be applied in obedience to economic law, and not in the teeth of economic law. Here we have the happiest possible illustration of that canon. If a certain amount of time and money be forthcoming, in order to raise the condition of the peasant, by calling forth his inert and unused power of cultivation, it will be wasted if applied to the farm, it will be productive in a high degree if applied to the garden.

Something, however, more than either the will or the opportunity is necessary for those good efforts to bear fruit. It is not enough to reply, "I go, sir," to the injunction, "go and work to-day in the garden." The will may need only the gentle stimulus of occasion to set the strong arm to work. The occasion may be very readily afforded. Plots and patches of neglected land are to be found almost everywhere,—in the outskirts of towns, in the purlieus of villages, on the unused sides of the highways. But little cost, and not so very much effort, are necessary, in numerous cases, to supply the peasant with garden ground. But far more rare and difficult to meet are the knowledge and skill, on the

part of the peasant, to till the plot so provided. If Dogberry be in error in thinking that "reading and writing comes by nature," no less is this theory inapplicable to digging, and hoeing, and planting. To how many of us do these things come as if instinctively? To those, and those alone, who, surrounded from their happy youth by gardens and orchards, have learned something of the craft of the gardener by the unconscious tuition of early habit. To such people it is very natural to think that you have only to give a man, who has a few spare hours at his disposal, a bit of ground and a spade, and straightway he will make it blossom forth in wealth or in beauty.

Very far is this from being the case. We have to create two elements, before we can apply self-sprung labour to wisely economised or redeemed land. We have to create taste. We have to impart skill. The peasant must have the wish to garden, and he must be taught how to do it. The two, happily, go readily together. To those better and happier individuals of this class in whom the spirit of Poetry has inspired a native love of flowers, knowledge of their culture will come, almost imperceptibly, so soon as the means of gratifying the wholesome taste are placed within reach. The same may be said with regard to fruit and culinary vegetables. But these are the rare exceptions. In how many villages and towns do we see the neglected squalor of nooks and corners of land that might so easily be bright with beauty? How much more frequently do we see horticulture carried out under difficulties, the blooming cottage garden of three yards square, the box of mignonette in the window, the little window itself blinded by a carefully-tended rose, or a pot of snowball geranium; than we see anything like a systematic utilisation of all the ground available for gardens.

If one strolls from village to village in the remoter districts of the country, nothing is more striking than the contrast afforded by the cottage gardens. In one place Flora seems to have made her home. Every patch of ground is tended; bright with flowers, green with mown lawn, or affording a goodly promise of hedgerows of peas and beans. No window is without its climbers. Dense sheets of ivy clothe the walls, and keep the rooms within both dry and warm; and here and there will be seen not only a beautiful flower—all flowers are beautiful—but a new one. How much care, and even cost, has gone to the production of the pride of some of these cottage gardeners? The yellow Austrian briar is a matter rather of ancient heritage than of purchase; but what shall we say to the deep rich petals of the "Duke of Edinburgh," or like roses of new production and Royal or noble name! It is incredible how soon a fashionable flower will be carried by the birds to the remotest hamlet, so only there be a cottager with a passionate love of the beauties of the garden.

Go into the next village. Pick your way, and put your kerchief to your nose as you pace the heap that denotes its boundary; the heap of brickbats, stones, broken slates, utterly useless potsherds, and worse refuse; diversified by a worn-out shoe or hat, and perchance by the remains of a hunted cat or dog, and backed by a dense growth of nettles, showing what Nature would do if gently solicited. This unsavoury altar to the Terminus of the place characterises the entire village. If foul puddles be absent, if drainage has been introduced by the strong hand, still the lower of listless idleness, and the utter absence of the least glimpse of order or of beauty, mark the entire group of tenements. Poverty is made more repulsive by being exhibited in its most cynical phase. The only vegetable products thought of in that village, beyond the ordinary crops which it is a daily and grudging toil in some way to tend, are the potato and the tobacco plant.

Where does the cause of the difference lie? We can answer the question with regard to some instances. We strongly suspect that the same answer would apply to the great majority. Where the squire is no longer to be found, it is the doing of the clergyman, or of the clergyman's wife. A bright, trim, well-tended garden, in the manse or the hall; a tasteful, graceful, truly feminine love and care of the flowers, as well as of the fruit; the gift, at odd times, of spare plants, of slips, or of seed; example, and good example; tend to beautify a village by a happy contagion. So, on the contrary, the man who looks at his book alone for his lessons, and has no eyes to see the clearer and holier, as well as the more ancient, lessons that are inscribed on every form of organic life,—the man who, with another world on his lips, takes no heed of what is most beautiful in this,—the man who remembers nothing of the first garden but the serpent and the apple,—is not one who understands his mission to his countrymen, or whose parish will return him an odour of flowers which is no other than an odour of the sanctity of Nature.

LONG MELFORD AND LAVENHAM CHURCHES.

THE Council of the Institute of Architects have more than once included the above-named churches, the most conspicuous among the "late" parish churches of Suffolk, among the subjects suggested for illustration in competition for their "silver medal and five guineas" prize, annually given for the best set of drawings illustrative of existing buildings unpublished, or only inadequately illustrated hitherto. As, in spite of the reputation which Lavenham at least has long had as a fine example of Perpendicular architecture, these two churches seem to be neglected by sketching and measuring architects (partly perhaps on account of the contempt in which the late period of the style is held at present), a note or two on a passing visit may revive interest in them a little, and lead to a response to the Institute invitation this year for drawings of one or other of them.

As Lincolnshire is noted for its churches of the "Decorated" period, so is Suffolk for those of late Perpendicular works, some of them of very large size. Bury St. Edmunds, which divides the honour of principal "county town" with Ipswich, possesses its two specimens, in very late style and in very effective contiguity in the centre of the town; these two churches being, however, more remarkable for the perspective of their long and lofty nave arcades, poised on very slight piers, than for anything in the detail, which in both cases is of that shallow and nerveless order characteristic of the decadence of the closing period of English Gothic. It is worth while, however, for any architectural student to see with his own eyes so fine a bit of fourteenth-century work as the Abbey Gateway, not to speak of the Norman tower, and the bridge over the small river at the end of the long piece of the old Abbey wall (fourteenth-century also) which remains, skirting the route out of the town towards the north-east. Much as the antiquities of the place have been talked of, and illustrated by engravings (rather artistically than architecturally), many members of the profession are hardly acquainted with them; a fact which may be partly accounted for by the consideration that Bury is on the Eastern Counties Railway. However, to return to our immediate subject, any one who finds himself in Bury St. Edmunds, and has had enough of the railways of the district (and a little of them goes a long way), will find the drive to Melford (thirteen miles or so) a very pleasant one in fine weather, through country not without much beauty, in a quiet way; for Suffolk scenery, hereabouts at least, is not exciting, but the country is rich in fine foliage, and in that sort of picturesqueness which is peculiarly and unmistakably English. But the place itself will repay any dissatisfaction that might be felt with the route to it. "Long Melford," which is the full name of the place (we do not remember to have heard if there is a *short* Melford anywhere about), might be called a model English village of the rural type,—at least as to general site and aspect. The village architecture, it must be admitted, is not of the most interesting type; the rural villa, with white paint over it, being too much developed, though there are better things here and there. But the general effect is hardly spoiled by this. "Upon an hill most pleasant for air and aspect" (as an old manuscript has it) "there standeth a large and beautiful church called Trinity Church"; and looking down from the churchyard we see a long irregularly-shaped gently-sloping lawn, bordered on the one side by cottages and the villas aforesaid, on the other by masses of trees overhanging a park wall half hidden in foliage, and terminating in one of the most picturesque of red brick gatehouses, in a style between Tudor and Elizabethan; a clump of fine trees at the bottom of the green half bounds the view, and half seems to give perspective to the village street seen across the bridge beyond; in summer weather, and with the trees in full foliage, the effect is something delightful to those who have been "in populous cities pent."

The church tower,—a piece of villainous "compo" Classic, erected in the first half of the eighteenth century,—an oblong mass set up on end, and with an urn at each corner, is a damper to the prospect certainly. The church itself is singularly complete in design, and presents a long unbroken line of windows in aisle and clearstory, with a battlemented parapet above the latter; and adjoining the east end, but with a marked break in the line of building, the large and unusual lady chapel which gives the chief interest to the church. The high-pitched external tiled roof of this is a break in the uniformity of the design, and looks like a subsequent addition or alteration for the better protection of the building, which as seen from inside is roofed, or rather we may say ceiled, with a very flat-pitched roof of the characteristic style of the period, and of excellent design and execution. Externally a noteworthy feature is the flat arcading designed in flint and pebble work; or rather in broken and unbroken flints, the darker insertions being formed by the broken faces of the stone, amid the light grey tint of the unbroken pebbles. "Flint rubble and stone dressings" would in fact be the "specification" description of the work here and in other churches of the neighbourhood, which show a remarkable aptitude for dealing effectively with materials plentiful on the spot. Internally the nave arcade, still with its coating of whitewash dating from the churchwarden period, shows better work in the arch mouldings and plan of the piers, than the aisles and clearstory give evidence of; almost creating an impression that the peculiarly "save-trouble" style of the last period of Perpendicular architecture had been adopted subsequently to the design of the arcade; for in the rapid movement of taste at the critical periods of Gothic an accidental retardation of a building for a very short time would lead to its being resumed with altered details; of this there are many instances. The design of the nave generally suggests the idea of an attempt to imitate Lavenham, when the genius of the style, at its height in that church, was fading. The rich oak roof, and the rood-screen, have been among the glories of Melford; the latter to be spoken of in the past tense except in regard to a section of the old screen which fills one bay on the south of the chancel, and has been well reproduced in continuation, as a screen for the south chapel, and for the organ-room in the corresponding position on the north. The church has been conspicuous, too, for its brasses, unfortunately much decayed, but of which sufficient remains are seen of one or two splendid canopied designs to indicate what they were when uninjured. Besides the lady chapel, with its ample ambulatory round all four sides, the Clopton Chapel, north of the chancel, presents most delicate and beautiful work in the canopies of its twelve small niches, all varying in design, and in wonderful preservation, considering the delicacy of the work. There has been much colour decoration here, remnants of which are traceable, and elaborate inscriptions on the ceiling and over the beams, at present in a confused state of decay and partial obliteration. Restoration has not touched the interior of Melford, except in regard to re-seating and the screen before mentioned. What is desirable is the scraping off of the whitewash, and the removal of the unsightly and incongruous Classical reredos; and it would be an interesting experiment to restore the decoration of the small north chapel referred to, for which probably a critical inspection would give sufficient data. Externally there is nothing to be done, fortunately,—for this grouted flint masonry stands wonderfully, and keeps the worked stone well in its place also,—unless it be to remove altogether the inexcusably unsightly tower: it would not be worth while, however, to rebuild it, when all trace of the original has departed. The internal tower arch was entirely built up when this precious erection was made, and was in recent years restored in conformity with the height and general design of the nave arches; but the octagonal caps at the impost, by an absurd caprice, have been worked with hollow faces showing a concave curve on plan, in an un-Gothic manner directly contradicted by the caps of the nave arcade. Another peculiarity of Melford is the absence of a chancel arch, and the continuation of the nave arcade design right up to the east wall of the main church, an effect interesting from its peculiarity, though hardly to be imitated. The remains of the old stained glass, collected from different parts of the clearstory, into windows at the east and west ends, offer bits of the greatest interest

and beauty in colour and design; their deficiencies are supplied by bits of modern glass, some serviceable enough for the purpose, some of it actually impudent in its incongruity and raw colour, especially the heads of the windows at the west end of the aisles; it is incomprehensible that any one could put in such tawdriness with the other glass before his eyes. The church contains a really good and artistic Classical monument to Sir W. Cordell, at present standing in a most awkward and unsuitable position to the south of the Communion, where it was apparently placed as in opposition to the Gothic recessed monument occupying the usual position of "founder's tomb," on the north side: as the Classic monument of course is not a recessed one, the appearance is most incongruous. With this monument removed into the south chapel, the present reredos (which has no merit of any kind), replaced by something in keeping with the rest of the church, and the bits of modern stained glass in the "restaurant" style taken out of the old windows, and replaced with something more in keeping, there would be nothing in the interior of Melford to interfere with the unity of its effect, unless it be the new windows. A somewhat violent one by Wailes already asserts itself near the south doorway; not, we hope, to be followed up by others in the same style. In such a church, with its two series of large windows in aisle and clearstory, there would be a fine field for the display of quiet and delicate effect in stained glass, of which examples are before us in the old glass which modern designers seem so unwilling even to attempt to imitate in its really fine qualities, its delicacy and reticence of colour, though they are quite ready to reproduce the characteristic defects of the period, in the archaic and distorted drawing of the figures.

A drive of three or four miles, in the return direction, brings us to Lavenham, which may be termed the "King's College Chapel" of parish churches; the finest and most complete specimen, in this class of building, of the Perpendicular style at its height, and before the first hint of decay had supervened. The flat decoration in flint work is repeated to some extent here, but Lavenham depends for its external effect more upon its profusion of fine stone carving, showing a breadth and fulness of manner very unusual in the work of this date. The small carved panels which occur in the remarkable open-work parapet have in style of execution more the character of the best fourteenth-century work than of the later date to which they really belong. The splendid masonry of the tower, entirely of large broken flints with the broken face outward (except, of course, the angles and window-dressings in worked stone) shows what can be done in this sort of ready-to-hand material, and what durable work it is, too. Lavenham tower is likely to out-last many a tower built of carefully-hewn stone. The crowning angle pinnacles are wanting, and have probably been removed, for it is difficult to suppose that the builders who had completed everything else in a manner regardless of labour and cost should have stopped short in crowning the edifice, unless they could not make up their minds as to the design of these features. The large and bold band of panel-carving traversing most of the exterior near the base course of the Tower is a notable feature in the external design, with every panel differently treated; for the diversity in detail is remarkable at Lavenham, considering its period. Every one of the roof-principals is varied in the design of its ornamental carving. The piers are of a remarkably effective plan, and as the whitewash has been removed here, the effect is proportionally increased in comparison with Melford, which, however, can lay claim to no competition at all with Lavenham in regard to detail, however it may rival the latter in general interest and design. The treatment of the interior walls above the nave arcade shows a richness and completeness of design rarely found in this position in a parish church. Some remarkably fine oak screen work, especially the pew anciently belonging to the Spring family, against the north wall of the church, is worth special attention. Stained glass, what there is, is mostly recent, and, on the whole, not fortunate. The east window presents florid and pinky combinations of colour depressing to the mind; and the window by Messrs. Lavers & Barraud, at the east end of the south aisle, with better colour, presents the dire mistake of a perspective scene with background, &c., and is otherwise vulgar in design. Considering the unmistakable manner in which nearly all who can claim to speak with any authority on matters of æsthetic correctness have joined in condemning the transformation of windows into "pictures," it is really surprising to find "firms" which have considerable artistic ability at their service persisting in a method of treating stained-glass design, which, even if it were not a complete mistake in itself, is, at any rate, totally opposed to the spirit of Mediæval art, and therefore *à fortiori* out of place in a Mediæval church. However, there is little prospect of improvement in stained-glass treatment until the donors who generally give these things, and the congregations or clergy who receive them, learn a little more about the matter, and are not content to accept with unquestioning faith the taste of the firm employed. *Au reste*, Lavenham has been too long reputed as a fine example of the style to need further or more detailed recommendation now; but the fact that no architect has done for it what has been done for the finest earlier parish churches of England seems to indicate an insufficient practical recognition of its remarkable excellence; and as the Institute are asking, as above mentioned, for illustrations of this among other buildings for their silver medal, we recall attention to it at this juncture as a unique specimen of the Perpendicular style in its best phase, which may very well claim special attention from any younger members of the profession who have time and inclination for such work.

There are other smaller churches accessible from Bury St. Edmunds, not much known in "Gothic manuals," but presenting no little interest in regard to picturesque outline and general style, in combination with natural advantages of site: Stowlangtoft is a charming example of the country church in the midst of its enclosure of ancestral trees, where even poor architecture would look effective; but the tower at least here is a very good bit of work; and at Pakenham a curious little cross church with a central octagon tower, with very abrupt broaches, forms a characteristic crowning point to a very picturesque village. There is plenty for the student of rural domestic architecture, too, in the neighbourhood: old cottages and farm-houses with that nameless picturesque charm which it seems impossible to reproduce, even when the attempt is made; which, it must be confessed, is not very often. Such an artist as Mr. Boyce might find materials for a dozen drawings during a morning's drive; and if he would pay Long Melford a visit, we should be pretty certain to come upon the Park Lodge there, some morning, "on the line" at the "Society of Water-Colours" Exhibition.

MATTERS IN CAMBRIDGE.

THE dining-hall at Pembroke College, about which, as our readers remember, much discussion has taken place, is out of the reach of discussion now. It is "clean gone for evermore," the walls of the new one are getting up, and the college "quad" generally is in a state of transformation. What has been done, is doing, and is about to be done, seems to be briefly this. The side of the quadrangle adjoining Trumpington-street has been already half rebuilt from the design of Mr. Waterhouse, in bright red brick, with stone quoins, strings, and mullions; the style being a modified domestic Gothic, with three-centred arches to the principal windows. The remainder of the Trumpington-street front, excepting the chapel (the end of which comes up to the street in the middle of this front, and at present divides the old work from the new), will probably be rebuilt before long in accordance with the design of the other half; this portion consists entirely of rooms, and in some places, over the gateway especially, is in a "state of disrepair" (as some American said about our cathedrals), which renders rebuilding really practically desirable. The return of the quadrangle at the further end, flanking Pembroke-street, may not improbably follow the fate of the front, though the practical reasons for demolishing it are not so obvious here as in the front, the buildings having the appearance, at least, of better repair. Projecting into the quadrangle from the centre of the Pembroke-street range of building, and parallel with Trumpington-street, comes the new dining-hall, on the site, or nearly so, of the old one. Back from the end of this, parallel to Pembroke-street, runs the only range of buildings which it seems certain will be preserved; a range of old brick "rooms," with a quiet picturesqueness in their aspect which makes it matter for congratulation that these, at least, are reputed to be safe from demolition. Opposite to these, on the other side of the green furthest from Pembroke-street, the new library is to be built, forming another side, or part of another side, of the quadrangle. The ends of the library and of the old buildings just mentioned abut on the master's garden, behind the quadrangle, and are separated from it by a brick wall (new), showing some picturesque treatment of brick gate-piers. The master's house, the back of which adjoins Pembroke-street, is just completed from Mr. Waterhouse's design, in a similar style to that of the new buildings in Trumpington-street; so that the intention to make one thing of it is pretty obvious. Nor does it appear that this is an intention likely to meet with any serious opposition from among the governing body of the college, notwithstanding what has been said on the subject. The chapel remains as a fixed point in the midst of the changes going on around it. This has been a plain brick erection, an unbroken oblong with a low-pitched roof, subsequently "made beautiful" (though, as it should seem, "not for ever") with compo covering and pilasters and capitals. These it is possible to remove, and replace with a red brick outer surface similar to the other building, which will, if the whole scheme is completed, flank it on each side.

The work on the new building is being admirably and solidly done, and the character of the design shows that type which belongs to Mr. Waterhouse's more recent work, and for which there is much to be said, considering it as an adaptation of Gothic to the feeling and requirements of the present day. If we look at it in regard to this particular case, however, there may be room for question. The old buildings which are to remain should, one would suppose, give the key to the style and feeling of the new work; but this is certainly not so. The old buildings, it is true, have but little of what is generally called "architecture" in them, and one need not expect an architect, in rebuilding, to tie himself from going beyond these in elaboration. But there does seem to be, in the new buildings as so far proceeded with, too little consideration for the *genius loci*,—too much of the "handsome structure" element, in place of the quiet domestic look of the old building. If architects could only be content, in rebuilding such places as these, to keep to the old quiet style of the place, to avoid the (apparent) desire to outdo all that has gone before, there would be less dissatisfaction about rebuilding when dilapidation has rendered it desirable. That the completed scheme, if carried out, will result in an excellent set of buildings we have no doubt, entirely creditable to their architect if they were a first erection on a new site. Viewing them as a replacement of the old college, and taking the portion of that which is to be left as the datum to go upon, we cannot but feel some sympathy with those members of Pembroke College who complain that the old character of their college is being destroyed, and its associations annihilated. We hear that considerable rebuilding is in preparation at Jesus College; and it is because this sort of operation tends so much to repeat itself that we cannot help giving a caution and admonition against unnecessary pulling to pieces and rebuilding. We all know how this sort of thing goes on, and how few people can rest in peace when their neighbour has refurbished his house or restored his church, without at once wishing to rival him; and if this sort of spirit were once encouraged in Cambridge, there would soon be an end to half the interest and association of the place. We hope the heads and fellows of colleges, and others who have influence or authority, will set their faces against wanton demolition of buildings the historical and architectural associations of which, once gone, nothing on earth can replace.

One of the new sights for the architectural visitor to Cambridge is the decoration of Trinity Chapel by Messrs. Heaton, Butler, & Bayne; the chapel being only recently completed, and the ante-chapel still in the hands of the decorators. The work affords the opportunity of estimating the effect of coloured decoration on the walls combined with colour in the windows, a combination often condemned on high critical authority, and which the present experiment does not altogether tend to recommend. Messrs. Heaton & Co. of course know all about the requirements of stained glass, and have not attempted to make the wall-decoration vie with it in brilliancy; but the subordination is not complete, and the

eye is confused, in looking along the apartment, between the reflected and the transmitted colour, of which the latter goes far to kill the former. The wall decorations consist mainly of conventional foliage, in large panels, and in which gilding is very largely used,—the most effective material for competing, and at the same time contrasting, with the colour in the windows. The panelled wood ceiling is painted, in the panels, with symbolical devices and angels, &c., on the dark wood ground; the general effect is good, though the host of archaic symbols and figures seem as little in keeping with modern feeling and modern education as with the style of the Renaissance building. The Papal chapel of the sixteenth century was painted by Michelangelo. The chapel of the most celebrated educational establishment in nineteenth-century England is painted by a firm of decorators. The contrast is curious, and suggestive. The mass of gilding over the reredos is in keeping with the style, and as what is termed a "gorgeous" effect, not altogether displeasing to the eye. The windows, considering that they are not all by the same makers or designers, show a happier conformity of style and tone of colour than is generally secured in such cases.

Among other items of novelty in connexion with architectural embellishment, there is talk of a large new window for King's Chapel, by Messrs. Clayton & Bell. Other operations did not come under our notice during a hasty visit, except that the singularly uninteresting bit of road which leads from the railway station up towards the town is getting made more hideous by red and white brick "villas" of the most vulgar type. The approach or entrance to Cambridge is certainly not inviting to the architectural visitor.

THE AMENDED RIVERS POLLUTION BILL.

WE have seen a copy of the "Pollution of Rivers Bill," as amended on report on recommitment, and ordered to be printed the 8th of July. The new title of the Bill is "An Act for the Better Prevention of the Pollution of Rivers." The law as to pollution is now confined to three heads,—viz., solid matter, sewage, and liquid pollution; the suggestion which we made on the subject (*Builder*, No. 1685, p. 456) having been generally adopted. We are also glad to observe that an evasion of the penalties enforced by the Bill, which was feared to be possible by placing under or other solid refuse not in but near the channel, is estopped by a definition of the word "convey," which is given under the interpretation clause. It seems incredible that such an evasion should have been allowed; but it is in evidence that such has been the case, so that the addition is of much importance.

To the second clause, prohibiting the conveying of solid refuse into a stream, there is, we are glad to say, no exception. To the third clause, prohibiting the conveying of any solid or liquid sewage matter, there is a delay as to proceedings under the Act until after the end of the year 1876, or until the expiration of any further delay that may be granted by the Local Government Board, if matter of the same description has been conveyed to the stream in question before the month of January, 1875. There is also the elastic, not to say unmanageable, clause, "Such person shall not be deemed to commit any offence against this Act so long as he is using the best practicable and available means to purify such matter before it is conveyed into the stream." As to the fourth clause, prohibiting the conveying into the stream of any poisonous, filthy, noxious, or polluting liquid proceeding from any trading or manufacturing process, or from any mine, no proceedings are to be taken, "in cases where such conveyance was in operation before the commencement of the present year, until Parliament shall have authorised such proceeding to be taken.

Thus altered, or, in technical phrase, amended, the Bill only erects a barrier against any fresh pollution; leaving the actual condition of the rivers unimproved. Nor does it quite effect even so much as this. As we read it, if a manufacturer had been in the habit of conveying a gallon of poisonous liquid into a river in the course of a week, before the 1st of January last; and were now, emboldened by the result of the stand made against legislature dealing with the case, to pour in a million gallons in a week, or in a day, he would not only be out of the reach of the Act, but would be establishing a user in his own behalf against any future Act. This obvious source of danger we hope will be met by those who have charge of the Bill.

With regard to the further exceptions it seems useless now to say much. We very much regret that the Government should not feel justified in adopting a stronger policy. To pass the enactment as it stands will, of course, be a positive gain; but it can only be accepted as such by sanitary reformers, on the distinct understanding that the measure is only provisional. If that be distinctly promised, and if, at the same time, steps be taken for collecting the results of our actual experience, and for communicating them to the public under efficient authority, we shall be thankful; on the principle that half a loaf is better than no bread.

The important ninth clause of the original Bill stands, unaltered, as the eighth clause of the Amended Bill. It is from the principle admitted in this clause, and from the adoption of such principle alone, that any rational expectation of real improvement in our water system is to be derived. The *morcellement* of sanitary authorities means the negation of sanitary reform.

THE DRAINAGE OF MADRAS.

THE Madras Government have just passed an order on Mr. William Clark's scheme for the drainage of the presidential capital, intimating that they consider it the most satisfactory solution of the problem likely to be attained, and instructing the Accountant-General to propose the best method for obtaining the requisite funds to carry it into execution. Madras has long had an evil reputation on account of its insanitary condition, as is shown by comparing its death-rate with those of the other Indian cities. In 1871-72 Delhi headed the list with a mortality of 41·3 per thousand; then followed Madras, with 33·4; while Bombay showed only 25·0, and Calcutta, 23·7 per thousand. Matters, moreover, have been getting worse; for in 1873 the death-rate of Madras was 36·7, and last year it rose to 37·1. Zymotic diseases are, also, unusually prevalent, and are partly traceable to the want of proper sewers. From its situation the city presents many difficulties to the drainage engineer. It stands on a sandy plain, the lowermost part of the city being from only 2 ft. to 6 ft. above mean sea-level, while the highest portions do not rise above 24 ft. above that level; and water is found in all parts of the town, a few feet above or below the level of the ocean. The local rainfall is very heavy, averaging above 50 in. per annum, and this quantity generally falls in about three months when, the lower parts of the town are apt to be flooded by the excess of storm-water during the monsoon. The total population of Madras has been ascertained to be 397,552, while the number which Mr. Clark's scheme provides for is only 317,479. This discrepancy is occasioned by the fact that the excluded 80,000 persons are scattered over suburban districts, extending for many miles, which are already provided with some sort of sanitary arrangement, and to include which would enormously increase the cost of the project. He also provides separate plans for the drainage of the city proper and of the old town of St. Thome.

Madras is at present almost entirely dependent for its drainage on a system of gutters on each side of the streets, with outfalls in the sea, the river Coum, and the cutting known as Cochrane's Canal. "These drains," Mr. Clark admits, "appear to be carefully attended to by the sanitary officer and his subordinates; but no amount of attention can render what are, in most cases, stagnant receptacles of filth otherwise than objectionable," and "objectionable" is a mild term to apply to the exhalations given off by these open drains when the hot Indian sun beats upon them. Mr. Clark would leave these drains to assist in carrying off the storm-water, which he excludes from his sewers, as an adequate provision for carrying it off would treble the outlay. He limits his proposal to the removal of all fluid filth proceeding from houses and manufactories, the subsoil-water from those localities where it is found in the soil near the surface, and the excreta of the population. The removable fluids of Madras have been recently greatly augmented by the new water-supply, which will ultimately yield 20 gallons daily per head of the population, and will be capable of extension to even 40 gallons. Owing to the limited number of fountains and the small number of houses supplied direct from the mains, the consumption is as yet only 7 gallons per head, and Mr. Clark suggests that measures should be taken to render the water more conveniently available by the people. He has based his calculations on an ordinary consumption of 20 gallons daily for each individual. As to the removal of the night-soil and excreta, he says, that the quantity is small as compared with the house drainage; so whether it is admitted into the sewers or not, the cost of the drainage will not be in the least affected. He regards the water-carriage system of drainage as the cheapest where, as in Madras, water can be procured in abundance; and while he recognises the economy of sewage utilisation prefers to let richer towns conduct experiments, and confines his attention to the collection of the sewage and its transport to the sea.

Mr. Clark proposes to do the work by a system of main and outfall sewers of brick or laterite in mortar, plastered with cement inside, and laid on concrete, or of concrete blocks cast to the required shapes; and of subsidiary stoneware drain-pipes laid on concrete. The sewer-pipes will vary from 9 in. to 15 in. in diameter, and, being mostly below sea-level, no provision for flushing will be necessary. In order to facilitate the cleansing of these pipes they will be laid as nearly as possible in straight lines, with manholes at intervals not exceeding 300 ft. for the use of scavengers. Manholes will also be provided at the junction of one street sewer with another. The pipe joints will be made with Portland cement for three parts of their circumference, the remaining fourth at the top being packed with tempered clay, and covered with concrete to prevent the entrance of sand, but to permit small quantities of subsoil water to percolate through. The sewers will be ventilated by gratings fixed on the road surface, near to the manholes, and in connexion with them, at distances of about 100 ft. The total population of the drained area being taken at 300,000, the maximum quantity of house and subsoil drainage is calculated at forty-two gallons per minute per thousand inhabitants = 12·600 gallons per minute, and two engines of 35-horse power effective will, it is believed, be sufficient to raise this quantity. A pumping-station will be built near the centre of the area to be drained, and the pump will be closed from the outer atmosphere, and will cause no nuisance. The outlet, which like the suction-pipe will be of cast iron, will be laid at such a level as to admit of a brick culvert, 4 ft. 9 in. high, being laid beneath the surface, with an inclination of 5 ft. per mile, the total fall in the culvert being 10 ft. The town having been passed, the sewage will fall into an open excavation, carried through market-gardens and waste lands to the sea, where a length of 200 ft. of oval brick culvert will be constructed, with a further length of 22 ft. of stone masonry work, in which will be secured the junction lengths of a cast-iron 4 ft. 6 in. pipe, which will be continued into the sea at 1 ft. above sea-level for a distance of 100 ft., and supported on a screw-pile jetty. At the end of this outfall pipe will be a valve, arranged to close by a float, so as to prevent the entrance of sea-water. The market-gardeners through whose property the sewage will run will be encouraged to irrigate their gardens with it, and it is hoped by Mr. Clark that eventually some capitalist may be found to take up the question of utilising the whole of the sewage available in the enormous area of low land near to which the channel passes.

The estimate cost of this scheme is 234,800*l.* for the whole area which it is proposed to drain, and the working expenses are calculated at 3,700*l.* per annum, while the annual instalment necessary to pay the principal in thirty years, with interest at 4½ per cent., will be 14,415*l.* As the *Madras Mail*, to which we are indebted for much of the foregoing information, points out this charge will be felt to press heavily, but it and the other local journals strongly advocate the scheme, and show that the pecuniary value of the lives lost and of labour wasted by sickness owing to unsanitary causes which the drainage should remedy is nearly ten times as great as the new burthen on the ratepayers. On this point Mr. Clark himself says:—"When it is stated that Madras is too poor a place to indulge in the luxuries of drainage and water supply, let it be remembered that loss and sickness and death are the penalties of filth, and that they are paid chiefly by the poor who cannot help themselves; but the rich do not escape, for when surrounded by such conditions as abound in this city nature frequently exacts the penalty from all'

rich and poor alike, who neglect or break her laws." There seems a possibility that Mr. Clark may have been deserted by his old patrons of the City of Palaces only to find a new and suitable sphere created for him in the southern capital. A paragraph of the official order says:—"The Government as well as the municipality being financially and otherwise interested in the complete development of the water supply, which is now retarded, owing as much to want of engineering knowledge and experience as to lack of funds, it would appear desirable that arrangements should be entered into for placing both the water supply and drainage in the hands of a competent engineer-in-chief, such as Mr. Clark."

THE DERBYSHIRE INSTITUTE OF ENGINEERS.

THE annual meeting of this body commenced on the 6th inst. at Nottingham. Having visited the collieries in the neighbourhood, the members drove through the pretty villages of Linby and Papplewick, along Papplewick-lane, to Sherwood Lodge, the residence of Colonel Seely, where they had been invited to luncheon, which was provided in a marquee on the lawn.

On the 7th inst. a meeting of the members was held in the School of Art, Lord E. Cavendish presiding, who said the present meeting was the fifth anniversary of the establishment of the Institute. It had for one of its objects the improvement of the working classes, and he was glad to see the kindly feeling now subsisting between employers and employed, and he hoped the Institute would be the means of maintaining and fostering that feeling.

There were discussions on Mr. Fowler's paper on "Hydraulic Apparatus for Loading and Unloading Pit Cages"; on Mr. Bainbridge's paper on the "Application of Mechanical Power in Colliery Operations"; and on Mr. H. Stokes's paper on "Boring and Boring Machines."

Mr. G. H. Wright then read a paper on "The Prevention of Over-winding"; and

Mr. M. O. Tarbotton, the borough surveyor of Nottingham, one on the "Sewerage Operations in Nottingham," in the course of which he said:—Nottingham is a town of about 100,000 inhabitants, and is situated upon the banks of the river Trent, and of its gentle tributary, the Leen. The Trent has a watershed of 4,076 square miles, 2,900 of which lie above the town. The Leen is a small river, rising in Robin Hood's-hills, above Newstead Abbey, and discharging into the Trent near the Trent Bridge. Another small stream flows through the town to the north and east, called the Beck, which rises in the Mapperley hills, and also discharges into the Trent a short distance to the east of the debouchure of the Leen. As in most other towns, the rivers have been hitherto made the receptacles of the aggregated filth of the community; and enormous sewers, necessary for the health and manufacturing interests of the people, daily disgorge their contents into the waters of the Leen and the Trent. The daily increasing impurity of the Trent for many years past, caused great annoyance to the landowners and the public generally, and the Corporation was pressed to seek other means of disposing of their sewage. Although the borough contains about 100,000 people, yet this does not represent the true size and population of the town. Nottingham is surrounded by six populous out-districts. These districts have each independent governing bodies, viz., Local Boards of Health or Sewer Authorities. Topographically, Nottingham lies at the base of the Leen Valley, and constantly receives all the upper waters of that basin; and the Leen acting also as the outfall sewer of the upper districts, the whole of their sewage passes through the borough on its way to the Trent. Application was made to Parliament, and a Bill prepared, which resulted in the Nottingham and Leen District Sewerage Act, 1872. This measure provides for:—(*a*) The definition of a district or watershed area, within and over which the powers of the Act are applicable. (*b*) The constitution of a Board or body corporate having perpetual succession and a common seal. (*c*) The construction and maintenance of intercepting sewerage works in the valley of the Leen. (*d*) The construction and maintenance of outfall sewerage works, and the purification or utilisation of the sewerage (*e*) The conservancy of the river Trent and the river Leen, and their several tributaries. (*f*) The extension of the powers of the Act under certain conditions to places outside the prescribed district. The first operation of the Board was the construction of an intercepting sewer in the valley of the Leen. Immediately after the formation of the Board a detailed survey of the Leen valley was made, and levels taken, and the lines of the sewer to intercept the whole of the sewage between Bulwell and Nottingham were carefully determined. This sewer was commenced near the end of the year 1873, and is in progress at the present time, about two-thirds of the whole work being completed. The total length of this sewer is 30,837 ft. 6 in., or about six miles. The total fall from the upper to the lower end of the sewer is 70 ft. 6 in., or an average of 12 ft. to the mile. The discharging power on the flattest gradient, and in the lower part of its length, viz., in the mile between Lenton and Nottingham, is 3,097 cubic feet per minute, or 27¼ million gallons per day. The cost of the work will be about 35,000*l*.

THE LATE MR. J. E. DOVE.

WE record, with much regret, the death on the 8th inst., after a long and severe illness, of Mr. John E. Dove, who for more than a quarter of a century has been connected with the *Builder*. Besides numerous miscellaneous contributions during that long period, some curious and erudite articles, under the signature of "J. E. D.," will be remembered, treating of signs and symbols and prehistoric matters. Mr. Dove had been connected with the press during the greater part of his life, but though he had published some distinct works, and contributed to various publications, he was so retired in his habits that he was but little known. He was, however, most assiduous and persevering in his labours, and his great integrity and courteous manner endeared him to those who knew him.

TAUNTON AND THE ROYAL AGRICULTURAL SOCIETY.

IN no place since the first show of the Royal Agricultural Society was held at Oxford in 1839 have the members received a more effusive and demonstrative welcome than they have done in the present meeting at Taunton. The decorations of the streets are of the most profuse character, and have involved the expenditure of much time, labour, and money. The money for the public decorations has been provided by subscription, but many of the inhabitants have been at great cost in decorating their own premises. One place of business at the corner of High-street, known as "The White Hart," of which the well-remembered Mr. and Mrs. Manning, of unhappy end, were host and hostess, must have cost the present occupier not less than 150*l*. If it be true—and who can doubt it?—that a bit of red gives a lively appearance to anything, the streets of Taunton ought to present, and they do present, a very lively appearance indeed, being from the railway station to the show-ground quite a blaze of bunting, in which red prevails. The public decorations consist mainly of rows of Venetian masts, adorned with clusters of bannerets, and mottoes, more or less trite, and spiralled with box or coloured calico, the lower portions surrounded by evergreens. A wonder, in the mind of some visitors, is as to where such a large number of poles, and such a great quantity of box-foliage and bay-branches, can have come from. The masts are connected by festoons of evergreens; those in Hammet-street—the approach to the splendid church of St. Mary Magdalene—being in good taste. The decorations surrounding and about the parade, or *grande place*, of the town are also profuse.

A Fine Art exposition in Taunton Old Castle was opened on Monday. We hope its merits will be appreciated alike by inhabitants and visitors. The venerable historic building in which the exhibition is held is deserving of more than a passing notice. It should be mentioned that in addition to the display of bunting, a number of inhabitants made on Monday night an illumination, in which the devices were more brilliant than varied, stars being the staple device. Reverting to the Society's Show, it is to be hoped that it may prove successful, but the weather during last week, when the trials of implements were made, was generally very unfavourable, and a gale on Sunday morning and forenoon sadly damaged the decorations. On Saturday the exhibition was partially opened, when there was a comparatively slender attendance of visitors. On Monday it was fully opened as a five-shilling day, but the attendance fell short of what might have been expected. The weather was all that could be wished for, but it did not tempt intending visitors, who were probably like Mr. Gilpin, on pleasure bent, but of a frugal mind. The admissions compare very unfavourably with those of the last two years. They were at Hull, first day, 1,963; at Bedford, 2,581; at Taunton, 831. The next day, however, the weather having been brilliant, the attendance was considerably more than 9,000, the visitors streaming in from Bristol, Yeovil, Exeter, and the places surrounding Taunton, by the earliest trains.

The exhibition ground covers 55 acres; the exhibits, exclusive of live stock, are 4,214 in number; and the central sheds, measured on their ridges, aggregate about six miles.

ANCIENT MEASUREMENTS.

AT a recent meeting of the Society of Biblical Archæology, a paper on "Ancient Metrology," by Mr. F. R. Conder, C.E., was read. In this paper Mr. Conder indicated the confused and contradictory state of our present knowledge of the subject, and proceeded to establish an absolute metrical base, identifying the barley-corn, which the Hebrew writers state to be the unit of length and of weight with the long measure barley-corn and with the Troy grain. The grounds of identification were—(1) actual measurement and weight of full-sized grains of barley at time of harvest; (2) determination of specific gravity according to statements made in Hebrew literature; (3) actual dimensions of ancient Jewish buildings; and actual weight of a Babylonian talent now in the British Museum, which corresponded to Mr. Conder's determination of 960,000 Troy grains within one *per mille*. The remarkable double division of the Chaldee metrical system, which is both decimal and duo-decimal, was then explained, and shown to apply to measures of length, area, capacity, and weight. The origin of the Troy ounce, the diamond carat, the Spanish ducat, and other existing divisions, is traced to the early system employed by the Phœnician traders.

NEW WATER SUPPLY FOR LEWES.

AN era in the hygienic arrangements of the town of Lewes was inaugurated on the 9th inst. at the Waterworks, when the new supply which the company have obtained by their new boring was ushered into the new reservoirs which store the water issued to the town and its suburbs. One of the engines at the waterworks now throws 1,200 gallons per minute into the reservoirs from the new well and deep boring recently executed for the company by Messrs. Easton & Anderson, the engineers. The well is 24 ft. deep, lined with four cylinders 6 ft. 6 in. in diameter, and 6 ft. in depth, the bottom being embedded in brickwork and cemented. Projecting from the bottom is a 1 ft. 3 in. guide tube, which extends downwards about 6 ft. below. This is the boring through the rock from which the water issues. It is carried down about 120 ft. below the well. A suction-tube is fixed into the well, 7 in. in diameter, and at the end is a strainer, 12 in. by 15 in., which terminates within 1 ft. of the bottom. This pipe is attached to a pump worked by a 20-horse engine, which propels water into a 10½-in. pipe, running from the works to No. 2 reservoir, near the Black Horse Inn, St. Ann's. From this point the pipe is reduced to 6 in., and is carried on to No. 3 reservoir on the hill above the County Gaol. In addition to these two reservoirs there is another on Kingstone Hills, which is supplied from a pipe 8 in. in diameter, joining the 10-in. near the works. Lewes is now supplied with water of the purest nature.

Re-opening of Shorne Parish Church, Gravesend. — About three years ago the Ecclesiastical Commissioners undertook the restoration of the chancel of the fine old church at Shorne, which was soon after proceeded with. In the autumn of 1873 the Earl of Darnley announced his intention of restoring the Randall Chapel, in which he had vested rights; and at the same time he obtained from his architect, Mr. T. H. Wyatt, of London, a design for the restoration of the body of the church. Altogether about 3,200*l*. have been expended in the work, which has been carried out by Mr. Vaughan, of Maidstone.

HENRI LABROUSTE, ARCHITECT.

FRENCH art has sustained a great loss in the death of M. Henri Labrouste, at Fontainebleau, on Thursday, the 24th of June. It would need a long obituary notice to do full justice to his works, and to his educational influence in his art; and no doubt the Institute of France, the *Société Centrale des Architectes*, and the Royal Institute of British Architects, of all which societies M. Labrouste was a member, will not fail to record in their annals the important place which this gifted and modest man occupied in the ranks of his profession: our aim here is only to recall the prominent phases and incidents of a long and fully-occupied career.

Pierre François Henri Labrouste was born at Paris in 1801, the youngest of several children, one of whom became director of the celebrated *Collége Sainte-Barbe*, and another was, like the deceased, an architect of ability, and, though the senior, survives him. After a good general education, he entered the *atelier* of M. Vaudoyer, then, and subsequently that of M. Hippolyte Lebas, and studied architecture under these two respected masters, and at the *École Royale des Beaux-Arts*, where he was not slow in realising a brilliant success. In fact, at the age of twenty he obtained the *deuxième grand prix* for a design for a "Palais de Justice"; at twenty-two, the *prix départemental* (at that time bestowed on the pupil who could count the greatest number of successes); and lastly he obtained in 1824, at the age of twenty-three, the *premier grand prix* for design for a "Cour de Cassation."

The five years from 1824 to 1829 were accordingly passed by Henri Labrouste in travelling over Rome, Italy, and Sicily, at the cost of the French Government; and seldom has a gift of this kind from the public funds been better employed; for the study which he sent home, in 1828, of his designs for the restoration of the temple and Basilica at Pæstum, comprising an essay and twenty-three sheets of drawings, is one of the most remarkable and splendid collections of drawings of its class, and one which, it may be added, may at the present day, after an interval of nearly fifty years, still be adduced as a model of conscientious investigation.

When Labrouste returned to Paris, M. Felix Duban attached him to his staff, as inspector of construction in the "École des Beaux-Arts"; and in 1840 he was charged, along with M. Visconti, with the important duty of superintending the decorations in connexion with the funeral ceremony consecrating the return of the remains of the Emperor Napoleon I. to France. Labrouste displayed real talent in his application of architectural design of a high character to these decorations, and owed to this mainly the ribbon of the Legion of Honour, which was bestowed on him shortly afterwards, in 1841. In 1848 he was again called upon to undertake the decoration of a funeral ceremony, this time for the victims of the insurrections of June of that year.

Since his return from Rome, however, he had himself opened an *atelier*, where he collected some of his future brethren in the art, giving them the same insight into the spirit of ancient art which he had acquired himself, and inculcating the observance of the rigorous laws which construction imposes upon architecture itself even more than on decoration. From the period of his career when Henri Labrouste and his friends Duban, Vaudoyer, Duc, and Constant-Dufeux carried on internecine war with the tendencies of the "official" French art of the period in opposition most strenuous on the part of Labrouste), we may date the formation of a remarkable group of artists, among whom, besides those whose loss we have to regret (Lassus, Laval, and Sibert), we may count M. Boeswilwald, Lheureux, Millet, Mimey, Visch, Darey, Verdier, Vandenbergh, Bouwens, Leon Dupré, Simonet, &c.

In 1849 and 1850, Labrouste was able at last to realise his dream, and to make, in a great building of a superior class, the application of five-and-twenty years of study. The Library of Ste. Geneviève, a work really remarkable, and, in a sense, typical, shows all his genius as a designer and constructor, and marks an epoch in modern French architecture. Everything, externally and internally, is praiseworthy in that great reading-room and its adjuncts, so complete and yet so simple, in which the solidity and massive character of the general design are relieved by decoration graceful in character and entirely in keeping throughout. After this achievement Labrouste was created, in 1852, an officer of the Legion of Honour.

Being charged, on the death of M. Visconti, with the work connected with the enlargement of the National Library, Henri Labrouste left his mark there also, by the best-known and most interesting of all his works, we mean the restoration of the portions adjoining *Rue Vivienne*, *Rue Neuve des Petits Champs*, and *Rue Richelieu*, and the new reading-room with its vast magazines of books, and its accessory departments of service. It was with these latter works that he was almost entirely occupied at the time of his death.

Besides the above-named works, Labrouste, as "general inspector of diocesan edifices," exercised a most important influence upon this branch of architectural work and on the edifices, ancient and modern, under this department. He was likewise member of the "Commission des Monumens Historiques"; and among the beautiful drawings which procured him, in the "Exposition Universelle" of 1855, a medal of the first-class, we may mention his studies of the Tour de Montbléry, exhibited in 1867 at the Palace of the Champ-de-Mars.

It was only in 1867 that the Institute of France opened its doors to him; and in 1868 the "Royal Institute of British Architects" and the "Royal Society of Portuguese Architects" both elected him an honorary and corresponding member. He was, besides, member of the "Commission des Beaux-Arts de Ville de Paris" and honorary member of the "Société Libre des Beaux-Arts," and of the "Société des Architectes de Lille et de Clermont-Ferraud."

As to the "Société Centrale des Architectes," Henri Labrouste was, in 1841, concerned in its formation (and indeed designed its remarkable medal of membership), and was successively member of its council, secretary of important committees, then vice-president, and was elected president in 1873. It was in that capacity that he presided in 1874 and 1875 over the second and third sessions of the Congress of French Architects; and our readers will have seen in the *Builder* of the 19th and 26th of June (pp. 544, 564, *ante*), how he gave on that occasion evidence of his devotion to his art, while his name formed the best rallying-point round which the architects of France could group themselves.

Paris. CH. L.

DWELLINGS OF WORKPEOPLE IN PENNSYLVANIA.

IN Philadelphia the dwellings of the industrial classes are of brick, and are distinct houses, in regular "blocks." The greater number are built 14 ft. wide, and two stories high, on lots averaging 50 ft. in depth; the house containing four complete rooms, with usually a bath-room in addition, projecting back from the second floor, and a covered porch beneath; as both these can be used in case of need, the one for a sleeping-room, and the other for an outer room or summer kitchen, the house may easily be converted by its occupants into a six-roomed dwelling. The height of the cellar is 8 ft., 2 ft. of which are above the level of the pavement; the ground floor, or first story as it is called, is 9 ft., and the second story 7 ft., from floor to ceiling. The rooms are 15 ft. each in depth, and the entrance-hall is 3 ft. wide, the staircase rising at the rear to the second floor.

The cost of houses of this class is 300*l.* to 400*l.* each, for a title in fee; and they can be purchased by making a small cash payment, say one-fourth to one-eighth of the whole cost, with mortgage or other security, for so much more as shall make up one-half the value, the other half being left at a permanent rent of 6 per cent. per annum, called a "ground-rent." This ground-rent may vary in amount, as it represents the cost of the land built upon, but it is generally about half the cost of the whole property. The interest is always the legal rate 6 per cent. Thus a mechanic with 50*l.* to 100*l.* cash can always purchase a roomy, well-ventilated, and very comfortable house, arranging for the payment of the balance of the consideration-money in easy instalments, and obtain the title in fee subject only to the ground-rent referred to. The house may be rented at 2*l.* 10s. per month for the cheapest, 2*l.* 16s. for others, and from 3*l.* to 3*l.* 10s. for the very best. Great numbers of this description of two-story dwellings have been erected in Philadelphia within the past fifteen years. All are neatly built, pleasant, and attractive, many having dressings and door-steps of white marble. They constitute a striking and interesting feature of the newer districts of the city.

Another class of two-story brick houses is largely built as residences for craftsmen, differing only in having six full rooms, three on each floor, and in giving a better finish to the whole, adding heating, furnace, gas, &c. These are valued at 400*l.* to 700*l.*, each according to location, and may be purchased in the same way as the others, half cash, and half on ground-rent. They rent at 4*l.* per month on the average. All have bath-rooms, and are supplied with gas fixtures. The more costly are 16 ft. in front, and 40 ft. to 44 ft. deep. All these two-story houses front on regular streets, the length of the square being 400 ft. to 500 ft., the streets 30 ft. to 50 ft. wide, and at the rear all open into alleys from 4 ft. to 6 ft. in width.

Three-story brick houses are also largely occupied by mechanics and working men in Philadelphia. These dwellings are similar to the best class of two-story houses, with an additional story and larger lots. They can be purchased in the same manner as the smaller houses, and rent from 4*l.* to 7*l.* per month, according to the amount of interior conveniences.

The records of building in the city show that from 1855 to 1871 upwards of 20,000 houses such as we have described have been erected, of which 18,000 are occupied by mechanics, or other people at wages, with an average of six and a half persons to each house, or a total of 117,000 people so housed. It may be stated generally that one-half the industrial classes occupy separate houses, the other half being in houses of an older style, and with more than one family, or with rooms occupied by lodgers.

The coloured population occupy the oldest and poorest dwellings. They let rooms, and crowd lodgers into them. Irish labourers do so to some extent, also the Germans of the poorer class.

The builders of the houses named state that two-thirds have been sold to their occupants,—a fact which speaks highly for the thrift and industry of the Philadelphian workpeople.

Lodgings are let at an average of 30s. per month for one room, and of 2*l.* 4s. to 2*l.* 18s. per month for two rooms. The houses in the older sections of the city, so occupied, and in which lodgings are let, are generally clean and comfortable. They present no evidence of extreme distress, the occupants appearing to have some certain means of living.

In a few interior cities, such as Reading, Lancaster, Harrisburgh, Pittsburgh, Erie, &c., there are many comfortable houses of brick similar to those above described, but generally in the smaller towns they are built of wood, a few being of stone. The prices paid for these houses are about one-half the price of those in Philadelphia. Rents are also about one-half, or 37s. per month, for a decent two-story house of four or six rooms. In the summer, the comfort of the lodgings and houses of workpeople in the country is equal to or greater than those in the city; but in winter the reverse is the case, and the inhabitants of the interior often suffer needlessly from badly-protected houses. The advantage of a garden is usually obtainable in the country, and smaller towns, but it is neglected to a great extent, not half the number availing themselves of it. In the city a garden is rarely or never available.

The hours of labour in the cotton and woollen manufactures, and, indeed, generally throughout the State, are ten hours a day. Extra work beyond that period receives extra compensation.

As regards the purchase-power of money, it is 75 per cent. in favour of Great Britain; that is to say, 1*l.* in England is equal to 1*l.* 14s. in Philadelphia. It would seem, taking as a basis the living of a carpenter, wife, and three children, that a respectable Philadelphian mechanic comfortably subsists on 2*l.* 13s. 3d. per week, whereas a British mechanic of similar grade would not spend more than 1*l.* 11s. 10d. per week with equal family, showing a difference in favour of the British mechanic of nearly 70 per cent. What, then, is the difference in wages? The Philadelphian mechanic earns 3*l.* 6s. 7d. per week; the British mechanic, 1*l.* 16s. to 2*l.* 2s.; thus showing a difference of about 60 per cent. in favour of the wages of the former. Deducting the cost of living from the wages of each mechanic, the Philadelphian mechanic is 3s. per week better off than the other. If the British workman could save a similar amount, he would be 70 per cent. better off than the Philadelphian, the purchase-power of money being to that extent in favour of England.

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THE HISTORY OF PAPER-HANGINGS.*

PREVIOUS writers on the history of paper-hangings do not seem to have searched the list of patents granted to inventors in this country since the year 1617. The information derived from these records has thrown considerable light on the subject, and has afforded the earliest allusion to them that I have discovered. The introduction of paper-hangings appears to have been foreshadowed by the invention of George Tomlyn, in 1662, when he obtained the following patent:—"A newe way to text and florish Veloms and Parchments with our name, pourtrachure, imperial armes, badges, and other ornaments, by printing the same with a rolling printing presse and engraved plates to the greate benefitt of our subjects, for that as good worke otherwise wrought cannott well be afforded for tenn tymes the price, the worke being likewise very neate and of good ornament to our letters patent and other exemplicacions." Whatever the precise object of this invention, it is evident that it was a kind of printing which approached the manufacture of paper for hanging upon walls. In the year 1692,—thirty years afterwards,—the first patent for paper-hangings was obtained by William Bayly, and it is, without exception, the earliest notice that I have been able to find regarding this inexpensive and convenient form of decoration:—

"William and Mary, by the Grace of God, &c., and all to whome these presents shall come, greeting. Whereas William Bayly hath, by his humble peticon represented vnto vs, that he hath by his industry, and his great expence, found out and invented, 'A new Art or Invention for Printing all sorts of Paper of all sorts of figures and colours whatsoever, with severall engines made of Brasse and such other like Mettals, with Fire, without any paint or staine, which will be usefull for Hanging of Rooms, and such like vses,' and that the said invention hath not been heretofore knowne or practised by any of our subjects, and hath humbly prayed vs to grant him our Letters Patents for the sole vse thereof."

The date of this patent seems to fix the exact time when the manufacture of paper-hangings began in England. Such is clearly expressed in the document, and there is no previous information of such paper-decorations being in use. It has been already shown that the manufacture of plain paper had just commenced, so it may be assumed that the use of paper-hangings began immediately after it was possible to obtain paper for the purpose. The precise mode in which Bayly printed his paper-hangings is not very clear, though it must have been sufficiently near to the present block-printing as not to have rendered another patent necessary. The earliest attempts are supposed to have been in imitation of the tapestry, velvet, silk, linen, and cotton hangings then in fashion, and they were naturally called paper-hangings. It seems impossible to ascertain whether they came into frequent use soon after they were introduced; though it is very probable that the demand for such a cheap form of decoration rapidly increased with the production of suitable paper; for in the year 1712, in the reign of Queen Anne, the manufacture attracted the attention of the Government, and a duty was imposed,—just twenty years after the invention of Bayly. The following is a copy of the Act:—"And it is hereby enacted, That for and upon all Paper which, at any Time or Times during the Term last mentioned, shall be printed, painted, or stained in Great Britain, to serve for Hangings and other Uses, there shall be answered and paid to Her Majesty (over and above the Duties payable for such paper before printing, painting, or staining thereof) the sum of one penny for every Yard square, and after that rate for a greater or lesser Quantity, to be paid by such person or persons as shall print, paint, or stain the same." This duty was distinguished by being a second charge upon an article highly taxed in its plain and simple state. The duty on all kinds of plain paper was also imposed under the same Act, before which there was no restriction on it. However, only two years afterwards a general increase of the paper duties took place, when that on printed, painted, or stained paper had an additional duty of one halfpenny for every square yard imposed on it. The words of the Act are exactly the same as the one quoted, with the exception of the alteration of the amount of the duty. In a piece of paper-hangings there were from 16 to 24 sheets, and these altogether contained eight square yards, the duty upon which, at 1½d. per square yard, amounted to 1s. per piece, with an extra charge (probably 5 per cent.) in addition, and no change was ever made after the second impost in 1714. The duty was usually supposed to be 1½d. per square yard on the paper actually printed, and not on the whole of the paper, including margins and joints. This seems to have been the mere popular notion, and the duty amounts to the same within a fraction by either mode of calculation. In the year 1715 an Act was passed to render the collection of duty on stained paper more effectual, and each sheet had to receive a Government stamp. There seems to have been a difficulty in collecting the duty, for in 1792 there was another "Act for more effectually securing the Duties of Stained Paper for Hangings." Paper-stainers had to procure an annual licence, which cost 4*l.*, that paid by paper manufacturers being 4*l.* 4*s.* In 1836 the number of licences was 150, and produced the sum of 600*l.*

Paperhangings imported from China are said to have been frequently used in the reign of Queen Anne. Some writers are of opinion that these Chinese paperhangings originated the idea of the manufacture in England, and that the art had been long pratised in China; but there is no reason for supposing that they did more than give an impulse to the use of such hangings. Chinese and Japanese paperhangings are occasionally brought home at the present time. They are, probably, partly printed and afterwards finished by hand. From 1712 a long period ensued during which I have not discovered any notice of paperhangings. Doubtless the duty weighed heavily on the trade, though such progress had been made during the interval that it had attained the perfection of a settled branch of industry. In the year 1724 Robert Redrich & Thomas Jones took out a patent "for making, marbling, veining, spotting, staining, clouding, and damasking any linen, silks, canvass, paper, and leather"; but it may have had little or no connexion with the trade. In 1746 the blocks used for printing paperhangings were very long,—some more than two yards,—and were made of light material, so that they could be easily handled; but it was soon found necessary to construct them in a more substantial manner when they were heavier, and had to be much shorter. The patterns produced at that time are said to have been principally geometrical designs. In 1753 Edward Deighton obtained a patent for "An entire new method of manufacturing Paper for Hanging and Ornamenting of Rooms, and other purposes, and that the same will be of great use and benefit to the publick." This method consisted of etched or engraved plates of metal. The design was impressed on paper under a rolling-mill, and then painted or coloured by hand, with pencils "called camell-hair pencils." Deighton used gold-size in gilding his designs.

About the same time, 1754, a manufacturer of paperhangings at Battersea, named Jackson, published a work on the invention of printing in chiaro oscuro, an imitation of stucco and bas-relievos, and its application to his business, with illustrations. He produced Classical subjects and landscapes with such decorative borders, festoons, and flowers, as to cover the wall with a general design. Possibly he was the first to introduce these varieties of ornament. From Jackson's account it is evident that paperhangings were then in general use; though they were, doubtless, rather expensive, and used principally in the houses of the wealthy and places of public resort. He says that "The person who cannot purchase the statues themselves may have these prints in their places, and thus effectually show his taste. 'Tis the choice and not the price which discovers the true taste of the possessor; and thus the Apollo Belvedere, the Medicean Venus, or the Dying Gladiator, may be disposed of in niches, so surrounded with a mosaic work in imitation of frames, or with festoons and garlands of flowers, with great taste and elegance; or, if preferred, landscapes after the most famous masters, may be introduced into the paper." Whether Jackson prevailed on many persons to show their taste by purchasing his statuary, it is of course impossible to ascertain. At this period English paper-hangings are said to have been much superior to those of the French, both with regard to execution and beauty of design.

In an old work entitled "The Handmaid of the Arts," printed for J. Nourse in 1764, there is a very minute description of the manufacture of paper-hangings, from which it is evident that the trade must have flourished for a long period. I states that "there are three methods by whic paper-hangings are painted; the first by printin on the colours, the second by using the stencil and the third by laying them on with a pencil as in other kinds of painting." Each of the thre processes is minutely described; and the mode o printing by block-work so nearly resemble that of the present time, as evidently to be th result of long experience in the trade. Th method of stencilling is minutely shown, "th pattern being formed of a piece of leather or oil cloth, in which the design was cut. This, o being spread out on the paper and rubbed ove with colour by means of a brush, coloured th parts of the leather or cloth that had been cu away." Stencilling was considered "to b cheaper than printing with blocks, but the wor was not so perfect, or free from blemishes as th former method." The author says, that "pen cilling is only used in minute work, for the pur pose of filling up outlines, and embellishing design with details requiring exactitude, free dom, and variety of outline." Paper-hanging finished by this process are said to have bee very effective, and were probably equal to th work produced by block-work at the presen time.

In the same old work is an account of a "embossed sort called flock paper, *chopt-cloth* which is of very late invention and is a great im provement of the manufacture of paper-hangings both with regard to beauty and durableness." The author mentions "imitations of velve damask, brocades, chintz, and other such silk and stuffs as are employed for hanging rooms," thus incidentally describing the modes of deco rating then practised, and which paper-hanging had not up to that period altogether displaced The reference to "brocades" possibly confirm the use of gold, and perhaps silver, for th meaning of the word in "Bailey's Dictionary," 1722, is "cloth wrought with gold and silver, though it has not such a limited significatio now. Allusion is also made to paper-hanging with varnished grounds, and various details con nected with the trade.

I have been informed by Joseph Pearson, Whitehaven, that his employer had a large piec of paper, torn from a wall in an old mansion i that neighbourhood, when under repairs an alterations, about 1786, which was supposed b the owner to have been on the wall about tw hundred years. He says, "I recollect examinin this, and it appeared almost as thick as card board. It had been put on the wall in sheet and a thick dark substance like varnish had bee used, instead of paste. It was very rudely don in pattern (like piece enclosed); and stalks an branches, some of the leaves, and part of flower in bouquets had been stencilled, but all wer finished by hand."

"There were three or four Welsh regiments o militia quartered in Whitehaven between 179 and 1796, and with one (Montgomeryshire) wa a trumpter, Edward Humphries, a stencille who married and remained in Whitehaven, wher he practised his trade, which had been in hi family for three or four generations. Man of the patterns were cut in thin sheets of mete like zinc, and others in brass. The plates wer slightly heated each time before they wer placed upon the wall, to prevent the size-colou from clogging." This proves that stencilling wa a regular trade in this country a century ago.

In 1786 Sherringham, of London, is said t have been the Wedgwood of paper-stainer He was a man of considerable taste, and ha travelled on the Continent. By employing number of artists of first-rate ability, includin two Italians, Rosetti and Lenis, who were o some repute at the time, he was enabled to in fuse into the art a style and beauty before u equalled.

In the year 1792 Antony G. Eckhardt took ou a patent for laying coats of composition or pain on paper and other materials, for receiving im pressions of engraved copper plates; and i 1793 Francis F. Eckhardt another patent style an "Invention and Method of preparing an printing Paper in different patterns, and t silver it over with fine silver leaves, so as t resemble damask, lace, and various silk stuff to be used for hangings and other furniture fo rooms." The silver was described as laid o with gold-size as at present. Gold is not men tioned, though it must have been used, and it i mentioned in another patent taken out b Eckhardt the following year; probably th former patent is the first use of silver.

The so-called gold used for paper-hanging

* From a paper by Mr. George H. Morton. Read at a meeting of the Liverpool Architectural Society. Since published *in extenso* at 122, London-road, Liverpool.

was the invention of John Hantsch, of Nuremberg, who died in 1670, and it is a preparation of tin. Other metals treated in a similar manner produce various metallic colours. Though the use of this substitute, bronze, for gold, is not mentioned in connexion with paper-hangings, there can be little or no doubt that it was the gold supposed to have been in use. A similar substance in the condition of leaf, which is an amalgam of tin and copper, was probably also used. It produces a much more brilliant effect, though it is not more durable.

In the same year (1793) Eckhardt obtained a patent for preparing linen or cotton-cloth with stiffening, starch being used; afterwards printing and ornamenting it with gold and silver; and, finally, varnishing, so that it could be washed. He says it was "to be used for hangings and other furniture of rooms." This patent proves that gold (that is, a substitute for it) was used at the time, and it shows that paper had not altogether taken the place of other materials. Eckhardt's establishment must have been a large concern, for artists of considerable talent,—Boileau, Fouglet, Joinot, and Jones,—were retained for finishing the designs by hand, while more than fifty young girls completed the less important parts. In 1796, John Gregory Hancock obtained a patent for "A new manufacture, videlicet, paper ornamented by embossing and enchasing"; but the first patent for embossing paper as now practised was obtained by Thomas Cobb in 1829.

The heavy duty which was imposed on the manufacture of paper-hangings, immediately after they came into use, was a great burden upon the trade, and at the beginning it must have yielded a very small amount. In spite, however, of this restriction, the trade gradually progressed, as the following returns of duty paid by paper-stainers will show:—

Duty* paid by paper-stainers,

In 1770 was	.....	£13,242	8	11
In 1780	,, ...	11,955	4	3
In 1790	,, ...	19,204	18	8
In 1800	,, ...	24,811	8	7
In 1810	,, ...	32,228	18	2
In 1820	,, ...	34,216	6	4
In 1830	,, ...	44,835	4	9
In 1833	,, ...	53,986	6	5
In 1834†	,, ...	63,795	16	9

Besides the duty on the plain paper of 3d. per lb.

From the descriptions handed down respecting the manufacture of block or hand-made paper-hangings to the close of the last century, it appears that the process very nearly resembled that of the present time. There have been improvements gradually introduced by the experience of manufacturers, which have resulted in bringing the printing process to the great perfection it has now attained; although, in the absence of almost any vestige of specimens of the old manufacture, there is a risk of supposing the advance to be greater than it really is. A hundred years ago, when paper-hangings of the highest class were finished by hand, the workmanship must have been of a superior character; though probably few of the designs would meet with approval now.

The earliest specimens of paper-hangings that have attracted attention are those hung on some of the picture-galleries at Hampton Court Palace. In a paper "On Paper-hangings" read before the Decorative Art Society, by Charles Cowtan, and published in their "Proceedings" for 1844, and also in the *Builder*, vol. ii., the author, after referring to the invention of flock by Jerome Lanyer, in the reign of Charles I., which he seems to associate with flock paper-hangings, states that "at Hampton Court specimens of the early productions may still be seen, mostly painted over in distemper, but the patterns can be distinctly seen." During a visit to the palace, I found on King William III.'s bedroom, a large flock pattern of a conventional design, on a salmon-coloured ground. The pattern is about 1 ft. in length, and is complete upon each breadth of paper, so that no matching at the edge was required. On the king's dressing and writing rooms, there is a scroll pattern, which does extend from one breadth to another, and the paper has been coloured over so as to resemble painted flock. Another apartment, Queen Mary's closet, is hung with a smaller scroll of flock, on crimson-embossed ground, which is very much faded. Of these paper-hangings, the pattern on the king's bedroom is the most remarkable; but they all closely resemble the designs that were common forty and fifty years ago. The breadths are all composed of a single piece, not of small sheets fastened together. As paper of that length could not be made before the beginning of the present century, and was not in use much before 1830, they cannot be very old.

In order to ascertain if any information could be obtained from the authorities at Hampton Court, I wrote to the First Commissioner of her Majesty's Works respecting these paperhangings, and was informed that the Board of Works were unable to furnish any reliable information upon the subject. During a recent visit I found no person now connected with the palace who remembers the rooms being papered, and no record has been preserved on the subject; but it is improbable their age can much exceed fifty years. They are evidently of English manufacture.

Fifty years ago, paper-hangings had to be made of a number of sheets of paper, usually 23 in. by 28 in., fastened together so as to form the required length of 12 yards. In 1799 a French operative, Louis Robert, made the first attempt to produce paper in an endless length, and was successful with a small model machine. The invention was purchased by Leger Didot, and a relation of his in England, John Gamble, obtained patents for it in 1801 and 1803, "for making paper without seam or joining from 1 ft. to 12 ft. in width, and from 1 ft. to 45 ft. and upwards in length;" and in 1805 Joseph Bramah obtained a patent 'for making paper in endless sheets.'" This great improvement was the result of the continuous efforts of Messrs. Fourdrinier, of London, who spent 60,000*l.*, without reaping any benefit, in perfecting the Papermaking Machine, before which all paper was made by hand. No immediate advantage to paper-stainers was derived from the invention for many years, and it was not till 1830, or thereabouts, that they were able to use the plain paper in a continuous length. It could have been obtained, but the Excise would not allow it. Each of the sheets composing the length of paper had to receive the Government stamp, and this probably caused the objection to any change or improvement being made. In the "Report of the Commissioners of Inquiry into the Excise Establishment," dated 30th June, 1835, there is a large amount of evidence showing how the manufacturers were hampered, and the Government is recommended to abolish the duty on stained paper. A partner of the firm of Williams, Cooper, & Co., stated that his house had made application for three successive years to have the paper made in lengths of 12 yards, instead of sheets, which had to be pasted together, rendering the paper very unsightly, and causing great expense and trouble, but had been refused, until the French introduced them a few years after. When this difficulty was removed, an impulse was given to the trade.

The repeal of the duty on paperhangings took place in 1836, when the duty on plain paper was reduced from 3d. to 1½d. per lb. These changes brought about quite a revolution in the trade, great improvements were effected, prices reduced, and paperhangings came into more general use. Previously to 1825, the importation of all foreign paperhangings had been absolutely prohibited, but in that year a duty of 1s. per square yard was imposed. The reduction of the duty on French paperhangings in 1846, from 1s. to 2d. per square yard, caused British manufacturers to improve their designs, so as to successfully compete with them, and the duty was altogether removed in 1861, the same year as that in which the paper duty in Great Britain was finally abolished.

* Representing 255,731 pieces.

† Representing 1,222,753 pieces. A single firm made 1,000,000 pieces last year, 1874.

MR. E. W. TAYLOR, C.E., OF CONSTANTINOPLE.

THE death of this gentleman is much deplored. He was originally employed as foreman in Maudslay's factory. The Ottoman Government sent a request to the English Government to be supplied with an engineer capable of directing the construction of the new buildings and shops of the marine arsenal, and Mr. Taylor, although young, was chosen for the post. He arrived in Constantinople in the year 1833, and immediately commenced his work, which he speedily carried out with great success. Having finally established himself in that country, he married and became the head of a family, the members of which occupy an honourable position in Pera. Mr. Taylor was next employed in constructing several factories and other buildings, notably the cannon foundry, for the arsenal at Tophaneh. The plans of these buildings were drawn up by Mr. W. H. Barlow, whom Mr. Taylor afterwards succeeded. The Tophaneh buildings fully established Mr. Taylor's reputation in the eyes of the Turkish Government. During the Crimean war Mr. Taylor was employed by Admiral Grey in the construction of a dock at Yali Kiosk, for repairing the English men-of-war, which he completed in less than a year. One of his last works was the construction of the rolling-mills for the plates of ironclads at Hasskeui, which have worked most successfully for several years past. As a reward for the services he had rendered, Mr. Taylor was appointed engineer-in-chief to the Evcaff, in order to superintend the repairs of the mosques and the waterworks which are under the control of that Ministry. Mr. Taylor was universally esteemed for his probity and uprightness as well as for his amiable character.

A VILLAGE HOME FOR GIRLS.

IN connexion with Dr. Barnardo's work at the East End of London, a village home for girls has been commenced near Ilford Station, Barking Side. In the first instance it was proposed to bring together about sixty girls under one roof, but inquiry showed the objections there were to this system. After some reflection, it was thought that if they could erect little cottages, and have a good woman as the mother set over each, who might gather the children around her, and develope their higher instincts, they would be doing a work which would be productive of the best and happiest results. Friends grew up, and last month Lord Aberdeen laid the foundation-stones of ten cottages and of a chapel. The ten foundation-stones represented ten distinct gifts of 450*l.* each. The first was given by a friend in memory of a beloved daughter. The next was presented by a lady. The third was collected by undergraduates of Cambridge, and the way in which this collection was brought about was this: Dr. Barnardo had lectured in Cambridge, and had been very kindly received. On Christmas morning a letter reached him from about twenty University men, who formed themselves into a committee to collect the amount needed for a cottage, and begged his acceptance of it. One of the first cottages will therefore be "The Cambridge Cottage." The one on the other side of the entrance is named "The Clapham Cottage," and is the result of a collection made by one lady living in the neighbourhood of Clapham. The next is the gift of a lady so great an invalid that she was always compelled to use a Bath chair whenever she left her home. There is room on the ground for about thirty cottages, so if any of our readers should feel disposed to help in this undertaking, there is room for their endeavours. We have not heard the name of the architect employed, but we trust there is one, and that due regard will be paid to the necessity for proper sanitary arrangements.

VIADUCT BUILDINGS, NEAR CHARTERHOUSE STREET.

THE block of dwellings for the labouring classes which have been erected by the Corporation off the north side of Charterhouse-street, from designs by the City architect, were completed a short time ago, and are now occupied. The buildings are approached awkwardly by a flight of steps down Charterhouse-street, and thence westward by another long flight of steps leading up to the ground area in front of the dwellings. The block consists of the ground-floor and three ranges or flats above, approached by a stone staircase in the centre of the block. There are altogether forty dwellings in the block, ten on each floor, and each dwelling is perfectly distinct, with a separate entrance, as in the case of ordinary street houses, the only difference being that the houses are in flats one story above another. The houses on the several floors at each end of the block, project about 4 ft. from the rest of the elevation. A parapet, surmounted by a stone coping and iron cresting, protects a flat roof intended for clothes-drying purposes, and also for recreation. This roof is approached from the staircase already named. A balcony, with iron railings in front of each of the floors, gives access to the dwellings. Each house contains a parlour, bedroom, and kitchen, which are neatly finished and fitted. The parlour and bedroom are papered and painted, and the kitchen,

in addition to an ordinary fire range, plate-rail, dresser, and other fittings, contains a large copper for clothes-washing purposes, together with space for the stowage of coal, and other conveniences. The area in front of the ground-floor of the building is about 22 ft. in width, and is asphalted. Mr. Morter, of Stratford, was the contractor for the block. The rents of the houses at each end of the building, which in consequence of projecting beyond the general frontage are larger than the rest, are 8s. 6d. per week, and the remaining portion 7s. per week, free of all taxes. For some time before the houses were finished, there was an unlimited number of applications for them, and they are now all occupied by an apparently respectable class of tenants.

We are disposed to fear that one staircase is scarcely sufficient for the number of inhabitants, and that the position of the dust-bin will be found objectionable in at least two of the dwellings.

THE NATIONAL PORTRAIT GALLERY.

THE eighteenth annual report of the trustees of the National Portrait Gallery states that ten purchases have been made up to February, 1875, bringing up the total acquisitions by the Gallery, by purchase, to 280. The first of the ten is a portrait of Edmund Burke, described as "painted in the school of Sir J. Reynolds," price 63*l.* The largest sum, viz, 126*l.*, was paid for a portrait of Warren Hastings, at the age of seventy-nine, by Sir T. Lawrence. 100*l.* each were given for a half-length of Lord Chancellor Loughborough, afterwards Earl of Rosslyn, by W. Owen, R.A; and for a life-size half-length of Nelson, by L. F. Abbott, representing the hero in naval uniform, decorated with the star of the Bath and a gold medal. A study of the head of Lord Chancellor Thurlow, "probably painted by Richard Evans, in the studio of Sir T. Lawrence," cost 15 guineas. This study is unfinished, but shows great power; the shadows are very strong. The same sum was paid for a plaster cast by Brucciani, of the gilt-metal effigy of Edward the Black Prince on his monument in Canterbury Cathedral,—a half-length figure in full armour. Similar casts by the same artist of elaborate effigies of Henry IV. and his second wife, Queen Joan of Navarre, also from Canterbury, were purchased for 7*l.* 17*s.* 6*d.* each. These three casts have been entrusted to Messrs. Elkington, of Birmingham, for the purpose of having them converted into bronze by the electrotyping process. A bust portrait of John Zoffany, R.A. (1733-1810), painted by himself, and dated 1761, cost 50*l.*; and a similar portrait of Miss Mary Russell Mitford, the authoress, by John Lucas, was purchased for ten guineas.

The trustees also report that a complete set of the bronze medals issued by the Art-Union of London, exhibiting profile portraits of twenty-one British artists, was presented by the Council in February last.

Want of space is the great drawback to the present gallery, and the trustees strongly urge that an extension of the gallery should be sanctioned.

THE PROPOSED NEW LIVERPOOL WATER SUPPLY.

THE Water Committee of the Liverpool Corporation have just presented their report on the proposals of Mr. Bateman, C.E., for an additional water supply for the town, particulars of which we published in last week's *Builder*. The committee state that after carefully considering Mr. Bateman's two proposals,—the one for a supply from Bleasdale and Wyredale, and the other from Ullswater Lake,—they have determined to recommend the combined Bleasdale and Wyredale schemes as those best adapted to meet the requirements of the Corporation. They state, however, that they are, nevertheless, very favourably impressed with the views expressed by Mr. Bateman as to the project for obtaining a supply from Ullswater, and they think well deserve further consideration if the council should come to the conclusion that the committee have under-estimated the wants of the district during the next thirty years, or that provision should be made for a longer period.

In conclusion the committee recommend the council to apply, in the session of 1876, for Parliamentary powers to execute the Bleasdale and Wyredale schemes, and obtain, if practicable, a long period of years for the execution of the works in connexion with the Wyredale project. The total aggregate amount required for both the new gravitation schemes proposed, and for an additional pipe line capable of conveying ten millions of gallons per day from the present works at Rivington, will be 2,615,876*l.*

PREMIUMS AWARDED BY INSTITUTION OF CIVIL ENGINEERS.

1. A Telford Medal, and a Telford Premium, to W. Hackney, B.Sc., for paper "On the Manufacture of Steel."

2. A Telford Medal, and a Telford Premium, to H. E. Jones, for paper "On the Construction of Gasworks."

3. A Telford Medal, and a Telford Premium, to A. Richardson Binnie, for paper "On the Nágpúr Waterworks."

4. A Telford Medal, and a Telford Premium, to G. F. Deacon, for paper "On the Systems of Constant and Intermittent Water Supply, and the Prevention of Waste."

5. A Telford Premium to J. Gaudard, C.E., of Lausanne, for "Notes on the Consolidation of Earthworks."

6. A Watt Medal, and the Manby Premium, to J. C. Hawkshaw, M.A., for paper "On the Construction of the Albert Dock at Kingston-upon-Hull."

7. A Telford Premium to Professor Prestwich, M.A., for paper "On the Origin of the Chesil Bank."

8. A Telford Premium to J. Timmis Smith, for paper "On Bessemer Steel Rails."

9. A Telford Premium to C. Colson, for "Details of the Working Tests and Observations on Portland Cement."

10. A Telford Premium to T. Colclough Watson, for "Description of the Use of Fascines in the Public Works of Holland."

The Council have likewise awarded prizes to various students of the Institution.

PICTURES BOUGHT FOR THE ART-UNION OF LONDON.

THE following is a list of the remaining chief prizes selected this year *:—

From the Royal Academy.—Pembroke, J. Pedder, 100*l.*; Building Houses on the Sand, E. Hume, 50*l.*; The Shot Tower, J. O'Connor, 50*l.*; A Home in Surrey, J. S. Rawle, 50*l.*; Scots Greys on the March, C. Richardson, 47*l.* 5*s.*; A Little Maid-of-all-work, A. Stocks, 46*l.*; Priscilla, Mrs. E. Crawford, 42*l.*; A Mountain Group, J. Henzell, 4·*l.*; A Grey Evening, C. Smith, 40*l.*; "When the Kye come Hame," J. W. B. Knight, 40*l.*; A Glen on the Greta, W. H. W. Foster, 35*l.*; Expecting Friends, T. Ballard, 30*l.*; Recalling the Past, L. J. Cowen, 30*l.*; At the Brook—Summer, N. O. Lupton, 30*l.*; Entrance to the Close, Evershaw, W. Callon, 25*l.*; River Ewe, Rossshire, J. Maculloch, 25*l.*; St. Asaph, North Wales, from the Ebury Meadows, M. P. Houghton, 20*l.*; A Farmyard, A. J. Stark, 20*l.*

From the Society of British Artists.—At Wargrave, on the Thames, W. H. Foster, 100*l.*; Evening in Autumn, G. Lucas, 76*l.*; Above the Miner's Bridge, North Wales, E. A. Fetitt, 75*l.*; Highland Cattle and Sheep, near Loch Linnhe, C. Jones, 60*l.*; A Mess of Porridge, E. J. Cobbett, 50*l.*; Left in Charge, A. Corbould, 50*l.*; A Yorkshire Stream, E. Holmes, 50*l.*; On the Medway,—Morning, T. F. Wainewright, 50*l.*; Lady Betty at Home, Mrs. Charretie, 45*l.*; The Fern Gatherer, E. J. Cobbett, 45*l.*; Night on the Bank of Loch Sligachan, A. Gilbert, 45*l.*; Looking from Denbigh's, Surrey, T. F. Wainewright, 45*l.*; Reeling up the Nets, J. W. McIntyre, 42*l.*; Clearing up, in the Meadows, W. Lucker, 41*l.*; Flower Girls of the Lagune, J. Bouvier, 40*l.*; Loch-na-Gar, from Ben-a-board Forest, A. Panton, 35*l.*; The Valley Home, T. Whittle, 35*l.*; The Merry Month of May, A. J. Woolmer, 35*l.*; Evening, Miss S. S. Warren, 31*l.* 10*s.*; Near Harwich—Moonlight, F. W. Meyer, 30*l.*; September on the Moors, A. B. Collier, 29*l.*; A By-lane in Berkshire, W. Gosling, 25*l.*; Morning on the Reefs, Robin Hood Bay, T. Griffiths, 25*l.*; At Fairlight, Sussex, G. A. Holmes, 25*l.*; A Morning Greeting, A. Ludovici, 25*l.*; Brigantine coming to Anchor, Caswell Bay, G. S. Walters, 25*l.*; On the Common, "Winter's Evening," G. A. Williams, 25*l.*; Free Quarters, J. Gow, 20*l.*; Through the Woods, E. Holmes, 25*l.*; A Quiet Afternoon, D. Muller, 20*l.*; A Common Friend, Miss C. M. Noble, 20*l.*; Mount Siabod, North Wales, J. Whipple, 20*l.*; Winter, G. A. Williams, 20*l.*

From the New British Institution.—Washing and Bleaching Ground, Ghent, T. O. Hume, 60*l.*; Tranquillity, W. Jay, 45*l.*; Threatening Weather at Capelbury, A. B. Collier, 30*l.*; The Last Load, J. Macpherson, 30*l.*; August, W. Jay, 25*l.*; Kingston Quay, Sussex, R. P. Nibbs, 25*l.*; The Old Mill, G. Pringle, 25*l.*; Scene from the Merchant of Venice, H. C. Selous, 25*l.*; The Extreme North Coast of Cornwall, A. B. Collier, 20*l.*

From the Crystal Palace Picture Gallery.—Morecombe Bay, J. Peel, 45*l.*; A Cat may Look at a King, J. C. Dollman, 42*l.*; Maximilian Strasse, Augsburg, H. W. Brewer, 35*l.*; Llyn-y-dines, North Wales, A. de Breanski, 33*l.*; Lugano, E. Myers, 25*l.*; Seaweed Gatherers, G. Sant, 25*l.*; The Towing-path, T. C. Swainson, 20*l.*

From the Society of Painters in Water-Colours.—A Sunset Gleam, S. F. Jackson, 37*l.*; Windsor, from Poet's Walk, Bton, S. G. T. Evans, 31*l.* 10*s.*; Cologne: Autumn Evening, W. Callow, 30*l.*; A Likely Place, Dovedale, Collingwood Smith, 30*l.*

From the Institute of Painters in Water-Colours.—Kenilworth Castle, John Chase, 42*l.*; Glen Sligachan, Isle of Skye, James Fahey, 30*l.*; Near Dolgelly, North Wales, J. H. Mole, 25*l.*

* See p. 483, *ante*.

INSUFFICIENCY OF PROVINCIAL POST OFFICES.

THOSE men of business who are acquainted with the large structure in St. Martin's-le-Grand, and the facilities afforded at the several district post offices in the metropolis, are, when they desire to procure money orders, telegraph, register letters, or transact any postal business in provincial towns, at once struck with the imperfections and bad arrangements of the latter Government offices; and feel surprised that the "countrymen" have not moved their squeezable "M.P.s" to bring the anomaly before Parliament.

At certain hours of the day that mysterious individual, a country postmaster or mistress, may, it is true, be caught peeping through a man-hole in a contracted and ill-constructed building, but whose chief duties, in answer to the business of strangers, are to first inquire who they are and what brought them into the town.

If a stranger should have any telegraph work either as sender or receiver, particularly at election times, the very construction of the old offices affords every facility for eaves-droppers and spies; and this added to the other gossiping machinery, has enabled so many innocent M.P.s to get into the judicial election courts of inquiry, and lose their seats. The many extra duties too now imposed on county postmasters, and the large populations growing up in the immediate neighbourhoods of most towns, have in no wise been considered by the Post-master General, in regard to improving and enlarging the country post-offices; and Saturday after Saturday, when London workmen and others desire to transmit post-office orders to their families, a rush and complete block ensues, and the confusion and struggles to get to the man at the pigeon-hole are most deplorable. An inquiry on the subject is called for.

MORE NEW BUILDINGS ON THE DULWICH COLLEGE ESTATE.

A CONSIDERABLE outlay will shortly be incurred in the erection of new mansions and other houses on that part of the Dulwich College estates known as Lordship-lane, where building on an extensive scale has for some time been in progress. The governors of the College, in accordance with directions from the Charity Commissioners, have just given notice of their intention to grant building leases, for the term of eighty-four years, of two pieces of land abutting on Thurlow Park-road, the one having a frontage to the road of 33 ft., and the other of 31 ft. The annual ground-rent in both cases is 75*l.* 15*s.* 4*d.*, and the lessees of each plot are to expend not less than 5,000*l.* on the buildings to be erected upon them. In addition to the above they are also about to grant similar building leases of a large plot of land on the west side of Lordship-lane, having a frontage of 1,200 ft. to the site of a new private road which is about to be constructed. This spacious area will admit of the erection of several blocks of houses. The annual ground-rent is to be 307*l.* 10*s.*, and the sum to be expended in buildings is 28,800*l.* The completion of these leases will add to the estate an annual income of 459*l.* 0*s.* 8*d.*, whilst the aggregate amount to be expended in buildings is 38,800*l.*

Excursion of the Norfolk Archæological Society.—Some members of the Norfolk and Norwich Archæological Society, under the guidance of the Rev. C. R. Manning and Mr. Fitch, hon. secretaries, have had an excursion to Tibenham, Gissing, Tivetshall, and the Pulhams. Starting from Tivetshall station in vehicles sent from Diss, the party proceeded to Tibenham Church, which is of the Decorated period. Anciently there was a chapel dedicated to the Virgin, standing by itself in the churchyard, to the east of the chancel, the remains of which are still to be seen. Under the guidance of the Rev. T. W. Thompson, they next visited the old moated Elizabethan Manor House, Channon's Hall. Its walls are 2 ft. 2 in. thick, and when, in the time of George III., it was sought to pull down a portion of the building to make alterations, it was found impossible to do so without blasting with gunpowder. Proceeding to Gissing Church, which has a Norman tower and doorways, and is a very ancient structure, and thence to Pulham St. Mary (on which latter church the Rev. C. R. Manning read a paper), the excursionists returned to Tivetshall, and dined at the Station Hotel.



METROPOLITAN CONVALESCENT INSTITUTION: HOME FOR CHILDREN, AT NORBITON.

STRUCTURAL DANGERS.

FOR some time past death has hung over the passers by in Little Russell-street. At three o'clock in the morning of Sunday last the stone entablature surmounting the colonnade on the northern side of Drury-lane Theatre, about 230 ft. in extent, fell to the ground with a mighty crash, startling the sleepers around, and blocking up the roadway. If it had happened in the day time or evening, the results must have been very serious. The accident has been ascribed to a storm of wind and rain, but it is evident that the stone-work has been waiting to fall for some time. The interspaces are spanned by light bow-string girders of iron, with brickwork, and the heavy stone work, including a projecting cornice, was stuck on to the front of these in the most insecure manner.

Neither this colonnade nor the entrance portico is shown in the views of the theatre given in Britton's "Public Buildings of London," published in 1825. The addition of the portico in Brydges-street, which was built by Sir Morton, then Mr. Peto, from the design of Mr. S. Beazley, is mentioned in the letterpress; and the colonnade was put up some time after. If the imminent peril to which we are exposed by bad building were fully realised, we should scarcely be able to walk about without fear. The sword of Damocles is still hanging.

METROPOLITAN CONVALESCENT INSTITUTION.

HOME FOR CHILDREN, AT NORBITON.

ON Monday last, their Royal Highnesses the Prince and Princess of Wales formally opened this building, which has been erected at Kingston-hill by the Convalescent Institution, for the reception of the male and female children who, till now, for want of funds, have been located in two old and ill-adapted houses at Mitcham and Sydenham.

It has been endeavoured by the architect, Mr. H. Saxon Snell, to carry out the instructions given to him by the Committee, that no expense should be incurred for either internal or external decorative features. The whole of the external walls are faced with stock bricks, the roof is covered by the Broomhall Tile Company with their patent roofing-tiles, and the overhanging eaves and the upper part of the tower are of deal, stained with Stockholm tar. The necessity for the tower, which forms a prominent feature in the building, arose from a desire that a good supply of water should always be available in case of fire; consequently the cistern occupies the upper part, and pipes descend to the hose and hydrants on the staircase, from which each room could at any moment be deluged with water in case of fire. This tower also afforded the opportunity for providing for the isolation of any doubtful case of disease that might arise in the establishment, and there is consequently immediately under the cistern-chamber an infectious ward capable of holding four patients, with bath-rooms, linen-closets, and other conveniences attached. This ward is approached from the second-floor by a separate staircase.

The first and second floors of the building provide dormitory accommodation for 146 children, or 73 of each sex. The nurse's rooms are sufficiently large to accommodate an extra child in cases where it is desirable that they should be under constant supervision. In the back wards it has been necessary to place the beds along the outside walls under the windows; but in the front wards the beds are ranged down the side walls of the room, and the windows being in the front walls, the draught through the room when the windows are open, is down the passage between and across the ends of the beds. In hospital wards this would be by no means a good arrangement.

Mr. Snell asserts that this is the proper position for beds in dormitories, where the superficial or floor space is insufficient to allow of the beds standing between, and therefore not immediately under, the windows. It is only in hospitals, or other such buildings, where so large an area can be afforded. One of the main objects in planning each floor has been to secure to the children, as far as possible, the constant supervision of the matron or of the nurses, and with this view these officers' rooms are placed so as each to command by small windows a complete view of two wards. Every dormitory is fitted with four of Jennings's tip-up lavatory basins, and supplied with hot and cold water. The floors around these conveniences are paved with tiles or lead. The waste-pipes from the basins do not go directly into the drains, but their contents will be discharged into the heads of special rain-water pipes, running up the outside walls of the buildings, and all fear of foul air entering the apartment through the waste-pipes is thus obviated. Each floor has its separate bath-room paved with tiles on that description of flooring known as "Fox & Barratt's." There is also on each floor of the building a water-closet (rather too small a provision as it seems to us), and slop-sink, the construction of the coverings to which forms the subject of a patent by the architect. At the back of these conveniences, and just above the level of the seat or sink, there are large openings in the wall, about 18 in. high, and the full width of the apparatus; the lids are so contrived that when shut down the water-closet seats and pans, or the sink, are exposed to the outer air by means of the large openings in the wall, above referred to, but when the seat is lifted up, these openings are simultaneously closed, and cold air is prevented from entering the room.

The ground-floor of the buildings contains in the two side wings a day-room for each sex with porches leading to the recreation or playgrounds. External water-closets and lavatories are provided for use during the day-time. A dormitory for four cripples is provided on this floor, as also a matron's and visitors' room. The dining-room is in the centre, and at the back of the building. It adjoins the kitchen and other administrative offices.

In consequence of the fluctuating number in this institution, it has been thought desirable to provide two ranges for this kitchen, and for the same reason, although one of these ranges an ordinary occasions heats all the water for the baths and lavatories, it is supplemented by a separate heating-furnace to be used when the establishment has its full numbers.

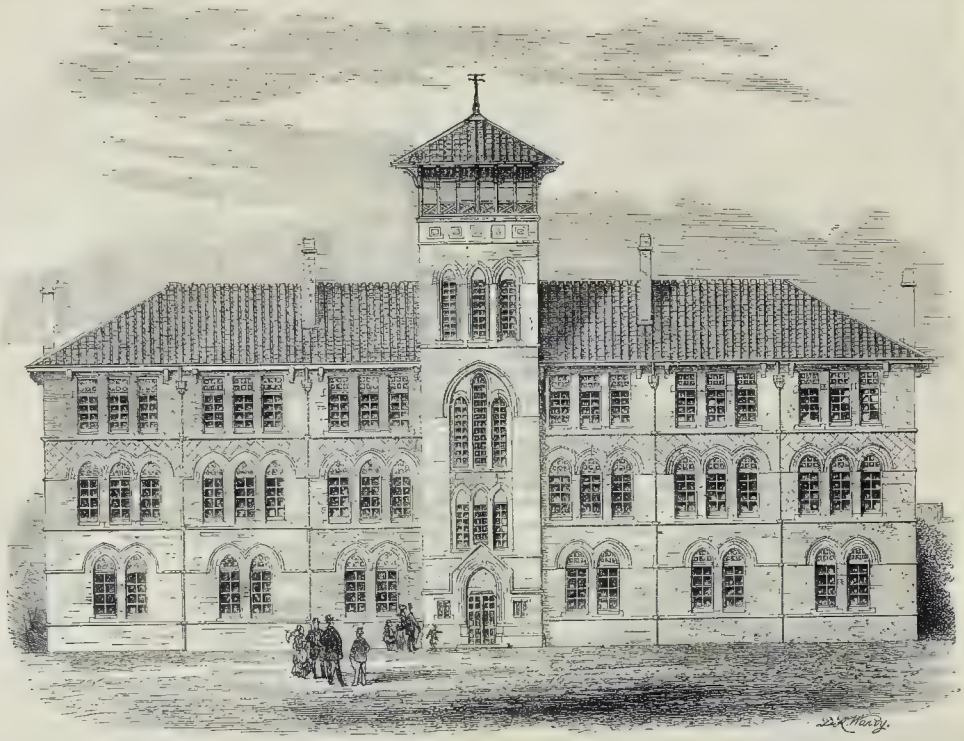
The ventilation of the building is generally effected by natural means, the walls are hollow, and being in all cases 18 in. thick, contain flues 14 in. by 9 in., wherever it is practicable to place them. In addition to this the dormitories and day-rooms are ventilated by special shafts which contain the hot-water circulation pipes running to and from the kitchen range and furnace. These heated pipes by rarifying the air in the shafts cause it to rise and so displace the foul air of the wards in communication with them.

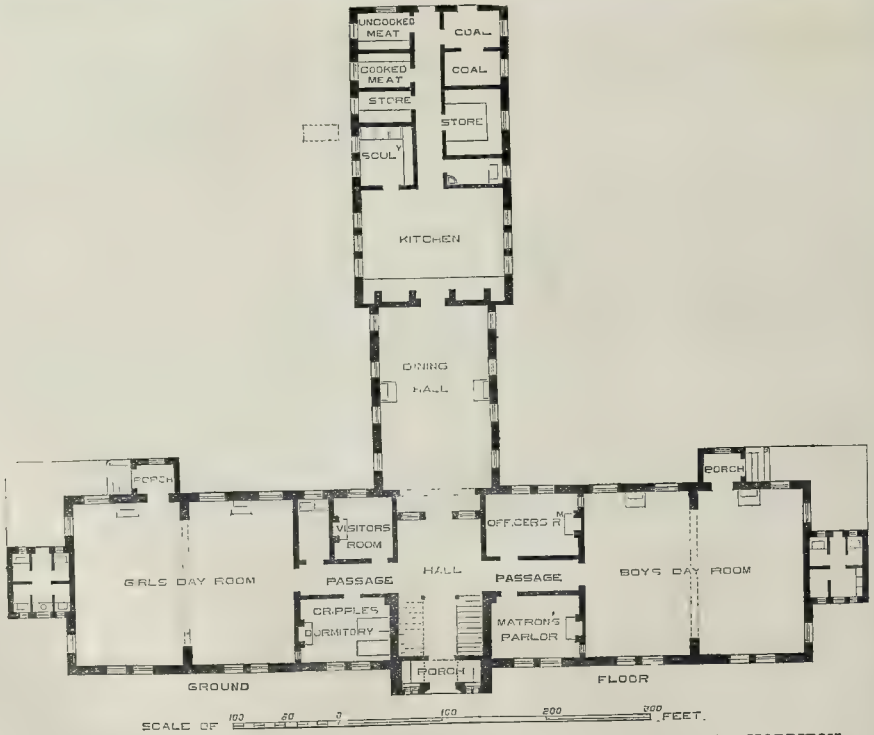
The total accommodation is for 150, and the cubic space allowed to each is 750 ft., but there is superficial area for more than this number.

The cost of the building with the fencing and all its accessories is about 10,000*l*. The contractor is Mr. George Wall. The heating and cooking arrangements have been executed by Messrs. Benham & Sons, and the gas and cold water supply and fittings by Messrs. Z. D. Berry & Son.

THE HOLLOWAY SANATORIUM, VIRGINIA WATER.

IN 1873, designs for this Institution were sent in by a limited number of architects, and the first premium fell to the design of Crossland, Salomons, & Jones, who were entrusted to carry out the work. At the death of Mr. Philpot Jones, which happened shortly after the works had commenced, the sole charge of carrying on the building fell into the hands of Mr. Crossland. In consequence of Mr. Holloway having substituted for cut and moulded brick Portland stone dressings, the design originally made had to be modified. The building is being carried out on a schedule of prices, by Messrs. Sharpington & Cole, and Mr. Lascelles; Mr. Featherstone and Mr. Perry Featherstone acting as clerks of works.

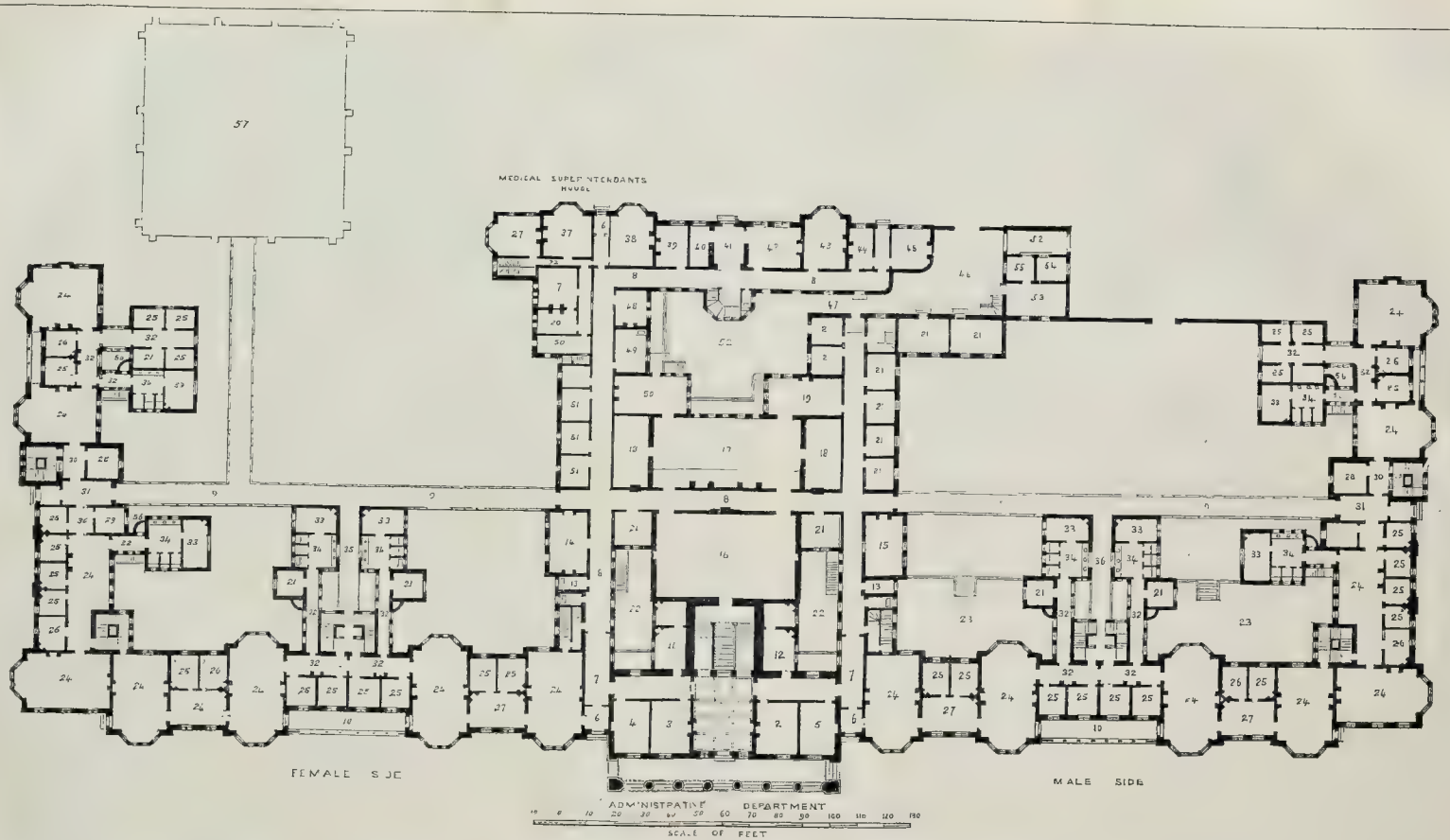




METROPOLITAN CONVALESCENT INSTITUTION: HOME FOR CHILDREN, AT NORBITON.
MR. H. SAXON SNELL, ARCHITECT.



THE HOLLOWAY SANATORIUM, VIRGINIA WATER, WINDSOR.—Mr. Crossland, Architect.



1. Colonnade.
2. Friends visiting male patients.
3. Friends visiting female patients.
4. Assistant medical officer.
5. Assist. med. officer's bed-room.
6. Porch.
7. Vestibule.
8. Corridor.
9. Connecting passage.
10. Verandah.
11. Head female attendant.
12. Head male attendant.
13. Head attendant's store.
14. Female attendant's dining-room.
15. Male attendant's dining-room.
16. Dining-hall.
17. Kitchen.
18. Serving-room.
19. Servants' hall.
20. Scullery.
21. Store.
22. Area.
23. Terrace.
24. Day-room.
25. Single room.
26. Attendant.
27. Library.
28. Padded room.
29. Half-padded room.
30. Ante.
31. Lobby.
32. Passage.
33. Bath-room.
34. Lavatory, &c.
35. Passage to first and second-class wards.
36. Passage to billiard-room from first and second class wards.
37. Dining-room.
38. Drawing-room.
39. Doctor's room.
40. Porter.
41. Entrance-hall.
42. Visitors.
43. Housekeeper's room.
44. Office.
45. Steward's store.
46. Steward's yard.
47. Cart entrance.
48. Surgery.
49. Bread-store.
50. Pantry.
51. Workshop.
52. Yard.
53. Post-mortem room.
54. Dead-house (male).
55. Dead-house (female).
56. Dust.
57. Laundry buildings.

THE HOLLOWAY SANATORIUM, VIRGINIA WATER.—*Plan.*

ANNUAL GENERAL MEETING OF THE MANCHESTER SOCIETY OF ARCHITECTS.

AT this meeting, held at the Royal Institution, July 5th, 1875, the president, Mr. James Murgatroyd in the chair, the honorary secretary read the following report of the Council for the last session :—

The Council have to congratulate the Society on completing the tenth year of its existence, and they are pleased at being able to report that its sphere of usefulness as a society is steadily increasing. During the last session, three additional names have been added to the list of members, which now numbers twenty-eight, as against twenty-five last year.

The income of the Society, as will be seen by the balance-sheet attached, is fully appropriated, a very considerable portion of it being awarded in prizes to those who are now studying in the expectation of succeeding us in the practice of architects, and another portion in prizes for the furtherance of technical education amongst the workmen.

The Council is glad to be able to report some progress in connexion with the proposed consideration of the Manchester Building Bye-laws, which, as you are aware, has engaged the attention of the Society for some time.

This is not a matter which can in any way be forced upon the City authorities, and it therefore of necessity requires time for its development. During the last session the attention of the town clerk has been directed to this question, both orally and by letter, and he has expressed himself fully aware of the importance of the subject, and also of the papers already submitted by this Society.

At a meeting of the General Purposes Committee of the City Council held at the Town-hall on April 4 last, "It was resolved that, as suggested by the town clerk, an epitome of the clauses relating to building operations which are contained in the various Local Acts of Parliament be prepared, and that the town clerk be authorised to take the steps necessary and incur any expense required to carry out such resolution as early as practicable."

Your Council feel that there is now a probability of their labours in this direction bearing fruit, and would suggest to their successors in office the desirableness of not losing sight of the subject, which is of so much importance to all who are in any way connected with building operations.

From the manner in which your Council have from time to time been met by the town clerk, they have no doubt whatever that he fully appreciates the assistance which can be given by this Society.

Your Council have in several instances forwarded copies of the memoranda in connexion with competition (which were arranged some time since), where they have been able to obtain early information of the intended competitions, and they have reason to believe that in some instances their suggestions have been found useful.

The Council would urge all members both by example and influence to endeavour to check responses to invitations to compete, where the conditions are materially different to those drawn up by this Society.

The Pupils' Competition for the Society Prize has not been so satisfactory this year as your Council would have wished. The subject given was a design in the Classic Style of Architecture, the study of which seems to have almost entirely ceased amongst the pupils, three only of whom responded to the invitation.

Your Council are sorry to notice the tendency to indulge in sensational design, more particularly on account of its evil influence on the younger members of the profession, and they would suggest that efforts be made to carry out a suggestion made by the President in his inaugural address, in order to induce the pupils to extend their studies beyond what is required to enable them to just fulfil the duties of their employers' offices.

Your Council are glad to find that in this opinion they are upheld by other members of the Society, more particularly Mr. James P. Holden, who has kindly offered to place at the disposal of the Council of the Society the sum of five guineas, to be competed for annually by the students in Manchester. The subject being strictly limited to Classic architecture, but all other conditions being in the discretion of the Council. They hope that by this, or other means, the Society may be enabled to extend its influence, and also its sphere of usefulness.

The drawings sent in by the students for the Society's prize were prepared by Messrs. Pendleton, Sussum, and Yabsley, pupils respectively with Messrs. Pinchbeck, Wilson & Oldham, and Royle & Bennett, and your Council considered it advisable to divide the prize amongst the three youths who had ventured to come forward and attempt to deal with that which seems to have been considered by the majority of the pupils as a thing entirely beyond their reach.

The competition by the members of the Building Trades Institute for the prize of Two Guineas, given by the Society, was competed for on the 23rd March last, the subject given being one specially adapted for testing the technical knowledge of the students. There was a fair attendance, but the productions were not so satisfactory as your Council would desire. In their opinion, too much time is devoted to studies not connected with the practical details of their respective trades. This is, they understand, to a great extent due to the character of the studies required for the Government examination, and to the necessity for the teachers carrying out their instructions so as to obtain the Government Grants, which form an important portion of their remuneration.

Another matter which has engaged the attention of your Council is a proposal (emanating from the Royal Institute of Architects of Ireland), by which the different local societies should be affiliated to the Royal Institute of British Architects, with the view of strengthening the position of the local societies, and adding some influence to the Royal Institute. Your Council felt that this was a matter of too much importance to be dealt with by them alone, and it was therefore referred to a special general meeting of the members of the Society. An affiliation as suggested was not considered practicable; but it was considered that a more intimate relationship should be established between this Society and the Royal Institute, and certain suggestions have been submitted to the parent Society with a view to promoting this result. The matter now rests with them, and your Council hope that, before long, such an arrangement may be made as shall conduce materially to the extension of the influence of this Society as well as of that of the Royal Institute.

Your Council have taken advantage of the opportunity afforded by the communication on the above subject, to draw the attention of the Royal Institute to the recent competition of terms for the proposed works at Sheffield, in which some members of the Institute, in their opinion, figure more prominently than creditably.

The accounts have been audited by Messrs. Henry Bridgford and Wm. A. Royle, and an abstract of the same is appended.

The following officers were declared duly elected :—President, Mr. Thos. Worthington; vice-president (by seniority), Mr. E. Salomons; hon. secretary, Mr. J. Holden; council, Messrs. W. R. Corson, J. Murgatroyd, G. T. Redmayne, W. A. Royle, and J. M. Taylor.

The thanks of the Society were voted to the late president, and also to the hon. secretary and council, for their services during the last year.

"SUBORDINATE TO THE ARCHITECTURE."

SIR,—The above expression is a fruitful source of misconception. There are, of course, many painters who understand the precise value of the expression; but the public, as a rule, take it in a too literal sense, and come to think that what is subordinate must be inferior to the architecture: consequently, that the historical painter who decorates a public edifice must be subordinate to the architect. This is one of the vulgar errors of the present day.

The expression really means nothing more than this, viz., that the painter's work, as well as that of the sculptor and architect, should be subordinate to the principles of art,—to the ruling of wisdom. To say that of any work of art is to bestow the highest praise upon it. But to say that painting is subordinate to architecture, or one art to another, is quite a different thing, and would betray a total ignorance of first principles. When we talk about mastery, that can only be ascribed to him who possesses the largest general powers,—to the master of that art which is the most difficult of attainment; and the most complete mastery of art has always been ascribed to the great historical painter and the great sculptor.

The specious argument which is commonly used, that the building contains the picture, the greater the less, and therefore that the artist of the greater is superior to the artist of the less, will not hold water. The earth contains man; but man has always been held to be the noblest work of Nature, and the painter who is master of the human form, and treats of the human nature, always holds the first rank,—takes the lead in art.

In England we would appear to be endeavouring to invert and subvert the true order and succession in art. We would conform the soul to the body, build the carcass, and then think about the thought it is to house. Whereas the higher teaching is, that matter should be conformed to and by mind.

It is pictorial art which should have the precedence in the designing of a great monumental edifice, for pictorial art can more fully express the soul, the thought, the purpose to which the whole work should be conformed. Pictorial art and sculpture should, therefore, occupy precisely the same relative position in a great building that the brain does to the body. With us, unfortunately, the more important work is an after-thought; and yet we wonder that flagrant instances of want of adaptation and congruity should frequently disfigure architectural design. The painter and sculptor must dominate before architecture can become a great art.*

W. C. T.

SUGGESTED AMALGAMATION OF THE INSTITUTE AND THE ASSOCIATION.

SIR,—In continuation of the letter you kindly published, I beg to send for consideration several suggestions as to the proposed society, the discussion of which may, I think, help to forward the union mentioned at the head of this letter.† That the present system of the R.I.B.A. does not work satisfactorily seems to be conceded on all sides, and it is here, therefore, that our reconstruction must commence, the general desire being that the alterations shall be of such a nature as to draw all members of the profession to its ranks. The only way to secure that the change shall be of the nature required is for the Institute to propound some scheme for the purpose, which, before being carried into execution, shall be submitted for the opinion of the "kindred societies" in Town and country, and the additions necessary to meet their views being incorporated in it, we have the foundation upon which to erect an Institution which shall really be representative of the British architects. But in doing this, we must not forget that although the purpose of the new society is exactly set forth in the charter, and the first of the bye-laws of the present one, yet, as alterations must be made, it will be necessary to petition for her Majesty's sanction to the changes. The name has often been objected to as being too long. It is worth considering whether it could not be shortened (as it usually is by outsiders) to the "Architectural Institute," or something similar, of two words at most.

Then, as to membership, we have mostly to consult the Architectural Association, from which body by far the greatest number would come, and principally into the grades now known as Associates and Students. Let us retain the names, but slightly vary the manner somewhat as follows:—

Fellows.—Architects in practice, who, when proposed, shall have been engaged (as principals) for at least seven consecutive years, and have acquired a considerable degree of eminence in the same.

Associates.—Architects in practice for less than seven years, gentlemen over twenty-five years of age, who are engaged in the study of civil architecture, or other gentlemen not necessarily architects by profession, but whose pursuits are allied thereto, and are therefore qualified to concur with architects in the advancement of professional knowledge.

Honorary Members.—Such persons of distinction in art, science, literature, &c., as are likely to concur with architects in the advancement of professional knowledge. Not more than five to be elected in one year.

Candidates for Election as Fellows or Hon. Members to be recommended to the Council by at least five Fellows from personal knowledge, and if passed by the Council, balloted for as may be arranged. Associates to be elected in a similar way, but may be recommended by either Fellows or Associates. Students to be recommended by at least three members of the society (not hon. members), and voted or balloted for by the students as a report to the Council, who will have the power of admission. Present members of the Architectural Association to be considered as admitted students; those qualified to be Associates to be eligible for the ballot without further nomination. Present members of the R.I.B.A. to rank as now.

Subscriptions. — Students, half-a-guinea entrance-fee, and a like amount annually. Hon. members, nil. Fellows and Associates, as at present.

As to Officers, &c.—The President and Vice-Presidents to be elected from the Fellows. Senior Secretary also to be a Fellow. The Junior Secretary and Librarian to be paid officers, elected, if possible, from the Associates for at least two years, and not necessarily to resign on becoming Fellows. The Council or Committee to consist of ten members, chosen as follows, in addition to the officers and ex-officio the representative officer of any special department of the Institution's work (such as a Class of Design, &c). Of the ten members, four to be Fellows, three Associates, two Students, and one Honorary Member. Such arrangements as these would of course greatly diminish the power of the Fellows, and in a manner unknown, I believe, in similar societies; but at present they have absolute control of everything, and, it is admitted, have fallen short of what was required and expected of them; this little sacrifice therefore seems required to give that material confidence so necessary for any new relationship.

Then, as to the means of furthering the objects of the alliance, this I imagine will best be done by in some degree following the line marked out by the Architectural Association, and intensifying the various departments, a sub-committee having (as now) the charge of each.

In addition to these would be considered the propriety of instituting periodical lectures upon professional matters not touched by the other sections, all tending and pointing to the examination as the ultimate aim and object.

To further the examination itself it might then be policy to hold it yearly, and for the Society to bear the fees of those of its students who successfully passed; even those who were unsuccessful might be charged but half what was payable by outsiders.

Students passing might also by so doing be

* Some of our correspondents will doubtless reply to W. C. T. on this point.

† We allow our correspondent to state his views, but we must not be considered as necessarily supporting the proposed amalgamation.

come Associates without payment of the "admission fee."

Among other things the Council would have continually under their notice all matters (public or otherwise) in any way affecting the interests of the profession, and by acquiring the representative status it does not at present possess, the Institute might and no doubt would become the recognised place for the redress of professional wrongs.

Some may say,—Where is the money to come from for all this? But I venture to think if reforms were made the income would largely exceed the present one, and then gradually get larger still; meanwhile the funded property, which seems to be accumulated for no one seems exactly to know what purpose, might help the lame dog over the stile which prevents him reaching the meat he craves.

Time will not permit me to say more now, but I think enough has been suggested to call forth expressions of opinion for and against. Anyhow, if sufficient has been done to call attention to the matter in such a manner that something, some change, some good may take effect from (let us say) the next conference, my object has been obtained.

R. E. P.

TRADE DISPUTES.

Leslie. — The Leslie masons have struck work in consequence of the refusal of the masters to grant a rise of ¼d. per hour on their wages.

Markinch.—The strike of the Markinch masons has terminated, the masters agreeing to grant the demands of their men.

Edinburgh.—A meeting of Edinburgh and Leith operative plumbers was held last week in the Hall, Jackson's-close, in order to give in reports as to the dispute between them and their employers in reference to the by-laws of the trade. One hundred and eighteen men intimated that they had struck work, and a number reported that they had given in their warning. It was ascertained also that six employers had signed the by-laws as approved by the men, and that thirteen masters, employing eighty men, approved of the by-laws, although they had not yet signed. A motion was unanimously adopted that no opportunity be lost of negotiating with the other employers so as to bring about an amicable settlement of the dispute. Later in the evening a number of the men on strike applied for and received travelling cards to enable them to seek employment in England.——A meeting of the master plumbers of Edinburgh and Leith was also held with reference to the strike which has taken place, Mr. Barton presiding. The secretary read the report of the committee appointed to communicate with the operatives, in which it was stated that a letter had been received from the latter requesting that a deputation of the masters should wait upon them with a view to the settlement of the dispute. The committee, however, being of opinion that former deputations had proved most unsatisfactory, had refused to meet with the men. Some conversation having taken place on the present position of affairs, the following motion was unanimously agreed to:—"That this meeting, after hearing the report of the committee appointed to communicate with the men, and while deploring the attitude which has been assumed by them, does not see its way to make any further concessions, and pledges itself to resist to the utmost the unreasonable demands of the workmen."

Bolton.—The strike of carpenters and joiners at Bolton is at length terminated, the masters having agreed to give the men an advance of 2s. now, with a copy of working rules; a further advance of 1s. 6d. on the 1st of February next, and a reduction in time of half an hour a day for five days in the week, commencing in May next. The men agreed to these proposals, on the understanding that, for all future advances, three months' notice shall be given instead of six.

Bath.—The operative carpenters and joiners of Bath, to the number of 300, have struck work for an increase of pay. The masters have declined arbitration.

Burnley.—Four masters and four workmen met at the Swan Hotel, Burnley, on Tuesday night, to see if terms could be agreed upon so as to prevent a strike. The men now work fifty-four hours per week, and their wages are 30s. per week. They ask for a reduction of five hours, or to forty-nine hours per week, and an advance in their wages to 7½d. per hour, or 30s. 4½d. per week. After a long conference, it was agreed that the working hours shall be fifty-two per week, and the wages 7½d. per hour, or 32s. 6d. per week. The strike will, therefore, be averted.

Birkenhead.—An arrangement has been come to between the journeymen carpenters and joiners of Birkenhead and their employers, by which the strike, which was threatened to take place on the 1st of next month, will be averted. The men agree to a rate of pay at 7½d. per hour, with a modification of the existing arrangements as to walking time. In future two hours' notice of leaving will be required on either side; and a code of rules has been drawn up and mutually assented to which will be the basis of negotiation in case of any future dispute in the trade.

Bristol.—The Rev. Prebendary Percival, master of Clifton College, to whom was referred for abitration the application of the builders' labourers of Bristol for an advance of wages, has decided that the rate of 4½d. per hour, which was paid last winter for the four winter months, be adopted as the rate all the year round. This is an advance of ½d. per hour upon the summer wages. The award is to last for twelve months.

IMPROVEMENT OF WASTE LANDS.

AN experiment, attended with gratifying results, has been tried in Cornwall, where upwards of 200 acres of the Connor Downs have been reclaimed by the Cornish miners. The land was leased to the men for ninety-nine years at a yearly rent of half-a-crown an acre, quite as much, if not more, than the property had formerly brought in to the owner. The size of the holdings varied from three to ten acres, and by degrees the workmen have transformed what was before nothing better than waste common land into a thriving and pleasant garden. Most of the miners have built houses and outbuildings for themselves on the plots, and nearly all are prospering, happy, and contented. The land has been tilled by the spade, after mine hours were over, and sand and sea-weed have been found to act as a capital manure. Wheat and potatoes are the principal crop, but all vegetables are grown.

Nearly every leaseholder keeps a cow and a pig, whilst a few keep a pony or donkey and cart. The experiment has operated most beneficially in improving the status and the health and morals of the miners.

It is now suggested that the great mine and land owners in the north of England should follow this excellent example, as there are thousands of acres of poor and unprofitable land on and about the surface of mines; and the steady workman once transformed into a leaseholder, with a house and land of his own, would become a happy, clean, and sober man.

THE DUOMO OF FLORENCE.

SIR,—I must own that I have never been more surprised in my life, when reading criticisms on buildings, than by the eulogy of your correspondent "S. D." upon the Cathedral of Sta. Maria del Fiore in your last number. I am well acquainted with it, having carefully for some days studied the masterly construction of the brick cupola with the late L. Vulliamy in 1818. Externally this rises with majestic dignity above the other edifices of the City, and its graceful outline is very pleasing in the contour and general proportions. The impressions produced upon my mind fifty-seven years ago remain the same, although I have frequently visited it of late years; and I quite agree with Mr. Fergusson in his "Christian Architecture," that, despite the ability of the general disposition of the plan, the effect of the interior "is utterly thrown away in the execution. The details are positively ugly. The windows of the side aisles small and misplaced, those of the clearstory mere circular holes. The proportion of the aisles one to another is bad, the vaults ill-formed, and altogether a colder (gloomier) and less effective design was not produced in the Middle Ages. The triapsal choir is not so objectionable as the nave; but there are large plain spaces that now look cold and flat: the windows are too small, and there is a (deadly) gloom about the whole which is very unsatisfactory."

To my mind, the exterior is as unsatisfactory as the interior. The surface of the walls is covered with panels of flat marble work, designed by an inlaying joiner as for a marquetry table, and executed by the marble mason without relief and with no sentiment for contrast in colour. The conception of the artist is nowhere perceptible, except in some of the lateral porches, which are very pretty as cabinet work. With these latter exceptions, there is neither grandeur, grace, nor propriety in the decoration.

T. L. D.

THE PATENT LAWS.

ON the 28th ult. a meeting of the members of the Institution of Mechanical Engineers was held at the Institution of Civil Engineers, Great George-street, to take into consideration the Patents for Inventions Bill, proposed by the Lord Chancellor. The chair was taken by Mr. F. J. Bramwell, president of the Institution. In the course of the proceedings it was resolved,—

"That this meeting is decidedly of opinion that the Patents for Inventions Bill, 1875, proposed by the Lord Chancellor, would be much worse in its operation than the Act of 1852, for the following reasons among others:—It would give unlimited power to the Lord Chancellor to stop all patents, as well as to control the length of patents, and the terms on which they should be used, to a large extent. It would not appoint paid commissioners to manage the office; it would abolish the provisional specification; and it would appoint irresponsible examiners, who would have the power of reporting against the applications for patents on grounds of which they frequently could not possibly judge."

Mr. William Smith proposed,—

"That this meeting is of opinion that many of the provisions contained in the Lord Chancellor's Bill are contrary to public policy and an interference with the admitted rights of inventors and others connected with property in invention."

Mr. W. E. Newton seconded the resolution, which was carried unanimously.

BRIDGE BUILDING IN AMERICA.

THE State authorities of the United States, it appears, erect bridges, and charge the cost to the persons interested. This paternal solicitude is to provide that all bridges are secure and safe for travelling over.

A sample of this State bridge-building is now to be seen a few miles above the State capital over the Erie Canal, which bridge has caved in with a two-horse wagon, drowning driver as well. The bridge had been recently constructed of iron, stone, brick, and wood, of the best kind; and a day has been set apart for the President and the authorities to inspect the stoppage of canal traffic.

HOW CHURCHES ARE MADE REMUNERATIVE IN AMERICA.

OF late years the rise in value of house property in New York has been very great, but the value of church property in "pews" has increased in a still higher ratio.

A costly church has lately been erected for the Presbyterians in one of the most fashionable streets in New York, and the pews in it were put up to auction at the end of May. The church was thronged with bidders. The pews next the pulpit were, after a brisk competition, knocked down for 1,200*l.* each, and the most ordinary pews fetched 60*l.* each. The prices ranged between these two figures, and in addition 40*l.* to 50*l.* premium was paid for choice of seats. One hundred and fifty-five of the pews, with premium, sold at 75,000*l.*, and the total amount realised by the sale was about 160,000*l.*, sufficient, with 40,000*l.* raised by free gifts, to pay the whole cost of building the church. The pew-holders are also assessed 6 per cent. annually for their sittings, which will give an annual revenue of 9,800*l.* for the minister! What should an archbishop get at this rate?

THE INDIA MUSEUM.

IN your remarks, published June 12th, on the New India Museum, South Kensington, you say a "somewhat detailed introduction may be of material service to those of our readers who visit, as we strongly recommend them to do, the spot." Induced by your recommendation, I made a short *détour* to learn the times and prices of admission, but was disappointed when I found the uniform time of closing is six p.m.

Your periodical, being the great instructor of the building trades,—for we find it in the Club and Institute Rooms, in the coffee-house, and often in the public-house,—ought, I think, to urge the authorities to keep open the museum for inspection at least twice a week (Monday and Saturday) until ten o'clock p.m., like the South Kensington general collection and picture galleries. If the collection is for the many, and especially for those who may carry out and utilise some of the ideas gained therein, can it be right to shut out ninety-and-nine of every one hundred, for probably at least that proportion are debarred viewing it, not being able to lose a day's, or even half a day's, wages? Opening it on certain week evenings might keep many from the beer-shop. Some may say, Why not go on Saturday? But after taking home the wage and washing, what time is left before six o'clock?

J. CHRETIEN.

RIGHT OF WORKMEN TO SUMMARY JUDGMENT FOR WAGES ON A BANKRUPT'S ESTATE.

IN the Durham county police-court, a very important question arose in respect to bankrupts under the Master and Servant Act, and, as one of the first decided, it deserves attention.

Messrs. John & Henry Pringle were summoned, at the instance of five of their late workmen,—Fenwick, Newton, Hall, Green, and Ward,—for the nonpayment of wages due to them under contract, they not having received a fortnight's notice to leave work, as stipulated when their engagement was entered upon.

The complaint was not denied; but counsel for the defence contended that, when an estate became bankrupt, workmen were placed on the same footing as other creditors, and could not take summary proceedings in county or police courts to recover wages owing, and as the defendants were adjudicated bankrupts, their old hands could not enforce payment for wages. It was true that when the men were engaged an arrangement was entered into that a fortnight's notice would be required on either side to terminate the contract. That the trustees of the estate would be acting illegally were they to pay these claims, and it might be there were not sufficient claims to meet the order.

Counsel for the men urged that a magistrate had power to enforce the payment of men's wages under any circumstances. That, in the present case, the agreement and wages had accrued before the bankruptcy was *Gazetted*.

The bench were clearly of opinion that the bankruptcy proceedings did not operate as a bar to workmen's wages. The men had not sued the trustees of the bankrupts' estate, but their late masters, the bankrupts, and the wages had accrued before the defendants were declared bankrupts. They would make an order for the payment of the wages claimed, with costs, to be levied by distress on the estate, or by committal of the defendants in default.

As there are numbers of men unpaid, the decision is of consequence.

BUILDERS AND AUCTIONEERS.

BADCOCK *v.* BROOKE.

IN this case, which was heard in the Westminster County Court, the plaintiff sought to recover from the defendant the sum of 18*l.* 11s., for work and labour done, and materials supplied in fitting up his private office in his new premises, in Lupus-street, Pimlico, as well as some repairs to houses, for which, it was alleged, he was acting as agent, and from whom the plaintiff received instructions, and a charge for estimating, &c., for other works. The plaintiff was represented by Mr. Peckham, and defendant by Mr. Buck, barrister.

The evidence went to show that defendant, in May, 1873, entered into an arrangement with Mr. J. Redford, who carried on business as an auctioneer and house agent, to join him as a partner, on payment of certain moneys; the provisional arrangement, after a probation of three months, to be turned into a partnership, in default, the defendant to be paid 2*l.* per week for his services, and all moneys received refunded. Three weeks after this provisional arrangement Mr. Redford was taken ill and died, and the defendant without further consideration took possession of the business, and has continued it ever since. Upon his joining Redford, he gave orders to plaintiff to fit up a private room for his office, and now repudiates payment for the same, upon the plea that he was only acting as a clerk to Redford; as also the repairs to houses, which came through the office, and which work was done subsequent to Redford's death. He also demurred to a charge of one guinea for plaintiff's writing specification and making estimate for further works.

The judge, after hearing the evidence of the plaintiff, his workmen, and also that of an independent witness, said the evidence was overwhelming, gave judgment for the plaintiff for the full amount, with costs, for the fitting up of the office, but disallowed the items for the repairs to the two houses, as, he said, although the work was undoubtedly done by the plaintiff in the defendant's time, there was no proof but that the orders might not have been given a long time previously. As regards the charge of one guinea for estimating, &c., his Honour ruled that where an estimate and specification were supplied, and no opportunity given to compete or carry out the work, the builder was fairly entitled to be paid.

The case is of some importance to builders, as showing they should be careful to ascertain if they are really receiving their orders from auctioneers or those who may shield themselves as clerks, as well as a caution to builders in supplying auctioneers or house agents with specifications and estimates, in order that they may obtain prices from others, without the trouble of employing a professional man.

SURVEYOR.

"GRINDING" TIME.

SIR,—In your paper we notice a statement to the effect that "last week" our men left work until the two hours' grinding time was conceded. We beg to say that in "February" last we came to an arrangement with our joiners (who did not strike, although they threatened to do so) that we would allow the "two hours" until the question had been finally settled between the Masters' Association and the men.

MANLEY & ROGERS.

LONDON SCHOOL BOARD.

TENDERS for the erection of a school, to provide accommodation for 837 children, on the site in Tennyson-road, Battersea, were recently received. The following were the respective amounts:—

Ennor	£7,354 0 0
Scrivener & White	7,287 0 0
Brass	7,248 0 0
Downs & Co.	7,230 0 0
Hill, Higgs, & Hill	7,032 0 0
Nightingale	6,963 0 0
Perry & Co.	6,956 0 0
Cooper	6,696 0 0

The lowest tender, that of Mr. J. Cooper, of 221, Camberwell-road, S.E., amounting to 6,696*l.*, was accepted. Cost of site, 2,120*l.*; cost of building per head, 8*l.*

For the erection of a caretaker's house, Saunders-road, Notting-hill, the amounts were:—

Chamberlin, Bros.	£442 0 0
Cowland	358 0 0
Hook & Oldrey	320 0 0
Mark	319 0 0

The lowest tender, that of Mr. F. Mark, of 51, Bell-street, Edgware-road, N.W., amounting to 319*l.*, was accepted.

SCHOOL BOARD SCHOOLS.

Willaston (*Cheshire*).—The new school, situated on the road leading from Crewe to Nantwich, has been opened. It is in the Gothic style, built of the local red bricks with blue brick dressings, and has a steep roof, supported in the interior by exposed deal timbers, stained and varnished. The exterior is diversified with gables and overhanging eaves, and the roof is laid in alternate bands of red and blue tiles. In the centre rises a bell-tower. The main schoolroom is of the T shape, and is 42 ft. long by 20 ft. broad, the length of the upper part of the T being 40 ft. 6 in., and its breadth 18 ft. From this room a classroom projects to the front, forming one of the gables of the building. Next to this is the entrance for the children, which is arched over so as to form a protection in case of rain. Two lavatories are attached to the back, and there are separate playgrounds for the boys and girls. The walls are 14 in. thick. The infant school, which is 26 ft. long by 20 ft. broad, is at the end of the building nearest Nantwich, and does not communicate with the other school. A classroom leads out of this room, and a separate lavatory is provided. The closets are upon the dry-earth system. Close to the school stands the master's house (in course of erection), which includes a room for meetings of the Board. The work has been carried out by Mr. Ellson, builder, of Hough; Mr. Bower was the architect. The outlay for the schools, which will accommodate 274 children, has been 2,000*l.*

CHURCH BUILDING NEWS.

Billingsley.—This church, having undergone restoration, has been reopened. It is built of stone from Higley, and is entirely new, except part of the west end, which has been repaired with new stones. A new tracery window has been put in, the gable end having new stone coping, with moulded corbels and bond stones. On this gable, supported with new pillars inside the church, is a turret, of stone, containing the two old bells. In taking down the south wall an old Norman doorway was discovered. The stone jambs have been repaired, and the caps and moulded arches cleaned, reset, and pointed. The chancel-ceiling is bordered to the under side of the rafters with moulded ribs, forming panels. The nave roof is open, and plastered between the rafters, the oak principals and purlins being reduced in size. The old carved oak porch, now fixed on a new stone base, has been cleaned, oiled, and varnished. The seats are of pitch-pine, varnished. The windows have been glazed by Mr. John Davies, of Shrewsbury. The staining and varnishing have been done by Messrs. Crump & Son, Bridgnorth. The chancel floor is paved with encaustic tiles by Messrs. Thorne. The hauling has been done by the tenant farmers. The work has been carried out by Messrs. Nevett, Bros., builders, Ironbridge, under the superintendence of Mr. William Nevett. Mr. Robert Griffiths, of Stafford, was the architect.

Coldham (*Isle of Ely*).—The chief stone of the new church for the district of Coldham has been laid, the edifice being dedicated to St. Etheldreda. The dimensions are: nave, 24 ft. by 48 ft.; chancel, 17 ft. by 24 ft. The church will be faced with Elton stone, with Bath-stone dressing, and there will be a bell-turret at the west end for two bells. The roofs are to be constructed of open timber, stained and varnished, and plastered between the rafters. The vestry will be on the north side of the porch. The church will hold about 170 persons. Mr. W. Smith is the architect.

Climping (*Sussex*).—The parish church has been restored and reopened. It consists of nave, chancel, with south transepts, south aisle, and tower at the end of the south transept. The tower is said to have been added to a smaller church in the twelfth century. The restoration included the rebuilding of the west end and upper part of the tower, the stripping and repair of the roof with boarding instead of plaster; the renovation of the old oak seating, the formation of a vestry, and general repairs to the walls and floors. The windows are lancet throughout. The tower possesses an enriched doorway, and windows in the buttresses. The architect is Mr. Gordon M. Hills; and the contractor, Mr. Bushby, of Littlehampton. The cost has been 2,200*l.*

Clacton-on-Sea.—The new St. Paul's Church here has been opened. The parish church being a mile and a half distant from this new and rising watering-place, it was only natural that as houses began to spring up, and the permanent residents to increase, an effort should be made to secure better church accommodation. The new edifice is erected on a piece of ground near the residence of Mr. Page, who gave the site; and is in the early English style, of plain design. It is constructed to accommodate 350 worshippers, and has a nave 71 ft. by 31 ft., with a square tower at the south-west angle, a semi-decagonal apse for the chancel, and a vestry on the north-east side. The walls are of cement concrete, relieved with shingle dashing externally, and no stone is used excepting in the west window, which is Early English work. The cost, inclusive of furniture, &c., amounts to about 1,000*l.* The architect was Mr. G. Gard Pye, Colchester, and Messrs. Saunders & Son, of Dedham, were the contractors.

Histon (*Cambridge*).—The re-opening of the chancel of St. Andrew's Church took place on June 23rd, after restoration. The first church was of the later Norman style. Then followed a restoration after the Early English of the thirteenth century. A second restoration followed, consisting of the entire nave and aisles, after the Perpendicular Gothic. The restoration of the south part of the transept was undertaken in 1872, by Sir Gilbert Scott, and it was carried out by Messrs. Rattee & Kett. The windows are of stained glass, executed by Messrs. Clayton & Bell. In 1873, the restoration of the north part of the transept and two aisles was commenced, Sir Gilbert Scott being still entrusted with the work. In 1874, the chancel was commenced after designs by Sir G. Scott. On removing the plaster from the walls two beautiful windows were discovered, one on each side nearest the nave; also half the priest's door was found in the north wall, showing that the eastern portion of the chancel to the extent of one bay (about 10 ft.) had been cut off, and the east wall brought in. In the end of the south wall was likewise discovered a piece of the old east window of the early dog's-tooth period. Sir Gilbert Scott thereupon resolved to restore the east wall after that style; and this old portion has been worked in, so as to form a part of the new window. In 1874, the proprietor of Madingley Hall was pulling down the gallery at Madingley, the walls of which were externally of red brick, and inside was found the clunch that had been removed from the church in 1600, with the rich moulding and colour as fresh in some parts as though the work had been executed only a short time since. This was secured, and the chancel of Histon St. Andrew is faced with the clunch which 275 years ago formed part of the church of Histon St. Etheldreda. The chancel windows, of which there are thirteen, are lancets, and are to be filled with stained glass, illustrating the Apostles' Creed. This work is being executed by Messrs. Mayer & Co., of Munich. The whole cost of the chancel will be, after the windows are completed, about 1,500*l.*

Hartford.—The Bishop of Chester has consecrated the new church of St. John the Baptist, Hartford, and the ground added to the churchyard. The style of architecture is Early Gothic. The outside walls are built of Kerridge stone, with red Eddisbury stone dressings. The interior walls are lined with Kerridge stone in thin courses, with white Kelsall stone in arches, and other dressings. The nave, piers, and

pillars to windows, &c., are redstone. The roofs are covered with brindled tiles. The church consists of nave, north and south aisles, chancel and transepts, the north transept being used as a children's chapel, and the south for an organ chamber and vestry. The foundations for a tower and spire at the west end have been laid, to be carried out hereafter. The seats are open, of pitch pine, and will accommodate 500 persons; the whole being free. There is a stained-glass window in the north transept, the gift of Mr. Knowles, in memory of his son, Captain Knowles, of the ill-fated *Northfleet*, run down by the *Murillo*, off Dungeness, in January, 1873. The subject is "Peter walking on the sea." The window was supplied by Messrs. Lavers, Barraud, & Westlake, of London. The other windows are glazed with cathedral glass. The carving was executed by Messrs. Williams & Millson, of Manchester. The cost has been over 4,000*l*. The works have been carried out by Mr. R. Beckett, of Hartford, from the designs of Mr. Douglas, architect, of Chester; Mr. Walter Edwards, of Chester, having been the clerk of the works.

THE PLANS FOR THE NEW COUNTY HOSPITAL, LINCOLN.

At the meeting of the governors last week, Mr. R. Hall read the report of the Plans Committee, which stated that seven sets of plans had been received, and after careful examination they had arrived at the decision "that the plan signed 'Experience' in red, not only combined a larger number of advantages than any other, but was in itself a very excellent design, capable, with certain modifications, of fulfilling every requirement, and placing the county in possession of one of the best hospitals of the time." It was then resolved that the plan be submitted to a professional adviser, who with the architect, and any governors who may have any suggestions to offer, shall consider the same with a view to its final adoption. After further discussion, the envelope accompanying the plans selected, and marked "Experience" in red, was then opened, and it was found that the architect was Mr. Alex. Graham, of Carlton Chambers, London.

TESTIMONIAL TO MR. AND MRS. S. C. HALL.

On the 14th inst., under the presidency of the Earl of Shaftesbury, and at the house of Mr. Griffin, Kensington-palace-gardens, Mr. and Mrs. S. C. Hall were presented with a testimonial in commemoration of their "golden wedding," and also in recognition of their eminent services to literature and art. A large number of their friends were present. Lord Shaftesbury took the chair shortly before five o'clock, and Mr. Godwin, as one of the executive committee, explained the inception and nature of the testimonial. The fifty years of married life of Mr. and Mrs. S. C. Hall having been completed in September in last year, it was thought that the event should be marked by some testimonial of esteem on the part of friends and of appreciation by the general public. The result of an appeal from a committee thereupon formed was the inflow of a sum of 1,530*l*., from 580 subscribers, and it was determined that a portion of the money should be invested in the purchase of a joint annuity of 100*l*. per annum, and the balance (some 400*l*.) handed over to Mr. and Mrs. S. C. Hall. Mr. B. Halswell, as hon. secretary, had taken an energetic part in the carrying out of the scheme, and Mr. Griffin had acted as treasurer. Mr. Godwin especially associated in the graceful work Miss Aikin Kortright, Mrs. Griffin, and Mrs. Martin. The Earl of Shaftesbury, in the course of a very apposite address, thanked Mr. Hall for the bold and manly line he had taken in all departments of literature, and more especially for the sagacity he had brought to bear in the discovery of fraud in works of art and taste; he congratulated him, moreover, on being linked with a woman of refined delicacy and taste, who had herself given to the world a series of publications tending to instruct and elevate the human race. The Earl concluded, amidst loud applause, by making the formal presentation of the testimonial. It may be added, that the committee had had bound up in an illuminated album a great number of letters from distinguished persons. One of these letters was signed by seventeen or eighteen persons in the Salt Lake State. Mr. S. C. Hall (whose wife, by his side, was visibly affected) made a touching reply, remarking that Mrs. Hall's contributions to literature would fill 200 volumes, but all this work had not caused her to neglect the domestic duties. After alluding, with allowable pride, to the projection of the *Art Journal* thirty-six years ago, he said that the guiding principle of his wife and himself had been that there was no happiness to be obtained from that which did not make others happy.

ACTION AGAINST A HALIFAX CONCRETE BUILDER.

On the 7th inst., at the Barnsley County Court, the adjourned hearing of the case of Froggart *v.* Firth was again gone into before a jury. Mr. Atkinson, barrister, appeared for the plaintiff, and Mr. Barker, barrister, for the defendant. The plaintiff is a miner, living at Higham, near Barnsley, and the defendant is a builder at Halifax. The action was brought to recover 50*l*. damages, sustained in consequence of two houses, built of concrete, falling in before completed. The case for the plaintiff was that the building fell owing to the defendant using a quantity of unburnt shale and clay, contrary to the contract, and against the protest of the plaintiff and his architect. For the defence, several witness were called to show that ashes were substituted for clay, which would not burn, and without the consent of the plaintiff. Mr. Briggs, builder, of Halifax, and Mr. Brock, of Huddersfield, swore that the buildings fell owing to the inner walls being too thin, and the windows too large. After a hearing occupying some hours, the jury retired, and after being absent for some time, returned a verdict for the plaintiff for the amount claimed.

CHARGE AGAINST A SEWER CONTRACTOR.

Sir,—My attention having been directed to a statement in the last number of the *Builder* referring to a charge of fraud against a "sewer contractor," allow me to say that, while the particulars therein are generally correct, I must beg to be allowed to set you right in regard to the statement of my having contracted to do the work under a schedule of prices, such not being the case, neither was I bound to price. I may also be allowed to correct the judgment of the "one member of the vestry," who thought it strange that I had not noticed the number of bricks used by Mr. Potter, inasmuch as the work not being quite complete I had no opportunity of knowing. Allow me further to inform you that the whole matter is in course of investigation. I shall be obliged by your suspending your further judgment until the result is known.

J. J. Griffiths.

STAINED GLASS.

Thirsk.—A new stained-glass window is about to be placed in the north aisle of the parish church, through the liberality of Major and Mrs. Sanders, in memory of Mrs. Sanders's brothers, one of whom was formerly the member for the borough and the lord of the manor. Mrs. Macbean has also promised to place a memorial stained-glass window at the west end, in remembrance of her late son, Mr. Frederick Bell, of the Hall, who died in January last.

Leicester.—Messrs. Wailes & Son have inserted in the west end of the south aisle of the parish church a stained-glass window, in memory of the late Miss Latham. It consists of four cartoons founded upon Numbers xx. In the left-hand light the people are murmuring at the lack of water; in the second, Moses and Aaron interceding; in the third, Moses is striking the rock. In the right-hand light, the people are drinking. Beneath are portions of Scripture, and the inscription. The tracery has three groups of flowers upon enamelled glass, copied from water-colour paintings by the deceased.

Melton Mowbray.—A memorial window has just been placed in the parish church by Messrs. Wailes & Co., in memory of the late Mr. Greasley. It is at the south entrance of the church, and has been principally subscribed for by former scholars in the church school.

Arbroath.—Two memorial windows, in stained glass, have been erected in Ladyloan, *quoad sacra* Parish Church; one on either side of the pulpit,—in the north wall of the church. They are about 15 ft. high by 5 ft. wide. One contains illustrations of Moses delivering the Law upon Mount Sinai. At the bottom of this window is the inscription,—"In memory of David Lonson, of Springfield, Town Clerk of Arbroath, 1812-1858." The window on the other side of the pulpit corresponds in its style of art, and is "In memory of Hugh MacDougall, minister of the parish of Killio, 1795-1827." The windows have been erected by Messrs. Ballantine & Son, of Edinburgh.

Widdrington.—A stained-glass memorial window, of three lights and tracery, has been erected in Widdrington Church, to the memory of the Rev. Simpson Brown Maughan, late vicar of that parish. The subjects are:—"Christ's Charge to St. Peter," "The Apostles preaching on the Day of Pentecost," and "The Baptism of the Centurion." The stained glass is from the works of Mr. Baguley.

St. Mary-le-Tower.—Recently a new stained-glass window, the work of Messrs. Clayton & Bell, Regent-street, London, and representing the Conversion of St. Paul, has been placed in the south side of this church. The following inscription is at the foot:—In piam memoriam Dei beneficiorum vidua cum liberis suis hanc fenestram decavit."

DISSENTING CHURCH-BUILDING NEWS.

Hatton.—The foundation-stones of the new Wesleyan Chapel and School at Hatton have been laid. The old chapel was erected in the year 1814, but the lease having expired, and the building becoming too small for the requirements of the village, it was decided to erect a larger one on a more convenient site. The chapel will be in the Gothic style and the school-room attached to it will be so built that it can be thrown open to the chapel in case of necessity. There will also be a vestry. The chapel will accommodate 120 persons and the school-room 80. The cost is estimated at about 800*l*. The architects are Messrs. Pierpoint, Hughes, & Pierpoint, of Bold-street, Warrington; and Mr. Fairhurst, of Whitley, is the builder.

Roade.—The memorial stones of a new Wesleyan Chapel in this village have been formally laid. For some time past the want of a larger place of worship has been felt by this denomination, the present erection being far from adequate. A site was therefore selected at the upper end of the village, and purchased at the cost of 60*l*. The chapel will be a simple brick structure, with an open timber roof. It will seat 170 persons, and will have a vestry or class-room at the end. The design is by Mr. S. J. Newman, architect, of Northampton, and is being carried out by Mr. Gooderidge, of Roade. The entire cost is calculated at about 460*l*.

Falmouth.—The Baptist congregation of Falmouth has outgrown its accommodation. The little chapel in Webber-street being inadequate to accommodate the people who repair to it, the foundation-stone of a new edifice was laid on the 10th inst. The building will be erected in Market-street, and will accommodate 900 persons. It will be in the Gothic style of architecture, and will be built of local stone, with granite and Bath stone dressings. The outlay is calculated at 5,000*l*. Mr. J. Hicks, of Redruth, is the architect; and the builder is Mr. W. Leggey, of Falmouth.

Smethwick.—The new Presbyterian Church, erected at the Six Ways, Smethwick, has been opened. It is in the Byzantine style of architecture, has cost about 1,700*l*., and is built to accommodate 400 persons. Mr. Tait, of Leicester, was the architect, who gave his services gratuitously.

Caersws.—The new Wesleyan Chapel here has been opened. It is in the Gothic style, and will comfortably seat 150 people. It is built in the form of a parallelogram, with a schoolroom and vestry at the north end. The foundation walls are of Penstrowed stone, with a moulded plinth, and the remainder of the walls with red brick, externally faced with the red pressed brick, and with bands of freestone and coloured brick. Over the porch is a large rose-window, which has, with the window at the other end, been filled with stained glass by Mr. John Davies, of Shrewsbury. In the sides are lancet windows. The roof is partly open, with circular ornamental flowers around ventilators, cornice around ceiling, and label mould over windows. The internal fittings are of pitch pine, stained and varnished. The seats are free. The cost was 270*l*., the land having been given by Lord Sudeley. Mr. E. Jones, of Newtown, is the architect; and Mr. J. Evans, Caersws, the builder.

Windsor.—A site has been secured for the new Wesleyan Chapel, on the Vansittart estate, as the corner of the Alma and New roads, at previously mentioned, the frontage being 120 ft.

on the New-road, and 140 ft. on the Alma-road. The building will be in the Gothic style of architecture, and the cost, including the purchase of land, will be 7,000*l.*, and provision will be made to accommodate 650 people. The chapel will consist of nave and side aisles. At the back of the chapel will be a building having externally the appearance of a transept to the chapel, to be used for Sunday schools and other purposes. The nave will be about 70 ft. long and 40 ft. high. The aisles will be separated from the nave by a series of five arches, supported by light pillars. The width of the interior will be 44 ft. There will be a gallery on three sides of the building. The chapel will be lighted from upper and lower windows on the side walls, and a large window in front of the building. There will be a spirelet, 90 ft. from the ground, surmounted by a weathercock, it being intended at some future time to replace this by a spire, at an additional cost of about 2,000*l.* The building adjoining the chapel will consist of two floors. On the ground-floor will be two passages leading into the chapel, making three divisions. Two of these will be used for Sunday school, and the other will be further subdivided into two class-rooms and minister's vestry. The upper floor will be one large room, to be used for meetings in connexion with the Wesleyan body. There will be lights in the gable ends, and also on the side facing St. Mark's School. The ground size of this room will be 60 ft. by 28 ft. The building will be of Wycombe stone, faced with Bath stone. Mr. Joseph Morris, of Reading, is the architect.

Miscellanea.

Roman Altar found near the Tyne Bridge.—At a meeting of the Newcastle Society of Antiquaries last week, the Rev. Dr. Bruce stated that a fine altar to Neptune had been found in the river near the new Tyne Bridge. It had been broken in three parts, but each part had been brought up by the dredger. It was peculiar in its appearance; on the capital they had the dedication to Neptune, by the Sixth Legion, "Neptuno, Legio Sexta victrix pia fidelis"; and the face of the altar was occupied by a trident, on the handle of which was a spirited and extremely handsome representation of a dolphin. The altar was unlike anything he had ever seen. Only two other traces of the god Neptune had been found in the North of England. One of these was a figure of Neptune found at Carrawburgh; and the other was a small altar inscribed "Neptuno Sarabo Sino," found at Chesterholm. The present altar was a much finer piece of sculpture than either of these. He did not know that there was another altar to Neptune found on the whole line of the wall; but the one coming from Pons Elii was exceedingly interesting. It was a pity that instead of the name of the Sixth Legion, whose head quarters were at York, the altar had not contained the name of the cohort located in the Roman garrison of Newcastle. The first cohort of the Cornevii is stated to have had their head quarters at Pons Elii, but no inscriptions have been found stating the fact. The altar would have been very precious if it had given the name of the cohort which was located in this garrison.

Material for Building.—A material suitable for blocks and bricks is, according to the invention of Messrs. Smith & Paterson, of Glasgow, made from two mixtures. The first contains coal tar, mixed with small broken stones or shingle, a portion of which should be pulverised or mixed with sand, so that the interstices between the stones of larger size may be properly filled up. The second mixture is composed of clay and pitch; sand or chalk may be substituted for the clay. The first mixture is mixed in a mixing apparatus at a heat which is gradually increased until the product is adhesive to the touch. The second mixture is formed by grinding the powder thus obtained, and is added to the first mixture while its particles are adhesive to the touch. The mixture of the two compounds is confined in a close vessel and heated so as to diffuse the vapours uniformly throughout the ingredients. In manufacturing a building block, the material, having been tested, is removed while hot to moulds, and pressed and shaped as required.

The Assistant Surveyor of Bermondsey. At the vestry meeting last week it was resolved, on the motion of Mr. Priter, that the salary of Mr. Ford, the assistant surveyor, should be increased 50*l.* per annum.

Bad Payments of the Leicester School Board.—At the meeting of the Leicester School Board, on the 6th inst., a letter was read from Messrs. Sawbridge & Tate, whose contract had been accepted under certain provisions at the last meeting of the Board, declining to undertake the responsibility of carrying out the work of erecting the Kent-street Schools, but stating that they were willing to do the carpenter's work. A letter was also read from Mr. John Loveday, of Kibworth, stating that he had heard such a bad character of the School Board, for payment on certificate, &c., that he would decline carrying out his tender, unless some alterations were made. In reference to this matter the clerk said that Mr. Loveday had called upon him, and he had expressed his willingness to carry on the work if the Board would advance 500*l.* on his tender, and order payment for the work within a week after the production of the architect's certificate. The following resolution was passed:—"That fresh tenders for the erection of Kent-street School be invited, and that arrangements be made for paying the instalments due to contractors on production of the architect's certificate (instead of making them wait for the receipt of the money from the Public Works Loan Commissioners), and that in case any persons desire to Tender for a portion of the work they be permitted to do so."

The Buyer of Sir Morton Peto's House. According to the London correspondent of the *Dundee Advertiser*, at the West End of London there is much talk respecting the personal extravagance of some of the persons,—especially of one or two originally coming from Scotland,—who have recently had to "succumb." Mr. Collie, who has not only come to grief himself, but brought so many others to grief along with him, began life in a comparatively humble sphere, but after making what was considered a lucky stroke by blockade-running, he established himself as a City magnate, and purchased the house formerly occupied by Sir Morton Peto, in Kensington Palace-gardens, for 30,000*l.* Sir Morton's crib being altogether too diminutive for Mr. Collie, and scarcely sufficient for the accommodation of his servants, he pulled it down, and built a palace which is one of the grandest, if not the grandest, in the Gardens. He is said to have spent about 30,000*l.* on his picture-gallery, which contains some fine specimens of the work John Phillip.

The Labour Laws and the Trade-Unions Committee.—At a special meeting of the Trade Unions Congress Parliamentary Committee held on Wednesday, Mr. Odger in the chair, a long discussion took place, resulting in the unanimous adoption of the following resolution:—"That this committee approve the clause of the Home Secretary, which he proposed on Monday night, dealing with the Criminal Law Amendment Act, 1871, as a first step towards the full settlement of the agitation on the labour laws as criminally applied; and believe that with a few verbal amendments, such as making the first part of the clause cover the latter portion, as well as the transposition of words so as to make the clause definite and unmistakable in carrying out the intentions of the Home Secretary's speech, the measure will be such as to give satisfaction to large classes of working men all over the country." The above resolution was ordered to be forwarded to Mr. Cross.

Worcester City and County Fine Arts Association.—The fourth exhibition of the Worcester City and County Fine Arts Association was opened in the Music-hall on Monday by the Mayor (Mr. J. Longmore), in the absence of the Earl of Dudley, the president. The Mayor, in opening the proceedings, said the beauties that were around them he was sure they would all appreciate, and he believed the public at large when they came to see them would be delighted with the collection, and those persons who could not appreciate such a collection must be akin to those persons who travel from Dan to Beersheba and say "all is barren." One feature in the doings of the association was the privilege that they gave at the close of the exhibition to the working men of the city to see those beautiful specimens at a nominal sum. It must have a beneficial and enlightening influence upon their minds, and give them a taste and love of the beautiful, and so must be calculated to do infinite good.

New Proprietary Schools at Cardiff.—The memorial stone of large proprietary schools at Cardiff has been laid by Lord Aberdare.

The New Bank Premises at Peterborough.—The Stamford, Spalding Boston, and Peterborough Bank, in Church-street, in this city, is near completion. It is a two-story building, of Ancaster stone front and return angle. The bank-room, one large compartment, 35 ft. 6 in. deep by 27 ft. 6 in. wide, is approached through a spacious doorway, the jambs being moulded and polished red granite, with mahogany swing-doors at the entrance. The floor consists of encaustic tiles in front of the counter. The building is warmed by hot-water pipes. The manager's room, 15 ft. high, 25 ft. by 15 ft., faces the street. The waiting and book rooms, not omitting the strong-room, which is inclosed with strong walls, and arched with brick and fire-brick, with the lavatories and retiring-places for clerks, are placed at the back. Mr. Nightingale, of the Albert Works, London, is the contractor; the architect being Mr. Eve, of London. The clerk of the works is Mr. Jno. Duncan. The carving is from the hands of Mr. Matthews, of Grantham.

The Proposed Market Hall, Pickering.—On the 7th inst. at a public meeting the committee presented their report, to the effect that all the sites in or near the market-place were too expensive, the cheapest being 1,500*l.* Two other sites were referred to—Mr. Coward's in Park-street, and Mr. Whitelock's in Hungate. Mr. Whitelock offered two cottages and his own shop, with a frontage of 45 ft., and 90 ft. in depth, for 350*l.*, or if with right of way through the market-hall for 300*l.* After discussion it was resolved that a conditional contract be entered into with Mr. Whitelock for his property, and that a market-hall with public room over, be built on the same; that a limited liability company be formed to carry out the wishes of the meeting; and that Mr. Watson should ascertain the cost of erecting a suitable building.

St. George's Hall, Langham-place.—The new first part, *Eyes and no Eyes*, written by Mr W. S. Gilbert, and set to music by Mr. German Reed, is very lively, harmonious, and entertaining. Mrs. German Reed, Mr. Corney Grain, Mr. Alfred Reed, Mr. H. Bishop, Miss Fanny Holland, and Miss Leonora Braham are all provided with characters well suited to their respective abilities, and their acting and singing are excellent. Miss Holland has a capital song in it, "As I was going along the Road"; and Mrs. Reed declaims delightfully in mock heroics, "Yes, yes, I am that Miserable Beauty." Mr. Gordon has painted a more important scene for it than usual,—a Burgundian Gothic Residence,—and the too little affair is altogether a success.

Archæological.—As the Duc de Gramont, French Minister of War, director of the Furness Steel Company, was on the 7th inst. with other directors inspecting the works, he visited some remains just unearthed by workmen in shifting limestone from Goldmire Cliffs. The party suddenly found red freestone masonry, forming a hollow, 9 ft. in diameter and 5 ft. high, containing human and animal bones. Five feet of soil, growing nut-trees, and an elm 30 ft. high, covered the masonry. A skeleton with a sword was found some months prior. The bottom of the hollow being covered with burnt lime, it is conjectured that this is the ancient kiln used by the monks of the building of Furness Abbey 700 years ago.

Edinburgh Museum of Science and Art.—The library of this museum has just been enriched by a large donation of books most liberally presented by the French Government. The whole of the patent specifications from 1850 to the present year, in ninety small but thick quarto volumes, containing some thousands of illustrations, with thirty-seven volumes of catalogues or indices to the same, constitute the bulk of the donation; but, in addition, there are twelve other most valuable works in twenty-two volumes relating to art and to the archæology of Paris, &c., all of which are from the Government printing establishment of France.

Opening of the New School, Northleach. On the 29th ult. the new National school was formally opened by the Rev. W. R. Lawrence, the vicar. Some 215 day and Sunday scholars assembled in the new building, which consists of principal room, 50 ft. by 18 ft.; class-room, 19 ft. by 16 ft.; porches, &c., and master's residence. It stands on a site of 1 acre (near the old school), given by Lord Sherborne. Mr. Knight, of Cheltenham, was the architect, and Mr. Knibbs, the builder.

Artisans' Dwellings.—We are authorised by the Executive Council of the Metropolitan Artisans' and Labourers' Dwellings Association, Limited, the programme of which appears in our advertisement columns, to state that her Majesty the Queen, whose earnest desire to promote the well-being of her people, and especially of that class who are most in need of judicious help, is so well known and appreciated, has been graciously pleased to express her approval of the philanthropic objects which the Association has mainly in view, and her best wishes for their successful accomplishment. We will refer to the programme another time.

Building in Fiji.—The 6th Company of Royal Engineers, under the command of Lieut.-Colonel F. E. Pratt, from the Chatham School of Military Engineering, have embarked on board the chartered screw steamer *Whampoa*, for conveyance to the Fiji Islands. The Royal Engineers are to be employed at Fiji in the erection of a residence for the Governor, and on other public buildings and works to be undertaken. In the same vessel Mr. James Hill, of Upper Thames-street, shipped a large quantity of his locks and door furniture, and general ironmongery, for the Governor's house, ordered by the Royal Engineer Department.

Hospital for Infectious Diseases at Warrington.—Plans for a new hospital for the treatment of infectious diseases in Warrington have been drawn by Mr. Vawser, the borough engineer, passed by Mr. Simon, the medical officer of the Local Government Board, and returned to the Mayor of Warrington fully approved. The proposed institution will have forty beds, medical and nurse accommodation, a porter's lodge, a mortuary, provision for a sick carriage. A new infirmary and dispensary for accidents and ordinary cases of sickness will soon be finished. It has been endowed with 10,000*l.*, through the munificence of one gentleman.

Wednesfield School Board.—At the last meeting of this Board, Mr. Lello, pursuant to notice, proposed the appointment of an architect, which was unanimously agreed to. The clerk said he had received letters applying for the office from the following gentlemen:—Messrs. Bidlake & Fleeming, Waterloo-road; Weller & Proud, King-street, and Mr. W. D. Griffin, Darlington-street, Wolverhampton; Messrs. Wilson, Son, & Aldwinkle, London; and Mr. E. H. L. Barker, of Hereford. Mr. Lello proposed the appointment of Mr. Griffin. This was seconded by Mr. Atkins and carried.

New Almshouses at Gerrard's-cross.—About twelve months ago a block of ten almshouses was commenced at Gerrard's-cross, being intended by Sir J. Wallis Alexander, bart., as a memorial to his brother, the late Sir William Alexander, bart. The buildings are now complete, and ready for occupation. The facings are of red brick, and the openings to the windows and doorways are of stonework, the chimney shafts of moulded bricks, and the roofing covered with Broseley tiles, the barge-boards having tracery and carved work. The cost has been about 4,000*l.*

Parsonage for Hammerwood.—In 1873 a school chapel was opened by the bishop of the diocese at Hammerwood, which had been erected by Mr. Oswald Augustus Smith, for the accommodation of that gentleman's tenants, their families and the surrounding inhabitants. There being no residence for a clergyman, Mr. Oswald Smith has lately given instructions to Messrs. Charlwood Brothers, builders, of East Grinstead, to erect a parsonage, at a cost of something over 2,000*l.*, from the designs of Mr. George Williams, architect, of London. It will be in the Elizabethan timbered style.

Egyptian Progress.—The Government of the Khedive gives constant proofs of its determination to march with the spirit and progress of the age. The last instance it furnishes of its resolution in this respect is reported in a letter from Alexandria announcing that from the 1st of September next the Gregorian calendar is to be adopted officially in Egypt, and the Christian era will take the place of that of the Hegira. The Khedive has just issued a decree to that effect.

Foreman's Cottage and Offices, Lincoln Gasworks.—At a meeting of the Lincoln Gaslight and Coke Company, last week, the tender of Mr. S. Sherwin, of Boston, for the erection of foreman's cottage, offices, &c., for the new gasworks, at Bracebridge, was accepted.

Monumental Cross, Horncastle. — The Monument recently erected in Holy Trinity churchyard, to the memory of the late vicar, is in the form of the old churchyard cross, and is altogether 16 ft. in height. At the basement, upon the second step, is the following inscription:—"To the glory of God, and in memory of Robert Giles, Prebendary of the Cathedral Church of Lincoln, and vicar of the parish of Horncastle. Died July 12th, 1872." Messrs. Walter & Hensman, have erected it under the superintendence of Mr. James Fowler, Louth, architect.

Newchurch, Isle of Wight, School Board. At a meeting of the Board, on Friday last, with Mr. Trimen, architect, tenders were received for erecting Board schools at Newchurch, as follows:—

J. Newnham, Ventnor	£1,772 0 0
H. W. Haden, Newchurch	1,678 0 0
W. Jolliffe, Sandown	1,600 0 0
F. Colenutt, Sandown	1,420 0 0
R. Sanders, Shanklin	1,323 0 0
A. & A. Newnham, Shanklin	1,320 0 0

Mr. Sanders's tender, 1,323*l.*, was accepted.

The Repairs of St. Bride's Church, Fleet-street.—The committee appointed to inquire into the state and condition of the church, and the necessary repairs required thereto, brought up a report, on the 8th inst., recommending that the church be painted, the pews, gallery front, chancel, and tablets cleansed, the cushions repaired, certain pews altered, and the organ regilded, tuned, and cleaned, besides other small matters. The approximate cost was estimated at between 1,800*l.* and 2,000*l.* There was sufficient money in hand. The report was adopted.

Sale of St. George's Hall, West Bromwich.—That dingy-looking structure, called by courtesy St. George's Hall, and situated in West Bromwich, has been sold for 900*l.* To those who have had the pain of attending meetings in a building which was splendidly ill-adapted for the purposes for which it was designed, this will be gratifying news. The inhabitants, in a few weeks, will have the comfort of meeting in a hall which does not outrage the title.

A Garden for High Wycombe.—Mr. J. O. Griffits, Q.C., one of the recently *Gazetted* batch of "her Majesty's counsel learned in the law," announces that he "has decided to signalise his preferment in the profession." This Mr. Griffits intends to do by purchasing the Frogmore Gardens, at High Wycombe (his native town), and laying them out as a public pleasure-ground, and to maintain the gardens for three years, after which they are to be supported out of the Wycombe rates.

Stonehenge.—Last week a party of civil engineers proceeded to this spot, and were engaged for four or five days in taking most elaborate measurements of the structure, as well as making astronomical calculations. The results of their exhaustive survey have been very striking, astonishing, it is said, none more than the *savants* themselves, and leave not the least doubt about the solar references of the structure; and, further, that it was undoubtedly erected as a temple of the sun!

Tenders for Corn Store, Rochester.—The following tenders were received for erecting a corn-store in the Canal-road, Strood, for Mr. George Youngman. Mr. M. Bulmer is the architect, and the lowest tender has been accepted:—

Naylar	£2,500 0 0
Ball	2,480 0 0
Pankhurst & Son	2,177 0 0
Callund	2,150 0 0

Northumberland Assize Court.—At the Quarter Sessions for the county of Northumberland, held at Hexham on the 30th ult., the plans of the proposed improvements to the "Moot Hall Courts," Newcastle-on-Tyne, prepared by Mr. William Crozier, county engineer and architect, for the county of Durham (who carried out similar improvements at the Durham Assize Courts), were approved. The estimated cost of the alterations is 6,000*l.*

Rural Sanitary Authorities and Builders. The builders of the North of England are complaining of the great inconvenience and hindrance to work by the long delay in passing of plans at the rural sanitary meetings; in many instances plans being kept over two months before a decision is arrived at. Several contractors who commenced work have been summoned, and the buildings ordered to be pulled down again.

Widening of Fleet-lane.—A memorial from certain inhabitants of the Ward of Farringdon Without and neighbourhood was presented to the Commissioners of Sewers last week, praying them to widen Fleet-lane on account of the heavy traffic which passes through. A deputation attended to support the prayer of the memorial, which was, after a short discussion, referred to a committee for consideration and report.

A Floating Swimming Bath.—The first of a set of floating swimming-baths was opened on the 6th inst., on the Thames, near the underground railway station at Charing-cross. It is 135 ft. long by 25 ft. wide, and the interior is neatly fitted up. The depth ranges from 3 ft. to 7 ft., and it is so constructed that there is a continual supply of filtered water, which runs in through the filters at the rate of 500 gallons per minute.

The Restoration of Knook Church.—The dilapidated old church at Knook, near Heytesbury, Wilts, is about to be thoroughly restored, externally and internally, and a new vestry-room built on the north side of the chancel. It is also to be repaved and reseated, and a new pulpit, communion-table, and heating apparatus provided. The estimated cost of the work is 750*l.*, towards which Lord Heytesbury has contributed 600*l.*

New Pavilion for the Newton-le-Willows Cricket and Bowling Club.—During the present season a new pavilion, costing 200*l.*, will be erected on the ground of this club. The wicket is well known as one of the best in England, and additional accommodation to the visitors belonging to the first-class clubs who frequent the ground has long been wanted. The building has been designed by Mr. R. Brierley.

Hailsham Church.—The restoration of the old church of St. Mary, Hailsham, proceeds but slowly, owing to a lack of the necessary funds. The working committee appointed some time since have, however, raised enough money to restore the south aisle according to the design of Mr. H. E. Rumble, Eastbourne, and these have been carried out by Mr. J. Thompson, of the same town.

Discovery of an Ancient Cave.—Workmen engaged in re-opening quarries at Ross of Mull to get material to restore the ancient monuments on the Island of Iona have come upon a large cave, called the Unns Cave, on the walls of which are sketched designs of the crosses and other architectural ornaments with which the island abounds. The date of the erection of the monuments and tombstones is also given. The cave is said to be 80 ft. long.

Bursting of a Dam.—Last week the dam of a large pool on Lord Dartmouth's estate, Patshull, near Wolverhampton, burst, owing to the late heavy rains. A large volume of water ran over various parts of the estate, carrying away a strong brick wall and fencing, distributing tons of fish, and inundating extensive game preserves, coppices, and woods. Fortunately the park, well stocked with deer, escaped.

A New Chapel at Bedminster. — The foundation-stone of a new chapel and school-room, in connexion with the United Methodist Free Churches, at Ashton-gate, Bedminster, was laid on Monday, estimated to cost some 700*l.* of which 250*l.* have been subscribed. The new building will accommodate about 700, and will be, when completed, 32 ft. by 47 ft. The builder is Mr. Isaac Bennett, and the edifice is a plain and substantial erection of the Italian type.

"Damage to the Parthenon."—With reference to a paragraph quoted in our last under this heading, a correspondent writes,—"One can scarcely conceive the possibility of this getting into the *Athenæum*; but, for pity's sake, how got it into the *Builder?*" Simply because the statements are so remarkable that we shall be glad to have them contradicted or otherwise by those who know.

The Ryde Town Council. — We have received a letter from Alderman Dashwood, of Ryde, in reply to one signed "An Admirer of the *Builder*," but as we have already published a long communication from the Town Surveyor to the same effect, and as, moreover, the Alderman's letter would render us liable to an action for libel, we do not print it.

The Park-lane Fountain, of which we gave an account some time ago, was uncovered on Friday in last week.

Fall of a Factory.—Three chambers containing sulphuric acid gave way on Monday afternoon at the chemical works of Messrs. Morris Brothers, Stonekurth, near Gainsborough. More than 100 men were employed near the spot, but at the first signal of danger they left the mill. Three, however, were seriously injured by the falling mass. The damage done will amount to several thousand pounds.

The Lowest Death-rate in England.—A remarkably low bill of mortality was presented at the last meeting of the West Bromwich Commissioners: the death-rate was only 13·4 per 1,000. This is a lower death-rate than any of the most naturally favoured places in England. "And yet some of the inhabitants are not happy!" says a local print.

A New Pier for Ryde.—A scheme is now being prepared for a new pier for Ryde. It is proposed that this shall be constructed by and belong to the town; that it be an ornamental iron structure, with promenade in the centre, and a way for carriages, carts, &c., on either side. The estimated cost is 50,000*l.*

Property in the Strand.—The freehold premises, No. 153, Strand, 18 ft. frontage, covering an area of 954 ft., and let on lease for twenty-one years, at 370*l.* per annum, were sold by auction, by Messrs. Wilkinson & Horne, and realised 7,920*l.*, being at the rate of a little over 8*l.* 6*s.* per square foot.

Price of an Island.—The Island of Lacroma, a property of the late Emperor Maximilian of Mexico, situated about a quarter of an hour from the town of Ragusa, has been put up for sale at the price of 375,000 fr. The most remarkable building in it is the convent of the Benedictines, founded in 1192 by King Richard Cœur de Lion.

The Sanitary Authorities at Tiverton have decided "that Mr Estridge be employed to make a survey and report on the water supply and drainage of the borough at a cost of 100*l.* and travelling expense."

Free Library, Stockton-on-Tees.—In the recent competition for this library fifteen designs were submitted. The plans sent in by Messrs. Garside & Johnson have been selected by the Town Council.

Institution for the Blind, Devonport.—The tender of Mr. Martin, of Stoke, for the erection of the proposed Devonport Institution for the Blind, in St. Aubyn-street, at 4,500*l.*, has been accepted.

A New Market for Leeds.—On Tuesday, the 6th inst., the Mayor of Leeds laid the foundation-stone of a new market for fish, hay, meat, vegetables, &c., to be erected at a cost of 40,000*l.*

Asylum for Lunatics at Bath.—At the Bath Town Council meeting, last week, it was resolved to purchase, for 8,100*l.*, a site on Claverton Down for an asylum for pauper lunatics.

The Working Men's Club and Institute Union.—The Earl of Rosebery will preside at the annual meeting of the members and friends of this society, on the 17th of July, at the Society of Arts.

History of Art.—We hear that Mr. John Forbes Robertson is writing for Messrs. Cassell a popular history of art for the last hundred years.

TENDERS

For new chapel, Greenwich Union. Mr. W. Wallen, architect:—

Crabb	£2,445 0 0
Staines	2,362 0 0
Wood	2,320 0 0
Allpress	2,275 0 0
Smith	2,260 0 0
Hart (accepted)	2,142 0 0

For the erection of Police offices, cells, superintendent's residence, &c., at Chesterfield. Mr. S. Rollinson, architect:—

Stevenson & Weston	£3,830 0 0
Slim	2,720 0 0
Hall	2,650 0 0
Forrest	2,424 0 0
Fidler	2,381 0 0
Rollinson (accepted)	2,366 0 0

For the erection of shop and warehouses in the Euston-road. Mr. W. Cresswell, architect. Quantities by the architect:—

Baldwin	£2,370 0 0
Dunkley	2,184 0 0
Beach	2,124 4 3
Gill	2,042 0 0
Sharman	1,885 0 0
Aitchison & Walker	1,810 0 0
Potter	1,806 0 0

For alterations to the Lord Nelson public-house, Blackfriars-road. Messrs. Ingram & Hollands, architects. Quantities supplied:—

Taylor	£777 0 0
Mills & Sons	768 0 0
Cook & Green	663 0 0
Blott	595 0 0

For alterations and repairs to Melmoth Lodge, Cookham, Berkshire. Messrs. Raynes & Shum, architects:—

Langmead & Way	£185 0 0
Silver & Son	179 0 0
Woodbridge	176 0 0

For restoration of St. George's Church, Edworth, Bedfordshire. Messrs. Raynes & Shum, architects:—

Redhouse	£740 0 0
Osborne	700 8 0

For the erection of school and residence, for the united parishes of Hinxworth and Edworth, Herts. Mr. John G. Raynes, architect:—

J. & G. M. Bates	£1,116 0 0
Bailey & Son	937 0 0
Redhouse	840 0 0

For Board schools, teacher's residence, boundary walling, &c., at Roade, Northamptonshire. Mr. T. Haygate Vernon, architect. Quantities by Mr. R. Carpenter:

Ireson	£1,790 0 0
Cosford	1,790 0 0
George	1,600 0 0
Hall	1,679 0 0
Goodridge (accepted)	1,437 0 0
Marsh*	1,280 0 0

* Preferred to take out his own quantities, but Goodridge was accepted on the surveyor's quantities.

For painting, colouring, &c., at Furnival's-inn, Holborn. Mr. Arthur Vernon, architect:—

Cook & Green	£1,070 0 0
Boden	997 0 0
Bracher	950 0 0
Peto, Brothers	880 0 0
Goodwin	787 10 0
Phillips & Sons	786 0 0
Thomas	745 0 0
Brindle (accepted)	695 0 0

For the erection of house, &c., at Hornsey, for Dr. Hall. Mr. A. G. Hennell, architect:—

Williams & Son	£4,045 0 0
Payne & Balding (accepted)	3,878 0 0

For additions to drill-hall, Bromley, Kent, for the Drill-hall and Gymnasium Company. Mr. W. Mallett, architect:—

Copping	£1,000 0 0
Taylor & Son	769 0 0
Arnaud	698 0 0
Payne & Balding	690 0 0

For building six cottages, at Bromley, Kent, for the Bromley Cottage Improvement Company. Mr. G. Truefitt, architect:—

Arnaud	£1,096 0 0
Carter	1,070 0 0
Jay	1,020 0 0
Payne & Balding (accepted)	1,000 0 0

For house at Chislehurst, Kent, for Mr. G. Crowhurst. Mr. H. F. Bacon, architect:—

Payne & Balding	£993 0 0
Hayesman & Andrews	975 0 0
Hall & Cooper	825 12 0

For additions to Shortlands House, Shortlands, Kent, for Mr. W. E. MacAndrews. Mr. Ernest George, architect:—

Arnaud	£9,073 0 0
Brass	8,450 0 0
Ashby, Bros.	8,421 0 0
Clark & Brassey	8,329 0 0
Payne & Balding	8,312 0 0
Braid, Jopling, & Co.	7,994 0 0
Manley & Rogers	7,457 0 0

For new premises, Blagrave-street, Reading, for Messrs. Blandy & Hawkins. Messrs. Brown & Albury, architects:—

Woodroffe	£1,250 0 0
East	1,136 16 0
Searle	1,125 10 0
Strong, Bros.	1,115 0 0
Filewood	1,085 0 0

For the erection of a pair of semidetached villas, in Wickham-road, New-cross, London, for Mr. George Mills. Mr. W. Seckham Witherington, architect:—

Slade	£2,120 0 0

For the erection of warehouses and stabling, in Old Bailey, London, for Messrs. Hoar & Co. Mr. W. Seckham Witherington, architect:—

Elkington	£16,500 0 0

For alterations and additions to the Salisbury Hotel, Fleet-street, for the Agricultural Hotel Company (Limited). Messrs. Giles & Gough, architect. Quantities by Mr. C. H. Goode:—

Nightingale	£4,963 0 0
Thorn & Co.	4,885 0 0
Trollope & Sons	4,973 0 0
Hill, Higgs, & Hill	4,910 0 0

For alterations and additions at the Fever and Small-pox Hospital, Homerton, for the Metropolitan Asylum District Board. Mr. E. L. Bracebridge, architect:—

Wood	£7,250 0 0
Potter	7,100 0 0
Staines & Son	6,996 0 0
Tongue	6,995 0 0
Dabbs	6,855 0 0
Parker	6,676 0 0
Wagner	6,610 0 0
Aitchison & Walker	6,114 0 0
Prout	5,940 0 0

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VOL. XXXIII. No. 1694. SATURDAY, JULY 24, 1875.

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The Proposed Monument to Byron.

VERY one who has an adequate sense of the power and originality of Byron's genius, for a long time past very scantily honoured in his native country, will have seen with pleasure the revival of a more just appreciation of it indicated by the recent influential meeting to inaugurate the undertaking of a public monument in London worthy of the poet's genius. The claims of Byron on his country were very well and ably expressed by the present Prime Minister on that occasion, and it is not our purpose here to add anything to what was said on that subject. But with the proposition for a monument of this kind, there always comes to those who are interested in art the after-consideration, what will the monument be like, and what is the chance of its idea and execution being worthy of the occasion, and of the aims which ought to animate our national art? And it is rarely that one can look with much confidence to a thoroughly satisfactory result in regard to this part of the question. There is the fear of a "job," in the commission being given to some artist recommended rather by personal or adventitious considerations than by the claims of superior genius; or of the question of site or design being influenced by those who may have some special claim to a voice in the matter, and who may be prone to interfere injudiciously as to the result, though with the best intentions. This latter element of disturbance seems to exist in the present instance, if it be the case, as we hear, that the surviving friends of the poet are urging a repetition, on a new site, of the statue by Thorwaldsen at Cambridge, on the ground that no better likeness than that presents, or none so good, is likely to be produced.

Now, such an idea, however well-intentioned, we do most strenuously protest against. We will not dwell too much on what might be said as to the propriety of employing English art to produce the monument to an English poet,—it is possible, no doubt, to press that principle too far, and something is to be said in favour of the view that the best and finest work possible should be procured, independently of considerations of nationality; though we cannot help observing that there is no other country in Europe, possessed of any art or artists at all, in which the employment of national art on such an occasion would not be considered a matter of course. Waiving that, however, we must most strongly urge that in the first place the mere copying of another work, however fine in itself, would be a most unfortunate anti-climax to a movement inaugurated in so worthy a manner, and in so ambitious a spirit as this. It is possible also that the merit of the Cambridge statue, as a portrait, has been a little over-rated by its admirers; at any rate, it is known that the Danish sculptor considered the English poet a remarkably difficult subject, and complained of the trouble he had to get his sitter to assume the air and expression which the sculptor believed to be in reality the natural and normal one in his capriciously varying manner and physiognomy. At all events, it is impossible to prove that a better work,—better as a combination of portraiture and of artistic power,—cannot be produced; and, therefore, in that light alone the attempt should at least be made.

But there is a further consideration which we think really ought to have weight, though it is not directly connected with the object of the movement. We cannot afford to have one of the finest opportunities possible for the production of a sculptural work of a high order taken from us; and the small group of English sculptors who take a serious and elevated interest in their art (a very small group it is, certainly) would have, if not a right to complain, at least a very strong excuse for feeling neglected and overlooked, if this opportunity were wasted in merely producing a copy of an existing work. And the question affects the public as well as the artists. One of the reasons, perhaps, why we have so few of what can be called great works in sculpture is the lack of subjects of high and inspiring interest, suitable for illustration in this form of art. The "classic myth" has very much lost its hold, for the present at least, on the English mind; and we are reduced for the most part to subjects of trivial interest, to what in a previous note on this year's sculpture at the Academy we took leave to call "goody" subjects, or to portrait statues of persons who, whatever their worth, did not specially illustrate that poetical or heroic side of life which art demands as an occasion for its best achievements. Now it would perhaps be scarcely possible to name a subject more fitted to evoke the highest power of a sculptor than a monument to Byron, called for by the voice of the leading minds and the highest official personages of the English nation. In every respect, in character, genius, circumstance, and outward aspect, the subject of the proposed monument was as completely the reverse of commonplace and prosaic as could well be imagined. The very defects of his poetic genius, arising out of an enthusiasm and *abandon* carried too far at times, were such as to give additional colour and interest to its nature; and his energetic personal efforts in the cause of Greek freedom gave to his life that touch of heroic interest which supplies a higher element for illustrative art than even literary and poetic genius can afford without this. In short, if this remarkable figure in the ranks of our native genius, combining imaginative power with energy in action, English independence of spirit with Oriental fervour of character, cannot inspire English sculpture with something really great and original, nothing can. And for that reason in particular we hope this opportunity will not be thrown away.

As to the manner in which the best artistic result can be obtained, there is the choice between entrusting the work to an artist of acknowledged genius, or of inviting designs in competition, as in the case of the Wellington monument. Had the idea been started a year or two sooner, there could be no doubt to whom the commission would then have been given by the universal consent of all who were competent to judge in such a matter. We have now lost the great sculptor who has left behind him works in which portrait-sculpture has been informed with the highest spirit of art to an extent rarely achieved before, and which is not likely to be often realised again. But if it be decided to select one artist, and entrust the work unreservedly to him, few would be at a loss to name the best and rightful successor to Foley, if technical knowledge, ability to appreciate and express character, and the most conscientious and serious study and aim in the production of an important work, can ensure success. But we have the recollection of the Wellington Monument competition in our minds, and the indubitable fact that that competition did bring to the front a man of genius who otherwise might have given no such high and adequate proof of his calibre, as will be manifest to all when the monument is complete according to its author's design. And we cannot but contemplate the possibility of the Byron monument evolving or bringing to notice in like manner, a new genius; and should, therefore, be disposed to wish that some similar opportunity (under proper regulation) may be afforded for so desirable a chance being realised.

A word or two as to the position or site of the proposed monument. The question has already been raised, and a correspondent of some literary standing (Mr. Alfred Austin) has expressed in the *Times* an opinion against the erection of such a monument in Westminster Abbey, on the ground chiefly that Byron was an altogether exceptional genius, standing quite alone in his character and position in English literature, and that therefore a more exceptional position was suitable for his monument than to form one of a row (including many comparative mediocrities) in the Abbey. Mr. Austin suggested (if we rightly understand him) the Park side of Piccadilly for the site, which is not a bad one in many ways, but is open to this objection, that if the statue faced the thoroughfare, as, of course, it should do, it would be during a great part of the day in a bad light from that side. Without proposing anything definite at the present moment, we are, however, inclined to agree in regarding the Abbey as unsuitable, not only for the reason already given (coupled with the fact that there is so little room there now for a monument of any importance), but also

because we suspect it is not the place Byron himself would have chosen, under present circumstances at any rate. That proud and haughty genius would scarcely have consented to accept admission, at the eleventh hour, to a sanctuary which had previously been deliberately closed to him. The site, however, is not the most difficult point to determine. There are plenty of places available; but wherever the new Byron monument is ultimately placed, we trust that it will be not only a worthy memorial of the poet, but a new glory to English Art.

LONDON ROADS AND THE COST OF THEM.

GIVEN a metropolitan population which is close upon the 1-200th part of that of the entire world, or three and a half millions of people altogether; given, too, a metropolis with half a million houses massed within its legal boundaries, and which if stretched into one long row would be sufficient, we repeat, to form a girdle of dwellings right round the island of Great Britain; given, moreover, a length of roadway (2,500 miles) which is nearly one third of the diameter of the great globe itself, and an amount of traffic which is such that every one of its 2,500 miles of pavement is traversed (taking an average), by some vehicle or other, at least a thousand times in the course of each week (see p. 611, *ante*)—given these facts, we say, and the problem which has now to be solved is: what is the cost of laying down an extent of highway which is long enough to reach from Spithead to Gibraltar (1,300 miles), and from Gibraltar back again to Spithead? — what the expense of keeping such an enormous "run" of roadway in repair, when the gross number of vehicles perpetually grinding down the pavingstones of only twenty-four of the principal streets in the city has been found to amount (what with passing and repassing) to one-eighth of a million in the course of twelve hours?—and what the sum which it takes to light up these two and a half thousand miles of thoroughfares with almost as many lamps every night as there are stars in the Milky Way? As we write the massive figures down, and state the mere *data* of the theorem, the vastness of the details amaze.

What was the state of the London highways, or rather byways, in the time of the ancient Britons, when it was the fashion for the subjects of King Lud to wear "coats" of paint, rather than suits of broadcloth, it is impossible to state, and difficult even to imagine. Under the rule of the Romans, however, when the tiny hamlet of a city had been raised to the pro-*vinc*-ial dignity of a "*colonia*,"—when it had got to be enclosed within a wall which gave it more the character of a common-jail than a capital, and occupied an area about as large as our Regent's Park—there were constructed, assuredly, some fine old roads, such as the ancient "*Wætlinga*" (the modern Watling) "*Strat*," which ran, almost as straight as a railway, from Kent to Chester.*

Still, in the sixth century, when the little metropolis of Cockaigne had become the headquarters of the Anglo-Saxon Kingdom (rather than county) of Essex; or, later on, when the "wattle-and-dab" palace of King Athelstan (A.D. 925-940) had been erected in Castle Baynard,—the only remains of which royal structure are now to be found in the title of "Adel," or "Addle Hill," close by,—there were certainly no roads better than lanes, and no streets better than alleys. For where would have been the use of them? seeing that in those days there was no commerce, and were no carriages, no factories, nor shops, no butchers nor bakers, no suburbs nor taverns, no letters, newspapers, nor even candles, — nothing, indeed, but monasteries, hospitals, and bridewells; priests, beggars, and lepers; sanctuaries and thieves; mud-huts and mud-palaces, "brigand-barons," and bond-slaves!

It was not till 1532, indeed, that the first Act (32 Hen. VIII.) was passed for paving and improving the City, the streets of which were described in this same simple-spoken statute as being "very foul, and full of pits and sloughs, so as to be mighty perillous and noyous, as well for all the king's subjects on horseback, as on foot with carriages" (litters). In fine, in the early part of the fifteenth century, even "the *uplandish* towns of the realm," we are told, could not boast of more than three or four chimneys, and the foreigners who came over with Philip II., some years afterwards, spoke of the houses as being built of "sticks and dirt"; while Hollingshead himself admits that London in his time had a wretchedly mean appearance.

The streets at that date, it would appear, were not only gloomy by day, and left in total darkness by night, but narrow and crooked in shape; so that, "perhaps, even the vilest bye-lanes, alleys, and courts which are nowadays to be met with," says a recent writer, "were hardly a degree worse than most of the main thoroughfares of London in the middle ages." Who can wonder, therefore, that pestilence and fire at such a period, in such a state of things, committed outrageous havoc? for the population being cooped-up in confined and badly-ventilated dwellings, constructed for the most part of plaster and timber, covered with thatched roofs, and with each story overhanging the one immediately beneath (so that there was little space between the upper parts of the opposite houses), it was but a natural result, not only that the health of the citizens should be imminently precarious, but that fires should prove terribly destructive—especially in an age when barbers were the chief doctors, and water was almost as scarce as soap.

Who can wonder, then, we repeat, that the Plague should have carried off no fewer than 68,600 (some say 100,000) souls in 1665, and that during the Great Fire (A.D. 1666) upwards of 13,000 houses and other buildings (including St. Paul's Cathedral) should have fallen a prey to the flames? Or, again, who can wonder that Malcolm should have exclaimed, "Heaven be praised Old London was burnt!" for nothing but fire could purge it.

But still, even down to the middle of the last century, so different was London from what it is at present, that no one would be able to recognise St. James's-street as portrayed in one of the plates of Hogarth's "Rake's Progress," or in the curious picture of "Pall Mall," by Canaletti, which is now in the possession of Mr. Herrman, of Great Russell-street, Bloomsbury, were it not for the gateway of the quaint old bricken palace,—the one unmistakable feature which now remains unaltered. Indeed, about the year 1700, the poet Gay described, in his mock-heroic poem of "Trivia"; or, The Art of Walking the Streets of London," the many inconveniences of pacing the metropolitan thoroughfares in his time; and certainly they appear to have been formidable enough—both in rainy weather and after nightfall.

Nor was it till the reign of George III. (1760 – 1820) that the present system of paving and lighting was introduced, or that the metropolis began to assume anything like a *polite* air, or to show that the City was in any way *civilised*. For it was only then that the projecting sign-posts, water-spouts, and such-like nuisances and obstructions were removed from the fronts of the houses,—that foot pavement was commenced to be laid down—and that lamps were lighted at night; since every householder previously had been compelled by Act of Parliament (2 Geo. I.), on pain of being fined 1s. for each infraction of the law, to hang out a lamp before his door, during winter time, with "sufficient cotton wicks to it to burn from six till eleven" p.m.; and to have it lighted every night, moonlight ones, of course, excepted!—the natural consequence being that highwaymen continually rode into the streets after nightfall, and perpetrated the most open outrages with impunity; so that the Government had to offer a reward of 100*l.* (a large sum in those days) for the apprehension of every knight of the road found in the City of London, or within five miles of it.

Now, whether roads are the necessary consequent, or the invariable antecedent, of commerce, it is hard to predicate; but that one is inseparably connected with the other there can be no doubt. Roads, indeed, are merely paved rivers; and as Taylor, the Water-poet, described the Thames as "the silent highway," so we may term roads the rattling currents of commerce. Towns run to rivers as naturally as the newly-born calf to the cow's teat; but roads run to towns as systematically as the veins of the body return the life-blood to the heart. And as there certainly *was* a time when St. Giles-in-the-Fields and St. Martin-in-the-fields, as well as Lincoln's-inn-fields and Spitalfields, were really surrounded with *fields*, and Nor-wood and Crickle-wood were literally *woods*; so there assuredly was a period (and that not very many years ago) when roads in this country were almost as unusual as stockings and sewers, or chimneys and carpets, or candles and forks. Roads, forsooth, are the result of commerce, or commerce is the "outcome" of roads, whichever you please; for the quandary is like that old hard nut to crack: which was the first, the bird or the egg? And as the days are not long past when roads in England were as "few and far between" as oases in the desert, so it is not a great while since when commerce was as unknown in the land as gunpowder or garotting, spiritualism or "kleptomania."

In the "good old times," as they are absurdly termed, the whole of the commercial transactions of the country were carried out at the yearly markets, or periodical fairs, which were then common to almost every town. There the producer and the consumer,—the weaver, the potter, the cooper, the smith, the bowyer, and the jeweller,—used to meet the lord of the manor and the squire, the boor and the hind, regularly face to face; and chaffer away over the wares, without the intervention of any "forestaller" or "middleman," as the tradesman *pur et simple* was then ignominiously styled. But these fairs and markets occurred only at stated times and seasons, and consequently it struck some sharp-witted and broad-shouldered genius that, as the housewives at the scattered homesteads must necessarily want some such goods in the long interval between the accustomed commercial gatherings, a tidy living might be picked up by putting a pack upon his back and carrying round the chattels required meanwhile to the peasants' doors. Accordingly, the packman, in course of time, got to be an acknowledged, well-to-do, and respected member of society; and thus the poor pedlar became eventually the progenitor of the modern merchant-prince.

After a while, however, some still shrewder varlet than the first packman conceived the idea that, as the visits of the hawker were but as intermittent as the fairs themselves, and some such wares as the pedlar was wont to carry to his village customers must occasionally be needed in the 'tween-times of his journeys, it might be a profitable speculation to set up a permanent store or small-ware house in some convenient central town, whither the wives of the yeomen, the villeins, and the handicraftsmen round-about, might come *after* the goods when they wanted them, instead of having to wait till the goods were brought *to* them.

The experiment, of course, succeeded,—as every salient social accommodation is sure to do ere-long,—and succeeded so well, too, that next it entered the pate of some still more sagacious schemer than either the itinerant packman or the stationary shop-keeper, that as these permanent stores or general warehouses for the sale of everything,—from gingerbread to jewelry, tapes to broadcloth, and scissors to scythes,—kept on increasing throughout the land, and each of the general dealers must necessarily waste an infinity of time and labour in seeking out and going after the several artificers of the infinity of wares in which they dealt, that he would open a *shop for the supply of other shops*.

And thus, from the gradual growth of the retail trade through the country, there came to be established, in due course, a wholesale one which soon proved to be even more successful than that of either the peripatetic packman or stationary store-keeper himself. Then, as a necessary consequence of the development of the large wholesale trade, there sprang up shortly after

* "If we fix the head of *Watling-street*, as everybody doth, at Dover, I think," says Leland, the antiquary, "there can be no doubt of its going through *Canterbury* and *Rochester*, and then over *Blackheath* to *Nevington* and *Lambeth*, where it crossed the *Thames* at the *Horse-ferry*, *ad Occidentem Westmonasterii*; and so went on to *Hamstead*. But about three miles below that town it divided itself, and one branch of it ran through the City of *London*, entering at *Portpool* or *Gray's-inn-lane*. The *stratum* of it was discovered at the building of *Holbourn Bridge*, after the Fire of *London*, 1666, several feet under ground; and in digging for the foundation of *Bow-steeple*, in *Cheapside*, 19 ft. below the surface of the soil. From thence it went into that Street, still call'd *Watling-street*, and might go down to *Dowgate*; and then joyning its other branch again in Saint *George's-field*, go on together into *Kent*."—*The Itinerary of John Leland the Antiquary. Essay concerning the four Great Roman Ways.* Leland denies that Watling-street ran from Dover to Cardiganshire; "*Cardigan*," as he says, "never having been a Station or *Roman* Town; nor are there any *vestigia* of such a road as this to be traced in those parts. Much more likely, therefore," he adds, "is it that this *Street* enter'd *Montgomeryshire* on the North side of the *Brethen-hill*, in which County the first *Hundred* we met with is call'd *Ystrad Marghell*, and a Monastery therein situated carried the same name, which is no other than that of *Stratæ Marcelli* [Marcellus-street], plainly denoting that there must have been some eminent *Street* running thro' these parts, and by the pointing of the *Watling-street*, at *Wattlesbury*, where we left it, it cannot well be any other than that, which might run West as far as *Mediolanum*, and then turn again to *Banchor* and *Chester*. . . . . Mr. *Burton*," he concludes, "very judiciously supposes this way to have been made under *Ulpius Marcellus*, Proprætor here in the time of *Commodus*, and from him to have taken its appellation of *Stratæ Marcelli*."—*Leland's Works, published from the original MS. in the Bodleian Library*, 1744.

its introduction the long retinue of brokers, factors, and agents,—"buyers" and "travellers," and (though last, certainly not least) bankers and bill discounters, ready at once to guard the surplus money of the merchant magnates, as well as to supply those who needed further capital for the further expansion of their trades with such funds as they for the moment required.

And so not only was brought about that wonderful system of commerce which is the salient characteristic of this the most wonderful commercial city in all the world, but so came roads and highways and byways, rivers and canals, steam ships and tugs, fast coaches and fly wagons, mails and letters, railways and tramways, newspapers and electric telegraphs,—and, indeed, all those vast appliances for facilitating intercommunication which constitute the grand distinctive feature of the present age.

The packman, then, was the first carrier, but a goat-track was almost sufficient pathway for him. He, however, as the chandlers' stationary stores got to be set up in almost every town, and goods were continually being sent to the general dealers' shops throughout the country, was soon succeeded by the packhorse, for whose progress a "bridle-path" at least was necessary.

But when the wholesale trade was instituted, and larger supplies of wares had to be transmitted from place to place, the pack-horse gave way to the regular country carrier, with his tilted cart to convey the goods between one town and another, as well as to the intermediate and surrounding villages; whilst soon after the "carrier" proper came the wagoner travelling between far-distant towns and even cities, and consequently transporting heavy loads which required a long team of horses and a huge cumbrous vehicle to move them,—and all this of course necessitated the formation of other roadways than mere "bridle-paths."

But roads having been once formed, the people, what with the continued expansion of manufacture and trade, soon came to require some more rapid means of transport than the old "fly-wagon." Hence, "fast coaches" at length were set up, and passengers were carried from London to York in the incredibly short space of three days! whilst finally "evening mails" came to be established through the genius of Mr. Palmer, of Bristol, a quondam actor, who, at the end of the last century, undertook to convey letters and passengers for the Government at the then unheard-of rate of ten miles an hour.

Still,—the desire for rapid intercommunication once developed,—this was by no means sufficiently fast for the rising go-a-head generation. Consequently a new form of roadway had to be invented,—an iron rather than a paved one,—and horses not being fleet enough, a locomotive that knew no fatigue, and was urged by a power to which there were scarcely any bounds, was fastened, not to one solitary coach, but to a long train of carriages, so that they were thus made to flit across the earth, almost like the shadows of the clouds sweeping over the fields in the summer time, and that with nearly the velocity of a hurricane.

Thus, then, in brief, it was that commerce came to be introduced and developed, and thus the paved and iron roadways of this country got to be the wonder of the world. But the increased facility for intercommunication soon made an increased desire and love for it; and this in its turn brought such a crowd of people up to the metropolis every morning from the provinces, and took so many down every evening from the City to the country, that the old "short stages," which but a few years before had not been allowed to enter the town from the suburbs, were at last obliged to be elongated into omnibuses and permitted to carry persons for a few pence from one part of the capital to another. Even so, the old lumbering hackney-coaches had to be superseded by lighter and brisker cabs; whilst the cumbrous old tortoise-like fly-wagons were forced to make way for the swifter railway vans. Moreover, the merchant princes began to desert the dingy old dwellings over their shops in the City, and went to occupy palatial mansions at the West End; whilst others of a more rural turn took up their abode amidst the balmy breezes of the Sussex downs, or somewhere within the convenient distance of half a hundred miles or so from their civic places of business. Further, the workmen and clerks of London went to live either in neat cottages or tidy lodgings amid the purer air and green fields of the outlying suburbs.

Now all this necessarily caused the already "Great Metropolis" to become nearly twice as great; for in the course of the last quarter of a century, the length of the streets within the Metropolitan Police District has been extended from 3,600 to 6,600 miles; in other words, they are now longer even than it is from here to the Cape of Good Hope. Hence the puzzling problem is, we repeat, what must it have cost to lay down such a "run" of roadway? and what sum does it take annually to keep the vast commercial channel in a state of continual repair?

This we will endeavour to work out in our next.

ENGLISH COUNTRY HOUSES.

IT is not always quite easy to understand the motive for some of the publications occasionally issued by architects, illustrative of the class of work with which they happen to have been most concerned. When an architect publishes a large and elaborate book going fully into all the details, practical and theoretical, of the subject dealt with, we understand that he addresses himself to the profession, and that his intention, or a main part of it, is to contribute the results of long experience to the general advancement of architectural practice. We have had some good books of this class of late years, but not very many. But we can count a considerable proportion of books illustrating special classes of building which, if addressed to the profession, are not full and detailed enough to form text-books of the subject; but which, if considered as addressed to the general reader, go into matters in regard to which the said reader, if he take to building, would naturally trust in the main to his architect. We have here the second edition of a work first published in 1870 * by an architect who has gained an established practice and considerable and deserved reputation in the Oxford district, containing plans and views of domestic buildings carried out under his superintendence, accompanied by a general treatise on house-building, in which a good deal of information on the ordinary process of building is compressed into a small space. But this, though exceedingly sensible and practical as far as it goes, gives little beyond what to all properly-educated architects are truisms; its only use to professional readers would be as giving a first idea of country house-building practice to a student, to be followed up further from practical experience and the study of more detailed treatises. In this point of view it is a useful book, and may be trusted as the experience of an able practical architect. But the volume is one of a class of architectural publications which are getting rather numerous, and we are tempted to put a sort of note of interrogation as to their actual purport and result. Of course it is easy to understand that an architect who has had successful practice in a particular branch of the profession may wish to let the public know a little more about him, and to put his works on record in an open and accessible form; and such an object in publication is a perfectly reasonable and right one. But it may be worth remembering that a possible result of making neat drawing-room books on practical architecture is to tempt the readers to think they can do without the architects; and it is possible that the general reader has been button-holed and taken into confidence a little more than is good for him. We do not for a moment say that Mr. Wilkinson's book will enable Squire Broadacres to build his gamekeeper's lodge, or Mr. New-broom to reconstruct his farmstead, without the assistance of its author, or one of his brethren. But it is just possible they may be encouraged to think so, with unfortunate results; and though the artistic and picturesque side of architecture is a subject appealing to all educated readers, the practical side is a matter for serious scientific treatises, and we can scarcely consider the production of books of building-made-easy for the general public as a very profitable employment for architects, or very good for their readers. Our opinion on this subject has been before expressed; and if we take this opportunity of repeating it, this is in no depreciating spirit in regard to Mr. Wilkinson's book particularly, but only as it makes another contribution to a class of books of rather doubtful purpose.

What the present work does contain of suggestion to the architect, as distinct from the general reader, is chiefly in regard to the special conditions of house-building far from towns, and to "country cottage-building," which forms the heading of a separate short essay following the general one. There is no doubt that the latter subject has received insufficient attention from architects. Much has been said and written of late, and divers experiments have been made in regard to ameliorating the dwellings of the working classes in towns; but the same attention has not been given, certainly not in so systematic a manner, to the improvement of country cottages. The reason for this is probably partly sentimental. The miseries of over-crowding, bad construction, and bad sanitary conditions in a town "rookery," are too obvious and pronounced to escape the attention and sympathy of any who think at all about the condition of their poorer brethren. But there is, we fancy, a kind of indefinite idea of paradisaical happiness and health and innocence in connexion with the humble country cottage "embosomed soft in trees." Unfortunately (as in these columns has been over and over again set forth) the picturesque low-roofed thatched cottage, which gleams from a distance among the trees, and forms to the passing visitor one of the pretty points of the landscape, is too often, if the truth were known, the one blot on the rural scene,—the abode of dirt and disease where all else is freshness and verdure; and the country clergyman could too often disenchant you sadly in regard to the pleasing contrasts you are disposed to imagine between the *morale* of the town cellar and the country cottage; and how intimate is the connexion between the physical and the moral and social healthfulness of dwellings, readers of the *Builder* need hardly be reminded. We thank Mr. Wilkinson for the plain-speaking manner in which he recalls attention to this subject and its important bearing on the moral condition of our rural population; while at the same time he states what we believe to be the truth, though an unpalatable one to the economic reformer, that cottage-building can hardly be said to be remunerative as an investment.

"Reports are heard," he observes, "from time to time, that cottages have been built at a sum that will pay a good per-centage; but these reports never bear examination. It is found, upon inquiry, that the carriage of material was done by the landlord; the lime or sand, or both, were supplied from the estate; that proper out-buildings and offices were not provided; that a well or pump and sink were not embraced in the cost; and so on; and the addition of the value of these to the sum mentioned, would bring the amount up to what a good cottage, really fit for habitation, and with all these requirements, must cost. Locality, of course, makes a great difference; and these supernaturally cheap cottages, besides being shorn of the requirements above enumerated, probably were built where many of the heavier materials, at least, were ready to hand. . . . . A pair of good cottages, each with living-room, scullery, pantry, three bedrooms, and outbuilding for coals, wood, oven, &c., and water supply, and where all materials, labour, and carriage, have to be provided, will not cost less, under favourable circumstances, than 300*l.* to 350*l.*, and the same pair *may* cost 400*l.* to 450*l.* Cottages with two bedrooms each will cost from 240*l.* to 300*l.* per pair, and cottages with one bedroom from 80*l.* to 120*l.* each. . . . . These estimates are based on the assumption of good materials being used, and good workmen employed in building them."

The real advantages which do accrue to the landlord from building good cottages on his estate are summed up in a few sentences very much to the point. If the money return is doubtful, there is no doubt of the ultimate gain: "it is but a limited view that looks only to the rent received for a good cottage and garden." The diminution of pauperism, crime, and disease among a well-housed population has even a direct money value in lessening the rates of a district. In regard to the cost of building and materials, Mr. Wilkinson's objection to the estimates often made for cottage-building, as based upon building with materials ready to hand on the spot itself suggests a legitimate form of economy in building, in making use as much as possible of materials which are plentiful in the neighbourhood, even if their employment lead a little out of the beaten track of building construction in the present day. In noting the ancient rural dwellings in different districts, we find continually that these vary completely with the variation of the character of the country: in a chalk country, pebble walling is used; in a clay country, brick comes in, or brick with a combination of timber; in a stone district, coursed masonry even may be cheaper than brick. These variations do not imply, necessarily, any variation in the excellence or permanency of the construction, provided each material is treated in the most fitting manner for its own peculiar character. The specimens of cottages given by our author are, we observe, described as "built

* English Country Houses: Sixty-one Views and Plans of recently-erected Mansions, Private Residences, Farm-houses, &c., with Sketches of Furniture and Fittings, and a practical Treatise on House-building. By William Wilkinson, Architect. Second edition. Parker & Co., London and Oxford.

of local stone"; but it is too much the habit in building or rebuilding cottages to employ brick in its least inviting form as the cheapest material, whereby in many instances a forbidding aspect is imparted to the dwelling, contrasting painfully with the picturesque appearance of older dwellings built of materials quite as sound, when properly used, and as cheap as the brick in the particular locality in which they abound. Timber might be more largely used than it is in the construction of modern country cottages, without necessarily reproducing the sanitary defects of the old cottages while emulating their picturesque character. The views given of cheap cottages built by Mr. Wilkinson in different neighbourhoods seem to us, by the way, rather deceptive as to scale; and by the proportions of the windows and other details convey the idea of being larger or loftier than we imagine they can be for the sums named as their cost. An architectural reader can correct this by comparison with the plan drawn to scale; but to the non-professional reader we doubt if they give quite the true idea of the structures represented.

It is well for the young architect, or architectural student, getting his professional education in a large town, where everything required in the service of a house is supplied by rule and regulation—drains at hand to drain into, water and gas laid on from the mains, &c.—to familiarise himself, before the experience is practically forced upon him, with the altered conditions to be encountered in building a house completely in the country, and out of the reach of all such systematised sanitary appliances; and the tendency of the wealthier class in England is so much towards retirement and isolation (where practicable) in the site of country dwellings, that this is likely to be more often the case than ever. Thus the country-building architect has, in addition to the usual provisions of plan and arrangement, to consider how and whence water can be supplied to the houses, whither the drainage is to be carried, and what use, if any, is to be made of it. Hints in Mr. Wilkinson's book may be suggestive on these points; though, as we have inferred, their treatment here is too vague and general, if we are to regard the essay as one addressed to architects. The question of water supply to country houses, as may be remembered, was the subject of a practical paper at one of the meetings of the Institute of Architects not long since. If the supply is drawn from wells, the position of these in regard to drainage from the house, so as to avoid all risk of contamination, is of paramount importance. To touch upon one or two special points in Mr. Wilkinson's essay, we can not quite go with him in his special commendation of Bath stone, either on architectural or constructional grounds; it is anything but durable, combines very ill with other materials, looks raw and over white when new, and dingy when old. Its great recommendation to a number of architects has been its cheapness, both in regard to prime cost and labour, and the economy with which a finished and "superior" appearance may be given to a house, when new, by the use of this stone in "dressings" and carved ornament; but it is usually a short-lived effect, and not of the most refined type while it lasts. The style of the houses illustrated in this book partakes, however, but too much of "Bath-stone dressings," and explains the author's favour for this material, which, we fear, does not conduce, when used in this way, to very refined or original style in domestic architecture. The author remarks that this stone is so reasonable in cost, and so readily worked, that "even in cottage-building it is often substituted for the local stone" of the district; in which case a showy material is substituted for one, in all probability, more durable, and certainly likely to be more in keeping with the local character of the neighbourhood. In the recommendation that the architect should exercise some care and judgment in the selection of the stone (of whatever description) at the quarry, and that preference should be given to that which has gone through some degree of test from exposure to the air after quarrying, we, of course, concur, and have often insisted on it. We are glad to see Mr. Wilkinson gives his adherence to complete drawings, and an accurate knowledge and statement of what is going to be done, before beginning to build, and is not of those who despise drawings and estimates as useless encumbrances on the genius of the architect. We do not know that he is not a little hard upon the contract system (which he recognises, however, as the one most generally adopted now, and therefore chiefly to be taken into consideration by the architect); if the competition system of tendering be, as it certainly is, the parent of many evils, of cheap and dishonest building, this is not a necessary part of the contract system; and the estimating of the work in detail by an experienced builder is the most satisfactory way of arriving at a knowledge of the cost, and prevents contention or disappointment much more effectually than the system of subsequent measuring up. As he says, — "Nothing is more unsatisfactory, even to those with ample means, and much more to those whose means are limited, than to be called on to pay more than they have been advised a house will cost; and this is more frequently the consequence of immatured and unprepared plans than of anything else"; but with the best prepared plans, a builder's "tender" is generally a safer and surer way of deciding what the work will cost than an architect's "estimate." In his attachment to the line-and-pulley sash-window, the author shows the prejudices of most English architects; we hope the time is coming when this clumsy and expensive method, more liable to derangement than any other, will no longer be considered such a desideratum. The preference, as a matter of course, of the large plate-glass window of the modern respectable mansion is another point on which we are less orthodox than Mr. Wilkinson. The loss of scale to a house externally, and the totally uninteresting glaring appearance of the window internally, which a great sheet of plate glass produces, is hardly compensated for by the slight amount of extra light obtained. In his denunciation of bad and cheap ironmongery, locks, latches, &c., in particular, every one who has experienced the discomfort of a house cheaply fitted in this particular, will concur. The remarks on drainage and the laying of drains point to a greater care, in this latter operation especially, than it is often thought worth while to exercise.

Mr. Wilkinson's executed specimens of domestic architecture, some sixty of which, large and small, are here illustrated, show unquestionable excellence in planning, and a good average merit in regard to design and external treatment generally; though it is a little disappointing to find a number of designs so nearly approaching what is characteristic and picturesque without (if the illustrations give a fair idea of them) quite hitting the mark. All the residences illustrated give the idea of being built by a competent architect; but we can scarcely find any which one would turn again to contemplate as a bit of particularly picturesque building. The majority of "clients" in England, it is true, care nothing about this, and perhaps would rather prefer that there should be nothing in their houses to attract notice even of a pleasurable kind; but some of us look for a little of the poetry and picturesque of architecture sometimes, even in modern building. It is just to the author to say that the largest residence illustrated, "A House near Lake Zug, Switzerland," is the best in this respect, and from some points of view must have a decidedly picturesque appearance, while it seems in every respect a well-planned house; and we are glad to see English domestic architecture so fairly represented on a foreign site. Among the smaller houses, the vicarages at Linton and Swanbourne please us most; in a good many of the illustrations there is too much an appearance of the using up of features now made too common in English country-house design to retain any of the interest they may have had when Gothic house building was first revived. The book does credit to its author, however, as a competent, considerate, and evidently industrious member of the profession, if it hardly shows much indication of genius or originality. The four sketches of interiors of a dining-room, drawing-room, library, and bedroom completely furnished, which are appended (as instances, we suppose, of what the furnishing of such rooms should be), are pleasing enough as specimens of modern Gothic furniture systematically designed to produce effect as a whole; but we hope amateur readers will not accept these as the necessary model for the style of furniture in a modern house. The possibilities of furniture combination are really endless, and we have no wish to see this class of design confined to the type which a majority of architects, or a certain clique of the profession, may for the moment approve as the best. The affecting of angularity, squareness, and straight lines everywhere is carried to excess at present, in the re-action from the curved sprawling type of "cabinet-maker" taste in furniture.

THE NATIONAL ART TRAINING SCHOOLS AND OUR MANUFACTURES.

IN our last issue we devoted an article to the consideration of what the nation requires of the National Art Training Schools, and called attention to the suitability of the present time for the introduction of such alterations as shall make this South Kensington Academy of Art more serviceable to our manufacturers; for, as we then said, there is at present a vacancy in the head-mastership of these schools, owing to the death of Mr. Burchett.

We much regret that we can now say that changes are rendered still more easy of accomplishment; for the second master, as regards seniority, Mr. Wm. Denby, has, almost suddenly, left us since our article of last week was written, he dying on the Thursday night.

It is a curious and sad fact that the two gentlemen,—Mr. Richard Burchett and Mr. Wm. Denby, who both received their appointment as masters at the old School of Design, almost at the same time, should have finished their work at these schools within the space of a week or two of each other; and, as though these griefs were insufficient for the institution to suffer, the architectural master has been smitten with an illness both dangerous and severe, but we understand that in this latter case the worst is past.

Now that the opportunity of making changes in these schools has presented itself, however sad the circumstances which have led to this opportunity may be, it is perhaps well that we indicate the nature of some steps that might, we think, be taken in respect of the teaching at these National Art Training Schools, to the benefit of our manufactures and the nation at large.

As we said in our last issue, the duty of educating the public in the art of drawing will probably be imposed for years to come upon the South Kensington schools with advantage, and for the purpose of affording such instruction the present excellent staff will still be available. Little change, indeed, is needed in these schools if they are only required to teach drawing, for no better drawing-masters could probably be found than those forming the present tutorial staff of the schools.

What we look for is, rather, the formation of a high "school of design," or of "practical art," in conjunction with the present drawing-schools, than any radical alteration in the schools that now exist. While it is rather the founding of a new high school that is wanted, than the alteration of the present, there would necessarily be some change in the institution which now exists; for its designing-class would be transferred to the new high school; but, with this exception, little or no alteration in it would be necessary.

In the new school the most advanced instruction would be given in the history and principles of ornament, and the nature of the faiths, feelings, inspirations, wants, and habits of the peoples who originated and perfected the great national styles of decoration would be fully explained to the students.

The students would also be instructed respecting the materials which have been at the command of the various people who have produced art works; materials for the formation of fabrics, for the construction of vessels, and for the erection of buildings, and in the climatic conditions under which each particular form of architecture and of decorative art came into being. The particular form that ornament took when applied by a nation, as the decoration of a vase, of a brazen vessel, of a woven fabric, of a printed hanging, or of a wall surface, would also be fully dealt with.

But more than this, and we attach importance to what we are now about to suggest, in this high school the fullest instruction should be given in such processes of manufacture, and in such technicalities of our arts, as it is necessary that the designer of patterns for these various manufactures should understand.

Besides this the peculiar wants of the various markets in which our goods are sold should be made known to the students, and instruction in those qualities of design which render them peculiarly valuable to manufacturers should, as far as possible, be given.

Then the student should practise the art of design under the guidance of successful and scholarly ornamentists, who know how patterns are prepared for manufacturers, and who know how to draw patterns which are at the same time useful to manufacturers, and good as art works.

It may be said that an attempt was once made by the then "Department of Practical Art," at giving this technical education, and that the attempt resulted in failure, but such a statement would not be rigidly correct. Three "special classes" were formed about twenty years back at Marlborough House. In one the art of metal chasing was taught, in another the art of painting on china, and in the third designing for the textile manufactures.

When it is remembered that the professor of the metal-chasing class was a foreign refugee architect who was not a metal-chaser, no one will wonder that this class was not a success. The class for the teaching of technical designing was presided over by a worthy gentleman, but he knew little or nothing of the technicalities of manufacture; and while the third professor did afford practical instruction in his art, and was a man thoroughly conversant with the various processes involved in China-painting, there was at that time no demand on the part of the public for the pictorially-painted plaques which the students in this class produced. These failures afford no reason for our saying that technical instruction, in some leading departments, cannot be successfully imparted in our Schools of Design.

That technical instruction is needed in our advanced schools is obvious from the fact, that but few of the students who are trained wholly in our schools ever succeed in making a means of livelihood as designers of patterns: while those students who spend the day in a factory and the evening in an art-school generally succeed in making a living of some sort.

Here is the difficulty. A youth who has spent five or seven years in a School of Art expects to earn his bread upon leaving; but, being ignorant of the technicalities of the arts, he is of little use in the manufactory: hence, the manufacturer cannot pay him, and, on the other hand, the youth feels that he has completed his education, and cannot afford a second apprenticeship.

It must ever be remembered that the same pattern may be rendered by two men, the one having knowledge of the technicalities of a particular manufacture, — say that of carpet-weaving,—and the other having only art knowledge, in such ways as will cause the two carpets woven from the differently treated design to appear the same to all but those having technical knowledge, yet the one will cost 10 per cent. more to produce than the other. If we are to aid our manufactures by educating artistic and scholarly designers, and to bring increased riches to the country by giving to our goods art value, in addition to their worth as objects representing a certain amount of material and of labour, we must fit our youths for serving the manufacturer immediately upon his leaving the schools by giving to him not only a scholarly knowledge of his art, but also by rendering him conversant with the requirements of the industries for which he intends to design.

But how is this to be done? Is it not possible (we ask it to open the discussion) to induce one or more of our ornamentists to carry on his profession at the South Kensington schools in conjunction with the students?—a certain salary and the gratuitous services of the pupils being his pay for the instruction which he affords? In every architect's and designer's office in the kingdom, as well as in the offices of lawyers, and, indeed, in all offices where we find apprentices, the work produced by the pupils becomes the property of the master.

It appears to us that if one or two of our leading ornamentists could be induced to carry on their profession before the eyes of the students, and in conjunction with them, the new schools at South Kensington might be made of great practical value to the nation. This practical work, together with lectures and demonstrations, and the most thorough study of historic ornament (thorough knowledge of drawing being of course assumed), is what the new high school of design should afford to our students.

A New Church in Whitechapel.—Mr. O. E. Coope, M.P., laid the foundation-stone of a new church in Whitechapel on Tuesday last. The new edifice will be erected on the site of the old parish church, of red brick with stone dressings, in the Gothic style of the thirteenth century. There will be nave, chancel, transept, side aisle, west gallery, organ-chamber, and a tower with clock and bells. The architect is Mr. Ernest C. Lee, and the builder Mr. Chappell. Mr. Coope provides for the cost of it—12,500*l.*

THE FLORENTINE PALAZZO.

In the gloomy *via*, and the still gloomier *borgo*, stand those great many-windowed fronts, whose walls are studded with the sculptured armorial bearings of the old burgher nobility. These are the ancient palazzi of Mediæval Florence. Having a common family likeness among themselves, they differ widely from the palazzi of Rome and the palazzi of Venice. It is needless to add that they have little in common with the old English palatial residence, or with the French château. The Palazzi Strozzi and Riccardi are famous examples of this style of building, but there are numbers of other palazzi of scarcely inferior interest standing alone or in whole rows in almost every street of the city. The front of the Florentine Palazzo is regular and almost rectangular. A great arched door in the centre of the ground-story gives entrance to the cortile in the interior, which is the key to the entire arrangement of the building. These portals are perfect caverns, and awful shadows lie in their vaulted length. The sun burns above in the cloudless sky the summer through, but no bright beam finds its way into them. To look into one of these portals is like looking into some valley of the shadow of death that leads to a dead past. Beyond the portal the pillars of the cortile stand in silent ranks with sculptured capitals and grey moulded bases, blunted and broken away by the contact of generations. The paved area, which is usually oblong in shape, is damp and green with the rains of many winters. Over the doors and stairways that lead from this court to the rooms around and above, the heraldry of ancient families is suspended; dust-covered paintings of coronets and shields, the Medician balls, the crescent moons of the Strozzi, the concentric rings of the Albizzi. There is usually a fountain in the middle of the cortile, with its bronze wild-boar, or its Cupid or Mercury from whose feet or lips the water just trickles. A sculptured group beneath one of the arches, of Classic design, reminds you of the half-pagan sympathies of the vanished Mediæval proprietor. The fenestration of the palazzo is perfectly regular. On either side of the arched entrance the windows are square and small, and defended by iron gratings. Their sills are far above the head of the tallest passer-by. They look down upon the broad stone bench that always runs the entire length of the palazzo, interrupted only by the central doorway. This stone continuous seat is pretty much at the service of the public. The half-starved beggar lies whole hours on it, and here the contadino spreads his flowers freshly gathered from the campagna. The windows that light the first story are round-headed with channelled stone borders, following the line of the arch. They are usually divided into two lights by a slender central column. Between each window projects an iron ring and socket (sometimes more than one) often finely wrought, intended to receive the end of the flag-staff when the palazzo was decorated for a festa, or to hold a blazing flambeau. The beautiful wrought iron girandola that adorn the principal angle of the Strozzi Palace, as well as some few others in different parts of the city, were only granted to those citizens who had greatly distinguished themselves. These graceful basket-like ornaments were filled with fireworks on occasions of public ceremony. The palazzo has a second and even a third story, pretty much like the first in design and arrangement, and then comes the huge impending cornice with its sculptured and moulded stones, as, for example, in the Strozzi and Medician palaces, or better, is the more frequent tile-covered roof that projects a third of the distance across the street and shades the open loggia beneath it. The overhanging rafters and supporting beams are quaintly carved, but fully as interesting as they are is the eclipse-like shadow that is thrown by the roof upon the upper portion of the building. These are the roofs that, projecting like long wings, narrow the scanty strip of sky and make perpetual twilight in the street. The appearance of the streets after sunset where there are many of these palaces is very striking, but they ought to be seen before the lamps are lighted. Some moonlight night should be selected to visit them, when the strip of sky overhead is spiritually clear in its pale violet depths. The overhanging roofs are then in the blackest sable and the shadows on either hand are hardly to be explored by the eye. Here and there a moonbeam finds its way to the ground, and a strip of some frescoed wall is lighted up, and the silvery pallor flows over the projections of windows and balconies, and touches into distinctness the jutting coronet and shield charged with heraldic symbols.

The walls of several of these palazzi are covered with frescoes, and figures larger than life recline above the portal or stand between the windows, stretching upwards to the loggia. The naked limbs and draperies are toned with almost Venetian richness. Many, too, are painted "à sgraffito," which was a favourite manner in Florence. The design is traced in white and buff, upon a green, or black, or a red ground. The imitation of this method of decorating walls, lately started in England, bears little resemblance to the work in Florence, whose name it has borrowed. Some few of the Florentine palazzi date from the times of the Republic, but the greater number were built during the Medician ascendancy. Without being able to present so striking a feature as the well-known pillared and traceried windows of the Venetian palace, they are remarkable instances of how much true dignity and interest can be given to a façade exceedingly simple in its lines, and almost destitute of projections. It would be difficult to find a building of equal size, the world over, more truly impressive than the Strozzi Palace. How many palaces are there, far exceeding it in mere bulk, that would look puny and contemptible if placed side by side with this famous example. The Palazzo Guadagni, on the opposite side of the Arno, is a fine instance of the palazzo, finished with an open loggia and overhanging roof. S. D.

WARWICK SEWAGE FARM.

A COMPANY has been formed under the title of "The Warwick Irrigation Farm and Dairy Company, Limited," for the purpose of taking from the Corporation, by agreement, the farm of 135 acres on lease, and also to undertake the purification of the sewage. The farm which is proposed to be taken by the company has been worked by the Local Authority since 1868, and lately at a considerable annual loss to the ratepayers. But as the farm is without any system of drainage, and as there is not any live stock to consume the produce, it is not a great matter for wonder that it has not proved a financial success. Already, although the prospectus (capital 3,000 shares, 2*l.* each,—6,000*l.*) has not yet been advertised, the greater portion of the capital, we are told, has been subscribed by residents in the neighbourhood. The provisional directory consists of various members of the Town Council, the borough engineer, and some influential ratepayers of the borough.

ACCOUNTS OF THE METROPOLITAN BOARD OF WORKS.

THE representative of the parish of St. George, Hanover-square, Mr. John Leslie, has forwarded a statement to Her Majesty's Treasury calling attention to what he considers "extraordinary errors in the Board's accounts for the year 1874, and to the audit of these accounts by the Government Auditor." Mr Leslie states "that the Government Auditor allows a receipt in 1874 of 2,605,000*l.* on account of Metropolitan Consolidated Stock, being 21,146*l.* less than the minutes of the Board show to have been received in 1874."

"That the account for 1874, as audited by the Government Auditor, commences with a balance of 636,683*l.* 11s. 10d., which is less by 2,339*l.* than the Treasurer's balance on that day at the commencement of business.

"That the total expenditure of the Board for the whole year 1874 is shown by the Government Auditor to have been 2,538,268*l.* 12s. 7d., while the corrected amount of loans received in 1874, 2,626,146*l.*, exceeded the whole year's expenditure by 87,878*l.* The charge upon the metropolitan ratepayers for interest thereon to 31st December, 1874, would be about 79,432*l.*

"The Government Auditor shows that the London and Westminster Bank allowed 34,951*l.* 0s. 9d.; that the interest on the loans received amount to nearly 80,000*l.*, thus entailing between the interest payable and the allowance from the London and Westminster Bank about 45,000*l.* loss to the metropolitan ratepayers.

"That the sum of 4,500*l.* was first stated as being *included* in the alleged balance of 636,683*l.* 11s. 10d., but in consequence of a letter addressed to the Auditor by Mr. Leslie, the cashier says 'that in revising the print the word "including" was not altered as it should have been to *excluding*.'"

THE DEAF AND DUMB ASYLUM MARGATE.

THE Prince and Princess of Wales opened the Deaf and Dumb Asylum, Margate, on Monday last. The building, which is from the design of Messrs. Drewe & Bower, architects, of Margate, and erected by Messrs. Bushell & Sons, contractors, is situated in the Victoria-road, in an elevated position, outside the town. A lodge, front wall, and entrance gate are being erected along the Victoria-road, the iron work of the railing and gates being cast by Messrs. Alexander Macphail & Co., iron merchants and founders, of Upper Thames-street, London. The cost of the building will be 16,000*l.*, and about 150 children will be accommodated. The schoolroom is common to both sexes, and is 96 ft. long by 25 ft. wide, over it being the dormitories for boys. The girls' work-room is 40 ft. long by 25 ft. wide, and, as in the case of the schoolroom, the rooms over it are for the girls' dormitories. The dining-hall is a spacious apartment with open timber roof supported on carved angels as corbels. Fire-proof corridors 6 ft. wide connect the various rooms and staircases, three in number. One peculiarity of the design is the arrangement of teachers' rooms, which is, in effect, never to leave the children without supervision.

THE VALUE OF PROPERTY AND BUILDINGS IN CHELSEA.

THE St. George's, Hanover-square, Union is under an obligation to purchase the Little Chelsea Workhouse, in the Fulham-road, and at the meeting of the Board held last week the finance committee presented a report stating that after conferring with a committee of St. George's Vestry they considered the adequate value of the house was 40,000*l.*, although four years ago it was valued at 28,150*l.*, and they recommended that the first-named sum be offered for it. In answers to inquiries from some of the members why the first valuation was disputed, and why the second valuation had been made, it was explained that the first valuation was the result of an independent valuer not having been appointed, and that the Local Government Board had approved the second valuation being made. It was further stated that the Chelsea house, which cost 40,000*l.* to build, would now cost 60,000*l.* In the course of the discussion it was stated that the St. George's Vestry, as was well known, considered the valuation of 28,150*l.* too little, and the Local Government Board allowed the question to be re-opened. The Chairman added that the guardians were compelled to buy the workhouse,—it was imperative. The recommendation of the finance committee to offer 40,000*l.* for it was confirmed.

JURISDICTION OF THE METROPOLITAN BOARD OF WORKS.

AT the meeting of the Board, on the 16th inst., the Building Act Committee reported with reference to the case pending before the magistrate at Marylebone Police Court, between Mr. Peebles, district surveyor, and the Metropolitan Railway Company, which involved questions under the Building Act with respect to the jurisdiction of the Board over buildings belonging to railway companies, and the application to the provisions of the Building Act of the decision of the Lords Justices, in the case of Weston *v.* Arnold as to party-walls, which related to the Bristol Building Act; that, inasmuch, as the case in question affects the action of the Board in carrying out the provisions of the Building Act throughout the metropolis, the reference to the committee be transferred to the Works and General Purposes Committee, and that Mr. Peebles, district surveyor of St. Marylebone North, and Mr. C. Fowler, district surveyor of Shoreditch, be requested to attend the committee when the subject is considered. This recommendation was agreed to on the motion of Mr. Runtz.

The New Potato Disease.—A discovery of considerable value in respect of the cause of the potato disease has been made by Mr. Worthington Smith, whose name is known to our readers, and an account of it has been communicated to the Royal Horticultural Society. Some particulars appear in the *Gardeners' Chronicle* of the 10th, and the editor of that paper speaks of it as "a discovery of the first importance."

THE METROPOLITAN ASSOCIATION FOR IMPROVED DWELLINGS.

AT the annual meeting of the Metropolitan Association for Improving the Dwellings of the Industrious Classes, which has just been held, the report stated that the average rate of mortality on the Association's property for the past year had been 15 per 1,000, whilst that of the whole metropolis had been over 22 per 1,000. The profits for the year amounted to 6,787*l.* 13s. 5d., sufficient to pay a dividend of 5 per cent. per annum, which the directors recommended should be declared. Lord Claude Hamilton, the chairman, in moving the adoption of the report, observed that the transactions of the past year showed that nearly all their old buildings were fully occupied, and the comparatively low rate of mortality in the Association's dwellings was also a fortunate result which they had to present. Referring to the Bill which has just passed through Parliament, he remarked that it must have been gratifying to them all to see how much time had been spent by the Legislature on a similar subject to that which had led them to found the Association.

A dividend at the rate of 5 per cent. was declared, and the chairman stated that next year they expected, owing to increased weekly rental from the Farringdon buildings, to have a considerable margin over what they now exhibited, and therefore they had thought it just and reasonable to recommend a dividend to the full amount permitted by their charter.

PRETTY SPECIMENS.

THE following tenders were sent in for the Hampstead Asylum for Imbeciles (late Fever Hospital),—External painting and repairs for the Managers of the Metropolitan Asylum District. Messrs. A. & C. Harston, architects. Let it be noted that the quantities were supplied :—

Nicholls	£1,060	0	0
Jakes	941	0	0
Farley	930	0	0
Cook	767	10	0
Channing	740	0	0
Probert	734	18	2
Cullingham	725	0	0
Braine	687	15	0
Burford	685	0	0
Horton	679	10	0
May	640	0	0
Wadsworth	592	5	0
Kelloway	591	12	0
Coen	590	0	0
Ward	567	0	0
Allen	558	12	11½
Woods	530	0	0
Johnson	525	19	4
Winship	525	0	0
Kendall	514	0	0
Derby	469	0	0
Dunsford	425	0	0
Seed (accepted)	399	0	0

For some works at the Poplar and Stepney Sick Asylum, colouring walls of wards, &c., under the same architects, quantities supplied, these are the figures :—

Brady	£200	7	0
Derby	120	0	0
Barrow	112	17	6
Selby	110	0	0
Hopewell	98	0	0
Nowlan	91	0	0
Cocks (accepted)	78	0	0
Coen	64	3	10

In both these cases we may fairly ask at which end of the lists is the swindler?

SCHOOL BUILDING NEWS.

Belbroughton.—A brick building, for new schools, of somewhat elaborate design, has been erected from the designs of Mr. Chatwin, of Birmingham; Mr. T. Baylis, of Belbroughton, being the builder. The schools have been completed about eighteen months, but, owing to the illness and death of the late rector, and an unfortunate dispute now happily arranged, they were not opened until Monday last week.

Nechells (Birmingham).—The laying of two foundation-stones of new Sunday schools in connexion with the United Methodist Free Churches, Rocky-lane, Nechells, took place on the 21st of June. Mr. George Ingall is the architect, and Mr. Parton the builder. The schools, which will accommodate about 800 children, are to be of brick, two stories high. The ground-floor will comprise an infant school, an intermediate school, and two Bible-class rooms, and the upper part of the building will be used as a general school-room, 60 ft. by 30 ft.

Castle Cary.—The buildings for the new schools in the Park are now progressing rapidly. New schools are also about to be erected between North and South Barrow to meet the requirements of the Education Act. Lord Portman has given the land as well as a handsome contribution. Mr. E. O. Francis is contractor for both the above works.

Darlington.—Last week the ceremony took place of laying the foundation-stone of the new Sunday Schools in connexion with the Congregational Church in Union-street. The new buildings will comprise a lecture-room, 25 ft. by 18 ft., an infant school the same size, and four class-rooms, each 16 ft. by 12 ft. 3 in., all on the ground-floor, and uniformly of 12 ft. in height. The floor above these will contain a school-room, 62 ft. by 25 ft., a library, and a secretary's room. This story will be 12 ft. to the wall plate, and 18 ft. high to the collar-beam. The whole interior will be amply lighted. The front elevation of the building in Union-street will be faced with stone to harmonise with the architecture of the chapel, which is adjacent. Mr. J. P. Pritchett is the architect, and the work has been contracted for as follows :—Mason's, bricklayer's, and plasterer's work, Messrs. Watson & Son; slater's work, Messrs. Atkinson & Son; joiner's work, Mr. John Hewitt; plumber's and glazier's work, Mr. Robert Smith; painter's work, Messrs. Wilson & Mellis; iron railing, Messrs. Kellet & Macfeggan, — all of Darlington; warming apparatus, Mr. Gibbs, of Liverpool.

Lincoln.—The National Schools in the parish of St. Peter-at-Gowts have been opened. The Victoria School has been thoroughly renovated, and a new school-room, class-room, and master's house have been built, the architect for which has been Mr. Goddard, of Lincoln. There is now accommodation in the parish for the instruction of about 300 children.

Upholland (Lancashire).—Last week the memorial stone of a public elementary school was laid at Upholland, near Wigan, by Mr. Samuel Stock, of Blackleyhurst Hall. The school is being built of hammer-dressed local stone, faced with hammer-dressed shoddies and Liverpool red stone dressings. The roof will be covered with Welsh slates, and finished with ornamental Maidenhead ridge tiles. Internally it will be ceiled. At the collar, at the intersection of the class-room and main roofs, will be a bell-turret, terminating with an iron finial. The interior walls and ceilings will be plastered, except a dado course from the floor to the level of window-sills, which will be of St. Helen's red pressed brick. The contract has been taken by Mr. Thomas Templeman; and Messrs. T. E. Murray & G. H. Thomas are the architects.

Yarkhill.—The school buildings of this parish have recently been enlarged to provide accommodation for the children of the adjoining parish of Weston Beggard. In the year 1865 a new school for about sixty-five children was built, together with a house for the master and mistress, chiefly at the cost of the late Vicar of Yarkhill, the Rev. Thomas Hugh Bird, upon land given by the Lady Emily Foley. The work now done consists of the addition of an infants' school, and a class-room to the original school-room, which is now used as a mixed school. Play-sheds have been provided, together with cap and cloak rooms, and lavatory fittings, and a separate entrance-porch for persons visiting the school. Ventilation has been provided by means of one of Captain Galton's stoves in the infants' school, and Sherringham's ventilators in the old parts of the buildings. The school will now accommodate 138 children. The house drainage has been carried into a tank in the garden, but owing to difficulty of disposing of liquid refuse the whole of the closets are constructed upon Moule's earth system, a building having been designed by the architect for the purpose. The new works have been done by Messrs. Collins & Cullis, of Tewkesbury (the school desks, &c., being by Mr. James Lewis, of Ross), the whole being from the designs and under the superintendence of Mr. Blashill, of London, as architect.

Restoration of Aber Church, near Bangor. A subscription list has been opened for the purpose of restoring the parish church at Aber, near Bangor. The church was a favourite resort of Mrs. Hemans, the poetess, and close by is the mound which covers the site of the palace of Prince Llewellyn, a famous Welsh chieftain. Lord Penrhyn has contributed 500*l.*, Major Platt 200*l.*, the Rev. T. N. Williams, rector of the parish, 100*l.*, and other contributions swell the list to about 1,200*l.*

WAREHAM.

WAREHAM and Corfe are the keys of Purbeck, or rather Corfe is the fortress and Wareham the bridge-head of that bold projection of the chalk of Dorset, the southern headland of which bears the name of the protomartyr of England, and of which the triple spurs of Durlston, Peverell, and Studland form the eastern points, each with its own bay, and the whole protecting from the prevalent west wind the great indentation of the coast between Purbeck and the Needles, in the bight of which open the harbour of Poole, and, under Hengistbury Head, the mouth of the twin streams that once gave name to Christchurch, before either castle or priory rose upon the banks of the Avon.

To the Northmen, these headlands, bays, and rivers were intimately known. Their long ships here found shelter while the hardy seamen ravaged the country of which they were one day to become joint inheritors. Though called, like Sheppey and Portland, an island, Purbeck is, in truth, not even a peninsula. If, indeed, it were to subside from 50 ft. to 100 ft., the great chalk ridge which extends from Lulworth to Studland would alone be visible above the waters, and the low broad valley which marks the course of the Nether Frome and the Piddle would be covered, and form, with Poole harbour, a considerable estuary. Even now the river valleys are low and moist, and in the eighth and ninth centuries were no doubt an impracticable morass. Where nature had done so much, there remained but little needed from art, and accordingly the military remains in Purbeck are scanty. Worbarrow, a strong half-circular camp of banks and ditches, crowns the steep cliff at one end of the great ridge, and Corfe, or Corfe-gat, occupies a gap or gate near its centre, while Wareham, posted to the landward of the marsh, and between the two rivers, guards effectually the approach from the north. Camps on sea-cliffs are generally supposed the work of those who used the sea, and drew up their galleys upon the beach; if this be so, Worbarrow must be the work of the Northmen, though in any other position it would be regarded as British. Corfe is probably entirely an English port; what Wareham is forms the subject of the present notice.

Wareham, a town which is still a Parliamentary borough, though one of its members was shorn away in the great struggle for reform, is built upon a knoll of chalk, the eastern extremity of a broad low ridge which descends and becomes narrower from the west and north-west, and finally sinks down into the lowland a little east of the town. This ridge divides the valleys of the Frome and the Piddle, the principal streams of Dorset, and its termination marks the meeting of the waters which flow together into the backwater of Poole Harbour. The Piddle lies to the north of the ridge, and the Frome to the south. The town between them is about half a mile broad, and their bridges are connected by its main street. In figure the town is nearly square, the west face about 600 yards, the north face 650 yards, and the area is pretty evenly divided by the main street, which is crossed by a second street, at right angles, thus dividing the town, after the Roman fashion, into four quarters. As at Wallingford and Tamworth the outline of this rectangular figure is an earthwork, within which the town was built, and which is now all too wide for its shrunken prosperity. The defence is a simple bank and ditch, the contents of the latter being piled up to add to the height of the former, but as the area inclosed is naturally high, with a steep slope to the north and east, on these two sides the bank is a scarp only, the river on the north forming the ditch. To the east the ground is not quite so low, and there is no river: here therefore is a ditch. The northern scarp is about 45 ft. high, with a slope varying from one and a half to two to one. Its crest is 15 ft. broad, and it rises about 15 ft. above the ground within and behind it. Towards the west end this bank is rugged and angular; the eastern half is very uniform, and seems never to have been disturbed.

The northern side is straight, or nearly so; the eastern has a low salient near its centre. This side is not carried to the river. There is indeed a hollow way, which seems to represent the ditch, but the bank is wanting for the last 200 or 300 yards. The western face is far stronger, and more perfect. Here the bank, of full size, is carried down to the margin of the river, and the ditch is broad and deep. This was the weak side, the exterior ground being high. This bank also is much cut about, and it is pretty clear that in the Parliamentary wars an attack must have been apprehended from the north-west, as the bank is notched as for embrasures for guns, and there are various small mounds to present them from being reached by a lateral and raking fire. The ditch also, instead of being cut to a central line, as usual in mediæval fortifications, and as is the case with this ditch near the river, is broad and flat, as though it had been widened and partially filled up to suit the requirements of the art of defence as practised in the seventeenth century.



A. St. Mary's.
B. Trinity.
C. St. Martin's.
D. St. Peter's.
E. St. Nicholas's.
F. St. John's.
G. Priory.
H. Castle.
I. Bowling-green.

There is no earthwork along the south or Frome front, towards which the ground slopes gradually. No doubt the river was a defence, as it was on the other front, but the absence of any special work on the south and south-eastern quarters looks as though those who constructed the work came from the sea, and desired to guard Purbeck, whereas the historical presumption is that Wareham must have been thrown up against invaders, and that it was a British fortress against the Saxons, and an English fortress against the Danes.

Of the four pretty equal quarters into which the area is divided, the south-western contains a later and subsidiary work, thrown up upon the bank of the Frome, and a little in the rear of the main defence. This is a conical mound, flat topped, rising about 50 ft. above the river, and about 60 ft. in diameter at its summit. It has a ditch proper to itself, about 60 ft. wide, dividing it from the main bank, and to its east and south-east are traces of other and lower earthworks, which no doubt include the base courts or wards usually appended to such mounds. This whole tract, however, is exceedingly obscure, being laid out in lanes and courts and walled gardens. Here stood the Norman castle, built, as usual, upon the earthworks of the English residence.

There is another earthwork, also within and later than the main defence, found in the north-eastern quarter. This is a rectangular inclosure about 60 yards by 30 yards, within a bank of about 4 ft. high with a base of 12 ft. and an exterior ditch about 6 ft. broad. There is an entrance at one end, and the angles are slightly rounded off, and as the north-east angle rises somewhat with the tail of the adjacent bank, it is clear that it is a later work. This looks exactly like a small Roman camp, though in such a position it seems much out of place. It is called the bowling-green, and may have been laid out for that game. It is difficult to say what it is.

Of the two roads which intersect Wareham, that running north and south is the main one, and leads to Corfe. The Frome bridge over which it is carried is said to replace one built in the reign of William Rufus. The east and west road is an important way in one direction, as it leads from Dorchester, and may well therefore be Roman. After reaching the cross it is continued eastwards, but this branch of it led nowhere from the town.

Wareham, like Wallingford, was well supplied with ecclesiastical establishments, there having been within its limits eight churches and a priory. The priory, originally founded it is said by Adhelm, Bishop of Sherborne, who died 709, certainly existed as a nunnery before 876, when the town was taken by the Danes. The church, dedicated to the Virgin, is now the principal church in the place, and Trinity, now used as a school, was probably the chapel of the Castle. St. Martin's is a small church upon the eastern edge of the deep cutting through which the north road enters the town. It has a small late tower, but the nave and part of the chancel seemed early Norman date. The sites are pointed out of the chapels of St. Peter, St. Nicholas, St. John, St. Michael, All Hallows, and St. John.

Nothing of the masonry of the castle remains above ground, but the adjacent walls evidently contain much old material, and in one of them is an old Norman doorway, with a bold chevron moulding round the head, interspersed with a line of roundels. This no doubt belonged to the castle.

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There is a great resemblance in position and plan between Wallingford and Tamworth, and to some extent Cardiff and Wareham. In each case the general earthwork is rectangular, of bold profile, and has a single ditch, and is placed near a river, and on that side undefended. Each also has a mound towards the river, with its own proper defences, and upon each the Normans placed a shell keep. There is no evidence of Roman occupation of any of these places, though the road from Wareham to Dorchester may be Roman, and if the line of the Ackebury ditch from Sarum to Badbury were produced, it would pass close west of that place. Possibly the rectangular defences were the work of the Romanised Britons, the mound being an English addition of the ninth century.

Wareham was an important place in the West Saxon kingdom. King Beorhtric, who married the daughter of Offa, and in whose time the Danes first landed in Britain, was there buried in 800. In 876 the Danes attacked and took Wareham, but submitted to Alfred, and retired to Exeter. Florence says of the Danes:—"Castellum quod dicitur Werham intravit; ubi monasterium sancti-monialium inter duo flumina Fraw et Terente it in paga quæ Saxonice dicitur. Downseto, tutissimo situ terrarum situm est, nisi ab occidentali parte tantummodo, ubi contigua est terra." And it is on that side that the works are the strongest. Some of the Danes went by sea and some on horseback. In the following year, however, they were again at Wareham, and their fleet was wrecked off Swanage, and 120 ships lost. At this time Wareham became the Danish head-quarters. A century later, in March, 978, King Edward, slain at Corvesgate or Corfe, was buried silently at Wareham, to be translated afterwards to Shaftesbury. In 982, Wulfwin, abbess of Wareham, there died. In 998, the Danes were again there, and in 1015 Canute sailed up the Frome, burning and plundering as he went. Domesday relates that the Confessor held 143 horses in demesne in Wareham. There were two mint-masters, but at the survey the town was in a desolate condition, and many houses were destroyed.

The castle is mentioned in Domesday:—"Of the manor of Chingestone the king has one hide in which he made the Castle of Wareham, and for that he gave to St. Mary's the church of Gelingham, with its appendages, to the value of 40 shillings." It is the only castle mentioned in the county. Chingestone is the manor of Corfe Castle, and St. Mary's the Abbey of Shaftesbury. Robert, Duke of Normandy, was for a time imprisoned in the Castle, as was Robert de Belesme, who is here said to have starved himself to death. Town and castle were burned in the wars of Stephen and Maud. Her great champion, the Earl of Gloucester, embarked here on his way to Anjou in 1142, and William, his son, was governor when the town was taken by Stephen. The Earl then retook it, the castle holding out against him for three weeks. It was at that time that he took Lulworth, and probably built "Bow and Arrow" Castle in Portland. King John landed at Wareham in 1205 and visited the place four times, staying about fifteen days in the years 1209–12–15, and 1216. Peter of Pomfret, was hanged here in 1213. Then and long afterwards it was rather a noted sea-port, and as late as 1558 ships of fair size reached its quays. The "Castle Hill" was granted away by James I. The western earthwork long bore the name of the "Bloody Bank," from the execution there of Judge Jeffreys's victims.

During the civil war Wareham was the scene of much fighting, being taken and re-taken many times. It was garrisoned by the Parliament in 1642, then taken for the king, then in 1643 re-taken for the Parliament. In 1644 the Royalists took it by storm. It was in these wars that the west bank was so much altered, to make it suitable for the defensive system of that day.

G. T. C.

Breach of a Useful Building Law.—An important case to builders came before the South Shields magistrates last week. According to the Borough Bye-Laws every builder, on the completion of any house, is required, before allowing it to be occupied, to give notice to the surveyor, so that it may be inspected. Thomas Smith, builder, was summoned for infringing this law, by allowing a new house to be occupied before it was inspected, and which was stated to be unfit for occupation. The magistrates fined defendant 20s. and costs.

THE FLOODS IN FRANCE AND HUNGARY, AND THEIR CAUSE.

THE great difference between the floods which occurred at the end of last week in South Wales, and those which have been attracting so much attention on account of the damage they have wrought in France and other parts of the Continent, lies in the fact that the most serious injury caused in England has been occasioned by the bursting of *artificial* reservoirs, while the force of a *natural* stream down its natural bed, but swelled beyond its normal limits, has been the cause of the destruction of life and property on the Continent.

The streams of this country are not to be compared for the steepness of their course, and the volume of water which they contain, with many of the rivers which have their source in the Pyrenees, the Alps, the Vosges, or some of the other great mountain ranges of the Continent. The river Garonne, which has just worked such havoc in Toulouse and the surrounding towns, flows rapidly through the department to which it gives its name (Haute Garonne), has its rise in one of the highest peaks of the Pyrenees about 130 miles distant from that town. The primary causes of the disaster were heavy rains and the sudden melting of the snows and ice in the high land, which sent such a volume of water down the mountain sides as to overflow the ordinary banks of the river, high and precipitous as they are in many places.

But have we not reason to look further for the causes which led to the immensity of the disaster? The country is always liable to rains, to the sudden melting of the snows, and ice. Some other agencies must have been at work to cause the unwonted exercise of force.

It is more than probable that the gradual destruction of the woods and forests on the mountain sides is in a very large degree answerable for the catastrophe. There is no doubt the combination of circumstances has been very unusual, and that an extraordinary amount of water has been suddenly let loose to find its way down the hill-sides; but there is as little doubt that, had the mountains not been denuded of trees to the extent which prevails, the severity of the floods would have been mitigated, and they would have been robbed of half their force.

The following considerations will show that this would have been the case. In the first place, the existence of trees in hilly districts tends to equalise the temperature: the winter frosts have less power to bind up the water-courses in their iron grasp, as the intervening trees protect the land; and, for the same reason, the summer sun cannot so quickly pierce the sheltering wood, and reach the earth beneath, so that the melting of the ice is more gradual. In the next place, the presence of trees serves to arrest the sudden descent of rain. A heavy storm of rain will rush without hindrance down a naked hillside, and carry with it large quantities of alluvial deposit, and frequently, by washing the earth away, loosen masses of rock. But where trees exist the descent of rain-water is more gradual. The drops have to filter, so to speak, through the leaves and branches to reach the earth. When they touch the land, the water is intercepted by the trunks of the trees, the roots of which have prepared the earth to receive the moisture instead of letting it run off its surface. Even if this occurs, the trunks of the trees prevent the surface-water from gaining much force or "head," and, the roots having bound the soil together, the water cannot carry off the deposit of mud which it otherwise would collect and roll down in its course.

On this point, Professor Landolt, the chief of the Government School of Forestry in Switzerland, says:—

"The influence of the forests of Switzerland on the climatic and meteorological condition cannot easily be expressed in figures, nor can convincing examples of their beneficial action as yet be adduced. Experiments have, however, been initiated which, in course of time, should lead to some conclusion. It may, nevertheless, already be affirmed:—

1. That forests arrest the downpour of snow and rain-water on steep declivities, and thus lessen the danger resulting from a too rapid rising of the brooks and rivers, whilst springs are fed in a fuller and more continuous manner than would be the case did they not exist.

2. That to a certain extent, at least, they prevent inundations and landslips.

3. That they present obstacles to the formation of avalanches and stone-falls within their range, and break the force of those coming from higher regions.

4. That they temper the action of the wind, and moderate the heat of summer and the cold of winter.

5. That they act favourably upon the rainfall in such a manner that both persistent droughts and violent rains are alike avoided.

6. That in high valleys and hill regions, in which the clearances have been the most complete, there is no doubt but that the climate has become severer, and the moisture of the soil has diminished."

Writing on the same subject, as it affects Hungary, Mr. Ffrench, our consul in that country, says:—

"The expropriation or diminution of the forests in parts of Austria, and more especially in Hungary, has been followed by effects of a serious and baneful nature, such as long seasons of drought and a permanency of tremendous winds, which come from the Carpathians, sweeping the whole of the plains of Hungary, filling the air with unceasing clouds of dust, and considerbly increasing the development of pulmonary disease, especially in the towns, which are now totally unprotected. Among these may be mentioned Pesth, Presburg, and Vienna, which are quite intolerable in spring, summer, and autumn on this account."

It is well known that in the particular part of Europe to which general attention is now being attracted, as well as in nearly every other portion of the Continent, the destruction of timber has not been counterbalanced by the proper planting of trees for future use. Indeed, it is generally observed that the extent of forest land is yearly diminishing. Recent reports from our consuls abroad, to which we have lately alluded, show that in nearly every country, of Europe at least, and even in America, no adequate provision is being made for the future supply of timber, and that forests are literally cleared away without any care for their restoration.

In France, the total area of which country is about 133,000,000 acres, about 8,000,000 hectares (less than 20,000,000 acres) are the whole extent of woodland of all kinds. Three-fifths of this area, it is estimated, produce only underwood and brushwood; so that the total extent of forest land is only 8,000,000 acres, or one-sixteenth of the area of the country. Various laws have from time to time been passed to enforce the preservation of forests, the most recent of which are those of 1859 and 1860. The first of these contains a scale of penalties for injury to forests, and the second treats of the re-planting of mountainous districts with a view to the prevention of floods. Mr. Wyndham, who has made a report to Government on the subject, says that the "latter law appears to have been prompted by a report addressed to the late Emperor Napoleon III. in 1860, in which the floods in France in 1856 are in great measure attributed to the want of trees and underwood on the Alps, the Pyrenees, the Cevennes, and the mountains of Auvergne, where the Rhone, the Isere, the Loire, the Garonne, &c., respectively rise." Here, then, we have a complete confirmation of the theory that the severity of the recent floods in France and elsewhere is to be, to a great extent, attributed to the destruction of the forests in the mountainous districts.

If only on this ground, then, the restoration of the forests is a matter demanding the serious attention of every country. But, for other reasons, the question of timber supply is one of vital importance.

Notwithstanding the largely increased variety of ways in which iron is now used, where wood was at one time the only available material, it is not difficult to see that the demand for timber is still on the increase. Iron ships may take the place of our "wooden walls"; coal may replace wood for the purposes of fuel; "ebonite," indiarubber, papier mâché, and other new materials may increase and afford substitutes for wood; but still there are a thousand-and-one uses to which wood must always be applied, and for which the supplies required are steadily increasing.

Yet, notwithstanding this fact, the quantity of timber available for use, either at the present time or in future generations, is rapidly diminishing.

Our own country supplies but a very small fractional part of her own wants in this respect; and her few remaining forests or woods are unfortunately rapidly decreasing in area, while very little or no planting of timber takes place at the present day. The United States and Canada, to which we have been accustomed for years to look for a very considerable portion of our supplies of timber, are being rapidly cleared, and the forests of northern Europe are becoming less productive. Those of the West Indies and South America are becoming practically neglected, and we are having recourse to newer lands, such as Australia, to supply the balance of our pressing wants. It will be worth our while, and it will be worth the while of other countries, to pay greater attention to the question of the supply of timber at home.

"DAMAGE TO THE PARTHENON."

UNDER this heading we reprinted (p. 629, *ante*) a paragraph from a contemporary in regard to the wilful dilapidations which the crowning edifice of Doric art is continually subject to at the hands of that destructive animal the "tourist"; the English variety, we much fear, being among the most mischief-making of the species, though special mention is made, in the paragraph quoted, of the savage attack by a specimen of the American variety, who swallowed a finger of one of the statues. The correspondent concludes with the statement that the museum which has been formed by the Greeks at the back of the Acropolis for the preservation of relics of the Parthenon, has come to a standstill for lack of money, and thinks this fact has only to become known in this country to ensure "immediate steps being taken to preserve the noblest remnant of Greece in her glory."

The history of English feeling and English behaviour in regard to the Parthenon, the recollection of which is revived by this remark, is rather curious, and raises the question what is really the right way to act in regard to edifices combining, as the Parthenon does, the highest artistic beauty with the deepest historical interest and association.

Most people in the present day have forgotten or overlooked the record of the great literary feud which arose when Lord Elgin first commenced the removal of the principal sculptures of the Parthenon to England, and of which the most telling record is in the verse and "Notes" of *Childe Harold*. The indignation of Byron on the subject was unbounded, and he certainly did not spare the Scottish nobleman who initiated what he considered this unpardonable sacrilege, –

> "Cold as the crags upon his native coast,
> His mind as barren and his heart as hard,
> Is he whose head conceived, whose hand prepared,
> Aught to displace Athena's poor remains;"

and in the preceding stanza he says,—

> "England! I joy no child he was of thine."

The predominant feeling of Byron, of course, was that of the poet rather than the artist; he never showed any appreciation of love of the details of artistic work, though he rhapsodised (not very logically) over the results. He thought that the building which had been the glory of Athens should remain untouched upon her soil, and that, at least, Greece and not England had the right to the sculpture if it was to be removed from its situation. The fullest reply to Byron's criticisms was that given subsequently by Haydon, who adduced (either in his autobiography or in his lectures) sufficient instances of the reckless way in which the building was treated by its then masters the Turks (the Turkish soldiers having been in the habit, among other acts of violence, of using the heads of the statues as marks for musketry practice) to lead to the conclusion that the removal of the sculpture entirely would have been almost the only way of preserving it for the study of modern artists. The enthusiasm of Haydon for these works, and his immediate perception (due to his own arduous anatomical studies) of their finest points, is one of the most satisfactory records in his strange and contradictory career. But the poet seems to have had more valid reason than his artistic antagonists were aware of, or at any rate admitted, for his charges of sacrilege and want of respect against the emissaries of Lord Elgin, at least if we are to credit the statements in some of the notes to his great poem. Among other things, it is there on record that "When the last of the Metopes was taken from the Parthenon, and in moving it great part of the superstructure, with one of the triglyphs, was thrown down by the workmen whom Lord Elgin employed, the Disdar, who beheld the mischief done to the building, took his pipe from his mouth and said in a supplicating tone to Lusieri, 'Τέλος!'" Lusieri was the director of the job; and such an incident certainly goes to establish a charge of great want of ordinary care and reverence in handling so important and unique an architectural monument as the Parthenon.

What we have got in return is, that those portions of the sculpture which reached England safely have been carefully preserved, and are accessible to all who wish to study them. We were going to add that they had given great impulse to English sculpture: they ought to have done so; but the proofs of this are not very recognisable. That a great part of their real merit and meaning is lost by taking them from their original position, is unquestionable; but there was the definite excuse that, at that time, they were very badly cared for, and were subject to much maltreatment. But there was a real ground for the Byronic feeling on the matter, and it might, perhaps, fairly be questioned whether the value which the sculptures gained as an educational element in English art, by their transference to this country, compensated for the value they lost by being torn from the positions for which they were designed, and the irreparable injury thereby done to the architectural effect of the remains of the building; and it may be doubted whether the feeling that would shrink from such spoliation on any terms and for any object, and would prefer the reverential contemplation of these relics of a glorious art of the past, in their fading grandeur, to the fingering and measuring at them as museum objects, is not the nobler and worthier of the two, in despite of the paramount interest claimed for art-education. At any rate, the mischief, if we consider it as such, has been done now, and in the process of removal of the statues the Parthenon has been too much pulled about, without taking into account the succeeding efforts of the tourist tribe, to make any restoration of the sculpture to its original position possible or desirable. But the Greeks, now happily under more prosperous political and social circumstances, appear to be taking an enlightened interest in the great monument of their country's artistic past, and forming a museum for preserving, on the spot hallowed by so many associations, the more fragile and perishable portions of the decorations of the Parthenon. This is probably the best thing that could be done. A "restoration" of the Parthenon, we may trust, is an attempt that will hardly be made, even in these days of restoration mania; but now that the edifice has arrived at so piecemeal a condition, the best course seems to be to preserve on the spot those details which are most perishable, and which have been detached or may be detached, without injuring the mass of the columns and walls still left standing. England, which has taken so important a part in the demolition, in one sense, of the Parthenon, could hardly better vindicate her right to the treasures she has acquired, or her claim to be considered as a protector rather than a spoiler, than by aiding a museum for the further preservation of the remainder, which, it appears, is now at a standstill for want of funds. We may thus make atonement for any wrong which Greece may be considered to have suffered, earlier in the century, at the hands of those—

> "Who snatch'd her shrinking gods to northern climes abhorr'd."

THE HISTORY OF PAPER-HANGINGS.*

Block Paper-Hangings.—In the manufacture of block printed paper-hangings, the first process is that of preparing the grounds to the required tint. This was formerly done upon a table, 12 yds. long, by means of two circular brushes filled with colour, to which a revolving motion was given by the workman, so that an even coating of colour was laid over the paper. A machine is now generally used for the purpose, and the work is executed with much greater rapidity. Satin papers are grounded in a similar manner, but with a preparation of lime, potash, alum, called *potash-alum*, and when dry, polished by means of revolving brushes, and powdered French chalk,—steatite. The artistical talent that at the end of the last century was expended on finishing and filling up the details of a pattern by hand, is now devoted to the production of an elaborate drawing of the design, the various parts of which have to be cut on wooden blocks for printing. These are usually carved in pear-tree wood, and each shade or colour is represented by a single block. The design is first traced on the surface, and then the block-cutter cuts out the intervening spaces, and where very few lines are required, pieces of brass are inserted. The back of the block is crossed with woodwork in contrary directions, so as to prevent warping, and the breadth is always 21 in., while the length is a little more or less, according to that of the design. In printing, each block as required in succession to form the complete design, is supplied with colour by dipping it into a shallow trough, across the bottom of which is stretched a cloth, floating upon water or some viscid fluid, the upper surface being continually coated with colour by a boy. The workman then places the block gently on the paper in the requisite position, exactness being ensured by brass pins in the corners, and pressure being applied by means of an upright lever above the printing-table, acting on the block through the intervention of a bridge-shaped piece of wood, after which the paper is drawn off by the attendant. When the required number of colours have been applied the design is complete, the paper is dried and rolled up. Flock and gold paper-hangings are made by printing certain portions, as the whole of the design, with gold-size. The flock is simply thrown over the moist gold-size and adheres to the part that has been printed; and the gold or bronze powder is dusted over the paper, and in like manner becomes fixed on the sized parts. Sometimes powdered leaf is used; and when it is, it presents a dull appearance until drawn through a calendering machine, which burnishes it. Many gold and other paper-hangings are embossed by being drawn between a brass cylinder, with a minute design engraved upon it, and a paper roller, by means of which various waved lines in imitation of leather and silk are produced. A variety known as stamped gold paper-hangings is the result of a more tedious process with leaf-gold,—Dutch metal. The paper is prepared with dry gum-size, and gilt-leaves laid over the parts of the design that are to be gilded. The paper is then stamped under a number of heated metal dies in a machine for the purpose, and a very brilliant effect is produced. All the paper-hangings previously described were made by means of blocks with hand labour, and to the year 1850 they were the only kind that were used, excepting for the most common purposes.

Machine Paper-hangings.—The importance of some method of producing paper-hangings by machinery seems to have occupied the thoughts of several persons over a period of one hundred years. In 1764 Thomas Fryer and others obtained a patent for "A machine of a new construction, and in mixing and adapting colours to the use of the said machine for printing, staining, and colouring of silks, stuffs, linens, cottons, leather, and paper." The patentee used engraved copper cylinders and colour rollers. This appears to be the earliest attempt at calico printing by machinery. The next patent was granted to Jacob Bunnett in 1786, for "A machine for the printing of Paper-Hangings, calicoes, cottons, and linens in general, whereby any number of colours may be printed thereon at one and the same time; and whereby ten times as many pieces may be printed in as short a space of time as one piece is now printed by the common method." The printing cylinders were to be of wood, metal, or other material, and the paper introduced into the machine in a roll. Whether paper-hangings were printed by this machine is very doubtful; it was evidently the intention of the patentee, but it is more likely to have been used for calico printing. In 1816 Edward Cooper, obtained a patent for "A method of printing paper-hangings and other purposes." This was by means of a kind of printing-press which produced pictures at regular distances from each other, but nothing like a continuous pattern. In 1823 he took out another patent for a machine, which seems more especially intended for printing calico. In the same year William Palmer obtained a patent for printing paper-hangings by a machine, which elevated and depressed a stationary block, and supplied it with colour on the under-surface. The machine was worked by means of a handle, which regulated a lever, but as nothing further is known of this invention it may be safely pronounced to have been a failure. There were improvements in machinery for printing calico, paper-hangings, &c., patented by James Hudson in 1834, and John Buchanan in 1835; but it does not appear that up to this date any successful attempts had been made to print paper-hangings. There were, however, at this period machines of a very simple construction used by paper-stainers, though they were by no means generally known. They printed only one colour, which was supplied by a colour-roller in the usual manner, and the machine was turned by a handle. In 1839 Archer and Taverner had a patent machine, which supplied colour and painted by means of an ordinary block with great exactness. It was worked by means of a handle turned by a boy, but it was found too cumbersome to move. Hand-machines with a roller-block, and supplied with colour by a roller

* From a paper by Mr. Geo. H. Morton, 122, London-road, Liverpool. See p. 640, *ante*.

for the purpose were in use in York and Dublin so late as 1850, but they have now all been long discarded, though they form interesting links between hand labour and the successful application of mechanical skill aided by steam power. There were besides these machines for printing a pattern upon the paper, others which produced particular kinds of paper-hangings such as oak. A machine for making plain striped patterns was brought into use about 1820; and one for producing pin-marked grounds, by means of a cylinder with holes perforated through it which formed the required design, was first used about 1835. About the same time rainbow grounds were introduced, and though in fashion for a period are now almost forgotten. The firm of Evans & Fisher, of Tamworth, seems to have been the first to produce any paper-hangings of marketable value. These manufacturers were not originally paper-stainers, but paper-makers, and their motive seems to have been to increase the sale of their paper by converting it into paper-hangings, and so far their efforts must have succeeded. They commenced to print in 1837, and continued to do so for about twenty years, when the printing was discontinued, and the manufacture limited to plain paper. Very little improvement was effected by this firm during the interval, but it is easily accounted for, as Mr. Fisher, who had become the only representative of the concern, stated that he had relinquished the business entirely in consequence of the restrictions placed upon him by the Excise. Mr. Fisher's designs were formed almost entirely of lines, without any width of colour, and resembled the mere outlines of patterns, somewhat like wire-work, without any recommendation except cheapness. This peculiarity was the result of printing in the mill, where the paper itself was manufactured; for duty had to be paid on the colour that was used, as well as upon the paper, and consequently only such patterns could be produced as required very little. The paper was taxed by weight as it left the mill, and the only alternative was either to build paper-staining works, at least a mile from the place where the paper was made, or to give up the business,—the latter course was decided on. It is well known that William Troutbeck, of Liverpool, claimed to be the first to print paper-hangings by a calico-printing machine. He certainly did so in 1838,—perhaps before,—and printed a considerable quantity of paper with a machine which had two rollers and a cylinder, which latter he did not use. Shortly after he had a machine for printing four colours. Immediately after, or perhaps simultaneously with the manufacture at Tamworth, C. H. & E. Potter, of Darwen, in 1837, directed their attention to the practicability of printing or staining paper-hangings by machinery. They were calico-printers and not paper-stainers, and had everything to learn. Although they had the calico-printing machine, which seems to have been patented for paper as well as for calico, there were many difficulties encountered, and it was not until much time and trouble had been expended, that some measure of success rewarded their efforts. The process of calico-printing, whether by hand blocks or by the machine, is very similar to the printing of paper-hangings, and the machine used is the same with some minor adaptations. In calico-printing by machinery engraved metal cylinders, as well as wooden surface rollers are used, though the work is for the most part performed by the former. It was found that the use of the surface rollers, with the pattern raised upon them in copper, alone promised a successful result. Many alterations and improvements were made during several following years, though machine paper-hangings were very indifferent productions, and could only be used for most ordinary purposes. The difficulty seems to have been to lay on a sufficient body of colour, to produce a solid and uniform effect over the pattern. In 1846 a patent was obtained by Harold Potter, and was intended to insure a more regular supply of colour. He was one of the originators of the firm that has greatly improved, and done much to bring the manufacture of machine paper-hangings to its present advanced condition. Since Messrs. Potter many others have entered the field in various parts of the country, and the trade has become a very important branch of industry.

Manufacture of Machine Paper-hangings.—The first process in machine-printing is preparing the ground of the pattern to the colour or shade required. This is done by passing the paper through a machine which spreads over it an equal coating of colour, by means of a series of brushes moving transversely. As the paper comes off the machine it is quickly dried, by being drawn through a hot-air chamber. All the paper is treated in this manner, except the very lowest qualities, in which case it receives the required tint during the process of manufacture. The paper for satin grounds is prepared in a similar manner to that used for block papers, and polished afterwards by means of revolving brushes with French chalk. The printing-machine contains a varying number of rollers or blocks, constructed of wood with a metal axle, and they print the pattern upon the paper. Great care and exactness are required in the preparation of these rollers, and a separate one is required for each colour. The design having been traced upon them, it is raised on the surface by driving slips of copper into the wood, and filling up with *felt* the portions which are to make the impression. In some patterns as many as twenty colours are used, requiring as many separate rollers. To print a flower, for example, several blocks are required, and in a design embracing various light shades and deep colours, each shade and colour requires a corresponding roller. By changing the colours very different effects may be produced, and various qualities of the same pattern are produced with the same set of rollers. Of course, every new pattern requires a fresh set of rollers, and a large sum is frequently expended in producing a novel design. The rollers or blocks are arranged in a circular form around the machine, which is about 10 ft. in height. Each roller having been supplied with its proper colour from a corresponding trough, the paper is taken up by the machine in a continuous web, or at least in pieces from 4,800 to 6,000 yards in length. The rollers press the paper against a large central cylinder, and as it moves along it receives the various colours in succession, and comes out with the design fully developed. Many of the colours are printed one on the other, but blending is prevented by the use of several varieties of size. There are machines for printing different numbers of colours; one with two rollers prints about 500 pieces in an hour according to the pattern; one with twelve rollers about 200 pieces; and one with twenty rollers about 100 pieces in an hour. A machine with two rollers produces the printed paper at the rate of four miles an hour; and one with twelve rollers at about half the speed. Plain paper is produced from pulp at the rate of one mile an hour. The printed paper is marked off in 12-yard lengths during the process of printing, and on leaving the machine it is dried by means of hot air. The rolling-up of the paper is also effected by machinery.

Although machine paper-hangings have been wonderfully improved during the last twenty years, there is still a wide difference between them and those printed by hand-blocks. They are printed upon thinner paper, with less colour on the prepared ground and in the formation of the design. Machine paper-hangings are, upon the average, about a third, and those in general use about half the price of those printed by hand-labour. About 24-25ths of the paperhangings sold are produced by machinery. They have provided the cheapest possible means of giving a clean and cheerful aspect to all kinds of rooms, and are used by all classes of the community. If machine-printing had not been successfully applied, the cost of paper-hangings would have continued about three times what it is; whereas now our manufacturers not only supply the home consumption, but export largely to the Continent, United States, and the colonies.

In 1834 the production was 1,222,753 pieces; in 1851, 5,500,000; in 1860, 19,000,000; and in 1874 about 32,000,000.

EXPENDITURE ON PUBLIC WORKS AND SANITARY IMPROVEMENTS IN MANCHESTER.

THE annual statement, showing the receipts and expenditure of the Manchester Corporation, has just been published, from which it appears that during the past year the expenditure amounted to nearly 270,000*l.*, of which 32,200*l.* was expended on the new town-hall, now in progress of building; 9,071*l.* on the public and branch free libraries; 6,000*l.* on the Philip's Park Cemetery; 2,297*l.* on account of the City Gaol construction; 2,950*l.* on new police stations; and 1,500*l.* on the improvement of the river Medlock. The maintenance of the public parks involved an expenditure of 6,192*l.* In connexion with the Health and Sanitary Department, the night-soil removal caused an expenditure of 30,315*l.*, the wages of inspectors and nightmen being 11,632*l.*, and the hire of horses and drivers 11,283*l.* The Health Department involved an outlay of 17,946*l.*, the salaries and wages being 8,323*l.*, and the miscellaneous expenses 15,587*l.*

OFFICES FOR THE LEWISHAM DISTRICT BOARD OF WORKS.

THE new building intended for the use of the Board of Works for the Lewisham district (which comprises Lewisham, Blackheath, Sydenham, and Penge), has been erected at Catford Bridge, close to the High-road, Lewisham. It comprises on the ground-floor, general office, 22 ft. by 18 ft. 4 in.; bookkeeper's office, 15 ft. by 11 ft., with two fireproof strong-rooms adjoining; surveyor's drawing-office, 30 ft. by 18 ft.; plan-room, 20 ft. by 9 ft., with two private offices for surveyor and medical officer or analyst, each 18 ft. by 14 ft. 7 in.; a separate pay-office for payment of wages; lavatories and waterclosets for officers.

On the first-floor is the Board-room, 46 ft. 9 in. by 30 ft.; a committee-room, 25 ft. by 16 ft. 6 in.; a second committee-room, 22 ft. by 18 ft. 4 in.; offices for clerk to the Board, 15 ft. by 14 ft.; and for assistant clerk, 15 ft. by 11 ft. 6 in.; lavatories and waterclosets for members.

On the second-floor are three additional rooms, with staircase leading to clock-room and bell-chamber.

Forming a portion of the building, with separate entrance in rear, are three rooms for a caretaker, the basement being used for coal-cellar and heating apparatus.

The building, which is detached, is faced on all sides with Kentish ragstone and Bath stone dressings. The roofs are covered with purple-brown Staffordshire tiles, and red ornamental ridge-tiles. The principal entrance is under a gabled porch, surmounted by a statue of her Majesty, and the arms of Kent and Surrey in traceried panels. The vestibule, 16 ft. 6 in. square, leads to the principal staircase of Portland stone, supported on ornamental wrought-iron girders with wrought-iron railing, and polished brass clips to special design; oak hand-rail and green marble shafts, with carved caps and bases of statuary as newels.

The corridors, vestibule, and landings are paved with ornamental tile paving from Messrs. Minton, Taylor, & Co.

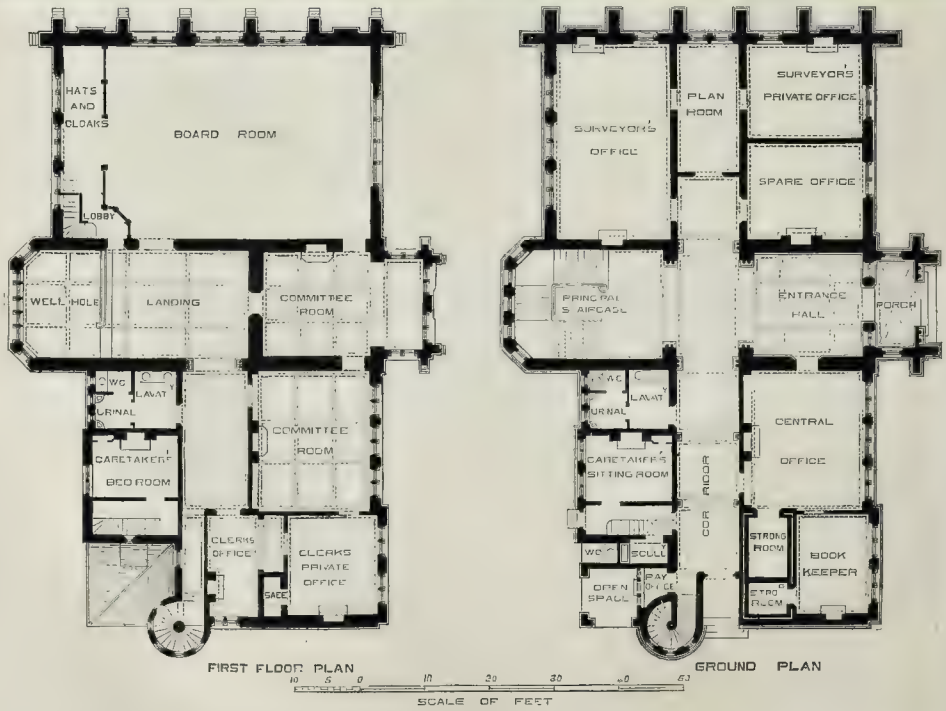
The Board-room, intended for public meetings as well as ordinary Board meetings, has a gallery at one end, with separate entrance, the space beneath the gallery being appropriated as a hat and coat lobby for members. It is lined with a carved and panelled dado, which is of oak, together with the doors, window-frames, and gallery front. The ceiling is vaulted and ribbed and of varnished pitch pine. The windows are glazed with cathedral glass. The Board-room and corridors are heated by hot-water coils (large pipe system), by Messrs. Jones & Son, of Bankside.

The committee-rooms are also fitted up in wainscot, with chimney-pieces of St. Anne's marble and tile hearths, and panelled and moulded plaster ceilings. The woodwork in the offices is of deal, stained and varnished. The gas-fittings are of painted iron, and polished brass in the principal rooms. The clock-room in the tower is fitted up with an illuminated clock, opal dial, 5 ft. diameter, and striking on a bell of 3 cwt. fixed in the bell-chamber above. These have been supplied by Messrs. Smith & Sons, of Clerkenwell.

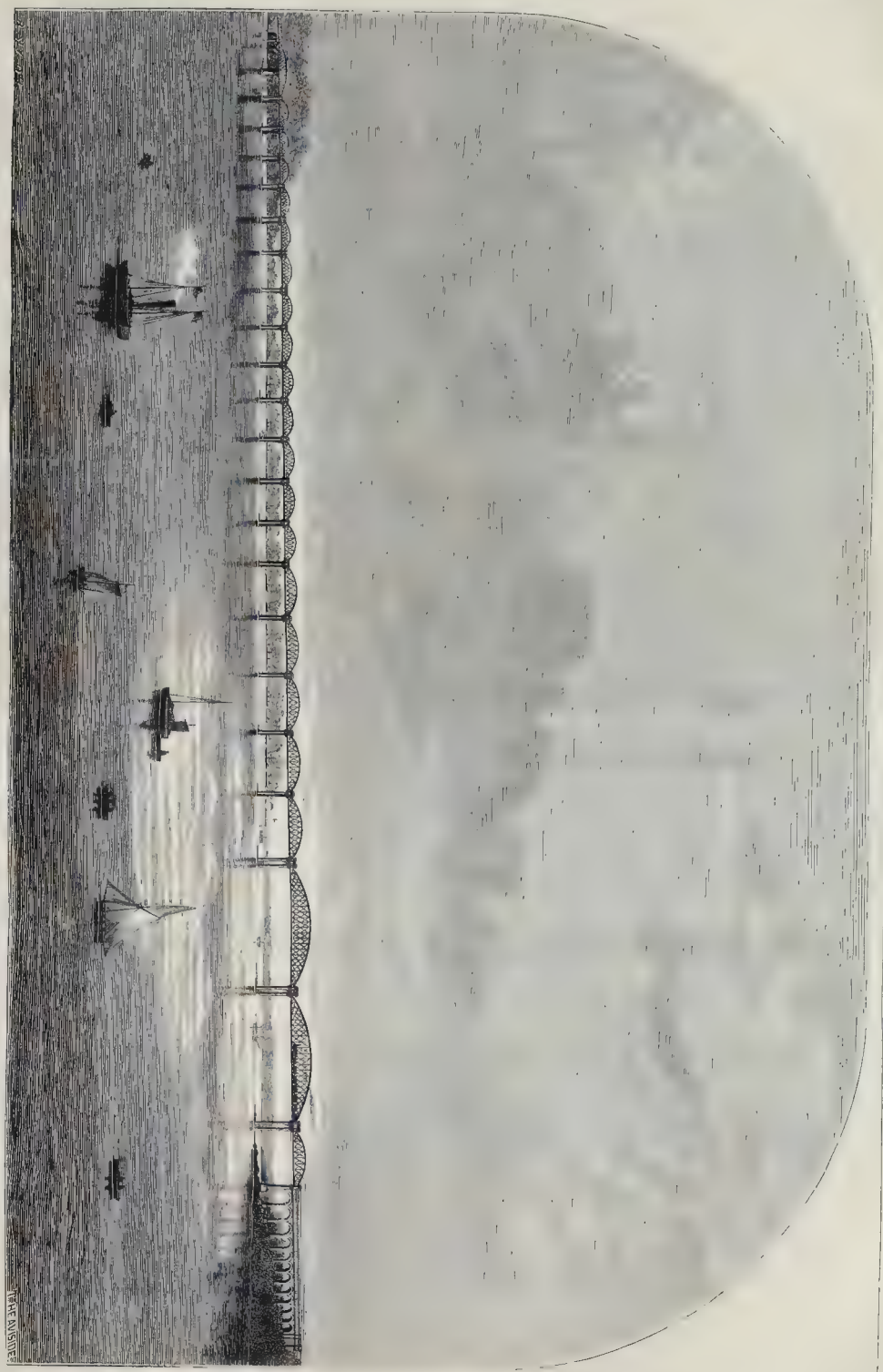
The amount of contract (exclusive of fittings) is 9,784*l.* The builders are Messrs. Hill, Higgs, & Hill, of South Lambeth. The clerk of works is Mr. A. Howard. The whole has been carried out from the designs, and under the superintendence of Messrs. Geo. Elkington & Son, architects, of Cannon-street, City.

Additional Surveyors for the Board of Works.—At the meeting of the Metropolitan Board of Works on the 16th inst., the Works Committee brought up a report recommending that in order to enable the engineer to complete the survey of the river banks, he be authorised to employ three additional surveyors until November next, at salaries of 5*l.* per week each, and to employ the present surveyors beyond the usual hours, which was adopted.





OFFICES FOR THE LEWISHAM DISTRICT BOARD OF WORKS.—MESSRS. GEO. ELKINGTON & SON, ARCHITECTS.



THE SEVERN BRIDGE.—MESSRS. G. W. KEELING & G. WELLS OWEN, ENGINEERS.

THE SEVERN BRIDGE.

THIS work may fairly claim to be one of national interest. It will be observed, on referring to the map of England, that the estuary of the River Severn severs a large portion of the country almost as completely as the Channel divides England and France.

The first existing bridge is at Gloucester, nearly fifty miles above the mouth of the river, so that the inhabitants on either side, although only a few miles from each other, are as much separated as if they were 100 miles apart. Moreover, the dangerous navigation of the river for boats has always very much limited the ferrying across from shore to shore.

Since the year 1845 many attempts have been made to bridge the river (for railway and other purposes) at various points between Portskewett or New Passage, and Newnham. Most of these schemes were either dropped or overthrown in Parliament through opposition. Two were, however, authorised in 1865, viz, the large bridge near Chepstow, two miles in length, designed by Mr. Fowler; and a bridge near Newnham, but these schemes were also in course of time abandoned.

The Severn Bridge now constructing was, after a severe fight in Parliament, authorised in 1872. Many difficulties had to be overcome in reconciling conflicting interests, which caused considerable delay in commencing the works, but the contracts were let in March last, and the works are now fairly in progress.

The Severn Bridge Railway, five miles in length, commences at Lydney by a junction with the Great Western and Severn and Wye Railways, crosses the River Severn near Purton Passage, and terminates at the Berkeley New Docks by a junction with the Midland Railway. It thus forms the long-needed connexion between the two sides of the river, it also shortens the distance from South Wales to London fourteen miles, and from South Wales to Bristol thirty miles. It is also of great local importance in providing a communication from the South Wales and Forest of Dean coal-fields to the Berkeley New Docks and the South of England: indeed, the great necessity of crossing the river cannot be better evidenced than by the fact that no less than five schemes were introduced the same session (1872) for bridges, three of which were at the point selected for this railway, and one scheme for a tunnel under the river near Portskewett.

The public companies locally interested, viz., the Midland Railway Company, the Gloucester and Birmingham Navigation Company, and the Severn and Wye Railway Company, have each subscribed largely to the undertaking.

The particulars of the bridge are as follow:—The portion across the river will consist of what are ordinarily termed bowstring girders resting upon piers composed of cast-iron cylinders sunk down and into the rock, and filled with concrete or brickwork. Commencing from the north shore, the spans will be as follows:—One 134 ft. 6 in. from centre to centre, two 327 ft. from centre to centre, five 171 ft., and thirteen 134 ft. The two spans of 327 ft. are across the navigable channel, and have a headway of 70 ft. above high water ordinary spring tide.

The headway of the remaining spans gradually decreases from 70 ft. to 50 ft.

The piers of the 327 ft. spans will consist of four cylinders, each 10 ft. in diameter, and will be founded about 44 ft. below low water.

The piers of the 171 ft. spans will consist of two cylinders, each 9 ft. in diameter, and will be founded at an average depth of 36 ft. below low water.

The piers of the remaining spans also consist of two cylinders, each of a diameter of 6 ft., and will be founded at an average depth of 15 ft. below low water.

The bed of the river is sand, and overlies the rock to an average depth of 25 ft.

On the north side of the river the bridge will be approached by a masonry viaduct consisting of twelve arches about 70 ft. in height, and on the south side of the river will terminate by an iron swing bridge over the Gloucester and Berkeley ship canal.

The swing bridge will consist of bowstring girders, 196 ft. in length, swinging on its centre, and covering two openings.

The total length of the bridge, including the masonry viaduct and swing span, will be 4,162 ft. The total weight of iron in the Severn Bridge is about 6,800 tons.

The contractors for the bridge are Messrs. Hamilton's Windsor Iron Company, Liverpool—190,000*l*. The contractors for the railway (about five miles in length) and masonry portion of the bridge are Messrs. Vickers & Cooke, London,—90,000*l*.

The engineers who promoted the scheme, designed the structure, and are now carrying out the works, are Mr. George William Keeling, M. Inst. C.E., Lydney; and Mr. George Wells Owen, C.E., Westminster-chambers, Westminster. The consulting engineer is Mr. Thomas E. Harrison, president of the Institution of Civil Engineers.

On Thursday, June 4th, the directors and their friends met at the site of the bridge, and the chairman, Mr. Lucy, laid the foundation-stone of the first pier. The directors were afterwards entertained at luncheon by the engineers.

We cordially wish success to this very important undertaking.

THE OLD CLOTHES MARKET, GLASGOW.

POSSIBLY an old-clothes market may not be regarded as a very important commercial institution, but when it is stated that the annual turn-over in the Glasgow "Old Clothes" Market amounts to something like 70,000*l*. per annum, and that the transactions of the traders extend over the three kingdoms, one may form a pretty accurate idea as to the extent of the interests involved. At the end of the last month, the humbler quarter of the city, about the Salt-market, where many of the old-clothes dealers and their customers reside, was *en fête*, the occasion being the opening of the new "Old Clothes" Market, which stands at the entrance to the Glasgow-green. The new building, which supplants the incommodious and unsightly structure, which for some years stood at the western entrance to the green, is built in the form of the letter L, one limb of which is 78 ft. long by 70 ft. wide, and the other 172 ft. in length by 63 ft. 6 in. in width, with frontages to Greendyke and Lanark streets. The frontage to the first of these streets is after the plain Italian style, with rusticated basement and windows, finished with ornamental frame-work. The interior walls are finished with fine white enamelled brick, the inside is divided into stalls to suit the requirements of the tenants, those on the ground-floor numbering 195 for retail and 36 for wholesale purposes. Galleries run all round the building, crossed at convenient distances by bridges, and these will accommodate 172 stalls. Light is admitted mainly through the roof, which is of open timber, cleaned, stained, and finished. There are three large arched entrances from Greendyke-street, while stairs to the right and left, each 9 ft. wide, will give access to the galleries. A small glass office is provided for Mr. Campbell, the lessee, in the centre of the entrance-lobby, from which point he can overlook the whole market. Towards Lanark-street the frontage is of brick, with ornamental white dressings to the windows. The entire flooring is laid with the finest Val de Travers asphalte, and provision is made for lavatory and other conveniences, so that the extensive business of the market may be carried on with comfort and cleanliness. The cost of the entire building is between 16,000*l*. and 17,000*l*., but as the lessee is bound to pay an annual rental of 2,000*l*., the burden of the cost will be removed from the shoulders of the ratepayers.

A MODEL CITY IN AMERICA.

A COMMERCIAL traveller, recently returned from the United States, has discovered a most remarkable enterprise in America, being nothing less than a large and first-rate city, being built by one man, the American "Crœsus," Mr. A. T. Stewart.

In New York, owing to exorbitant rents and heavy local rates, a great number of business men, with moderate incomes, are virtually banished from the city, and find riding to suburban districts cheaper than a New York residence, and there is of course a great demand for cottages and suburban villas; as a result, village after village and town after town have sprung up, in Long Island, New Jersey, and every point within an hour or two's ride.

Mr. Stewart, finding such to be the case, with his ample fortune started the happy notion of building an immense suburban city, and on the plan of keeping off the rate and other local burden-gatherers, and providing comfortable homes, with every English and American improvement, at a moderate rental or selling-price.

The capitalist went quietly to work, and purchased a valuable plot of land, in what English auctioneers term a ring-fence, and 10,000 acres in extent, in that part of Long Island known as Hampstead Plains. It is a compact tract, ten miles long and one mile across, and nearly a perfect parallelogram in shape.

Having surveyed and staked out the new suburban city, the next work was the roads, sewers, waterworks, gas-mains, pavements, culverts, and conduits for streets, churches, shops, and for blocks of buildings yet to be erected.

Simultaneously with laying the foundations of the houses was the erection of gas and water works, and the formation of a railroad, connecting this suburban city with New York.

Unlike the general system, no lots were advertised, nor has any attempt been made to dispose of the property, as the spirited builder intends to treat the city as a single house, erecting it first, and letting or selling it ultimately.

There will be no mayor, council, assessments for street improvements, no taxes for water or gas, no railway interference, no scramble to get emigrants from the mother country. The "father of the city" will find and keep his own police, firemen, and transport service.

An admirably-kept hotel, situate in the middle of a fine garden plot, together with about forty houses, are so far complete; and a whole army of builders and labourers are as busy as bees in June in fitting up this suburban hive. The houses as yet built are located in lots of about 200 ft. by 300 ft., and provided with out-houses and handsomely laid-out grounds, the latter under the direction of a Middlesex nurseryman and a clever landscape-gardener. Running waters of excellent quality both from the sea and springs intersect the estate. It is named the Garden City, and its advantages are so much appreciated, that, if every house were ready for occupation, there are more respectable would-be tenants' applications for residences than the city would hold.

One feature in the scheme is that the American laws give a cheap and clear title to sales of land or house property, and there will be no dedications of roads and paths to the public.

The places of amusement are to be an opera-house, theatre, concert-rooms, literary institutes, and a magnificent library.

Rowdy-bars and gambling saloons are to be strictly shut out, whilst respectable hotels and refreshment-houses will be provided.

Places of worship for Christians of all denominations will be built, and the Garden City bank and post-office will enable the residents to transact business without much trouble. The market will be for fish, flesh, poultry, vegetables, fruit, and corn. One excellent idea is the erection of the finest observatory in the world, and Lord Rosse's telescope is to be eclipsed. Colleges and schools are to be on an extensive scale.

Some of our readers will probably think that we have mistaken the name of the city, and that it should be called Utopia. We shall see.

EXPENDITURE ON THE UNPAVED FOOTPATHS IN CAMBERWELL.

THE Camberwell Vestry are about to expend the sum of 11,000*l*. in paving and kerbing the public footpaths within the parish, and at a meeting of the Vestry held last week the subject was discussed at great length, on a recommendation by the General Purposes Committee that the sum in question be expended at once. Mr. Dresser Rogers, in moving the adoption of the recommendation, made some statements as to the extent of these footpaths, remarking that there were 108 miles of them within the parish, and that of these 108 miles 45 miles had been tar paved, 33 miles York paved, and 30 miles gravelled. With reference to streets, he stated that 149 had been taken to under the 105th section of the Act, and that in addition to those 149 new streets, there were at the present time 25 new streets being proceeded with. The length of these new streets was 17 miles, and the work had been done at an approximate cost of 23,000*l*. What they had done was to pave as quickly as possible the poorer neighbourhoods, where fever and illness might have arisen from a want of paving. Relating to the subject of paving and kerbing the footpaths throughout the parish, he observed that they knew the work was an important one, and that the sooner it

could be proceeded with the better it would be. Camberwell was now in a good position. He remarked that some five years ago there were some 2,000 empty houses in the parish, whereas now, with the exception of passing tenants, there was scarcely an empty house in the entire parish. All this meant a large amount of rates, and it meant, too, that great improvements had taken place in the parish generally. The recommendation was ultimately carried unanimously, and the works are to be immediately proceeded with. 5,000*l.* of the amount required are to be borrowed, and repaid in ten annual instalments.

"SUBORDINATE TO THE ARCHITECTURE."

SIR,—Nothing can be more illogical than the reasoning of your correspondent, "W. C. T.," in his letter to the *Builder* on this subject. The real question is, *not* as to what department of art requires the most complete mastery of art in general. It is false reasoning to assume that pictorial art and sculpture should occupy precisely the same position to a great building as the brain does to the body. In a building the proper and primary object to be considered is its "destination" and practical purpose; then its decoration, which sculpture and painting are to contribute. There are many buildings requiring no such accessories, and which are complete without them. The genius of the architect, however, may so design them as to be works of high art,—prisons, hospitals, markets, bridges, magazines, baths, and the like.

But let us consider another and higher class of erections, as churches, houses of Parliament, courts of justice, town-halls, palaces, theatres; what would be thought of the Government, or other public body, who should go to the painter or sculptor to make the plan and design the arrangements of the courts, chambers, halls, staircases, and various requisites and conveniences absolutely necessary for worship, public business, or private convenience; for comfort and enjoyment; for accessibility and intercommunication? These are the first absolute technical requisites, and these being provided by the professional knowledge of the architect, the aid of the sculptor and painter is called in to add to the expression, dignity, and grace of a building, and to complete the harmony which high art,—a combination of the three sisters, — should produce.

The productions of a Scopas or a Polygnotus could not redeem a badly-designed building; consequently, the architect must be equal to his colleagues, as Phidias and Ictinus were in the Parthenon. Phidias, master as he was of the human form and all its combinations, would not have presumed to dictate to Ictinus the proportions of the Parthenon; nor would Ictinus have dared to suggest to the great sculptor the grouping or expression of the figures in the pediment, in the metopes, or on the bas-reliefs. The two must co-operate in council, and then will they best realise "the soul, thought, and purpose" of a building, as suggested by your correspondent.

But first in order of time and first in design must the architect necessarily be consulted,—decoration must be subsequent, not subordinately, but co-ordinately. Unfortunately, the great painters and sculptors who have tried their hands at architecture have done their best, or rather worst, to corrupt it: as Michelangelo, Boromini, Maderno, and others. The great Raffaelle is a solitary exception; for what he did he always did well.

"*Ne sutor ultra crepidam*," is a sound ancient proverb of Pliny's, and neither painter, sculptor, nor architect should attempt to encroach on the domain of his brother artist, to supersede him. The technical specialities of one art are too numerous, too absorbing, too intricate, particularly in architecture, to allow of one man being supreme in more than one special branch, and even in that how rare. Had Michelangelo never attempted architecture, such as the Medicean Library at Florence, or abstained from sculpture, he might have been a greater painter; or, abstaining from painting, he might have been the greater sculptor.

It is worse than useless, and tends only to excite unworthy jealousies and rivalry, to talk of inferiority and subordination between artists, who contribute to a great work. The greater difficulty to be overcome is the indifference of the authorities and of the public to the introduction of sculpture and painting, which they will not regard as essential to the completion of a great building. Architects fully recognise their importance, and do their utmost to get them allowed, and desire to get them introduced; but the public taste requires teaching up to this great principle, fully recognised in France. Look at our British Museum, one of the finest buildings in Europe, erected some forty years ago, and still left shorn of its power of expression by the absence of appropriate groups and statues upon its pedestals in front, on its pediment and on its attic podium! Look at the rare opportunities of experience afforded to our painters in our public buildings, so as to educate them for the execution of the pictures proposed for the Houses of Parliament, and for which ample space and place had been reserved by Sir Charles Barry; and how were the general expectations realised? We had men to prepare fine designs; but with rare, yet some brilliant, exceptions, how many failures were there in the execution.

The truth is, if the painter and sculptor dominate before the architect, their incapacity for the purpose will lead to the irremediable disgrace of our national monuments.

T. L. D.

JEREMIAH.

"The Hope of English Architecture."—*Quarterly Review.*

HOUSES built to last a season,
Contracts made to never keep;
Drainage absent, for the reason
That a cesspool is more cheap.
"Built to sell," is now the motto,
Architects are all at bay;
Palace, mansion, cot, or grotto,—
Jeremiah, clear the way.

Swamp or "shoot," it does not matter,
Up the brickwork goes by steam;
Walls, like roofs, are made to batter,
Settlements are in the scheme.
Carcass raised without a footing,
Auction'd off without delay,—
Finish'd work might bring in nothing.
Jeremiah, clear the way.

Draw your "blunt" at every story;
If your client comes to view,
Hodmen soon can make him hoary,
With a dash of lime or two;
Leave no ladders for ascension,
Lookers on must never stay;
Till it suits your condescension.
Jeremiah, clear the way.

Though Queen Anne may cross the borders,
Give no ear to all the "rot"
That you hear on Styles and Orders,
Galvanised by Greek or Goth.
Speculate and build the faster,
With the sunshine make the hay,
Brittle bricks and roadside plaster.
Jeremiah, clear the way.

Build as long as "flats" are ready
To be taken in and toss'd;
If your trade should grow unsteady,
Sell each carcass at its cost.
Never keep a single dwelling
On your hands a single day;
While you're building, still be selling,—
Jeremiah, clear the way.

Time is short, and art is shorter,
And men's health but lasts a day;
And their hearts, like bricks and mortar
Herein mention'd, rot to clay.
Notwithstanding this transition,
Scamp your work and sell, hurrah!
Architects have no position,—
Jeremiah, clear the way.

C. C. H.

THE COURTS AND ALLEYS OF GRAY'S INN LANE AND THE NEW ACT.

SIR,—In the notice you were good enough to insert of the report on this subject which I had presented to the Board of Works for the Holborn District, you state there is a point which strikes you as being "of very considerable, and indeed dangerous, importance," and that is, the including a large amount of good, sound, and in some cases valuable property, with the view of widening roads. You then ask, could this be done under the clauses of the new Act, which declares that in settling the compensation to be paid for any lands or interests in lands proposed to be taken there shall be no allowance in respect of the compulsory purchase of the same, without raising an irresistible storm of opposition?

The words of the clause bearing on this portion of the subject are as follow:—

"Whenever the compensation payable in respect of any lands, or of any interests in any lands proposed to be taken compulsorily, in pursuance of this Act, requires to be assessed, the estimate of the value of such lands or interests shall be based upon the fair market value, as estimated at the time of the valuation being made of such lands and of the several interests in such lands, due regard being had to the nature and the condition of the property, and the probable duration of the buildings in their existing state, and to the state of repair thereof, and all circumstances affecting such value, without any additional allowance in respect of the compulsory purchase."

The customary allowance for compulsory sale is 10 per cent. upon the fair market value: thus, if a freehold or leasehold interest were worth in the open market 1,000*l.*, the sum of 100*l.* would have to be added as and for the compensation to be given by reason of the sale not being a voluntary one so far as the vendor was concerned.

Having regard to the elastic nature of the wording of the clause I have quoted, and to the result which generally follows an inquiry into the value of property taken compulsorily, I have no hesitation in saying that the fair market value referred to in the clause would be ample compensation for the lands and the subsidiary interests therein proposed to be affected by my scheme.

I would also say, that the situation, surroundings, and general condition of the property embraced in the area with which I propose to deal are such, that I fully believe the freeholders, lessees, and all others concerned would gladly accept the terms of compensation as settled by the Act.

LEWIS H. ISAACS.

*** If the parish should proceed with the work on this assumption they would certainly find themselves in error. The scheme would require to be divided into two parts,—the widening of Gray's-inn-road is one thing, and the Improvement of the Dwellings of the Working Classes behind it is another.

The Holborn Board of Works have resolved that the reports of the surveyor and medical officer, together with the prepared plans, be forwarded to the Metropolitan Board of Works, with a request that they will proceed to put the Act of Parliament in force in that district, and a deputation of nine members was appointed to wait on the Metropolitan Board to urge upon them the desirability of putting the Act in force.

WINDOW GARDENS.

SIR,—Your interesting article, dated July 17, on "Peasant Gardening," encourages me to hope that you will perhaps allow space in your columns for "*pros* and *cons*." as regards the possibility of building workmen's cottages with a small receptacle for flowers in front of each window, so that each child, where not too numerous, might have its outside window-garden. The most ready substitute for the sloping-stone which now forms the window-sill would be cast-iron; and I am told it could be built into the cottages in the same manner that the stone slabs are now, at a less cost; but, perhaps, there may be a risk of breakage and expense in occasional painting. These are matters whereon I venture to ask information from yourself or correspondents. The small slab of iron could, of course, slope as the stone does now, and a series of small holes in front would carry off superabundant moisture.

Passing through the neighbouring village called Cefn, I was pained to see a miniature fernery outside a cottage window; for I knew how soon the little bits of stone, the soil, and the ferns would be swept away by rain and wind. It seems hard that those whose small patch of garden, when they have any, must be devoted to vegetables, could not have some encouragement and help given to them by the builder of their houses; and I hope you may feel disposed to look favourably on the idea.

ROSE MARY CRAWSHAY.

Cyfarthfa Castle, Merthyr Tydvil.

PRESERVATION OF NAILS.

SIR,—Referring to the inquiry of "J. S. P." in your impression of June 26, perhaps he has used *iron* nails. If he had used *zinc* or *copper*, I think he would have found a different result. At all events, I never hear complaints from the gasworks, where I have done work, about the nails.

ALFRED BEADY.

INFORMATION FOR ENGLISH BRICKMAKERS.

THE Japanese having successfully shipped immense quantities of capital bricks to California, and other handy foreign markets, are now negotiating with an English shipping firm for importing into this country a continuous supply; and what is more, several of the cleverest Japanese workmen have been in our brickfields at different times, and made themselves well acquainted with English brickmaking. Unlike the Prussian bricks, which are about half the weight and size of English bricks, the Asiatics mould to any weight and size.

The bricks supplied to the American builders are 8½ in. long, 4½ in. wide, and 2½ in. thick, and are red, grey, black, and yellow. Some are so hard that a trowel cannot halve or cut them. The Americans levy a duty of 20 per cent. on the value of every cargo imported, and even with this check the Japanese brickmakers and merchants are rapidly making large fortunes. It will be a paying concern at this distance, as no "duty" will have to be met.

WHERE THE KENSINGTON GRAVEL CAME FROM.

THE other day the Geologists' Association paid a visit to the new Natural History Museum which is slowly rising in Cromwell-road, South Kensington, and at the same time inspected the section of gravel which has been exposed by the excavations. Professor Maurice came from Oxford on purpose to talk to them about it. He first drew attention to the appearance of the section. There were layers of angular and of rounded flint stones, there were lenticular patches of sand, and there were layers of clay. The section altogether was about 18 ft. deep, and a deeper excavation in the opposite corner proved that 3 ft. below where they stood was the London clay. Between the deposition of the London clay and the gravel, which here lay directly upon it, there was a vast gap in time, a gap marked by depositions in other parts of the country and of Europe. In that time the Pyrenees, the Alps, and the Himalayas had been raised to mountain chains. Turning to the examination of the gravel itself, he said the rounded pebbles probably came from the Woolwich or Oldhaven beds, which were themselves the result of the disintegration of some previous area of chalk with flints. The angular flints of the gravel were the result of direct chalk disintegration, the flints being deposited without any long wearing process. Then besides these rounded flints and the angular flints there was a small per-centage of other pebbles, viz., hard sandstones or quartzites, for which we know no parent source nearer than Leicester or Wales. The per-centage of these is about seven, and they are supposed to have come in from the "high-level gravels"—that is to say, the old "high-level gravel," such as at Muswell-hill, is known to contain fragments borne from all the rocks of England,—Cumberland Shap Fell granite, silurians, Devonian, coal measures, and lias oolites. The Professor mentioned that at Muswell he had in one afternoon collected specimens of all. In the formation of the lower-level gravels, such as this, at a later period, and under totally different physical conditions of the country, some of these previously long-journeyed fragments got mixed up. In a pit three-quarters of a mile away remains of elephant, red deer, and ox had been found. The only remains found on the spot where they stood was a tooth of the mammoth.

ENGLISH WORKMEN AND MANUFACTORIES IN RUSSIA.

NOTWITHSTANDING several strong cautions from the English Embassy in Russia, advising English artisans to steer clear of St. Petersburg and other parts of the Muscovite dominions, numbers of our best workmen are over there, and are continually arriving at Moscow, St. Petersburg, and neighbouring places.

It further appears from a report recently presented to the Technical Society of St. Petersburg that a large portion of the manufacturing establishments of Russia are in the hands of foreigners, the majority being English.

In the district of St Petersburg, for instance, foreigners possess 28 out of 32; in the province of Moscow, 22 out of 47; in the district of the Vistula, 6 out of 14; and in the Baltic provinces, 21.

The total number of works for the construction of engines, without counting the Imperial Works, is 167, three-quarters of which number make locomotives and other railway plant, as well as marine steam engines, and building ironworks.

The larger portion of these foreign works is situate in Poland; next in order come the Baltic provinces, then the provinces of the centre and of the south.

The 167 establishments possess 422 engines and 476 boilers, of a total force of 6,162 horse-power, employing 41,382 workmen. These consume yearly 133,800 tons of pig-iron, 164,898 tons of wrought-iron, and 127,000 tons of fuel, of which about 100,000 tons consist of coal and coke.

An English manufacturing chemist, who has been in Moscow for some years, is also about establishing large chemical and soap works at Moscow; and whilst the Imperial Government are encouraging foreigners to settle in Russia, the workmen are placed under the most arbitrary laws, and find it of no use appealing to their Embassies for redress and protection, for the workmen become naturalised Russians, and are treated as such. The pay is good.

BUILDING ACCIDENTS.

Kensington.—An inquest has been held on the body of John Bryan, a bricklayer in the employ of Messrs. Trollope & Son. For some time past Messrs. Trollope have been building upon arches at Queen's-gate. Everything went on satisfactorily until last week, when preparations were made for taking away the centreing from three arches forming the flooring of some stables at Queen's-gate. One of the arches had been finished two months, and the deceased and a man named Brown were engaged in knocking away the boards and supports. The whole came down with a terrible crash, killing the deceased and severely injuring Brown. Mr. Foster, the foreman, said he could not possibly account for the occurrence; but Mr. James Matthews, manager to Messrs. Trollope, urged that as some of the tiles used in making the arch had been less baked than others, their absorbent qualities were different, and the cement having been absorbed, the structure gave way. All materials used were of the very best quality, the Barham Company supplying the tiles, and Messrs. J. B. White & Co. the cement. Verdict, "Accidental death."

Bell-yard.—An inquest was held on the body of Daniel Skeen, a bricklayer, who is alleged to have lost his life through the negligence of the foreman where he was employed. John M'Carthy, a labourer, said that on Wednesday last he was engaged at some new buildings for the Law Fire Insurance Office in Bell-yard, Temple Bar. The deceased was also at work there in an excavated hole about 7 ft. below the surface of the ground. A large mass of the concrete wall gave way, and before the deceased could get away it fell upon him, knocking him to the ground, and almost covering the lower part of his body. He was extricated in about five minutes, placed in a cab, and taken to the hospital. Witness considered the place where the deceased was working was dangerous, and the wall immediately above him ought to have been shored up. Joseph Jessell said he was employed as foreman of the works going on at the Law Fire Insurance Office. He knew the deceased as a skilled and practical workman, and that was the reason he had appointed him to do the work. He did not consider the wall required shoring up, and there did not appear anything dangerous about it before it fell. John Perry, labourer, said he was working at the building at the time of the accident. He considered the deceased was working in a dangerous place, and that the wall, which was being undermined at the time, should have been shored up. It was the foreman's duty to have looked to that. He said nothing about it for fear of being discharged. The jury returned a verdict of "Accidental death," and recommended that the foreman should be more careful in the future.

The New Temperance Hall, Newbury. The works in Northcroft-lane are being pushed forward by Mr. James, the contractor, and the building has been so far advanced as to prove that it will be an ornament to that part of the town. Arrangements are in progress for the opening ceremonial. The architect is Mr. Henry Flint, jun., of St. Mary's-hill.

APPRECIATION OF ART.

AT the Mansion-house banquet, on the 17th inst., the president of the Royal Academy said,—In proof of the increased appreciation of modern art which existed at the present time, he hoped he might be allowed to mention that within the last ten days the trustees of the National Gallery had purchased for the nation a beautiful but a very early picture of Gainsborough for the considerable sum of upwards of 1,200*l.*, which picture was painted for a great patron of art, a predecessor in the office which his lordship so worthily filled,—that Lord Mayor who is better known by the name of Alderman Boydell—who gave so great a stimulus and encouragement to art by his spirited enterprise in the production of the Shakspeare Gallery, which contained no less than 170 engravings from the works of Sir Joshua Reynolds, besides many others from the works of the eminent artists of the day. On the same occasion a picture by Richard Wilson produced the still larger sum of upwards of 1,800*l.*, and when it was known that the fine companion picture now in the National Gallery, "The Villa of Mæcenas," was sold by the artist for the miserable sum of 25 guineas, we could form some idea of the enlarged appreciation of art which now exists. He might mention one more remarkable example which occurred under their own personal knowledge—that of a gentleman with whom he was proud to have the honour of being acquainted—who offered the princely sum of 10,000*l.* for Landseer's noble picture of "The Stag at Bay"; and still more wonderful, the lady to whom the picture belonged, and who was by no means a very rich lady, declining the tempting offer, writing from Scotland to say that although she felt highly flattered that her picture was so much appreciated, yet that no sum of money would induce her to part with Landseer's *chef d'œuvre*.

IN RE VICTORIA EMBANKMENT.

SIR,—But one opinion, I think, can be formed regarding the wondrous improvement to our great metropolis arising out of the above, as well the bright spots of green and trees which adorn its roadway; but, Mr. Editor, it is a most extraordinary thing that in all the reclaimed land from the former black and unsightly river mud, there has not a tree been planted under which either now or in future years can any visitor expect to screen himself from the glaring sun,—one of the secrets of the enjoyments which spring out of a garden. To see persons compelled to hold up their umbrellas, or screen themselves by spreading out a "*Times* newspaper," is, I think, somewhat out of place. There has been one tree of matured growth planted in Charing-cross garden which seems to have had its day; for it appears to have died, and "made no sign," and under whose arrangement one of the most important points in the garden has had a crook-back tree planted which appears half dead and shapeless, I know not. But, sir, it is not enough to plant trees; there should be some order in their beauty. Do urge its removal, and in its place let there be a "deodora" or a "weeping ash," not one of either sort being in the gardens. See the former in Greenwich Park, as its brightest ornaments, but do prompt to an expectation of a shady seat under some bough or nook, the beauty of which let any one stroll down the path in Kensington Gardens from Prince's-gate, and see. I know all is new, but everything must have a beginning. A seat under a leafy foliage is not looked for on a lawn, unless allowed. I find the Embankment is being strewed with clippings from the trees again. Sir, we do not want them higher, but more extended in leaf. The public want shade, not tall trees. Had they been like those in Victoria or Battersea Park, what a picture we should have had, instead of the dreadful crooked-backed abortions which stare at us as we enter from the City. W.

The Patent Office Museum and the National Portrait Gallery.—In the House of Commons on the 15th inst., Lord H. Lennox, in reply to questions from Sir H. Johnstone and Mr. B. Hope, said he had been empowered by the Government to enter into negotiations with the Commissioners of the Exhibition of 1851 for the purpose of acquiring part of their property at South Kensington, the object being to obtain suitable sites for a Patent Museum and for a National Portrait Gallery, which he hoped would not be unworthy of the objects.

BOARD SCHOOLS.

Aberdare.—The new Board schools lately erected in Clifton-street have been opened. The buildings are in three departments, viz., for boys, girls, and infants, each having a general school-room and two class-rooms. The boys' and girls' school-rooms are L-shaped, and the infants' T-shaped. There are also master's and mistress's private rooms. The exterior is faced with tooled Pennant stone, with Cradley stone dressings; slated, and with an ornamental bell-turret in the centre. Internally, the whole of the walls are lined with brick, dado high with glazed bricks, and coloured above. Lavatories and hat-pegs are arranged in the entrances, and Macfarlane's apparatus is employed for the latrines. Mr. Everal, of Malvern, was the contractor for the whole of the work. Mr. David Grier acted as clerk of the works; and Messrs. Alexander & Henman, of Stockton and Middlesbrough, designed and superintended the carrying out of the building. The buildings will accommodate 1,000 children, and have cost 7,500*l.*, or 7*l.* 10*s.* per head.

CHURCH BUILDING NEWS.

Radcliffe. — The foundation-stone of St. Andrew's Church was laid on the 10th inst. The site is near the main road from Bury to Radcliffe, and the edifice comprises nave, with clearstory and side-aisles (to be used only as passages), spacious chancel, well elevated from the nave, and adjoining are the vestry and organ-chamber. The tower and spire are at the north-west angle, and on the ground-floor form one of the principal entrances. Contiguous thereto is the baptistery. Accommodation is provided for 500 persons. The contract for the erection of the church has been undertaken by Mr. George Napier. Mr. John Lowe, of Manchester, is the architect; the cost being about 5,000*l.*

Sandon (*Hertfordshire*).—The parish church of All Saints, Sandon, was re-opened on the 18th ult. by the Bishop of Rochester, after restoration. The church consists of nave with north and south aisles, chancel, west tower and south porch. The length of the interior is 109 ft., the width 43 ft. The ancient portions of the fabric include the work of three centuries, viz., thirteenth,—the nave arcades and chancel arch; fourteenth,—the north and south aisles of the nave, and the tower; fifteenth,—the chancel complete, with its roof, the south porch, two windows in the south aisle, and the upper part of the nave walls. The nave and aisle roofs are modern, except a few fragments in the north aisle. On the south side of the chancel, at the foot of a window, are three ogee arches under a horizontal hood-moulding, with pinnacles and crockets. The restoration has included the repair of the walls, masonry, windows, &c., of the nave, aisles and chancel, the partial repair of the roofs, clearing out the interior, cleansing the masonry and restuccoing the walls; also re-flooring and re-fitting the church. The ivy-covered tower and porch remain in a half ruinous state. Care has been taken to preserve all ancient features and only to repair the damage caused by decay or modern mutilations. The passages are paved with plain red and black tiles, and the chancel floor with Minton's tiles. The new seats in the nave are of deal varnished. The ancient benches which remained have been refitted at the west end of the church. The work has been executed by Mr. Edward Brown, builder, of King's Lynn. Mr. Christian was the architect.

Whitley.—Christ Church, Whitley, commenced in 1861, may now be said to have received its crowning touch by the erection of a spire. The church, as originally built, from the design of Mr. Woodyer, of Grafham, Guildford, involved an expenditure of 7,000*l.*, and subsequently, school-buildings and a parsonage were added.

Hitchin.—The memorial-stone of the new Baptist Church in Walsworth-road has been laid by Mrs. Pegg, of Chesham. The new building, which is already well advanced, is to be in the Early Decorated Style. The material used is mainly red brick, with stone dressings. There will be three vestries, and the building will accommodate about 730 persons. The architect is Mr. J. W. Chapman, of London, the builder being Mr. G. Jeeves, of Hitchin.

Tandridge.— The parish church has been re-opened, after restoration and enlargement. A north aisle has been added and a new vestry built, the cost being about 1,300*l.* The designs were by Sir G. Gilbert Scott (who gave his services), and they were carried out by the builder, Mr. William Worssell, of Oxted. The reredos, executed by Messrs Farmer & Brindley, Westminster, is of stone, with subjects carved in alabaster, and surmounted by carved canopies. In the centre is our Lord bearing His cross; on the north side, the anointing His feet; on the south, His appearance to the apostles. On the north side is a statue of St. Peter with the keys, and on the south St. John, with the cup and serpent. The walls of the sanctuary are lined with encaustic tiles. The east window is of three lights, representing "The Crucifixion." On the north side of the sanctuary is a two-light window, the subject being "Giving of alms." On the south side are "The three Marys at the Tomb." On the south of the chancel is a two-light window; subject, "Our Saviour appearing to St. Mary Magdalene in the garden." The font, of stone on marble pillars with carved capitals, has carved on it the "Agnus Dei," the "Pelican in her piety," the "Holy Dove," &c. The west window, of four lights, has "The Annunciation," "The Nativity," "The Burial," and "The Ascension." In the new aisle at the west end is a three-light window, "The holy Women at the Sepulchre." In the tracery are two angels with scrolls, "Sanctus." One three-light window represents Moses, David, and Isaiah; and another, Abraham, Isaac, and Jacob.

Chailey. — The foundation-stone of a new church at the northern end of the extensive parish of Chailey has been laid, a site on the North Common, close to the main road, having been presented by the Earl of Abergavenny. The edifice will be dedicated to St. Mary the Virgin, and is intended as a chapel of ease to the parish church, and also as a memorial chapel to Mr. Robert Willis Blencowe and Mrs. Blencowe, late of the Hooke, in this parish. The style of architecture is Early English, and the chapel will consist of nave, chancel, vestry, entrance porch, and turret. A south aisle will be added. The east window will have five lights, and the west window four. The vestry will be on the north side, and lighted by two windows. In the north and south walls of the chancel will be five windows, and in the north wall of the nave three. The cost of the building will be about 2,500*l.* The architect is Mr. John Oldred Scott, of London (son of Sir Gilbert Scott), and the builder Mr. Carruthers, of Reigate.

Ipswich.—The church of St. Helen, Ipswich, has been re-opened after restoration and enlargement. The alterations are mainly confined to the west end, where stood the old tower, which was in a decaying and tumbledown condition. A new tower and spire to the south of the old site have been built. The height is 80 ft., measuring to the top vane, and the walls are of concrete, faced with flint, with Bath stone dressings. At 44 ft. the tower terminates with a battlemented parapet, from which springs the spire. In the west end of the church, which is also of flint, with Bath stone dressings, has been placed a five-light window, the height being 21 ft. and the width 13 ft., in the Perpendicular style in correspondence with the rest of the building. Above this window, as also above the east window, is a quatrefoil opening, and the gable is surmounted with a stone parapet and a cross. A door has also been placed in the end of the south transept. In the interior the walls have been cleaned, the benches denuded of their thick dark coat of paint and varnish, and repainted in a lighter shade. The extension of the church affords accommodation for seventy additional persons. In the place of the ceiling the roof is boarded to the ridge; this mode being adopted for the whole church. The alterations, &c., have been carried on under the superintendence of Messrs. Barnes & Bisshopp, architects; the contractors were Messrs. J. B. & F. Bennett; and the cost has been about 1,300*l.*

Hawthorn Bank (*Lincolnshire*). — The new Church of St. John the Baptist here has been opened. The edifice with its adjacent school and vicarage-house, together with the land they stand on, and an endowment of 300*l.* a year, has been provided at the cost of nearly 20,000*l.*, by Miss Johnson, of Fairfax House, Spalding. The church is of stone, the exterior of Ancaster, with Casterton stone dressings, the interior of Corsham or Bath stone, the pillars of the arcades being of the blue Sheffield stone. The style is Early English. The church consists of a nave of five bays, with north and south aisles; a chancel with organ chapel, and vestry in its north side; and crypt under the sacrarium; a south porch and a bell tower over the west entrance. The length of the nave is 73 ft., and the width 26 ft.; the aisles, 73 ft. by 9 ft. 6 in.; the chancel, 36 ft. by 23 ft. The height of the nave to the wall plate is 30 ft., to the ridge 48 ft.; the chancel is 28 ft. from the floor to the wall plate, and 44 ft. to ridge. The building is covered in with Collyweston slates. The school is also built of stone.

DISSENTING CHURCH-BUILDING NEWS.

Sibsey.—A new Wesleyan Chapel has been opened in this village. Its style is Early decorated Gothic, the front next the road having a five-light traceried window in the centre, with doors on either side into the porches. The material used is red brick, with white stone dressings from the Ancaster quarries. The front gable is mounted by an apex stone, bearing date 1874, with an iron finial on the top. There are seven buttresses projecting on either side, with six Gothic pointed windows in the spaces between, glazed quarry-shape, with tinted cathedral glass, by Mr. Langstaff, of Boston. The roof is covered with slate, and the ridge with crested tiling. The interior of the building has an open-timbered roof stained and varnished. The walls are boarded with picked red deal, and, like the pulpit and seating, which are of the same material, will be stained and varnished. The floor is boarded throughout. The pews are open benches with reclining backs and seats, each fitted with a book-board, with space under for the feet and hat-pins. The pulpit is reached by four steps on either side, and is supported on a carved centre column, from which spring moulded and cut brackets. Over the pulpit, on the end wall, is an arch with moulded and carved capitals. The heating apparatus, by Mr. W. Barton, of Boston, consists of a Gill stove, of new construction, cast in ring sections. The building will accommodate about 400 persons, and is estimated to cost 1,490*l.* Messrs. Bellamy & Hardy, of Lincoln, were the architects; and the work has been carried out by Mr. Samuel Sherwin, of Boston, builder.

Rough Hills (*Wolverhampton*).—The memorial stones of a new Primitive Methodist Chapel have been laid at Rough Hills, near Wolverhampton. The old building being small and inconvenient, the members of the society determined to erect a more commodious chapel, which is now in course of erection. It is situated almost opposite the Parkfield Furnaces, and will front the Parkfield-road leading from Ettingshall-road Station, on the London and North-Western Railway. It will be of plain brick, will accommodate 300 persons, and will cost about 600*l.* The contract for the building, obtained by Mr. W. Pritchard, of the Highfields, near Bilston, is for 432*l.*; but, independent of this, there will be some additional expense in levelling the surface round it, and erecting palisading, &c.

Toppings, Turton (*near Bolton*).—A new Wesleyan chapel has been opened here. The chapel is of brick, with blue brick bands and strings, and stone dressings, in the Gothic style of architecture. It will seat 324 persons, and has a scholars' gallery at one end (over the vestibule), and the minister's vestry at the other end, with choir vestry over the same, and cellar underneath, for the heating apparatus. The cost, inclusive of heating, lighting, boundary-walls, &c., will be about 1,600*l.* Mr. William Townson, of Bolton and Astley Bridge, was the contractor, and Mr. Thomas Ormrod, of Bolton, the architect.

Bulwell.—On the 24th ult., the memorial-stones of a new Baptist Chapel were laid at Bulwell, near Nottingham. The new building will stand in the street leading to Basford. The style of the new chapel is Early English. The building is being constructed of the local stone, with rock face and Derbyshire stone dressings to the windows and doors. The whole of the woodwork in the interior, including that of the open-framed roof, will be stained and varnished. When finished, the chapel will seat about 600 persons. The work is being executed by Mr. S. Sadler, builder, of Bulwell; the architects are Messrs. W. F. & R. Booker.

Norwich.—A new church, dedicated to the Trinity, has just been constructed in Norwich for the Presbyterian community, and opened for divine service. Purchased for 2,000*l.*, St. Peter's Hall has been converted into the present church. In constructing the new church, Mr. E. Boardman, the architect, has adapted as much of the old building as it was possible to harmonise with his design. The structure, described as Lombardo-Gothic in style, has a frontage of 59 ft.,

and extends back 71 ft. Externally it is faced with white brick, with Bath stone dressings, and the façade, which is pointed, is in line with a flat-pitched roof, and has ornamental mouldings of Cossey bricks. In the centre is a wheel-window, 14 ft. in diameter. The entrance consists of a triple doorway, the central one being the largest, with circular arches and shafts of polished Scotch granite, and above is an ornamental frieze. There is a square tower at the south-west corner, lighted with circular-headed windows. This will be 100 ft. high. The entrance lobby is to be paved with encaustic tiles. The gallery, reached by a stone staircase, extends over the lobby and halfway down the sides of the church. The flat ceiling is panelled, and inserted in it are sun-lights and ventilators. The church is supplied with pitch-pine backed benches for 700 persons. The pulpit is pitch-pine, carved, and stands upon a platform within a railing. At the back of the buildings are vestries, &c. The contractor is Mr. S. Hall, of Pottergate-street. To Mr. Wilkins was entrusted the bricklaying; to Mr. North, the plastering; to Mr. F. Want, the stonework; to Mr. Self, the gasfittings; to Mr. Harvey, the glazing and painting; and to Mr. Sabberton, the foundry-work. The total cost will amount to 3,600*l.*

Newcastle-on-Tyne.—The corner-stone of a new United Methodist Free Chapel and Schools at St. Peter's Quay was laid on the 22nd of June. The erection of the chapel is delayed for the present. The schools now building adjoin the chapel, and comprise a room 60 ft. by 24 ft., and 16 ft. high, two class-rooms, and a vestry, together with yard and out-offices. The walls of the buildings are constructed of stone, and the architecture is of an early type of English Gothic. The gable of the chapel, 50 ft. high, facing Walker-road, will contain a triplet of lancet lights above two deeply-recessed pointed doorways, forming the principal entrances, the whole flanked by massive buttresses. The large schoolroom, when seated for a congregation, will accommodate about 260 adults, and when used for educational purposes will, with the class-rooms, contain about 220 children. The cost exclusive of the site (presented by Mr. G. Luckley) will be about 1,280*l.* The chapel will be 63 ft. by 30 ft., and 34 ft. high internally, and will accommodate (including small gallery over the entrance-lobby) 370 persons. It is estimated to cost 1,360*l.* The contractors for the schools are:—Masons and slaters, Messrs. Middlemiss Brothers, Corbridge; carpenters and joiners, Slater & Son, Newcastle; plasterers, Montgomery & Son; ironfounders, Walker & Emily; plumbers, painters, and glaziers, G. Walsh & Son, Halifax; warming apparatus, Dinning & Cooke. Mr. Septimus Oswald, of Newcastle, is the architect.

Dunkeld.—The new Free Church at Dunkeld is now all but completed, and will be opened on the first Sunday in August. The architect is Mr. Smart, of Perth. In consequence of the building being flanked right and left by other houses, only the *façade* is visible. The frontage consists of a large gable with a tower at each side,—the western tower terminating in a slated spire, 85 feet high. These towers are pierced with doors and louvre windows, and the gable proper is lighted by a large traceried four-light window of stained glass, the whole terminating with a Grecian cross. The interior of the church measures 60 ft. by 40 ft., and is appointed in pitch-pine wood, in some portions carved. The pulpit is of the platform style, and the building is capable of seating 1,000 people. The roof is painted in blue, relieved by golden stars, and a memorial window to Lord Dalhousie has been executed, at a cost of 100*l.*, by Messrs. Ballantyne & Sons. The cost of the building amounts to 2,000*l.*

Maidstone.—The memorial-stone of the new Congregational Church in the West Borough, Maidstone, has been laid. The present church was built in 1873, in the semi-Gothic style of architecture, and was designed by Mr. Henry Bridge, the builders being Messrs. Cox Brothers & Bridge. It was made to seat over two hundred people, the dimensions being 43 ft. by 36 ft. 6 in. The whole of the land was not built upon when the church was erected, sufficient ground being left on which to build a larger church, and, if necessary, a minister's house. A meeting of church members was held in February, 1874, to take into consideration the desirableness of building a larger church, when the smaller edifice would be used as a school-room, and in accordance with resolutions then passed, plans were prepared by Mr. Pertwee, architect, of Chelmsford; and the building is now being carried out under his direction. Mr. Avard is the builder, and the contract price is 3,127*l.* The church, which is of the architecture of the thirteenth century, will accommodate 500 persons.

SUGGESTED AMALGAMATION OF THE INSTITUTE AND THE ASSOCIATION.

THE suggestions of your correspondent, "R. E. P.," upon this subject comprise the annihilation of the Institute, and the formation of an entirely new Society of a much lower character. An Association not to consist of artists and professional men only, but a mixture of builders, plumbers, painters, glaziers, paper-hangers, quantity measurers, or of men of any or no calling whatever, under the convenient class of those "whose pursuits (it may be trade) are allied thereto, and are therefore qualified to concur with architects in the advancement of architectural knowledge." It is stated, "that the Fellows have fallen short of what was required and expected of them." Consequently of the ten members on the proposed Council or Committee four only are to be Fellows; three Associates! two Students! and one honorary member, who may be of the trade, or nothing at all; in the ratio of six of this class to four Fellows, and two of the six to be unfledged tyros of students! A charming amalgamation. A mechanic is compelled by the Schoolboard to pay a fee of some 3d. per week for his child's education in the Board schools; but in this new society the student is treated as of the pauper class, and to pay little more than 2d. per week for the instruction he will gain in this new society. And some being so poor, if they are clever and gain prizes, they shall be scot-free. It seems in the eyes of "R. E. P." that the funded property has been "accumulated for no known purpose." So it is to be applied "to help the lame dog over the stile which prevents him reaching the *meat he craves*." Read this, ye Fellows and Architects, and consider the objects and aims of our juvenile *Reformers* and legislators.

A SENIOR.

LIABILITIES OF COMPANIES FOR THEIR SUB-CONTRACTORS.

DONNEGAN *v.* DARLINGTON FORGE COMPANY.

THE claim in this action, in the Darlington County Court, involved a law point of considerable importance to firms employing sub-contractors or middlemen, and to workmen engaged and paid wages by the middlemen. It has been some time a question with lawyers and magistrates, whether the "heads," such as companies, could be sued for wages by men whom they never engaged, or whether workmen were *de jure* their servants or the sub-contractors'.

Mr. Donnegan, a labourer, has at last given a blow to the middlemen system, that may lead the "heads" to reconsider the policy of sub-contracting for labour.

The plaintiff stated that he was engaged by a person on the works, named Targett, and he started work in April last. He worked three weeks altogether. On the Monday in his last week he went to work, but was taken ill. He told the furnaceman he was had, and asked him to tell the hammerman, and he then left the works. He went the next evening and worked up to Friday, but 16s. was stopped from his wages, because he did not stop on Monday night. When he was there he was paid by the hammerman.

Mr. John Hodgson, the secretary of the company, denied employing the plaintiff, or that his name was on their books. The man, no doubt, had been employed by one of their sub-contractors.

Mr. Raine, solicitor for the company, contended that the defendants were not liable. The plaintiff should have sued the sub-contractor who employed him.

The Judge (Mr. E. R. Turner) said he was of opinion that the plaintiff had sued the right party, and that the sub-contractors were in the light of agents to the defendants. He should, therefore, rule that the company was liable for their contractors, and give judgment for the plaintiff for 16s., with costs.

WORKING MEN'S CLUB AND INSTITUTE UNION.

ON the 17th instant, the thirteenth general meeting of this Association was held at the Society of Arts, the Earl of Rosebery in the chair.

Mr. Hodgson Pratt, vice-chairman of the executive council, read an abstract of last year's report, from which it appeared that fifty-five new clubs had been affiliated, making a total of 321 now in connexion with the union. The total number of the clubs and institutes known to the society, whether in union or not, was 644, estimated to comprise 103,040 members. The union had issued, on loan, nearly 4,530 volumes during the year to clubs having 24,000 members.

It was moved by Earl Fortescue, and seconded by Sir H. Cole, and unanimously resolved, "That there are few social reforms of greater importance to this country than the substitution of clubs and institutes for public-houses as places of resort for the recreation and business of the working classes." It was also resolved "That workmen's clubs and institutes are calculated not only to diminish excess in the use of intoxicating liquors, but also to promote self-culture and the growth of a healthy public spirit among the mass of the people."

STONEHENGE.

SIR,—The paragraph entitled "Stonehenge," in your issue on the 17th inst., refers to my operations there as having occurred "last week," that is between the 4th and 10th July. Permit me to make a correction, which, apparently trivial, is really of essential consequence. My main purpose was to test the astronomical theories which have been propounded to explain the structure, by making complete observations of its relation to the sun at the summer solstice, 21st and 22nd June. That was, therefore, the time chosen for the survey.

The work is so detailed that some time is necessary for its reduction. But already certain angular values are apparent, which are so unexpected that I am disposed to postpone the publication of results until after a further series of observations and verifications at the winter solstice, or perhaps I may publish the drawings in the meantime for the assistance of those who are interested in the question, and reserve the descriptive and exegetic text for a later volume.

W. J. COCKBURN-MUIR.

A SURVEYOR FINED FOR UNLAWFUL ENTRANCE.

ON the 15th inst., before the Mayor (Mr. W. B. Maltby), and Mr. Jos. Maltby, Michael Drury, the city surveyor of Lincoln, was summoned by the police for having, on the 13th July, while a *fête* was going on in the Arboretum Grounds, unlawfully entered the Park, other than by means of the gates, to wit, by getting over the fence on the north side of the park, contrary to the bye-laws for the management of the grounds. Police-constable Pritchett proved that the defendant got into the Arboretum Grounds on Tuesday afternoon, by getting over the fence on the north side. Pritchett told him that he had instructions from the chief-constable not to allow any one to get into the park that way, but defendant got over, and said it would be all right. Mr. Williams, for the defendant, said Mr. Drury was entering the Arboretum in discharge of his duty as a corporation officer, and that the bye-laws did not apply to him as to ordinary persons. Mr. Williams also showed that there was no intent to evade payment of the fee for entrance, as he offered to pay the money to the police-officer, who refused to take it. The magistrates, after retiring, said that though there was no imputation of any wrong motive, there had clearly been an infraction of the bye-laws, and he must pay a fine and costs amounting to 10s.

The surveyor expresses his indignation as follows:—

"Sir,—I wish to express some of the intense indignation and disgust I feel at the whole course of proceedings in which I was concerned at the magistrates' meeting this morning. The summons I looked upon as being merely a mischievous joke; but the result is, I am gravely informed, that although no moral blame is attributed to me, yet I have infringed a bye-law, and must pay the penalty. I am, therefore, actually fined, when, in fact, I consider an apology was fairly and properly due to me for being brought to such a degrading situation. In my office of corporation surveyor I report upon the state of the buildings and premises of the Arboretum, superintend works, and, moreover, am held responsible for the stability of the stand at the *fêtes*, having been forcibly instructed by Ald. Brogden, soon after the occurrence of the accident at the racecourse; and I hold that, as a necessity for the fulfilment of my duties, I ought to have free and unrestricted access to the Arboretum, as well as to all the rest of the corporation property. In all innocence I infringed the mere letter of the bye-law, which I felt was not obligatory upon me by virtue of my office. I was perfectly open in my proceedings; there was nothing crafty, underhand, or to be hidden. I did not stay in the grounds, but went steadily upon my business, with the *astounding* result that I am brought before the magistrates.

MICHAEL DRURY, Corporation Surveyor.

Lincoln."

BREACH OF CONTRACT.

FOX *v.* WINTER.

THIS was an action for damages for breach of contract, at Derby Assizes, before Mr. Justice Field. The plaintiff, who is a builder, residing at Stretton-on-Foss, in Leicestershire, tendered for the erection of a slaughterhouse, &c., for the defendant, who is a butcher at Derby, for the sum of 340*l.* It seems, several interviews between the plaintiff and defendant had taken place, at various times, on the subject of the contract, and on the 7th day of August, 1874, plaintiff called upon the defendant at Derby, by appointment, when it was arranged that plaintiff should have the execution of the work, which was to be commenced on the Monday following. The plans and specifications were delivered to the plaintiff, who, on the following Monday, the 14th of August, accompanied by his foreman, went to Derby, and commenced the work. Lime, timber, and bricks were ordered by the plaintiff, who left his foreman on the ground, to proceed with the work. Plaintiff's foreman then began to arrange for the delivery of the materials, set a labourer to work, and was doing everything necessary for executing the contract in accordance

with the plans and specifications. On Wednesday, the 16th of August, defendant asked the plaintiff's foreman for the plans and specifications, which were given up to him, on receipt of which he said, "I discharge you from proceeding with the work, as I intend to do it myself." The work was afterwards let to another person of the name of Bingham, a builder, of Derby, who executed the work. Plaintiff and his foreman swore to the above facts. Defendant, in his evidence, alleged as a reason for what he had done, that the plaintiff had signed no written agreement, consequently there was no contract between them. He swore that the plaintiff had promised to bring a written agreement with him, and that it was to be signed before the work was proceeded with. The plaintiff claimed for journeys for himself and foreman on several occasions, loss on lime and timber, and 10 per cent. profit on the amount of his contract. Verdict for the plaintiff for the full amount claimed.

CHEAP INSPECTION.

SIR,—Inclosed I send an advertisement, taken from the *York Herald*, for an inspector of nuisances, at a salary of 90*l.* per annum, to include travelling expenses, likewise to have a knowledge of surveying and of taking levels, and to devote the whole of his time to the performance of such duties. Can you inform me what kind of testimonials the Authority will require, as I think, if such-like salaries are given to inspectors, there is no wonder that work is done in a careless manner and slipped over (see, for instance, the case alleged against a sewer contractor, mentioned lately in the *Builder*), for really men will not look after work as they ought to do in a position of inspector of nuisances, and to pay all their own expenses, for, I might term, a mere wage of a London bricklayer's labourer. SUB.

[The district comprises twenty-seven parishes.—ED.]

VARIORUM.

THE *Technical Educator* for July (a valuable work), speaking of "Curves," says:—"Curves will be found to be beautiful just as they are subtle in character; those which are most subtle in character being most beautiful. The arc is the least beautiful of curves (I do not here speak of a circle, but of the line, as a line, which bounds the circle); being struck from one centre, its origin is instantly detected; while the mind requires that a line, the contemplation of which shall be pleasurable, must be in advance of its knowledge, and call into activity its powers of inquiry. The elliptic curve, or curve bounding the ellipse, is more beautiful than the arc, for its origin is not so strikingly apparent, being formed around two centres. The curve of the egg is more beautiful still, being formed round three centres. As the number of centres necessary to the formation of a curve increases, the difficulty of detecting its origin also increases, and the variety which the curve presents is also proportionally great; the variety being obviously greater as the number of the centres from which it is struck is increased."——From the new part of Cassell's "Old and New London," we take a paragraph about "Whitehall Gardens":—"Down to a comparatively recent date, these gardens were called by the old name of the 'Privy Gardens,' but this has now become changed to 'Whitehall Gardens,'—a name given to a row of houses in the rear of the Banqueting House, which, until the formation of the Victoria Embankment, had its gardens and lawns sloping to the Thames. Whitehall Gardens were very fashionable residences in the reign of William IV. In 1835, No. 1, the present home of the National Club, was the Town residence of the Marquis of Ailsa, and afterwards of the Dowager Marchioness of Exeter; and further on were the houses of Lord Farnborough (better known as Sir Charles Long) and the Earl of Malmesbury. Here, too, lived, in the time of Pitt and Fox, old Lady Townshend, who in her early days had been one of the 'queens of society' in the court of George II. Here used to drop in of an evening George Selwyn and the other wits of the age; and it was said of her by Sir N. W. Wraxall that, 'in the empire of mind, she had succeeded to the place left vacant by Mrs. Hervey and Lady Mary Wortley Montague, in the previous generation.' The Right Hon. Benjamin Disraeli took the house, No. 2, in 1873, after the death of his wife, Lady Beaconsfield."——The *Pictorial World* says,—"The young ladies of Warsaw, Kentucky, have set a good example. English Benedicts would, we are sure, rejoice if the fair sex of our own 'tight little island' would only follow it. Unfortunately, however, they are not likely to. They love finery too much; just as a certain famous statesman's motto was 'Register, register, register!' so is their motto 'Dress, dress, dress!' But we have not yet explained what the example in question is. Let our lady readers listen. The young ladies of the far-away district named have signed what is called, and rightly too, 'a pledge of economy.' The substance of this pledge is, that during twelve months,—from May 1st, 1875,—they will not purchase any dress material costing over twenty-five cents a yard, that they will observe strict economy in the household, and use all means in their power to lighten the burdens of husbands and fathers. Certainly, seeing that Warsaw is by no means financially prosperous just now, there was especial necessity for these considerate Kentucky maidens coming to the determination they have. Still, the fact remains that they have set English women an excellent example. 'Twere well if the wives of our struggling clerks and artisans would take it to heart; an they did, happiness would be brought to many a humble English home."—— A writer from Rome, in the *European Review*, says:—"The salvation of Rome from inundation forms but a small portion of General Garibaldi's whole scheme, which embraces nothing less than the redemption of the entire Roman Campagna, the reclaiming of the waste lands of the Agro Romano, the amelioration of the sanitary condition of Rome and its neighbourhood. This theme is too vast to be even touched upon in the present article, but it is even more important than the one of which we have treated; for it must be borne in mind that even when Rome shall be preserved from inundation, it does not by any means follow that it will be preserved from malaria, which malaria is derived, not from exhalations of the Tiber, as some have erroneously supposed, but from the inert soil and the noxious vapours and gases that arise from the innumerable swamps, bogs, fens, and marshes in which the Campagna abounds. One thing is certain, that in this, as in all other undertakings of his life, Garibaldi, having once put his hand to the plough, will not turn back till his work is done. We have been with him in many phases of his eventful life: wandered with him along the olive-clad mountains of his native Nice, listening to his narrations of past battles fought for his country; to his aspirations for the future; we have stood by him in the hour of triumph, when from the Volturno he telegraphed to Europe 'Victory along all the line'; we have watched by his bed of pain, upon which the royal bullet, winged from the 'Bitter Mount,' had laid him; we have gone through the French campaign with him, so fraught with difficulties and dangers that were not merely military; and now our last memory of him is as we left him yesterday in his wooded seclusion of Frascati, studying, in utter solitude, maps and charts of the Roman Campagna, absorbed entirely in studies for the achievement of the material amelioration of the condition of the people to whose moral development his whole life has been devoted."

Miscellanea.

Average of Life.—A return made by the Registrar-General, in compliance with an order of the House of Lords, shows the average age at death among different classes in the healthy county of Rutland on the one hand, and on the other hand in the Superintendent-Registrar's district of Liverpool, of Manchester, and of Salford, all of which three have a high death-rate. The classes distinguished in the return are (1) the gentry and professional persons and their families; (2) tradesmen, &c., and their families; and (3) labourers, mechanics, and servants, and their families. The return extends over the thirteen years 1861-73. It appears, then, that in the county of Rutland the tradesmen class average at death an age not greatly below that of the gentry, but the labouring class only three-fourths of that age; but in the three towns the tradesmen class average only about two-thirds, and the labouring class not much more than half the age of the gentry. In the towns the average age of the labouring class at death, and also of the tradespeople class, is only about two-thirds of the same class in the county of Rutland. Taking 1873, the last year in the series, we find that in the towns no less than 8,394 of the 19,117 deaths,—that is, nearly 44 per cent.,—were of children under five years of age; but in the county of Rutland only 129 of the 417 deaths or less than 31 per cent.

The Endowment of an Almshouse at Bristol.—The property left by Lady Haberfield for the endowment of an almshouse in Bristol, has sold so well that it produced 50,000*l.*, or nearly 10,000*l.* more than the will was originally proved for.

Baptist Chapel and Schools, Brearley.—These new buildings occupy a commanding position on the incline of the picturesque hill-side to the south of the district of Brearley. The site has been given by Mr. John Hodgson, of Sunderland House. On the ground floor is the chapel, approached by an easy flight of steps and inclined walk leading into a capacious vestibule. The organ recess is raised above the general body of the chapel, under a moulded archway resting on columns and corbels, and immediately in front is the minister's platform. The baptistery is placed under the communion, and is approached by stone steps to the ends; the sides and bottom lined with white tiling, the sides being glazed. The boys' and girls' schools are on the same level as the chapel, and have direct communication therewith. Internally, the roof timbers (which rest upon fluted and moulded stone corbels) and joiners' work generally are intended to be stained and varnished. The buildings are stone-built, and the walls to the west and in contact with the hill-side are built hollow to prevent damp. The style is Romanesque in treatment. Accommodation is provided in the chapel and school for 650. The buildings are fitted up with gas and water. Ample ventilation is provided, and the chapel and school-rooms are warmed by hot water apparatus, provided by Thornton, of Huddersfield. The total cost of works, including boundary walls and appurtenances, will be 3,000*l.*, and the works have been carried out principally by local contractors. Messrs. Horsfall, Wardle, & Patchett, architects, of Halifax, have designed and superintended the erection of the building.

The Sanitary Condition of the War Office.—In the House of Commons, on the 19th inst., in reply to Colonel Gilpin, Mr. Hardy said it was no doubt true that there had been many complaints with respect to the arrangements at the War Office, and especially that part which was called Buckingham House. The Board of Works had inspected the drainage, and they stated that the building was drained by earthenware pipes of a modern construction; that the drains were flushed every week by mains provided for that purpose; and that they were at all times kept in good order. The ventilation of the closets throughout the building had, no doubt, been very bad, and after careful investigation it had been determined to remove them outside the building, and it was hoped that in this way the evil complained of would to a great extent be remedied. That was what had been recommended by the Army Sanitary Commission. With regard to the deaths, he believed it was true that four officers had died since 1871, but he was unable to say that it was owing to the state of the ventilation.

Compensation for Forced Sale.—At the Sheriffs' Court, Red Lion-square, on Monday, the case of "Tildesley and Another *v.* The Great Western Railway Company," was tried before Mr. Under-Sheriff Burchell and a special jury. This was a compensation claim of about 3,400*l.* for some land at Hayes, required by the company to widen the line, and now used by Messrs. Tildesley & Mintee, of Irongate-wharf, Paddington, contractors, for making large numbers of bricks. A novel question as to the usual allowance of 10 per cent. for compulsory sale was raised. Mr. Baylis, Q.C., and Mr. Howard Payn were for the claimants; Mr. R. C. Webster for the company. The case lasted two days, and the difference of opinion as to the value of the property was remarkable. On one side the claim was 438*l.*, and on the other the estimate was about 3,400*l.*, and on the 10 per cent., as the full value of trade profits, was the only question before the jury. Mr. Under-Sheriff Burchell thought it was not a case for the usual 10 per cent. for a forced sale, as it was for trade profits only. The jury assessed the compensation at 800*l.*

Submarine Cables.—Mr. John Pender, M.P. at the meeting of the Eastern Telegraph Company, stated that the various sections of the Eastern system, with the exception of a short end of a short line at Lisbon which was undergoing repair, were in perfect working order. But of far greater importance, as affecting the future of submarine cable enterprise, was the announcement that the Suez and Aden section, which was laid in comparatively warm water, had improved in insulation by no less than 38 per cent., and the other cables of the Eastern Company from 45 to 77 per cent. in insulating power, which is, of course, the chief element in estimating their capacity for the transmission of messages. Mr. Pender further stated that the cables longest laid have improved the most

Excavations in Brittany.—An account has been published in a paper of L'Orient of researches which have been undertaken at Carnac, in Brittany, by Mr. James Miln, a member of the Scottish Archæological Society. He has been at Carnac for about a year, employing twelve men daily in excavating under his own eyes, and has discovered a great number of specimens of pottery, for the most part Roman, with fine free-hand ornamentation. The lower portions of the walls of a building have been unearthed, and they seem to be the remains of a Roman bath, there being an oblong piscina, and the leaden pipes for the water being in excellent preservation. Brick furnaces have been found at one extremity of the large chamber. The lower courses of the building on the outside are ornamented with a symmetrical arrangement of little shells, and a square asphalted surface near what seems to be a well appears to have been a sort of platform for the bath. Mr. Miln thinks that the remains of this building indicate the existence during the period of Roman rule of a considerable town at this spot.

The New Hospital at Warrington for Infectious Diseases.—Mr. Vawser's plans for this new hospital are now completed. The building is to be one for utility merely, comprehending everything that will favour the cure of infectious diseases, without a penny spent on ornamentation, or on matters of taste. In principle the plan of the proposed hospital is that of the new St. Thomas's Hospital, recently erected on the banks of the Thames, opposite the Houses of Parliament. The accommodation consists of a series of detached one-story buildings, to the right and left of a central covered way, so that each building is perfectly isolated, and yet to be reached by the attendants and medical men conveniently and without exposure. These separate detached wards, with porters' and nurses' apartments, and ample administrative accommodation, seem to us to comprehend all that the necessities of the case require, and to give opportunity for a piecemeal erection, if that should be thought the best.

The Owner of a Grand Stand sent to Prison.—At the Glasgow Sheriff Criminal Court, before Sheriff Clark, Duncan Brown, of Market-street, Bridgegate, was sentenced to four calendar months' imprisonment, without the option of a fine, for culpable and reckless violation or neglect of duty, arising out of the accident which occurred at Shawfield Recreation Grounds, Rutherglen, on the 17th of April, when a wooden stand, composed, as alleged, of old rotten decayed wood, fell and injured a number of persons who were witnessing some sports. The details in connexion with the fall of the stand were published in the *Builder* at the time of the occurrence. The defendant was the proprietor of the structure, and the evidence of practical witnesses went to show that there was a total want of all the appliances for distributing the strain and proportioning the load, and that there was not a bolt in the whole structure.

The Rainfall.—The weekly return of the Registrar-General states that at the Royal Observatory, Greenwich, no less that 3·27 in. of rain were measured last week, of which 2·39 in. fell during the forty-four hours ending at 7 a.m. on Friday; so large an amount of rain has not fallen in London during any week since the last in September, 1871, when 3·34 in. were measured. In the other large English towns furnishing weekly returns, the rain measured last week ranged from 0·32 and 0·56 of an inch in Bradford and Leeds, to 3·04 in. in Bristol, which was the nearest approach to the rainfall in London, and the result has been considerable destruction of property. In two low-lying districts of Bristol,—Baptist Mills and Bedminster,— the water rose 3 ft. into the houses, and the strange phenomenon was seen of men swimming in the streets.

Attempted Suicide by an Architect.—At the Manchester City Police-court, last week, John Spencer Raby, architect and surveyor, of Cottenham-street, Chorlton-on-Medlock, was charged on remand with attempting to commit suicide in the Rusholme-road Cemetery, on the 7th of June. On the day named the prisoner was found by Police-constable Oxley (C division) in Rusholme-road Cemetery, suffering from the effects of having taken a quantity of nitric acid. The prisoner was now out of immediate danger. The accused, who said he knew nothing about the matter, was committed for trial at the sessions.

Ladybank School Board. — This Board have agreed to expend between 300*l.* and 400*l.* on the accommodation and improvements connected with the Madras School here. They propose to erect a new class-room,—remove the old one and erect new offices,—and also to build a west boundary-wall of substantial mason work, with iron gates as a main entrance. The expenses connected with the class-room and offices will require to be fully rated for, as the time had expired for lodging claims for additional accommodation before the Board took action in the contemplated improvements. The following tradesmen have been the successful contractors:—Mason work, Messrs. Morris & Williamson, Ladybank; joiner work, A. Aitken, Freuchie; slater and plaster work, Dick & Low, Ladybank; plumber work, W. Brownlee, Kingskettle.

Gift of the Site for a New Chapel at Chester by the Duke of Westminster.—The Baptist denomination, who have a small chapel in Pepper-street, wished to build a new one on a somewhat larger site; and a requisition signed by many of the members of the congregation was sent to the Duke, respectfully asking that two cottages might be sold to them at a fair valuation. The Duke, naturally enough, inquired about the building which it was proposed to erect, and plans were submitted; but it soon became evident that if there was to be a chapel adequate to the wants of a rapidly-increasing congregation, and also school accommodation, of which the present dilapidated building is entirely destitute, the site must be enlarged. Accordingly, his grace has given the four cottages, and in all probability he will open a bazaar in aid of the building fund, which will be held next month. The chapel is to cost about 2,000*l.*

Bursting of a Reservoir.—Thirteen lives have been lost through the bursting of a reservoir supplying the Monmouthshire canal. The reservoir is situate at Cwm Carn, about ten miles from Newport, on the Western Valleys line of the Monmouthshire Railway. In consequence of the continuous rains of the past few days, the embankment, formed of sand and gravel, was carried away by the swollen waters, about eleven o'clock on Wednesday night. Sweeping down a steep valley, the mass of water thus released came to the turnpike road, which is carried on an embankment across the Dingle, and made a clear breach of forty yards through it. Thence the flood extended to the canal embankment, a quarter of a mile farther on, and forced a gap in the masonry and earth banks, thus augmenting the force and volume of the torrent.

As to the Adulteration Act.—The food analyists appointed to ferret out the villainous dispensers of adulterated food and drink, and at some expense to the London ratepayers, have, up to the present time, produced but short returns to the expectations of the ill-used consumer. St. George's, Hanover-square, is a rich parish, and when the authorities have moved in the prosecution of the adulterers, by some means the wrong parties have been sued; and the vestry have had to pay costs—an issue that appears to have scared the inspectors, for the "Act" is now a dead letter in Belgravia, Grosvernia, and Pimlicolia, and the other metropolitan parishes do not appear to be more alive to the interests of their poor parishioners.

Constantinople. — It is stated (says the *Levant Herald*) that the Sultan has abandoned the idea of erecting the new mosque on the heights of Beshiktash. His Majesty is understood to have decided upon bestowing on his eldest son, Prince Yussuf-Izzedin, the block of houses which he originally intended should form an endowment for the projected fane. As regards the unoccupied land which was to have been the site of the mosque, &c., the Sultan has, it is said, made a present of it to his mother, the Validé-Sultana. It may be remembered that the new mosque, which was to have borne the name of its founder, was to have cost some T.800,000*l.*

Proposed New Public Park at Hampstead.—A proposal has been made and taken up in an influential circle at Hampstead to purchase forty, fifty, or sixty acres of the Conduit-fields, lying between Hampstead and St. John's Wood, for the purposes of a public park, and to preserve the land as an open space. The owners of the land, which it was intended to build upon, have expressed themselves ready to sell the quantity mentioned at 1,000*l.* an acre, on condition that it shall be kept open for ever.

Church Restoration in Warwickshire,—The Bishop of Worcester opened the newly-restored church of Farnborough, near Leamington, last week, and there was a large attendance of the clergy and laity of the county. The church, which is of Norman architecture, has been restored under the direction of Sir Gilbert Scott. The restoration included the removal of the transept and the gallery, the building of a new aisle, raising the nave roof, raising the tower, and the erection of a spire. The bells have also been repaired, two new ones added; and a new organ will also be placed in the church. The entire cost of the alterations will be about 4,000*l.*

The late T. L. Rowbotham.—Mr. T. L. Rowbotham, member of the Institute of Painters in Water-colours, an artist whose works are well known, and who died at the comparatively early age of fifty-two, has left a widow and eight children almost entirely unprovided for. It is proposed to raise a sum of money for investment for the benefit of the family; the widow to have the interest during her lifetime, and the principal to be divided equally among the children after her death. Mr. W. H. Benyon-Winsor (Winsor & Newton), Rathbone-place, is acting as hon. secretary.

The late Mr. Baylis.—We hear with regret of the death, at the age of eighty, of Mr. Thomas Baylis, of Thames Bank, Fulham, whose name was well known a few years ago as owner of the adjacent Prior's Bank, to which residence, it may be remembered, a chapter of Mr. Dillon Croker's interesting "South-Western Sketches," quoted in our columns some two years since, was devoted. Mr. Baylis was a keen antiquary, and was in familiar intercourse with many of the celebrities of his day, including the late Lord Lytton, who was much attached to him.

Arsenic in Blue Wall-papers. — Mr. Leonard W. Sedgwick, M.D., of Gloucester-terrace, Hyde Park, writes to the *Times*:—"Every one knows that very many green wall-papers contain arsenic and are poisonous. Not every one knows that there are pale-blue papers equally deleterious. Latterly my wife and I have suffered much in the manner that people do when poisoned by arsenical vapours. As a matter of curiosity, I analysed my bedroom paper, which is a pale blue. It contains a large quantity of arsenic."

Proposed Market Hall at Goole.—It is proposed to erect a market-hall in Goole, at the corner of Booth Ferry-road and Estcourt-terrace. Mr. Bennett, of Grove House, purchased at Doncaster the market which has been in use for some time, and this will be erected; while a building will also be put up in connexion with it, which will provide a number of shops in the front, shambles, and also public offices, with a tower rising to a considerable height. A company is in course of formation, so that the necessary capital may be raised.

Victoria (Philosophical) Institute.—The usual monthly meeting of the Council was held at the Institute's house, 10, Adelphi-terrace, on Monday. Twenty-four new members were elected, among whom were,—The Lord O'Neill, the Bishop of Meath, the Bishop of Melbourne, General Taylor, the President of Queen's College, Belfast, Professor Appelbe, Principals Ralph, Gotch, Edwards, Canon Walsham How, and others. The total number of members was reported to be 637.

Sale of Manley Hall.—Mr. Ellis Lever, who recently purchased Manley Hall and grounds, the late residence of Mr. Sam Mendel, in Manchester, has just sold the whole of the property to a firm of capitalists, who purpose, by the issue of 500,000 1*l.* shares, to convert them into a fashionable place of resort for summer and winter, after the style of the Alexandra Palace, London.

Oxford.—Adjoining the Radley Station of the Great Western Railway a considerable extent of land has been set apart for building purposes, and twenty acres have been let for building, on leases of 999 years, at 10*l.* per acre. The ground has been laid out by Mr. Galpin, of Oxford, and Mr. Badcock, of Abingdon. The buildings will be commenced as soon as the crops are off the land.

Woolwich. — The foundation-stone of St. Michael and All Angels' Church, Woolwich, was laid on Thursday, the 15th inst., by the Lord Bishop of Rochester. Mr. J. W. Walter is the architect, and Messrs. Kirk & Randall are the builders.

Preserving Wood.—M. Lostal, railway contractor, of Germany, has communicated to the Society of Mineral Industry, at St. Etienne, France, the results of his observations on the effects of lime in preserving wood, and his method of applying it. He piles the p'anks in a tank, and puts over all a layer of quicklime, which is gradually slaked with water. The wood is said to acquire remarkable consistence and hardness, and to be quite safe from decay.

Primitive Methodist Chapel, Newbury. In answer to an advertisement that appeared in the *Builder* a few weeks ago (May 8th), the trustees received twenty-one sets of designs, and have decided to accept (conditionally) the plans sent in by Mr. Joseph C. Curtis, Wellington-square, Ox'ord, builder. The stipulated cost is 2,000*l*. The design is described by its author as "Gothic upon a Greek cross."

A New Police Station at the East End.—A new police station is now in course of erection in Commercial-street, near the Great Eastern Railway Station, and will replace that now in existence in Church-street. The new building, which is progressing rapidly, stands singularly enough in three parishes, namely, Shoreditch, Norton Folgate, and Spitalfields.

Discovery at Pompeii.—The *Pungulo* of Naples reports an interesting discovery at Pompeii, consisting of a number of wooden tablets with writings. They were found carefully arranged in an ivory box. The backs of the tablets are smooth and unwritten upon, and their faces, upon which the writing is found, are surmounted with a kind of frame or border.

New Fever Hospital for Glasgow Suburbs. The foundation-stone of a combination fever hospital for the burghs of Partick, Hillhead, and Maryhill, was laid recently. The cost of the building will be about 10,000*l*., which will be provided by the three burghs.

Obelisk at Southsea.—A stone obelisk has been erected by Commodore de Horsey on the Clarence Esplanade at Southsea to the memory of the officers and men who died during the epidemic of yellow fever on board Her Majesty's ship *Aboukir* at Jamaica in 1873-4.

Joiners' Strike at Saltburn.—The strike of the joiners at Saltburn for an increase of wages to the extent of ½d. per hour, which has lasted for three weeks, has been brought to an end by some of the men agreeing to the masters' terms.

Earls Barton.—A new floor has been laid in the chancel of the parish church, composed of tiles, the pattern being designed by the Ven. Lord Alwyne Compton. There are twenty-six different patterns. The floor was laid by the Minton Tile Company (Minton, Hollins, & Co.).

Opening of Trinity Wesleyan Chapel at Halton.—On the 15th inst., Trinity Wesleyan Chapel, Halton, erected at the sole cost of Mr. Thomas Hazlehurst, of Beaconsfield Villa, Higher Runcorn, was opened for public worship.

The Channel Tunnel Bill.—In the House of Commons, on Monday, the standing orders having been suspended, the Channel Tunnel Bill was read a third time and passed.

Open Spaces.—In the House of Commons, on the 14th inst., Mr. Whalley brought in his Bill to preserve the open spaces in the metropolis, and it was read a first time.

The new Marylebone Police-court, situated in Seymour-place, Bryanston-square, was opened on the 16th inst. for the transaction of public business.

A District Surveyorship.—Mr. David Roper, District Surveyor of St. Saviour's, Southwark, has resigned his appointment.

TENDERS

For rebuilding Apton Hall, Canewdon, Essex, exclusive of basements, for Mr. Henry Mew. Mr. John W. Morris, architect:—

Thipthorp	£2,920 0 0
Heywood	2,889 18 7
Saunders	2,759 0 0
Bangs	2,625 0 0
Scott (accepted)	2,620 0 0

For building new workshop and sundry alterations at No. 126, Old-street, for Mr. W. H. Farrow:—

		Extra if painted.
Smith	£545 0 0	
Woodward	490 0 0	£14 0 0
Allen & Son	427 0 0	13 0 0
Jarvis & Sons	395 0 0	10 14 0

For new Primitive Methodist Chapel, Seymour-place, Marylebone-road. Mr. A. J. Rouse, architect:—

Dover, Son, & Co.	£1,929 0 0
Goold & Brand	1,877 0 0
Temple & Forster	1,859 0 0
Potter	1,798 0 0
Wagner	1,730 0 0
Crabb	1,676 0 0
Beach, Bros.	1,654 0 0
Colebrook	1,575 0 0
Lose	1,550 0 0
Steed, Bros.	1,549 0 0
Turner & Enderson	1,275 0 0
Toogood (too late)	1,251 0 0
Brindle	1,245 0 0

For additions to the Gun Tavern, Blackwall. Quantities not supplied. Mr. F. F. Holsworth, architect:—

Sheffield	£1,497 0 0
Bangs & Co.	1,352 0 0
Earl & Son	1,293 0 0
Johnson	1,147 0 0

For additions and alterations to house and premises, No. 9, Albert-terrace, Knightsbridge, for Dr. Cahill. Mr. H. H. Collins, architect:—

Cohen	£1,020 0 0
Macintosh	989 0 0
Vernal	956 0 0
Stimpson	945 0 0
Morland & Nixon	865 0 0
Mark	837 0 0

For alterations at the Old King's Head, No. 173, Blackfriars-road, for Mr. Miller. Mr. E. L. Farraire, architect. Quantities by Mr. J. Waghorn:—

Ware	£697 0 0
Ward	597 0 0
Chapman	489 0 0
Stimpson	482 10 0
Canning & Mullin	457 0 0

For alterations and additions to Burley Wood, near Newbury, Berks, for Col. Crichton-Stuart, M.P. Mr. Henry J. Gordon, architect. Quantities supplied:—

Shapley	£4,715 0 0
Adey	4,683 0 0
Little	4,576 0 0
Meaders	4,499 0 0

For house and shop and ten cottages, at Bishopstoke, for Mr. Henry Wheeler (bricks, lime, and sand excepted). Mr. W. H. Mitchell, architect:—

Chapman	£1,869 0 0
Jacobs	1,850 0 0
Dyer	1,740 0 0
Barney	1,649 0 0
Nichols	1,584 0 0
Langman (too late)	1,549 0 0
Rowland (accepted)	1,450 0 0

For additions and alterations to chapel, East-hill, Wandsworth. Mr. E. C. Robins, architect. Quantities supplied:—

Nightingale	£4,293 0 0
Stimpson	3,988 0 0
Brass	3,797 0 0
Sharpington & Cole	3,597 0 0
Hobson	3,594 0 0
Tunnell	3,592 0 0
Hill, Higgs, & Hill	3,579 0 0
Taylor	3,560 0 0
Newman & Mason	3,326 0 0
Adamson	3,367 0 0

For new schools, Rotherhithe New-road, for School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. W. H. Barber:—

Pritchard	£7,280 0 0
Enmore	7,200 0 0
Cowland	7,193 0 0
Jerrard	7,173 0 0
Cooper	7,125 0 0
Roberts	7,075 0 0
Shephard	7,027 0 0
Grover	6,993 0 0
Nightingale	6,983 0 0
Hill, Higgs, & Hill	6,980 0 0
Hobson	6,957 0 0
Kirk & Randall	6,880 0 0
Thompson	6,825 0 0

For alterations at the Rose and Crown, High-street, Highgate, for Mr. Thos. Arno. Mr. Edward Brown, architect:—

Sommerville & Smith	£1,072 0 0
Pringle	1,060 0 0
Loaring	1,052 0 0
Brown	1,052 0 0
Stamp & Bowtle (accepted)	995 0 0

For the erection of the Primitive Methodist New Chapel, Dorchester. Mr. Samuel Jackson, architect. Quantities supplied by the architect:—

Guy & Son	£650 0 0
Bartlett	625 0 0
Davis & Son (accepted)	600 0 0

For the restoration of Kimbolton Parish Church. Messrs. Haddon, Brothers, architects:—

Welsh & Son	£1,845 0 0
Page & Son	1,645 0 0
Edwards	1,492 0 0
Hine (accepted)	1,350 0 0

For new Mission Church, Howle-hill, near Ross:—

Pearson & Son	£1,400 0 0
Coleman, Bros.	1,160 0 0
Bowers	1,150 0 0
Griffiths (accepted)	1,140 0 0

For additions to Hill House, near Leominster, for Mr. T. Burlton. Messrs. Haddon, architects:—

Smith (accepted)	£1,235 0 0

For the Hereford City and County Working Boys' Home. Messrs. Haddon, architects:—

Welsh & Son	£2,245 0 0
Griffiths	1,975 0 0
Bowers	1,900 0 0
Ford	1,780 0 0
Lewis (accepted)	1,730 0 0

For foundations of new church, Stepney. Mr. Ewan Christian, architect:—

Downs & Co. (accepted).

For rebuilding Nos. 6 and 7, London-street, Paddington, for Messrs. Flower & Sons. Messrs. Lee, Bros., & Pain, architects. Quantities supplied:—

Simpson & Sons	£4,118 0 0
Roberts	3,947 0 0
Patrick	3,912 0 0
Pain	3,907 0 0
Thompson	3,823 0 0

For stables, stores, workshops, shedding, &c., at Riverside Wharf, near Cremorne-gardens, for the Chelsea Vestry. Mr. G. H. Stayton, C.E., architect:—

Mills	£385 0 0
Neave & Son (accepted)	339 0 0

For two cottages at the back of the Coach and Horses, Mile-end-road, for Mr. Garner. Mr. E. Brown, architect. Quantities not supplied:—

Salt	£440 10 0
Loaring	401 0 0
Judd & Hawkins	382 0 0
Norris, jun.	377 0 0

For new schools and residences, at Haverhill, for the District of Haverhill School Board. Mr. F. Whitmore, architect. Quantities supplied by Messrs. R. L. Curtis & Son:—

Tooley	£6,422 0 0
Bell & Son	5,893 0 0
Mason & Son (accepted)	5,313 11 0

For Sturmer Schools:—

Tooley	£960 0 0
Bell & Son	870 0 0
Mason & Son	774 0 0
Gower & Arber (accepted)	705 10 0
Garwood	694 0 0

For additions to the Manor Farm House at Haverhill. Mr. Frank Whitmore, architect:—

Mason & Son (accepted)	£335 0 0

For new house at Steeple Bumpstead. Mr. Frank Whitmore, architect:—

Choat	£495 0 0
Dix & Humphrey	449 0 0
Mason & Son (accepted)	441 0 0

For a residence at Haverhill. Mr. Frank Whitmore, architect:—

Mason & Son	£545 0 0
Arber & Son	488 18 9
Mason & Son (accepted)	465 0 0

For alterations and improvements to Stockwell Chapel, Colchester:—

Farran	£695 0 0
Scott	651 0 0
Chaplin	639 0 0
Everitt & Son	619 10 0
Gardner & Son	617 0 0
Dobson (accepted)	602 0 0

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The Builder.

VOL. XXXIII. No. 1655. SATURDAY, JULY 31, 1875.

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The Paris Exhibition.

FORMALLY opened on the 10th of the month, the Exhibition was then in so skeleton a state that no ceremony was attempted, and no attraction created for the public. It appears the invariable fate of all such displays that they shall offer to the sight, at first, little else than bare walls and floors, and, though the policy may be a good one of adhering to the date originally fixed, the credit of an Exhibition is seriously hurt when it is found to be, comparatively, a blank. This, as is well known, was designed to set forth, in systematic order, illustrations, specimens, or models of every description of machinery, apparatus, and implements employed in ships or boats, on seas or rivers, whether for commerce, fisheries, pleasure, or the saving of life; together with all varieties of provisions for the health and comfort of the mariner class. But other objects were included: a department of fine arts, embracing painting, sculpture, drawing, and photography; one of furniture, carpets, floor-cloths, felting, Japanese hangings, metal-work, earthenware, and glass, with other miscellanies, utterly unmaritime and unfluvial. To render the collection still more comprehensive, it was arranged to contain plans and models of ports of refuge, basins, moles, jetties, floating-docks, and dams, with examples of bricks, stone, timber, and cement used in their construction, and explanations of the various processes used in their fabrication by different countries. Finally, there were cabinets of aquatic productions in all their endless richness. A visit paid at the close of last week to the familiar building known as the Palace of Industry, on the banks of the Seine, brought to view a great amount of progress, and made the whole scheme of the Exhibition at least intelligible, besides which a vast number of interesting matters have already been brought together, while thousands of other treasures or trifles, as the case may be, are, every hour of the day and night, being unpacked. Some attempt has been made to institute a comparison between the wonderful competition at Havre, held some years ago, and this; but though there are many points of resemblance, the conditions are essentially different. That took place in the second maritime city of France, amid a population of traders and sailors; this is in a capital, lying far inland, on the shores of a very inferior stream: that had every requisite near at hand; this had to assort them from far and wide. Yet in both the same purpose is apparent, and, although the general subject may not possess so much importance for France as for England—for a riverain metropolis as for a seaport town—it must be borne in mind that the Exhibition is International, not local, or even purely national. It represents Great Britain and the United States, the Northern kingdoms and Germany, Russia and Italy, as well as France; and the emulation concerns them all, if not equally. Where so much is still in a state of chaos, and where the indications of a catalogue, as yet necessarily imperfect, serve but as a broken clue through an elaborate labyrinth, it is not easy to obtain an idea of the whole as it will be when panoramically disposed; but it has assumed sufficient form by this time to be generally understood. Of course, among the eight groups and forty-two classes, those dedicated to the business of the waters of the world, salt and fresh, are the most conspicuous, occupy the largest space, and set forth the intentions of the projectors. It is difficult, perhaps, for landsmen, without seeing them, to imagine how powerfully interesting these everyday affairs of a sphere so foreign to his life can be made, even to him. There is a real fascination, however, in all this inventive ingenuity, and, in our days of *Castalias* and *Bessemers*,—in those suggestions of hulls in new forms, curiously-contrived decks, cabins warranted to be steady as civic drawing-rooms, rafts to take off entire crews from wrecks, safety-boats, fishing-craft with wells for deep-sea adventures, and especially lifeboats, the science of whose construction has been marvellously advanced within the last seven years. It must be remembered that we live in an age, not merely of extraordinary ocean enterprise, but also in an age of extraordinary ocean disaster, and that the people who go down into the deep represent another and far larger population dependent on them, and attached to them, who remain at home. Hence a common sympathy, quite apart from any professional instincts, with these ingenious proposals for the better stepping and steadying of masts, the superseding of heavy by light chain-cables without increase of danger, the taking of soundings in perilous seas, the regulations for entering or leaving harbours; and, above all, perhaps, the raising and lowering of boats, to defects in which so much of calamity is due. It would carry us beyond all practicable limit, to specify the many ideas of this kind that are presented, and to select a few might be unfair; besides which, at present, only a general survey of the Maritime and Fluvial Exhibition at Paris is contemplated. There are, as would be expected, numerous displays of canvas and rigging, of anchors and rudders, of grappling-irons and oars, of compasses, telescopes, quadrants, and chronometers; and an irresistible impression is produced of the infinite necessities to be considered in the construction and equipment of a ship. In the display of wood, a wide choice lies open between the British oak and the northern teak, and it is evident that year by year experiments will continue to be made on fresh materials. For the building of light river-craft, and the lining, so to term it, of luxurious yachts, the riches of the forest, in every part of the globe, have been put under requisition; the brilliant rosewood of Brazil; the infinitely delicate pomegranate of Havannah, the red-hearted cornel tree of Cuba, the Madagascar ebony, which takes a polish like that of steel, the St. Lucia satin, the ordinary sandal and maple of trade, and the rare amaranthe of Cayenne. These are in distinct and striking contrast with the qualities applied to the manufacture of blocks, capstan-bars, belaying-pins, masts, spars, and helms, which, nevertheless, are quite as interesting, if not so attractive. In canvas, we have the white, or royal; the dirty brown, or merchant; and the red, or fisherman; in rigging, an immense proportion of iron and steel as vieing with the old-fashioned cordage; and, for holding a vessel to her ground, Cyclopean cables of iron, which, it would seem, no tempest could tear away, side by side with a wire cord scarcely 1 in. thick, to which, it is asserted, a 300-ton three-master might trust herself in the severest storm. To another class belong sets of articles, characteristically marine, paint, pitch, and coppering, materials for caulking, anti-galvanic compositions, gums for preserving sheathing from the adhesion of weeds and crustaceæ, preparations of copal and gutta-percha, to resist alkalies and acids, patents to prevent timber from rotting, and so forth; while near them, wil be seen surgeons' chests, ships' ventilators, deck and cabin telegraphs, white slippers, traditionally assigned to the exclusive wearing of stewards, cabin book-shelves, swinging lamps, passengers' chess-boards, tooth-paste for special use afloat, perfumes and bitters similarly special, and a hundred other varieties, many of which, no doubt, are mere clap-traps, though in general good authorities affirm them to be much in vogue There always will be, indeed, a certain amount of quackery in collections so large and miscellaneous. But the Paris Exhibition is infinitely more free from trivialities than such Exhibitions, as a rule, are in England,—a fact to be accounted for, partly by the serious and practical tone of the programme, and partly by the prizes offered. Among trivialities, however, it is not intended to include a considerable class of illustrations, extraneous though they certainly are to the idea of a maritime and fluvial emulation, but admitted, probably, in order still further to popularise it. French and Italian silks, jewelry from Rome, London, Paris, and Vienna; bronze work, in which the French are no longer our superiors; pianos that must be superb if their tones are only on a par with their decorations; perfumes, trinkets, toys, clocks, watches, and bicycles. More legitimate, if not so picturesque, are groups of hats, coats, leggings, and boots for seamen; but, even more valuable than these is that which has been termed the Commissariat of the Seas. In no respect has nautical life undergone so complete a revolution. The picture of a mariner's existence in the olden time was one of utter monotony and hardship, so far as his food and drink were concerned; but the maritime exhibitions of our day exhibit a very different state of things. It is true that the bulk of provisions shipped must be akin to the traditional type; but there is something better now than the invariable hard junk, barrelled pork, excruciatingly salt, biscuits often mouldy or weevily, coarse rum sparingly qualified, when necessary, with lime-

juice, with only the chance of a fresh meal, at distant intervals, when a haul of fish could be obtained, or when a boatload of mutton, fow's vegetables, and fruit, was procurable in some harbour, or from the coast of some Friendly Island. Other stores are put on board than briny blocks of meat, puncheons of fiery Jamaica, and biscuits which, perhaps, have made many voyages, or decayed in the East End ship-chandlers' stores There are ovens for a daily, or less frequent, baking of bread, with appara'us for converting salt water into fresh every twenty-four hours, thus ridding a water-logged or becalmed ship of its worst danger. The sailor's table may be spread with a constant change of dried lentils and beans, Italian, African or Chinese rice, burnt onions, corn flour, and barley, milk in a concentrated or medicated form, cheap cheeses, fit to keep for a long time in almost any climate, and tinned beef and mutton, which the new supplies from South America and the Colonies have rendered far less costly than heretofore, and many a savoury and wholesome mess is possible now, of which, in former days, the seaman would not have dreamed; and the innovation has got rid of the eternal *régime* of saltness, dryness, and spirituous liquors, although, of course, a considerable amount of the mariner's fare must always be kept in a smoked, dried, or pickled state, and although it is somewhat irony to tell us, in connexion with him, of Norman butter, cheese, flour from Holland, spice-cheese, extract of potatoes, or Taragon vinegar. Rum, too, is necessarily the staple drink at sea; for while an inventor has patented an anti-scorbutic beer for the Exhibition, ship-charterers object that it would take up too much room. Leaving this topic for the remaining mechanical departments, they comprise models of improved carpenters' chests and tools, ship-smithies, steam-engines, and the several uses to which they may be put on board, besides that of propulsion, naval architecture in all its stages, from keel to truck, patent methods of steering from different parts of the vessel, and for manipulating its sails, and for the greater safety of fishing craft, in all its varieties, from that pursued by the villagers of the Norman coast, to that of the remotest Northern seas; and these are supplemented by models of foreign craft from the Mediterranean, the Southern, the Indian, and the China seas, suggesting how vast, various, and strange a world it is that lives, and moves, and has its being on the waters. A very creditable effort is visible, moreover, to ameliorate the condition of those who dwell incessantly on rivers or canals, for everywhere, except, perhaps, in Holland, this is a most ill-lodged, miserable, uncomfortable population, whose abodes admit of no ease or decency, and whose means of locomotion, probably, have not witnessed any improvement for half a century. Some designs of iron barges appear excellent. Again, the life-boats and life-saving apparatus are, in most instances, admirable; but it may be objected that many of the plans appear excessively elaborate, because, for such purposes, simplicity is above all else essential. Classed near, though not with them, are sundry novelties of idea for whaling and ferry boats,—compounds of weight and strength, quite consonant with the terrible array of weapons that constitute the professional cutlery of a whaler, and particularly to be noted in one respect, in that they provide for the stowage of stores in larger quantities than usual for boats that may part company for any length of time with their ship. All this is proof of an intelligent and humane design on the part of those by whom the entire scheme of the Exhibition was originated; but credit is due, also, to the several Governments which have given the aid of their authority and experience to a work so praiseworthy. That of England never fails to share the knowledge it acquires with those of foreign nations. For example, three times have the Board of Trade allowed the French ample opportunities for studying their matchless Rocket Apparatus, which, on each occasion, has manifested an appreciable improvement, and, if it may not be regarded as perfect at last, it is simply because further progress in the future is sure to follow. It would be tedious to enumerate the various details of a "station," but the principal are,—carts of special construction for carrying the apparatus to a wreck; machines from which to fire the rocket; the rockets themselves; the lines and boxes for holding them,—upon these everything depends; the cases for the ammunition; the "travellers" for easing a passage along the cable; the sling life-buoys; the anchors for burying in the soil and securing the land end; the light-stands, resembling those of telescopes; life-belts; mortars; ladders; heaving-canes, loaded at one end with lead; there are many others, such as axes, wheel-barrows, lamps, and tents for reception of the saved; but they fill a long list, and the general scope of the official display will be apparent without referring to more than its leading features. The last class is that, perhaps, in which the failure of any too ambitious plan was inevitable. The Aquarium, it was true, might have been made at once instructive and attractive, and may yet become so; but, like other projects of the kind elsewhere, it is at present only a sketch, and can never be expected to rival its prototype at Havre, built in imitation of Fingal's cave, which had the advantage of an unbounded sea-water supply, and has never been equalled as an illustration of sea and river life. Apart from this, however, the term "aquatic products" was a large one, suggesting a promise impossible of fulfilment. There was no difficulty in gathering together collections of sponges, sea-weeds, and the several forms to which they are reduced by science; shells,—with the cameos cut from them,—corals, whalebone, pearls, tortoiseshell, oil, mother-of-pearl, sea-ivory, edible birds' nests, meerschaum, and sealskin; yet these constitute only a trifling proportion of the wonders and riches that lurk in the ocean; and even if to them be added a range of natural history illustrations, such as was possible in an inland city, the programme is still, as it could not help being, exceedingly restricted. Taken altogether, nevertheless, the latest enterprise of Paris, in the shape of an International Exhibition, while imperfect in many respects, and backward in more, has produced results of remarkable interest; an increase which will be considerably enhanced when its outlines have been fully filled up. Those of the Fine Arts Department are, even now, so void and formless that they must be left for judgment at a future day.

LONDON ROADS AND THE COST OF THEM.

AFTER giving some notion of the uses of the streets within the Metropolitan Police District, we proposed, in our last, to inquire what it had cost to lay down and did cost to maintain these roadways.* Let us see. But, first, it will be as well to impress upon the reader that since the latter part of the last century the highways of this country have been the admiration of all Europe. Our roads, our horses, our coaches, and our coachmen, were all so thoroughly English that they were well calculated to astonish the foreigner who had been accustomed in his own country to travel along highways which were as loose in the soil, and as furrowed with ruts, as newly-ploughed fields; and accustomed, too, to be conveyed from town to town in diligences, which were a kind of cross between a fly-wagon and an omnibus, and not nearly so rapid as hearses returning from a funeral; and had the great hulking horses harnessed to the lumbering vehicle with traces of rope, and a huge jack-booted driver, moreover (half-postboy half-coachman), to "tool" the animals along, and who kept continually shouting, screaming, and swearing at the straggling team.

In this country, on the contrary, the roadway was generally as level as water and as hard as steel, and upon it the patter of the horses' hoofs sounded as they galloped along almost as crisply as the rattle of castanets. Then, the coachman was often a gentleman, and, in many instances, even a person of rank; whilst the vehicle itself was a perfect model of lightness and elegance, and the "cattle" such thoroughbred animals as England alone could produce,—with coats as sleek as satin, and their entire leathern trappings as brightly polished as a dandy's boots.

What a sight it was only a few years ago to see the mails and the fast coaches leaving the metropolis by night! What a crowd there used to be every evening at eight congregated on the "off side" at the Angel at Islington, the White Horse Cellar, Piccadilly, and the Elephant and Castle over the water. Who that once saw it can forget the scene at such places on the king's birthday? for then the front of the taverns was studded over with lights of many colours, arranged in glittering starry lines. The graceful horses were all newly harnessed; the bright brass ornaments on their trappings shone like burnished gold in the glare of the illuminations, and at each of their tossing heads there were gay rosettes of ribbon and bunches of flowers which were as brilliant as the pattern out of a kaleidoscope with the cluster of their many bright tints. Then the mail-coaches themselves were all newly painted; and the coachmen and guards gay, as poppies in a corn-field, in their unsullied scarlet coats (worn for the first time that day); while the air kept on resounding with the twang of the tantara! from the post-horns of the newly-arriving or departing vehicles.

When the present roads of the metropolis itself were first formed it is difficult to state with any precision. As we have said, the first Act for paving and improving the City was passed as far back as the second year of the reign of Henry VIII. (A.D. 1532); and though, towards the end of the seventeenth and the beginning of the eighteenth centuries, there were sundry Bills brought before Parliament and confirmed, for giving the Corporation of London power to improve the lighting and paving of the City, nothing effectual seems to have been done till the middle of the reign of George III. Then the present system of paving and lighting is known to have been introduced—but still in a very imperfect form; for at that time gas was hardly invented (indeed, it was not till 1803 that Mr. Winsor first lighted the old Lyceum Theatre with carburetted hydrogen,—and that merely as an experiment); whilst macadamisation was a system of road-making which was not known at the beginning of the present "year-hundred" (as the Germans call it), or at least it was not put in practice till 1818; and then only "tentatively."

However, let us dismiss the historical and come down to the practical part of the subject: the one is merely curious, whilst the other is useful, information.

Well, then, there are now four different kinds of pavement employed in the streets of the metropolis.

1. *Stone pavement*, which is composed of solid blocks of Aberdeen granite.

2. *Macadamised pavement*, or rather "road" which is, or should be, composed of granite, broken into moderately small pieces, and compacted or indurated together by means of continued pressure.

3. *Wood pavement*, composed of blocks of pine or other wood treated, either laterally or superficially, with some bituminous coating.

4. *Asphalte pavement* composed of a layer of hard bitumen spread upon a bed of concrete.

Of the relative efficacy or advantages of these several kinds of hard and smooth transit-surfaces we have just now nothing to do. The cost alone concerns us; and to that, and that only, we shall confine the present article.

Of the relative *quantities* of such pavements, on the other hand, there exist no definite returns. The comparative extent of the stone, the macadamised, the wood, and the asphalte surfaces has not as yet been ascertained; for no general account has been published condensing into one comprehensive total the reports and returns, as well as the receipts and expenditure, of the several vestries and parochial authorities intrusted with the paving and lighting of the metropolitan thoroughfares. It is, however, still possible to arrive at an approximation as to the comparative extent of such pavements by consulting those of long experience in connexion with the subject.

Granite or *Stone Pavement*, we are informed, prevails principally in the great centre of London; for the old saying of "getting off the stones," as one proceeds towards the suburbs, still holds good to a great extent. Hence, "granite," as the granite blocks are usually called, forms the main material of the highways running through, so to speak, the *heart* of London. For if, on the northern side of the Thames, a boundary-line be drawn along the Euston-road, and so down the City-road, and then *viâ* Brick-lane to High-street, Whitechapel, in the East; and if afterwards the other end of this northern limit be carried down by the side of Hyde and Green Parks, to the foot of Westminster Bridge, on the west; it will be found that nearly all the thoroughfares on the north bank of the Thames which are enclosed within such a line, are paved with granite. Then, if on the south side of the river a similar boundary-line be made to stretch from the New-cut to Long-lane, Bermondsey, and to include very nearly the whole of Lambeth and Southwark, it will be found that mostly all the streets bearing down to the Thames, and falling inside of this line, may likewise be taken as paved with the same material.

* See p. 656, *ante*.

"*Macadam*," on the other hand, generally prevails in all the thoroughfares outside of such a circle; and though it is doubtlessly a fact that, in both the districts thus indicated as constituting granite-paved London and macadamised London, exceptions to the general rule may exist,—viz., that in the so-called granite-paved portion some miles of macadamised way may be found, and *vice versâ*,—nevertheless, we are assured by persons of authority, such exceptional cases are the best proofs of the rule, and that the few miles of *this* kind of pavement existing where *that* is said to prevail may be fairly dismissed as just about balancing each other.

Wood and *asphalte*, we are informed by the same authority, cannot be said respectively to constitute the paving of more than five miles of the London thoroughfares; so that as such kinds of pavement are as yet only tentative processes, and undergoing merely a probationary course of traffic, little notice need be taken of them here.

In the City proper, stone pavement alone (excepting, of course, a few experimental "runs" of the before-mentioned wood and asphalte surfaces) affords the medium of street locomotion. Now, according to a return made by the London police as to the extent, population, as well as the length and the number of streets in the metropolitan police district, and also in the City of London, in 1850, the total extent of the City streets was just fifty miles. The area of the City proper however, is but a fraction more than one square mile (668 acres); whereas that of the stone pavement district included within the above-mentioned boundary is about seven times as large: so that, as this portion of the metropolis constitutes, together with the City itself, the great bricken heart of London, the relative extent of the streets inclosed within the respective areas may be safely said to be in the same proportion. Hence the gross length of the thoroughfares included within the granite-paved boundary may be taken, in round numbers, at 400 miles, *i.e.*, $50 + (50 \times 7)$.

But, as we have said, the entire extent of the roadways included within the metropolis proper (which is not quite one-third larger than the inner police district, and that is just 90 square miles superficies) may be set down at 2,500 lineal miles; so that if there are about 400 miles of pavement in the granite portion of London, there must be 2,100 miles of roadway altogether in the suburban *macadamised* part of it. Consequently, the sum to be worked out stands thus:—Given 400 miles of granite pavement in the heart of London, and 2,100 miles of macadamised roads forming the several suburban arteries and veins in connexion with this same "heart," what would be the cost of each, as well as the gross expense of instituting and maintaining such an extent of thoroughfare?

Now the charge for Aberdeen granite, ready prepared for paving (or, as it is called "pitching"), and delivered on the spot, is about 1*l.* 10*s.* per ton. A ton of 7-in. blocks,—that is to say, of blocks which are to be sunk to that depth below the level of the roadway,—will cover from $2\frac{1}{2}$ to 3 square yards. The cost, therefore, of "pitching" the blocks, labour included, will amount to somewhere about 11*s.* 6*d.* per square yard.

Further, the average breadth of the metropolitan streets may be taken at about 10 yards from foot-pavement to foot-pavement. Each yard "run," therefore, of such a granite-paved street would come to 5*l.* 15*s.*; or as $1{,}760 \times 5{\cdot}75 = 10{,}120$, we may say roughly that the cost of every mile of granite pavement would be about 10,000*l.*; and hence the original gross cost of the 400 miles of pavement in the central portion of the metropolis would average about four millions sterling.

For macadamised streets, where the traffic is considerable, such as that of Regent-street and the Edgware-road, three layers of broken granite a year are necessary; and the expense of this is not less than 2*s.* 6*d.* a square yard; but the concrete used as a foundation in this kind of road-construction averages 4*s.* 6*d.* to 6*s.* the *cube* yard, by which admeasurement it is always calculated; and a cubic yard of Thames ballast weighs just upon $1\frac{1}{4}$ ton. So that the cost of a macadamised roadway may be set down at 7*s.* 6*d.* per square yard, or at 10 yards breadth to each roadway, 3*l.* 15*s.* per yard run. This is at the rate of 6,600*l.* per mile; and as there are 2,100 miles of these roads in the outer portion of the metropolis, according to Act of Parliament, it follows that the gross cost of constructing such highways must have amounted to $6{,}600 \times 2{,}100$, or very nearly 14,000,000*l.* altogether.

Hence, adding this sum to the previous 4,000,000*l.* (the cost of the whole of the 400 miles of granite-paved streets), we have a total of 18,000,000*l.* sterling for the gross expense of constructing 2,500 miles, which make up the aggregate length of paved surface throughout the capital.

And now for the annual expense of keeping such a length of highway in a state of repair, and then our task is ended

In some of the more quiet streets, such as those in the immediate neighbourhood of Golden and Fitzroy Squares, a good granite pavement will last for twenty years, with but little repair; and even in streets of inordinate traffic, such as Fleet-steeet, Cheapside, &c., it will last for three or four years, provided the best form of construction is originally adopted. On Macadamised roads of regular traffic, however, the repairs and relayings range from 4*s.* to 6*s.* yearly the square yard. But the expense of such repairs can be ascertained with considerable accuracy from the paving rate, and this for one of the largest metropolitan parishes shows an average annual cost of 1,000*l.* per mile for the repairs of granite-paved streets (ten years being the average duration of the original pavement), and about 4,400*l.* per mile for those of the Macadamised roads (5*s.* per square yard, or 50*s.* per yard run, for the whole width of the street, being the average expense of the relaying. It follows, therefore, that the aggregate expense for the repairs of the entire London streets may be broadly stated as follows:—400 miles of granite at 1,000*l.* = 400,000*l.*, and 2,100 miles of Macadamised streets at 4,400*l.* per mile = 9,240,000*l.*, or just upon ten millions sterling per annum!

Hence the conclusion is that the streets of this very "great metropolis" cost just upon twenty millions to lay down, and about ten millions annually to maintain in a state of continual repair.

Well, therefore, may country-folk say "the streets of London are paved with gold!"

Still, this is the cost of the roadways alone; consequently, to make "the little bill" complete, there must even yet be added to the above amount the expense of the foot-pavements, or "*trottoirs*," as the French style them. Let us, therefore, endeavour to find out what is the sum required for the formation and renewal of these same sideways, rather than highways; and then the statement as to the total amount of money expended upon the construction and repair of the London thoroughfares is finished.

Now, the foot-pavement is to the roadway what the gravel walk is to the garden: the trim and comely edging which enables those who desire a stroll to enjoy conveniently the charm of the well-laid-out and well-tended "plot" in the centre,—the broad flat frame which is at once an ornament and a use to the enclosed picture. The roadways, indeed, are the big veins, carrying the commercial life-stream to the great heart of London; whilst the footways are the tiny capillaries, charged with an endless stream of "*corpuscles*," which serve to give energy and spirits, as well as the fresh hue of health, to the whole system. And if the carriages, cabs, and 'buses, carts and vans, are the heavily-freighted ships ploughing the broad rivers of the London highways, the foot-passengers are the lighter craft skimming the streamlets of the metropolitan sideways. For, according to a recent Report of the Society of Arts (see p. 594, *ante*), "On the Roads and Pavements of London," there are not less than three-quarters of a million of such foot passengers wending their way daily through the principal thoroughfares of the City alone,—a number which is equal to 1·466 part of the entire population of the capital.

In the old Roman roads the footway was placed in the centre of the highway, and raised some feet above its level; but then, of course, there were neither houses nor shops skirting the greater proportion at least of the thoroughfare. It is upon the foot-passengers, however, rather than those riding in the roads, that the shop-keeper has to depend for his custom; for what to the people out in the highways, incased in cabs, packed in omnibuses, or lolling in carriages, is the showy or tasty decoration of the shop-windows. Indeed, the "shop-front" is set out specially to catch the eye of the pedestrian, from whom the knowing proprietor of the "emporium," in every crowded thoroughfare, is well aware that he mainly derives his income. The rents paid for the shops in the Poultry, Cornhill, Regent-street, or any part where the traffic is inordinate,—or, indeed, in the Burlington and Lowther Arcades, where the passers-by are *solely* pedestrians,—are sufficient proof that had the foot-pavements of the metropolis been placed, Roman fashion, along the middle of the road, the retail trade of London could never have been developed.

But, not only are the foot-pavements the main source of revenue to the proprietors of the "establishments" whose shop-fronts they border, but they are necessarily a source of infinite convenience to those whose business or pleasure leads them to tread the London causeways; and it is the ease, afforded the pedestrian by a well-paved path, as well as its immediate proximity to what the French call "*magazins*" of trade, which causes a special stroll to look at the shops in the principal streets of the metropolis, to be such a special delight even to the tight-booted and tenderer portion of humanity. To those who have ever known the Arcadian charms of living in an *untrottoired*, undrained, and unlighted primitive German town, the horrors of a walk through the streets must be indelibly impressed, not alone on the mind, but on the feet of even the "*stout-soled*" traveller; for there the stones of the *chaussé* are as hard and knubbly as if they were so many petrified potatoes, and the pathways consequently about as level as corrugated iron; so that the pedestrian is literally footsore with even a quarter of an hour's promenade through the picturesque, but particularly unpleasant, city.

And yet even in this mighty "Great Metropolis," which is assuredly the best-drained and best-watered capital in the wide world, foot-pavements were a peripatetic convenience unknown in the land till the reign of George III., though there can be no doubt that they must have added as much to the retail trade of the neighbouring shopkeepers as the construction of roads did to the wholesale commerce of the entire country.

Let us see, then, what is the gross cost of these viatorial comforts, and what the average annual expense of their repair; and then, adding these amounts to the previous outlay on the roadways, thus arrive at something like a rough estimate as to the expense of the metropolitan streets *in toto*.

Now the average width of the London foot-pavements may be set down at 7 ft. In Regent-street and such like highways the *trottoirs* are about 10 ft. wide, whereas in the smaller and less-frequented byways the breadth of the foot-paths does not exceed 5 ft. The cost of the Yorkshire "flagstones" required for laying down such a pathway, labour included, may be safely taken at 14*s.* per square yard: hence for two and a half, or (let us say) two square yards, the expense would be 28*s.* for each yard "run." Add to this 4*s.* 6*d.* per lineal yard for the kerb-stone, and 9*s.* for each lineal yard of the channel, and we have a total of 41*s.* 6*d.* for the average cost of every yard run of the footpaths of the metropolis. However, so as to avoid making big figures appear bigger than they otherwise would, let us estimate the expense of laying down the London foot-pavements roughly at 2*l.* the yard run. Then the sum to be worked is an exceedingly simple one: for 1,760 yards $\times$ 2 = 3,520; so that the cost of forming these same foot-paths would amount to about 3,500*l.* per mile.

But, the total length of the metropolitan streets within the Registrar-General's district being 2,500 miles, and each highway having a double run of such sideways (*i.e.*, one on either side of the street), it follows that we have only to multiply 3,500*l.* by 5,000 in order to arrive at the aggregate amount required for their construction. Accordingly, we arrive at the conclusion that the foot-pavements alone of London must have cost not less than $17\frac{1}{2}$ millions sterling; and this sum added to the 20 millions originally required to be expended on the roadways brings the total expense of constructing the metropolitan thoroughfares up to $37\frac{1}{2}$ millions of pounds altogether.

And now for the amount needed annually for the repairs of these same footways. A well-constructed *trottoir* will last, with but slight occasional relaying in places, some seven years, even where the traffic of foot-passengers is excessive; and where such traffic is comparatively slight, as long as fifteen years or more. Hence, let us say, in order to err on the right side, that the average duration of the London foot-pavements is twelve years; then $\frac{17{,}500{,}000}{12} = 1{,}458{,}333$; so that, in round numbers, the average sum of money required annually for the repair of the

metropolitan footpaths would amount to about one million and a half sterling. And hence, as the repairs of the united roadways cost somewhere about ten millions, we come to the following general conclusion :—

Gross cost of constructing the whole of the London roads and foot-pavements	£37,500,000
Gross amount required annually for their repair	11,500,000

"Prodigious"!

PUGIN'S ARCHITECTURE OF NORMANDY

IT is just forty-seven years since John Britton wrote his modest preface, in the capacity of editor, to the original edition of "Specimens of the Architecture of Normandy," for which he furnished the literary portion, and the eldest Pugin the drawings, which were translated in such a masterly and beautiful manner into engravings by the brothers Le Keux. The work originated, we are told in the preface, "with the two artists whose names appear on the title-page, and who, from predilection for architectural antiquities, and from some experience in the execution of works illustrative of the ancient architecture of England, persuaded themselves that a series of engravings which should define and clearly exemplify the Christian architecture of Normandy would be at once useful and popular. Influenced by corresponding feelings and convictions, the writer of this preface was induced to co-operate with his friends, and enter warmly and zealously into the plan." Britton goes on to say that illness had prevented him from personally visiting the buildings illustrated, as he had intended, and that he could not satisfy himself consequently in the execution of many parts of the work, though delaying its publication for some time, in consequence of deficiency of information which he might have obtained in person on the spot, but could not obtain by correspondence. This may fairly be held as partially the reason, in conjunction with the comparatively deficient archæological study of Mediæval architecture at that time, why Britton's literary notices are no longer up to the required standard in many points, and have needed revision, correction, and enlargement, to an extent which would not probably have been needed had the editor's characteristic enthusiasm and industry had fair play. His able coadjutors in the artistic department of the work were under more fortunate circumstances, and their labours were complete proportionately and admirable. Since they "persuaded themselves" that architectural remains in Normandy would interest people in England, a generation or two of architects have been over the same sketching-ground, which has become almost a common property for travelling students of architecture, who need no "persuasion" now to believe in its interest, and illustrations of its remains have been produced pretty plentifully. Yet it is the judgment of the able editor of the new edition,* and one which every one acquainted with the subject will probably coincide in, that this is still the chief standard work on the architecture of Normandy; and that not only would it be difficult to select better examples for publication than those which were chosen by Pugin, but that no work has appeared since which can supersede it in beauty of engraving and accuracy of measured drawing. "In fact," says Mr. Spiers in his preface to the new edition, "when we consider the immense progress which has taken place during the last forty years in the true knowledge of Mediæval architecture, and how, step by step, the vague theories of its rise and development have been displaced by sound scientific knowledge, we are astonished that drawings, made so long ago, should not only show a perfect mastery of rule and compass, but display the most intimate acquaintance with all the artistic and scientific problems of the buildings represented. In these drawings the formation of the ribs and webs of the vaulting, their true curvatures, and the constructive lines of every part of the buildings are indicated with a truth that few draughtsmen of the present day could hope to rival; whilst the character and vigour of the foliage, and other carved ornament, especially that of the Flamboyant period, has been rendered in a manner that has never been equalled in any more recent publication."

Looking again over the engravings of Le Keux after Pugin, thus endowed with a second lease of life by republication in a more complete setting than before, as to literary illustration and bookbinder's getting-up, one must admit that they fully vindicate what is here said in their commendation. And one may call the attention of publishing architects to the superior effect and illustrative efficiency of these finely-executed engravings over illustrations by other processes which have largely usurped the place of engraving among publications by the younger generation of architects, especially in the present day. Lithography and photo-lithography have probably simplified and cheapened the process of publishing illustrations to architectural books, and have their value as giving a more or less literal transcript of the author's original drawings; and etching has its very high claims to preference where picturesque effect is a main object. But the object of architectural illustration is really, in works intended for architects at least, the accurate and permanent representation of the facts of structure and design in a building. With these given correctly and in a permanent form, the architect can mostly draw his own conclusions as to effect, and at any rate is more likely to trust to conclusions drawn in this way than to picturesque sketches, which do not show detail clearly, and may be in more than one way untrustworthy. We have a great deal of the "picturesque sketch" style of book illustration at present in architectural works, but very few, if any, publications which can show drawings so careful and correct, so minute and refined in execution, as these engravings by the brothers Le Keux. It is true that they do not shine so much in views; and that the perspective views, for instance, of the Palais de Justice at Rouen, or of the Château Fontaine le Henri (plates l., lxxi.) are rather thin and bald in appearance from the absence of shading and effect, though beautifully "touched" and manipulated, the latter especially, in regard to detail and surface character. But such accurate and finely-executed drawings of architectural construction and detail as the section and elevations of the choir compartments of Bayeux (plates xxxiii.–iv.), for instance, are now hardly seen except in French architectural works. There is something, of course, to be said in favour of the feeling that architecture is building and not drawing, which has been, perhaps, at the root of some of the preference for "sketchy" lithographs among the younger generation of architects. This contempt for mere drawing has led to one or two publications, and those by names standing high in the profession of modern architecture, in which neglect of all the refinements of drawing has been carried to a curious and not very admirable result. But there is a practical value also in this accurate and precise engraving of Le Keux's: it will stand wear and tear. It may be safely said that very few of the lithograph illustrations of the picturesque school of architects could have the chance of republication forty or fifty years hence, even if they are worth it. Drawings on stone cannot be kept so long with convenience, and the impressions are worn and ineffective after a certain amount of use. But here are the reprints of the original engravings after Pugin's drawings as good and clear as ever. This is certainly a point to be looked to by those who are ambitious of publishing for the future as well as for the present. In every respect the republication of Pugin and Le Keux's Normandy, and the excellent place which it is calculated to take among the similar works of the present day, is an example of the permanent value of work that is thoroughly and conscientiously done at the outset.

Had the author of the book worked in the present day, some things which are carefully and elaborately portrayed in it would have received less attention. The earlier period of the Mediæval revival was, as every one knows, marked by an admiration for the florid late Gothic, with its profusion of carving and detail, which would be completely disclaimed by the Gothic architect of the present day. It may have been as well, perhaps, that some architects were disposed at that period to illustrate Late Gothic, otherwise there would seem to be little chance now of its getting illustrated or recorded at all, in England at least. There is, however, a good deal of bad, overdone, wiry detail drawn out and depicted with greater care in Pugin's work than it perhaps merited. The most valuable part of the illustrations is that which relates to the churches of the *Abbayes aux Hommes* and *aux Dames* at Caen, and to Bayeux Cathedral. The delineations of the two great churches at Caen have been further supplemented by Mr. Spiers by a plan of that of *Abbaye aux Dames*, from measurements taken by himself for this work. This plan, with its long unbroken vista of nave and choir,—long to excess in proportion to width,—serves to remind the reader how inadequate outline drawing is, after all, to give the perspective effect of such an interior; for the accompanying interior view conveys no such effect of length, aërial and colour perspective being wanted to help out the rendering. The ornamental details of the Abbaye aux Hommes, almost Classic in their severity, and the lines of construction of the vaulting are given with a precision and finish of execution which leaves nothing to be desired. We are not, however, of those who would find nothing admirable or valuable in the less pure, or, at all events, less severe modifications of later Gothic. Such a building as the Palais de Justice at Rouen, though corrupt and over-ornate, is admirably suggestive for a civic treatment of Gothic; and there is a refinement and suitability of general design, in spite of the bad detail of the buttresses, about the gateway of the nunnery of St. Clair at Rouen (plate xlvi.), with its three-centred round arch for the doorway and its pointed arch above, which even the most enthusiastic adherent of transitional work must admit; there is an originality and effectiveness, too, in the manner in which the pedestals of the statues in the tympanum are "evolved" out of the tracery, which is very natural and picturesque. There is much that is suggestive for modern design, too, in the Hôtel de Bourgtheroulde at Rouen; bad and indefensible as are some of the details, it is in general aspect an instance of a style of "Free Gothic" which effects the combination of the picturesque with the convenient and suitable for modern building, more effectually perhaps, certainly in a more interesting way, than what has been called recently the "Free Classic." Wiry as the details are, there is much fancy in them, and there are suggestions that would very well bear working out in better form.

The new matter supplied by the present editor is distinguished by brackets, and includes additions to the historical and descriptive analysis of the buildings illustrated, in some cases correcting conclusions of the original editor which modern archæological and architectural research has shown to be erroneous; and a short essay is added on the development of groined vaulting and its influence on the style, especially as illustrated in the churches of the Abbaye aux Hommes and the Abbaye aux Dames. This essay does not contain anything in addition to what is now known or admitted by all who have studied the Mediæval style as all true styles of architecture must be studied—on the basis of its constructive principles; but it places the leading points of the subject in a very concise and intelligible form; and the consideration of the vaulting problem as the real main element in the development of Mediæval building is so all-important to the right understanding of Gothic architecture, that it can hardly be repeated too often or too prominently whenever the subject is critically dealt with. The mere fact of the insertion of such an essay here, in place of the vague and varying theories about the "origin of the Pointed style" which used to appear in works of the period to which the original edition of this book belongs, is a proof how far we have progressed in architectural analysis in the meantime and how completely the sentimental theory of Gothic is now put aside. Among the editor's miscellaneous additions we come upon some remarks, in reference to plate i., upon the Caen stone of to-day in comparison with that used in the abbeys and churches of the Caen neighbourhood in the Mediæval period. An examination of old and now deserted quarries* in the district some of them almost under the churches which were built from them, showed a quality of stone similar to that used in the ancient work, but very superior to what is now sent and accepted as Caen stone. This is not an uncommon case indeed, when a particular locality acquires a name for the quality of its stone, it is only reasonable to expect that bad stone will be sent as well as good to meet the demand. This

* Specimens of the Architecture of Normandy, from the Eleventh to the Sixteenth Century. Measured and drawn by Augustus Pugin, Architect. Engraved by John and Henry Le Keux: with Historical and Descriptive Notices by John Britton, F.S.A. New edition, edited by R. Phené Spiers, A.R.I.B.A., Master of the Architectural School of the Royal Academy, &c. Blackie & Son: London, Glasgow, and Edinburgh.

* Some particulars of these quarries, by the conductor of this journal (who visited them, accompanied by Mr. C. H. Smith), will be found in one of our early volumes the result of personal examination.

explains the anomaly in some of our own cathedrals, where we find (or did find before they were restored) the parts of the latest date the most decayed, though built with stone of the same class and from the same district as the rest. The description and analysis of the church of the Abbaye aux Hommes is largely supplemented, partly with the results of the researches of M. Ruprich-Robert, whose name is well known to our readers, and under whose professional care the building is now placed. M. Bouet has discovered evidence of the choir having been largely repaired and rebuilt in the seventeenth century, but with such fidelity that it is difficult to tell the restored work from the old. Such a restoration must be a fortunate, we might perhaps say almost a unique one.

The noble simplicity, combined with elegance, of the design of Bayeux Cathedral is admirably set forth in the fine series of plates devoted to it; the inherent merit of the architectural design, the peculiarity and effectiveness of the decoration (much of it given here in detail), and the admirable manner in which the drawings of the construction are made out, render this one of the most interesting of the sets of illustrations in the book, and one of the most instructive to the student. Among curiosities of construction the section of the extraordinary pendentive of the roof of the Lady Chapel at Caudebec (plate lxv.), a most interesting delineation of one of the most singular pieces of masonry construction in existence, is rendered further interesting by the extended note appended by the present editor, giving the account of how the construction was investigated by A. Pugin, assisted by Mr. Ferrey and Mr. Talbot Bury, and how the latter nearly made his mausoleum of the space or pocket between the main vault of construction and the pendentive, having got in through a hole in the infa filling up the groining at the top, which proved easier to get in by than to get out by,—"facilis descensus—sed revocare gradum," &c. The pendentive, it may be remembered (for these particulars originally appeared in our pages), is carried in a way it would scarcely occur to any one to suspect, by a monolith-key 7 ft. in length, held up at the top by the main vaulting ribs, and supporting at its foot the ribs of the pendentive, which turn over and descend upon it. Nothing could be more ingenious, or more absolutely stable, so long as the key-shaft does not give way; but if we come to talk about principles of construction, such a specimen should, perhaps, hardly have been specially dwelt upon by the master of the architectural school of the Academy, without it being pointed out that it depends entirely upon the *cohesive* strength of the key-shaft,—an inherently wrong principle in masonic construction, however successful it may have proved, so far, in the present instance.

The two plates given in the original volume of the specimens of stained glass are published in the new edition without the colour, which, owing to the deficient means of colour printing at the time of the first publication were, as Mr. Spiers says, rather misleading than otherwise. The plates are hardly of any value without the colour, however; as specimens of forms of "leading up" glass, as suggested by Mr. Spiers, they really present little or no interest.

We welcome with great pleasure a republication of an excellent work under a very good re-editing, and with additions which increase its value considerably so far as the letter-press is concerned. The real value of the book, however, lies in the plates, which are as instructive to the student as they are interesting to the advanced architect. The new edition should find a place in every good architectural library.

THE ROYAL ARCHÆOLOGICAL INSTITUTE.

ACCORDING to arrangement the Royal Archæological Institute of England have made the neighbourhood of Canterbury the scene of their annual excursion, commencing on Tuesday, the 20th inst.

The preliminary meeting was held in the town-hall, at which a congratulatory address was read by the town clerk on behalf of the mayor, aldermen, and citizens, welcoming the members of the Institute to the ecclesiastical capital of England. Reference was made in the address to the fact that Canterbury might be almost considered the birthplace of the Archæological Institute since it was there that the British Archæological Association (from which the Institute separated) held its first meeting.

After a *déjeûner*, the company proceeded, under the guidance of Mr. John Brent, F.S.A., Mr. J. H. Parker, C.B., and Mr. G. T. Clark, to perambulate the city. The first place of interest visited was the Dane John. The city walls and mound were inspected, various opinions being offered as to the origin of the mound at that spot. Amongst the most notable objects visited were the Norman Keep, a very large and grand ruin, probably of the date of William Rufus, now used as a coal-store by the gas company; and the small but memorable church of St. Martin, the foundation of which is attributed to St. Augustine, and in the external wall of which Mr. Parker pointed out a small portion of widely-jointed masonry, which might be of as early a date as the period of that saint who first introduced Christianity to these isles in the Anglo-Saxon age. The chapel of St. Pancras, in which the good Queen Bertha, wife of Ethelbert, is presumed to be buried, was also viewed. A temporary museum at St. Augustine's College and another in the Cathedral Library had been arranged, in which were stored objects of great interest.

On Wednesday, the meeting of sections, commenced at ten o'clock in the hall of St. Augustine's College. This presents a very different aspect from its state when the Archæological Association held its first meeting in this city. It was then degraded to a mere public-house. It was consigned to the hammer in 1844. The purchaser was Mr. Beresford Hope, who forthwith began its restoration, under Mr. Butterfield, and thenceforth it has been devoted to the purpose of a college for the education of missionaries. The range of edifices thus owe their preservation, their restoration, and their utilisation, to one of the most devoted and able members of the Institute, and when Mr. Hope was voted to the chair of the architectural section, the applause with which he was greeted was very cordial.

The paper read was one by Sir Gilbert Scott, on "The Transition of Styles of Architecture, as illustrated by Canterbury Cathedral." Sir Gilbert said his paper, though all re-written, contained much that he had stated before in his lectures at the Royal Academy, and which will be found in our pages. He traced the growth of the arch from the time when it was a mere opening in the wall or vault, with a flat stone over it, through its successive developments, to the pointed arch of early English days, illustrating every step by drawings, taken not only from Canterbury Cathedral, but also from Sens, Noyon, Caen, Glastonbury, and many other places. Mr. Godfrey Faussett's paper on "Canterbury till Domesday," which was read for the author, then came on in the section of Antiquities, which was presided over by Mr. G. T. Clark, F.S.A. Dean Stanley was to have read a paper on "The Monastery of Christ Church, Canterbury"; but as he had not arrived at half-past one o'clock, it was deferred till the *conversazione* in the evening. It was then read in the cathedral library before a large assemblage.

On Wednesday afternoon there was an excursion to Chilham Castle, the seat of Mr. C. S. Hardy, who admitted a large party to view the old keep. Mr. G. T. Clark gave a discourse, explanatory of the structure, and after paying a visit to Chartham church, the party returned to Canterbury. On Thursday morning the annual meeting of the Institute was held, when Colchester was fixed upon as the place for the next meeting. About midday the members went to Sandwich and the ruins of Richborough Castle, returning in time for a meeting in the evening, at which several papers were read. The proceedings were resumed on Friday morning, when a meeting of the Historical section was held in the hall of St. Augustine's College, under the presidency of Sir John MacLean. Mr. J. B. Shephard, of Canterbury, read a paper on "The Archives of Canterbury Cathedral." Amongst the deeds shown was the original deed, signed (with a cross) by William the Conqueror, and also by his queen, in addition to the two archbishops and four bishops, settling the long-standing dispute as to the primacy and supremacy of the Archbishop of Canterbury over his Grace of York.

The section rose at eleven o'clock, at which hour the Rev. E. Venables commenced in the Chapter House, before a large audience, a discourse on the Architectural History of the Cathedral. A perambulation of the cathedral afterwards took place, and when the party arrived at the scene of Beckett's martyrdom, Canon Robertson read a short paper, in which he tried to demolish the tradition that the flagstone on which Beckett fell is still there, marked by having a small square piece let into it, where it is related a portion of the original was cut out, and sent to Rome and there preserved, because a portion of the martyr's blood fell upon it. Repeated inquiries in Rome had failed to find the stone. Archdeacon Harrison said he stood by the tradition. A perambulation of the precincts followed, and a further sectional meeting was held, at which Mr. R. E. Pullan read a paper on "The Revival of Polychromatic Decoration in Churches; the pith of which our readers know."

On Saturday, the archæologists made an excursion to Hythe and Saltwood, calling at Westenhanger and Lympne, and inspecting the numerous ancient monuments in that district of Kent. They were entertained at luncheon by the Mayor of Hythe, and after a long pilgrimage returned to Canterbury early in the evening.

On Tuesday the Institute met at Dover, the members of the Kent Archæological Society, who were having their annual outing in that town, and a paper on the Pharos, by Mr. C. Roach Smith, was read. Then the combined party, to the number of about 300, proceeded to inspect the Castle, again under the guidance of Mr. G. T. Clark, whose initials are well known to our readers. After seeing the armoury they were conducted to the top of the keep. Mr. Clark ascended one of the towers in the angle, and proceeded to address his audience as to that part of the castle (the north-east angle). He informed them that they would be conducted down a narrow staircase which was constructed through the thickness of the wall itself, and which would only accommodate about one person. Accordingly all or nearly all made their way down the steps. They safely arrived at the bottom, and after inspecting the old well and the ancient chapel, assembled in the courtyard. Mr. Clark took up a position close to the gateway affording an entrance to the keep, and in the course of a comprehensive lecture said that the hill on which the grand old pile which they had been visiting was situated was, no doubt, taken advantage of by the Celtic inhabitants of the island. They had considered it a convenient place for the defence of a tribe, and the Romans, finding a place to land, made use of it, and had not only left their marks upon the roads around, but had erected a watch-tower. The Saxons,—not only our predecessors, but our ancestors,—had left traces of their earthworks, but with the Normans came masonry into Britain. He did not mean to say that we had no traces of earlier masonry in ecclesiastical edifices, but so far as he knew we had no traces of masonry for military defence before the eleventh century. There was none that, so far as he knew, could be traced back further than the Norman period. At the conclusion of Mr. Clark's address, the party separated, and at four o'clock met at the Town-hall to dine, under the presidency of Lord Amherst, president of the Kent Archæological Society. The concluding meeting was held in the Town-hall, Canterbury, Lord Talbot de Malahide presiding, and it was resolved, "That the best thanks be given to the Mayor and Corporation for the use of the Guildhall, to the Dean and Chapter for the use of the Library, and to the Warden of St. Augustine's College for the use of the hall of the College."

To those very few who remembered the original meeting in Canterbury, more than thirty years ago, the whole affair seemed but a pale reflex, notwithstanding the number of able men who took part in it. The fact is, they found little new to say or do.

VISIT TO ST. ALBAN'S.

ON Tuesday last, on the invitation of Sir Gilbert Scott, R.A., as president of the Royal Institute of British Architects, the Vice-Presidents and Council of the Institute, as well as a number of private friends, paid a visit to St. Alban's Abbey, where Sir Gilbert gave some account of its history, and described the various objects of interest to be found in it, and the work that had been done. He considered that the Anglo-Saxon Church built by King Offa was entirely swept away, and the Norman Church was built by Paul of Caen, the first Norman Abbot of St. Alban's, of Roman tiles and stones brought from the ancient city of Verulam. This abbot was very ambitious, and made his church half as big again as the metropolitan cathedral his cousin had built at Canterbury. John de Cella, the twenty-first abbot, began the trans-

formation of the west front from the Norman to its present style of architecture. He began it in 1198, and at his death his successor, William de Trumpington, modified the details of the work in the most reckless manner, and from being very rich changed it to comparatively poor work. Sir Gilbert then proceeded to point out the principal features of the west front and its portals, and the difference between the work of John de Cella and William Trumpington, that of the former being extremely beautiful. The interesting paintings which were discovered a few years ago on the west faces of the Norman piers on the north side of the nave were next described by Mr. J. G. Waller. One of the paintings is a gigantic representation of St. Christopher with the infant Christ. Sir G. Scott explained how it was that five arches on the south side of the nave are of the Decorated period, while the remaining arches on that side are Early English, and the opposite arches are Norman. We learn from a contemporary record that in the year 1323 this part of the church suddenly fell to the ground. The nave was then, said Sir Gilbert Scott, the "church of the laity," and as there were a number of men and women in the church at the time, it was attributed to a miracle that there were no lives lost. These pillars were partly rebuilt by Hugh Eversden, who also completed the Lady Chapel, and who died in 1326. The party proceeded to the choir and the presbytery, where the work of restoration has been, to a great extent, completed. The tower, which, our readers will remember, was found to be in a most dangerous condition, has been made perfectly safe, and has been stripped of its external plaster, so as to expose to view the Roman tiles of which it is composed. All the structural parts of the choir, presbytery, transepts, aisles, and the Saint's Chapel have been restored, and the whole fabric of this part of the church has been strengthened. The roofs have been cleaned and restored. It is rather remarkable that, in restoring the choir ceiling, under the paintings of 1680 older paintings were found, of which the later were but rude imitations. The original paintings have been cleaned and exposed to view. They are believed to be the work of Abbot Wheathamstead (*circa* 1440). The visitors proceeded to the Saint's Chapel, where Sir Gilbert called their attention to the superstructure of the Shrine of St. Alban, 2,000 fragments of which were brought to light in 1872 and illustrated in our pages. Mr. Ridway Lloyd made some remarks explanatory of the altars and tombs in this part of the Abbey. On arriving at the ante-chapel of the Virgin, the pedestal of the shrine of St. Amphibalas, fragments of which were also discovered in 1872 and have been since put together, were described.

Some 2,000 fragments of beautiful mouldings and sculpture were arranged in the south transept for the inspection of the visitors.

The party were afterwards entertained at dinner in the Town-hall, where some apposite speeches were made by the President, Sir Edmund Beckett, Archdeacon Grant, Precentor Venables, the Rev. J. Lawrence, and others, the toasts including "The Health of the Founder of the Institute, Professor Donaldson," who responded.

THE OPERA-HOUSE ON THE EMBANKMENT.

ACCORDING to notice, Colonel Beresford called the attention of the House of Commons to the intended encroachment by the erection of the New Opera-House. In the course of his observations, he said, that some months back the Metropolitan Board of Works had let a portion of this land to a person named Bulmer, at a rental of 3,000*l.* per annum. That lease was subsequently transferred to Mr. Mapleson, who paid Mr. Bulmer 10,000*l.* for it. Shortly afterwards Mr. Mapleson obtained permission from the Metropolitan Board of Works to advance his proposed building 75 ft. nearer to the roadway, thereby giving him an additional 5,000 square feet, on condition that he made two short roads 20 ft. wide on either side of the building. He, however, was prepared to show that Mr. Mapleson would have been compelled to execute these roads for his own purposes, and that therefore he was not entitled to any additional land by way of compensation for making them. The two houses of which it was said Mr. Mapleson could not get possession, had now, he believed, been secured by that gentleman, who had let the ground at a considerable rental for the erection of a Royal Academy of Music. Mr. Mapleson was not allowed to have his own architect or contractor. The architect connected with the Board, Mr. F. Fowler, was to be his architect; and his contractor was named by the Board. Surely this was in violation of the Metropolis Local Management Act, which provided that no officer or servant of the Board should be concerned in any contract or work made or executed by the Board. Mr. Fowler was also to be the architect of the Royal Academy of Music. He begged to move—"That, in allowing the building frontage on the Thames Embankment to be advanced to within 30 ft. of the roadway, the Metropolitan Board of Works is acting in contravention of the policy intended to be affirmed by the resolution of this House, July 8, 1870, whereby the Embankment was secured as an open space for the use of the people."

Sir J. Hogg defended the conduct of the Board, and said the land was originally divided into two parts, and in November, 1873, tenders were invited. Only one was received, which was declined, because it did not come up to the price their land was thought worth. The architect was next directed to negotiate with several gentlemen who had privately signified their desire to become purchasers. None of them came up to the price. Again, in October, 1874, other tenders were invited, and one for 3,000*l.* was accepted, the valuation of the architect having been considerably below that sum. The Metropolitan Board of Works, therefore, had made a good bargain for the ratepayers. He knew nothing of any negotiation between Mr. Bulmer and Mr. Mapleson. They made Mr. Bulmer complete his contract and allowed him to hand it over to Mr. Mapleson. The hon. member said that Mr. Mapleson was not allowed to have his own architect and his own contractor. He must give the most unqualified denial to every word of that statement. There was not a shadow of foundation for either of those statements. The facts were these:—When Mr. Mapleson got the land, a certain number of architects thought proper to send designs. Mr. Fowler sent in a tender under an "initial"; two plans were selected, one happened to be Mr. Fowler's and another that of Mr. Phipps,—one being a member of the Board and the other a friend of his own.

Colonel Beresford rose to order. He begged to tell the hon. gentleman that his authority for the statement he had made was Mr. Mapleson.

Sir J. Hogg must give the most direct contradiction to the statement. Then, as to Mr. Webster, the Metropolitan Board had no contractors. Their usual course was to issue specifications: tenders were sent in, and the lowest tender was always accepted if it were that of a fit and proper person. Mr. Webster had done several works for the Metropolitan Board remarkably well, but there was not a shadow of truth in the statement that he had been thrust down the throat of Mr. Mapleson.

Mr. Beresford Hope also combated observations made by Colonel Beresford, and the motion was ultimately withdrawn.

Colonel Beresford's assertion as to Mr. Mapleson's statement will of course be inquired into.

BUILDERS' BENEVOLENT INSTITUTION.

THE 28th annual general meeting of this institution was held yesterday (Thursday), at Willis's Rooms, St. James's, Mr. George Dines, president, in the chair. There were also present Messrs. George Plucknett (Cubitt & Co.), treasurer; Thomas Stirling, F. W. Keeble, W. J. Mitchell, James Simpson, M. Hall, — Fry and Thomas Patrick. The annual report and balance-sheet, which were unanimously adopted, on the motion of Mr. Mitchell, seconded by Mr. Simpson, stated that the directors had purchased the sum of 914*l.* 15s. 7d. stock, 3 per cent. Consols, for the relief fund, making a total of 18,434*l.* 9s. 9d. stock,—viz., 14,903*l.* 9s. 4d. for the relief fund, and 3,531*l.* 0s. 5d. for the building fund. The directors are now taking the necessary legal steps to transfer the sum subscribed to the building fund to the general relief fund, the idea of erecting almshouses having been abandoned, as the pensioners prefer to live with their friends. When this transfer is effected, the directors will have an additional sum of 105*l.* per annum to distribute to pensioners. After appealing for increased subscriptions, the report alluded in feeling terms to the recent death of Mr. A. G. Harris, after twenty-eight years' faithful service as secretary. The balance-sheet showed the receipts from all sources to be about 3,000*l.*, and a balance of 380*l.* remains in hand on the year's account. Votes of thanks to the patrons, president, vice-president, trustees, treasurer, directors, hon. secretary for ball (Mr. J. T. Bolding), hon. auditors, and hon. solicitors were duly accorded; Mr. George Plucknett was re-elected treasurer; Sir Samuel Morton Peto, Alderman Sir James Clarke Lawrence, M.P., and Messrs. George Plucknett and C. T. Lucas were re-elected trustees; and on the motion of Mr. George Plucknett, seconded by Mr. Thomas Stirling, Mr. John Aird, jun., was unanimously elected president for the ensuing year.

ABERDEEN "PALACE BUILDINGS."

THE Palace Buildings in Union-street have been recently opened. The hotel occupies the whole of the floors above Union-street. Its main entrance is from Union-street, the first floor being reached by a grand staircase, lighted from above. Immediately at the top of the stair is a bar and landlord's parlour, on either side of which corridors lead to the various apartments and different parts of the hotel. To the left are a coffee-room and drawing-room. The former is a spacious apartment, 50 ft. long by 24 ft. wide, with cheerful views from the windows. The drawing-room, on the same side, is about 35 ft. by 35 ft., with a corner cut off. Immediately behind this room to the south is a suite of rooms suitable for a family, with every convenience. On the right-hand side on entering is the commercial room, the dimensions of which are 35 ft. 6 in. by 20 ft. 6 in., with an ante-room, also to the front, for writing in, &c.; and, adjoining the commercial room is a smoking-room, 24 ft. by 18 ft. Immediately above the principal entrance, and between the commercial room and coffee-room, is a large parlour. Another suite of rooms, opposite the bar on the right hand side, fills up the centre division of the building. Passing by a short flight of stairs to the lower portion of the building, we have over the side entrance two large stock-rooms, a billiard-room, and luggage-room, &c. Upon the second-floor, the south-west corner is set apart for the culinary department. The kitchen is 35 ft. by 17 ft., and has a cheerful look-out. The kitchen communicates with the servants' hall, servants' bedrooms, pantries, &c., all shut off from the main building. The remainder of this floor is taken up with bedrooms and dressing-rooms, parlours, bath-rooms, &c., entered from two wide corridors traversing the whole length of the building on either side. In the centre, between these corridors, is the housemaids' room, which is placed in communication with all the private rooms by means of electric bells. The public rooms on the floor below communicate with the bar by a similar arrangement. The upper story is wholly taken up with bedrooms and their adjuncts, housemaids' accommodation, &c. On this floor alone there are thirty-two bedrooms, all of them large and airy. The total number of bedrooms is over seventy-five, including those in the suites of rooms. From all the rooms in the hotel, without almost any exception, there is a cheerful look-out; and from the upper windows the suburbs may be scanned for miles around. At the roof of the building are the water-cisterns, affording an ample supply of hot and cold water to the whole house. A hydraulic lift, capable of lifting a ton weight, is placed in the lower floor, and acts as a common carrier to the several floors of the hotel. The Palace Hotel has been leased by Mr. Mackie, late of the Northern Hotel.

Our Water Supply.—Mr. Bailey Denton writes:—"During the last month there has fallen on the surface of the country, with but few places excepted, within the short period of one hour, as much rain as would, if conserved, supply the entire population with water for domestic and other purposes for a whole year. There has fallen within the present year (1875) sufficient rain 'per square yard of surface' to furnish 50 per cent. more water than would satisfy each unit of the population with all required for drinking purposes. Ought an inquiry into the capability of utilising such excesses, and so equalising extremes, to be delayed, when it is well known that, even at this moment, while in the midst of the deluges of rain that have occurred, there are places where an insufficient provision of water exists?"

THE BASILICA OF ST. CLEMENT, ROME.

IT is a thing most full of marvel to one that has stumbled among the dry bones of archæology, in a piteous search for something of which he may say "Behold, this one has something of life," to see those dry bones, gathered together and clothed with flesh, standing up every man on his feet. Yet before him who turns the pages of "*Saint Clement, Pope and Martyr*," a part of this great army files, very flesh and blood. Nor is the vision faintly limned: the shadow of death, which hangs so heavily over the remains of the past, has been pierced and driven by those rays of faith which light up every point towards which our writer turns.

We propose, however, to give merely an epitome of the architectural and archæological matter which this valuable work contains: and we undertake the task, because, owing to the large amount of theological and other learning with which the descriptions of the basilicas of San Clemente is interwoven, in the ordinary course of things our profession would lose the benefit of the author's labours.

The book which, in its present form, was published here in 1873, contains some 450 octavo pages, of which the first fifty are given to the introduction. This opens with the description of a Pagan tomb, still existing. "In a corner of the inclosure are ruined *columbaria*, probably for the dependents, with broken cinerary urns still in their niches; and in another place a vast massive round "monument of stone for the head of the house." The author traces the adaptation of these *prædia* to Christian burial, and thus explains the occurrence of Pagan ornaments in early catacombs. He dwells on the fact that classical learning is not sufficient to elucidate Christian ruins, and goes on to some account of Christian cemeteries and the reason of their construction. He writes:—"About Rome the Christians dug into the hill-sides, as the Etruscans had done before them." "They were not thereby precluded from monuments or chapels above ground, and in case of distinguished martyrdom they were sure to construct such *memories*, which, when persecution ceased, became basilicas." Passing over much on relics, the duty of burying the dead, prayer for the dead, the sign of the cross, persecutions, &c., we come back to the catacombs. "After the death of Julian the Apostate in 363, De Rossi says that the use of subterranean cemeteries visibly declined. In the public distress they were neglected and fell into the hands of private fossors, and after the year 454, he finds no interment in them at all. The liturgies of the second half of the fifth century constantly refer to burials in the basilicas; and in the sixth century burial was common within the walls of Rome. As for the Pagan emperors, the first direct attack upon the cemeteries was that by Valerian, in 257, and it only lasted three years..... In 303 Diocletian burnt and ravaged everything..... But the invasions of the barbarians were the real cause of the destruction of the cemeteries..... In 648, 682, the bodies of the martyrs were brought in from the suburban towns, such as Porto and Nomentum. Astolphus and the Lombards ruined the cemeteries in 760. Paul I., who was created Pope in 757, brought the bodies of the martyrs into the city, because the cemeteries were in decay. Adrian I. and Leo III. tried to restore them. Paschal I., in 817, removed the body of St. Cecily, and many others. Sergius II. and Leo IV. brought in some that were still left. Nicholas I. attempted, in 867, some catacombic restorations, and they were the last..... The substructions of St. Peter's conceal the Vatican cemetery. The new basilica of St. Paul shows that the Popes have not yet forgotten the grave of either Apostle. But the Basilican churches of Rome were sometimes built upon the martyr's own house, whether interred there, as in the case of SS. John and Paul, officers in the army under the apostate Julian, or not, as in the instance of St. Clement, who was martyred in the Crimea." The remaining few pages of the introduction are taken up with the subject of church pictures looked at in different lights. Considering them from an historical point of view, our author says:—"If we were in possession of those with which St. Damasus adorned his church of Saint Lorenzo in Damaso, and which were extant 400 years afterwards, that is, about 800, we should have an ascertained series of pictures to supply the link which seems wanting in Catholic decorative art between the catacombs and the compositions in mosaic, which, though some may be of the sixth and seventh, are more generally of the ninth and later centuries. Independently, however, of any other interest, the frescoes in our basilica of St. Clement go far to fill up the gap; for in them we have the earliest large wall-paintings of church compositions now left us, certainly in Rome at least; ingenious in their arrangement and replete with piety..... If we agree, from the square nimbus about his head, that Leo IV. introduced in the picture of the Assumption of our Lady, was painted before his death in 855, we can judge in some degree (even without the pictures lost in the interval, and taking no account of the Crucifixion and other earlier frescoes in St. Clement's), by comparison, with the Catholic art of the fourth century, such as the glasses inlaid with gold, and the latest representations in the catacombs, how much has been lost in the lines of drawing, and what progress made in more crowded composition. Again, if we refer the great picture representing the translation of St. Clement's relics, from the Vatican to his own basilica, to the time of Nicholas I., who died in 866, we shall not think, even by this comparison with the catacombs, that Catholic art had miserably perished." This brings us to the end of the introduction, and to the beginning of the section which treats of the life of St. Clement, in some hundred and more pages; but as it is not to our purpose, we refer to it very briefly.

Clement was of imperial blood, and of the Flavian family. The martyr of the same name was his uncle. He was converted by St. Peter at an early age. He is mentioned by St. Paul in his epistle to the Philippians. He succeeded to the Popedom A.D. 92, being the third from St. Peter. He was exiled to the Chersonesus by Trajan; where he worked miracles and converted the Aborigines. The result of this was that "Auphidianus ordered the Pontiff to be thrown into the sea with an anchor fastened to his neck. The sentence was executed in the presence of an immense crowd. The Christians being grieved that they could not recover his relics, were advised by his disciples Cornelius and Phœbus, to have recourse to God by prayer, and humbly implore of Him to indicate the spot where the holy martyr's body lay. As their prayers ascended to heaven, the sea miraculously retired from the shore. They followed the receding waters, and having gone to the distance of about three miles, they found to their astonishment and inexpressible consolation, a marble temple and within it an urn containing the holy Pontiff's body, while near it lay the anchor, the instrument of his martyrdom. Falling on their knees, they returned thanks to God for having recovered so priceless a treasure. For more than two hundred years the sea used to retire on the anniversary of St. Clement's martyrdom," after which time it seems to have returned to its natural habits, for in the ninth century St. Cyril went in search of the relics of the blessed St. Clement, and "taking ship on a calm day, under the guidance of Christ, they took their way, to wit, the aforesaid philosopher, with the bishop, George by name, and the reverend clergy, and some of the people. Sailing then with great devotion and confidence, hymning and praying, they reached the island in which they supposed the holy martyr's body to be. Getting round about it then and searching" they found the holy man and his anchor, and transported them to Rome.

We have now arrived at the section headed "Subterranean Basilica of St. Clement," which has for its frontispiece a plan of the old basilica, with the foundations of the present church shown on it in lighter ink. We must now follow our author more closely.

We quote the commencement of Chapter I. at length, as, although containing nothing absolutely new, it is a clear expression on a subject by no means universally understood:—"The Greek word *βασιλικη* (basilica) means a royal pall, and in this sense it is used at the end of the 'Recognitions of St. Clement,' where it is stated that Theophilus, the first citizen of Antioch, '*Domus suæ ingentem basilicam ecclesiæ nomine consecravit*,' for the reception of St. Peter's chair. It was a covered building, not like the Forum, an open place surrounded by covered porticoes. The first great basilica was built A.U.C. 568, by Cato the elder (Marcus Portius), whence it was called Portia; the second was called Opimia; the third that of Paulus, built at so great expense, and with such magnificence, that it was called Regia Pauli. Julius Cæsar built, under the direction of Vitruvius, the Basilica Julia, which served not only for the hearing of causes, but also for the audience and reception of foreign ambassadors. It was supported by one hundred marble columns in four rows, and enriched with decorations of gold and precious stones. Pagan Rome contained many other basilicas also, such as the Emilian, the Alpian, the Constantinian, &c. Ecclesiastical writers generally use the word to signify a church of great magnificence, and in that sense it is frequently employed by St. Ambrose, St. Augustine, St. Jerome, Sidonius Apollinaris, and several other writers of the fourth and fifth centuries. Some, with the learned Jesuit Alexander Donati, and Rondinini, assert that the ancient churches were called basilicas from their having been built in the style of the Roman halls; while others maintain that those halls were given to the church for the celebration of Christian rites, as may be collected from that passage in Ausonius, where he tells the Emperor Gratian, 'The basilicas which heretofore were wont to be filled with men of business, are now thronged with votaries praying for your safety.' These words clearly indicate that, at least, some of the Roman basilicas were converted into Christian churches. The design of the basilica was simple and grand: oblong in form, with a nave and two aisles, separated by lines of columns, from which, in many instances, sprang arches to support the walls that sustained the roof. At the extreme end opposite the door was a raised platform for the tribune, and the apse in which it stood was often ornamented with mosaics. The main entrance to the building was through a portico supported by five or seven columns, according to the size of the structure. All these arrangements are still perfect in the modern basilica of St. Clement, the style of which, we presume, was borrowed from the ancient one. Bottari, Agincourt, Raoul Rochette, and Father Marchi have maintained that the style of the Christian basilica was borrowed from the chapels in the catacombs. But these chapels were rather modelled after the plan of the ancient Roman basilica, as it was natural for the Christians to adopt the designs to which they were accustomed."

We next learn that Clement, shortly after his conversion, erected an oratory in his own palace at the foot of the Cœlian-hill; and that it was replaced by a magnificent basilica, probably at the beginning of the fourth century. This latter date is determined by the following facts: Diocletian levelled many churches during his persecution, which commenced in 302, and Constantine repaired and rebuilt these churches on his accession in 306, or soon after. It is not likely that the oratory of so eminent a saint escaped the attention of either emperor. There is no evidence of its having been built previously to the fourth century, and the style of the architecture indicates that it was not. On the other hand, it cannot have been built much later, for St. Jerome informs us that the church built in Rome keeps the "memory" of St. Clement's name "to this day." The occurrence of this word "memory" leads to an investigation of the technical meaning of the word *memoria* to the layman somewhat tedious. A *memoria* seems to have been a place of worship raised on the site made famous by some saint and martyr.

In Chapter II., our author shows reason to conclude "that both church and clergy were flourishing in 600. Two hundred years after, whatever may have been the cause, the basilica was falling into ruin. Anastasius, the librarian, tells us that Adrian I., who died in 795, restored the roof." He says also, "The title of blessed Clement, which was even about to fall and be laid in ruins, of the third region, he made new. One of the columns of the original basilica is broken, and perhaps the brick piers in which it and several other pillars of the old church are imbedded are Adrian's work."

Two possible causes of the apparently sudden filling-up of the ancient basilica are suggested. "The great earthquake of 896, which shook the old pillars of St. John Lateran, and may have reached this church, and the destruction of this quarter of the city from the Lateran to the Capitol, by Robert Guiscard, who came to Rome in 1084, to rescue the great Monk of Cluni, Gregory VII. . . . . Probably that was the time at which our venerable basilica disappeared." To Father Mullooly, the author of this book, we are indebted for the discovery of the basilica. In his own words, "The basilica disappeared and was forgotten, so that, notwithstanding the industry of Roman archæologists, every record and tradition relating to it was referred to the comparatively modern church built upon its ruins. However, the basilican style was followed in all its details in the latter, which caused it to

be regarded by all archæologists as the most perfect example existing of the early Christian basilica. But a particular study of the topography of this part of the city, as well as a minute inspection of the marbles in the choir, induced the writer of these pages to suspect, so far back as 1848, that the church spoken of by St. Jerome, Pope Leo the Great, Symmachus, and Gregory the Great, could not be that described by Ugoni, Panciroti, Rondinini, Nibby, and others; and, therefore, that the former must be either beneath, or somewhere near the latter. Just as these conjectures were about to be tested, Rome became the theatre of revolution. The contemplated researches were therefore deferred, but not abandoned. In progress of time what had been conjectures ripened into convictions, and, in 1857, the researches were commenced by opening a passage through a chamber containing some remains of ancient walls, and thence through another, quadrangular and vaulted. Here, having made an aperture in the wall, and removed a quantity of rubbish to the depth of 14 ft., we discovered three columns standing erect *in situ*, and some fragments of frescoes." What repose there is in the picture which this simple narration presents to us. We see the Dominican prior walking his round of consolation, and musing as he treads the ground so dear to him, of all that ancient fathers and modern antiquaries have written concerning it; we see him seated in his choir vainly endeavouring to follow the discourse of Father Verydry, while his eye and mind wander to the pavement beneath his feet; we see him with that power of faith which forms so marked a characteristic of the man, directing the works, and telling the number of cartloads removed, "of which," says he, "more than 150,000 cartloads had to be carried up the same way that Maximin made the martyrs, Thraso and Saturninus, carry gravel from the arenaria to build Diocletian's baths, that is, in baskets on the shoulders." The works succeeded admirably under the direction of Fontana; the upper church being supported on brick arches and vaults. Passing over notices of inscriptions (one of which records the restoration of the basilica in 384–398) and a mutilated statue of St. Peter as the "Good Shepherd," we now come to the description of the basilica itself, and with that we will deal in another article.

Rome.

OLD AND NEW METHODS OF ART WORK.

JAPANESE ART.

AMONG the multitude of "activities" which distinguish the "Western," or civilised, portion of the world in these modern days, there is surely not one more remarkable than that of the desire apparent on all hands of the *Western* civilisations, to "convert"—to use a general and descriptive term—the nations of the *Eastern* world. Reform is everywhere; but it centres in the West, and spreads on all sides from thence, and all desire to spread it, and to "Westernise" the world! In art matters, which so closely concern us, this is more especially so, and not a little of our never-tiring energy and commercial activity and capital is employed in the sending of our fabrics and "patterns" to those far-off Eastern countries, which are waiting to be thus "civilised"! But there are two sides to all questions. If the East be now borrowing, as far as may be, from us, it is quite certain that we owe not a little—how much it would take some time to tell—to it. Can the two, so opposite in feelings and tendencies, be ever brought together, and so mixed up together, through mutual borrowings, as to make one? Is it, on the other hand, desirable to do this, even if possible?

Some such thoughts as these must need occur to many interested in the art of Japan. This singular phase of art is just now not a little in fashion, and much money is being spent on it for reasons which are not, truth to say, quite obvious. Why should Japanese art be specially entertaining, and to be coveted?—for what can well be further removed from us here than the isolated art productions of so strange a people, so different from ourselves in all ways?

It is but very lately, be it remembered, that anything was known, either of Japan itself or of its exceptional productions; for no treatise even, say the authors of the new book on the "Keramic Art of Japan," which is dedicated emphatically to the Duke of Edinburgh, specially devoted to the subject of Japanese art, has been written by any of the travellers in Japan. Indeed, if all the remarks were collected from the numerous works on the country, and on the manners and customs of its people, which have any bearing on art, they would produce but a very fragmentary and sketchy essay on the subject. The authors add, and it is not a little significant of what is in the future, that so great are the changes which modern "civilisation" and commercial intercourse have so lately made, and are making, every day in Japan, that at a very early date but little will be found of its really *national* art work, or art thoughts; little remaining to enrich our present imperfect knowledge. How true this is none need be assured who have paid any sort of attention to the matter. A few thoughts about Japanese art, therefore, before it disappears, and is lost in "art-manufacture," may be of interest, if not of use.

It is a strange thing to go back in thought to that older state of the world when nations, such as Japan, were each in one complete state of *isolation*. Such state belongs emphatically to the barbaric state of the world. It followed from its savage state, and is followed by our present so-called civilised condition of things mundane. To this state in the life of nations belongs China,—to which Japan would almost seem to be a natural province,—and to produce, at first glance, it seems, the same species of art, and to be produced by the same means. But the authors of the new book on Japan tell us that few if any bonds of sympathy exist, and very few outward marks of resemblance are to be observed in their respective works, the differences being so many, and so important, even when the material employed is the same in both cases. Indeed, so great and wide is this difference between the two that we might suppose, they contend, that wide oceans or untravelled wastes had always existed between them, and so separated them. But in spite of all this, there is a sort of likeness and similarity in them that is not a little striking. A right curious subject of inquiry it is, and will one day, we cannot doubt, help to throw light on the very origin and progress of art. It is not necessary that two peoples in their art efforts should *copy* or even *see* each other's art works, to be more or less alike: it is but necessary that they should work in the same vein. Indeed, may it not be affirmed that the art *beginnings*, at least, of all nationalities were the same, or nearly so?—*e.g.*, the well-known *fret* of the antique Greek, of the Japanese, the Chinese, of the Mexican—with a pathless ocean between them and the old world civilisations—might well have been copied from each other; the differences being caused by the special individualities of each producing power, mind, and nationality, the individual peculiarities of each artist workman producing in *detail* further and more subtle distinctions. We might cite in proof of this, which may seem to some an over-refinement, not a few striking instances, did space permit.

It may here be observed that this fine art of the Japanese can be only thoroughly seen and appreciated by an attentive and long-continued examination of the *objects* themselves, whatever they may be, whether textile fabrics, paper, wood, or metal work, or keramic art. Books and illustrations are excellent things in their way, when the objects themselves cannot be seen; but when they can, *they* should be looked at, and certainly by those who need go into the difficult questions of kind and texture of material, tone of colour, individuality of drawing, and subtlety of forms. Some of the finer work in ivory, when coloured and gilt, *no* drawing, however fine, could possibly adequately represent, so exquisitely fine and minute is the *carving*, and so subtle the colour. Nothing but individuality of handwork, and fineness of touch, and correctness of taste, could produce such work. Machinery of any kind would be here utterly powerless. It evidences, as all such work must, how much is lost to art by the substitution of the machine for the hand in the production of art-work. This may he, and is no doubt, questioned by not a few; but look into this Japanese work,—*i.e.*, into the art-work itself,—into the hand-made objects,—and all doubts will and must be removed in exact proportion to the attention and study given to it. In the very fine work no study even is needed, for the fact is to be perceived at a glance. If the famous fine and fairy-like *muslin* of India is beyond the power of the best machinery, as it is admitted to be, then is this fine Japanese work equally, if not more, so.

Looking at the quaint conventionalism of the costume, and at the general surroundings of the Japanese, we should hardly think of the fact of their strong likings for Nature, and for the representation of natural forms and movements. But so it is. Some of the representations of the forms and movements of animals, birds, and insects especially, can hardly be surpassed in accuracy of deliniation and truth of colour, and even subtlety of expression. And yet with all this truthfulness they are Japanese likenesses. Nowhere most surely in the whole range of things artistic is there to be found a more instructive and convincing proof of the value of national and pure individuality. All is intensely Japanese, and could come from nowhere else. The more one looks at it the more pity does it seem that it should be lost, and "improved" out of the way. Its value surely is in its own inherent and unadulterated strength, and is not to be made better, whatever that may mean, by mixing it up with all kinds of incongruous and inharmonious forms and conceits. In its own inherent and individualised power is its strength, and out of this present strength must its future grow: *i.e.*, if it be not lost altogether in "Western" influences. What the strength of the distant future art-world is to consist in may indeed puzzle the most learned, and the most acute, and the most cunningly prophetic, when all things artistic get well mixed together; but what the strength of the old art-world consisted in there can be no sort of doubt. Japan, in the last generation at least, was the old world in the new.

There is one special consideration connected with this subject of the older phases of art worth note when dealing generally with art nationalities. It is in connexion with books of *travels*. The farther we go back, and the more old-fashioned the book of travels is, the more quaint and thoroughly national and individualised do the accounts of "foreign parts" get. Everything is new and strange to the traveller. Everything offers a contrast to that which he left behind him in his distant home. Houses, rooms, furniture, human kind, and the costume it wears, and the ways of men, all are different from what he has always been surrounded by. The old voyager is intent only in pointing out these manifold differences, at wondering at them, and all his literary strength is exhausted in the endeavour to make it evident and plain to the intelligence of his readers. This can hardly be said of the more modern searches into "foreign parts," for their burden mostly is of what and how best impression is being or is to be made on the outer barbarian. In matters Japanese this is specially to be noted. In the most recent books about Japan and the Japanese, we seem to see through them,—great as their merits may be,—the Japanese from our own stand-point, and to look at them through a British glass, somewhat darkly it may be. But with the old voyagers we plunge right into the strange islands themselves, and forget our own ways, and see the odd people and their surroundings and ways of life as though we lived with them, though not of them.

It would be a very curious matter, indeed, to go exhaustively into the full amount of art teaching which this art of the Japanese can teach, and to pick up out of it all that could by us be fairly and usefully utilised. In the first place, it must be borne in mind that the art of the Japanese is, as we have before noted, on the visible decline, and that a knowledge of "Western" ways of doing work, however advantageous that may be in itself, is not in Japan improving the native work, but gradually and certainly destroying it. There seems to be no doubt whatever of this, and, indeed, if we analyse the art process itself which produces art work we must soon see that this must needs be so. Unfortunately, the Japanese are getting into the way of *manufacturing* objects for the European markets, so that caution is needed. But if any one will take up a piece of pure Japanese work, and try to copy it, then will the difficulty,—nay, the impossibility,—of the process become apparent. No matter whether the work be fine or coarse, large or small. The character and individuality and feeling of the work are purely Japanese, and take native talent and feeling to interpret truly. It is rather in the study of such work, and in the looking at it, and may be wondering at the strangeness of it, than in any attempt to reproduce it, or to steal from it, that real artistic good can come. All will agree, the longer they look at it, with us, we are quite sure, that it is a pity that so curious a phase of art should be "improved" out of existence? And for what? Much, very much, more might be here said in reply.

SCULPTURE BY THE GROSS.

PASSING a large new building the other day, not a very great way from the Houses of Parliament, we were conscious of an effort of decoration in progress thereupon, which gave us pause. A series of symmetrically spaced panels on a long elevation had been and were being carved each into a design formed by a couple of specimens of the conventional dolphin, each pair reposing in peaceful companionship in its own panel. The objects of the edifice being, in a sense, aquatic, the device might lay claim to be considered appropriate to the situation; and, at any rate, we are not going at this time of day to strain at a dolphin as a piece of architectural ornament. We have, metaphorically, swallowed in our time many scores of architectural dolphins, and perhaps might be very glad if we never found anything worse disporting itself on a building. The method of representing these respectable conventional fish standing on their heads, with their tails crossing or tied in a knot, has scarcely the charm of novelty, certainly; but that may be said of some other architectural details. But what did strike us in the case alluded to was that this not very original device was being repeated in a score or so of places all in a row, by dint of a distinct and separate operation of carving applied in each situation. And such a proceeding we cannot but think an indefensible waste of human labour.

The principle of repetition is an essential element in architectural decoration in almost every style, and of course we are not saying that the carving of a repeated ornament, such as the modillions of a cornice, along a whole range of building, is a waste of labour. Repetition of that kind is necessary for continuity of effect, and, in fact, it is the repetition that constitutes the decorative effect, in cases where the single feature without the repetition would have no significance. And in larger features, in a line of windows for instance, the best, or at any rate the most dignified, effect is generally produced by symmetrical repetition. But in the case of panelled spaces enclosing ornament which is worked by hand, the fact of the symmetrical shaping and spacing of the enclosing panels is just what allows of the variation of the work contained within them, without detracting from the general effect of symmetry. The demand which the eye makes for repetition is satisfied by the general form and border of the enclosed spaces being made to correspond; the spaces themselves are then at liberty for varied treatment in detail without detracting from the general unity of design. To ignore this opportunity, and to set masons or other workmen to carve the same design over and over again in each separate situation, is to reduce intelligent men to the condition of machines, and to make them laboriously carry out what could be done as well by any of the mechanical means of casting or shaping designs by the score. We do not (to come to our dolphins again for a moment) find fault with the lamp-pillars of the Thames Embankment for repeating a somewhat similar style of design to that we have been mentioning, along the whole length of the river wall; there may be two opinions as to the design, but the fact of its repetition does not offend the judgment, because it is cast-work, and if suitable for one part of the site is equally suitable for all the rest, and its variation would hardly give any advantage to compensate for the labour and expense of a larger number of models. Nor is the moral sense offended by seeing a workman employed in cutting a number of stones to the same mould for a continuous cornice. That is mechanical work, to be carried out with mechanical accuracy, and not demanding what can be called artistic ability or feeling. But when we see work which comes under the class of architectural sculpture, and requires the hand of the art-workman to bring it into form, deliberately repeated by the gross, so to speak, in situations where the same amount of labour and skill might have been turned to the production of as many varied and new designs, we feel that the art-workman is being degraded into an operative machine, and that the degradation of architectural art can hardly be more effectually brought about. This sort of proceeding is not at all uncommon, and its object seems to be to save the architect the trouble of designing twenty things where one can be made to do duty. There is no parallel for this in any fine or noble architectural style of the past; at least, not as regards sculpture. Imagine the Parthenon with the same group laboriously sculptured in all the metopes, in unvaried repetition, and there would be the parallel to what is being done on great buildings in London, on which much money is being laid out. Even in the less intellectual work of the panelling and niche ornament of Mediæval architecture, we constantly find in the best work variation carried out in the most conscientious manner, as if the workman would have been ashamed to go over again mechanically what he had once done, when a little thought would enable him to vary it. Not unfrequently, we venture to say, the modern English stone-carver, if left to himself, would be equally unwilling to resort to this save-trouble method of repetition, and certainly no architect with any feeling for and interest in the art ought to allow him the opportunity of doing so.

No doubt the hurry in which buildings are wanted in the present hurrying age has something to do with, and gives, perhaps, some excuse for the system of carving in the gross, to which we allude. But if sculptured decoration cannot be carried out so as to add to the life of a building, and give scope for something like thought in design and execution—if there is no time for this, it would be far better to acknowledge the fact at once, and to be content with such decorative effect as can be obtained by more mechanical means. Architectural design, however unadorned, which makes no pretence to more than it really achieves, may command respect at any rate, and gain the praise of good taste. But to attempt effect by carving some commonplace design indiscriminately and in a hurry all over a building, is to degrade both the art and the workman.

THE OLD QUESTION.

ARE we to go on for ever copying old styles? is a question often asked, and in reply to which no practical response has as yet been given. Certain axioms have, it is true, been accepted, and by the acceptation and adoption of which a decided step in advance of the system so long prevalent has been effected. It is no longer thought sufficient or desirable that a design should be carried out in any material whatever irrespective of its nature and texture. The artistic form adopted, it is justly held, should be based upon the nature of the material to be used, and not be altogether irrespective of it. It is thought unworthy of the practice of every true lover of art to sanction or encourage the use of shams; the material, whatever it is, should declare itself, and be used so as not to appear like any other, and, when practicable, the more durable material should be employed in place of the more fragile and perishable.

When these opinions had been arrived at, a decided step in advance was made. When the architect resolved to use wood as wood, he, by a natural sequence, concluded to use every other material in a natural and characteristic manner, and in that way was led to produce new designs,—designs in perfect harmony with the style, and yet essentially different from the mass of the old work.

In determining the character which his design is to possess, the first consideration of the architect should be the nature of the materials he will have to deal with, the fitness of the means to the end, the relation between principles and ideas.

In using stone itself, the pointed arch is not an absolutely essential requisite to the carrying out of a Gothic design; a lintel may be used where it is most suitable for a purpose without its being weakened by cutting it into the form of an arch. Panels are more appropriate to a wooden construction than a stone one, and should not be adopted except in rare instances, such as where a thin slab of a richer material is inserted, where such a mode of construction becomes absolutely necessary to produce the desired end.

A pulpit may be constructed either of marble, stone, or wood, and in each case the form and the nature of the detail should be governed by the material; in marble it should be delicate and refined, bolder in stone, and altogether different in wood. A pulpit, being an accessory to the temple of the Everlasting, should, we think, be formed of the most durable materials, and although we have no favour for notions of smug respectability and comfort in such a place, there can be no objection to the feet of the preacher being protected by a wooden floor or thick mat. Stone sedilia again are hardly compatible with our modern ideas of what is requisite for the health of the occupants, and cushions and padding would be quite out of keeping in such a position.

Cast work is generally showy and meretricious, but it may be used properly and with good effect; it is, however, too often made to assume the form of carving which it can never do effectively. Cast-iron, for example, if produced with elaborate enrichment and undercutting, is always blunt and ineffective. Simple flat forms should therefore only be used, but wrought iron may be made to assume the most elaborate and fantastic forms, with sharp, well-defined detail. Plaster, again, is a much-abused material; an abundance of cheap and flashy enrichment can be produced in it, and there is therefore considerable temptation to use it; but it is weak and perishable, especially when put into the form of relief. It is a useful material when used in a flat manner, and in the right place, but where it is used in circumstances where a more durable substance might be reasonably looked for, the effect is disheartening.

Another good result of modern discussion is, that the interior plan is usually made to govern the exterior form, in place of the interior arrangement being made to fit into a previously designed exterior. The interior arrangement being shown on the exterior, greater expression, variety, and individuality is attained, the grouping is more picturesque than formal, and the ornament may be made to enhance and not to encumber the expression; every feature may have its use, and not be placed in a certain position merely because it is thought proper to do so: convenience and elegance may go hand-in-hand.

A decided improvement in our street architecture has been effected by the introduction of plate glass. Like many good things, it has been abused, especially in the case of shop-fronts; but to revert to the use of leaden casements with the smallest possible panes of glass, is a practice so absurd as to carry its own condemnation with it, and to encourage rather than to discourage the extravagant use of the largest sheets.

The relation between the site and the form, character, and design of a building is a grave consideration. It is generally a mistake to bring material from a distance; that which is common to a district is usually most in harmony with the surroundings. A stone house in the neighbourhood of Hambledon, Hazemere, or Witley, seems as much out of place as a timber-framed mansion would be on the shores of Loch Rannoch, or the wilds of Badenoch. A flimsily got-up thing, coated with cement, is a blot on the face of the least attractive spot in this world of ours.

The art of the past was, as every student is aware, the result, not simply of admiring and copying what had been done before, but of studying the requirements, necessities, and feelings of the period, by effecting gradual improvements as the call for them became apparent. But it almost seems as if no system of art action can be perpetuated in these modern days. In the struggle for existence men do not now look so much to the future as to the present, sufficient for the day if commissions are obtained and a per-centage pocketed. Strive to be conspicuous whatever the result,—the individual, and not the art, is what is most worthy of consideration!

Classicalism, Mediævalism, or even "Free Classicalism" is not what is wanted, but a style suitable to modern ideas and requirements.

DWELLINGS OF WORKPEOPLE IN CONSTANTINOPLE.

THE dwelling-places occupied by the industrial classes are invariably of two descriptions,—small, self-contained houses, which are either occupied by a family, or sublet to two or three; and large "Odas" or "Khans" inclosures containing a number of rooms each occupied by a family, or by a number of unmarried men. The houses, or odas, in one quarter of the city are, so far as can be seen, similar to those of another; but the quarter in which their dwellings are situated must make a difference in the relative health and comfort of different classes of the working men. Some districts frequented by them in the heart of Stamboul, or in the ravines behind Pera, are ill-drained and inaccessible; whilst others on the sloping ridges of the Bosphorus are within easy reach, both of the open country and of the sea. A separate house can scarcely be obtained at a lower rate than 25s. a month; an apartment of two rooms can be found at 16s. 8d. a month.

The common industrial classes are usually lodged

at the "odas," a description of which is not without interest. In one visited there were 150 lodgers. In a room, 12 ft. by 15 ft. and 12 ft. in height, lodged five men. The rent of the room was 10s. a month. It contained scarcely anything beyond bedding, quilts, and three small boxes. Within the "oda" was a coffee-house, where pipes, coffee, and raki were to be found, and to which a barber was attached. There was likewise a shop for the sale of cabbages, onions, and lemons, as well as bread, candles, and charcoal. The entire building was of wood. In another, the "oda" contains the means of lodging 350 persons. The master was a Turk. Of thirty-six rooms twenty-nine were tenanted by Armenians and seven by Mussulmans. The rooms, all of wood, were on two stories. In the court-yard vines were growing. In the centre was a large tank. The oda contained a coffee-house and a kitchen. The lodgers had one meal a day, and that in the evening. The food preparing was soup, with pieces of meat in it, stuffed cabbage-leaves, and beans.

Odas or caravanserais more or less similar to those mentioned serve for the accommodation of the very large numbers of the industrial classes that are attracted to Constantinople from a distance. They generally leave their families behind them in the hope of realising something more than the means of returning.

The artisans born in Stamboul are for the most part married, and occupy a portion of a small house. Until their marriage, that is during the period of their apprenticeship, they live with their parents. The nature of their engagements with their employers depends on the nature of their industry. Shoemakers and saddlers, for instance, are engaged by the piece; jewellers and tailors by the day or week.

The industrial classes are formed into "esnafs" or guilds, an institution which the Turks are said to have borrowed from the Arabian caliphs. Certain guilds are recruited from amongst men of one race only. Thus jewellers, watchmakers, tailors, furriers, and men engaged in the working of silk are all Christians; whilst saddlers, seal engravers, and others are Moslems. The property of each guild is made "Vakouf;" that is, endowed, so that it is secure from arbitrary seizure on the part of the authorities. An artisan serves an apprenticeship of from three to five years, and in some cases of seven years. He is then a "kalfa," or companion, and receives wages from an "Oosta," or master of a room.

The work of the native (including in this term the Greek Armenian and all those properly belonging to the Levant) is, as a rule, rude and unfinished. He takes no pride in his work. His pride consists rather in doing work as his forefathers have done it, roughly, rudely, and incompletely; and what he is satisfied in producing his customers are satisfied to obtain. The man who hammers copper, as his forefathers hammered it, into stereotyped forms is content to do this and no more. His guild approves, the public is content, he gains a livelihood, and his children will copy him as he has copied his ancestors.

BUILDING ON THE EFFRA HALL ESTATE, BRIXTON.

AMONGST the numerous historical mansions and grounds, in almost every direction around the metropolis, which are constantly in succession being broken up and applied to general building purposes, the Effra Hall estate at Brixton, must now be included. Effra Hall and its grounds have long been well known as one of the most picturesque suburban spots about South London. The park or grounds within which the hall, now demolished, was situated, is upwards of thirty acres in extent, bounded on the west by Effra-road from Brixton Church to the Dulwich-road, and stretching eastward to the Atlantic-road in immediate proximity to the Herne-hill and Victoria section of the London, Chatham, and Dover Railway. The whole of this estate has been laid out in streets for building purposes, and already upwards of 200 houses have been erected, several of which are occupied, whilst a large additional number are at present in progress. Three streets, each 50 ft. in width, run parallel with each other, in an eastward direction, from the Effra-road frontage to the Atlantic-road boundary, whilst other streets running north and south, intersect the first-named thoroughfares at right angles.

There will be altogether from 800 to 1,000 houses on the estate, which has been laid out by Messrs. Hammack & Lambert, surveyors, of Bishopsgate.

OPENING OF A NEW DOCK AT RUNCORN.

ON the 22nd inst. a new dock, which for some time past has been in course of construction, to meet the requirements of the growing trade of the port of Runcorn, was formally opened, and the facilities which it will afford for the rapid discharging and loading of vessels will be a great boon to the shippers, merchants, and others interested in the trade of the port.

The dock extension and machinery have been constructed upon plans laid down by the Bridgewater Navigation Company's general manager and engineer, Mr. E. Leader Williams, jun., who has arranged the increased accommodation in such a manner as to meet, in every possible way, the particular necessities of the trade of Runcorn. The area of the new dock is 2½ acres, its length being 600 ft. and its width 150 ft., making the total area 12⅛ acres, which will be increased to 17¼ acres on the completion of the conversion of the Weston Canal into another dock.

The contractors for the dock and extensions are Messrs. Dransfield & Holme, of Liverpool, and we understand that they have executed their task to the entire satisfaction of the Bridgewater Navigation Company. Messrs. Tannett, Walker, & Co., of Leeds, are erecting the hydraulic machinery and appliances, which are now nearly completed. Mr. F. Griffiths, C.E., has acted as the local resident engineer.

THE WELLINGTON MONUMENT, ST. PAUL'S CATHEDRAL.

TWENTY-THREE years nearly have elapsed since the "Iron Duke" (as he is sometimes styled) died,—a great man of whom the nation may well be proud. To speak of the hero of a hundred fights in his military aspect would be to enter upon a subject far beyond the limits of this paper: let it suffice that he went on from success to success, until the power of his opponent was broken, and his forces were scattered at Waterloo.

In his private character he well deserves the esteem of his countryman,—a man of self-denial, self-discipline, and integrity. A grateful nation has sought to honour his memory with a noble monument erected in the Metropolitan Cathedral of St. Paul's.

After all that has been said and done, and after all the time, too, that has elapsed, it is a happy circumstance that the carrying out of such a work should have fallen into the hands of Mr. Stevens, a rare man of his kind, although, like many great men, he had his weaknesses. It is also a happy circumstance that he should have lived to so far complete it, as that all the models for the figures are finished, and the whole of the marble or architectural framework is already executed, and in its place in the cathedral.

The view which we publish represents the work complete, as Mr. Stevens had designed it, and which, when finished, will measure in its extreme dimensions on plan (*i.e.*, taken at the die of the podium) 13 ft. 6 in. in length by 8 ft. 8 in. in breadth, and about 27 ft. in height. The place in which it stands was formerly the Consistory. It is at the south-west end of the nave, adjacent to the clock-tower. The compartment is oblong in plan, having apsidal ends, and measures 55 ft. long by 26 ft. broad, and 43 ft. in height to the vaulting. This ceiling or vaulting is handsome of its kind. There are four octagonal panels having vacant spaces for mosaic or fresco pictures, together with eight spandrel panels, which are sculptured in foliage and flowers out of the solid Portland stone of which it is composed. This court or chamber is lighted with a large window some 22 ft. high by 9 ft. 6 in. broad. Our readers will, for the most part, recollect that the court is divided off from the rest of the church by an oak screen, the work of Wren.

The position is a very undesirable one, but with that we are not now dealing.

The drawing made for us by Mr. Whellock, which we have engraved, gives a very good idea of the monument.

It will be noticed that it is divided into four stages, viz., the Podium, the Order, the Canopy, and the Attic. The podium is raised on two marble steps, and consists of a marble plinth and capping, with a bronze die. This die is ornamented with a series of forty-eight tablets, hung round with cords of bronze, bearing the names of the principal engagements in which the Duke sustained the honour of his country.

On the centre of the podium is placed a low pedestal, with military arms grouped around it. Here we see the helm, the cannon, the bayonet, the legionary "eagle" of his great opponent, coats of chain mail, and various shields.

This pedestal supports the sarcophagus, which is of antique form, very richly ornamented in low relief. Following the ancient custom, an effigy of the deceased, recumbent on a bier, is placed upon the sarcophagus. This is considered by all who have seen it to be a very excellent portrait of the general. Here he lies "with his martial cloak around him," and his orders upon his breast, while the ducal coronet, no longer needed for his brow, rests on the folded end of the bier beside it. At each angle around the sarcophagus, in groups of three, stand the columns, which are of the Corinthian order. The shafts, monolithic, are enriched with a diaper of oak-leaves, in place of the usual flutes. The frieze of bronze is adorned with a series of cherubs' heads modelled with fine feeling, and the cornice is very beautifully profiled.

The canopy consists of an arch thrown across from the east to the west groups of columns.

The semicircular soffit, which is of bronze, is panelled very richly with alternate cruciform and square spaces ornamented with heraldic badges and cherubs' heads. At each side is placed a colossal group in bronze. That on the east represents Valour crushing Cowardice, while that on the west typifies Truth tearing out the tongue of Fraud. These groups impinge upon the attic, thus connecting those parts of the composition.

The attic consists of a die, with very original and rich baluster columns at the corner; the panels contain escutcheons with the armorial bearings of the late Duke in bronze; and the whole is surmounted with a bold cornice, which, with all parts not otherwise described, is of the purest Carrara or white marble.

As we stated at the time of the lamented death of the sculptor,* the work is so far finished that it can be completed without any interference with his intentions, and we are informed that his friend, Mr. L. W. Collmann, who has the contract with H.M. Government, is pressing it on, and is having the assistance of one of Mr. Stevens's pupils in any matters of subordinate detail which may arise.

The bronze parts of the design have been executed for Mr. Collmann by Messrs. Henry Young & Co., of the Eccleston Foundry, Pimlico, and they have spared no expense to do it in a manner worthy of so important an occasion.

We may add that the construction of this stately monument is of a very solid character. Moreover, Mr. Penrose, the surveyor to the cathedral, who has from the commencement taken the liveliest interest in this great national work, both from his friendship for Mr. Stevens, and his own high-art instincts, has devised a substantial auxiliary to the foundation, forming a wrought-iron framework braced together and imbedded in cement concrete, and which underlies the whole of the monument, thus spreading the bearing, and equalising the pressure over the vaulting of the crypt.

Although Mr. Stevens has left a model of the equestrian figure intended by him to surmount the whole, the erection of this is not included in the present arrangement.

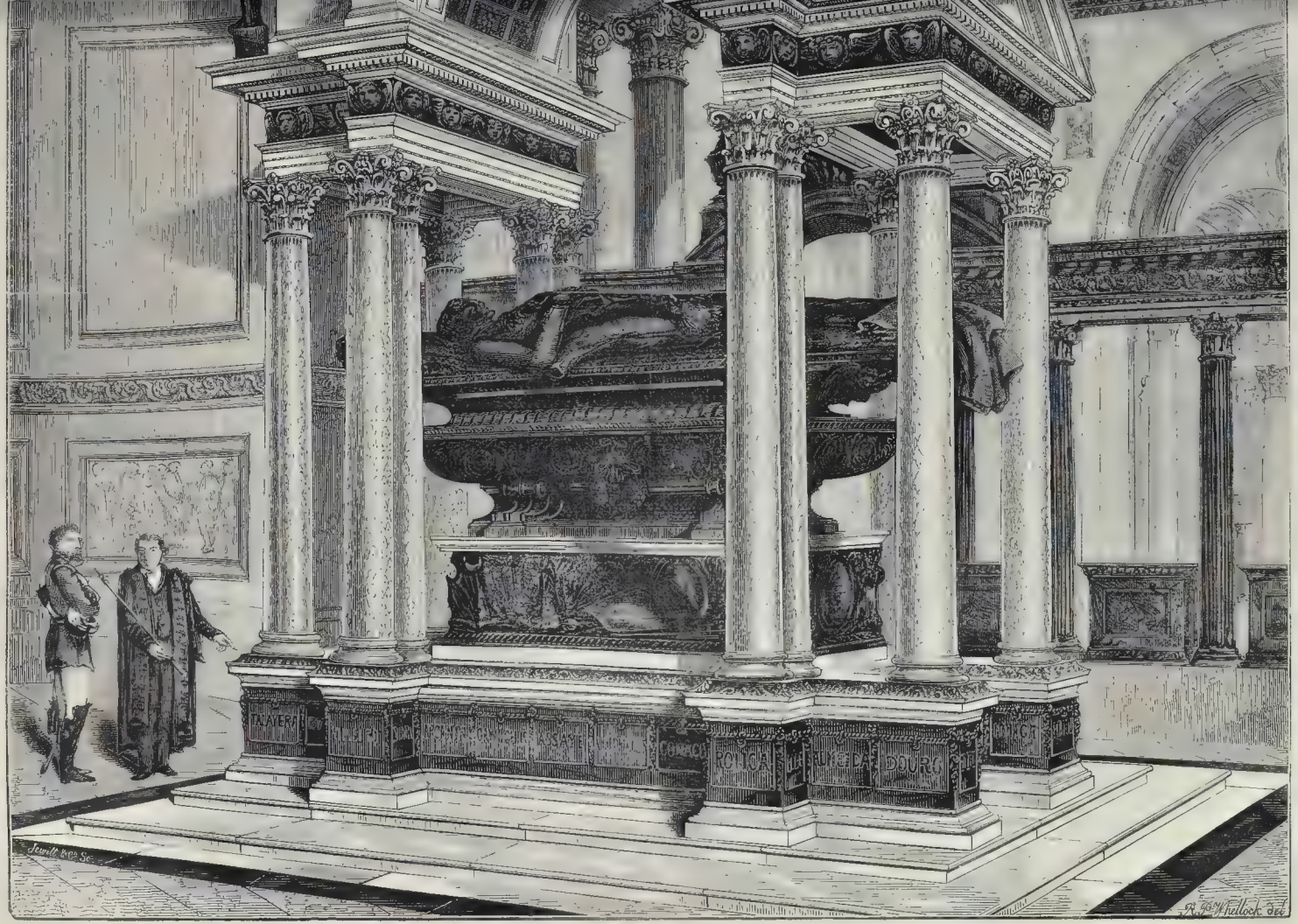
BALA WORKHOUSE.

THE Guardians of the Bala Union have decided to erect a new workhouse at Bala, from the plans of Mr. W. H. Spaull, architect, Oswestry, and for that purpose have entered into a contract amounting to 2,250*l.* with Messrs. Robert Roberts, mason, and Robert Roberts, joiner, of Bala.

Houses Unfit for Habitation. — John Morgan, of Landore, was summoned by the officers of the Urban Sanitary Authority for permitting the occupation of two houses in Hamilton-street, Landore, while in a state unfit for human habitation. Mr. Ebenezer Davis, Medical Officer of Health, and Mr. McAdams, Inspector of Nuisances, attended to prove the case. The walls were damp, and there was no through ventilation. These houses had been built in the gardens of other houses, and without the cognizance or sanction of the Local Board. The only entrance to these newer houses was through other houses. The height of the ceiling was only about 6 ft. The bench made an order to shut up the houses until they had been altered to the satisfaction of the Local Board of Health.

* See p. 495, *ante*.





THE WELLINGTON MONUMENT, ST. PAUL'S CATHEDRAL.——The Late Mr. Stevens, Sculptor.

A LYRIC ON DRAINS.

[*Persons*: The Husband and the Wife, with Children.]

H.—What smell is here? What dirt about the house?

W.—No dirt, an 't please you, that I can get away.
The drains! the drains! 'tis they that smell. How oft
I have reminded you of this, and yet not done.
Get them alter'd, pray you, and turn your wrath
on them and not on me.
Time was when you and I could live together,—
you in peace;
But since we 're in this place you 're alter'd, man.
Peace! What peace for me? One dead, one ill, one sick,
And 't will be so until you see about the drains.
Why, you, yourself, are far from well, I know; and as for me,—
Well, ne'er mind, I have to bear it.
But pray you see about the drains. Go to the inspector;
He 'll give notice and have them all put right.

H.—I have been. I only waited t' hear what you would say.

W.—What said he, then?

H.—He said he 'd see about it; and so he 's said before;
T is not the first time I have told him on 't.
He does naught.

W.—He does naught, else we should h' had water before now.
I do declare I cannot stand this water-fetching;
Fetch, fetch, fetch, one 's everlasting fetching water,
Stead of having time to tidy up one's house,
And make it as it should be.

H.—'Tis but a hundred yards; how near wouldst t' like to have it?

W.—You have it not to carry, else you'd know
It's twice as far, and more.

H.—Why dost t' not send Eliza for 't? She's twelve years old;
And I do oft see children carry water.

W.—Thou mayst; but thou shalt never see
Our children spoilt in that way.
Some do carry 't on their heads, I know,—
A quarter of a hundredweight.

H.—Then, how dost t' fetch the water?

W.—I fetch it thus, if thou must know:
I "fetch" three days a week, and as for t' rest,
We save in tubs.

H.—I know those other days; the water's nasty.

W.—Then, why not get some better? Thou 'rt a man.
Surely water cannot be so precious
But we could ha' some nearer home, and then
Thou 'd see a difference.

H.—Nor thou nor I will ever move the Board
To get us water. The Board! Who are they?
They 're they who have some of their own,
And care not we should have or none. (They pay, thou know'st, the greater part of the expense,
So why should they help pay for thee and me and t' childer?)

W.—I know not of your Boards, or who they are;
I know we cannot go on as we are,
With stinking drains and dirty floors,
And water, none but that we carry.

H.—Has t' landlord been for t' rent this week?

W.—Ay, landlord if he be,—but he 's no landlord;
He 's but the agent of the landlord.
I 've asked him many a time about the drains,
And mending th' window and the roof;
But what 's the use? He has no power;
All he can say 's that he will see about it.
He 's afraid to lose his job of agency,
Or be impertinent, or vex his master.

H.—Like th' Inspector, perhaps.

W.—He seems a different sort of man, th' Inspector,
And we may do him wrong. I do not know.
But why should he care? He 's well paid
To see to such as we. Then why do naught?

H.—I thought thou said he 'd been complaining
O' th' pigstye and o' th' yard.

W.—Ay, that 's all he does.
But as to getting water, what 's he done?
Why does he let the smell come into th' house
From those abominable drains?
Let's leave the house. You give notice.

H.—We cannot go. Besides, 't would be no use.
No water anywhere within
A compass of two miles or so.

Child.—Oh, mother!

H.—What ails him?

W.—He's ill, as he has been before;
The same as Johnny was, poor lad! Typhoid fever.
Thou 's had 't thyself, and ought to know;
But thou 'rt strong, and bearest it.
Not the poor child!—how should he, being child?
That other older child thou fret'st about
Was kill'd outright,—and so will this one be
Unless thou see about the drains.

H.—Damn the drains, and those who made them,
Thou 'rt always laying th' fault on me.
How should I have known, when we came here,
The drains were wrong? How should I?
Enough. There is no peace at home. I'll go elsewhere.

W.—Thou must not; thou 'lt begin to drink,
And make things worse than they are now.
Besides, it rains; hark thou!

H.—Damn the house. I 'm ill, myself.

W.—Thou art, and I have seen it all the day, and thought thou would be so.
The smell is always worse before the rain, and I can tell
As well as any weather-glass when 't 's going to rain;
But I do think 'tis worst of all when th' rain comes down. How 's that?

H.—How 's what?

W.—Thou 'st Johnny in thy heart, I see.

H.—Ay. This, then, 's how it is; and thou canst tell th' Inspector so.
Afore the rain the air is light, and those imprison'd devils which
Till now have been kept down, expand, arise, flow out amain,
From all the gulleys and the traps, and seize upon
The vitals of our children and ourselves. Wouldst t' shake them off?
I do so. E'en thou mayst; but th' children cannot.
Do 's t' think I would not thrust my arm 'tween harm and them
If I could do so? Thou know'st I would, and yet,—

W.—Ah! me. That e'er we left the house we loved so well,
For this vile place! What 's higher wages done for us?
Thank God, thou dost not drink away thy brains, and if we could
But live in decent health, all this might yet be well.
But what 's the use of working hard to pay for funerals,
For doctor's stuff, and such like? For th' doctor's hardly ever out o' th' house.
But, stay, thou hast not told thy tale of how it is
That when the rain comes down the smell is worse than ever.

H.—'Tis worse because the air is forced out by the water;
That air which, once as pure as thou art, 's become defiled
By contact with the noxious matter of the drains.

W.—I would th' Inspector heard you.

Inspector.—Good day. I see you've sickness in the house. What is it?
Have you had the doctor to the child?
What says he? What is the disease?
Why speak you not?

H.—I thought I had done that already.
Did I not tell you 'bout the drains?

I.—You did. You should have done 't again.

H.—The trouble——

I.—Never mind the trouble, to either you or me.
You must have patience. We've a deal to do;
And you must help to do it, for, unless you do,
'Twill long remain undone.
Why have you not, ere this, been to the landlord? Whose house is this?

W.—It belongs to Mr. So-and-So, I do suppose,
But he ne'er comes near us;
Old Stickfast gathers t' rents.

H.—I once did tell him all our grievances, civ'lly,
Thinking he'd do what was required of him; and I
Not o'er but under-stated th' circumstances.
This is what he said,—not th' landlord, but his agent:—
"I'll lay out not another penny: did I not,
To please you, have the house done up but lately?
It cost ten pounds. We shall have to raise the rent."

W.—No ten pounds. Ten shillings would be nearer truth.
Why, what did they? I'll tell you.
They used a barrowful of bricks, and stay'd two days,—
One man, one boy,—and that was all.
Inside the house did absolutely nothing;
But, certainly, they painted th' outside woodwork.
Ten pounds!

H.—I only told you what the agent said.

I.—Well, never mind. Here come the workmen.

Foreman of Workmen.—What is it, master, that we're to do?

I.—I'll show you.

H.—Mary, thou'rt better than thou used to be,
And so am I; and so 're we all, I think.
This ventilation of the drains, done ten years since,
Has made the house another house to us.

W.—It has. But I do think the water has
Done more than it. Look now! Why
Ten years since we'd none worth naming.
Look now! inside and out my house is clean.
While I—I work not half so hard
'S I used to do, at that. More time
To make and mend, which is to save
Our money for a rainy day.

"SUBORDINATE TO THE ARCHITECTURE."

SIR,—In pursuance of a natural supposition, I beg to record an idea or two relative to the engrossing investigation as to what ties exist between painting, sculpture, and architecture. They are three sisters, like the Graces, so far as unity of purpose is concerned, for they all evince and often denote a wishful desire to please. They can hardly be ever said to live apart, but one sister may become dominant through the false modesty or effrontery of the others, or from similar designs of her own. The subordinate art in any work where all these three beautiful sisters appear is often quite visible to a tutored eye. But there's the rub. In what does a tutored eye consist? Most will say in the power of perceiving a strict adherence to conventional custom, and rightly so, for such a custom is merely an easy and necessary form of lawful deception, known only to the initiated. To copy nature exactly is impossible, therefore attempts to imitate fail because even the uneducated would discern the feebleness of the artist in not being able to create anything that did not bear the impress of ideality. What necessarily follows is of course conventionality, and the practice is maintained by the acquiescence of those who can and of those who cannot decipher beauty. Painting is undoubtedly more true to nature than the other arts, because colour is a vehicle of expression and in some clever instances, can almost confound reality with unreality. Sculpture often fails because of the absurdity of its site. Heads, forming dripstone terminations, though representing contortions and other possible faces, remind one too much of the uses to which Temple Bar was at one time put. A horse or a lion on the top of a house, and a general or admiral on the top of a column, or a benevolent gentleman sitting in the open air without a hat, all make the thoughtful mind reflect that works of art should not represent idiosyncrasies. It is obvious, nevertheless, that though architecture is more or less mixed up with such misplaced statuary, it always adorns both it and painting, but it is not necessary to their adornment, for a cartoon or a Venus would exhibit every meritorious quality under a tent as well as under the roof of a most imposing structure. But architecture demands her sisters' aid, and never fails to obtain it, though oftentimes ungraciously, in contemptible and miserly quantities. Family jars are not unknown where rival beauties live, and the animus of one sister often instigates an effort to eclipse the beauty of another. In the present day, during the ferment occasioned by the apparition of Queen Anne's shadow on the veneer of some buildings, advantage might accrue from scrutinising two noble works, viz., Waltham Cross, and the Albert Memorial. I conclude that in both cases architecture is the subordinate art, forming merely an elegant mounting to a precious gem in the one case, and in the other the same with the drawback of the richness of the surroundings, causing the observer to forget the "head and front" of the stately monument. With public and other buildings of a different character, however, architecture can-

not be subordinate, because their requirements are definite, and dimensions must be adhered to. Hence an architect of genius has a basis to found his proportions upon, and determines without wavering the place and space respectively for the ornate productions of the sculptor and painter. It results, I think, that having, with masterly skill, arranged for decorating construction, and having comprehensively indicated in detail to the other artists what he requires in the way of decoration, the architect really fundamentally designs edifices in their totality, and consequently, owing to his mind and conceptions generating and guiding the work, the sister arts are subordinate to architecture when rightly conjoined to it. ZAX.

SIR,—As every one who advances any special doctrine is regarded as the champion of that doctrine, I ought to have written with more circumspection and precision. The three positions which my letter of the 17th was designed to uphold may be thus stated:—

1. That painting, sculpture, and architecture are but three aspects of one art,—are but special applications of the selfsame general principles.

2. That these principles are the principles of the human nature; all art the reconcilement of nature to the humanity.

3. That he who completely understands the æsthetic principles of human nature, and works under their guidance, is the great master of the plastic arts.

Whether the analogies which I drew in my letter of the 17th between architecture and the body, and painting and sculpture as the brain, are just,—or *illogical*, as "T. L. D." maintains,—will be proven as we proceed.

Certainly no better exemplar of the correctness of my view could have been adduced than that of the Parthenon; for in this temple we have indisputable evidence that the architect had to conform his building, *ab initio*, to the conditions that it should contain a colossal statue of Minerva, the sculptures of Phidias in the pediments, frieze, &c.; and as the sculpture, and, doubtless, also the painting, were the arts which could alone give the most complete exposition of the idea or purpose to which the building was to be adapted, I think there is nothing inconsistent or *illogical* in comparing these to the brain; and the architectural carcass, the building itself, which was predestined to contain them, to the body. There cannot be the slightest doubt that the consideration of painting and sculpture did dominate in the arts of the age of Pericles, and so strongly, that to this day Phidias stands out as the master mind. Surely "T. L. D." cannot for a moment cling to the notion, that that statue of Minerva, and that the "Elgin" marbles were mere after-thoughts, "finishing decorations," instead of primary considerations, to which all other matters were subordinated. It is in this respect, I maintain, that ancient, and modern art proceeding, essentially differs. The prices which were given for pictures and statues in the Classic times show very clearly that painters and sculptors received a far higher consideration than at any time since the revival of art, even than in the fifteenth century; and till this state of things is somewhat more nearly approached than at present, architects, as a rule, must remain architects, instead of becoming artists. That this is felt by many in the profession is demonstrated by the earnest discussion which was some time since carried on in the pages of this journal respecting the existing urgent need for enlarging the education of the architect, and in which the study of the human figure was imperatively insisted on.

Whether Michelangelo would have been a better painter if he had not also been an architect, sculptor, engineer, &c., it is, perhaps, idle to discuss; for his painting, sculpture, and architecture, surpass the best efforts of those cobblers who, in the present day, stick to their lasts. The injunction, "stick to your last," was meant for cobblers, and cobblers only, not for genius. Seeing, then, that the great artists of the fifteenth century were not cobblers who should have stuck to their lasts, but men of large general powers, possessing various accomplishments, would it not be better if our stock of "exemplary cobblers" were reduced, and if so many would not stick immovably to their lasts? There was one great worker of the fifteenth century who was not a cobbler, and who, therefore, could not stick to a last,—Raffaelle, whom "T. L. D." acknowledges was a good architect as well as painter, and, in so doing, gives the *quietus* to his own precepts.

The original conception of some edifices, as "T. L. D." justly remarks, does not include the consideration of painting and sculpture; but this is only saying that the purposes for which they are destined do not require painting and sculpture for their exposition. They must, nevertheless, be conformed to some human purpose, and, in such cases, the master of greater things would show himself more than equal to the less.

As for technicalities in construction, in carpentry, masonry, &c., why, if an artist of the calibre we are alluding to should have any momentary difficulty in such matters, he could easily take the counsel of either masons, carpenters, or bricklayers, as men sometimes do who are neither artists nor architects. W. C. T.

THE FATHER OF THE DISTRICT SURVEYORS.

SIR,—I have read with much interest the remarks in your issue of the 10th inst., under the above heading. As a ratepayer, I think I may not unnaturally feel regret at the want of consideration with which the tried servants of the Metropolitan Board of Works are treated by our representatives of that Board. I have no intention, however, of dwelling on this, nor have I the intention of alluding to Mr. Henry Baker beyond saying that in common with all who have the privilege of his acquaintance, I hope that he may continue to add to the fifty years during which he has already held the district surveyorship of St. Pancras, and that he will for some time continue to enjoy the proud title of "Father of the District Surveyors."

I may, however, state generally that an officer of the Civil Service, retiring after forty years' service, would be entitled to two-thirds of his emoluments at the time of retirement; and so, on somewhat similar scales, would any officer of the military, diplomatic, or consular service; whilst banks, merchants, and others all allow retiring pensions to their deserving officers.

I believe there is held to be no legal authority to charge the rates with a pension to a district surveyor, but I am by no means satisfied that, if the Metropolitan Board were to proceed under the 29th Vict., cap. 31, sec. 4, and grant an allowance, they could not readily provide for its payment, if such an arrangement as the following were carried out:—

The Metropolitan Board in appointing a new district surveyor can impose what conditions they like. Let them make the new appointment on the condition that the whole of the fees shall be paid into their hands. Let them pay the newly-appointed surveyor a fair salary according to the size of his district, and carry the balance to a fund to be called in their books the "District Surveyors' Superannuation Fund." Upon that fund let them charge the amount of the superannuation allowance granted under 29 Vict., c. 31, s. 4. This mode of procedure seems at first sight somewhat cumbrous, but is rendered necessary by the absence from that statute of any provision to meet the charge for a district surveyor's superannuation allowance.

There can be no doubt that an offer of a half of the present emoluments, with a promise to increase to the full amount after the death of the pensioner, would attract the same number of skilled professional gentlemen as are at present induced to offer themselves on each vacancy, whilst an encouragement would be held out for the retirement of the veterans.

Such an arrangement as that here sketched seems to me eminently calculated to promote the interest of the ratepayers, and I cannot but think that the Metropolitan Board of Works, with a due regard to the welfare of their constituents, and in justice to their officers, might well refer to a committee the consideration of this question. RATEPAYER.

Oxford Drainage Scheme.—The Oxford Local Board lately accepted Mr. Acock's tender for the execution of Contract No. 5, which comprises the western and north-western intercepting sewers. Mr. Acock's tender amounts to 26,000*l.*, exclusive of New Hinoksey, the drainage of which is dependent upon the sanction of Parliament being given to the provisional order for incorporating that district with the district of the Local Board. The measure, however, is now before Parliament, and will probably become law during the present session. This contract will complete the whole of the interior drainage of the city.

RESTORATION OF ST. MARTIN'S, BIRMINGHAM.

ON Tuesday, the 20th inst., the Parish Church of Birmingham was reopened, after being entirely rebuilt with the exception of the tower and spire. The church now consists of nave, aisles, transepts, chancels, with chancel aisles; clergymen's vestry and choir vestry. The length from east to west measures over 155 ft. inside; and the width, including the nave and north and south aisles, is 67 ft., of which 25 ft. are occupied by the nave. The highest point in the church is the chancel arch, which reaches an altitude of 60 ft., and the transepts measure, from north to south, 104 ft. The massive roof of the nave is embellished with carved angles and rich tracery, and has a very imposing effect. The chancel roof consists of massive oak ribs artistically carved, springing from a beautifully-sculptured cornice. The entire roof is left without any staining or varnishing, and adds to the generally good appearance of the building. The masonry in the interior is all worked in Codsall stone, which, while imparting a warm tone, has in no way a gaudy effect. There are two circular staircases in the chancel communicating with the roofs. Under traceried arches between the chancel and the chancel aisles are placed the old monuments of knights and ecclesiastics. The floor under the pews is laid with wooden blocks on concrete foundation. There are three entrances to the church, viz., by the large south porch, a west door, and an entrance under the tower. The latter opens into the body of the church by lofty arches. The portion underneath the tower is formed into a baptistery, and at some future date iron grilles will separate it from the body of the church. It is pleasant to note that some very interesting remains of the old church will find an abode in the new structure just consecrated. The interior of the base of the tower is preserved intact; the old mural tablets are still left to link us with departed generations, and the walls exhibit many fragments of ancient stonework. The greater part of the bricks and material of old St. Martin's has been utilised in the walls of the new building, and the oak rafters were discovered to be so sound that they have been used up in the roof of the chancel and the choir stalls. The chancel stalls are carved in wood, and the floor is laid with tiles with white marble margins.

The structure has been carried out by Messrs. Davies, Bros., under the supervision of Mr. J. A. Chatwin, architect, Birmingham, and almost the whole of the work, including the building, has been done by Birmingham firms. Messrs. Jones & Willis have supplied the brass eagle lectern, the altar-cover, which is very elaborately embroidered on silk velvet, besides the cushions, hassocks, and other fittings; Messrs. Hardman have executed the stained glass window for the east end. The pulpit and font (both of which are richly carved) are the work of Mr. J. Roddis. The carving generally has been executed by Messrs. Farmer & Brindley, of London. The total cost is stated to be about £26,000.

MANCHESTER AND SALFORD BUILDING REGULATIONS.

AN ordinary meeting of the members of the Manchester Scientific and Mechanical Society was held on the 23rd inst., at 88, Mosley-street, Mr. C. S. Allott in the chair. Mr. Grimes, who introduced the subject of the Manchester and Salford Building Regulations, said that with respect to Manchester especially, it might be said there existed a want of building regulations, for he had never in all his experience in any large town seen so few building regulations. With regard to the actual construction of any building, the corporation appeared to exercise very little authority, and certainly the bye-laws with regard to materials, and the forms in which they were to be worked, were very meagre. The speaker then proceeded to allude to concrete foundations, and in a criticism on the ordinary mode of building dwelling-houses, he proposed that every plot of land to be built upon should be inspected by an officer of the corporation, who should certify what the foundation should be. He also objected to the regulation respecting drains, and he expressed the opinion that he did not think that oval pipes should be insisted upon in small sections. With respect to the timbers used in the construction of dwelling-houses, &c., he thought

that some supervision was necessary to render them more suitable for each individual building. In speaking of the quantity of joists and spars which were used by some builders, Mr. Grimes said he was happy to say that many architects were adopting wrought iron for girders, instead of cast iron. Still he should like to see shop-fronts covered over with an arch. In conclusion he said he should recommend the desirableness of calling the attention of the local authorities to the bye-laws of the Metropolitan Board of Works. Those bye-laws had been in operation for some time, and he had not heard of any complaint against them in London. Mr. Jerram and Mr. Hildebrandt afterwards addressed the meeting, and a resolution was passed, appointing a committee to report on the advisableness of promoting an alteration in the extising bye-laws of Manchester and district.

AN ORPHANS' HOME IN SOUTHWARK.

THE foundation-stone of the north wing of the Orphans' Home, in West-square, Southwark, was laid on the 22nd inst., by the Duchess of Sutherland, under attendant circumstances of a very favourable character.

A statement was read by Mr. Roger Smith, the honorary architect, which showed that the freehold site secured for the new institution, purchased in 1873 for 3,500*l.*, was three-quarters of an acre in extent, with a frontage of 113 ft., and a depth of over 200 ft. It was admirably open and airy, occupying a most healthy situation, and the Home itself would be lofty, while the surrounding houses would be low. The proposed new building was to consist of a centre and two wings, that now commenced being devoted to the elder girls, and comprising about one-third of the whole structure. The corresponding wing was to be appropriated to infants, the centre block containing the rooms required for general purposes. The Home was to be a substantial and plain one, and the contractor had undertaken to complete the wing now in question by October 31st.

BELGIAN IRONWORKS FOR NEW BUILDINGS.

CAUTION TO ARCHITECTS.

A PRACTICAL and scientific inquiry, of much value to architects and engineers who use Belgian ironwork on account of its cheapness, has recently ended by a report from Mr. W. Farnworth, manager of the iron and tin-plate works of Messrs. Baldwin :—

"In personal observations and statistics, made and acquired during a journey through most of the principal coalfields and ironworks in Belgium," Mr. Farnworth says, "that the rails which an English ironmaster and himself inspected in the works of the John Cockerill Company, and which were going off in a finished state, were certainly such goods as would not have been passed in England. When he called the attention of the Belgian overseer to the flaws in the rails, the reply was, 'You would not have it quite sound would you?' Nor was the unsoundness exceptional. They did not find one rail which would not, in England, have been called defective, or that would not need patching. The rails, however, were mostly for Government lines, and the Belgian Government had an interest in the works. Having noticed that the sheets which the Belgians were rolling were both red-short and cold-short, he was not a little surprised when, on leaving the iron mills and going into the engine-works, he found that locomotive dome casings were being made from Belgian sheet-iron. When, however, he examined these casings, he found none perfect, and all had to be patched. He knew well what kind of iron was required to stamp out a perfect dome; for he had been engaged in the making of it, and it had occupied much of his attention. He was, therefore, not much surprised that, remembering the quality of the iron which the Belgians mostly produced, they should not, out of their own metal, be able to make perfect dome casings. Such domes would not be passed by English engineers."

Those architects employing rolled beams, joists, girders, and other constructional ironworks from Belgium, are in the habit of leaving all inspections to foremen, or to the clerks of the works. The iron is brought to the buildings and cast off the trolleys into the road, and labourers at once are at work in hoisting it to its intended position on the new works.

The New Store, Hebden Bridge.—The contracts for the new co-operative store, which is about to be built opposite the White Horse Hotel, have been disposed of. They amount to 5,326*l.* 3s. 5d. The following are the chief contractors :—Masons' work, Mr. Lewis Crabtree; joiners' work, Mr. J. Lister; plastering and slating, Messrs. Wrigley & Son; plumbing, &c., Messrs. A. Uttley & Sons, Hebden Bridge; window shutters, Clark & Co., London.

CONGRESS OF THE BRITISH ARCHÆOLOGICAL ASSOCIATION.

THE programme of the Evesham Congress runs as follows :—

Monday, August 16th.—Reception by the Mayor and Corporation at 3 p.m.—Delivery of the inaugural address by the president, the Marquis of Hertford.—Visits to the remains of the Abbey, the churches, and other antiquities.—At 7 p.m. the inaugural dinner will take place at the Town-hall.

Tuesday.—Excursion to Stratford-on-Avon.—Reception by the Mayor and Corporation.—Visits will be made to the birthplace of Shakspeare, New Place, the Guild Chapel, Church, and Monuments, under the guidance of the Rev. Dr. Collis, the vicar of Stratford-on-Avon.—Thence to Clopton House, where Mr. and Mrs. Arthur Hodgson will receive the party.—Evening meeting at Evesham at 8·30 p.m.

Wednesday.—Excursion to Broadway and Buckland, at the invitation of Mr. J. O. Halliwell Phillipps, F.R.S.—Examination of the antiquities of Broadway, and the ancient manor house and roof of Buckland Church, under the guidance of Mr. J. Robinson.—Luncheon will be provided at the Lygon Arms.—Evening meeting.

Thursday.—Excursion to Stanway, Hailes Abbey, and Sudeley Castle, where a reception will be given by Mr. and Mrs. Dent.—A paper will be read on its history.—A visit will be made to Postlip Manor House, Winchcomb, and Toddington Park.—Evening meeting.

Friday.—Excursion by steamer down the Avon to visit Fladbury, Wyre, Pershore Abbey, Strensham Church, and Deerhurst Saxon Church, thence to Tewkesbury Abbey, which will be described by Mr. Thomas Blashill.—Evening meeting.

Saturday.—Reception by the president at Ragley Park.—Visits will be made to Alcester, Conghton Court, Oversley, where, by the kind permission of Sir Nicholas W. Throckmorton, the Tumulus will be opened and explored.

TENDERS FOR THE LONDON SCHOOL BOARD.

AT the meeting of the Board last week, the Works Committee reported that :—

1. The Committee have invited tenders for the erection of a school to provide accommodation for 1,104 children, on the site in Keston's-road, Bermondsey. The following are the respective amounts :—

Crockett	£10,350	0	0
Oliver	9,885	0	0
Manley & Rogers	9,577	0	0
Kirk & Randall	9,395	0	0
Shepherd	9,160	0	0
Jerrard (accepted)	8,949	0	0

Cost of site, 5,721*l.* Cost of building per head, 8*l.* 2s. 1d.

2. The Committee have also invited tenders for the erection of a school to provide accommodation for 1,104 children, on the site in Holden-street, Battersea, the amounts of which are as follow :—

High	£9,880	0	0
Oliver	9,256	0	0
Thompson	9,236	0	0
Newman & Mann	9,113	0	0
Hill, Higgs, & Hill	8,904	0	0
Tyerman	8,815	0	0
Kirk & Randall	8,690	0	0
Taylor	8,592	9	6
Wall Brothers (accepted)	8,303	0	0

Cost of site, 2,864*l.* 8s. Cost of building per head, 7*l.* 10s. 5d.

3. The Committee have also invited tenders for the erection of a school to provide accommodation for 828 children, on the site in Union-street, Larkhall-lane, Clapham. The following are the respective amounts :—

Scrivener & White	£7,635	0	0
Brass	7,562	0	0
Cooper	7,500	0	0
McLachlan & Son	7,375	0	0
Wall Brothers	7,223	0	0
Pritchard	7,175	0	0
Tyerman	7,023	0	0
Downs (accepted)	6,739	0	0

The recommendations of the Committee were adopted.

PAYMENT FOR ESTIMATE.

AT the Woodbridge County Court, on the 19th inst., Mr. John Frost, builder, Woodbridge, brought an action against Messrs. Coles & Shadbolt, cement manufacturers, to recover 3*l.* 16s., for making an estimate of the cost of a new dock at cement works belonging to the defendants at Waldringfield, and for other work done. The firm wrote stating that, not knowing any solicitor in Woodbridge but Mr. Brooke, who, as registrar, could not act for them, they would leave it to his Honour, with a statement of the facts that they engaged the plaintiff to make an estimate, but his estimate was so large that they employed another tradesman. On giving up the works, they requested defendant to send in his account at once, but he did not do so.

His Honour went carefully through the account, and gave judgment for 3*l.* 12s. 6d.

ARCHITECTURAL EXAMINATION AT THE INSTITUTE OF ARCHITECTS.

IT is stated that, of the fifteen candidates who presented themselves for examination in the Proficiency and Preliminary Classes of the Architectural Examination, 1875, the following gentlemen passed, viz. :—In the Proficiency Class (*Artistic Section*) Henry Branch, James Jerman, H. W. Moore, Charles R. Pink, Sydney Vacher. (*Scientific Section*) :—James Jerman, Charles Richard Pink.

In the Preliminary Class :—Robert Flemming, Wallace Gill, John H. Greene, J. F. Hennessy, Adrian Lane, William H. Thorp, Robinson L. Wadmore.

Further, that on the report of the examiners the Council awarded the Ashpitel Prize to Mr. J. F. Hennessy, as the candidate who had distinguished himself most creditably in the examination.

The Ashpitel Prize (consisting of books to the value of 10*l.*), has been duly presented to Mr. J. F. Hennessy.

OVERCROWDING IN SUFFOLK.

THE medical officer of health of the Samford Rural Sanitary District (Mr. G. S. Elliston) reports to the Board of Guardians as to overcrowding in the district, and the difficulties which exist in dealing with such cases, as follows :—

"The great drawback in country districts is that, owing to house rents being low, the return on the capital expended in building new cottages is not sufficient to induce private individuals to embark in such undertakings; the consequence being that village after village contains a number of old and patched-up cottages, tenanted by large and increasing families. It would be an inestimable boon to the working classes in agricultural districts if the local landowners would interest themselves in this important question, and provide model labourers' dwellings on their estates, in which families could be reared in a decent and healthy manner. A good example of this may be seen at Woolverstone, where a large-hearted landowner has demolished all the old and dilapidated cottages, and erected in their place good roomy and well-appointed model dwellings. When the labourers in country districts have become better housed we shall see an improvement in the physique of their families and a reduction in the amount of sickness and pauperism."

PUBLIC WORKS IN IRELAND.

THE forty-third annual Report of the Commissioners of Public Works in Ireland, states that during the year, ended March 31st, 1875, a sum of 285,436*l.* 19s. 1d. was advanced by them to various public bodies and individuals, thus bringing up the total amount of the loans since 1831 to 11,842,767*l.* Of this sum 6,436,245*l.*, including principal and interest, have been repaid, and 5,737,390*l.* remitted. The principal works for which these loans are issued, are railways, harbours and docks, labourers' dwellings, towns' improvements, and drainage. Under these various heads the docks carried out during 1874 include seventeen new National schoolhouses, erected at a cost of 5,908*l.*, besides which various extensions and repairs have taken place at Kingstown, Howth, and Donaghadee Harbours.

VICTORIA EMBANKMENT.

SIR,—In your issue of the 24th of July is a letter from "W.," with which I agree. When the carpenters (yclept gardeners) were spoiling the shade trees on this Embankment by lopping off all the *under* branches instead of the *top*, I told them of their mistake, with, of course, the usual result, *i.e.*, disdain for an outsider. If the tops were lopped, the trees would spread laterally, and afford a pleasant shade, like the Dock Promenade at Ipswich, and would not (as at present they bid fair to) become living linen props.

CIVIL ENGINEER.

HOW REMEDY THE USE OF SEA SAND?

SIR,—I have a house at the seaside, built of stone and sand from the shore, the result is that the walls and internal divisions exude the salts when the least humidity is in the atmosphere. Can any of your correspondents suggest a mode of keeping the damp from coming through, except battening, which, I fear, would have to be renewed frequently, from the action of dry-rot on the timber and boarding.

SHEPPARD SCOTT.

THE BAXTER STATUE.

A STATUE of Richard Baxter, author of "Saint's Everlasting Rest," has been unveiled in Kidderminster, where he long preached. When money had been raised by subscription, the sculptor selected to do the work was Mr. T. Brock, a pupil of the late Mr. Foley, and who has produced an admirable figure. The face, which has been taken from portraits of the divine, is a striking likeness. Baxter is represented wearing the Geneva gown and bands, with his right hand elevated as if enforcing an argument. As before stated, the figure of Baxter is of white Sicilian marble, and is 10 ft. in height. It stands on a gray granite pedestal 12 ft. high, in all being 22 ft. high. On the pedestal is the following inscription:—"Between the years 1641 and 1660, this town was the scene of the labours of Richard Baxter, renowned equally for his Christian learning and his pastoral fidelity: in a stormy and divided age he advocated unity and comprehension; pointing the way to 'the everlasting rest.' Churchmen and Nonconformists united to raise this memorial A.D. 1875." The cost has been about 1,250*l.*

ATTEMPT TO WITHDRAW A TENDER.

At a meeting of the Norwich Town Council on the 20th inst., the Asylum Committee reported that at a meeting on the 23rd of June, in answer to an advertisement, tenders were received for building the foundations of the new asylum, and excavating and levelling the ground. After discussion, and Mr. Phipson having informed the committee that the lowest tender was fair and reasonable, it was unanimously resolved that the Council be recommended to accept the tender of Mr. G. E. Hawes, for carrying out the work according to the plans and specifications prepared by Mr. Phipson, for the sum of 6,000*l.* The Town Clerk said he had received a letter from Mr. Hawes stating that a week having elapsed since the tenders were sent in, and the delay having created certain difficulties involving additional expense, if his tender was the lowest one or if he had been selected to do the work, he must have more money. It was resolved that Mr. Hawes should be held to his contract.

VALUE OF OPEN SPACES.

A PROPOSITION was lately made to the vestry of St. Marylebone to allow a row of four-story houses with shop to be built at the west of the Marylebone-road on the property of Mr. Bond Cabbel (where there have been for many years some unfinished houses standing back from the road) and to be placed 8 ft. from the footpath, thereby reducing the general width of the road, gardens included, from 30 ft. or 40 ft. The application was treated by the influential members as a boon to the parish, and it was acceded to with only about half a dozen dessentients. It was strongly supported at the Metropolitan Board by the two representatives, and met with the same success.

A similar application was made a few weeks before by a builder to put up a row of houses opposite the Workhouse, in the gardens, and unanimously negatived, he not having a friend to speak in his favour. This is a sample of unanticipated parochial wisdom.

The parish is now spending many thousands in pulling down narrow streets in the close neighbourhood at the back in order to make wide ones and ventilate the locality.

A RATEPAYER.

THE ACCIDENT AT KENSINGTON.

SIR,—With reference to the report in the *Builder* of the inquest held upon the labourer Bryan, who was killed at Kensington on the 12th inst., by the falling of a tile arch, allow me to say the houses in question are not built "upon arches," but the arch which fell was turned to form a coach-house floor over a cellar in the basement. The suggestion offered to account for the accident was not that the porous tiles "had absorbed the cement," but that the harder burned tiles had not absorbed the water when soaked, as the more porous ones had, and (the arch having been turned during the hot week in May) the water had evaporated from the harder tiles. This theory is supported by the fact that the porous tiles of the fallen arch were covered with cement on both sides, but the harder-burned tiles were almost as clean as before being used.

M.

THE NEIGHBOURHOOD OF BURY.

SIR,—I am pleased with the article in your issue of the 17th inst., touching upon the churches of Bury St. Edmunds and Lavenham, Long Melford, &c. Having visited them and others in my rambles, while engaged in the neighbourhood, I would recommend the visitor, in going or returning, to take the road between Bury and Long Melford, leading by Cockfield, when he could pay a visit to the church of, I think it is called, Little Whelentenham, where he would find something to interest him in the old hammer-beam roof, and other matters, not forgetting some old bench-ends; one in particular bearing evidence of a very peculiar taste on the part of either the designer or the workman.

A little further on, after regaining the road, he will, at Bradfield Combust,—opposite the village inn at the bottom of an avenue of limes,—find an ably-executed specimen of napped flint walling, with red brick dressings, (cut) mouldings and clustered (cut) moulded chimneys, corbel to oriel window, &c., the residence of Mr. A. J. Young, built in 1857, the architect being Mr. F. Barnes, of Ipswich. The neighbourhood abounds with objects of interest in the way of village churches, amongst them being the Three Bradfields (viz., Bradfield Combust, St. Clare, and St. George), Stanningfield, Cockfield, and others, enough to amply repay the visitor for his pains taken to reach them. By-the-bye, you did not mention the famous peal of bells in the tower of Lavenham Church.

J. W.

LIGHTING WITH MINERAL OIL.

SIR,—Whilst going round the recent Camp at Wimbledon and into individual camps, I was somewhat astonished at the very excellent arrangements that were made and carried out for lighting it and them, and was gratified to learn that it was all done with mineral oil and lamps, and at a really nominal cost. Of course I am not prepared to maintain the superiority of this system of lighting over gas in every particular, but I certainly think it achieved a triumph in this instance, being used with perfect safety where it would have been impossible to use gas without considerable expense, and giving forth about twice the power of light at a little more than half the cost of consumption.

I have long thought this method of lighting capable of a broad development on the side of economy, and the experience of my visit proved to me that it was a fact.

To give one instance alone of its capabilities, take the lamp ("hurricane," I believe) used at the top of the flagstaff in each camp through the violent weather of the past week: each could be seen with a perfectly steady illumination all over the camp. Put a gas jet in such a position and compare the two under the same circumstances.

R. P. D.

CASES UNDER THE BUILDING ACT.

NEGLECT OF NOTICE.

ON the 17th July, at the Greenwich Police-court, before Mr. Balguy, Mr. J. Tolley, District Surveyor of Sydenham, summoned Mr. A. Deards, builder, of Webber-row, Blackfriars-road, for having built two greenhouses at the Hall, Sydenham, without giving him the notice required by the Act of Parliament. The defendant stated that he was employed to do the brickwork only, and produced a perspective drawing of the walls of one of the houses, minus the sashes and woodwork, and urged that what he had done did not form a building, and therefore the notice was unnecessary.

Mr. Tolley drew the attention of the magistrate to the clauses in the Building Act, which set forth that the necessary woodwork of the sashes, doors, and frames only are exempt, and that, therefore, the brickwork is specially the work for which notice is required, and that the term "builder" applies to, and includes the master builder, or other person employed to execute, or who actually executes *any* work upon a building, also that the buildings were covered in, and that he had used every means from the 25th June to the taking out of the summons, to get defendant to give the notice, but without effect. The magistrate ruled that the defendant was the builder, and that the work he had done was a work subject to the rules and regulations of the Act, and, therefore, it was his duty to have given the District Surveyor notice two days before he commenced the work, and that by the neglect he had incurred a penalty of 20*l.*; but that as he appeared to have misunderstood the Act, and not intentionally evaded giving the notice, the penalty would be reduced to 40*s.* and costs.

Jedburgh Abbey Church.—Workmen have now commenced to remove the old church from the ruins of the Abbey. Already all the seating has been taken out, and part of the north wall, which formed no portion of the original fabric, has been taken down.

HISTORY OF PAPER-HANGINGS.

SIR,—Referring to your interesting article (Nos. 1693, 1694, pp. 640, 663) on Mr. George Morton's History of Paper-hangings, read at the Liverpool Architectural Society, allow me to direct attention to some designs for paper-hangings, dated so far back as 1740, which are in the Soane Museum. They form part of a collection of "Miscellaneous Drawings and Prints, Patterns for Embroidery, Tapestry, &c." The drawings by a foreign hand are admirably executed, and contain some quaint notes by the artist.

JOSEPH BONOMI.

STAINED GLASS.

Cookham.—A coloured glass window has been placed in the parish church of Cookham, in memory of Miss Anne Pocock, late of Maidenhead, by that lady's brother, Mr. Isaac Innes Pocock. It has been executed by Messrs. Lavers, Barraud, & Westlake, and represents two incidents connected with the Resurrection of our Lord; namely, the Angel at the Sepulchre appearing to the Three Women, and our Lord appearing to St. Mary Magdalene in the Garden. The groups are placed under Early English canopies, and beneath are the two texts, "He is not here, but risen," and "I ascend unto My Father and your Father."

Springfield.—A stained-glass window has recently been placed in the nave of All Saints, Springfield, on the south side, to the memory of the late Mrs. Seabrook, of Old Lodge. The window is divided into three lights, with tracery. The subject chosen is "The Presentation in the Temple." At the base is the inscription, "To the glory of God, and to the loving memory of Mary Seabrook, this window is erected by her daughters and youngest son." Then follows the text, "Lord, now lettest Thy servant depart in peace." It is from the studio of Messrs. O'Connor & Taylor, of London.

ARCHITECTS' CHARGES.

PEARCE *v.* BARTON.

THIS was a claim, at the Brompton County Court, on the 14th inst., brought by an architect and builder to recover the sum of 4*l.* 4*s.*, for making certain drawings and specifications for proposed alterations in defendant's premises.

Mr. Abraham Pearce said he was an architect and builder, and the defendant having got a provisional licence for his beer-house, employed him to make the plans and specifications for its conversion from a beer-shop to a public-house. There was also an understanding that if the licence was confirmed, witness was to have the superintendence of the work. The magistrates, however, refused to confirm the licence, and defendant now refused to pay for the plans, &c.

Defendant said when he engaged with the plaintiff, it was distinctly understood that if the licence was obtained, plaintiff was to be engaged to superintend the work, and be paid for so doing; but as he had not got the licence, the plans were useless to him, but as plaintiff had been at some trouble witness had offered him two guineas as compensation for his lost time.

His Honour said there had been no complaint that the work had not been competently done, but defendant seemed to think he was justified in refusing to pay for it because he had not obtained his licence. It was nonsense to suppose that plaintiff would have undertaken the work on the terms suggested by the defendant. He gave judgment for plaintiff for the full amount.

WORKMEN'S WAGES.

SIR,—A number of plasterers and labourers were engaged on board a vessel lying in the Victoria Docks, and finished the same on Friday night, June 11th. The following day (Saturday), after a great deal of trouble, the principal of the men were paid half their money by midnight. On Monday they applied to the magistrate at Stratford Police Court for summonses to recover the remainder, when he refused, and referred them to Bow County Court.

I myself, as overlooker and timekeeper, applied to the magistrate at Clerkenwell Police Court, and was also referred to the County Court.

I should like to know if the law is altered with regard to recovering wages in a Police Court. If we are compelled to recover in a County Court, it will be some months, if ever we recover it at all, and therefore a great hardship to poor workmen with families, who may have to wait for two or three months for their weekly wages, if a master chooses to keep them waiting.

J. BARNETT.

The Wallace-Tucker Fire Annihilator.—This invention consists of a chemical composition, which, when fixed in an apartment, will on a fire occurring in that apartment, and raising the heat to a certain temperature, give off a sufficient quantity of carbonic acid gas to extinguish the fire. Thus it only comes into action by the operation of the fire itself, without attention or care of any kind. According to the inventors, the gas is given off with sufficient force to permeate the whole apartment, and consequently it completely annihilates all fire therein.

THE IMPROVED INDUSTRIAL DWELLINGS COMPANY.

THE twenty-fourth half-yearly meeting of this company is to be held at the Mansion House, on Tuesday next. According to the report, which will then be read,—

"The total expenditure, including the contributions to the Leasehold Redemption Funds and Repairs Account, amounting respectively to 134*l*. 12s. 10d. and 1,692*l*., has been 7,612*l*. 11s. 2d., leaving a profit of 6,868*l*. 9s. 8d. Of this amount, 518*l*. 10s. 9d., repaid to the Commissioners during the half-year, has been carried to the Public Works Loan Redemption Fund; and the balance, viz., 6,349*l*. 18s. 11d., added to the balance, 282*l*. 5s. 9d., brought forward from last half-year, gives a total of 6,632*l*. 4s. 8d. available for dividend."

"The Directors recommend the payment of the usual dividend at the rate of 5 per cent. per annum, free of income-tax, which will absorb 4,375*l*.; that 2,000*l*. be added to the reserve fund for the equalisation of dividends; and that 257*l*. 4s. 8d. remaining, be carried forward to the next half-year's account."

"The buildings in Pimlico-road have been completed, and were at once let, the applications having been greatly in excess of the accommodation provided. The additional block of dwellings at Wapping has been also completed, and is now being let. The buildings in Tothill-fields, and Upper Garden-street, Westminster, are progressing favourably, and, it is hoped, will be opened before the end of the year. Applications for these dwellings are being already daily received. The erection of 150 more dwellings at the Bethnal-green Estate, by the company's workmen, is proceeding satisfactorily, and a portion of the buildings will, it is believed, be ready for occupation at Christmas.

The designs of the Goswell-road Estate, prepared by the Directors, as referred to in the last report, have been approved by the Marquess of Northampton, the free-holder, and are now being carried out. These provide for the accommodation of 285 families, or about 1,500 persons."

"The works to which the Company are at present committed will require for their completion the whole of the balance of the present capital, as well as the balance of public loans which it is contemplated may be raised in respect of these works; and having in view the sites which may be obtained under the new Act, as well as from other sources, the question of raising additional capital must be considered. This subject has engaged the attention of the Directors, and it is proposed to call a special meeting of the members at an early date to consider the same, when a proposition will be submitted for the creation of further capital to the amount of 250,000*l*."

SUPPLY OF WATER IN VILLAGES.

SANITARY DELEGATES' MEETING.

THE first meeting of the delegates appointed by the different Sanitary Authorities, was held at the County Hall, Northampton, on the 17th inst. There were present,—Mr. J. L. Stratton Brackley (Rural Sanitary Authority), Rev. C. Smyth (Hardington Rural), Rev. A. Boodle (Thraptston Rural), Mr. Reeve (Potterspury Rural), Mr. Taylor (Newport Pagnell Rural), and Mr. Haviland (Medical Officer of Health).

The Chairman (Mr. Stratton) stated that he had ascertained from the Local Government Board that a clause had been inserted in the new Act which enabled that Board to call meetings of the delegates of the combined authorities, and give those meetings a legal status. He then introduced the subject of the supply of water in villages. The wording of the Act was, that the Sanitary Authorities may supply water to any villages. If all the owners dug wells, the Sanitary Authorities would not be required to supply the water. He thought the best plan for obtaining a good supply would be to "spout" a church, and place a cistern in which to catch the water. Taking the fall at 24 in.—that was 2 cubic feet of water per square foot, and a cubic foot was six gallons,—that would be twelve gallons for each cubic foot of the area of the church. In his own place, with a population of 300, this would give between 30,000 and 40,000 gallons in the course of the year, which was an enormous quantity. Many of the cottages might also be spouted, but the thatched cottages were the great objection, and it must be remembered that the water would only be useful for washing purposes, cleaning, &c., not for drinking, because of the dirt.

Mr. Haviland.—Not without filtration.

Mr. Reeve said, with regard to the spouting of the churches, at Stony Stratford they had a good fire-brigade, and a bad supply of water, and at his suggestion a tank was made. This was sunk about 6 ft. deep, and it was wonderful the quantity of water they got off the church. It was filled the first rain they had. The average rainfall in Northamptonshire was 24 in., and if that fell on a roof 500 square feet they would get 6,232 gallons of water. It was computed that the roofage of the houses throughout towns might be taken as an average of 60 square feet. That would give throughout England about three gallons saved to every individual per diem. The subject now engrossing attention was, how the water could be made pure and wholesome by certain filtering appliances, which had been perfected. This had been done in the army abroad, where they were worse off than here, and the system of filtering had been made so complete that the water was perfectly drinkable. He looked upon river water as a source of pollution. What they wanted was, to reserve the water which they could depend upon for drinking purposes, and economise it in times of drought by using rain-water for cleaning and other purposes. He advocated the spouting of the churches and other buildings, by which means an abundant supply of water could be obtained.

Rev. C. Smyth said that in the two villages with which he was connected there was a well to every two or three houses, but from scarcely any one of them could decent water be obtained. They were on ironstone rock, and the refuse from a farmyard percolated, and spoiled the water in a well 60 or 70 yards away. Then, again, there would be a difficulty in spouting the cottages, as they were nearly all thatched roofs, and, as regarded the church, he was afraid there would be an objection to fixing a tank in the churchyard. In his parish they had to deal with limestone rock, which was very porous. There was plenty of water near the surface, but it was more or less contaminated. At last they set to work, and bored for 280 ft., when they found a splendid supply. This was sent to Mr. Young, the analyst, and he declared that it was very much impregnated with sewage. Next it was sent to Dr. Letheby, who reported that it was free from sewage, but impregnated with Glauber salts.

Mr. Dunn said the tank would soon be a cesspool. At the union a large tank was fixed, but it became a nuisance, and so they would find it with the tank in the churchyard. The people would not go to it while they had plenty of water, and the result would be that if the water were left there two or three weeks it would be unfit for use.

After further discussion the meeting was adjourned till October.

SETTLEMENT OF THE GRINDING MONEY QUESTION.

AT a Conference held on the 27th inst. between the Sub-Committee appointed to represent the Central Association of Master Builders of London and a Deputation from the Carpenters and Joiners of London to discuss and settle the question,—

"Whether an allowance to carpenters and joiners for grinding and putting their tools in order should be uniformly made, and, if so, to what extent and under what conditions:"

The following arrangement was made and agreed to:—

"That sufficient time,—not exceeding two hours,—shall be allowed to the carpenters and joiners on discharge for the purpose of grinding and putting their tools in order; this time to commence two hours before such discharge, it being understood that the time allowed shall be occupied by the carpenters and joiners for that purpose."

Signed,—

"Benj. Hannen,	Francis Chandler.
F. J. Dove.	Samuel Tindall.
Edward Conder.	John Kennedy.
James Mugford Macey.	George Searls Double.
Stanley G. Bird.	James George Sydenham.
	Charles Matkin, Secretary."

A CONTUMACIOUS BUILDER.

AT the Solihull Petty Sessions, Richard Court, a builder, at Sparshill, was summoned before the magistrates for having neglected to provide certain sanitary arrangements in some houses belonging to him as required by the Rural Sanitary Authority. The defendant had been before the Bench on previous occasions, having given a great deal of trouble from time to time with regard to houses he had been building; and having been building five houses of a very trumpery character at Greet, the sanitary inspector directed his attention to the want of proper accommodation and drainage, which made it impossible that the houses could be occupied without becoming a nuisance, and ultimately after various adjournments an order was made that he should construct proper accommodation. On the inspector going to the defendant for the purpose of serving the order, he was received with a volley of abuse, the defendant including in his denunciations not only the inspector, but the magistrates and the authorities generally. As one effect of the neglect of the defendant, it had been reported that there were cases of blood-poisoning and low fever, and a family in one of the houses had to be sent away in order to avoid infection. The defendant, who did not appear, was ordered to pay the full penalty of 10s. per day from the service of the order,—seventeen days,—together with costs. An order was also made in case the defendant still resisted for the Sanitary Authority to do the work, and charge the defendant with the cost.

A Stone Pulpit for Trinity Church, Windsor.—The officers of the Scots Fusilier Guards are about to present a handsome stone pulpit, with marble columns, to Trinity Church, Windsor.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Chester.—The Roman Catholic Chapel of St. Francis, in this city, was recently opened by Cardinal Manning. In December, 1863, a gale swept over the city, and the building, which was then approaching completion, was unroofed and almost destroyed. A new church now stands on the site. Over the porch is a niche with a temporary statue, which is to be replaced by a statue of St. Francis of Assisi, the founder of the Franciscan Order (a gift from the architect). The height of the walls to the top of the plate is 28 ft., and from the floor to the ceiling 45 ft., to the apex 61 ft. The church consists of nave, 86 ft. by 45 ft. inside of walls; sanctuary, 20 ft. by 20 ft., the opening between the sanctuary piers being 19 ft. wide by 40 ft. high from nave floor to crown of arch. Side chapels, of which, when completed, there are to be seven, 10 ft. by 8 ft., the openings 8 ft. wide by 18 ft. in height to crown of arch. The floors of the side chapels are laid with encaustic tiles, and raised from the level of nave by a 6-in. step of whitetree stone running the whole width of the building and inlaid with encaustic tiles, also a second step to the sanctuary, of the same material. Behind the sanctuary, and connected with it by two carved oak doors, is the fathers' choir, 33 ft. 6 in. by 14 ft., and on the north side of the sanctuary is the lay brothers' choir, 12 ft. by 12 ft. Adjoining this is the boys' sacristy, 12 ft. by 12 ft., and on the south side of the sanctuary is a vestry-room, 24 ft. by 24 ft. At the west end is the organ gallery, 45 ft. by 14 ft., with a pitch-pine perforated front, and lighted by five geometrical windows from the gable, accessible by a stone staircase. The architect was Mr. James O'Byrne, of Liverpool; and the builder, Mr. John Woolley, of Birkenhead. The stone-carving was by Mr. Sullivan, of Chester.

Plaistow. — The foundation-stone of St. Margaret's Church, Barking-road, Victoria Docks, has been laid by Cardinal Manning. The new church will be built of brick with Portland stone dressings outside and Bath stone inside, and will consist of nave, choir with an apsidal termination, two narrow aisles with porches on the north and south, and a small tower on the north. A distinctive feature in the interior is that the church is vaulted throughout with brick groining, and is in the twelfth-century style. Mr. F. W. Tasker is the architect, and Messrs. Greenwood & Sons are the builders.

Dudley.—Having been closed for some months, and in the meantime undergone considerable alterations and repairs, at a cost exceeding 600*l*., the Catholic Church, Dudley, has been re-opened. The edifice was erected from designs by the elder Pugin. The salient features of the restoration are as follows:—The whole of the old quarry flooring has been removed, and an encaustic tile floor substituted. The part occupied by the congregation has been raised and boarded. The seating has been re-arranged, and further accommodation provided. Three-branch gas-lights have been obtained in lieu of the old brackets which were formerly fixed to the pillars. The seats in the singers' gallery have been re-arranged, and the organ cleaned and repaired. The interior has been renovated and painted throughout, the roof timbers being grained light oak, and the ceilings coloured a grey tint, the walls being of a warm stone-colour. The caps of the pillars are relieved by gold and colouring. The work was executed by Mr. Henry Holland. The general contractors were Messrs. W. Holland & Son, of Dudley, who have also carried out the repairs required upon the exterior of the building. Messrs. Hardman, of Birmingham, have decorated the sanctuary and lady chapel. The tiles for the flooring were from the manufactory of Mr. W. Godwin, of Hereford, and the gas-standards from Mr. Whitehouse, Birmingham. The architects were Messrs. Marah, Bros.

Flint, Window, and Stained Glass Exhibition.—The London Company of Glass Sellers, incorporated in 1664, is about to hold an exhibition in the Alexandra Palace, in September, of specimens of glass manufacture of all varieties, and have invited the Warrington manufacturers and others to exhibit. Prizes will be given for the purity of metal, elegance of design, durability, and cheapness of the flint glass; for the finish, adaptability, and cheapness of the window glass; and for the best specimen of painted stained glass.

VARIORUM.

SKETCHING the life of Sir John Hawkshaw, the *Leisure Hour* says,—"Speaking in 1862, he was then able to affirm that the engineering works of the thirty previous years had exceeded in magnitude all the previous engineering works of the world put together. The address, devoted in part to a review of improvements and progress effected in steam navigation, electric telegraphs, and other cognate subjects, thus eloquently concludes: 'No man can look back on the last twenty or thirty years without feeling that it has been the age of engineers and mechanicians. Our profession has done much in that period to change the aspect of human affairs. What physical agency, single or combined, can be compared in its effects or in its tendency towards the amelioration of mankind with the establishment of railways, the electric telegraph, and steam navigation? In constructing railways, telegraphs, steamboats and their adjuncts, docks and harbours, and moulding and fashioning the face of the material universe to the wants of man, in overcoming barriers, overleaping valleys and spanning seas, engineers annihilate both space and time, bring into juxtaposition nations and peoples, and accelerate beyond all human expectation personal communication and that interchange of ideas which is all-important to the advancement of civilisation and knowledge. Distance and separation have led, and always will lead, to misapprehension and prejudice, to ignorance and mistrust, to rebellion and war; and engineers may feel, when labouring on the great public works that facilitate the intercourse of nations, that they are not merely conquering physical difficulties, but they are also aiding a great moral and social work.' These words will serve to show that Sir John Hawkshaw's aims reach beyond the immediate object of his professional labours,—material prosperity. He takes an interest in education, and lately pointed out in a forcible communication to the *Times* the deficient training in the use of living languages which our modern education supplies. Before Parliamentary committees he has frequently been examined, and is well known for the clearness and honesty of his evidence, and for his steady maintenance of opinions which his long and varied professional experience has convinced himself to be correct."——Mr. Walford devotes the August number of "Old and New London" to Westminster Abbey. He says of the Towers,—"The towers on either side of the west front are strengthened by substantial buttresses, with two ranges of canopied niches on their fronts. The lower windows of the towers are pointed; those above them arches only filled with quatrefoils and circles. It is from this part that the incongruity of the new design begins in a Tuscan cornice; above this is a Grecian pediment and enrichments over the dial of the clock, and in each face of the topmost stories is a Gothic window of poor design; the whole being crowned with battlements and pinnacles. The credit of completing the west front, as it anciently appeared, is due to the abbots Estney and Islip; but it was never entirely finished till the reign of George II. 'It is evident,' observes Sir Christopher Wren in his architectural report addressed to Bishop Atterbury, 'that the two towers were left imperfect, the one much higher than the other, though still too low for bells, which are stifled by the height of the roof above them; they ought certainly to be carried to an equal height, one story above the ridge of the roof, still continuing the Gothic manner in the stonework and tracery. Something,' he adds, 'must be done to strengthen the west window, which is crazy; the pediment is only boarded, but ought undoubtedly to be of stone.'"——Cassell's *Family Magazine* gives a recipe for Cleaning Plate,—"In the busiest households, I presume, it is arranged that the plate should be cleaned once a week. You will find that it will shine throughout those seven days (with the aid of the occasional rub over with a dry, clean wash-leather) if it has been properly cleaned at the outset; on the other hand, if it has been attended to in a careless slip-shod way, that day it will do no one credit, and the next day it will look as dull as if it had not been touched. The error which is so often committed is that of putting on the whitening, rouge, or whatever plate-powder is used, and expecting that will do all that is required. But no silver can or will shine if it has the least suspicion of grease about it, and this being the case, it is necessary to wash all the articles in clean warm water, with flannel and soap, before any further attempt is made. Then, after it has been dried with a clean cloth, the plate-powder can be put on, and when dry it may be brushed off again, and finally every piece of silver must be industriously and thoroughly rubbed with a soft chamois leather. Now it looks as if it had just arrived from the silversmith's shop."

Miscellanea.

The Discovery at Pompeii.—A correspondent of the *Times* writes an interesting account of the recent discovery of the archives of a private citizen of Pompeii, consisting of a large number of waxen tables in a perishable condition, but still capable of being deciphered. The workmen were busy excavating the remains of a private house, the walls of which are covered with well-preserved paintings, and in clearing one of the upper rooms situated above the inferior *ambulacrum* they came upon a wooden box somewhat sunk into the pavement, which in the process of time had given way beneath it. Its contents consisted, as nearly as could be ascertained, of about 300 thin tablets of pinewood of various dimensions; some measuring 118 millemètres by 83, others 132 by 120, a few double this size, all tied together in threes, and packed in regular order, or strata; and upon the edge of a number of these tablets was the word "Proscriptio," written with *atramentum*, and followed by a name on some in the genitive, and on others in the dative case. With great delicacy one of the packets from the upper stratum was lifted off and carefully opened, when, to the delight of all around, the writing was seen distinctly legible,—the stylus, in penetrating the thin layer of wax, which had entirely disappeared, having left the form of the characters on the soft wood beneath, and the following words were read:—

> "Q Volusio Saturnino. P. Cornelio. Cos. VIII. K. Jul.
> M. Alleius Carpus scripsi me
> accepisse. ab. L. Caecilio
> Jucundo HS MCCCXXCVI
> ab auctione me supatipulatu ejus
> Actum Pomp."

Which he renders—

"Written by Marcus Alleius Carpus on the 8th Kalends of July, Quintus Volusius Saturninus and Publius Cornelius being Consuls (A.D. 56). I have received from Lucius Caecilius Jucundus, 1,386 sesterces, the amount increased by me upon the contract stipulated by him. Done at Pompeii."

Roads in Westminster.—At the meeting of the Metropolitan Board of Works last week, a deputation was introduced from the Westminster District Board by Mr. White, and a memorial was presented on the subject of improving the approach between Victoria-street and Rochester-row, either by widening Strutton-ground or by forming a good communication by way of Artillery-row. Mr. Trollope said a short time ago a memorial, signed by Mr. Sclater-Booth, M.P., and a number of influential gentlemen, was presented to the Local Board, asking them to carry out a most important public improvement. He was old enough to remember when the whole of South Belgravia was green fields, but it was now covered with buildings of a superior character. At present the most direct way from Rochester-row to Victoria-street was by way of Strutton-ground, which was of a very narrow, overcrowded, and otherwise inconvenient character, and by widening this street a great benefit would be conferred upon the inhabitants of South Belgravia, and of the metropolis at large, by forming a better route from the Houses of Parliament and Westminster Bridge. Mr. H. L. Taylor asked if the district was prepared to pay half the cost, and if any estimates had been prepared of the probable cost. Mr. Trollope said the district was not prepared to contribute at present, and they did not know what it would cost. The memorial was referred to the Works Committee.

Brighton School of Art and Science.—In the Government examinations and competitions of the students of this school, in the science examination in Building Construction, second-class certificates have been awarded in the elementary stage to Messrs. D. B. Bostal, C. E. Butler, W. Franklin, C. C. Freeman, F. C. Ide, E. J. Norris, and G. Weeks. In the advanced stage, to Messrs. H. Alderton, E. J. Coles, and H. Farncombe. To numerous ladies have been awarded certificates and prizes in freehand drawing, model drawing, practical geometry, and perspective, to the exclusion almost of the other sex.

The Sanitary Condition of Wednesbury. Dr. Ballard reports as to the sanitary condition of this town that the arrangement of the streets in the older parts of the town is very irregular. There are numerous ill-arranged courts, many of which are very confined, several houses being crowded upon a very limited space. Unwholesome cottages are let at exorbitant rents, the demand for labourers' cottages having much exceeded the supply. The district generally is unsewered, the only public drains in the town being brick culverts put into the sides and sometimes the middle of roadways for the conveyance away of surface water and the sewage which reaches the gulleys from the street channels, along which it flows for long distances. The inhabitants are dependent for the removal of slops and domestic sewage upon the surface channels at the side of the street, and in many instances domestic sewage is conducted into cesspools or dumb wells. Very many of the cellars are flooded with water either habitually or in rainy weather. Ashpit privies are in almost universal use, and in many parts of the town are overloaded with excrement and ashes. In the course of five years no fewer than 248 deaths have occurred from scarlet fever, 154 from fever, 174 from choleraic and diarrhœal affections. The spread of many of the diseases is to be attributed to unwholesome local conditions polluting the soil, air, and water with filth.

Ovenden School Board, Halifax.—At the monthly meeting of the Ovenden School Board last week, the clerk said that the plans of Mr. Petty were altered in accordance with the recommendation from the last meeting, and sent to the Department, from whom a reply had been received, approving of the plans for the Moorside School. Mr. Hanson suggested that the names be given to the schools according to the locality in which they were placed; and it was resolved that the names of the three schools be respectively "Moorside," "Bradshaw," and "Mixenden." The plan of Mixenden School was submitted by Messrs. Horsfall, Wardle, & Patchett, who estimated the cost of the building at 2,850*l.*, which included the erection of school, conveniences, boundary-walls, drainage and water supply, &c., according to the drawings and specifications sent in, and did not include the cost of site or other incidental expenses. The accommodation provided would be for 380 scholars. The chairman said that the cost would be 7*l.* 10*s.* per head without fittings, and the additional cost for the site would be about 360*l.*; whilst the plans of Mr. Petty estimated the total expenditure at 8*l.* per head, including fittings. The plans of Messrs. Horsfall & Co. were agreed to be sent to the Department.

Accident at St. Mary's Hospital.—Dr. Hardwicke held an inquiry at the Bank of England Tavern, Cambridge-place, Paddington, touching the death of Thomas Fudge, 21. St. Mary's Hospital, which is now undergoing repair, is in the hands of Messrs. Holland & Hannen, contractors, deceased being in their employ as a plumber. The evidence showed that at the time of the accident deceased was engaged with two others in lowering some 6 cwt. of lead, &c., from the second to the ground floor, by means of the lift, which they had obtained permission to use. The construction of the lift was described, showing that there was a brake attached, which could be removed by the pulling of a rope at any of the landings, to allow of the lift descending at pleasure. Deceased and a carpenter were in the cage of the lift, and deceased was in the act of getting out on the second floor landing, when the lift suddenly moved downwards and the upper part of the cage caught him, striking him on the neck, and jamming his head on the stone sill. The jury agreed that death in this case was caused by being crushed in the lift, but that there was not sufficient evidence to show who it was that interfered with the brake.

Accident at New Brighton.—On Monday night between five and six o'clock a number of men were engaged in Victoria-road, opposite the two new shops of Messrs. Dickson & Mason, making a connexion of the sewerage pipes, which, at this point, are 17 ft. below the surface, and are embedded in sand. The upper portion of the trench had been propped up with small pieces of timber, but nearer to the bottom no measures had been taken to prevent the sides from falling in. Just as a man named M'Nally was making the connexion of the pipes, the sides of the trench gave way, and he was instantly buried in the sand, and when, in about half an hour, he was got out life was extinct.

Hospital for Sick Children.—The new hospital for sick children in Great Ormond-street, which has nearly approached completion, has been opened by the committee of management for private view, and visited by a large number of the friends and patrons of this praiseworthy charity, whose usefulness in this vast metropolis has been generally admitted. Although the architect, Mr. E. M. Barry, R.A., has given an attractive front to the building, and made everything in the interior pleasing to the eye, the decorations, with the exception of the chapel, which has been the gift of an unknown donor, are inexpensive. The wards are lined with glazed bricks. The ceilings are in parian and the floors are of teak. The wards are heated partly by hot-water pipes, and partly by a Galton's stove in the centre of each ward. In addition to ventilation by the windows, by the ventilators on the floor level, and by an ingenious arrangement in the window-heads, a ventilating shaft runs up in the centre of the wall of each ward in which, by means of a furnace in the basement, an upward current of air is constantly maintained. Full particulars of the building, with plans and view, will be found in our volume for 1872 (vol. xxx.), pp. 65, 66, and 67.

St. Alban's School of Art.—The arrangements made by the committee for the new School of Art are now complete, and have been approved by the Science and Art Department. The Art Night Classes, which have been taught by Mr. Brash during the last five years, will be attached in September next, so that the school will then consist of a morning class, open twice a week, and an evening class three times a week. Dr. Puckett is elected head-master; and Mr. Brash will act as assistant master to the evening classes. The accommodation placed at the disposal of the committee for a school of art is not of the best kind, though we do not know that any better is existing in the town at the present time. If the idea of having a Mechanics' Institute and School of Science and Art in one building could be practically worked out, the whole of the present inconvenience in the way of carrying on the School of Art would be obviated, and a long and generally-felt want in St. Alban's would be supplied. It will be "better late than never," and we trust even yet that something will be done to provide a Literary Institute for the town, whether wholly by voluntary subscription, or partly in that way, and partly from the borough funds.

Dispute in the Building Trade at Jarrow. On the 17th inst., the operative joiners engaged in the building trade at Jarrow turned out on strike. Hitherto, it appears, they have been working without any rules, but latterly a code has been framed by the men and submitted to the twenty-four master builders, only three of whom had approved and signed them up to Friday night. At that time a resolution was passed that if the rules were not signed by noon on Saturday, the men should turn out on strike in a body, and the masters having still dissented, they have done so accordingly. Without rules, the men have been working overtime at the same wage as day time,—viz., 8½d. per hour, but the rules stipulate that "all time wrought after 5 p.m. (or twelve, noon, on Saturdays) shall be paid for at the rate of 10½d. per hour for the first four hours, and after that 1s. 0½d. per hour; and from twelve, midnight, on Saturday till half-past six a.m. on Monday double the ordinary rate." The men have also passed a bye-law, abolishing piecework and sub-contracts.

St. Peter's Church Tower, Maldon.—Considerable alarm was occasioned on the 23rd inst., when it was rumoured that this tower had fallen. Time and weather have so far affected the structure that several feet of the stone work connecting the tower with the octangular turret at the north-west angle have fallen, and in the descent made a large breach of some 4 ft. or 5 ft. in diameter in the roof of the library, but has not penetrated the ceiling. The difficulty was not got over until the following day, by which time a party of engineers had set matters right. Other portions of the tower appearing likely to fall unless at once supported, operations were commenced with a view to the old tower being made still able to hold its own.

Popular Museum of Anatomy and Physiology.—Mr. A. J. Harvey proposes by a circular the establishment of a People's Museum of Human Anatomy, Physiology, and Popular Surgery (including a department on popular medicine), to be erected and endowed by Government.

Constantinople.—It appears that the news given by the *Byzantis* relative to the suspension of the works of the new Azizieh mosque on the heights of Beshiktash, is incorrect. A long revetment has been completed on the Dolmabaghtché side, and more than 4,000 workmen are constantly employed on the foundations of the edifice. Serkis Bey, the palace architect, has promised the Sultan to finish the mosque, with all its kiosks, fountains, and outbuildings, in the space of three years. In order to economise the cost of the transport of the stone and timber used in its construction, the Sultan has placed at the disposal of the architect the steam-vessel *Shelif*, bought a short time since from the Messageries Maritimes. The whole of the cost will be defrayed out of the Sultan's privy purse, and the workmen are paid regularly every week. The block of eighty houses which are being constructed at Beshiktash, and are to serve as an endowment for the new mosque, will be finished within three or four months.

Discoveries at Iona.—Mr. Thomas Cook says:—"From the captain I learned that the existence of the cave was well known, especially to Mr. Maclean, the proprietor of Carsaig; and it was known to be a cave of considerable extent and interest. Its location is on the shore, at the foot of a cliff, about a mile east of the Carsaig Arches. At Iona I got an interview with a mason, who had been engaged in quarrying freestone for the repairs at Iona, and he told me that he had traced drawings of columns on the walls; that the cave is 80 ft. square, and will afford room for a large number of workmen. Some fifty tons of beautiful freestone have been got out for the repairs of the cathedral, and any quantity may be obtained. I suggested that most of the monuments,—broken crosses, tombstones, &c.,—are of slate, and he replied that there are layers of slate under layers of freestone, and there is abundance of material, of both kinds, for any number of monuments that might be erected on Iona. The evidence of this practical man confirms the opinion that this was the quarry where stone to build and monuments to adorn were procured for the famed island."

The Royal Forests.—In a report from Messrs. Mathews, Murton, and Menzies to the Lords Commissioners of Her Majesty's Treasury relative to the Royal forests, which has just been printed, attention is called to the system under which the large timber is now supplied to the dockyards from the New Forest; a system which is said to be "open to serious objections, as it is at variance with all the principles which regulate commercial transactions between one department and another." A certain quantity of timber is required for the Navy; the entire forest is searched for the best trees, which are taken down without any reference to what is around and about them, and broken into "thick stuff" or "plank" by the forest servants (whose business is, or ought to be, to grow trees, and not to be converters of timber), and accepted or rejected at the caprice of the Navy purveyor, it being notorious that one purveyor will reject what another will accept. The rejected timber is then sold to the general merchant at such price as an article with a discarded brand upon it may be expected to realise.

Restoration of Ashbourne Parish Church. Immediately after the foundation-stone of the new schools was laid on the 19th inst., two parishioners announced their intention of restoring the window of the north transept of the church, and of filling the same with stained glass at their own expense. This will be a great improvement, and form a companion window to that recently placed in the south transept as a testimonial to the Rev. J. R. Errington, the late vicar. The cost of the new window will, it is believed, amount to about 600*l*. We are glad to see that the restoration is going on steadily, and that friends come forward as in this case and help to make this fine old parish church what it must have been two or three centuries ago.

The Midland Institute of Mining Engineers and Coal-cutting Machinery.—The members of the Midland Institute of Mining Engineers, at their annual meeting, held at Barnsley recently, made an additional grant of 25*l*. to the sum of 50*l*. voted to a committee appointed some time ago to examine and report upon the various mechanical arrangements now in use for under-cutting or otherwise assisting in the operations of getting coal. The report of the committee is looked forward to with some interest.

New National Schools, Shildon.—St. John's new National Schools have been opened. There are now three school buildings almost ready for the reception of scholars,—that which was opened on Wednesday, another at Eldon, and a third in connexion with All Saints' Church, on the south side of the valley. The St. John's National Schools occupy a convenient site, which is easy of access to the residents of the surrounding neighbourhood, and the buildings have been erected with due regard to health and comfort. They form two sides of a square, and consist of one well-ventilated room, of a length of 100 ft., and with a class-room at each end. The schools have been built to accommodate 400 children, and have been erected at a total cost of 2,500*l*.

The New Station at Sale.—The works were commenced in March, 1874, and during their progress to completion it is satisfactory to record that no accident occurred. The principal entrance, which will be greatly improved in appearance when the bridge is widened, is from the high-road. It is well protected with a large awning over the front, and the arches of the windows and doors are done in parti-coloured bricks. On the same floor are placed commodious booking and parcel offices. The cost of the new works, we may mention, is about 11,000*l*. The architect is Mr. Woodhouse, Stafford; the contractor, Mr. E. Johnson, Manchester; the clerk of works, Mr. E. Parry; and the superintendent foreman, Mr. G. Furness.

New National Schools, Ashbourn.—On the 19th inst. the foundation-stone of an additional school (for girls) was laid by the Rev. J. R. Errington, rector of Ladbrook, and late vicar of Ashbourn. The site of the new school is nearly opposite the north entrance of the parish church, and near the present school, which will be appropriated entirely for boys. The new school is to be built of Alton and Hollington stone, from designs prepared by Mr. Robinson, the diocesan architect, and suggested by the Rev. J. R. Errington. The erection of the school was offered for public competition, and the tender of Mr. W. Smith, to do the work for 1,630*l*., was accepted.

West of England College of Science and Literature.—Last week an important meeting of peers and members of the House of Commons, connected with the West of England and South Wales, was held in the Conference-room of the House of Commons, for the purpose of promoting the proposed School of Science and Literature for the district, which it is proposed to establish at Bristol. The Dean of Bristol and the Rev. Prebendary Percival gave details of the proposed scheme, of which various other gentlemen signified their approval, and it was stated that 17,000*l*. had been already collected in Bristol.

The Building Trade in Edinburgh.—Building is almost the only trade brisk here. So many new schools are going up all over the country that very few workmen are coming to town; and the new schools, two new theatres, and a cathedral are all in want of more hands. The new cathedral is at a stand still, however, the men having left *en masse* for the theatre, where as much as 1s. per hour is being paid to push on to be ready for the next pantomime. Meantime, Mr. Brooke, of London, the church contractor, wishes to be relieved of his responsibility, and there the matter rests.

Moving the Ocean.—A rather "big" thing in contracts has just been entered into by Mr. W. Hudson, the "Ecosevephoron," Queen's-road, Brighton, who has undertaken to effect the conveyance from Brighton to London of 600,000 gallons of sea-water required for use in the tanks of the Westminster Aquarium, which is now in an advanced stage of completion. The water, which will be conveyed in casks, will be obtained through the agency of Brill's Baths Company.

The Clerkenwell Surveyor.—We have to record the death of Mr. Sanders Bevan, the surveyor of the parish of Clerkenwell, at the age of sixty-three, which took place on Thursday afternoon in last week, at Southend. Mr. Bevan was appointed surveyor soon after the establishment of the Vestry in 1856, being the first surveyor named under Sir Benjamin Hall's Metropolis Management Act of 1857. Ever since that period he has occupied the post.

A New Deaf and Dumb Institution for Leeds.—On the 22nd inst., at Leeds, the Baroness Burdett Coutts laid the foundation-stone of a new institution for the deaf and dumb in the West Riding of Yorkshire.

School Board Architects. — The School Board of Llangattock-nigh-Usk (Monmouthshire) have elected Messrs. Haddon, Brothers, of Hereford and Malvern, their architects. The Walterstone (Herefordshire) School Board also appointed these gentlemen their architects at a meeting held on the 15th inst. The Messrs. Haddon now hold the appointment of architects to *seven* distinct School Boards, viz., Hay, Breconshire; Marden and Stoke Prior, Herefordshire; Llanbister and Llanfihangel-Rhyd-Ithon, Radnorshire; and the two first named.

Memorial Stone Laying at Rotherham. The four memorial stones of the new Wesleyan chapel, at Eastwood, Rotherham, were laid last week. The chapel will be built in the Romanesque style of architecture, and will accommodate about 800 people. It will be 71 ft. long by 47 ft. wide, and an outshot at the back, forming vestries, will be 32 ft. by 12 ft. Underneath the chapel will be a schoolroom and two classrooms, which will provide accommodation for 380 children.

The Drainage Scheme, Lightcliffe.—The plans for the proposed drainage of this district have been prepared by Messrs. Horsfall, Wardle, & Patchett, of Halifax. A system of drainage must be carried out; and the board has wisely planned a general scheme rather than go in for a partial one. It may not be necessary to carry out this all at once; but as many new buildings are now in progress, and the erection of others is contemplated, it is almost absolutely necessary that main drains should be at once constructed in some parts of the district.

The Clearstory of Chipping-Norton Church.—At an adjourned vestry meeting held an the 15th inst. — present, the vicar (in the chair), Messrs. A. C. Rawlinson and Martin Pearson (churchwardens), and Messrs. Coleman, Sladden, and Lewis — it was determined that the architect's plans with reference to the glass in the clearstory windows be carried out, and that Mr. Hobb's tender be accepted at the sum of 498*l*.

Proposed New Exchange in Newcastle.—The proposal to erect a new Exchange, and to pull down the present building, together with the Guildhall, has lately been laid before the members of the Exchange Company by Mr. Benjamin Plummer, jun., and, after consideration, has met with the approval of those gentlemen. One hundred thousand pounds is mentioned as the likely cost of the new Exchange, should it be erected.

A Statue of the late Elector of Hesse is about to be placed in the cupola of Wilhelmshohe, among the statues of former Electors. By a strange coincidence there was but one vacant niche left in the wide circle, as if the architect had foreknown the number of princes of the House of Brabant destined to occupy the Electoral throne. The last statue will be that of the last once independent Elector.

Drinking Fountain.—Mr. A. M. Silber has presented a drinking-fountain with dog-trough to the parish of St. Alban, Wood-street, Cheapside. The fountain, which is of granite, has been erected in the churchyard in Wood-street. The Vestry of the parish have passed a vote of thanks to Mr. Silber for his gift. The *City Press* contains a sonnet suggested by it.

A large Flint Implement Found.—Dr. Gladstone, F.R.S., has found in the Lower Thames Valley a large flint implement of palæolithic make—the first indubitable relic of man which the mammalian beds of the Lower Thames Valley have yielded to show the contemporaneity of our race with the great quadrupeds of the Pleistocene age.

The Charity Children in St. Paul's.—It is rumoured that the gatherings of "charity children" in St. Paul's is to be discontinued for want of funds to cover the unavoidable expenses. We are very glad to hear it. The risk of fire to which the cathedral is exposed on those occasions from the piling up of timber stagings is enormous.

The Dust Depot for Islington.—At a special meeting of the Islington Vestry, held on the 23rd inst., a long discussion took place on the proposal of the Highways Committee to establish a depôt for dust on a piece of freehold land near the Great Northern Railway, between Highbury Park North and Gillespie-road, to be purchased for 8,950*l*. The proposal was negatived by a large majority.

Geological Curiosity.—The workmen employed upon Major Cartwright's new building, at Brackley, in sawing a block of stone of some two tons weight came upon a piece of decayed wood firmly imbedded in the centre of the stone. The wood was about 2 ft. 6 in. in length, and 3½ in. to 4½ in. in diameter. The stone was brought from the quarries at Corsham, Wilts.

Bust of Sir John Franklin.—*Apropos* of the death of Lady Franklin, which took place on Monday, the 19th inst., it may be mentioned that Mr. Matthew Noble, the sculptor, only on Saturday completed the cutting of the inscription on the monumental bust of Sir John Franklin, which he has just executed, for Westminster Abbey, and which will shortly be erected there.

Attack on the Palestine Exploring Party. According to Reuter's Agency, Sir H. G. Eliot, the English ambassador, has received a telegram announcing that Lieutenant Conder and the members of the Palestine exploring party have been attacked near Japhet (?) by a band of Algenens. The explorers succeeded in repulsing their assailants, and none of their party were wounded.

Church Building.—Messrs. Silver & Son, who are engaged in restoring the parish church of High Wycombe, and building a new one at West Wycombe, have entered into a contract for the restoration of Beedlow Church, under Sir Gilbert Scott, architect.

Stanley.—The old church of this parish was taken in hand for restoration and enlargement on Monday, July 12th. The builder is Mr. Brown, who is working under Messrs. Evans & Jolley, architects. The estimate of the entire cost is about 900*l*.

TENDERS

For alterations at 11, East India-road, Limehouse. Messrs. A. & C. Haraton, architects:—

Heiser	£337 0 0
Harris & Wardrop	297 0 0
Hearle & Son	239 0 0
Palmer (accepted)	235 10 0

For a house in Tufnell Park, for Mr. Claude. Mr. George Truefitt, architect:—

Bird (accepted)	£1,713 0 0

For a house in Tufnell Park, for Mr. Bovet. Mr. George Truefitt, architect:—

Carter	£1,800 0 0
Bird (accepted)	1,785 0 0

For erecting and completing stable, at Hove, for Mr. J. Dempster. Mr. C. O. Blaber, architect. Quantities supplied:—

Newnham	£540 0 0
Stenning	530 0 0
Eldridge	515 0 0
Spreadborough & Feldwick	197 0 0
Reynolds	482 0 0

For the erection of three dwelling-houses, Chobham-road, Forest-gate, for Mr. T. Rea. Mr. Geo. Fowler, architect:—

Webb	£875 0 0
Lewis	870 0 0
Mansfield	867 0 0
Henry & Peddie (accepted)	795 0 0

For new premises, Broad-street, Reading, for Mr. A. Palmer. Messrs. Brown & Albury, architects:—

Searle	879 0 0
Filewood	828 0 0
Grover	820 0 0
Carter	794 0 0
East	757 15 0
Painter and Glazier's Work.	
Freeman	68 15 0

For building three mansions at the new street from Wigmore-street to Hindle-street, Orford-street, for Mr. Jas. Heudry. Mr. John Norton, architect. Quantities by Mr. L. Thacker:—

Shapley	£17,700 0 0
Wilson Bros.	15,828 0 0
Lawrence	14,798 0 0
Smith	14,750 0 0
Braid, Jopling, & Co.*	14,000 0 0
Boyce	13,900 0 0
Gerrard	13,731 0 0

*Accepted.

For the erection of Christ Church, Stepney. Mr. Ewan Christian, architect. Quantities supplied:—

Patman & Fotheringham	£6,348 0 0
Brass	6,276 0 0
Jackson & Shaw	6,220 0 0
Dove Bros.	6,190 0 0
Manley & Rogers	6,177 0 0
Downs & Co.	6,050 0 0

For alterations and additions to No. 3, Cadogan-place, for Lady Lamb. Mr. C. B. Evans, architect:—

Heath (accepted)	£1,226 0 0

For alterations for Mr. Tappenden, Barrack Tavern, Woolwich-common. Mr. J. Groom, architect:—

Toms	£520 0 0
Raby	440 0 0
Whitby	400 0 0
Knight	391 0 0

For additional outbuildings and cottage, at Messrs. Lovibond's new stables, North Pole-lane, Greenwich. Mr. J. Kiddle, jun., architect. Quantities supplied by Messrs. Batterbury & Huxley:—

Newman & Mann	£607 0

For Boyd's Workmen's Institute. Mr. R. Gane, architect:—

Hosking Bros.	£1,850 0 0
Hammond (accepted)	1,835 0 0
Dover & Co.	1,812 0 0
Stephenson	1,810 0 0
Cropper	1,809 10 0
Potter	1,793 0 0
Timewell	1,756 0 0
Perry & Co.	1,728 0 0
Crabb	1,706 0 0

For schoolrooms, classrooms, and teachers' residence, at Wivelscombe, Somerset, for the School Board. Mr. J. Houghton Spencer, architect:—

Spiller	£3,665 0 0
Escott	3,641 15 4
Morse	3,642 0 0
Stagg & Handford	2,937 0 0

For schools for London School Board. Mr. E. R. Robson, architect. Quantities supplied:—

Manua-street, Lambeth.—2nd Design.

Cooper	£9,582 0 0
Williams & Son	9,480 0 0
Taylor	9,351 0 0
Wall Bros.	9,274 0 0
Hill, Higgs, & Hill	9,240 0 0
Tyerman	9,233 0 0
Hobson	9,168 0 0
Nightingale	9,083 0 0
Kirk & Randall	8,989 0 0

Rendlesham-road, Clapton.

Staines & Son	£8,278 0 0
Lawrence	8,100 0 0
Nightingale	7,883 0 0
Hobson	7,879 0 0
Shurmur	7,803 16 7
Newman & Mann	7,820 0 0
Sargeant	7,792 0 0
Pritchard	7,706 0 0
Boyce	7,494 0 0
Enhor	7,374 0 0
Roberts	6,642 0 0
Grover	6,447 0 0

For erecting and completing domestic offices for the Cripples' Home, Wright's-lane, Kensington. Mr. E. C. Robins, architect. Quantities supplied:—

Sharpington & Cole	£1,186 0 0
Brass	1,128 0 0
Newman & Mann	1,116 0 0
Hobson	1,043 0 0
Lucas	960 0 0

For taking down old building and erecting new premises on the site of No. 10, Little Tower-street, City, for Mr. H. Sotheram. Mr. Sextus Dyball, architect. Quantities supplied by Mr. W. E. Stoner:—

Croaker	£3,545 0 0
Holland & Hannen	3,370 0 0
Kilby	3,360 0 0
Ashby Bros.	3,348 0 0
Patman & Fotheringham	3,195 0 0
Brass	3,184 0 0
Newman & Mann	2,948 0 0
Browne & Robinson	2,837 0 0

For alterations and additions to chapel and boundary walls, &c., East-hill, Wandsworth, Surrey. Mr. E. C. Robins, architect. Quantities supplied by Mr. G. R. Tasker:—

Stimpson	£3,988 0 0
Brass	3,797 0 0
Sharpington & Cole	3,597 0 0
Hobson	3,594 0 0
Turrell	3,592 0 0
Hill, Higgs, & Hill	3,579 0 0
Taylor	3,560 0 0
Newman & Mann	3,426 0 0
Adamson	3,367 0 0

For new Baptist Chapel, Meyrick-road, Battersea. Mr. Gordon Stanham, architect. Quantities supplied:—

Hill, Higgs, & Hill	£2,224 0 0
Adamson & Sons	2,129 0 0
Newman & Mann	2,128 0 0
Hockley	2,110 0 0
Lathey Bros.	1,960 0 0
Appleton & Turtle	1,935 0 0

For new school and mission room, in King's-cross-road, Clerkenwell, for the trustees in connexion with St. Philip's Church. Mr. Walter E. MacCarthy, architect. Quantities supplied by Mr. William Smith:—

Cullum	£1,144 0 0
Greenwood & Son	1,114 0 0
Wheeler & Warren	1,050 0 0
Sabey & Son	1,037 0 0
Newman & Mann (accepted)	1,025 0 0

For new studio and fence walls, at Hampstead. Messrs Batterbury & Huxley, architects. Quantities supplied:—

Patman & Fotheringham	£2,993 0 0
Burford	2,822 0 0
Newman & Mann	2,462 0 0
Manley & Rogers	2,377 0 0
Lusell	2,300 0 0

For new warehouse, Hatton-garden, for Mr. Munt. Mr. Wimble, architect. Quantities supplied:—

Bayes & Ramage	£2,597 0 0
Morter	2,571 0 0
Hoare	2,539 0 0
Croaker	2,483 0 0
Newman & Mann	2,425 0 0
Patiker	2,387 0 0

TO CORRESPONDENTS.

W. H. P.—H. H. B.—Mr. P.—A. & C. H.—R. C. P.—D.—H. L.—J. H.—J. D. H.—E. B. F.—J. M.—J. C.—A. A. K.—C. T.—W. H. L.—T. H.—J. B.—J. M.—T. B.—C. F.—E. G.—B. J. & Co.—L.—J. D. H.—J. S. H.—W. R.—D. & Co.—C. G.—H. M. C.—E. I. B.—C. R. S.—T. H. H.—A. L. G. (thanks).—T. R. (we cannot advocate any scheme for *preserving* the dead).—R. R. P. (next week).—H. L. (next week).—C. F. (next week).—W. H. W. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

The Builder.

VOL. XXXIII. No. 1666. SATURDAY, AUGUST 7, 1875.

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A Treatise on Timber.

THE series of influences and processes, natural and artificial, through which wood passes in the course of its transition from the state of a tree to that of baulks and planks ready for use in construction, and further into the finer and more minute operations of joinery, are not much taken into consideration except by a few whose business it necessarily is to do so. To the majority of persons wood presents itself under two general aspects only; as a living and more or less beautiful vegetation (unless the more practical view of it as an "excrescence of the earth provided for the payment of debts" predominate), and as a material to be had in blocks of convenient sizes for cutting and carving in various operations of building or construction on a smaller scale. The circumstances attending the transition from one state to the other are hardly thought of in general and have scarcely been very systematically considered even by those who are practically concerned in knowing all about them. We have treatises on trees, and treatises on carpentry, but we hardly possess in English any volume containing so full and comprehensive a study of wood from its growth in the tree to its manipulation in the joiner's mortising or rebating machine, as is collected in the French treatise,* named *Les Bois*, under which heading is condensed into a volume of moderate size a review of the material under all its aspects and conditions; the effects on its growth of site, climate, and treatment; the diseases and attacks to which it is subject; the chemistry of its formation; the processes of cutting, transportation, and commercial distribution; and its various uses and treatment, from the comparatively delicate operations of joinery to the formation of railway sleepers and telegraph-posts. The book is written from a French point of view, of course, and in regard to certain points its information is only or chiefly applicable to France, but in the main its value is general. Being the joint production of a member of what we should call in England the "Woods and Forests Office," and of a naval engineer, there seems to be in the authorship a kind of guarantee that each end of the subject would be fairly and equally represented.

Accordingly, with the precision and completeness of arrangement characteristic of their nation, the authors commence with the consideration of the cellular construction of wood as exhibited by the microscope, the formation and development of the tree from the embryo, and the formation of the bark around the exterior; illustrated by various diagrams from microscopic observations. Under the same head, "Physiologie," we have an elaborate analysis of the whole system of the growth and nourishment of trees, and the causes of injury and decay. A good deal of the information given on the former subject, illustrating minutely the chemical action of the tree in process of growth, has little or no relation to the practical uses of wood, and is purely botanical in its interest. Among causes of faults and injuries in timber, the authors note one which few, perhaps, would think of in connexion with the practical part of the subject; namely, the bruises in the wood from the contact of heavy branches in a strong wind. No sound economist, therefore, can permit himself to contemplate with pleasure what has always been supposed one of the most beautiful sights in nature, the waving of the woods under the action of the wind; he must reflect that while he is admiring the effect, the market value of the wood is being deteriorated, and the formation of knots and shakes is going on, to be the subject of future difficulties and disputes on the part of some architect or clerk of works. The remarks on the relation of forests to temperature (p. 115) are sufficiently interesting for quotation:—

"Trees are actual living machines, fabricating for us combustible matter; but, as nothing in Nature is either gained or lost, they must take from somewhere the warmth which they accumulate in their tissues; the bad conductibility of their trunks and stalks does not permit them to draw up warmth from the earth; they can only absorb it from the air, which they do at the same time that they decompose carbonic acid from it. Trees would accordingly be permanent refrigerators if they were constantly fabricating combustible matter, but in reality they only do so during the season of vegetation and in sunshine; consequently it is only during that limited period that they cool the atmosphere. During the rest of their existence, that is to say when they are deprived of leaves, and when there is no sun, not only do they cease to absorb heat or to exercise a cooling influence, but they even spend a portion of their combustible matter in producing a slight warmth, of which the surrounding air always receives something. Lastly, the emission of damp which accompanies their transpiration is much greater in the heat of the day than at night, in summer than in winter, which is a second cause of coolness in summer. . . .

One may say, then, that *forest vegetation reduces the variations of the atmosphere*. Its action is, it is true, very feeble in comparison with the forces producing atmospheric variation; but it is continuous, and it has accordingly been possible to define it from the mean of a great number of observations. It has been ascertained as a fact that, first, the mean temperature is higher outside a wood than within it by about half a degree; the mean of greatest daily temperature shows the same proportion, and that of least daily temperature the reverse; secondly, the variations of temperature make themselves felt within the wood in the same proportion as outside it, but more slowly and with less disturbance.

Although forests are in general the moderators of temperature, it must be remembered that in winter their branches are charged with snow, and that then the refrigerating surfaces are greater within the wood than without it, and in consequence the temperature of any comparatively warm body abates more rapidly."

The direct influence of forests upon the healthfulness of a country is believed, however, to be hardly important or appreciable, except in climates at once hot and dry. Observations on this head, however, are not at present numerous enough for any precise deductions to be drawn from them; but we incline the other way. The relation between forest land and public wealth is more intimate. The authors sum up this part of the question carefully. They conclude that forested countries, where the soil is of good quality, would be richer if partially disforested, and that the timber itself is more carefully and economically used where its extent is restricted. The only case in which it would be of advantage to preserve forests in good soil is where they consist of trees which produce wood fitted for a superior class of work, for these woods are rare, and their preservation calls for certain sacrifices. The interest of a country, therefore, is to clear forest ground where the soil is good, at the same time reserving timber enough for the requirements of its industries. On the other hand, the same interest dictates the planting of bad soil, which absorbs more labour than it is worth in cultivation, with forest-trees. It is the duty of careful and providential Governments, think our authors, to see to these things. The interest of the proprietor of wood is often adverse to that of the country. In mountainous and barren wooded districts, an owner of land is under temptation to capitalise by making a clearance of his wood and realising by it. He is for the moment the richer, but the country is the poorer, since for a good timber district has been substituted bad pasture or arable land. In France the clearance of plain countries from forest has been carried on so far already that, before long, no part will be wooded, possibly, except that which is utterly unfit for anything else. "*Il appartient à un gouvernement prévoyant d'aviser aux moyens de conserver et d'améliorer les rares massifs boisés où la marine, l'artillerie, et l'industrie trouveront les bois de grande dimension et de qualité supérieure, que la propriété privée est impuissante à produire.*" Perhaps these latter considerations are not quite without point and significance for other Governments than that of France, whether in regard to the conservation of existing timber or the utilisation of lands for forest which present no capacity for cultivation of another kind. The manner in which English oak has been allowed to go without any systematic attempt at propagating and cultivating, in suitable districts, what might have been so valuable a source of revenue, is a curious instance of the thoughtlessness upon such matters which has usually characterised English legislation.

It may be observed here that under the heading of "Statistique forestière" we have a comparative table of the proportion of wooded land to the rest of the area in the principal countries of Europe. The British Isles give by far the

* Les Bois, indigènes et étrangères: Physiologie, Culture, Production, Qualités, Industrie, Commerce. Par Adolphe E. Dupont (Ingénieur des Constructions navales) et Bouquet de la Grye (Conservateur des Forêts, Membre de la Société Centrale d'Agriculture de France). Paris: T. Rothschild. London: Williams & Norgate.

lowest average, only "0·04," while France is "0·16." In proportion of population given *par hectare* (2½ acres), in an adjoining column England is the highest of any country but Holland; the figures for the two respectively being "0·911" and "0·960"; the proportion of wooded country in Holland is 0·07. The population figures of France, which shows four times the proportion of wooded country that Great Britain does, are a good deal more than one-fourth less than ours. Comparing the two statistics, one may conclude that in spite of our high population figures, there are still in England "lands that want hands."

Under the heading "Exploitation" we have a detailed summary of the processes of felling, sawing, and transportation; the preparation of charcoal; the separation of the bark for special manufactures in which it is used, &c. The authors are severe on the old-fashioned method of felling trees with the axe, by which 5 per cent. of the trunk wood is generally lost, and the tree is brought down with a crash which extensively damages the branches. Apparently they recommend the two-handed saw in preference, as working with less injury to the tree and more economy; but it is not very easy to see, after all, how trees of the largest size are to be "let down easy," without a complication of machinery which would more than compensate (as a matter of economy) for any saving effected by the better preservation of parts of the tree. The best method of sawing up the trunk so as to gain as much from the material as possible, is carefully gone into and illustrated. The "qualities and defects" of wood occupy considerable space, and contain much information and suggestion. In regard to the action of fire on wood, the authors repeat the opinion which has already been expressed as the result of experience and observation among English architects, that though light and porous woods are very combustible, and burn rapidly, the hard woods, after their outer surface is burned, as well as the gas which the heat disengages from the centre of the mass, practically resist fire for a long time, and though slowly charred, maintain their strength and power of cohesion and resistance, in the mass, almost unimpaired. In reference to the duration of wood, and the effect in regard to this of thorough dryness (seasoning), the following illustration is given:—"In the middle of the seventeenth century, the English built their ships of war with very well seasoned oak, of good quality; and these lasted thirty years. At the close of that century their constructions, made more hastily, did not last more than fourteen years; and their duration was at last reduced to eight years, when the wars of the first empire compelled them to build quickly and with fresh wood."

The section, "Travail des Bois," begins, like the others, with first principles:—

> "It is by cutting certain parts and leaving others that we are enabled to give to wood the forms we wish. The fibres have to be cut sometimes across, sometimes lengthways; in some cases by great quantities at a time, in other cases by very small ones; the same tool cannot therefore satisfy so many differing conditions, it is necessary to have a varied series of them appropriate to different operations; but, whatever the tools may be, their working parts may all be compared to wedges working upon the wood at certain angles at which they have the most effect in carrying out the intended operation."

This generalisation is the preface to a description and classification of wood-working tools in all their branches; in the course of which some of the larger machines for sawing, mortise-cutting, &c., are delineated in very well executed engravings. The authors cannot do without a little more of the philosophy of the subject, however, and their definition of tools as various forms of wedges leads to a little consideration of the mechanical manner in which the edges of the tools act upon the particles of wood, illustrated by a diagram, showing the normal tool or "wedge" in operation on the fibre, in four positions, which include every manner in which the cutting edge of tools is applied to wood. Perhaps the average workman would be hardly likely to do his work any better for these considerations; but it is just as well to be reminded of principles and of the why and wherefore of everyday operations at times.

The "Commerce des Bois" has an important position to fill in social mechanism,—"it is, to reduce, within the limits of strict necessity, the endless series of dimensions demanded by the different industries which have to be provided for, in obliging them at times to modify slightly their work, to such a degree that the provision of wood necessary for all branches of industry may be limited to the least possible number of typical dimensions, of customary fabrication, among which each industry finds the raw material necessary for its operations as nearly in the right form as possible." The industry requiring the largest amount of types or special forms of wood is of course ship-building; though the demand for curved pieces of various proportions is not so great now as when ships of war were still built entirely of oak. The great amount of wood employed in comparatively rough forms in engineering operations is surprising when it comes to be stated on paper. Under the head of "Traverses de Chemin-de-fer" we find that France annually employs about 2,700,000 sleepers in the making or repairing of railways, representing 270,000 cubic mètres of undressed wood. Telegraph-posts form now an important special item in the expenses of Government works: and again, under the head of "Perches et Étais de Mine," we find that in England, "which in this respect is the nation most favoured by the solidity of the soil and of the coal strata, and where the owners of the mines are too careful of the main chance to leave any wood unused in the old workings," more than a million is annually spent on this item alone. This seems enormous, but the figures are carefully and deliberately given by the authors; and it is added that the expenditure in France is more than double that of England in proportion to the coal excavated, though of course the actual total is less than in this coal-producing country.

We have merely given a rough outline of the information to be obtained in this very exact and valuable treatise, which is well worth the attention of those to whom the growth and manipulation of timber is a matter of interest in its wider aspect, as a portion of the commercial wealth of their country, and as touching on the important question of the best utilisation of the whole of the soil of the country so as to gain from it all that it is fitted to supply; a consideration which, in regard to sundry not inconsiderable tracts of English land, can hardly be said to have been entered on at all as yet.

COST OF OUR PUBLIC BUILDINGS: HOUSES FOR THE MULTITUDE.

It is matter, not only of interest, but of definite professional information, to learn from time to time what is expended on our public buildings. Since the year 1851 large sums have been laid out in the erection of schools, museums, and other buildings, intended to further the æsthetic education of the people, under the direction of the Science and Art Department of the Administration. At one time annual reports told us, from year to year, what was going on in this respect. Then a change took place. The expenditure on buildings was transferred to the charge of another department. As to the advantage or disadvantages of this course we have nothing to say. As a practical architectural question, we presume it matters but little. But there was the inconvenience that the outlay became far more difficult to understand. It was only by the comparison of different estimates and amounts, by analysis and combination, that a result could be obtained. And those public writers are few who have the time or the habit thus to collect the details on which to ground their communications to their readers.

During the last month, however, two returns to orders of the House of Commons have been printed, by comparison of which it is possible to obtain a more comprehensive view of the outlay on museums and similar buildings, from 1852 to the present year. The first of these, which was moved for by Mr. Sullivan, purports to be a "Return of all sums derived from Parliamentary grants, expended each year since 1852 by the Science and Art Department, or under its control and direction, in England, Scotland, and Ireland respectively, specifying, as to the years 1872, 1873, and 1874, the several purposes for which such sums were expended." The abstract return, on the first page of this document, gives a gross total of 2,958,235*l*. But there is a note to this page, which should not escape attention, "Besides these amounts" (for building), "other sums have been expended by the Office of Works in England and the Office of Public Works in Ireland. See respective returns." This note is explanatory of the fact that in England, since 1869–1870; in Scotland, since the year 1855–1856; and in Ireland, since the year 1868–1869, no sums are entered in the abstract as expended on "buildings."

The second return was moved for by Mr. McLaren. It shows "the sums voted during each of the last five years, under Class I. and Class III., and for specimens and books, for the British Museum, Natural History Museum, South Kensington Museum, Bethnal-green Museum, and the Edinburgh Industrial Museum (Museum of Science and Art), with the total amounts of the same, and the average annual amount of votes, &c." Class I., we should explain, regards Works and Building; Class IV., Education and Salaries.

It would appear at first sight as if this return, which does not present any gross total on its face, would exactly supply the blank, as to England at least, in the former return. But even here is a hitch. There is a N.B. to the following very pertinent effect:—"It must be remembered that the above table, although showing the amount voted, is no guide to a knowledge of the sums actually expended. In the four years to 1873, 1874 inclusive, the amount voted for the Natural History Museum was 166,000*l*.; that expended, only 66,286*l*."

It is of course the duty of the officers who superintend the returns to the orders of the Houses of Parliament to take care that the exact information required by the order for the return is supplied. We are not prepared to say that it is their duty to go outside the exact answer. But, that being the case, it is a misfortune that the motions of private members should be so framed, that the exhaustive information, which is of value to the public, should not be brought out when two or three returns are asked for on different branches of the same subject. We cannot tell, whether, in the present case, either or both of the hon. members obtained that information which they actually sought. But we are quite sure of the inconvenience felt by any one who, having procured the above returns, still finds himself at a loss to know what we have expended on the various buildings named on the back of the report.

The discrepancy between sums voted and sums expended is one of those relics of our old constitutional jealousy which, so far as our own knowledge of its working extends, has a simply mischievous effect. For the year 1873-74, for example, Parliament voted the sum of 80,000*l*. for the buildings of the Natural History Museum. It might so happen, and we suppose, in point of fact, did so happen, that the superintendents of this undertaking were not so ready with their plans and contracts as to insure the expenditure of that sum within the year. Let us suppose—not as an approximation to fact, but for the sake of argument—that they were only able to spend 15,000*l*. within the year. The remaining 65,000*l*. would then lapse—be lost, as we have heard it called in the Government works—that is to say be unexpended within the year. Instead, however, of remaining to the credit of the Museum, to be expended in the following year, together with any further sum voted for that purpose, the vote expires. Thus, for 1874–75, 80,000*l*. was again voted for the Natural History Museum, without reference to the question whether the grant for the previous year had, or had not, been expended. As a matter of national account, this is perplexing and unbusiness-like. It diminishes definite control exerted by the votes. No such public control is rendered possible as would result from a comparison of votes and expenditure. Thus financially it is a very slovenly mode of proceeding. Practically it has yet another disadvantage. We now speak of a somewhat remote time, and of a branch of the Government service to which we have made, and shall make, no more distinct reference; but we speak from personal experience. In that case, as the financial year advanced, we have often known the officials of the Government to urge their contractors to make every effort, in order to justify them, by deliveries, if not by actual work, in sending in certificates for payment that the money might not be "lost." A zealous administrator might, and often did, thus act in the best faith, and with the view at once of expending faithfully the Parliamentary grant, and of keeping down the nominal charge of the work entrusted to him; for which he would be debited, *coram publico*, with all the sums voted, but not debited, *per contra*, with any savings made in the actual expenditure. But the influence of the system is bad. It will be in the interest both of those who seek for information on the cost of the architectural and other works carried on by the Government, and of those who superintend these works, for this anomalous method of keeping accounts to be remedied. More than all, we venture

hint, may it be to the advantage of the ublic.

Subject to the above reserve, we find that the otal sum expended since 1852, by the Science nd Art Department, on buildings, is set down t 208,601*l.*, a figure attained by the close of the ear 1869–1870. From this time to 1874–1875, ie sums voted for the same buildings have een, for South Kensington new buildings, 49,145*l.*, and Bethnal-green Museum new buildgs, 10,122*l.*, making a total of 357,868*l.*, which e conclude must approximately represent the st of the blocks of buildings at South Kengton, and of the succursal establishment at thnal-green.

This, it will be seen, is a large sum. It is one which it is very desirable that we should have clear, definite, and exact statement, accomnied by such a plan and description of the ildings erected as will enable the architect to rive at the cost per square yard of area and r cubic foot of structure. This information is e more desirable from the fact that the buildgs in question have been, for the most part, ilt under the direction of men who, though of doubted eminence in their own profession, were regularly educated civil architects. Beyond s, in the buildings in this vicinity, including se which may be taken to form a part of the neral system, although the cost of the erection s not defrayed by Parliamentary grants, ch reliance was placed on the use of models, tead of regular drawings, for the guidance the detailed execution of novel designs. two reasons, therefore, it is important to e definite information as to this large group buildings. It is becoming, as we shall pretly see, each year more important for us to e a thorough practical knowledge of the s that regulate combined buildings, especially h reference to their cost; and it is further irable to see whether any gain or any loss, in economical sense, is obtained by the employt of military in lieu of civil architects. It is d to say whether these questions are of most ortance to the architectural profession or to tax-paying and house-requiring community. esides this sum of nearly 360,000*l.*, 36,735*l.* e been voted since 1870, for the works and dings of the British Museum; 47,000*l.* for e of the Edinburgh Industrial Museum; and 000*l.* for the Natural History Museum. With rd to this last building, the information is icularly vague. The total votes, for five s, amount, as above stated, to 246,000*l.* re is the note to which we also referred as to 66,286*l.*, having been expended, out of 000*l.* voted in four years. The difference of 00*l.* is the vote for the current year, out of h we have no means of knowing how much be expended, and how much will be "lost," o the nation, but to the apparent credit of the ding. As Parliament has already voted 140 cent. more than the directors of the work managed to expend, to the close of the financial year, we are unable to form any nate how far the 80,000*l.* which is set down eir credit for the current year will be exled, or how far the vote may lapse.

hile on this part of the subject, it may be ell to add that the expenditure on all grounds, the exception of buildings by the Science Art Department, since 1852, has amounted ,736,511*l.*, being at the average rate of 666*l.* per annum. For the last five years the ary maintenance of the South Kensington, nal-green, and Jermyn-street Museums has 40,077*l.* per annum, and 16,970*l.* per annum been laid out on specimens and books. In Abstract of Expenditure for the three years ng 1873, 1874, however, only the sum of 3*l.* is set down to South Kensington um. It may be due to our imperfect actance with the mysteries of return-making there seems to be here some discrepancy, ially as the charge for 1872–3 is only 7*l.*, and that for 1872 is 34,222*l.* But the s as they stand will not be more intele to nine hundred and ninety-nine out of thousand of our readers than they are to lves. They illustrate, at all events, the ence between a reply that may be satisy to the various members who move for as, and that which is of value to architects re seeking figures for their own guidance, ublic writers, who are devoting time and r to assist them in so doing.

e heads of service under which the expendi- of the Science and Art Department are d are seventeen. Of these the Science rt Schools alone cost 104,186*l.* in the year 1873, 1874. South Kensington is the item next in importance. Then comes the line which, no doubt, includes the materials for explaining many apparent discrepancies between the several returns. Services common to the several divisions, 26,505*l.* This is exclusive of the cost of administration of the department, 4,483*l.*, and of "expenses of purchases, circulation," &c., 23,113*l.* The geological survey of the United Kingdom cost 21,010*l.* in the year under review, the total outlay in which, for the department, was 257,788*l.* The sums of 51,815*l.* for salaries, and 51,640*l.* for specimens and books, for the British Museum, are not included in this return. As a strictly educational grant, they raise the total under the two heads united to 361,243*l.* for the year. Here, again, we observe that the Edinburgh Museum for Science and Art is debited with a total charge of 7,510*l.* for maintenance, salaries, and purchases, during the years 1873-74, in Mr. M'Laren's return, and for a total of 9,064*l.*, exclusive of any share in the "services common to the several divisions," in Mr. Sullivan's return. We confess to more difficulty in understanding this difference than we found in the former instances. One thing, however, is tolerably clear,—we are without any plain, full, exhaustive return of the national expenditure for museums, schools, and similar art and educational purposes, as it is commonly incurred under the sanction of Parliamentary votes. It would be a public service if any independent member would move for such a return.

We now come to the definite practical aim with which we first undertook the examination of returns that are not, perhaps, all that could be wished. It is with reference to the relative cost of accommodation in large and small buildings. This is a matter of extreme importance. The provision of dwellings for the artisans, and for the poor, is one of the most perplexed questions that awaits the practical decision of the builder. Every one admits that we must turn over a new leaf in this respect. At the present moment the dwellings of the poorer classes may be grouped in two main divisions, of course with certain noble exceptions. Where the growth of a city has been, not only rapid and continuous, but general, we frequently find that large houses, built probably for opulent traders, and important city magnates, gradually being hemmed in by the growing mass of building, have first suffered in fashion; then fallen into disrepair; and finally, divided into small sub-tenements, or single rooms, have come to resemble a hive of unhealthy inhabitants, rather than a well-designed and well-constructed building. On the other hand, where the growth of population has arisen from the development of some special industry, as in Birmingham and many other manufacturing towns, the rapid demand has called into existence a web of small houses, built with a view of holding a single family each; but built always on the very cheapest plan, often of the least durable materials and workmanship; and possessing, in all cases, the very great disadvantage of covering an acreage altogether disproportionate to the amount of cubic accommodation which that area ought properly to afford.

It may be urged by the orthodox disciples of the *far-niente* school, that the laws of political economy prohibit any meddling with matters of this sort. They should be left to settle themselves. Supply and demand are correlative terms. If good homes are required by the poor, they will be forthcoming. If they are not required, it would be contrary to the principles of political economy to supply them. Rent must be paid in proportion to accommodation, and where rent is not forthcoming, or is inadequate, accommodation must follow the same rule.

It is very imposing to hear doctrines of this clear and peremptory nature laid down by men who give us the idea of being excellent judges of all that most conduces to creature comforts, and of making a practice of availing themselves of the full advantage of that superiority of their judgment. But we confess to being somewhat heretical in the matter. We are not so comfortably convinced as might be desired that it is nothing to us whether our nearest neighbours are well housed, ill housed, or not housed at all. There are a good many,—we hope an increasing number,—of persons who share our own want of true politico-economic education to this extent. Add to these a large number who are under the influence of fright. One man looks at the returns of epidemic diseases, and of increasing death-rate. He thinks it likely to infect his establishment; Lazarus *will* sit on the flags before his door; and if Lazarus points out that he should be happy to go to some spot of his own, so that one is provided for him, and to leave the flags free for the rush of the healthy breeze, Dives,—albeit, with a grumble, not to say a curse,—will put his hand in his pocket to provide the needed refuge. Thus one from a good motive, another from a purely selfish one, very many from mingled motives of undefined human sympathies, make up so numerous a body that we think it is pretty clear that, in spite of the eternal co-relation of demand and supply, Englishmen in the mass will come to the conclusion that the problem of providing decent and reasonable dwellings for the poor shall be looked in the face and practically solved. We need hardly add that the great clearances caused by metropolitan and other railways have been powerful agents in bringing matters to a crisis in this respect.

Here, then, considering the extreme value of land in those localities where accommodation is most urgently required, we come to the question of the best principles on which small tenements and single rooms can be grouped. And here we confess that to our idea the long-established practice of our masters in the building art deserves far more careful attention than it has met with in this country of late years. Since the rise of the monastic orders, the problem has been incessantly proposed to the Italian architect, how best to house a given number of persons, each of whom requires a chamber of absolute privacy—although for certain purposes common apartments serve for the community. It is true that this problem has been simplified by the restriction of the buildings thus required to the habitation of one or other sex. But this very restriction has rendered the subject more easy of study. Nor can there be any doubt that if, by way of experiment, we were to begin by making some model dwelling for several hundred persons of the same sex, there are thousands who would gladly find themselves on the list of candidates for admission.

In fact, the great monasteries and nunneries of Italy, more especially in the southern provinces, present a form of building as to the possibility of introducing which into our great centres of population it is worth while to make some serious inquiry. All that we actually need is to be found in some of these noble buildings. There is permanent protection from excess of weather; the more permanent and the more complete that these great houses must be built so as to resist any moderate shocks of earthquake. There is extreme convenience. There is admirable ventilation. There is every provision for health, for comfort, and for privacy. And within the lofty quadrangle a garden at once charms the eyes and purifies the air.

The considerations that oppose the introduction of this type of building into London are chiefly two. They are sentimental and financial. The latter, to our mind, is that which requires the greatest attention to meet. With regard to the former, we freely admit that the taste of the English people is opposed to that composite style of abode that is so familiar to our memory on the Continent,—not in monasteries alone, but in the great houses of almost every French and Italian city. It may be urged that an attempt, fairly considered and carried out, to introduce the system of "flats" into London has not had such success as to encourage repetition. All this has much truth. On the other hand, can any one contend that if we could offer to five hundred sempstresses, or five hundred young men engaged in mechanical industries, clean, weather-tight, light, warm, ventilated dormitories at something like a penny a night, there would not be numerous applicants? The only serious difficulty, we maintain, is the financial one. And this has two distinct aspects,—the construction and the remuneration.

It is, we suppose, a general, and probably a well-founded, opinion, among those persons who are familiar with buildings, that large, lofty houses, especially when we bear in mind the provisions of the Metropolitan Building Acts, are so much more expensive *per cubic* foot of contents, as to be economically inapplicable to such dwellings as we contemplate. We are not prepared to deny that there is room for such a view, irrespective of the question of ground-rent. But we desire to see the matter discussed, not as the subject of opinion, but on scientific and practical data.

One of the points as to which there is no doubt is, that a roof of immense span costs more per

square than an equal area of smaller roofs. The ratio, in iron roofing, has been held to be that the price per square is in proportion to the square of the span. But this cause of expense need not apply, as there can be no objection to the roofing of such a building as we suggest in very moderate spans and pitches.

Then comes the question of the thickness of the wall. Here the detail becomes too technical to be discussed without plans and drawings. But there is one consideration that should not be left out of sight. Increased cost, laid out in producing increased solidity, does not require proportionate increase of rents. It tells, in one respect, the other way. If, for instance, we build a house that may last for forty or fifty years, and receive 8 per cent. on the outlay by way of rent, a considerable portion of that percentage is not rent, but insurance. It is, or ought to be, a provision to enable the house-owner to renew the building at the time of its natural decay and downfall. But if, by increased solidity, the durability of the house be increased, a lower rent, in proportion to the outlay, will pay the builder. If, instead of having to rebuild *in toto*, say in sixty years,—which would be a long term for much of the house accommodation that is now being run up,—rebuilding would not be requisite for 200 years; and it would require no extravagant outlay to secure this,—5 per cent. might pay better than 8 per cent. in the former case. We have not space to pursue this inquiry further, at the present moment. But we commend the subject to the consideration of our readers; and we recommend the careful collection of such data, with respect to the cost of large public buildings in this country, as compared with the structural advantages and cost of the great conventual buildings in Italy, as may tend to ripen our judgment as to the best method of solving a problem which we can very ill afford to neglect.

SEPIA PAINTING.

It is next to impossible for amateur artists (meaning by that term those who can only pursue art as an occasional recreation) in any way to compete with the work of trained and practised executants in the higher branches of artistic production, such as painting in oil or water-colour. In regard to the latter, this is more the case than ever, now that so much more elaboration of detail, so much more minute imitation of nature, is practised than in the olden days of the art. Amateurs who take up these sections of artistic production must for the most part be content to be judged by a comparative rather than a positive standard, to gain the praise of showing feeling and perception of effect, without expecting that their productions can be accepted as satisfactory when judged by the same rule which is applied to the works of a professed artist, or claim to be hung in an exhibition on the same footing; unless, indeed, in rare and exceptional cases of original genius. But for those who would rather practise a form of art which they can render complete in itself, than hang on the outskirts of a higher and more elaborate art, there are processes which may be considered as especially adapted for amateur work; the chief characteristic of which is that their productions are valuable rather for the general idea and the degree of force with which it is carried out, than for elaborate technical finish.

Of this kind of process drawings in monochrome are the most important element, and few forms of monochrome work are more agreeable in their results, and less taxing in the manner in which those results are arrived at, than sepia sketching. The material presents an agreeable tone, and a certain degree of warmth, without producing a heated effect, and it is one that works readily and easily. In such a medium it is possible for those who have acquired or naturally possess an eye for form and for contrasts of light and shade, but who have little time for hard work in painting, to gain facility in producing studies from nature, or original studies of landscape or other effect, in a form which entails perhaps the maximum of effect in comparison with the labour bestowed,—which is the essential condition of amateur art under such restrictions. Many people of naturally artistic feeling, who are deterred from attempting the difficulties of water-colour, hardly know, perhaps, how much they could do in these simpler mediums, with pleasure both to themselves and others. To such we commend the art of sepia painting, as set forth in a very clear and comprehensive manner in a small book by Mr. R. P. Leitch*, consisting of tenty-four lithographed plates, illustrating progressively the possibilities of sepia painting, and accompanied by brief hints and instructions which show true artistic feeling, and a very exact perception of the capabilities and the limits of this branch of water-colour drawing. Such a book stands on a different footing from works intended to teach water-colour by progressive illustrations. The same author has himself, we believe, published a course of water-colour painting on the same principle, but which we should hardly recommend in the same way, because water-colour cannot, by any possibility, be adequately represented by chromo-lithograph, nor can anything be learnt of it from copying chromos, except in a hard, mannered, and conventional style, which had much better be let alone altogether. But lithography can represent monochrome drawings with almost the effect of the original drawing; especially in regard to what is the best use of sepia painting, the production of broad and free sketches of effect with little attempt at working up detail elaborately. When more than this is attempted, it is often a loss rather than a gain; for when too much realism of detail is aimed at by means of form and shading, the eye begins to demand the realism of colour also to complete the effect; but as long as the drawing only stands as a sketch, suggestive rather than realistic, everything is in its proper place, and the work becomes, if executed in a true spirit, entirely complete and satisfactory as far as it goes.

Mr. Leitch's instructions and hints are entirely in this spirit. In his general remarks, at the outset, he recommends the learner rather to avoid too much attempt at detail, the great charm of sepia painting consisting in the representation of masses of light and shade, "the result of which is breadth. The student must bear in mind that a picture represents the scene as a whole, as it would be impressed on the mind at one glance; and that, under such circumstances, no trifling details would be perceived, but that all the minor parts would be lost in the larger forms, which would again be blended into one harmonious whole, which would be disturbed were the details of any particular part rendered too prominent." In the more detailed instructions the author always keeps prominently forward the fact that painting of this kind is a system of *washes*, not of "outlines"; this is always one of the most difficult things to get into the head of young beginners, and in this view the study of sepia only might be an advantageous preliminary to the higher form of water-colour. At the same time, he is careful to insist on the necessity of accuracy and true perspective in the forms defined by the washes, either by applied colour or "spared-up" lights. The perfection of work of this kind is, in fact, to be able to draw or delineate with the brush alone, without previous outlining. It is only by considerable practice that this could be acquired, however; until it is, outlines must be made, but so as to be capable of complete obliteration, and removed as soon as the subject is defined sufficiently by the first washes of colour. Unless this is done, true aërial effect can never be obtained.

For the rest we leave Mr. Leitch's instructions in sepia painting to speak for themselves, merely adding that we agree entirely in his remarks and principles generally. The only thing for criticism is in the nature and forms of some of the earlier studies given; which are much such as we all know in many "first drawing-books." They serve the purpose of instruction in light and shade and general manipulation as well as anything else, but it is a pity that young students, especially, should be familiarised at the outset with (for instance) bad architectural detail, when good could be as easily drawn, and would give the same instruction in manipulation. Nor are we quite sure of the advantage of confining studies of this kind so much to objects presenting what is supposed to be a picturesque irregularity, that is to say dilapidation, of appearance. Objects of more finished and symmetrical form may be equally good practice in another way, and are often more difficult to draw; and the style of subject we allude to is calculated to give a false impression to the beginner that nothing is worth drawing but what is old and broken and decayed. Of the more advanced studies in the book we can speak with great satisfaction; Nos. xvi., xx., xxii., and xxiv. are especially good. We commend the little book to those who are minded to try a very fascinating form of art, in which much may be done even by those who have no large spaces of time at their disposal for such recreation.

* A Course of Sepia Painting; with twenty-four plates, from designs by R. P. Leitch. Cassell, Petter, & Galpin: London, Paris, and New York.

"THE UNIVERSAL ARTIST."

"He told us that he had been thirty years employin his thoughts for the improvement of human life. He ha two large rooms full of wonderful curiosities, and fift men at work. Some were condensing air into a dry tangib substance, . . . others softening marble for pillows an pincushions, others petrifying the hoofs of a living hors . . . The artist himself was at that time busy upon tw great designs: the first to sow land with chaff, . . . the other was by a certain composition, outwardly applie to prevent the growth of wool upon two young lambs; ar he hoped, in a reasonable time, to propagate the breed naked sheep all over the kingdom."

The Voyage to Laputa.

That this admirable being, who occupie a chair in the grand Academy of Lagado, still represented in the western portions Europe, has been recently shown by more tha one characteristic effort of criticism. One his descendants has lately declared in a lett to this journal that "painting and sculptu must dominate before architecture can becor a great art"; and to understand this em nently striking assertion it should be reme bered that in the academy before mention architecture was regarded as a pictorial a inasmuch as a new method was contrived the for building houses by beginning at the roof a working downwards. But in countries l favoured than the kingdom of Laputa, t architecture has depended for its success production upon a right and proper start, upon the maintenance and development traditions. In France and England the Mediæ master was given a certain problem or schei which he solved by the exercise of reason common sense. He knew nothing of "t principles," and infinitesimally little of the ord of architecture. If, in his own way, he ceeded in accomplishing what the Greek accomplished fifteen hundred years bef and if an analysis of the two systems pro identity in principle, it is because the mind men, when they have been absolutely compel to exercise them, are found to be constitute pretty much the same fashion, even at differ and remote periods of time. As a rule course of true architecture runs smoothly centuries; at length a crisis arrives, either p tical or religious, and the chain of traditio severed. In the consequent confusion the bro links are scattered, buried, and forgotten. period of comparative oblivion follows, of wh history takes no note. Then a change co and the fire of energy is rekindled. A w arises and it is met by the simple exercis mother wit: hence, the *naïveté* of early exam of what is now designated a style of architect The old story is yet new. It has been tol the lifetime of living men, when the suc introduction of railways created new wants new means of satisfying them.

The history of art in this country is history of art in any other. Take a si illustration. When the nobles levied war each other, and the vassals of one do were pitted against those of a neighbouring it was necessary to command an easy and view of a broad expanse of country. G quently lofty towers rose above the fortifica of a town, and these were as much a useful of a fortress as battlements and curtain w and many a long siege and stout def rendered them famous in story. At one haps a chieftain falls gallantly defendin castle against the foe. His grateful kin wish to perpetuate his memory in some stantial manner; so at the base of the t in defence of which he fell, and in a shel corner, cunning hands carve his figure on h back upon the stone wall; or perhaps a stat prepared and inserted in the wall bordered harmonious mouldings and covered with a g ful canopy. Then a chapel is built and ded to the saint whose day it was on whic chieftain died. Stories of the saint's life death are painted upon the inside so that Catholics may learn something of him is to intercede for them with the Deity. T art in a simple form, and up to a certain of development it retained its early simpl All the arts which ministered to archite were useful arts; and those of the sculptor, painter were then as necessary to com

building as those of the joiner and smith now. But when Falconbridge the young on of England, who, according to Portia, "neither Latin, French, nor Italian," e back from his travels, in an odd suit, he ught with him the original progenitor of the versal artist; and the latter's descendants buy doublets in Italy, round hose in France, nets in Germany, and,—Shade of the Poet, denient!—designs everywhere. They refuse believe that shot and shell have superseded grey-goose shaft, or that strings of wire are tter means of communication across country any number of lofty towers. It was pro- y a son of the original universal artist who ned some of the English cathedrals with ulchral four-post monuments; and a great- dson who "collected" in France and Italy heads and wings of Cherubim and Seraphim ph, their owner dying intestate, were ulti- ely stuck upon plain English walls. It was ly a member of his family (now nearly 300 rs old) who suspended from English ceilings sprawling saints of Verrio and Laguerre. Egyptian Hall in Piccadilly, and the Pavilion Brighton, were undoubtedly inspired by the ific genius of his later descendants. In every tower which serves no traditional purpose, very spire which tells no certain tale, in every ellated country-house, in every high-pitched with flat ceilings under it, in every traceried low with sash frames behind it, in many ew public edifice, in many an elegant ving-room, the universal artist has had, a finger, but a whole hand. Against raditions, except those which have been itely superseded by new inventions and veries, he strenuously sets his face. For the time is always out of joint. His labours prodigious, and he does not labour in vain. ar as this country is concerned no stranger ay with confidence whether a work of what t to be technic art is of recent execution, her it be brand-new, or a relic of centuries. niversal artist, in spite of all and every one, -eminent; and the result is that in architec- the best new things are those which seem to hat they are not. In painting the result is,— yal Academy Exhibition. In sculpture, on. Thanks to the universal artist, instead perfect work of art, like Rheims Cathedral, ce now produces a National Opera House hich painter and sculptor, regardless of or proportion, pile a Pelion upon Ossa of statuary and coloured mosaics; and a red artistic parallels can be drawn of arly misdirected energy in this less naturally red land.

Nevertheless, it would be idle to ignore the gh of love which is now expended upon s of painting and sculpture. This wealth inter encloses in a gilt frame of more dubious design, while a sculptor sticks pon an old packing-case covered with cloth. Each work ultimately goes to fill is called a gallery: the one to be fitted ke a Chinese puzzle amongst a host of res of a totally different and incongruous cter; and the other, life-size, and in a coat, to be placed between a diminutive ph and an Infant Samuel of Herculean ularity.

s not too much to assert that few men, how- refined in artistic matters, can visit an ition of the Royal Academy, the walls of are papered with pictures, without iencing a sense of oppression, an incapacity mire, a dread suspicion of being bored, the accompanied with a firm intention of submit- o any mental torture rather than acknow- the truth. Happily, a catalogue, which is ly studied with more attention than is be- d on the pictures, affords relief to the jaded A careful observer has but to watch the us stare of casual groups of visitors who have only three rooms to realise the nature of nflict which is taking place in their minds. he sculpture galleries are a still more satire upon the triumph of the fine over seful arts. The pre-disposition to fly, which upon an educated man when he finds him- ace to face with an indiscriminate collection ubjects" in every uneasy attitude and of es is one result at least of the emancipa- f sculpture from the parent art. Yet, so the obvious argument, painters and ors must exhibit their goods in order to hem, and a red star becomes the summit of mbition. Thus, by this singular process, a man, a man of taste, a connoisseur, and led citizen of the world, who may have spent thousands of pounds over a new house, in which he has sought to have "everything in keeping," may perhaps be lucky enough to purchase such a pretty picture as that by Mr. Alma-Tadema in this year's exhibition, called the "Water Pets," which he will eventually suspend from a brass-headed nail upon the wall of his dining-room, between a hooded fireplace and a stained glass window!

The present relation of painting and sculpture, —promoted to be fine arts,—with architecture, a useful art,—may certainly warrant such a hypothesis as the following:—Suppose the St. Paul's Decoration Committee were to buy up all the pictures of sacred subjects and all the religious sculptures just exhibited in Burlington House for the purpose of placing them indiscriminately in the metropolitan cathedral, and therewith concealing the present staring baldness of the walls and arcades! Yet that is the way rich connoisseurs and others decorate their houses under the advice of the universal artist; and while this last-named irrepressible person holds sway any palpable change is impossible. There is, however, one man who can drive him from this country, and that is the patron who protects him; for the breed of patrons did not die out, as many suppose, with the great Lord Chesterfield. To such patrons it might be possible to say individually,—"If you have any intention of building a new house, or repairing an old one, spend a little time before doing so in getting up the subject of architecture as it has been explained by M. Viollet-le-Duc in France, and Mr. Fergusson in England, each of whom in remarkably clear language has corroborated the arguments of the other. Above all things, first commit to memory Mr. Fergusson's chapter on 'The Technic and Phonetic Arts.' Try and settle beforehand what you really want, and add, or even pull down, rather than restore. Collect the scraps of your own history, and that of your ancestors, if you happen to know of them; and remember that the smallest, and even a half puerile, incident connected with yourself will be as interesting to your descendants, and perhaps to the world six generations hence, as one six generations old, is now interesting to you. Such incidents form subjects for bas-relief, medallion, and frieze, and it is for you to tell your architect clearly the facts, in order that he may dress them up and frame them artistically. You may have written a book—who has not?—the plot or the substance of it can be rendered in stone or portrayed in colour. You may be a racing man, and the owner of celebrated horses; or a breeder of shorthorns, and famous at cattle-shows. You may be a statesman or a politician, and instrumental in passing certain measures which have contributed to the public good. Then take steps to record these facts upon the walls of your dwelling-house delicately and unostentatiously. Instead of buying 'Infant Samuels,' or pictures of some 'purling stream,' at chance exhibitions, perpetuate rather the remembrance of scenes dear to you, or linked with some association interesting to you and yours; for that is the way in which painting and sculpture appealed to men's minds when appreciation of both was spontaneous; and when architecture, of which both formed a part, was unaffectedly true and homely, and understood as clearly as an open book is at present by all classes of people."

It is happily unnecessary to assert the rights of the parent art over unruly and overgrown offspring. If it be worth while for a juvenile sculptor or painter to exalt his own art at the expense of architecture, some equally juvenile philosopher may rejoin, "*Et que sera donc la philosophie?*" The *Bourgeois-gentilhomme* was not more perplexed than wiser men had they been forced to discriminate between the rival claims of his professors of music, dancing, fencing, and philosophy. Perhaps, however, M. Jourdain may provide an answer to the question of how to rout the universal artist. The former desired to tell a fair Marchioness in the language of true gallantry that "her beautiful eyes made him die of love"; and after all sorts of ingenious transpositions of the same words he was surprised to find that the version which flowed, naturally, from his lips was deemed by his professor of philosophy to be not only the simplest but the best. Since the art traditions of this country were interrupted the forms and fashions of architecture have been transposed only to find out, after centuries of confusion, that the simplest are most befitting the national character. If painters and sculptors can revivify architecture by an ephemeral domination, by all means let them dominate; but they must select different subjects for the brush and chisel than it has long been their wont to do. Fine painters, however, should remember Lord Bacon's words, that "the best part of beauty is that which a picture cannot express." Nor ought the fine sculptor to forget that the efforts of some of his early brethren were made in countries in which naked beauty was and still is to be encountered. A Greek Venus loses some little of its dignity and sentiment when exposed to the inclemencies of a leaden sky. If the painter can afford at times to dispense with artistic surroundings and remain independent of the architecture against which his work reposes, a sculptor surely cannot. If both will study architectural laws they will help their own arts even if they do not raise architecture. Some modern painters of eminence have failed even to draw a round or pointed arch in true perspective, and of late years hardly any British sculptor has succeeded in making a really successful pedestal to support often a less successful statue.

In conclusion, it has been, until very lately, a self-evident proposition that all work of whatever kind must be directed by some one. Common sense has also demonstrated that there is little or nothing in a name. It is of small importance in the building art whether the master-of-the-work be a sculptor, painter, or modern architect, provided he possess knowledge enough to direct the work. Even the universal artist cannot transpose this admission by any "nice derangement of epitaphs"! Although very little is known of the antecedents of mother Earth, it is at least clear to a few who have used their eyes that existing upon its surface are substantial records,—relics of a period of more than two thousand years,—which prove beyond doubt that in works of true architecture painting and sculpture have held a place proper to each; that they have been set therein to tell some cognate tale of history or romance; and that where they have strayed beyond certain limits the general effect of the work has been marred.

> "'Tis not a lip or eye we beauty call,
> But the joint force and full result of all";

and to obtain that "full result" in architecture has depended, and still depends, upon him who, higher than the painter and sculptor, "contributes knowledge but not manual labour."

LYMNE AND THE ROMANS.

At the recent meeting of the Kent Archæological Society, Lymne was visited, and Mr. Roach Smith was called on to describe and account for the massive ruins seen around them. He said the broken and overturned walls formed the castrum or fortress erected by the Romans near the old *Portus Lemanis* to repel the invasions of the Franks and Saxons, who, towards the decline of the Roman Empire, made continual descents upon the nearest parts of the coast of Britain. It constituted one of a series of forts from Brancaster, in Norfolk, to the Adur, in Sussex, a tract called the *Littus Saxonicum*, or Saxon shore, from, as he believed, the aggressions of their forefathers, the Saxons; and not, as some maintain, from their having established settlements; part of the opposite coast of Gaul was also called the Saxon shore. It was by fortresses such as this, connected by roads, and divided only by the Channel from the great military way which led to Rome itself, that Britain was retained so long as an important province of the Roman Empire, supplying precious tribute, and receiving in return arts, sciences, and civilisation. While the *castra* they were now examining (Richborough and Lymne) were of individual importance, yet they must be studied as a part of this great military occupation of Britain, in order to estimate fully, and understand the mechanical means by which the Romans secured their conquests. They belong to the early history of our country, and are indispensable to it, especially in connexion with inscriptions, of which nearly a thousand have just been published by Dr. Bruce in his "Lapidarium Septentrionale," and these are wholly confined to the North of Britain. Among those he (Mr. R. Smith) had the honour of addressing was Mr. Parker, fresh from his valuable researches in Rome, and stored with her grand monuments; yet, he felt convinced, Mr. Parker estimates the remains of Britain as historical evidence, quite as highly as those of Rome itself, infinitely superior as the latter are as works of

art. For the future histories of our country these monuments will supply materials hitherto neglected; but time was limited, and he must confine himself to the place before them. Mr. Roach Smith then proceeded to assign reasons for his conviction that these *castra* on the Saxon shore, are of comparatively late date. One of these is the absence of inscriptions. Those on the line of the Great Wall, which date from the time of Hadrian, as well as the places where the legions were quartered from a more remote time, had supplied many inscriptions of more or less historical value. Not so the fortresses on the Saxon shore. We know from the *Notitia*, a late work, giving a full account of the distribution of the military forces throughout the entire empire, the various bodies which garrisoned them; but we have no lapidary documents to confirm and extend that information. Dover had Tungrian soldiers, drawn probably from the north of Britain, like as the second legion was moved from Carleon to garrison Richborough. Turnacenses, from the region of Tourney, were stationed in the castrum, within the walls of which they were, at that moment, assembled; but at present no records of their doings had been discovered. Yet there has been found during excavations which he and Mr. Elliot had made, some years since, evidence which did not bear upon the station itself so much as upon the *Portus Lemanis*. This was from inscribed tiles, and from an altar. The former were not tiles which had formed the bonding courses of the walls, but they had been used in some of the buildings or barracks within. They were stamped CL.BR. which he (Mr. R. S.) had explained; and the explanation is allowed as meaning "Classiarii Britannici," or British Marines; and similar tile stamps have been found at Dover. The altar was dedicated by a Præfect, or Admiral, of the British Fleet, to some deity whose name had been effaced in consequence of the altar having been brought from the place of its original destination, and used as a foundation-stone of the chief gate. He believed it had been brought, together with the tiles from the *Portus Lemanis*, now filled up and dry ground. Upon it, as well as upon other building stone, were incrustations of marine shells, showing that at a former time they had been submerged in the sea, or subjected to tidal action. The *Portus Lemanis* and its buildings had probably experienced some great change when this castrum was built. Mr. Roach Smith then briefly described the character of the castrum, the buildings inside, and the cause of their overthrow.

Mr. Dowker inquired upon what authority was it concluded that the site indicated was that of the *Portus Lemanis*.

Mr. R. Smith replied, chiefly the Itinerary of Antoninus; and the *Notitia*. The distance from Canterbury as given in the former, by what is now called the Stone-street, confirms it, and the position of the castrum as indicated by the *Notitia*. Concluding with urging the importance of studying the natural features of the country as well as the ancient remains, he directed the attention of his audience to the long-debated and contested question of the landing of Julius Cæsar, observing that having visited Richborough, Sandwich, and Lymne, they would be better qualified after their meeting at Dover to form a correct opinion; and to judge from what Cæsar himself has written, and from the features of the country, as well as the sea coast, whether the flat and open place where he effected a landing was Deal, or Folkestone, or Lymne; and to which place the required river at the foot of high ground, and the distance of sixty miles to the Thames would the better apply.

THE HOUSE OF THE LONDON SCHOOL BOARD.

At the meeting of the Board last week, a statement of the cost of the new offices on the Embankment, designed by Mr. Bodley, was brought up. The site cost 18,552*l.* 8s. 8d. (inclusive of legal expenses). Three tenders, the aggregate amount of which was 20,473*l.*, were accepted on the 5th February, 30th April, and 28th May, 1873, for putting in the foundations and for erecting the buildings. Finally, on the 8th July, 1874, the committee were instructed to take the necessary steps for "completing the fitting up and furnishing" of the offices. The cost of the fabric of the building has exceeded by 2,741*l.* the amount of the tenders accepted, and the additional 10 per cent. authorised by the Board in the case of all contracts. This excess has been caused by the variations in the original plan which it was found necessary to make during the construction of the building. As to the infringement on the lights of the adjoining owners,—in the case of Messrs. Woodfall & Kinder's claim, the arbitrator appointed under the seal of the Board to determine the compensation to be paid has given his award for 1,200*l.*; and, in the case of Messrs. Gwynne's claim, the committee thought it advisable to agree to a payment of 100*l.* and 21*l.* costs, in order to avoid litigation. The total cost of the site, building, and furniture, with all incidental charges, is 60,423*l.* 19s. 5d.

For this large expenditure the ratepayers have obtained the ugliest piece of affectation to be found in the neighbourhood,—a flimsy "front" inharmonious and ill-proportioned.

In the course of the discussion which followed the statement as to cost, some of the members eagerly repudiated any responsibility for the building, and one (Mr. Lafone) protested against any expenditure for the decoration of the board-room, which he described as simply insufferable, no one but the chairman, and the chairmen of committees, who sat near him, being able to hear what was going on.

ESTIMATES OF FURTHER RAILWAY EXPENDITURE.

A statement has been issued as to the estimated further expenditure during the next and succeeding half-years which will be required by sixteen of the leading railways, on lines open, on lines constructing, and in working stock, from which it appears that the aggregate sum which will have to be expended in capital for these purposes, amounts to the enormous sum of 34,183,753*l.* The London and North-Western Company stands at the head of the list, the figures showing that its expenditure will be 6,353,846*l.*, of which 2,900,000*l.* will be on lines open, and 3,143,225*l.* on new lines now in course of construction, together with 256,000*l.* on working stock. The Great Northern Company is next in order, their intended expenditure being 4,457,545*l.*, namely, 749,807*l.* on lines open, 3,428,318*l.* on new lines in course of construction, and 279,421*l.* on working stock. The Midland Company follows with an expenditure of 4,081,538*l.*, of which 654,588*l.* is on lines now open, 3,267,950*l.* on new lines in course of construction and 159,000*l.* on working stock. The North-Eastern Company's estimated expenditure is 3,381,262*l.*, of which 565,663*l.* is on lines now open, 2,420,199*l.* on new lines in course of construction, and 395,400*l.* on working stock. The estimated expenditure of the Caledonian Company on these several heads is 2,755,177*l.*; of the Lancashire and Yorkshire Company, 2,702,835*l.*; Great Western, 2,654,255*l.*; Manchester, Sheffield, and Lincolnshire, 2,110,000*l.*; London and South-Western, 987,100*l.*; Great Eastern, 950,000*l.*; Glasgow and South-Western, 782,749*l.*; North British, 602,600*l.*; South-Eastern, 442,720*l.*; London, Chatham, and Dover, 348,130*l.*; London, Brighton, and South Coast, 331,196*l.*; and Bristol and Exeter, 242,800*l.*

ATTACK ON THE EXPLORING PARTY IN THE HOLY LAND.

We referred briefly in our last number to the report which was in circulation as to the attack on Lieutenant Conder, R.E., and his party, engaged in the survey of Palestine, which was said to have taken place at "Japhet," a place unknown to topographers. In the first telegram, dated Constantinople, July 23, it was so uncertain whether it was announced that *nine* of the party were wounded, or that *none* of the party were wounded, that contradicting readings were sent out from Reuter's office. In a subsequent telegram, the same slovenly obscurity prevailed. The word was then spelt NUNE, and there was another word entirely undecipherable.

Further particulars have now been received at the office of the Palestine Exploration Fund; and the honorary secretary, Mr. Grove, has published an account. A full report is also on the way to the Foreign Office, from the Consul at Beyrout. It appears that on the 10th of July a ferocious and entirely unprovoked attack was made on the exploring party by the inhabitants of Safed. The range of the Jebel Safed is the highest ground in Palestine, forming the western limit of the Ghor, a remarkable depression through which the Jordan runs, linking the three lakes of Merom, Gennesaret, and th Dead Sea. The town of Safed, which is co spicuous from a great distance, is considered be referred to in the Gospels as the "city set up a hill." The natives are zealous Moslem; a Safed is nearly as holy a part in the north Palestine as Hebron is accounted in the sout When surveying near Haifa, in 1872, Lieutena Conder's party was fired on by some of t natives, and considerable precautions were tak on the return of the party to this wild vicini in the present summer.

The attack appears to have been violent. was entirely unprovoked. The little party mu have been overwhelmed by numbers, but for t arrival of the Turkish troops. Lieut. Cond then retired to Haifa, with eight of his par wounded. Malaria fever has also attacked t officer in command, but on the 1st of August were reported as doing well.

The consul reports that measures are taken the arrest and punishment of the assailants. T Foreign Office has taken the matter in han We hope that a proper compensation to t wounded will be insisted on by Lord Derb Such a step will prove of far more service in t protection of English travellers and offic residents in the East than any amount of p sonal chastisement inflicted on the ringleade It is quite consistent with Oriental habits yield up the individual denounced, to pris bastinado, or anything else. Such a descr tion of punishment will be regarded with lit interest,—except by the ruffians themselv But an adequate fine imposed on the district v come home to every inhabitant. It will str far more alarm through Syria and Turkey th any other description or means of redress do. And it will do much to restore the Engl prestige, and to prevent Englishmen who are posed to danger in Mohammedan countries fr envying those Europeans who enjoy the pro tion of the French, the German, or the Ameri flags, which is at present but too notoriously case.

SALE OF CHALK LANDS AND CEMENT BEDS.

A numerous company connected with manufacture of cement, and those belonging building pursuits, was present at the Ma Tokenhouse Yard, on Thursday week, when Stone Court estate at Greenhithe, on the ba of the Thames, containing an area of 99 ac was offered for sale by auction, by Mes Fuller, Horsey, Son, & Co. The property described as containing a most valuable trac chalk land, with beds of cement, mud, sand, gravel. The quality of the chalk was said t of the best description, and a large trade now being done in supplying chalk to cem manufacturers. A bed of sand and gra extending over about eight acres, havin depth of 30 ft. above the chalk, had been ope The sand was a sharp grit, available for build purposes, and was now said to be commandi large sale. Adjacent to the river 28 acre the land contained a natural deposit of excel cement mud, equal to the Medway mud dep so that all the requisites for the manufactur Portland cement on a large scale were on property. It was further stated that a pier a railway 1,200 yards in length had been structed on the estate at an outlay of 20,0 Mr. Horsey, the auctioneer, made an exp atory statement as to the great value of property for the manufacture of cement, and other purposes. He stated that he valued property at 78,000*l.* as a minimum, and endeavoured to show that any one who chased it at that price would realise from i annual income of 5,000*l.* a year at the The biddings then commenced, the first made being 50,000*l.*, and by advances of 50 each bidding the property was rapidly run u 67,000*l.*, when the biddings slackened. mately, the property was bought in, as t was no further advance beyond 67,000*l.*, b was stated in the room afterwards that property had been purchased privately for 70,000*l.*

Gloucester.—The enlargement of the rec house of St. Michael's, in this city, has commenced. The residence will be extende the addition of a wing in the ground occupi a nursery by Mr. J. Bond. Mr. Albert Este is the builder, and Messrs. Waller & Son are architects.

GRINLING GIBBONS AND HIS WORKS.

The early life of Grinling Gibbons affords a notable example of the irrepressibility of genius. He studied under no great master, he received no elementary instruction from a school of art, and yet Evelyn found him in a cottage near Sayes-court, Deptford, copying in wood, with exquisite taste and skill, an engraving of Tintoretto's "Crucifixion."

Contrary to the generally received opinion, the great carver was born at Rotterdam, April 4th, 1648, and not in Spur-alley, in the Strand. This fact was placed beyond a doubt by the discovery by Mr. Black of his horoscope among the Ashmolean MSS., at Oxford, cast by Elias Ashmole himself. There was a Simon Gibbons employed as a carpenter by Inigo Jones, who may have been his father.

Evelyn, June 18, 1671, introduced "the incomparable young man," as he calls Gibbons, to Charles II., and thinking the subject of the carving from Tintoretto would please the Queen, showed it to her Majesty. She would have purchased it, had not one of her attendants made deprecatory remarks, and the carving was taken away, and its present possessor is not known. One other carving of a like character, happily in existence, was purchased by Charles II. It represents the "Stoning of Stephen," and the seventy figures are remarkable for their artistic feeling. The architectural portions of the design and other subsidiary features are of exquisite character, and, unlike Gibbons's carvings in general, this superb work of art is in perfect preservation. Charles II. presented the carving to the Duchess of Chandos, and it was taken to Cannons, in Hertfordshire. That mansion was pulled down a hundred and fifty years ago, and the carving was purchased by Mr. J. Gore, who placed it in his house at Enfield. His descendant, Mr. J. Gurdon Rebow, removed it to Wyvenhoe Park, near Colchester, where it still remains,—the most important Gibbons carving in existence.

We now turn to the carvings executed in his distinctive style,—fruits, flowers, game, &c., among richly-diversified foliage. Fortunately, many examples exist in the mansions of England to testify to his matchless variety of treatment. Few data enable us to mention these in their chronological sequence, but we will notice those first the dates of which have been ascertained.

The carvings at Cashiobury, the seat of the Earl of Essex, were executed *circa* 1675. Evelyn, in his "Diary" (April 16th, 1680), says:—"On the earnest invitation of the Earl of Essex, I went with him in his house at Cassioberie, in Hartfordshire. There are divers faire and good roomes, and excellent carvings by Gibbons, especially the chimney-piece of y^e^ library." Unfortunately these beautiful carvings have been injured by paint and varnish. They were in perfect condition as late as 1835!

The following entry appears in the accounts of works at Windsor (October 1st, 1680, to September 30th, 1682):—"Grinling Gibbons, carver for an extraordinary fine piece of carved work, made and carved by him for his Ma^tie^ and sent by his Ma^tie^ as a present to the Duke of Florence, 150*l.*" It appears from the same accounts that he then was in receipt of a pension of 100*l.* per annum. Mr. W. Watkiss Lloyd identified this carving with one now in the Ducal palace at Modena. He says it consists of "fruit, corn, flowers, shells, in great variety, combined and festooned among mere ornamental foliation. The centre is formed by a skull, executed with the greatest detail,—a music-book open, with music and words, and musical instruments. From a round linked chain, which passed round the skull, hangs a medallion, with a three-quarter face of the artist, and inscribed "Gibbons, inventor, sculpsit, Londia." So far as we know, this is the only example of Gibbons's work in existence which bears his name and the amount paid for which is ascertained.

To 1684 belongs the altar-piece at St. James's, Piccadilly, Evelyn saw it December 16th of that year, and remarks in his diary, "I went to see the new church at St. James's. Elegantly built. The altar was especially adorned; the white marble enclosure curiously and richly carved; the flowers and garlands about the walls by Mr. Gibbons, in wood; a pelican, with her young at her breast, just over the altar, in the carved compartment and border. There was no altar anywhere, nor has there been any abroad, more handsomely adorned." Two Italian artists were allowed to restore this thirty years ago, and replaced some of Gibbons's work by their own.

In 1685-6 he received 340*l.* 17*s.* 9*d.* for "carving the crown, sceptre, and tassell, with nine bosses of wood over the canopy, and for vallens, festoones, cornishes, and other carved work, for the front of the organ, for the tabernacle and all its relieves, and fourteen figures in the chapel; for a marble holy-water pot, and for a chimney-piece in the Great Bedchamber, and another in the Little Bedchamber," at Whitehall. For carving the great altarpiece of white marble with Arnold Quellin, they finding all materials, he received 1,875*l.* 1*s.* 8*d.* Ten years after the altarpiece was taken to Hampton Court, Gibbons receiving 130*l.* for its removal.

From October, 1691, to March, 1696, Gibbons received 339*l.* 0*s.* 4*d.* for "work done in the new gallery building, in the king's great and little closets, in three rooms under the king's apartment, in the king's gallery, and other places," at Kensington.

To the last decade of the seventeenth century belong the carvings in the Cedar Chapel, Chatsworth. On the high authority of Mr. W. G. Rogers we ascribe these to him; but it is perfectly certain that the beautiful carvings in the State dining-room, though usually assigned to Gibbons, are not by him; for in the original book of work is a memorandum of agreement, dated September 9th, 1692, by which Joel Lobb, William Davies, and Samuel Watson, for the sum of 400*l.* agreed to execute in lime-wood "the carving of the great chamber, to be done equal to anything of the kind before executed," and not only so, some of Watson's designs are preserved (Hall & Jewitt's, "Stately Houses of England," p. 368). At any rate, these works are worthy of Gibbons.

We have seen how busy Gibbons was elsewhere about that period, and it is probable he came little to Chatsworth, but found time to prepare the Cedar Chapel carvings in London. Considerable sums are charged in the books of account for carriage of "carved work," &c., from London, and it is only in this way that we can account for his name being traditionally connected with Chatsworth. There is one piece which must be mentioned, carved in a style in which Gibbons is known to have excelled. By common consent the carving,—a cravat of point-lace, a woodcock, medal, and foliage,—is called his masterpiece. It is preserved in the State dressing-room, and Walpole says Grinling presented it to the duke when he had finished the carvings which he executed at Chatsworth.

Before noticing carvings, to which no dates can be assigned, we may observe that he executed in marble the statue of Charles II. for the Royal Exchange; the tomb of Baptist Noel, Viscount Camden at Exton, Rutlandshire (cost 1,000*l.*); the font at St. James's, Piccadilly; and probably that of St. Margaret's, Lothbury.

The beautiful carvings at St. Paul's belong to the concluding period of his working life,—the reign of Queen Anne,—at whose accession he was fifty-four years of age. Mr. Boutell, in a paper in the *Art Journal*, Jan., 1865, illustrated by beautiful engravings of these carvings, observes that they may be classed in five divisions,—flowers and foliage in naturalistic combination; panels of arabesque design, with strictly conventional foliage; mouldings in which foliated members of the design are more prominent; carvings enriching architectural construction; and, lastly, combinations of all these varieties. We commend these remarks to students.—"Our carvers of wood require long, profound, and thoughtful study of the conventional, and also of the natural, in their art. They need to observe what effects result from every modification of natural treatment, from every combination of natural with artificial and conventionalised forms, and also from the direct action of positive conventionalism, and this observation must extend to treatment, to execution, and touch, and finish, as well as to design, and composition, and aggroupment." Malcolm has a curious account of the payments made to Gibbons for his work at St. Paul's (iii. 105). It appears that he received altogether 1,337*l.* 7*s.* 5*d.*

The chapel at Trinity College, Oxford, contains the finest Gibbons's work in either university. This exquisite work, executed in lime and cedar, has in some parts been painted, and in others treated with an undrying oil. Skelton, in his work on Oxford, engraves two inferior carved pendants instead of the exquisite work at the east end. The chapel was built in 1691, and consecrated three years after. The library at Queen's College, Oxford has good carving in Norway oak attributed to Gibbons. A good deal of the delicate work enriching the presses has been injured from its exposed situation.

The projecting bookcases at Trinity College Library, Cambridge, are enriched with carvings in lime by Gibbons. Of better character are the panels at the end of the gallery, the door-heads, and arched recesses. But all these appear to have been painted, and indications are not wanting to show that the imprisoned insects are working sad havoc within.

At Kirtlington Park, Oxford, the seat of Sir H. W. Dashwood, bart., Mr. Rogers found two of the largest Gibbons's panels he had ever seen. One of these, in the great hall, are from 5 ft. to 6 ft. square,—a fine composition of dead birds, fish, shells, and wild flowers. Mr. Rogers's experienced eye saw that the insects within were reducing this work of art to rottenness. On the grand staircase is another panel having a basket of flowers and fruit, with side pendants, about 5 ft. by 4 ft. There are other carvings by Gibbons in this house.

The carved dining-room at Petworth House is enriched with a superb series of carvings. This room is 60 ft. by 24 ft., and is, as Walpole wrote to Montague, August, 1749, "gloriously flounced all round with whole-length pictures, with much the finest carving of Gibbons, that ever my eyes beheld. There are birds absolutely feathered; and two antique vases, with basreliefs as perfect and beautiful as if they were carved by a Grecian master." It is stated that Selden, one of Gibbons's assistants, lost his life in saving the carvings when the house was on fire. Ritson restored them about forty years ago. These carvings are in Gibbons's best, or naturalistic, manner, and the rich festoons of fruit, flowers, shells, birds, &c., hang between the pictures in this magnificent apartment.

A good deal of Gibbons's work is scattered over the rooms at Lyme Hall, near Disley,—a house rebuilt by Sir C. Wren. It is in the style of that master, but as there is a tradition that it was executed by persons employed at Chatsworth, it may have been done by Watson and his assistants. The rich series at Belton House (Earl Brownlow's) were restored by Mr. Rogers in 1855, or ten years before he similarly treated those at Chatsworth. In this paper we have only alluded to typical examples. Other mansions,—as Sudbury Hall, Derbyshire, and Melbury House, near Dorchester,—have good specimens of the great master.

The reredos of St. Nicholas's, Abchurch-lane, having large masses of festoons and pendants of fruits and flowers, has been painted over in the same way as the work at St. James's, Piccadilly, and other places. The enrichments in the hall of the College of Arms were undoubtedly executed by Gibbons, for his receipts for the various payments are preserved there. We may also mention that Mr. Newdegate has his original accounts for the carvings done at Harefield Church.

The carvings from 108, Cheapside,—Sir Edward Waldo's house,—were purchased in 1861 by Mr. M. C. Jones, of Gungrog, near Welshpool, and fitted up in that place. Mr. Jones has written a pamphlet in which he attempts to prove, — and, I think, with success,—that they were the work of Gibbons. They are remarkably like the Heralds' College carvings, and the house was built between 1669 and 1672. One of the most recent works of the late Mr. W. G. Rogers was a sideboard to place in the room filled up with the carvings at Gungrog. The back has a scene representing Charles II. knighting Sir E. Waldo on the occasion of his visit to the City in 1677.

Two examples of Gibbons's exquisite point-lace work, besides the example at Chatsworth, are in existence. The finest of these graced Horace Walpole's collection at Strawberry Hill, and is now in the possession of the Baroness Burdett-Coutts. Mr. Rogers found another specimen at Cullen House, Banffshire.

When at the height of his fame Gibbons was appointed by George I. his master carver at the munificent salary of 30*l.* per annum! The great carver died August 10, 1720. He had nine children, but it does not appear that any followed in the artistic footsteps of their father.

JOHN PIGGOT, F.S.A.

Monument to Clarkson.—Wisbeach is about to erect a memorial of Clarkson, who was born there,—a tardy tribute, but better late than never. A design for it has been obtained from Sir G. G. Scott.

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THE PRESERVATION OF OLD MONUMENTS, AND WHAT TO AVOID.

"Better late than never," is, certainly, speaking ever so generally, a most capital proverb, and when cited specially, it is sometimes found to be more than ever to be commended, and, if possible, acted out and practically illustrated. And right fortunate it is when it is uttered in time. Never was it more to the purpose, or was it more to be desired in its practical applicability than at this moment, when the attention of the British world of art, at least, is being powerfully, and in many ways, called to the important subject of the "preservation" of our ancient monuments and memorials of past times. It would be quite impossible to overrate the importance of this movement; and there may be further good done, and the *progress* of the good work urged, by a glance at, and a few thoughts on, some of the less understood phases of this subject of our ancient monuments and practical deeds and works of our forefathers,—of those who have preceded us in life's race. What is an "old monument"? Is it better or worse than a *new* monument? for monumental and memorial work is always and perpetually going on, and what is new to-day is old to-morrow, or next year, or next century. And why should it be desirable to perpetuate an old memorial, and one of past times, and modes of thought, and action, and work? Questions worth a little cogitation.

So important, indeed, is this problem of the preservation of old things, and even of the *sites*, in which they have been found, and on which deeds have been done, thus making of the mere ground itself an antiquity, and, old as it is, more ancient still; that we have been usefully reminded by a great authority that the greatest of antagonisms have been those which have been aroused by the highest and deepest sentiments by such, indeed, as are associated with the "antiquities" either of race or society; and certainly not least, though it may be last, of those "material antiquities" which remain to us, or ought to have remained to us, in the shape and semblance of memorials in stone. Sacred spots must needs have sacred stones,—marble or limestone. What would the world be were these all to suddenly crumble into dust, and to disappear? In this metropolis it is affirmed, there are antiquities, memories of the past, daily dug up, only to be buried again, or destroyed; but that even as this is, there will be enough remaining for the curiosity of many future ages. Not a corner of this island but in it, or near to it, may be found remains,—memories in earth or stone, quite enough to feed the antiquarian proclivities of most men.

It would be a right curious subject of inquiry to find out, with any certain approach to accuracy, which among the many yet existing remains in these islands, is the "oldest memorial." Where and which is the oldest and first built-up stone or earth mound, of stable form and dimensions, erected by the spirit and hand of man here in these islands, and who were they who built it up, and what was it for, and why was it done? Who was its superintending architect? and what "precedent" had he, if any? If none, how did he get to work?

These considerations, and such as these, are well worth the thought of those who will one day,—almost too late, we fear, in many cases,—legislate to "preserve" our old memorials of the past, or such of them as can now, after so much injury has been done, be cared for. We should be disposed, considering how important an influence even words have on human actions, to substitute for the phrase "preservation" of old memorials: the clearer idea, however conveyed, of letting them alone, or fencing them round. A most momentous consideration is this if we but come to think of it with any sufficient attention. Not a few thoughts come before us as we look into the subject-matter of it. All know how the word and idea of Restoration have been the subjects of controversy for a long time, and how far pushed to extremes has been the idea of "restoring" ancient remains, and mouments of the dead past; and how not a few of them have thereby been utterly and for ever blotted out and destroyed!

Stonehenge, even, to begin with, the roughest and hugest and most mysterious, has been proposed for restoration! From Stonehenge downwards, where is the monument which has not yet been at least threatened with restoration? That the restoration days have passed away we cannot affirm; but the force which the idea once had is lessened, and the word and idea of preservation are gradually and surely, though somewhat slowly, taking its place. To preserve our national antiquities is now the aim of many who but a few years back would hardly have cared to meddle with the subject at all. But, "better late than never."

There are so many aspects in which this now momentous subject may be looked at, that we hardly know which of them is the most pressing and most needful of thoughtful care and consideration. We had almost come to the conclusion that the one thing most needful of pressing on the consideration of those who are likely to be the most active in this matter when we have a "law" will, and needs must, be a clear definition, of hard though perhaps popular and well-known terms and phrases. The very *word* "preservation," to wit, is a long word, and admits, as far as old things are concerned, a multitude of meanings. What is it, for example, to *preserve* the remains of an old Norman castle or keep, or an old abbey wall, and two or three straggling columns, supposing such to be found somewhere or other intact, and just as time and the elements have mercifully left them, half-buried, it may be, in accumulated and heaped-up earth, with weeds and rank grass everywhere about them? In such a state as this it seems almost a pity to in any way disturb them or to touch them. Time and the elements have done their work wholly, almost like living intelligences. It has taken old Father Time some centuries, may be, to accomplish his task, and he took it up as soon,—the very same day,—as the human and caretaking occupants of the place left it or were driven from it. Time here was the second workman, and has done his own work in his own way, and it seems almost a sacrilege to disturb it. Some will urge the digging out of moulded plinths, pavements, *et hoc genus omne*, and to get sight of even methods of foundation building; and it may be hard to dispute with them. We are inclined to think that much should be left to the "imaginative faculty," and to the fact of such ruin being left to show itself to be what it really is,—a ruin and nothing else, either more or less. The hand of time, ever at work here as everywhere, has been the workman, and made the thing what it is; and it is his work, in addition to the purely human work that rouses the souls and thoughtful faculties of those who wander to the spot to gaze upon the twofold work. If indeed anything in the way of real restoration is to be done, and the place again sought to be reinhabited and built up again, and made again humanly useful, why then Time's work must needs be itself destroyed, and the human workman become again master. It is not a little easy, and perhaps tempting to do too much, and in the very effort to take care of the old monuments, and to exhibit them, there is no small fear of the very monument or past memorial itself being lost in the careful and well-looked-after surroundings of the place whereon it stands. Mentally and poetically this is to blot it out, and it would be almost better to do as was always done in days gone by, viz., to pull down and do away with altogether, and to build up again in the style of the hour and day, a new building, making all convenient use of the old and worn materials. This was the case at York, as elsewhere, when the old Norman materials, carved work included, were built into the new Early English work.

But of all the truly unfortunate ways whereby an old monument, wherever it is, may be marred, and the romance of it taken well out of it, it is by the process of taking too much and over care of it, and by, "so to phrase it," "cultivating" it. This is worth noting by those who are interested. At the good and archiepiscopal city of York there are the remains of St. Mary's Abbey, quite enough of the old work to well indicate what a goodly pile of architecture the Abbey once on a time was, before "improvements," and before time's work had been so far blotted out. It must have been sufficiently striking and impressive. These ruins are not, it is true, "restored," but the ground in and about them has been smoothed and levelled, and, as far as is possible, converted into a small and neatly-arranged garden, with flower-beds, gravel walks, and neatly-divided plots. Nothing, as it would seem, can be better, and with, in addition, garden seats at convenient spots from which to gaze upon, and, if you like, to sketch the ruins of the old Abbey. Most surely nothing could well be done more effectually calculated to destroy at a blow all idea of a ruined and depopulated building, and to eliminate from the spot all sense of its being deserted by its once teeming occupants. A ruin surely while it is a ruin should be left to show itself as such, and no attempt made to make of it anything but what it is. The charm and poetry of it lie in its very desolation, and in the sense of its very wasted strength, and the way in which nature comes in and occupies the desolate spot, and sows in her own wayward way,—so inexpressively attractive always,—the "weeds" and grass. It is not most surely to be bettered by the sweeping all these away.

Among these, and perhaps not a few other cautions, there is one other not a little worth taking to heart. We may even wonder that any caution can be required. We allude to the cultivation, for it amounts to that in not a few instances that we could name, of that wonderfully picturesque plant—ivy!—poetical, picturesque, architectural, and all that is good. But you may have always too much even of a good thing, and you may certainly have far too much of "ivy." It may totally conceal the very ruin, or building, it was meant to add a charm to. We well remember a fine ruin, or rather a bit of one, in the Isle of Wight, so entirely smothered with ivy that it was impossible, without pulling a portion of it aside to see what was beneath it, whether stone, or some artificial Vauxhall Gardens construction, purposely built up to support the huge mass of green leaves. It would be, as we take it, impossible to do a worse thing than to over "cultivate" such a plant as ivy. It requires not a little restraint and occasional pruning, or rather cutting away, to prevent its getting the entire mastery, and fairly burying the building or ruin outright.

We have thus thrown together a few hints on this important subject, and can but earnestly hope that good will come of the present desire to care for and mentally utilise our ancient memorials,—memories of the dead past, and of those who once lived and acted out their part, as times so manfully and so well, in this world's work and life. They have surely left a something behind them, and we are bound to care judiciously for it.

THE BASILICA OF ST. CLEMENT, ROME.

We come now to the description of the basilica itself, from which we omit, at any rate for the present, all accounts of the frescoes, as they are not technical and somewhat fulsome.

"The basilica consists of a nave, two aisles and a narthex. Its entire length is 146 ft. The nave is 52 ft. 3½ in. wide; the width of the northern aisle is 18 ft. 6 in., and that of the southern 13 ft. 10 in.; the narthex, which runs the whole width of the church is 91 ft. 8 in. From the narthex we enter the north aisle which is divided from the nave by a line of seven columns of various marbles, embedded in a wall built for the most part of the *débris* of ruined temples and broken statues. These columns are 12 ft. high and 1 ft. 6 in. in diameter; and all stand in their original positions. The first, *verde antique* is of marvellous beauty, and very remarkable for its vermilion spots, varying in surface of vivid green and pure white; it is considered a unique specimen of its kind in Italy. The second is Parian; the third and fourth are Numidian marble; two others are of Oriental granite, and the seventh of *settebasi* of the rarest quality. Some of these pillars have been stripped of their capitals, others retain them, and, although all are valuable and beautiful they lack uniformity both in height and diameter which shows that they must have been taken from still older edifices, perhaps porticoes of Pagan temples. Springing from these columns are arches of early construction, supporting the northern wall of the upper church. The columns seem to stand on a uniform plinth, running along the aisle, but in fact, it is a brick wall of the Imperial period." The remainder of this chapter is chiefly theological. In Chapter II. leaving the descriptions of the pictures, with the meditations thereon, we find the following most interesting narration:—"Under this" (the Tribune) "as well as under the southern aisle several chambers have been discovered, and are supposed to be some of the original chambers of Clement's house. Only three of them have been as yet partially explored. When the excavations reached the west end of the north aisle, it was found that this ancient basilica stands on the ruins of much earlier structures. Observing that the lower part of the west wall was built

* See p. 683, *ante*.

quality of brick far superior to that above it, ne ground was dug to a depth of 14 ft. and ree walls of three different constructions as well s of three different periods were discovered. ne is of the finest brickwork of the Imperial mes, and probably belonged to Clement's alace. It forms, as it were, the chord of the pse. Parallel with it, leaving a space of only ft. 1 in. is another wall of *tufo lithoide*, which very probably part of the walls of Servius ullius, the sixth king of Rome. Upon this is uilt another, of the Republican period, of colossal ocks of travertine, varying in length from 8 ft. 10 ft. These walls have been traced 98 ft. from orth to south; from east to west the travertine all was traced 410 ft., and the *tufo* wall upards of 500 ft., without finding its termination ther way. A depth of about 20 ft. is still uried in the earth, which shows how low the vel of Rome of the kings must have been. thorough exploration of the length and depth these walls could not fail to throw great light n the topography of this quarter of Rome. scending from the intermural passage, just escribed, to the west end of the south aisle, and rning to the right we find a spacious stairse of twenty steps, constructed for easy access the rooms of a fine Roman dwelling-house. s walls are of Imperial brickwork, and the yle of the stucco decorations on the vault duces us to assign them to the age of St. lement. This chamber is precisely under the ibune of the basilica. In fact, it occupies most the same position under the high altar as e Confession of St. Peter does in the Vatican asilica, so that there can be little doubt but that is the *memoria* mentioned by St. Jerome in his otice of St. Clement written towards the end of e fourth century." A few pages further on we ad, "Just beyond the apse of the basilica, the de wall of the *memoria* showed three arches led up with excellent brickwork, and embedded it two pilasters of Parian marble. These lasters have debased Corinthian capitals conasting strongly with the Classical style of the ucco vault. The roughly-chiselled foliage minds one of the arch of Gallienus: it shows clining art, and was not executed till the ginning of the third century. Breaking rough the brickwork, we found a long narrow ssage, 28 ft. by 6 ft. 10 in. A few inches yond the pilasters is a fragment of a large lumn of Numidian marble sunk into the pave-ent. Opposite to this was a doorway, also icked up. On breaking through it a large hall as discovered 30 ft. long, 20 ft. wide, and almost tirely filled with earth. The first impression as that this was the real oratory, the vestibule swering to the *ambulacrum* intersecting the ell-known basilica in the Catacombs of St. gnese, and, as in that basilica, the smaller amber under the apse constituting the part served for the altar. The circumstance also at there had been a door at the extreme end rengthened the idea. The vault was pierced eleven *luminaria*, or skylights, some round, me square, and all decorated with mosaics. osaic bands also run round the sides and at the ds. The simplicity of the decorations and the sence of Pagan forms, gave strength to the nviction that it was the first Christian oratory. uch of the ceiling, however, was made of small ones artificially imitating a grotto; and when e whole was cleared out, as we see it, there mained no doubt that it was one of those verns in which Mithras, whose altar had been ready found, was habitually worshipped. It as evident that it was not originally a Mithraic ve, but a large room changed and adapted to e Mithraic mysteries. At Ostia, the Emperor mmodus gave up the palace crypt to the iests of Mithras. The like had been done re. Along the walls were raised platforms cended by three steps. They have been found other Mithræums, but here there is a pecurity: they are not level, but form an inclined ane toward the walls. They are 6 ft. wide and ft. 3 in. from the ground. It is difficult to say r what purpose they served. They may have en occupied by the initiated in the mysteries; as De Rossi thinks, they were *triclinia* on nich the guests reclined while participating in me sacred feast held in this cave, which is by means improbable; for in the Mithraic ysteries there was a profane imitation of the crament of the blessed Eucharist. Along the tward extremity of these benches there is a pressed edge on which are five semicircular ches, two on the right hand and three on the t. They were formerly covered with marble, agments of which still remain. In the Mithræum discovered a few years ago at Ostia, there is a similar edge, on which were placed lamps, fire-vases, and small altars of terra-cotta. The five semicular niches probably contained the figures or statues called *signa sacrorum*, symbolising the five grades of initiation into the Mythraic mysteries, to which we shall hereafter refer. High up in the wall, at the end of this temple, is a niche, which formerly must have contained a statue of Mithras, and lower down is a small square cavity, built of brick. It might have contained water for religious purification, or perhaps served as a receptacle for the blood of victims. Near it, on the floor, there still remains a portion of an altar, and a few inches in front a small round piece of marble, upon which, it is supposed, burned the sacred fire that was kindled and preserved in the two small square furnaces, facing each other, in the sides of the benches. The learned Cavaliere Visconti thinks that the round piece of marble we are just after noticing served as a pedestal for the conical-shaped stone that was found here, representing the birth of Mithras; 'for,' as Layard and others write, 'owing to the comparison between him and his symbol, fire, it was said that he had been generated from a stone, from the fact that a spark is produced by striking two flints together. Mithras, therefore, was called Θεος εκ πετρος, and hence the stone itself was called his mother. This statue is 25 in. high. The deity, from his knees upwards, has emerged from the stone. He stands erect, and wears the Phrygian cap. The arms from the elbow are wanting. It was broken into three pieces, which were found at various periods during the progress of the excavations, and is the only one of the kind in Italy.

Near the pilasters already alluded to, was discovered the ara or altar, now placed on the floor in the centre of the Mithræum. The upper part of it, on which probably was represented the chariots of the rising and setting sun, and the symbols of the seven constellations, is quite gone. It is of Parian marble, and, in its mutilated state, is 4 ft. high, 2 ft. 5 in. across the front and back, and 20 in. along the side. On the front of it is the background of a grotto, in the centre of which is the *taurobolium* or sacrifice of the bull. Mithras is clad in a short tunic with his clamys fluttering over his left shoulder. He wears the Phrygian cap, and is looking earnestly towards the heavens. He has his left knee on the bull stretched on the ground before him, and while he holds him by the nostrils with his left hand, he plunges a dagger into his shoulder with his right. A dog and serpent lick the blood that flows trickling from the wound, and a scorpion gnaws the scrotum. The tail of the bull ends with ears of corn. Two genii, clothed like Mithras, stand as his assistants, one with his torch erect to indicate the rising sun, and the other with his torch depressed to indicate his setting. On the edges of the upper part of the grotto, to the right and left are fragmentary figures of the sun and moon, and within it is a raven. Low down, on the right of the spectator, is the head of a lion, which, so far as we know, has not been, as yet, found on any other monument representing the *taurobolium*."

The following twenty pages are given to a most learned exposition of Mithraic worship, from which it appears that this religion, which was in its essence a deification of nature, was first introduced into Italy by the fleet of Pompey, when it returned to Ostia in 687 A.U.C., after having finally defeated the pirates of Cilicia; but that it was not well known until the second century A.D. The system was derived from the Persians who worship the sun under the title of Zor-Aster, and they on their part derived it from the Chaldean Magi. Mithras, whose symbol was fire, and who was supreme in the movable planets, was a mediator between man and Hormisdas,—the benignant deity,—and his principal work was to offer an expiatory sacrifice for the human race. The Romans confounded Mithras with the sun, as we learn from the inscriptions on the altars and marbles dedicated to him, in which he is invariably called,—"Deus sol invictus Mithra—Soli invicto Mithræ." In the reign of Adrian, the worship of the sun was substituted for that of all the gods; but it was from the end of the third to the middle of the fourth century that it obtained its greatest number of adherents, and was practised alike by Pagans and Neoplatonists, who endeavoured to demonstrate that it had been the primitive religion of mankind. Strange were its mysteries. If we turn back some fifty pages we read that in 394,—"In the temples of Alexandria, the crue mysteries of Mithras were discovered, and in the secret *adyta* the heads of many children which had been cut off, mangled, and superstitiously painted." They seem, too, to have practised a species of vivisection, though not for scientific purposes, and to have immolated human beings that they might inspect their bowels for the purposes of divination.

Contrary to our intention, we will quote the description of one fresco, as it shows, in the clearest manner that even in those primitve times the superintendence of a building was *literally* enough to make a saint swear. "In the lowest compartment there are four figures, one of which is in the attitude of giving instructions to the others, who are engaged in dragging a column, and each has his name written near him. . . . . Three are clad in the short tunic which is the badge of servitude. Sicinius wears the toga, and is addressing the men in the following terms:—'Get behind the column, Carvoncelle, with a lever. Albertel, draw it up. Whoresons, draw it up.' This compartment may, perhaps, have some allusion to the building of the Church of S. Clemente."

The following brings us to the end of this section:—"Inserted in the wall of the narthex are several inscriptions, and fragments of inscriptions, some of which are pagan, and others Christian; also exquisitely sculptured capitals, divers pieces of broken columns, fragments of marble candlesticks, ornamental sculpture, pieces of mosaic pavement, and tiles with the names of the makers and the consuls in office at the time."

The next section is entitled "Modern Basilica of S. Clemente," and opens with ten pages of preliminary remarks, which we entirely omit as without the scope of the work, and unnecessarily galling to the *acattolici*. We then arrive at the description of the church, which is illustrated by an interior and a section. An inscription over the door informs us, in eighteen lines, that it was restored in 1715. "We must regret that the restorations are not in keeping with the style of the church; and in particular, that the heavy carved, gilt, flat ceiling, substituted for the open timber roof, existing 1690, presses upon and conceals some parts of the mosaic apse. The stucco-ornaments, and the pictures above the arches of the nave, are also of the last century. A series of frescoes is painted over the colonnades that divide the nave and aisles."

Further on we read,—"Outside the chapel (of the Rosary) to the left, is the monument of Cardinal Venerio, of Recanati, who died in 1479. The columns sculptured with vine-tendrils, and birds pecking at the grapes are very beautiful. The capitals are admirable specimens of fine pierced work. On the rim of one of them is engraved the name 'Mercurius Presb. S. Clementis,' very probably the same John Mercurius, titular of the basilica, who erected an altar in it under the Popedom of S. Hormisdas, 514-523, and therefore they must have been removed from the underground basilica." . . . . Having described the modern portions of the church, we will proceed to examine it as carrying out the primitive arrangements of a Christian basilica, reproduced from the original beneath. First, the front, once painted, is roughly built with four antique columns, sustaining a Gothic canopy, three of the columns being of granite and one of *cipollino*, differing in order and diameter, two having Corinthian and two Ionic capitals; the door-jambs are rudely sculptured with tracings of dissimilar designs. There are also remains of other buildings, and the whole is carelessly constructed. . . . . From this outer porch we enter the quadriportico, which is oblong, being 62 ft. by 50 ft., and surrounded on three sides by sixteen pillars: twelve of grey Bigio marble, three of Numidian marble, and one of Oriental granite. The pavement of the atrium contains many fragments of green and white serpentine, and in the centre of the court is the impluvium to receive the rain. So far we have the usual arrangement of the Roman palace. The fountain at which the Christians purified themselves before entering the house of God was restored in 1868. In the porticoes of the ancient palaces, family busts and other ornaments were found. In those of the church were placed pictures." Again: "As we passed through the quadriportico to the great door of the church, persons excommunicated and utterly cast forth from prayer at the time, weepers, and mourners in sackcloth and ashes,—winterers as abiding the elements,—would lament their exclusion and beg for prayers. The vestibule of

the modern church being precisely over the ancient one, the first step into it would bring us among the catechumens and penitential hearers, both of whom were obliged to withdraw before the offertory. They were under the rod of the *ostiarius*, and hence this place got its name *Narthex*, which signifies a rod.

The interior of the church before us is 170 ft. 6 in. long, by 70 ft. 9 in. in width. On either hand sixteen antique columns separate the nave from the aisles; five of them are Parian marble, and of these four are fluted and one plain; five others of Numidian marble, three of granitello, two of Oriental granite, and one of *bigio*. The pavement is of beautiful *Opus Alexandrinum*, in varied patterns. More than one-third of the nave is occupied by the choir, with its paschal candlestick and elevated ambones on either side. At its further end is the shrine of the martyr, to whom the church is dedicated, with the altar over it, raised in front of the bishop's throne, and the sedilia for the priests. The sight is arrested, at this most important point of a Christian basilica, by the ciborium over the altar, and the rich mosaics of the apse. . . . . The high altar is separated by marble panels from the laity, the penitents, and the catechumens. . . . . Before we approach that elevated spot, which, in all the ancient basilicas, is nearly the same,—a platform from wall to wall, mounted by steps on either side of the altar,—let us examine the choir, on a lower level, but raised also by one step above the floor of the church. It is paved with rich Alexandrine work; the entrance-gates are enriched with mosaics; the great marble panels are carved with wreaths and crosses, and one conspicuous monogram frequently repeated; and on the jambs supporting them are engraved the fish, the dove, and the branches of the vine." This monogram, the author sees reason to suppose, is that of Pope John II., 532—534; and the panels upon which it is found to be of the sixth rather than of the ninth century.

On either side of the choir are the *ambones*. The word *ambo* is said to be derived from the Greek word *αναβαινειν*, to go up, which might apply to any other staircase, so that it is possible that *ambones* may be a colloquial corruption of *umbones*, that is convex projections, or elevated promontories. . . . . The Gospel *ambo* has a double staircase, on one side toward the altar and on the other toward the narthex. According to an old Roman ordo, the two acolytes with their candles separated when they reached the *ambo*, two sub-deacons with thuribles, and the deacon with the Gospel, passing between them; and going up into the *ambo* by one staircase, the sub-deacons immediately descended by the other, and there stood. A third sub-deacon, preceding the deacon, held in his left hand the Gospel to be opened at the mark, and the deacon read on a higher step in the *ambo*, which a sub-deacon was not to mount. . . . . As we stand below the altar before the slab of the martyr Consul Clement, on either hand are two white marble *transennæ*, admirably worked, and they were once, probably, in their proper place in the lower basilica. These network panels sufficed to admit air to the lamps within, and did not hide the martyr's body from the sight of the worshipper. In the more ancient *transennæ* the interstices were larger, that cloths might be passed through them to touch the body; for the corporeal relics were not then generally distributed. On either side of the shrine, steps lead to the platform upon which the altar stands; and to know the use of the altar we must turn to the episcopal chair behind it, raised by three steps above the sedilia, for the priests, diverging from it on both sides. . . . . The bishop then was most appropriately placed in that seat, where the prætor had decided so many profane causes, for between him and the people is no longer the table upon which the death-warrant of Christians had been signed, but the altar upon which the Lamb of God, who taketh away the sins of the world, is immolated. . . . . The altar in St. Clemente's is at the west end."

Our task is now ended. If, in reducing 450 pages to a few columns, the soul of the book has escaped through those great wounds which the process of excision has produced, we need not apologise to those to whom the *anatomy* of the subject is alone of vital importance.

St. Pancras Vestry-hall.—This building, of which we gave a view a few weeks ago, has been formally opened for business.

REPORT OF THE PRIVY COUNCIL ON EDUCATION.

This report states that "the two most urgent requirements of the country, viz., the provision of a suitable number of suitable schools, and the supply of a body of teachers qualified to conduct these schools efficiently, continue to be rapidly met. Voluntary effort, which in past years has done so much for national education, has seldom been found wanting, but, whenever it has failed to keep pace with the demands of a growing population, the enforced local organisation which by the Act of 1870 is kept in reserve to take its place, has been called into action." As a proof of the importance of voluntary efforts, we find that in the last ten years the sum of 4,238,099*l.* (to meet Government grants of 5,958,976*l.*) has been subscribed towards the maintenance of elementary schools under inspection; and the annual amount derived from this source has risen from 277,760*l.* in 1864 to 616,326*l.* in 1874. The number of subscribers in these ten years was respectively 145,856 and 251,185. Voluntary effort in the past year further contributed 172,166*l.* towards the erection of those elementary schools to which building grants were made, and 22,395*l.* towards the maintenance of training colleges under inspection.

The average attendance in aided schools has risen from 1,225,764 in 1870, to 1,727,449 in 1875, and the total number of names of scholars on the registers of the 12,167 "inspected" schools was 2,497,602, of whom 2,070,727 were actually present on the day of the inspection.

Up to the 31st August, 1874, the number of School Board schools in England and Wales was 838, affording accommodation for 245,508 children; and up to the 30th September the number of School Boards was 859; and excluding London, the sum paid to the Boards, out of the rates in the year 1874, amounted to 267,907*l.*; the sum raised for the School Board for London, was 105,951*l.*—being equivalent to a rate of 1¼*d.* per pound on the rateable value of the district. The average rate per pound on the rateable value of the other School Board districts was, in English boroughs 2·13*d.*, and in English parishes 3 22*d.*; in Welsh boroughs 2·58*d.*, and in Welsh parishes 3·01*d.* In no less than forty districts the rate amounted to 9*d.*, and over, per pound, and the highest rates in England were reached in the parishes of Queenborough and Staplehurst, Kent, with 1*s.* 4*d.* per pound each, and in the borough of Chesterfield with 10*d.* In Wales the highest rates were in the parish of Melindur, Glamorgan, with 1*s.* 3*d.*, and the borough of Llanidloes with 6¼*d.*

The School Boards have availed themselves freely of the power of borrowing on the security of the rates and loans amounting to no less than 4,179,174*l.* have been recommended to be granted to 502 School Boards, by means of which new accommodation will be furnished for some 370,956 scholars.

Besides the sums received for the rates, the sum of 1,490,038*l.* was actually paid to the treasurer of Board Schools during the year in respect of loans; 574,693*l.* of this were advanced to the London School Board.

The total expenditure of the School Boards in 1874 was 1,825,957*l.*, of which 1,397,857*l.* were spent in the purchase of sites and the erection of buildings. The average cost of completed schools, including furniture and fittings, was 11,635*l.*; the average cost per child accommodated, 11*l.* 19*s.* 11*d.*

THE SANITARY CONDITION OF BATTERSEA AND NEW WANDSWORTH.

An outbreak of scarlet fever of a serious nature, in Battersea, has led to grave charges being made respecting the sanitary arrangements and condition of the locality, against the Wandsworth local authorities, in whose district it is situated. The charges refer more specifically to the unsatisfactory condition of the sewers as regards ventilation. Mr. Thomas Buckham, C.E, who resides in Spencer-road, New Wandsworth, has just addressed the Home Secretary on the subject, in which he says: — "The ventilation of the sewers has evidently been neglected, and no apparent precautions were taken to prevent the approach or spread of this fearful malady. I do not know whether or not you have any jurisdiction over the 'Board of Works for the Wandsworth District,' in which body I presume is placed the responsibility of carrying out the Acts of Parliament imposed upon them in the year 1856 and subsequently. But if you can by any means ask them to empower their medical officer, surveyor, and sanitary inspectors with some discretion to adopt temporary means to alleviate the present calamity, you will command the united thanks of the whole neighbourhood." Writing to the surveyor of the Wandsworth District Board himself, Mr. Buckham states that in the whole vicinity of New Wandsworth, with the exception of the two main roads, the sewers are totally without ventilation, and that the ventilators of the other portions of the parish have never been charged with any deodorants for now nearly two years, the effect of which is that the residents of the district are constantly inhaling disease. He adds:—"As you are aware we are situated at a level of upwards of 60 ft. above the southern low-level sewer, the consequence being that at high water in the Thames, in muggy and stormy weather, we get a rapid discharge through the traps and water-closets of the houses, impregnating the cisterns and the dwellings with the nauseous and fatal gases emanating from a system of sewerage nearly the whole way to Deptford. It appears to me there is a laxity of duty somewhere, and I think the sooner your Board give instructions for some remedial measures, the better will they be respected."

PORTSMOUTH DOCKYARD EXTENSION.

It is understood that her Majesty the Queen is about to open the new works at Portsmouth, a view of which we now present. Very remarkable works they are. When they were begun in 1866, the area was mere mudland, which was left uncovered at every tide. The outer enclosure or rampart against the sea, consists of an internal and an external wall, with the space between them filled in with a core of clay. Owing to alluvial deposits, great difficulty was experienced in finding a solid substratum for these walls. The area of the dockyard is 115 acres; the area of extension, 178 acres; total 293 acres. The walls of the basins are exceptionally strong, the lower part being composed of concrete, lined with brickwork, and the upper part with Portland stone, bound or "coped" with granite.

The walls of the docks are of Portland stone and granite. The locks will have a depth of 27 ft. 6 in. over their inverts at low water spring tides, and will thus be able, at all states of the tide, to transfer a first-class ironclad from the tidal to the repairing basin, or *vice versâ*. The locks and docks have greater fulness of section than older docks, to meet the altered form of our modern ships. The entrances to all of them are 80 ft. wide. The depth of the basins and docks is 50 ft.

In construction, railways, ninety-four steam engines, steam cranes, steam hoists, &c., were used, and from 700 to 800 convicts have been continually employed. Bricks, the average production of which has been about 20,000,000 a year, have been made by the convicts.

The caissons of the docks, between the tidal and the repairing basins, are not floated into position, but are slid into and out of chambers in the walls.

The estimated cost for the completion of the undertaking was 2,207,000*l.*

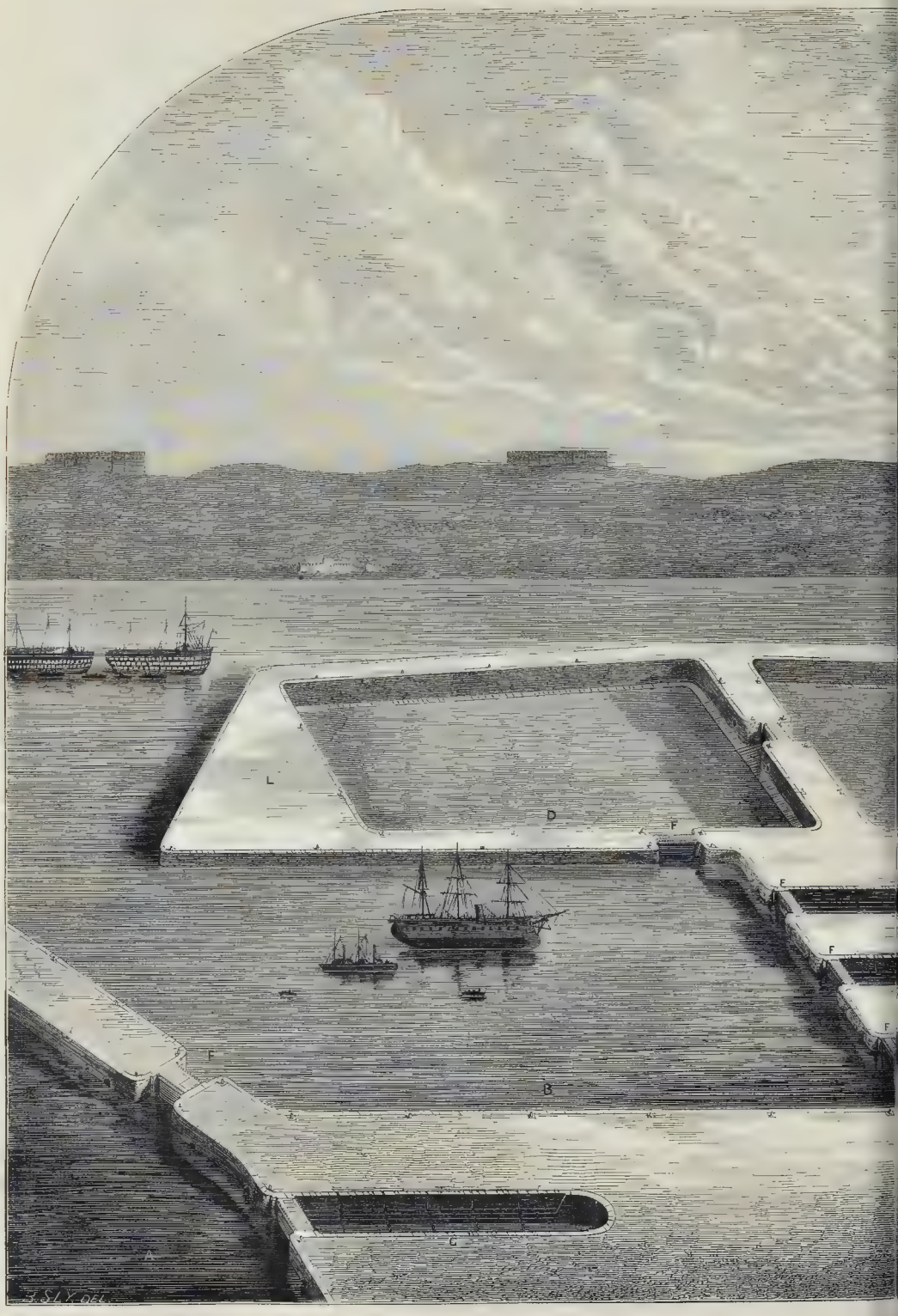
The work is being carried out by Mr. Henry Wood, the Admiralty superintending civil engineer at Portsmouth, assisted by Mr. Macdonald.

Our illustration shows:—

A. Steam basin opened by the Queen on the 25th of May, 1848.
B. Tidal basin, open to the harbour, and subject to the same fluctuations in the height of the water in it as the harbour.
C. Repairing basin, having an area of 1,369 ft. by 700 ft.
D. Fitting basin.
E. Rigging basin.
F. Caissons.
G. Docks.
H. Locks, to be used also as docks.
K. Shears; one having a lifting power of 130 tons.
L. Reserved for the erection of a coal depôt.

In the background are seen Porchester Castle, Portsdown Hill, and forts.

The Llansaintfraid Chapel.—At a meeting of the building committee of the Bethesda Chapel, it was decided to accept Mr. Richard Edwards's tender for the alterations and renovation required for the chapel, according to plans prepared by Mr. Lay, of Welshpool.



PORTSMOUTH DO



EXTENSIONS.

THE ORDNANCE SURVEY.

Surveys of England and Wales on three different systems are now in course of completion by the Ordnance Department, viz., on 1-in., 6-in., and 25-in. scales. Scotland is also being mapped out on the three scales, while the surveys of Ireland on the 6-in. and 1-in scales are being revised. On the completion of the survey of Ireland on the scale of 6 in. to a mile, the survey of England and Scotland, which had been previously proceeding on the scale of 1 in. to a mile, was resumed, but the survey of Ireland on the 6-in. scale having proved to be of immense importance for the valuation of that country, a similar scale was adopted, and Yorkshire and Lancashire in England, Wigtonshire, Kirkcudbrightshire, Edinburghshire, Haddingtonshire, Fifeshire, and Kinrosshire, and the Isle of Lewis, in Scotland, were surveyed on that scale. But it was found that the absence of townlands in Great Britain, the areas of which were engraved on the plans of Ireland, rendered the 6-in. scale plans of far less value in Great Britain than in Ireland, and it was ultimately decided that the scale of $\frac{1}{2500}$, or 1 in. to an acre, should be adopted for all the cultivated country in Great Britain, and the 6-in. scale for the uncultivated parts. This 25-in. scale will enable the areas of any property to be easily obtained from the maps.

On December 31st the maps of the following counties in England, on the 25-in. and 6-in. scale, had been surveyed and drawn,—Northumberland, Durham, Cumberland, Westmoreland, Yorkshire, Lancashire, Cheshire, Flint, Denbigh, Essex, Middlesex, Kent, Sussex, Surrey, and Hampshire, and the Isle of Wight and the Isle of Man; while portions of Pembroke, Cornwall, Stafford, Warwick, Herts, and Oxford had been completed. The new survey on the 1-in. scale is completed, down to a straight line drawn from Preston to Hull, and the south-eastern counties are completed, with the exception of the drawing in of the hills.

Of Scotland, nearly the whole of the mainland has been mapped out on the 25-in. and 6-in. scale, and the new 1-in. survey has been proceeded northwards as far as a line drawn from Oban to Peterhead, the maps for the whole of the country south of this line being engraved in full, and a large portion of the remainder being engraved in outline, and with names only.

The revision of the 8-in. maps of Ireland is finished in so far as relates to Ulster, and the counties of Kildare, Carlow, Dublin, and Westmeath. The 1-inch map of Ireland needs only the hills to be filled in in the following counties:—Fermanagh, Cavan, Galway, Clare, Tipperary, Kilkenny, Carlow, Wexford, Waterford, Cork, Limerick, and Kerry.

The total areas surveyed are as follows:—In England and Wales, of a total area of 58,000 square miles, 26,358 have been surveyed on the 6-in. and 25-in. scale. In Scotland, out of an area of 30,000 square miles, 28,858 square miles have been surveyed, and the maps published.

Besides this, 819 sheets of a special map of London, on a scale of 5 ft. to the inch, have been published, and special maps of other towns, on a 10-ft. scale, are being engraved. But it would be tedious to enumerate the various works which the Department has in hand, for they are too numerous to specify, and many of them are not of sufficiently general importance. It is satisfactory to be able to add that the progress of the work in which the public has the greatest interest, viz., the mapping out of our country on a systematic plan, is progressing surely, if not as quickly as would be desirable; and that the special calls of the War Department for maps for military purposes do not seem to interfere much with the progress of the work.

A GREAT HOTEL FOR GLASGOW.

After some litigation operations have commenced for the erection of what is intended to be one of the finest hotels in the country, to be situate at Charing-cross, in the West End of Glasgow. The site at Crescent-place, Sauchiehall-street, and lying between Woodside-crescent and St. George's-road, was acquired by Mr. John Duncanson, builder, with the object indicated some little time since, but the work has been retarded by the legal opposition of parties who conjectured that by the partial demolition of the fashionable houses now standing there, and building on the roadway in front of the crescent, the rights of the public would be interfered with, and the amenities of the neighbourhood destroyed. Mr. Duncanson, however, having obtained from the Lord Ordinary, in the Court of Session, a declaration of his absolute right to the ground, the work of erection will proceed without further delay. To Mr. James Thomson, of the firm of Messrs. Baird & Thomson, architects, Glasgow, has been assigned the task of preparing the plans. Preferring not to rely solely on his own individual taste and experience, and knowing the determination of Mr. Duncanson to make the structure an exceedingly handsome one, the architect gladly availed himself of the suggestion of the proprietor to accompany him on a visit to London, to inspect some of the hotels there, with a view to adopt and embody such points of beauty or utility as might suggest themselves. Mr. Thomson also, subsequently, inspected some of the hotels of Paris with the same object. It is intended that the new hotel shall have an elegant elevation in Sauchiehall-street, with a large public entrance in the centre of the building. There will be spacious shops on either side the front entrance, 16 ft. 7 in. in height, and ranging in frontage from 40 ft. to about 15 ft., the front of the hotel being carried on iron fluted columns. The existing houses at Crescent-place, a portion of which will be merged in the hotel buildings, are now being partially transformed, so as to provide bedroom and other accommodation. To a height nearly corresponding with these houses, the new erection will be carried round the other three sides of the square, leaving a sort of court inside which is to be built up to the height of the first story, and lighted from the roof with glass, the remaining space, up to the height of the surrounding buildings, being left as a "well-hole," or ventilation space. The dimensions of the dining-hall will be 71 ft. long and 39 ft. in breadth, with 30 ft. height of ceiling, and these will be from 130 to 150 bedrooms, with ample parlour, smoking-room, and other accommodation to be found in first-class premises of the same kind. Absurdly enough, the establishment will be named the "Charing-cross Hotel," and the total cost will be between 80,000*l.* and 90,000*l.*, including the sum of 20,000*l.* paid for the site.

AN AMERICAN VIEW OF CHURCH ARCHITECTURE, AND CHURCH SCHOOLS.

In the days of the Apostles Christians gathered for worship in private houses or in public rooms hired, or donated to them. When terrible persecutions raged, they met in more sequestered places. In the earliest centuries, followers of Christ were to be found in Syria, in Egypt, in Africa, and in Asia. About the year 244, the Emperor Philip, the Arabian, favoured the Christians, and gave them permission to build churches. In one or more of these lands ruins of the most ancient churches in the world are to be found. More interesting discoveries may yet be made by students of these ruins. It is supposed that many of the earliest churches resembled Jewish synagogues. With the exception of some very ancient ruins, comparatively little is known of the architecture of the churches of the first century.

About the fourth century, the Roman emperor, Constantine, espoused the cause of the Christians. By him and his successors many churches were built. In those days there were many heathen temples throughout the Roman empire; there were also buildings called Basilicas. The Basilica was often, if not always, grander even than the temples used for idolatrous purposes. The Basilica might be called a palace in which justice was administered, and a part of which merchants could use as an exchange. When new churches were erected, some were built on the plans of the heathen temples—some on the plan of the Basilicas. To-day, the visitor in Rome can find a few churches, said to have been originally heathen temples, or can look upon quite a large number of churches that so resemble the Basilicas that they have been called Basilican churches. These great buildings —their walls heavier than those of many an ancient fortress—in whose pillared interior the words of a speaker sound strange and hollow, under whose chancels rest the ashes of the dead, —these buildings, which one can fancy exceed in grandeur many of the heathen temples of olden times, have in their turn been looked upon as models for new churches for ages.

The architects of these buildings seem rather to have understood the copying of the wrecks of heathen splendour than they did the fine requirements of a building suited for Christian worship; indeed, these buildings were better suited to impress an awe-struck worshipper of the divinities of pagan Rome than they were for places of Christian worship.

Although, during the ages, certain styles of architecture were introduced, the interior proportion of the churches seem copied from the first Roman churches.

After the dark ages, many of the Roman Catholic churches and cathedrals passed into the hands of Protestants. Although three centuries have passed since the Reformation, it is sad to see how little improvement has been made in the architecture of the churches of evangelical Christians. To be sure, such men as the gifted Spurgeon, of London, and Talmage, of Brooklyn, have made important improvements in the architecture of their churches, yet many Protestant places of worship may almost be called miniature copies of the great cathedrals of olden times.

A new feature in church architecture, introduced within a century, is the Sunday school-room.

The history of Sunday-school architecture can be summed up in few words. During the last ninety-three years it has been customary with many congregations to fit up the cellars or lecture-rooms of their churches for Sunday-school purposes. During this period commendable efforts have been made by earnest Christian men and women to found schools in places especially convenient for children. These earnest workers, realising in some measure the advantage of having good attractive buildings for the children, have erected some of the finest Sunday-school buildings in America. In the architecture of such schools there has been displayed much taste and ingenuity. The architects of these schools have not been under the thraldom of traditional rules as have been the architects of so many churches. Many congregations, stimulated in part perhaps by the example of the earnest men and women who have been so successful in founding what have been called mission schools, have built quite handsome—sometimes very handsome—additions to their churches for Sunday-school purposes.

In these days, when a new church or Sunday-school room is to be built, generally a building committee is appointed by a congregation. Upon this committee devolves the selecting of a design for the new building. An architect is employed. The architect submits a design, the greatest merit of which often is, that it appears churchly, looks like some old cathedral. The gentlemen on the committee may be men of taste and education. If any of them were about building a country villa, he would have many suggestions to make to the architect,—he would perhaps aim at rivalling in beauty of variety and architectural perfection, the baronial halls of England or some of the scarcely less beautiful country homes in the suburbs of the cities of America. Yet these gentlemen adopt a design for a church with scarcely a dissent. When the design is presented to the members of the church, although they are expected to approve or condemn or amend the design, it would seem that they generally, with few words, accept the selection of their committee.

Within the last few years, a new style of church architecture has made its appearance in America. Although the style is new in America, there were churches built centuries ago on a very similar plan. I allude to the tabernacle Mr. Talmage has reared in Brooklyn. It is doubtful whether Mr. Talmage, with all his devotion and earnestness of appeal, has been enabled to do as much for the cause of Christ as he has accomplished by introducing this style of architecture. The style of the Brooklyn Tabernacle, which is semicircular, has been copied by Mr. Hepworth, of New York, who preaches to one of the largest congregations in America; and by scores of other churches.

The congregation of the Rev. Stephen H. Tyng, jun., of New York, has also been enabled to contribute to the improvement of church architecture, by erecting a church on a somewhat new style. The arrangement of his pulpit is specially worthy of notice.

In this age a minister is expected to be an agreeable speaker. Although a minister looks to a higher source than simple oratory to affect the hearts of his listeners, yet it would seem as though it was more difficult for him to speak well in some churches than in others. An orator longs, for his own sake as well as for the sake of others, to have all the advantages which the

architect can give him. He prefers to have the people ranged in a somewhat circular position around him, or at all events to have them ranged in such a way that when he speaks he will not feel as though he was addressing an army drawn up as few abreast as though in marching order. He desires to stand in a position in which he can give and receive sympathy,—in which he can see and be seen by every one whom he addresses. He does not desire to have any of his audience hidden behind pillars. Could a Demosthenes, or Cicero, or Quintillian come to this earth again, and have occasion to speak in some modern churches from enclosures called pulpits, he might well shrink, if he cared for his fame, from doing so, feeling that he was called upon to undertake a cruel task. A faithful minister of Christ, however, has a message of such importance to dying men that he is thankful to be enabled to speak to his fellow mortals in any church in which his voice can be heard.

The architecture of Sunday-school rooms is as yet in its infancy. It should receive especial attention. It, perhaps, can be truly said that the style of every Sunday-school building erected at this time will be copied not only in this land, but also in those lands in which the Sunday-school system is being introduced, and will be transmitted to future ages.

Mr. John Wanamaker, of Philadelphia, who has been so intimately connected with the founding of the school so widely known as Bethany Mission—now as Bethany Church—one of the largest schools in America, has shown a commendable interest in Sunday-school architecture Mr. Wanamaker having offered premiums for the best designs for Sunday-schools, some twelve designs were submitted from architects in different parts of the country. In the *Sunday-school Times* of August 1st, 1874, can be seen the drawings of the design to which was awarded the highest premium.

A church or Sunday-schoolroom should be broad and spacious, cheerful and well ventilated; a building well lighted by day and which can be handsomely lighted up by evening.

Every modern improvement which will add to the convenience and comfort of even the youngest member of the congregation, should be remembered.

Especial care should be taken to have the building heated by the best means. Some furnaces are injurious to health. Probably Sunday schoolrooms, and prayer-rooms, in the country, would be heated most advantageously by simply burning wood in an open fireplace.

To rear a good church in a neighbourhood in which it is needed, is a work which Christian men and women should covet. Long after the designer shall have passed away the building may stand a monument to their noble toil.

One main object of this essay is to draw attention to the fact that the architecture of many churches and schools might be greatly improved at comparatively little cost.

It would be startling, indeed, if it were known how badly many churches and Sunday-schools are ventilated. Can it be possible that those who meet in these buildings are ignorant of the great importance of breathing pure air? Must their attention be called to the fact that bad ventilation is said to be a more potent cause of disease than any other? Must the long, terrible, ghastly list of diseases which follow in its train be again enumerated? Shall they be reminded of the depression,—of the petulance and discomfort which they have so often experienced? Perhaps one of the best ways to get an idea of the importance of good ventilation is to study the history of hospitals. Such a history, however, is too terrible to dwell on! I draw attention the more freely to this fault, so common in church architecture, as it can be so easily remedied,—often at such slight expense. In every church or school, or infant class-room, in which there is even a suspicion of the ventilation being bad, a competent architect should be employed to give, after due consideration, a careful opinion as to what improvement in architecture is needed. Let it never be forgotten, however, that no matter what skill the architect may display, good ventilation will not be secured unless sextons are better supervised than they often are. How many sextons are there who know enough to air a church or schoolroom before and after its being used?

It is to be regretted that the sunlight is not oftener admitted into churches and schoolrooms. From every assembly of people certain poisonous gases are given forth. The gases, to a greater or less extent, settle in the furniture, &c. The rays of the sun are said to be an excellent disinfectant. There are churches whose gloomy, though perhaps imposing interiors, have not for centuries been brightened with a flood of cheerful light. The custom of having stained glass in the windows is to be deprecated,—a custom that has descended from a superstitious age.

Some churches have lights so placed about the minister that the congregation cannot look at him without having their eyes dazzled; other churches are so poorly lighted that the congregation can scarcely read a hymn. The manner of arranging the lights in a church, especially about the pulpit, should receive very tasteful and skilful attention.

The position and style of the pulpit in many a church could be greatly improved.

There are some churches and schools of such faulty architecture that no architect can alter them to his satisfaction.

In future, let Christians blessed with architectural talents lay at the feet of Jesus the choicest treasures of their genius, then a more independent, a more suitable style of church architecture will prevail than has ever graced the earth before.

New York. JOHN C. HENDERSON, JUN.

PROPOSED FUSION OF THE INSTITUTE AND ASSOCIATION.

SIR,—The end, "Senior," last week assigned to my suggestions seems so untenable upon the facts put forth, and which he has in no way altered, that I really must apologise for asking space to reply. Had he definitely given the grounds upon which he based his conclusions, we might have seen the precise line that separates our opinions, but, as it is, I do not think he has at all confuted the possibility of a scheme such as I proposed, being attended with good effect.

From the tone of his letter, I should imagine he considers it impolitic that the Institute should do more than the "next to nothing" it now does, and, therefore, no alteration is necessary. I start with the contrary as an acknowledged fact, and wish to discuss merely the means by which it may be improved. If, therefore, he considers the present position of the Royal Institute of British Architects satisfactory, and one that it ought to occupy, I, of course, have no ground of debate with him; but if he agrees with me in thinking change desirable, I would ask in what he considers it defective, and how he would propose to remedy? We could then put our ideas side by side, and perhaps, by incorporation, produce what is really required. My object is simply to obtain a governing society occupying to the architectural profession, the position which the Law Institution does to the Legal, believing it would tend much to the improvement of our art and the public mind upon it.

In few words, "Senior's" letter amounts to about this:—

1. The Institute will be annihilated *because* the Fellows will then be subject to some little control from other members.

2. Students will have the opportunity of learning more, though paying less; *therefore* the scheme is all wrong.

For my own part, I cannot see how these conclusions come logically out of the arguments. I had hoped the reasons I gave for each suggested alteration were so plainly set forth that misapprehension could not well arise.

"Senior" seems to have overlooked the fact that I was merely taking two societies with aims in common but different ways, and by endeavouring to combine the acknowledged best points (and shall I say—prejudices?) of each to suggest a course by which they should become one, and so in future work in harmony and with mutual confidence. He also seems to have forgotten that my scheme is only the suggestions of one mind, open to amendment in all points. It is well known that for rules to be complete, for no matter what purpose, they should be the result of the experience of many minds and many views: it was to obtain these views I asked you to publish my ideas and this reply; and if not intruding too much on your kindness, I should wish to answer somewhat in detail the issues "Senior" raises.

He asserts that the new society must necessarily be of much lower character than the present. My wish is quite the contrary. In extending the term "Associates," I said "*gentlemen* willing to concur, &c.," and I have yet to learn in what manner, no matter what profession (or even *trade* if you will) they follow, they are inferior to architects. The mode of election I suggested is, if anything, more exclusive than the present, and as it rests with the members themselves, I do not see why we need anticipate its being abused any more than we do now. No one will, I think, venture to affirm that the status or prestige of the Inst. C.E. is below that of the R.I.B.A.; yet in its charter the qualification of an Associate is given in very nearly the terms I suggested, except of course the application to architecture instead of engineering.

I fail also to see how my suggestion as to hon. members will lower the Institute in that particular. My idea is that the honour should be as great to the Society as to the individual, whom, be it remembered, the Fellows only have the power to elect.

Notwithstanding this, however, "Senior" will, I hope, give me credit for wishing to raise the standard for Fellows by making it a necessary qualification that they shall have attained a considerable degree of eminence in their profession, which rule I would have carried out as strictly as in Great George-street, where the form of proposal recommends a person because he is or has done so-and-so, &c.; at the R.I.B.A. it is simply because he has the slight qualification required and wishes to join. This one trait I think fully illustrates the manner of the two Societies.

I drew particular attention to the unusual composition which I suggested for the council, and gave my reasons. "Senior" opposes, but gives none except the meagre note that only four out of ten would be Fellows. He forgets that the *ex officio* members would in all probability also be Fellows. The Associates and Students, as being the far larger, though "junior" classes, are fairly entitled to be represented, especially when it is remembered that the former is really the type of the "average architect." The mode has worked well in the Architectural Association. The introduction of the hon. member to the Council would, I believe, leaven the discussions with just so much of the lay element as is necessary in the consideration of all professional questions.

As I have before said, my remarks are suggestions only; and if on the whole four was thought too small a proportion to be Fellows it could readily be increased, though for my own part I can see no reason for assuming, as "Senior" does, that the Associates would necessarily combine with the Students in preference to siding with the Fellows. From an intimate knowledge of both classes, I should say rather the reverse. In the proportions I gave the Fellows would most decidedly be most powerful, for in conjunction with either of the other classes they are the stronger; and if opposed to all the rest, should they not give way, though even here the *ex-officio* might support them? My wish, however, would be that no such *class* questions should disturb their deliberations. Let us hope the time is at hand when such petty feelings may be confined to the "vestries and vestryism," whence they mostly originate.

As to the subscription, "Senior's" remarks are not only intemperate but beyond the question; the one I quoted is that which has been that of the Architectural Association for some considerable number of years, and without any ill effect. As to my remark with regard to the examination fees, it is evident some further inducement is necessary to cause present students of the Institute to submit to it; what I suggested was simply means to an *end*. If "Senior" likes them not, pray put forth other, or perhaps he likes not "the end."

In conclusion, may I further suggest that if this correspondence is to answer any practical good, it will be best attained by its being carried on with an unimpassioned calmness.

R. E. P.

SIR,—It appears to me that "R. E. P." would, by his scheme of amalgamation, produce a society much inferior to the Institute, and possessing less activity than the Association; but I think "A Senior," in your last issue, when writing of "quantity measurers" as amongst the miscellaneous members to be introduced in the new scheme, threw a slight upon one branch of the profession. It is the fashion with certain architects to look down on those who take out quantities as belonging to an inferior branch of the profession, or rather an inferior profession altogether. Why should this be?—for, leaving the provinces out of the question, it is a fact that

a large number of those who take out quantities in the metropolis are properly qualified architects, who have, through a mere chance, gradually taken up the more scientific branch of the profession of an architect and surveyor. Some of the gentlemen now engaged on quantities have been students of the Institute and Royal Academy, several have passed the voluntary examination, and one was a Pugin Travelling Student. Many London quantity surveyors have been estimating clerks to contractors, and their general knowledge of building matters is often much superior to that of the ordinary architect.

In the provinces the quantity surveyor is almost unknown; all call themselves architects, whether they are qualified professional men, or ex-builders' foremen, or auctioneers.

QUANTITY SURVEYOR.

CASES UNDER THE METROPOLITAN BUILDING ACT.

Enclosures of Buildings.—On Tuesday, the 20th ult., Mr. Sedgwicke, of 211, Hackney-road, appeared before Mr. Bushby, at the Worship-street Police-court, on a summons by the district surveyor of Shoreditch, for constructing an irregular building.

From the statement of the district surveyor, it appeared that defendant had constructed a wooden enclosure and roof to an external staircase leading from defendant's house to a detached building in the rear. The fact was admitted; but defendant stated that, after receiving a formal notice from the district surveyor, he had removed the wooden roof, and he considered that what remained of the structure could not be considered a building under the Act. The district surveyor pointed out that, although by the first schedule every building must be enclosed with *walls*, it was not provided that there must necessarily be a roof, though section 19 provided for the *external covering* of roofs; he, therefore, contended that it was not essential that there should be a roof in order to constitute the structure a building within the meaning of the Act; there was no definition of a building in the Act. The learned magistrate said it appeared to him that one of the principal objects of the Act in question was protection against fire. He thought the risk from fire to defendant's structure was almost equally great whether the structure was covered with a roof or not, and that the Act was intended to prevent the erection of such a structure. He would, however, adjourn the case for a month to enable defendant to make an application to the Metropolitan Board of Works, if he thought proper, to ask their sanction for some modification of the structure instead of the enclosing walls which the district surveyor had required to be built.

Alteration or Repair.—Mr. M'Cann attended on a summons by the same district surveyor, for refusing to pay a fee of 15s. for an alteration to a shop-front at No. 28, Pitfield-street.

The district surveyor stated that defendant had executed the work without giving due notice. When first discovered, the whole of the old shop-front had been removed, and afterwards a new front was put in in a different form. The fee claimed was a reduction on the amount that might be charged. Defendant contended that the work was a necessary repair, not involving any structural alteration, and therefore exempt. He stated that the old shop-window consisted of two squares of glass, one of which had been broken, and that he had only taken out and repaired the sash, and made it for one square of glass instead of two. The defendant afterwards gave evidence on oath as to the case. In cross-examination by the district surveyor, he admitted that the entrance in the old shop-front was in the centre, whereas that in the new one was at the side. Upon this evidence the magistrate decided that the work was an alteration within the meaning of the Act, and ordered payment of the fee claimed, with the costs of the summons.

Cornices of Shop Fronts.—Mr. J. Randall, builder, of Victoria-road, was called on three summonses, by the same district surveyor, for irregular construction of the shop-fronts to three houses in Bath-street.

The defendant did not appear, and on proof having been given that the summonses had been duly served, the case was heard in his absence. The district surveyor stated that, according to sec. 26 of the Act, the cornices of shop-fronts, as well as other projections, "must be so arranged and constructed and so supplied with gutters and pipes as to prevent the water therefrom from dropping upon or running over any public way." This the defendant had neglected to do. He had been served with notice to amend the work in each case, but had failed to do so. These facts having been duly proved, the magistrate made orders for the work to be done in fourteen days, with the costs of the summons in each case.

Additions to Large Buildings.—At Worship-street, Mr. William Scott, builder, of Antill-road, Mile End, was summoned for erecting a new building, and uniting it to an old building, the cubical contents of which then exceeded the maximum allowed by the Metropolitan Buildings Act, 18 & 19 Vic., cap. 122.

Mr. Philbrick, barrister, instructed by Messrs. Loxley & Morley, of Cheapside, appeared on behalf of Messrs. Charrington, to defend. The complainant was Mr. Legg, district surveyor of Mile End. Messrs. Charrington, it appeared, had recently had an addition made to their brewery in Brick-lane, Spitalfields, and the district surveyor claimed that the new building could not be united to the old without a party-wall being run up between the two, the Act of Parliament limiting the contents of a building to 216,000 cubic feet without party-walls. The Act was passed in 1855, and Messrs. Charrington's buildings were erected prior to that time. The Act was not retrospective, and the brewery, though admittedly exceeding the maximum allowed by the statute, was not interfered with. Mr. Philbrick argued that the Act did not contemplate the erection and addition of a new building which did not exceed in itself the statutory limitation, and the contents of that building alone not being in excess the summons must fail, as the Act had already legalised the old building. It was said that if a party wall was to be erected it would cause a loss of several thousands of pounds sterling to Messrs. Charrington, as it would divide their largest premises and compel them to remove a valuable erection called a "mashtub."

Mr. Bushby gave a lengthy judgment, in which he said that the 9th section of the Act enacted that an addition to an old building should, "to the extent of such addition," be subject to the regulations of the Act. The point was whether the limitation implied by the words "to the extent of such addition," meant that the old building was to be ignored in deciding what was necessary to render the addition conformable to the Act, or whether the limitation only meant that the old building need not be interfered with further than was necessary to make the new conformable to the Act. He thought the last was the most reasonable view, and made an order for the erection of the party wall, but was willing to grant a special case.

HOW THE DEPARTMENT OF ART CAN BE BEST UTILISED.

SIR,—It is exceedingly strange that, after so many years' experience in the working of this Department, outsiders should still be found insisting on that policy which has always proved abortive, viz., that the Department should be made a Technical School of Design. "Schools of Design," was the very title with which the Department was ushered into existence, but which was afterwards abandoned when the policy which was indicated by that title proved to be a false one.

A central art institution, directly interfering with and influencing technical developments of art, is an inversion of the ancient modes of proceeding; and when fine and technical art reached their highest, the old-world method of developing the fine arts was to encourage them in their highest aims, in order to raise the taste of the people, and by these means indirectly influence and improve all the subordinate arts of design.

The manufacturers should themselves look after their special artists and designers, take pupils into their designing offices and there educate them to their requirements, to the technical conditions to be fulfilled, taking care to collect all foreign novelties in the shape of patterns, &c. A central Department will never be able to supply designers for the manufactures with any marked success. As soon as you detach the special artist from the factory and the presence of the special manufacture, he will indulge in caprice, and wander from those practical limits which it is so essentially necessary to preserve.

A passage in an article in the *Builder* of the 24th ult. fully substantiates the correctness of this view: "But few of the students who are trained wholly in our schools ever succeed in making a means of livelihood as designers of patterns: while those students who spend the day in a factory and the evening in an art-school generally succeed in making a living of some sort."

What then should be the function of the Art Department? Why this—the development of monumental, of historical, art. As a Government department, it could most effectually render assistance to that regal art, which Sir Charles Eastlake and the Royal Commission on the Fine Arts, years since, declared was "beyond the reach of private patronage."* The department devoted to such a purpose would have a *grand raison d'être*. It would not interfere with the Royal Academy, which encourages that kind of art which is the offspring of private patronage. South Kensington by adopting such a policy would take the head and front in art education, and exercise a more potent and beneficial influence over the subordinate arts of design than by any other means.

W. CAVE THOMAS.

Property in St. James's-square.—Winchester House, No. 19, St. James's-square, was bought in last week at 42,000*l.*, the reserved price not being reached.

* "Mural Decoration has for a century and a half received little or no encouragement in England. Bare walls are the rule in our great public buildings, and in our churches. The object now is to find opportunities fit for the development and display of historical painting on a large scale, for this is precisely the class of painting which, more than others, requires encouragement beyond the means of private patronage. The want of such encouragement has long been regretted, not by professors only, but by all who have turned their attention to the state of painting in England,—a proof that the promotion of historic art is an object of interest with a considerable portion of the public."—*Report, Royal Commission on the Fine Arts.*

HYDE PARK AND KNIGHTSBRIDGE BARRACKS.

THE vast and rapid extension of London which now encircles the park and Kensington Gardens adds to the value of these beautiful woodlands, in proportion to the yearly increase of population—the crowds frequenting the walks and glades, with thousands of carriages thronging the drives, in quadruple ranges, show how the public appreciate the taste and skill displayed in border plantations, shrubberies, and flower-walks.

Both the ride and the drive are continuous round the park; but the drive, which is now changed to the interval between Hyde Park Corner and Albert Gate, has of late been often blocked by the increasing stream of carriages in double lines both going and returning. The taste displayed in shrubbery and floral decoration is most conspicuous in perhaps the worst portions of the border, as, for instance, at the back of the paltry shops and houses of Knightsbridge, and up to the barracks; but here for the extent of about 300 yards there is no ornature (on one side) save the unsightly old building, the officers' quarters, stables, and mess-rooms, with sentinels dismounted—in fact, four ranges of windows, the bedrooms of troopers, overlook and command the fashionable drive—added to this, the street frontage on the south side obtrudes upon and narrows the Kensington main road, which is the principal western thoroughfare. Except as regards the officers' quarters, which command an unrivalled park view, these barracks are decaying, old, and inadequate: the rooms being but 8 ft. to 9 ft. high, whilst there is no inclosure for drill or muster; and their position is such a bane upon the choicest quarter of the town that all *neutral people* agree as to the expediency of moving them. Many, however, clinging to a fixity of tenure, object that "they must be near the park and palace," and therefore cannot be transferred to Chelsea. Now it so happens that there is a site upon which a modern and suitable barrack might be erected, at very little distance, and that is upon a spacious and open plot of ground adjacent to the palace entrance at Kensington, upon a part whereof now stands the old and disused barrack, covering a space of 220 ft. by 80 ft., between the Palace-road and Palace Garden Terrace, and to which may be added any portion of the open green, adequate to the erection of proper barracks, together with a reserve ground for drill and muster.

All this could be effected without encroachment upon the palace view, or upon any private property; and as the old palace is in a tottering state, and must shortly be rebuilt or removed to a higher position on the palace reserve of the gardens, the sooner the work is begun the better.

A portion of the palace grounds eastward stands 10 ft. higher upon the plateau, commanding a view of the round pond, and of Repton's plantation vistas; here is a site worthy of a palace, situate 400 ft. within the west boundary, and close to the central traverse roadway, without trespassing 1 ft. upon the public gardens. The new Guards' barracks stand also near to it, with entrances from Church-street and from Palace Garden-terrace.

The old palace was built in line with the garden's boundary wall, of which it seemed to form a part; the new palace, as recommended, would be interned in the grounds, with scope sufficient for any erection to suit Royalty, and even adequate to the reception of levees and drawing-rooms, as well as for an abode worthy the dignity of the empire.

It was suggested by a correspondent in the *Builder* to transfer the Guards' barracks to the centre of the park, near the ranger's lodge, where a sergeant's guard was formerly quartered to protect the magazine; here, although "far in wild and unknown to public view," where *several private pensioners' rural abodes have been erected*, the regiment might certainly be located, by clearance of the old guardhouse, new villa, cottages, and stables; but if the Horse Guard regiment were thus interned, adieu to the sequestration and user by the public of their once valued and beautiful park.

The position I have recommended stands clear of all interference with the palace, the gardens, or private property; in fact, the space of 18 to 20 acres, external to palace and gardens, has been for years an open waste! A more modern small guardhouse and five old cottages, occupy the northern and upper extremity, together with an inclosed pasture-field of about 8 acres, extend-

ing to Bayswater-road, all of which are in strict keeping with the condition of the old palace, and all are external to the gardens' boundaries. If Knightsbridge is a suitable position on account of its propinquity, this site is still more eligible; it would meet military requirements most thoroughly, and could not interfere with public rights. QUONDAM.

THE FRENCH ARTISTS' ASSOCIATION.

THE twenty-ninth annual meeting of the Association of Painters, Sculptors, Architects, Engravers and Designers was lately held in the Great Hall of the École des Beaux Arts, Paris, under the presidency of Baron Taylor, the founder of the Association.

According to the *European Review*, on the opening of the proceedings by M. Louis David, an architect, read a report on the works of the committee of the Association during the year 1874 to 1875. He showed that on the 31st of December, 1873, the society numbered 3,892 members; the following year these had increased to 4,109; and at the present moment they numbered 4,500. The funds have, of course, risen in proportion. In 1873 the receipts were 83,818f.,—this year they had reached the sum of 158,418f. The expenses having only amounted to 80,209f., there is a surplus of 77,358f., which has been converted into 4,000f. Rentes; thus, with this addition, the income of the Association has now reached a total of 44,000f. M. Louis David concluded this interesting report by announcing that a fine-art sale would be held in the spring of 1876 to increase the Pension Fund of the Society, and called on all its members to assist in the successful realisation of this project. He then continued, amidst the applause of all the artists present, to eulogise the constant and devoted services rendered by Baron Taylor to the Association.

Baron Taylor thereupon rose to thank the assembly. With visible emotion he glorified French art, and declared that it gave him the greatest satisfaction to consecrate to art and artists what little strength he still retained. He has well earned the praise that was given.

THE RIGHT OF OWNERS TO SUPPORT FROM ADJACENT LAND.

LOWE AND ANOTHER *v.* TROTTER AND OTHERS.

THIS was an action, tried at Stafford, to recover damages for injury done to the houses of the plaintiffs by mining operations of the defendant under adjacent lands.

The property of the plaintiffs consisted of a public-house and premises adjoining the Brettal-lane railway station. The surface of the district has been long undermined, and old cracks in the house showed that the land on which it was had suffered from the effects of subsidence at a period prior to any workings of the defendants. The question, therefore, came to be whether some more recent cracks and damage now complained of were attributable to the acts of the defendants.

His lordship (Grove) carefully laid down the law with reference to the right of owners to support for their land from the adjacent land of their neighbours, and asked whether, assuming old workings existed, the defendants' acts had caused the damage for which the action was brought.

The jury found in favour of the plaintiffs, damages, 80*l*.

A question was also put to them whether, if the land had been in a solid state and unaffected by former mining, the operations of the defendants would have injured the plaintiffs' house. The jury found a difficulty in deciding this, and his lordship discharged them from doing so, saying that, in his opinion, the plaintiffs, although their house stood on "honeycombed" land, had a right to the adjacent support for the land, such as it was.

A GRANITE LIGHTHOUSE FOR CEYLON.

A LIGHTHOUSE has been built by Messrs. Shearer, Smith, & Co., for the Little Basses Rock, Ceylon, and is about to be transported there for erection. The tower, which is wholly formed of Dalbeattie granite, is constructed after designs by Mr. J. N. Douglass, engineer to the Trinity Board, its height measuring 101 ft. 8 in., its diameter at base 33 ft. 3 in., at top 22 ft. In plan it is circular throughout, and the courses of masonry are sixty-four in number. In profile it diminishes by an elliptical curve from 33 ft. 3 in. at base to 17 ft. at a point 67 ft. 6 in. high—the first fourteen courses, which are of solid masonry, forming a series of steps. From this point it is carried up vertically for 18 ft., when a projecting cornice is formed. Above the cornice, where the seventh floor is formed, the diameter is reduced to 16 ft. 6 in., thence again carried up vertically for 7 ft., when a heavy moulded cornice is formed which completes the profile. Its interior arrangement is a series of seven cylindrical rooms, each measuring 13 ft. in diameter, by 9 ft. 6 in. in height. The floors are formed entirely of granite, so fitted together as to be self-supporting, and forming at once a level floor for one room and a domed ceiling for the one immediately underneath. In the living-room are fitted a neat set of granite jambs with moulded mantel-shelf, whilst under the first door is a place set apart for a water-tank. The entrance-door is situated at a height of 33 ft., whilst at a height of 89 ft. a second door is placed where the first cornice forms a projecting ledge, nearly 3 ft. in width. The tower is also provided with sixteen windows, into the openings of which, as also to the doors, gun-metal frames are fitted. The Trinity Board have had Mr. J. R. Seldon as resident superintendent during the progress of the work, and, the tower being put together in sections, each section was personally inspected by Mr. Douglass previously to its removal. The blocks have been cut according to full-size templates, drawn out by Mr. James Oswald, foreman at the works, and the stones, when finished, put in their respective places under his direction,—the building being thus wholly fitted together before removal to its destination.

ST. JAMES'S CHURCH, BRIGHTON.

THE new building is up and nearly finished. It is in the Early English style of architecture, slightly decorated at the chancel arches, window, and reredos. The total length of the building, north to south, is 89 ft., outside measurement, and total width, east to west, 66 ft., outside measure; while the width of the nave is 24 ft.; height to springing of roof, 39 ft.; the roof rising above this about 23 ft. The width of the aisles internally is,—west, 17 ft. 10 in.; and east 14 ft. The church consists of a nave, two side aisles, and a chancel, the nave being lighted by a clear-story, having twenty-four single pointed-headed windows, and two double ditto, and three long lancet windows in the south end, with a circular window over, light being also obtained from the north by a large chancel window with tracery head. The walls of the clearstory on each side and the nave roof, are supported by three pointed arches of moulded brickwork, springing from piers of beaded kiln bricks, and Bath stone in courses, the corners being moulded, and the bases and caps of Bath stone moulded. The arches on each side of the chancel in continuous line with the nave are in Bath stone moulded, and having a "dog-tooth" worked therein. The materials of construction are,—for outside walls, flint work with kiln brick piers, lacing courses, eaves, and label moulds, with Bath stone window and door dressings, and Bath stone mullions. The roof over the nave is of open-timber work, with moulded and chamfered tie beams and ribs. The seating arrangements accommodate between 700 and 800 persons.

Messrs. E. E. Scott & Hyde are the architects, Messrs. Patching & Webber the contractors, and Mr. W. H. Webber, jun., is the clerk of works.

THE METROPOLITAN RAILWAY COMPANY AND THE MOORFIELDS CHAPEL.

HEAVY EXPENDITURE.

ACCORDING to the statement made by Sir Edward Watkin, chairman of the Metropolitan Railway Company, at the half-yearly meeting of the Company held on Friday last week, it appears that the Company have had to incur an exceptionally large expenditure in connexion with the Roman Catholic Chapel in Moorfields. In constructing the works of the Bishopsgate extension just opened, they had to pass immediately in front of the chapel, at a considerable depth below the street level, and under the Act of Parliament they were bound to maintain the structure exactly as it stood, not being permitted to pull it down. It was found, during the progress of the works, that the chapel was constructed upon piles, which in course of time became less substantial, and he said it further appeared that the architect of the chapel had put upon the building a tremendously heavy roof, making it top-heavy. The consequence was that the contractors had to underpin the whole of the chapel, to the depth of 30 ft. in the London clay, before they could construct an inch of the railway passing the chapel. The result of this underpinning was that the walls in some places cracked, and two or three valuable fresco pictures were damaged, which the company were responsible for, and he might say that the company had had to build a brand new chapel. They had paid to the Rev. Dr. Gilbert for the restoration of the interior of the chapel 4,000*l*. The cost of the underpinning amounted to 8,000*l*., and the expense of providing for the congregation in the interim a temporary church stood at 1,023*l*. They had also paid to the arbitrator 540*l*., together with 104*l*. to the solicitor, and had yet to meet the architect's claim for 900*l*., the entire cost amounting to 14,500*l*.! He added that the necessary works in respect of Finsbury Chapel amounted to 1,000*l*.

PROPOSED RE-NAMING OF BISHOPSGATE STREET.

A MOVEMENT has been started for doing away with the "Within" and "Without" as regards the well-known old street in the City, and at a Bishopsgate Ward Vestry-meeting which has just been held, a motion was made that Bishopsgate-street should be so-called throughout its entire length, instead of "Within" and "Without." It was urged in favour of the proposed change that on several grounds it has become absolutely necessary. It was urged that great and serious loss is caused by letters and parcels being delivered at wrong houses in consequence of double numbers, and also that the loss of time of persons traversing the streets to discover whether the person he requires is "Within" or "Without" is a great evil, and a source of annoyance, and involves pecuniary damage. It was objected against the proposal that there would be re-numbering, re-painting, and re-printing invoices and other forms, which would be vexatious to tradesmen; but this was met by the answer that the inhabitants of some 1,800 other streets in the Metropolis have had to bear this inconvenience in their turn. To the objection that the street would lose its historical and traditional character by the change, it was answered that such could not well be the result so long as the name "Bishopsgate-street" was retained. The proposal was, however, defeated, but it is stated that it will shortly be again brought forward, and be supported by petitions in its favour by several of the inhabitants in the street.

ENGLISH AT THE MANSION HOUSE.

SIR,—My Lord Mayor Stone has made a good bid for fame, and has done a good work; but he wants some cleverer people about him. As a visitor from abroad I went to the Reception at the Mansion House on Saturday last, after a visit to the Alexandra Palace in the afternoon, and must confess I was horror-struck by the man who announced the carriages in the hall:—"The Mayor of Tureen" (poor Italy!) "A Bishop whose name is *on*known." So much for fame—who wants to be a bishop? "Mr. Hexeter, Mayor"; and so on, and worse. As to the Alexandra Palace, I did not get much pleasure from my visit. There was a vast crowd, and I and my party got out into the air as much as possible. A few piercing screams reached us now and then, which, I am told, was the concert. I pitied my poor *prôjet*.

I am much pleased with the Lord Mayor for the snub he has obviously tried to give Germany in all these doings.*

A FRENCHMAN WHO KNOWS ENGLISH.

DIVERSION OF SEWAGE FROM THE THAMES.

THE Thames Conservators, in their report, dated the 5th inst., just issued, observe:—

"On reviewing the results of the notices served on various persons and places requiring the diversion of sewage or other offensive or injurious matter from flowing into the river, the Conservators are enabled to report that above the intakes of the water companies only four towns still pass their sewage into the river; of these, two,—Oxford and Reading,—have sewage works in a forward state, and of the other two, Windsor has commenced the sewage works, and Abingdon is about to do the same. A hope may therefore be entertained that above the source of the chief water-supply of the metropolis all sewage will very soon be diverted from the river. Between the intakes of the water companies and the western limits of the metropolis, where the main drainage scheme comes into operation, a less satisfactory state of matters prevails. Notwithstanding the measures taken by the Conservators under their Acts of Parliament, the local authorities, with the exception of Twickenham, have not yet diverted their sewage from the river. The Conservators will not relax their efforts to enforce a compliance with the provisions of the Conservancy Acts until the diversion of the sewage and the consequent purification of the river above the limits of the metropolis have been fully accomplished."

* We hold a quite different opinion on the subject.—ED.

STONE CHURCH, KENT.

The ruins of Stone Church, near Faversham, have been visited by some members of the Archæological Institute. Mr. J. H. Parker, remarking upon the unique masonry of the walls of the chancel, said that he believed the chief portion of it was Romano-British, of about the fifth century. The east end was an addition, probably of the Early English period. The alternate courses of hewn stone and Roman bricks were very remarkable in the original work, the extent of which is indicated by the foundation of a cross wall at its east end. This wall was taken down, when the later eastern portion was added to the chancel, and its base was formed into a step; some of its materials were used in making two other steps up to the new altar. At the west end, Mr. Irvine pointed out the original entrance to the chancel by two steps, descending from the nave. In the lower step he found the round hollow in which a chancel door or gate swung upon a pivot. Mr. Parker remarked that the Romans used that method of hanging doors. Sir John McLean and Canon Scott-Robertson, made some observations respecting traces of early English painting upon the plaster inside the walls.

BRICKS.

At a meeting held at the Hop and Malt Exchange, of various brickmakers supplying the London market, it was computed that there were lost to the building trade through the late floodings of the fields and in diminished moulding, about one-eighth of the season's make, or over one hundred millions of bricks, and a rise in price was consequently threatened.

OPENING OF THE CRESCENT HALL, WALTON-ON-THE-NAZE.

Mr. Robert Warner, of Broomfield, Chelmsford, and the head of the firm of John Warner & Sons, of the Crescent, Cripplegate, London, is a landowner at Walton. Some short time since Mr. Warner established a new foundry and engineering works at Walton, which are now assuming considerable importance, and employing a good number of workpeople. Numerous dwellings accordingly are being erected near, which are beginning to make a new suburb. Mr. Warner, having a desire to afford means for the mutual recreation and improvement of his workpeople, decided to erect a club-room and hall for their use. On the 23rd ult. this building, designed by Mr. T. A. Cressy, of Walton, was opened. The building and surroundings were gaily decorated, and a number of the workmen, headed by the Walton amateur brass band, and carrying banners and flags, made a circuit of the town, and marched to the hall, where a good tea was provided. After tea an entertainment was given in the lecture-room. Mr. Goslin, the manager, from London, in the course of the evening, delivered an address, in which he laid before the members the details of the origin of the movement, and the objects for which the hall had been built, and the Club and Mutual Improvement Society established. At the close of the entertainment many expressions of gratitude were accorded to Mr. Warner for his munificence. The Club is instituted especially for the workmen employed at Messrs. R. Warner & Co.'s Engineering Works, although any one resident in Walton is eligible for membership.

CHURCH OF ST. MARY ALDERMARY.

The church of St. Mary Aldermary, in Queen Victoria-street, is about to undergo extensive repairs and restorations; it is now the church of four united parishes,—St. Mary Aldermary, St. Thomas Apostle, St. Antholin, and St. John Baptist, the two latter parishes having recently become united for ecclesiastical purposes consequent upon the demolition of the church of St. Antholin. The sum proposed to be expended is 8,000*l*. The plans have been prepared by Messrs. Tress & Innes, and approved by the united vestry, and the works will shortly be commenced.

The edifice immediately preceding the present one was founded in the year 1510. It was destroyed by the Great Fire of London, and rebuilt by Sir Christopher Wren upon the plan of the former church.

FENTON TOWN HALL COMPETITION.

In public competition for the new town-hall, police station, engine-house, &c., Fenton, Staffordshire, the urban sanitary authority have awarded the premium to the design submitted by Mr. J. William Stevens, of Wingmore-road, Camberwell, under the motto "Labore vinces."

WHITWORTH SCHOLARSHIPS.

The following is a list of candidates successful in the competition for the Whitworth Scholarships, 1875:—

Joseph Harrison (aged 21), mechanical engineer, Hyde; George Goodwin (20), mechanical engineer, London; John Alldred (21), locomotive engine-fitter, Wolverton; Franklin Garside (20), pattern-maker, Oldham; Frank W. Dick (21), mechanical engineer, Glasgow; Joseph Poole (20), fitter and turner, Dudley.

WORKMEN'S WAGES.

Sir,—I beg to inform your correspondent, "J. Barnett," that the Court of Queen's Bench has recently held in two cases (Millett *v.* Coleman, 39 J. P., 454; and Shaw *v.* Alderson, 39 J. P., 374), that wages are recoverable in the police-courts under the Master and Servant Act. Before these decisions the answer given by the magistrate was a doubtful one. G. K.

INTERMENT OF THE DEAD.

Sir,—Allow a short letter to settle a long, grave controversy which will never be settled by the fishmongers' basket. The closed coffin, as at present constructed, being every way suitable to our method of interment, the objections to it afterwards are easily obviated by making the lid so that the moist earth should soon make openings by dissolving the glue, which secured a longitudinal insertion in it. Senex.

FRENCH ARCHÆOLOGICAL CONGRESS.

The Congress of the *Société Française d'Archéologie* will be held this year at Chalons-sur-Marne, commencing on Monday, the 23rd of August, and ending on the 28th. A list of thirty-four questions for discussion (seven of which relate to matters pre-historic) is published.

The Congress of the *Institut des Provinces* will be held at Autun early in September.

SCHOOL BOARD SCHOOLS.

Siddal (*Halifax*).—The school at Siddal, erected by the School Board at a cost of 4,600*l*., has been opened. Before the formation of the present board it was resolved to build a school in the neighbourhood of Siddal. The school is large and airy, is fitted up with every convenience, and divided into infant and mixed departments of about equal size. There are three class-rooms to each, and the desks are Moss's patent. It is calculated to accommodate 490, and the cost is about 4,600*l*. Messrs. Horsfall, Wardle, & Patchett, were the architects.

Lee Mount (*Halifax*).—The infant school here has been formally opened by Mr. Swallow, the chairman of the School Board. Some time ago an offer was made to the Board, by Mr. Joseph Binns, on behalf of the trustees of the Lee Mount Sunday school, that it should be let to the Board at a nominal sum, besides the further offer of the trustees to make it adequate for the requirements of the township, and to build an infant school. The other school has been worked by the Board for some time; but the infant schoolroom has only just been completed at a cost of about 600*l*., including the chapel-keeper's house adjoining, with accommodation for 140 infants.

BRICKS COUNTED IN OR OUT OF KILN.

In the Crewe County Court, William Bebbington, brick manufacturer, Amor-green, Stapeley, sued Enoch Elson, builder, the Hough, for 13*l*. 14s. 9d., as balance of account for bricks supplied. The plaintiff stated that in March or April, 1874, he made an oral contract with the defendant, at the corner of a street in Nantwich, to supply him with bricks at 12s. 6d. per 1,000. The bricks were to be counted into the kiln, otherwise he would charge considerably more—about 14s. per 1,000. Defendant was to find coals for the furnace. On several occasions he was short of coals, consequently some of the bricks were not quite so well burned as they might be.—The Judge: You are entitled to be paid for the amount you claim, if the contract was to count them into the kiln.—The witness said that he had sunk two wells for him, for which he charged him 3*l*. Defendant had paid 134*l*. 14s. 3d., leaving a balance of 13*l*. 14s. 9d. to be paid. He counted the bricks every week as they were made. He had asked the defendant several times for the account, and he raised no objection until he received the County Court summons.

The defendant deposed that the contract was made for 12s. 6d. for bricks good out of the kiln. There was no written contract, and plaintiff never said that he would require 1s. 6d. more if they were counted out of the kiln. Plaintiff had to make the bricks and burn them. He had a contract to build the Willaston schools, but the bricks from plaintiff's kilns were refused, and he had to pay 23s. for substitute bricks, while he sold some of the bricks complained of at 23s. per 1,000. The bricks were soft and badly made. 12s. 6d. was more than the average price for the good counting out of kiln bricks. He had about 5,000 of the bricks now, and 5,000 were lying broken. He had sustained a loss of about 50*l*. by the transaction.

The Judge said he was satisfied the contract was to count into the kiln. It was an undefended action. This was subject to a cross action regarding the burning of the bricks.

TO REMEDY DAMP WALLS AT THE SEA SIDE.

Strip off the old plaster, rake out the joints, clean off the dust, throw water on the wall with a brush, coat all over about ¼ in. thick with Portland cement five parts, sharp sand one part; make the surface rough, let it stand two or three days to harden, finish with ordinary mortar (well haired) made with fresh-water sand or fine ashes. If required to be finished immediately gauge with plaster of Paris. Cement should not be used for the finishing coat. W.

STAINED GLASS.

Soham.—A stained-glass memorial window has recently been placed in the east end of Soham Church, which is about 12 ft. by 20 ft., contains twenty different subjects from the closing scenes in the life of our Lord, viz.:—His Entry into the Holy City, His Weeping over Jerusalem, the Last Supper, the Betrayal, the Denial by Peter, Christ's Agony in the Garden, Bearing the Cross, the Crucifixion, the Descent from the Cross, the Burial, Sealing the Stone, the Resurrection, His Appearance in the Garden, &c. The work has been executed by Messrs. Clayton & Bell, London.

CHURCH BUILDING NEWS.

Kittisford (*near Wellington, Somerset*).—The parish church of St. Nicholas, Kittisford, has been recently re-opened, after various reparations. The decayed old lath-and-plaster flat ceilings to the nave, north transept, and south aisle have been replaced by panelled polygonal ceilings, covered with stained deal boarding. The internal walls have been cleaned and replastered. The whole building (except the chancel and chancel aisle) has been repaved and reseated with two open benches. The tower has been divided off from the nave by a low perforated, ornamental screen. The old oak arches and shafts, separating the nave and south aisle, have been cleaned of whitewash, repaired, and reset. The porch being much decayed was rebuilt to a new design, but all ancient stonework has been re-used, wherever in decent condition. The interesting old font has been slightly repaired and reset on a new platform, while the Jacobian oak pulpit has been divested of paint, and placed on a Ham-hill stone base. The roofs externally are covered with tiles from Pool, near Wellington. The total cost of the works has been about 550*l*. Messrs. W. J. Arde & Cottrell, of Ashbrittle, were the builders, and Mr. Edmund B. Ferrey was the architect.

Pilsdon.—The interior of the church at Pilsdon (Pilesdon Pen), having undergone restoration, was re-opened for Divine service on the 11th ult. The expenses of the work have been defrayed by the late Mrs. H. Syndercombe Bower, and her son, Mr. H. S. Bower, of Fontmell Parva, near Blandford, the lord of the manor and patron of the living.

Pitney (*Langport*).—The parish church at Pitney was re-opened on the 21st ult., after restoration costing 1,300*l*. The nave has been rebuilt on the original foundations, the old Ham stone windows and other dressings having been carefully preserved and re-used. The exterior walls are of pointed blue lias stone, laid in regular courses; the inside being of tooled white lias, also in course work. The roof, which is open, is of pitch pine, wrought and moulded, with bosses from the old roof at intersections of the moulded ribs. The covering is of dun-coloured plain tiles. The old pews have been removed, and open benches of pitch pine, varnished, erected in their stead. The windows are glazed in quarry lights,

with tinted borders. The chancel roof has been completed, the bosses being decorated with gilded edgings. Mr. Knowles, Bridgwater, was the architect, and Mr. Cox, Yeovil, the builder.

Awre (*Gloucester*).—By the generosity of Mr. Henry Crawshay, of Oaklands, the old parish church of Awre has been restored at a cost of some 2,000*l.* or 3,000*l.*, and has been re-opened by the Bishop. The church was erected in the early part of the thirteenth century, and consists of a nave and chancel, a north aisle, separated from the nave by an arcade of six fine arches, a good south porch, and a tower at the west end of the nave. The walls, roofs, and floors were all more or less dilapidated, and in some cases in a dangerous condition, especially the chancel, the whole of which had to be taken down and rebuilt. The walls of the church have been pulled down, and rebuilt where necessary; the roofs have been stripped, re-covered with Broseley tiles, and boarded; the floors have been entirely renewed, and laid on a bed of concrete; the windows have been re-glazed, and the whole church has been re-seated; the tower has been restored; a western gallery, which formerly blocked up the tower-arch and window, has been removed; the bells and framing have been put in repair; an area has been made all round the church, with drainage therefrom; and provision has been made for warming the church with Gurney's stoves. In restoring the church, care has been taken by Messrs. Waller & Son, the architects, to preserve every old feature, and to put every old stone as nearly as possible in its ancient place. The colouring in the quatrefoils and ribs in the roof is a copy of the old work; the chancel-screen has been replaced; and the remains of the approach to the rood-loft can still be seen against the north wall of the chancel. The east window is to be filled with painted glass, the gift of Mrs. Crawshay.

Sticklepath (*Devon*).—Sticklepath is about four miles from Okehampton. The unsuitable character of the little chapel there has induced some of the people in the parish to build a better structure. For some time past there has been no service held in the chapel, the mother church of which is at Stampford Courtenay, about four miles off. They pulled the old erection down, bought and razed to the ground the cottages that stood in front, and having a clear approach for building they proceeded to build, and the opening services have been held. The structure is small, plain, and (barring the seats) unvarnished. It is in the Early English style, and bears a resemblance to a new Board school. There is a bell at one end of the roof, and at the other end a cross. The edifice cost about 600*l.*, but is very diminutive, holding about 100 persons. There has been no expenditure on ornament. Messrs. Geen & Ash, of Okehampton, are the builders, and Mr. Hooper, of Hatherleigh, the architect.

Lassington (*Gloucester*).—The picturesquely-situated and ancient little church at Lassington, three miles from Gloucester, having been restored, has been re-opened for divine worship by the Bishop of the diocese. The church is dedicated to St. Oswald. Several months ago Messrs. Medland & Son, architects, made a survey of the church, with a view to its renovation; they found that it was necessary that the whole of the structure should be taken down and re-erected, with the exception of the tower, and its quaint roof. The restoration, or rebuilding, has therefore been carried out in accordance with these ideas. A new south porch, chancel-arch, and nave windows, have been built of Norman character; and small lancet windows have been put in the south side of the chancel, to correspond with the original windows at the east end and north side of the chancel, which have been replaced. New open timber roofs, stained and varnished, have been constructed throughout, and covered with old stone tiles. The floors of the aisles and passages have been laid with Godwin's tiles. The seating throughout, and the lectern, are of pitch pine, varnished only. A new font has been erected, on a stone base, in the south-west corner of the nave. Behind the altar a small reredos has been fixed, consisting of central gable, supported on polished alabaster columns, and enclosing the sacred monogram, surrounded with a wreath of thorn. This work, and also the font and the carvings throughout the church, have been executed by Messrs. Frith & Morris, sculptors. The chancel window and south window of the nave have been filled with stained glass, by Evans, of Smethwick. The works have been executed by Messrs. Wingate & Sons, under the superintendence of Messrs. Medland & Son. The churchyard has been levelled, footpaths have been formed round the church, and a new churchyard gate with steps, thereto has been constructed.

Builth.—The new church here has been consecrated and opened. It is constructed in the Early English style, on ground contingent to its predecessor, and consists of centre and side aisles, chancel, place for organ, and vestry. It will seat 450 persons (the old one providing for only 180). The length of the nave is 66 ft.; width, 25 ft. 2 in.; side aisle, 14 ft. 9 in. wide; height from nave floor to wall-plate, 24 ft., and to apex of roof, 46 ft.; chancel, 30 ft. 6 in. long, from west to east, 20 ft. 6 in. wide; the vestry and organ-place measure 20 ft. by 14 ft. 3 in. The outer walls are built of Llanelwedd stone, which is obtained in the neighbourhood, and all the dressings are Box stone. The interior is faced with Bath stone painted light red. The roof is open-timbered of pitch pine, plastered between rafters and finished of warm (vellum) tint; the principals rest on corbels exposed to view. The nave and aisles are divided by an arcade of four arches, supported by octagon pillars, the caps of which are left in block for carving. The tracery windows are plain glass. The chancel and vestry are divided by an arcade of double arches, supported by a slender column. The walks are paved with Broseley tiles of black and red, and the chancel with Godwin's tiles. The seats are painted deal. The contract was undertaken by Messrs. Stephens & Baston, of Bristol, Mr. J. Norton, of London, being the architect; Mr. H. Carr, Builth (formerly of Bristol), was the clerk of the works. The old building, about eighty-five years old, of the quaint "high period" type, is to be entirely pulled down to make way for an entrance.

Howle Hill.—The little church here recently opened has been erected at the sole cost of Miss Philips, of Walford, near Ross, and consists of nave, chancel, sacristy, and south porch, and will accommodate rather more than 100 sitters, the building being a simple specimen of Early English architecture, executed by Mr. William Griffiths, of The Lea, near Ross, builder, from the designs and under the superintendence of Messrs. Haddon, of Hereford and Malvern, architects, the outlay being about 1,300*l.*

Stretford.—Stretford parish church has been re-opened, after restoration. The church consists of a nave with north aisle, chancel with north aisle, vestry, and south porch; and was in a sad state of dilapidation. The ground around was much above the floor of the interior, which was whitewashed, and fitted with high-backed pews of the horse-box fashion, littered down with straw to keep out the damp. The building is a specimen of Early English type, the roof continuing from east to west in one span, with king-post principals rising immediately over the centre arcading, the timbers being of massive oak. The work of restoration has been to remove the lath and plaster ceilings, and to throw open this roof by cleaning and renovating the timbers, which are stained and varnished, and re-covering the exterior with Broseley tiles, surmounted with terra-cotta cresting. The south porch and campanile, or bell turret, over the west gable, of oak, have been renovated, and the latter covered with a shingled roof, and surmounted with the ancient vane. The whole of the stonework, so thickly coated with plaster and whitewash, has been laid bare and well pointed. It was found necessary during the progress of the work to take down and re-build the south wall, and this has been cautiously done by replacing the whole, stone for stone. The chancel is fitted with oak altar-rail and standards, and stalls of pitch pine. The gangways are laid with Godwin's encaustic tiles. The windows are re-glazed with the old glass, as far as it could be utilised. The works were executed by Mr. John Sandford, of Norton Canon, under the direction of Messrs. Haddon, of Hereford and Malvern, architects, the total expenditure being within 600*l.*

East Winch.—The parish church has been re-opened after restoration. It is in the Perpendicular style, and was probably built in 1460. The work was entrusted to Sir G. Gilbert Scott, architect. The chancel has been thoroughly restored by Mr. E. Kent, the impropriator of the tithes; and a new reredos, painted by Mr. W. Munton, Lynn, erected. The length of the interior of the church, now that the seats have been removed out of the tower, is 104 ft. It formerly seated about 300 persons; it will now accommodate nearly 400. The total cost of the work will be about 1,500*l.* The work has been carried out by Messrs. Burdell, Brothers, of Middleton, under the direction of Mr. King, chief clerk in the office of Sir G. G. Scott.

Books Received.

Street's Indian and Colonial Mercantile Directory. Cornhill, 1875.6.

A new issue of the "Indian and Colonial Mercantile Directory" has been published, and will be found valuable. The various steam routes to the places treated of, with rates of fares, and times of transit, are given; particulars of the various railways in operation or construction are also supplied, and of the principal products, and the articles in which the trade of each place chiefly consists, so as to guide merchants with regard to shipments. The lists of the various traders, which give the merchant full particulars of possible buyers abroad, populations, extent of countries, and official information, appear to have been carefully revised.

Handbook of House Property. By E. L. Tarbuck, Architect. London: Lockwood & Co., 1875.

This is intended to serve as a popular guide to the purchase, mortgage, and compulsory sale of houses and land, and treats also of dilapidations and valuations generally. Mr. Tarbuck has divided his little book into three parts,—the First, relating to the law affecting land and houses; the Second, to the practice in valuations; and the Third, to procedure in building houses. He has brought together and condensed a large amount of floating information, and has produced a manual which will be found a very useful introduction to the study of the subjects treated of. We are glad to be able to recommend it.

Miscellanea.

Meersbrook Bowling-green, Sheffield.—Last year a number of gentlemen resident at Heeley, impressed with the desirableness of providing local facilities for the healthful outdoor exercise of bowling, formed a committee for giving effect to the scheme, and Mr. H. Matthews, architect, prepared the plans. It was ascertained that upwards of 2,000*l.* would be required, and the inaugural opening of the club has recently taken place. The premises stand upon a pleasantly-situated plot of freehold land, the main entrance to which is from Victoria-road. The green itself is 66 yards by 40 in extent, and it is intended to add to its attractions a shrubbery. The block of buildings comprise, in addition to a committee-room, residence for the steward, bar, &c., a spacious saloon, 31 ft. by 21 ft. and 16 ft. high; a billiard-room, 32 ft. by 26 ft., and 20 ft. high, supplied with lavatory and other requisites. The buildings have been so arranged that the billiard-room and the saloon may be thrown into one, so that a large apartment may be at the disposal of the committee for parties and concerts. The work has been carried out, under the superintendence of Mr. Matthews, by the following contractors:—Masons' and joiners' work, Mr. Wilkinson; plasterers' work, Messrs. Barter, Unwin, & Son; painters' work, Mr. G. E. Bennett, Fargate; plumbing and gasfitting, Mr. J. F. Tayler, Norfolk-street; slaters, Messrs. Staniforth & Lee. The tiles have been supplied by Mr. H. Webb, of Worcester; and the green itself has been prepared and laid by Mr. W. Markham.

Destructive Fire at Hereford.—The extensive timber-yard of Mr. Bower, Bath-street, Hereford, has been almost completely destroyed by fire, which broke out on the 28th ult. about one o'clock. The stock and permanent plant and the workmen's tools it was found impossible to save, partly from the rapidity with which the flames spread, and partly owing to the inadequacy of the fire-engines to cope with the fire. These premises were about the most complete of the kind in the country, and the loss is estimated at about 10,000*l.*, exclusive of the workmen's tools, one set of which, belonging to the foreman, valued at 70*l.*, have been lost. It is conjectured that the fire originated near the boiler; that some shavings and chips which may have been strewed alongside by the planing machine were ignited by a spark from the fire-hole. Some timber afterwards caught fire, and the building after this was speedily enveloped in flames.

The Grosvenor Club for Workmen.—The concert and lecture hall, which has been in course of erection during the last twelve months, in connexion with the Grosvenor Club for Workmen, in Buckingham Palace-road, has been opened. This club was designed upon the model of a West End club, to supply workmen at an expense within their means with the comfort and advantages of club life, and after an existence of nearly three years the object of its promoters may be said to have been so far accomplished. Its chief merit, which augurs well for permanent success, is that it is self-supporting. This, however, is to be said, that the club started with a capital building in a most excellent situation, an advantage which it owes to the late Marquis of Westminster and the present duke, and a large number of benevolent donors. The subscription is only 10s. a year, with an entrance-fee of 5s., and there are at present about 1,200 members. The new structure is a large building, intended not only for the use of the club, but for letting to the public for meetings, lectures, concerts, and balls, &c., and thus to add to the funds of the institution. It consists of a hall, 90 ft. long, 32 ft. wide, and 26 ft. high, with a platform at one end and a music gallery at the other. The hall has been erected, from the designs of Mr. H. A. Hunt, jun., by Messrs. H. J. & C. Wilkes, and will cost, exclusive of decorations, between 3,500*l.* and 4,000*l.*, towards which the Duke of Westminster has contributed 1,000*l.*

The Amalgamated Society of Engineers, Machinists, &c.—In the twenty-fourth annual report of the Amalgamated Society of Engineers, Machinists, Millwrights, Smiths, and Pattern Makers, the general secretary remarks:—"In regard to the increase of members, we may state that on the last club night of 1873 we had 42,382, and on the last one of 1874 that number was augmented to 43,150, giving an increase of 768. Between the same periods twenty new branches were opened—namely, fourteen in England, two in Scotland, one in Ireland, one in Canada, and two in New Zealand, making the total number of branches at the close of 1874 to be 379. The geographical area over which the branches extend will be sufficient evidence to show that the influence and operations of our society are stretching into every quarter of the globe, where commercial civilisation has penetrated and found a home. We shall now draw attention to our financial transactions, and which we have found to be of a very satisfactory nature, for after meeting all our liabilities, we have been able to add to our reserve fund the sum of 38,066*l.* 9s. 3d. This, added to our balance at the beginning of 1874, which was 200,923*l.* 1s. 6½d., gave us at the close of the year a reserve fund of 238,989*l.* 10s. 9½d., or 5*l.* 10s. 9½d. per member."

Borough Surveyor of St. Alban's.—A special meeting of the Town Council was held in the Council Chamber, Town-hall, on the 26th ult., to consider the application for the office of surveyor. At their last meeting, the Mayor said it was resolved that they should advertise for a successor to Mr. Colbron, which had been done, and they had received letters from four candidates. The first was from Mr. Ingram, the former surveyor, who again offered his services on condition that the duties of surveyor and collector were separated, as he could not undertake both. The other three applications were Mr. J. Colling, of Lambert; Mr. J. Cook, Southwick, Sunderland; and Mr. J. H. Duckingfield, of Rochdale. A lengthy conversation resulted ultimately in the adoption of a motion by Mr. Alderman Martin,—"That a special meeting of the council be called to take into consideration the desirability of rescinding the resolutions relating to the offices of surveyor, inspector of nuisances, and collector of rates, being held by one and the same person, and to rescind such resolutions if deemed necessary, and to make such orders thereon as shall be considered advisable."

Good Templars' Hall at Weymouth.—The foundation-stone of a Good Templars' Hall in High-street,—on a site adjoining the old Town-hall,—was laid on the 28th ult. The ceremony was performed by Mrs. Talbot Greaves, her husband, the rector of Melcombe Regis (the Rev. Talbot Greaves), also attending and delivering an address on the occasion. Mr. G. R. Crickmay is the architect. The new hall will consist on the ground floor of a coffee-room, 17 ft. by 15 ft. 6 in., together with bedrooms and sitting-room for the attendant, and an ante-room for the members, the whole of the first floor being devoted to a hall 45 ft. by 20 ft.

Breach of Contract.—At the Bedfordshire Assizes, an action was tried, before Baron Bramwell, in the Nisi Prius Court, John Pepper, brick-maker, Eversholt, being the appellant, and Benjamin Litchfield, contractor, Bedford, respondent. The cause of action arose in the refusal of the defendant to accept two quantities, viz., 100,000 and 50,000 of bricks, which plaintiff alleged he had agreed to purchase. Defendant's pleas denied the breach as regarded 6,100, affirmed the bricks were not of the proper quality, and asserted that a sum of 10*l.* 7s. 5d. paid into court was adequate remuneration for the bricks received. Mr. Pepper spoke to defendant coming to his brickyard in February last, and ordering the quantities of bricks as set forth in the action, having first examined and expressed approval of them. He affirmed the bricks sent were of exactly the same description as those examined. His Lordship said, inasmuch as defendant had used a portion of the 17,000 he must pay for the whole. It was for the jury to say at what price. The jury valued the bricks at 28s. per 1,000,—a verdict, in fact, for 23*l.* 16s., less the 10*l.* 7s. 5d. paid into Court.

The Trades Union Congress. — The Trades Union Parliamentary Committee have issued the following circular to the officers of the trades societies and trades councils throughout the United Kingdom:—"Gentlemen: The next trades congress is fixed to take place in Glasgow, on Monday, October 11th, and following days; we therefore request you to appoint your delegates without delay, so that they may be communicated with as the time approaches for the congress to assemble. In consequence of the position of the Labour Laws Bills in Parliament we are unable to determine the exact wording of our programme, but it will be issued as soon as the Bills have received the Royal assent and they have become law. The committee would urge upon those societies who have not yet sent their contributions to do so at once, as the expenses attending the work of the committee have been very heavy in connexion with the Labour Bills now before Parliament, and the work accomplished has been of the most important character." The circular is signed on behalf of the committee by "George Howell, secretary, 27, Villiers-street, Strand," and "Daniel Guile, treasurer, 200, New Kent-road."

Worcester Association for Building Dwellings for the Labouring Classes.—The twenty-first annual general meeting of the above association was held at the Guildhall, last week. According to the report then read, the governors "consider it imperatively necessary, from the position in which the association is placed, that the proprietors should authorise them to take at once the necessary steps for disposing of the property to the best advantage. They regret that they see no alternative, and are much mortified to be compelled, after twenty-one years of anxious solicitude for the welfare of the association, to propose that their labours should terminate in such an unsatisfactory manner." The financial statement showed an actual balance in hand of 13*l.* The mortgages upon the property amount to 2,200*l.* After some discussion the report and balance-sheet were adopted, and a special committee was appointed to arrange for the disposal of the property.

Building Operations at St. Luke's.—At the meeting of the guardians of the Holborn Union, on the 27th ult., Mr. Hopkins called attention to the state of the unfinished buildings in connexion with the St. Luke's Workhouse. These buildings are without a roof. During the winter the frost had affected the exterior, and now the rain was damaging the interior of the works. The time for the completion of the work had expired a month ago. He concluded by moving that the solicitor be instructed to write to the contractor, informing him that the Board would take urgent steps, and enforce the penalties if the contract be not completed without delay. Mr. Snell, architect, explained that the reason why the work was so behind hand was because there was a delay in the delivery of the ironwork. He further stated that he could not excuse the want of foresight on the part of the builder, and that he would be very glad if the builder could be made to move faster. He could say that as a rule builders had very great difficulty with ironfounders. After some further conversation, the motion was put and carried.

Great Chart Parish Church.—The work of re-seating the parish church of Great Chart, Kent, under the direction of Mr. Blomfield, architect, is now going on.

Ventilation of Glastonbury Kitchen.—In a recent paper read before the Bath and West of England Society, Mr. Neville Grenville, M.P., called attention to the system of ventilation employed in the great kitchen of the abbey, a building still almost, if not quite, perfect. The system must have succeeded in all weathers. The building is about 39 ft. square, and has a door in the middle of the south side, another opposite; a fireplace in each corner, and a window on every side. The high-pitched roof converges to an octagon lantern, with an upper lantern above it, so arranged that cold air entering at the lower one and meeting the air from below, both would blow out above and effectually ventilate the building, without excessive draught.

The Builders and the Hove Commissioners.—A numerously attended meeting of builders was held at the Albion Inn, Hove, on Tuesday in last week, for the purpose of taking into consideration the best means of obtaining an amendment of the Hove bye-laws, so far as they related to building operations in that district. It was stated that some portions of the laws were very oppressive and impracticable; and Mr. C. O. Blaber (surveyor) moved the adoption of a memorial setting forth the clauses complained of. This resolution was carried, and it was resolved that the memorial, when signed by the builders, should be presented to the Hove Commissioners by a deputation consisting of Messrs. Cheal, Eldridge, Lidbetter, Nurcombe, and Stenning.

The Wilberforce Memorial.—On the 26th ult., the memorial-stone of the late Right Rev. Samuel Wilberforce, D.D., Bishop of Winchester, was laid in the permanent church of St. Augustine's, the site of which is in Lynton-road, South Bermondsey. The church will consist of a chancel 40 ft. deep, 27 ft. 6 in. wide, and nave 77 ft. long, of the same width, with north and south aisles, 13 ft. wide. The chancel will have a square east end, with aisles running round to the north, south, and east sides 5 ft. wide. The church will seat about 900 adults, and will cost about 12,000*l.*, exclusive of steeple.

The Opera House on the Embankment. Mr. Mapleson has written the following letter to Colonel Sir J. M. Hogg, M.P.:—

"Sir,—I beg most emphatically to deny the statements made in the House by Colonel Beresford, with whom I have never had any communication, nor do I know that gentleman.

"With regard to the appointment of the architect for the new Opera House, the design was selected by a committee from a large number that were sent in, and the architect's name was not known until afterwards.

No contract has yet been made for the erection of the building, but, in order to save time, Mr. Webster has, by the advice of the architect, been employed to prepare the land for putting in the foundations."

Dorking Church.—The south porch of the parish church, which the parishioners have undertaken to construct, as a token of their appreciation of the services of the Rev. Philip Hoste, during his residence in this town, is, we understand, to be commenced at once, and last week the architect, Mr. Woodyer, met some of the Hoste testimonial committee at the church, to discuss the matter. The porch will doubtless prove a useful as well as an ornamental addition to the church, and not more than about 40*l.* of the 370*l.* it is estimated the work will cost, remains to be subscribed.

The Hermann Memorial in Germany.—Extensive preparations have been made for a great national festival on the occasion of the unveiling of the colossal statue of Armin, or Hermann, the German hero who, according to Tacitus, effected the overthrow of Roman dominion by the battle in the Tentoburg Forest in the year 9 A.D. The colossal size of the monument, which has been erected on a hill near the place where the battle was fought, may be gathered from the fact of the statue, which is of iron, weighing not less than 145,000lb.

The Mayor Collection of Drawings.—Messrs. Hogarth, of Mount-street, have now on view the collection of original drawings and sketches by Old Masters formed by the late Mr. William Mayor, of Bayswater. The specimens are about 1,000 in number, and illustrate most of the different schools of Europe. The desire is to sell them as a whole. A good catalogue has been printed.

The Albert Medal.—At the request of the London Society of Arts, to find a fit person for the honour, the Royal Academy of Rome have selected the civil engineer, Grattoni—the surviving engineer of the Mont Cenis tunnel—as the recipient of the Albert medal.

Laying the Foundation-stone of a New Chapel of Ease, Tonbridge.—On the 31st ult. a distinguished company assembled in Dry Hill Park, to witness the foundation-stone laying, by Mrs. J. Deacon, of a new Chapel of Ease, which in future is to be known as St. Saviour's. The church, which is to be the gift of Mr. J. Deacon, will be built by Messrs. Punnett & Sons, from designs of Mr. Ewan Christian, and it is calculated that it will accommodate 450 seat-holders. The cost is estimated at about 3,000*l.*

Fever at Sevenoaks.—A special meeting of the Local Board was held at Sevenoaks on the 31st ult., to consider a report from Dr. Baylis, the sanitary inspector, as to the condition of the town. Dr. Baylis stated that forty cases of fever had come under his notice, and two others had just been reported to him. The fever arose from the existence of cesspools and the bad construction and filthy condition of certain buildings. It would be necessary to adopt a system of drainage, upon which he would further report.

An Elizabethan Cottage at Southleigh is attracting the attention of archæologists. According to local papers, among the carving is the emblem of St. Luke, and the shields have the crosses of St. George and St. Patrick, or St. Andrew, painted on them. This is supposed to be a portion of the reredos of the ancient altar of Southleigh Church. The date is said to be about Edward VI.'s time, and it is probably a relic of the taste and munificence of the Bonvilles, the ancient lords of Southleigh.

Value of Freehold Land in the City of Westminster.—An important site, comprising Nos. 53A, 53½, and 54, Parliament-street, containing an area of 2,363 superficial feet, was sold by auction, by Mr. Robins, of Waterloo-place, on Wednesday last week, for 17,400*l.*, being 7*l.* 10s. per foot. It is understood that the property was purchased on behalf of Mr. Mapleson, for the purpose of the new National Opera House and Royal Academy of Music.

Saxmundham Church Restoration.—A parish meeting was held at the Market Hall on the 29th ult. to receive a report of the receipts and expenditure of the fund raised for the restoration of the parish church and of the work done. The works were carried out under the direction of Mr. R. M. Phipson, architect; Mr. Grimwood, of Weybread, being the contractor. The total expenditure upon the restoration and enlargement of the church and chancel has been 2,614*l.* 3s. 9d.

The Lambeth Waterworks.—The new intake and reservoirs which have been constructed by the Lambeth Water Company at West Molesey have been inspected by a large body of the shareholders, whose visit, though ostensibly for business purposes, was not without the characteristics of a picnic party, owing to the provision that had been made by the chairman and directors for securing the comfort and pleasure of their guests.

Crystal Palace School of Art, &c.—The award of prizes to successful students in the classes for water-colour painting, taught by Mr. Edward Goodall, and for drawing from the figure and modelling in clay, instructed by Mr. W. K. Shenton, in the Ladies' Division of the Crystal Palace School of Art, Science, and Literature, was made on Saturday last. The judges were Sir John Gilbert, A.R.A., Mr. Louis Haghe, and Mr. T. Woolner, R.A.

Bristol and Gloucester Archæological Society.—A meeting to consider the advantage of forming a district archæological society was recently held at the Bristol Museum and Library, Dr. John Beddoe in the chair. The proposal for such a society originated with Mr. John Taylor, who submitted the scheme, which, after discussion, was unanimously adopted. A provisional committee was formed, and rules were agreed upon.

Strike of the St. Gothard Tunnel Workmen.—A strike of 2,200 men has occurred on the St. Gothard Tunnel works. They demanded the establishment of provision depôts by the contractors, and a rise of wages. A number of the men, armed, blocked up the Goeschenen (northern) entrance to the tunnel. A riot ensued.

Ornamental Ironwork.—The ornamental railings and gates at the Deaf and Dumb Asylum, Margate, recently opened by the Prince and Princess of Wales, were executed by Messrs. Alexander Macphail & Co., ironfounders, Upper Thames-street, London.

Department of Science and Art Bill.—The Lord Chancellor, in moving that this Bill be read a second time, explained that it was rendered necessary by the form in which Sir Joseph Whitworth desired to secure his grant of 3,000*l.* a year to the Department for the Promotion of Science, and that it would enable the Department to take devises of land for this purpose if under the control of Parliament. The Bill was read a second time.

A Convalescent Home in Yorkshire.—Through the liberality of Mr. Charles Semon, J.P., of Bradford and Broughton Hall, near Skipton, a convalescent home for sixty inmates has been erected on the verge of Rombald's Moor, near Ilkley, Wharfedale, Yorkshire, at a cost of 8,000*l.*

Death of Mr. James Hughes, Architect, Charlemont.—The demise of this gentleman, on Saturday last, at his residence, Charlemont, is announced. The deceased was an architect of ability, and several ecclesiastical structures, and other buildings, attest his skill. He died at the comparatively early age of forty-eight years.

L'Association pour l'Avancement des Sciences.—This Association, which was founded in Paris at the conclusion of the war, on the model of the British Association for the Advancement of Science, having now arrived at its fourth year of existence, will hold its next annual congress at Nantes, in Brittany.

Strike at Dundee.—Thirty-one mills are closed, and upwards of 12,000 persons idle. An open-air mass meeting of the operatives was held on the 27th ult.; 10,000 men and women attended. It was resolved to continue the strike till the notices reducing the wages by 10 per cent. are withdrawn.

TENDERS

For Kentish rag walling and iron railing at Elmer's-end, Beckenham, for the Crystal Palace District Cemetery Company. Mr. A. G. Hennell, architect:—

Downs & Co.	£1,682 0 0
Willson, Brothers	1,597 0 0
Potter	1,198 0 0

For additional stables for Messrs. Crosse & Blackwell, in Crown-street, Soho. Mr. R. L. Roumieu, architect. Quantities taken out by Messrs. Welch & Atkinson:—

Dove, Brothers	£3,795 0 0
George Smith & Co.	3,760 0 0
Longmire & Burge	3,757 0 0
Holland & Hannen	3,649 0 0
Macey	3,561 0 0
Southcott	3,258 0 0

For the Fountain-road School, to accommodate 250 boys, 250 girls, and 250 infants, for the Kingston-upon-Hull School Board. Mr. W. Botterill, architect. Quantities supplied:—

Clarkson & Son	£7,530 0 0
Grassby	7,507 15 0
Stanley	7,500 0 0
Hockney & Liggins	7,216 0 0
Drewery & Harper	7,125 14 0
Habbershaw	7,065 2 6
Skinner	7,125 0 0
Sergeant	7,020 15 0
Musgrave	6,860 0 0
W. & J. Hall	6,578 0 0
Jackson*	6,420 0 0

* Accepted, subject to the approval of the Education Department.

For the erection of new school buildings, Codford St. Mary, Wilts. Mr. E. H. Lingen Barker, architect:—

Ford	£430 19 6
Scamell	440 0 0
Hopkins & Son	438 10 6
Gasford (accepted)	422 15 3

For the erection of lecture-hall, class-room, &c., Victoria-road Church, Leicester. Messrs. J. Tarring & Son, architects.

Loveday	£2,840 0 0
L. H. & R. Roberts	2,580 0 0
Richards	2,508 0 0
Gilbert & Pipes	2,220 0 0
Boden	2,106 0 0
Bland & Sons (accepted)	1,985 0 0
Lighting.	
Rothwell	85 10 0
Webb (accepted)	65 19 0
Warming.	
Boulting	97 15 0
Gimson & Co.	67 5 0

For cemetery chapels, lodge, and entrance, for the Hampstead Rural Board. Mr. Bell, architect:—

Stimpson & Co.	£5,677 0 0
Gould & Brand	5,647 0 0
Scrivener & White	5,593 0 0
Manley & Rogers	5,417 0 0
Watts	5,416 0 0
Niblett & Son	5,389 0 0
Boyd & Jopling	4,990 0 0
Stains & Son	4,974 0 0
Hobson	4,843 0 0
Crabb	4,650 0 0

For decoration of St. Thomas's temporary church, Westbourne-grove. Mr. T. Hayter Lewis, architect:—

Hayward & Son	£237 14 0

For the erection of new middle-class school, Wretham-road, Handsworth, for Mr. E. Haywood. Mr. W. Tadman Foulkes, architect. Quantities by Mr. W. A. Phipson:—

Smith & Son	£1,233 0 0
Barker & Son	1,198 0 0
Bloore	1,173 0 0
Lidzey	1,160 0 0
Sapcote & Son	1,156 0 0
Steel	1,100 0 0
Hughes (accepted)	1,090 0 0

For alterations to a dwelling-house at Clapton, for Mr. J. Crook. No quantities supplied. Mr. Edward Clark, architect:—

Hunt	£810 0 0
Brightmore	744 0 0
Fox	660 0 0
Raby	649 0 0

For rebuilding No. 10, Little Tower-street. Mr. Sexius Dybail, architect:—

Croaker, Brothers	£3,570 0 0
Killby	3,420 0 0
Ashby, Brothers	3,396 0 0
Holland & Hannen	3,395 0 0
Patman & Fotheringham	3,256 0 0
Brass	3,217 0 0
Newman & Mann	2,948 0 0
Browne & Robinson (accepted)	2,864 0 0

For alterations to the Duke of Marlborough, Dalston. Mr. H. J. Newton, architect:—

Godden	£280 0 0
Shurmur	269 0 0
Boden	218 0 0
Larter	199 0 0
Wells (accepted)	187 0 0

For alterations to the Duke of Sussex, Islington. Mr. Newton, architect:—

Boden	£240 0 0
Wells	225 0 0
Taylor	197 0 0
Hockley (accepted)	190 0 0

For repairs to the Duke of York, Somers-town. Mr. Newton, architect:—

Hockley	£134 0 0
Shurmur	117 0 0
Boden (accepted)	115 0 0

For alterations and decorations to St. Bride's Church, Fleet-street. Messrs. Arding, Bond, & Buzzard, architects:—

Hayward & Son	£1,255 0 0

For the erection of a pair of residences, at Edgbaston, Birmingham, for Mr. E. L. Tyndall. Messrs. Payne & Talbot, architects. Quantities by Mr. T. H. Mansell:—

Moffat	£3,277 0 0
Briley	3,200 0 0
Parker & Son	3,027 0 0
Partridge	3,000 0 0

For the erection of a residence, at Edgbaston, Birmingham, for Mr. H. W. Whitmore. Messrs. Payne & Talbot, architects. Quantities by Mr. T. H. Mansell:—

W. & J. Webb	£2,830 0 0
Wilson & Son	2,800 0 0
Smith	2,770 0 0
Briley	2,700 0 0
Jones & Son	2,699 0 0
Partridge	2,500 0 0

For stabling, coach-houses, and attendant's rooms (exclusive of fittings), at Aske Hall, Richmond, Yorkshire, for the Earl of Zetland. Quantities by Mr. George Connell. Mr. Thomas Oliver, architect:—

Gradon	£12,387 0 0
Millar	12,112 0 0
Reed	12,026 0 0
Whitely	12,020 0 0
Shaw	11,936 0 0
Simpson & Co.	11,716 0 0
Allison	11,540 0 0
Elliot	11,298 0 0
Keswick	11,180 0 0
Watson	10,750 0 0
Teo	10,550 0 0
Armitage (accepted)	10,345 0 0

For the erection of house, shop, and warehouse, in High-street, Wapping, for Mr. J. T. East. Mr. Charles Dunch, architect. Quantities by Mr. G. P. Raggett:

Read & Son	£4,200 0 0
Palmer	4,190 0 0
Johnson	3,770 0 0
Killby	3,740 0 0
Perry	3,739 0 0
Ennor	3,712 0 0
Elkington	3,683 0 0
Outhwaite & Son (accepted)	3,597 0 0

For new concert-hall and alterations to the Town of Ayr public-house, Canning-town. Messrs. Ingram & Hollands, architects. Quantities supplied:—

Atherton & Salter	£725 0 0
Curtis	680 0 0
Stephenson	680 0 0
Moreland & Nixon	630 0 0
Heiser (too late)	623 0 0

For a house in Waddon-road, Croydon:—
Ridge & Kingsland, accepted.

TO CORRESPONDENTS.

A. M. (thanks).—T. W. (shall appear).—J. C. K. (shall appear).—W. H. W. (shall appear).—C. P.—L. H. & Son.—T. Brothers.—L. L.—J. K.—H. M.—C. L.—T. & Son.—J. W.—Dr. B.—Dr. O. D.—G. T. C.—E. P.—A Bricklayer.—T. O.—J. E.—A. J. W.—W. T. F.—W. H. G. V. & M.—W. W.—S. D.—H. S.—T. & R.—J. C. & Son.—Several communications in type are unavoidably postponed.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

The Builder.

VOL. XXXIII. No. 1697. SATURDAY, AUGUST 14, 1875.

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Church and School Architecture.

ONE who read some remarks on the above subject by a correspondent from the other side of the Atlantic, printed in our last number, will require to be told that their appearance in these columns did not necessarily argue the endorsement, on the part of the *Builder*, of each and all of the sentiments expressed. Indeed, considering how a good many of the observations of our American critic flew in the face of some of the most cherished associations of English architects and churchmen, even some portions of them which privately we might not dissent from at all, might have been modified in expression, on Lord Chesterfield's principle that it is not wise to speak the whole truth at all times and in all places. To do so is sometimes to startle into opposition those who, by a more moderate statement of the case, might have been gained as allies.

It is always useful, however, to have the sentiments of those who see a thing in a different light and under different circumstances from our own. In this country we are so much governed by sentiment and association in regard to such a subject as church architecture, for instance, that it is difficult to realise how our practice in this department appears to those who are not under the same influence. Our New York friends, on the contrary, have nothing of this sort to hamper them, no ecclesiastical past to look back to, and they reduce the problem to the conditions of sheer utilitarianism, with a thoroughness of purpose which leads to a somewhat bald and unsatisfying result. Much of what is urged in Mr. Henderson's letter has been, it is true, brought forward by ourselves, not merely once nor twice. We have always discouraged the sentimental symbolism of the ultra-ecclesiological party of church-builders in England; we have even, so far as could be at all consistent with the objects of this journal, gone out of our way at times to expose the folly, from a higher point of view, of a great deal that is going on in the matter of ecclesiastical ceremony at present. On the other hand, however, the American view of the matter is deficient, from our standing-point, in not taking into account the really important influence of sentiment and association, in regard especially to the architecture of buildings so much more than utilitarian in their objects as churches seem to us to be. Of course we must remember, also, what our American critic seems to forget, that the current view of the nature and requirements of a church service must necessarily have its effect on the architectural treatment of the building. If the service is Mediæval the church must be so; and if it were really to appear that the Church of the present day had made up its mind to masquerade in the ecclesiastical guise of the præ-Reformation period, the manifest duty of the architect is to supply, when called upon, the kind of building necessary to carry out the illusion completely. Whatever his private opinion, it is his business not to argue, but to build. Leaving out of question this contingency, however,—believing as we do that the bulk of English worshippers have not made up their minds to any such state of things,—there is still the double influence of association and architectural effect to be considered, in addition to the mere practical healthiness and comfort of a place of worship. The New York ideal of a church seems to be simply a place where every one can sit comfortably, breathe unvitiated air, and hear a preacher. This is the common-sense side of the matter, and far be it from us to disregard or under-rate it. Proper atmospheric regulation in churches is especially a matter of absolute necessity; at least, one would think so if it were not so habitually neglected. Our complaint in regard to English churches, however, has not been mainly that of deficiency of ventilation, though that often exists. An interior so lofty in proportion to its area, and with so much air space, as is the case in many Gothic churches, old and new, does not present much difficulty in the way of ventilation, and, except in very hot and calm weather, will to a great extent ventilate itself. The complaint against the neo-Gothic church, as well as the Mediæval cathedral, on sanitary grounds, is more generally on the score of draughts and insufficient warming, when warming is necessary. We know that serious and sometimes fatal illnesses have often been traced, especially in the case of delicate women, to exposure to cold and draughts in a breezy church, with a large expanse of cold substances—cement, stone, tiles,—around and under foot. So far the complaint against a large number of modern churches, on the ground of discomfort and unhealthiness, is fully sustained. There is no reason why, in the name of religion and church principles, we should subject ourselves to colds and bronchitis. But whether the church is the place for the development of "every modern convenience" may be a question. The fact is that this is a very self-indulgent and luxurious generation; and for all who are blessed with average means, the opportunity of making themselves exceedingly comfortable wherever they go is provided to an extent which is calculated, we think, to enervate and effeminise the rising generation. We should hardly be sorry to see the church, almost the one place of general meeting where it is still admitted that all are on an equality, retained also as the one place from which this over-wrought luxury of the present day is banished, and where a degree of comfort not beyond that which is within the reach of the poorer class is also accepted as sufficient for the time for the needs of the wealthier. If there is any sense or meaning whatever in a great deal of our established form of worship, and in much of what is adopted as the prevalent tone in Dissenting worship also, a church is a place where people are supposed to go in a certain spirit of humility; and we can hardly therefore see the suitability of imparting to its furniture and fittings all the luxury and comfort which meets us in too exaggerated a form, often, in the modern drawing-room. If simplicity, and absence of self-indulgence and ostentation, are but too little characteristic of the domestic life of the day, let these qualities at least be retained in the *appareil* of our places of worship. Any other principle would seem, in England, like a returning to the old days of the squire's pew, with its curtains and cushions, marking it off from the seats for the humbler brethren. Then in regard to the general question of the utilitarian arrangement of churches, in plan as well as in details, there is this to be said,—and it is a consideration which cannot be put on one side,—that the Mediæval form of church, however inconsistent with many of the requirements of modern worship, has been connected for centuries with the English idea of a place of worship. In some respects its practical unsuitability has been a little over-rated; for instance, it is stated on scientific authority that the three-aisled form of building is by no means acoustically unfavourable: it is certain, at any rate, that the same area roofed in one span often proves exceedingly troublesome to the speaker. Other points may be objectionable, and may be susceptible of modification without entirely destroying the association of the old form of church. And it is certain that this association is a powerful element in the feeling with which a place of worship is regarded among us. It may be all very well in New York to make a church into a kind of lecture-room in appearance and plan; but in England nine persons out of ten would not feel that they were in church at all in such a building; and we cannot regard their prejudice as entirely trivial or unreasoning, any more than the feeling which makes a man reluctant to pull down an old and inconvenient house with which all the recollections of his past life are connected. We have never supported mere archaism in church building, and have often urged reformation in it, but not transformation—not that wholesale application o the every-day economies and patents of building which would sweep away all that we have so long connected with the idea of a church. That would be a one-sided proceeding.

Then as to the question of architectural effect. Most of the ideas of utilitarian reform in church building include the extinction of the monumental character of church architecture, and the reduction of the church to the type of a curtained and cushioned theatre or assembly-room. This amounts, in our thinking, to a wanton obliteration of one of the few opportunities for impressive building left to us, and an absolute loss in regard to the relation of the building to its object. Owing to the luxurious habits of modern life, before referred to, it is but very rarely that we can have a chance of producing architecture in its severer form, not smothered beneath a coating of upholstery. Surely a class

of buildings the object of which is not utilitarian and which are intended not as permanent dwellings, but as temporary meeting-places on special occasions of mental and spiritual aspiration, may very well be retained as the most fitting opportunities for the higher forms of architectural expression. We may go further than this, and say that they are thereby more fitted for their object. There is a good, whether consciously perceived or not, in the effect of an interior on the minds of those assembled in it; and certainly the tone of devotional seriousness must be rather helped than otherwise by the substitution of architectural design, properly so called, for the mere wall-paper and curtain type of finish. For the poorer classes especially this is worth remembering; for to many of them the church, with its arcades, its stained windows, and its music, is, apart from all other considerations, the one bit of something like poetry that finds its way into their lives. Our American correspondent is sweeping in his condemnation of stained windows, as "a custom that has descended from a superstitious age." This is a very New York way of looking at it, and certainly incorrect, unless in a very qualified sense. A great deal of the style of design produced in stained glass at present does, it is true, partake of such a character as that indicated; but that is no necessary quality of stained-glass design, nor need it be such as to unduly darken the interior,—it is better not so, in fact. But stained glass is a beautiful means of giving effect to an interior; nor are we at all sure of the superiority, from any point of view, of the too-garish light of large clear glass windows. In country churches, indeed, there is sometimes less to be said for stained glass; for often the outer landscape, seen through the windows, has more of beauty and suggestiveness than the cunningest worker in stained glass could supply. In one place, perhaps, it is the rich masses of foliage of the adjoining trees which fill up the window; in another the side or outline of a hill; and so on. But in town churches, where a great deal of the surroundings may perhaps be squalid and repelling, or, at best, dull and respectable, stained glass is most invaluable in shutting out the outer world, and giving to the interior a kind of "glamour" and repose, which is to many persons at least most refreshing and restful in its effect. It is possible that the feeling for this kind of repose in the church interior scarcely exists or is understood in the States; but it certainly exists among us, nor is it a feeling by any means to be scouted or derided. And, therefore, while deprecating and, indeed, opposing all attempts at sensational and theatrical ornament and ritual, we do by no means at present wish to see our churches deprived of their architectural and monumental character.

The architecture of schools is, our American correspondent thinks, yet in its infancy, and he may be right. We have hardly arrived at the perfect architectural form of a school yet, though a good many different attempts have been made. On the whole, we may say that the exteriors of our schools are too utilitarian, and the interiors not utilitarian enough. Deficiency of ventilation and imperfection in the system of warming are defects only too common, and the more noticeable as their results in a crowded school are very serious. The present school-building movement is doing a good deal to improve matters in these practical respects, but in general absolutely nothing to ameliorate the state of school architecture. School boards, in fact, are ostentatiously indifferent to this. A case came under our notice, in which a school board in a large town had asked by circular for suggestions, from several head-masters or superintendents of schools for primary education, in regard to any special points which they thought needed improving. One of those who replied had the good sense to add to his other recommendations a remark that architectural interest and style should be considered a matter of importance, as the character of a building had certainly an influence on the children who were educated in it. The administrators of education, however, were proof against any such sentimental nonsense, and appended to this paragraph formally the note, "The Board do not take this into consideration at all in accepting plans." That was at least honest, and probably the gentlemen who made the statement had not the slightest idea that they were doing anything else than exercising a conscientious and salutary check upon unnecessary expenditure. The buildings erected for the London School Board are by no means carelessly carried out in regard to architecture; but in most cases they present little that is attractive, even in their present state, and will look like so many factories when properly coated with smoke and dirt. As a general rule, the architectural aspect of schools is too stern and forbidding looking. We should prefer to see a somewhat more homelike and domestic aspect given to them; in country schools this sometimes is done, and may very often be done equally well in town schools. Architecture is never better employed than in giving an inviting and attractive air to buildings such as these, which too often present a gloomy, prison-like character, not calculated to decrease the natural antipathy of the rising generation to being caught and confined for their own good. Schemes are being mooted for making children's education more amusing and attractive to them than it has generally been. Towards such an end the architect might at least be permitted and encouraged to do what he can in his own province.

GARIBALDI AND HIS PORT OF ROME SCHEME.

During the months of March, April, and May of the present year, there appeared, from time to time, in the daily papers telegrams, letters, and even leading articles on the subject of a scheme for the diverting of the Tiber, and the construction of a "Port of Rome" at Fiumicino. From these it appeared that General Garibaldi was about to add fresh lustre to his renown by becoming as pre-eminent in the arts of peace as he had been in the art of war. It appeared, too, that England, which, as the General remarked in a letter on the subject of these works, has done so much for Italy, was to participate in the glory of the undertaking, in the person of Mr. James Wilkinson, of Westminster, the engineer entrusted with the construction of the harbour. Recently nothing has been heard of the matter, and the public are left to suppose that all is proceeding in successful course. But, unfortunately, such is not the case; and we can fully understand the unwillingness of the journals to disparage one who has deserved so well of his country. It seems desirable, however, to give a short history of the transactions as it has reached us.

Mr. Wilkinson was introduced to General Garibaldi several years ago by the American Consul, and renewed the acquaintance on the 28th of January last by a letter from London, in which he offered his services in connexion with the important public works then contemplated. On the 1st of February the General answered this letter, saying how glad he would be to accept the support, especially of the English, who had done so much for Italy. Mr. Wilkinson went to Rome immediately, and an interview took place on the 7th of February, at which the General explained his views (which were afterwards greatly modified) and made arrangements for an excursion down the river to inspect its course and select a spot for the construction of a harbour at Fiumicino, a small town on a branch of the river from which it takes its name.

The General made the excursion on the 11th of February, accompanied by Mr. Wilkinson, who four days later received instructions, in the presence of an English gentleman, to prepare plans for the port. These instructions were repeated the following day in writing, and, relying implicitly on these engagements, Mr. Wilkinson proceeded, with the assistance of three engineers, who came from England for that purpose, to prepare plans; and as time was a great object, and the weather very bad, he hired a steamer in order to take the soundings, and completed these operations on the evening of the 6th of March. Having lost no time in submitting the preliminary plans to the General, Mr. Wilkinson received an answer from him, in which he expressed his satisfaction therewith, and requested that the detailed plans might be made, so that he might present them "to the Government for their approval, to the Province of the Municipality, to the Commission, and to the National Parliament, whose approbation is indispensable to the carrying out of such a great and important project." Mr. Wilkinson, therefore, at once commenced the drawings of the detailed plans, and on the 2nd of April they were completed and presented to the General, who went carefully through them, and expressed himself entirely satisfied.

On the 12th of April Garibaldi signed a demand to the Government for the concession for the port, it being always understood that he was to transfer the concession to the company to be formed, and that Mr. Wilkinson and those gentlemen, if any, whom he chose to associate with himself, were the only parties acting for the construction of the port. On the 13th of April Mr. Wilkinson, in company with Mr. Menotti Garibaldi, presented the demand for the concession, accompanied by the plans and documents which he had drawn up, to the Minister of Public Works. It was favourably received, and the Superior Council approved the plans, only suggesting certain modifications, consisting chiefly in a wider entrance to the port. The matter proceeded satisfactorily up to the end of April.

However, at a conference at the General's house, held on the 6th of May, in presence of Mr. Baccarini, who came on behalf of the Government to arrange the exact words of the concession, the General produced a plan for the port, drawn up at his request by the architect Landi (who was then present with Semenza, Renzis, and other professional men), and requested that an arrangement should be made with him.

At this time, in consequence, as it appeared, of a statement made to General Garibaldi by General Fabrizis, which had emanated, there is good reason to believe, from Mr. Semenza, to the effect that a gentleman connected with the affair had offered to sell the concession for 250,000 francs (the said gentleman being in no position to do such a thing, besides being the most unlikely person to contemplate it, if he were), the General's tone altered so much that a remonstrance became necessary.

He was, therefore, reminded by letter that arrangements had been made in England, America, Austria, Prussia, France, and Hungary for finding the money; that this had been done, and the plans prepared, on the understanding that Mr. Wilkinson was to construct the port; that he had in writing accepted and approved the terms and drawings submitted to him; and that the matter had proceeded satisfactorily to within a few days of the date of the letter. His request, or rather demand, that an arrangement should be made with Landi, and the fact of his having commissioned De Renzis to settle the terms of the concession for the port of Rome with Mr. Baccarini, were referred to, and it was pointed out that those engaged in the construction of the port should settle the terms of the concession, and that the interference of Messrs. Landi and Renzis was uncalled for and unjust.

The General returned no answer to this, but received Mr. Wilkinson in a friendly way on the 10th, and requested him to return with another gentleman on the 12th. This they accordingly did, and submitted to Garibaldi a short draft agreement in which they bound themselves to construct the port, and to form a syndicate or company for that purpose, and he on his part engaged to leave the arrangement of the project entirely in their hands. He appeared satisfied with it, only adding a few words, and asked them to call with a fair copy of it in the morning, which they did: he then, however, much to their surprise, refused to sign any agreement at all, and even to give them a letter to the effect that when the company was formed he would transfer the concession to it. He said,—"Form a company; when I see they have spent a large sum in the port, I will transfer to them the concession." Of course, no capitalist would ever spend money on such terms.

The General quite ignored the rights of those he had employed, and has not since proposed any arrangement to remunerate them for three months of their services, and a large expenditure of money in preparing the project for him. Mr. Wilkinson finally wrote to General Garibaldi announcing his intention of withdrawing altogether from the undertaking. This letter has not been answered, nor have the plans been returned, as was requested.

This affair, if the statements made to us are correct, is almost sufficient to deter capitalists from investing their money, and professional men from risking the loss of their time and labour in a land the people of which are so intensely "national," that they will decoy, by fair-seeming engagements, a foreign engineer to devote himself to their undertakings, and, when they have obtained the benefits of his skill, band together to deprive him of a part, or, if he will not submit quietly to that, the whole of the fruits of his labour; endeavouring, meanwhile, to make their peace with the world by putting forward an improbable tale.

A description of the proposed port cannot fai

to be interesting, even though it should never be constructed.

The port was to have been situated close to Fiumicino, about sixteen miles from Rome. The approved drawings showed two moles running out from the shore, the southern one 2,050 mètres in length, and the northern one 1,698 mètres; the two inclosing an area of about 118 hectares. The depth of water at the entrance to the harbour would have been nine mètres, so that the largest vessel would have been able to enter. A railway was to have been made from the existing Rome and Civita Vecchia Railway at Ponte Galera Station direct to the Port, and along its northern mole, at the extremity of which the trucks would have been loaded direct from the ships by means of steam cranes. This railway would have passed over only seven miles of country remarkable for its flatness. By means of Trajan's canal, which is about two miles long, water communication along the Tiber to the City of Rome was secured; and to stop the silt which is at present brought down, a lock was to have been constructed at its junction with the river.

The moles, as shown, were constructed entirely of large blocks of concrete (composed of lime, puzzolano, and small stone), weighing 25 tons each. The facilities for this mode of construction are very great, as all the materials occur on the site. The northern mole, 40 ft. wide, was paved with Caprera granite, from the General's quarries, and had a perpendicular face next to that port where the ships were shown to lie. The base of the moles, as shown, was nearly 100 ft. wide, in order to distribute the bearing over as large an area as possible, on account of the alluvial nature of the sea bottom. The total cost of the port, including a lighthouse on the southern mole 25 mètres high, built on cast-iron piles, and fitted with a revolving light, but exclusive of the lock near the Tiber, was estimated at 600,000*l.* sterling.

The entrance of the Port was shown, 150 mètres wide, and accessible to vessels in all weathers, being extremely well protected from heavy seas and prevailing winds and currents. As this port would have been the most central in Italy, and so near the city of Rome, a very large traffic was expected; and the great railway facilities offered an additional inducement to its development. Civita Vecchia now takes the bulk of the coal and other heavy traffic for the city; but it is fifty miles off, and is consequently disqualified for competition with a genuine "Port of Rome."

It was calculated that, taking the port charges as only 1f. per ton, they would yield a revenue of 40,000*l.* sterling per annum; and, as the cost was to have been only 600,000*l.*, the affair promised to be a great commercial success.

THE UNDERGROUND POPULATION.

According to the latest returns, 538,829 persons are employed in Great Britain and Ireland in getting and bringing to bank, and distributing, coal, fire-clay, ironstone (in layers, as distinct from iron ore), and shale; of whom 428,611 work under ground, and 110,218 above ground. The Coal Mines Regulation Act includes fire-clay, ironstone, and shale, and the Metalliferous Mines Regulation Act includes all other mining produce. In these latter mines, in Great Britain and Ireland, there are employed 62,306 persons, of whom 35,283 are under ground, and 23,700 above ground in Great Britain, and 1,855 under ground, and 1,468 above ground in Ireland.

This latter Act has a more extensive application than its title indicates. It regulates the operations of mines of flagstone, freestone, limestone, slate, rock-salt, and lignite, as well as the metallic ores; but in one case,—the great slate quarries or mines of Festiniog,—the owners declined to conform with the Act, upon the plea that their works are not mines. At the time the inspector of mines for that district (Mr. T. F. Evans) made his report,—March 27th, 1875,—the matter was left to the Court of Queen's Bench for settlement. In the case of the mineral produce included in the Coal Mines Regulation Act, the inspectors of mines are able to give not only the number of accidents and of deaths proportionate to the number of persons employed under and above ground, but to the number of tons of produce; but in the case of those minerals included in the other Act, an immense reduction takes place in the quantities of some of them in the process of dressing to which they are subjected in order to make them marketable, so that the calculation of any such average of quantity raised to lives lost as that made for the coal mines would only mislead; but, comparing the accidents with the number of persons employed, there appears to have been one fatal accident for every 663 persons employed, and one death in every 604; and distinguishing between the underground and surface workers the ratio is one death in 417 under ground, and one in 1,797 above ground.

Under the former Act there were produced from the mines of Great Britain and Ireland, in 1874, 126,590,108 tons of coal, 2,067,791 tons of fire-clay, 11,693,186 tons of ironstone, and 362,747 tons of shale (principally oil-shale).

In 895 fatal accidents, 1,056 persons were killed, in the same year, in and about the same mines. There were no fatal accidents or deaths in Ireland in 1874; but in Great Britain one fatal accident happened amongst every 602 persons employed in or about the mines, or one death by accident amongst every 510 persons employed. In the same year there was one fatal accident for 157,222 tons of mineral raised, or one death by accident for 133,251 tons.

Mr. James Willis, F.G.S., the inspector of mines for the county of Westmoreland, South Durham, and the North Riding of Yorkshire, shows that the

Number of persons employed in his district in 1874 was	65,541
Tons of mineral raised	23,844,628
Separate fatal accidents	94
Lives lost by accidents	96
Persons employed per separate fatal accident	697
Persons employed per life lost	682
Tons of material raised per separate fatal accident	253,655
Tons of material raised per life lost	248,381

Mr. Willis says of children:—"I have not met with any case of boys being allowed to enter pits under the age specified in the statute; moreover, I do not think there is any disposition on the part of the employers or their officials to permit this. I am of opinion that there is much more readiness on the part of parents, and I speak from experience, to send the children to work under age. I do not speak of the workpeople generally, but of a class among them,—the idle and dissolute." A woman with (say) a couple of workers, would, according to the custom of this district, be entitled to occupy a house rent-free, and a sufficient allowance of fire-coal at a nominal cost of sixpence a fortnight. Mr. Oakley, one of the inspectors of schools, has had frequent complaints from the teachers that boys are permitted to work under age; but, "probably owing to the dependent position, to a certain extent, which the teacher occupies in regard to the colliery owner," no names or cases have been brought under the notice of the inspector of mines.

Plans and elevations are given of houses now being built for miners in the county of Durham, for which no rent is charged. They are built in rows, with small back-yards, as usual. A small pantry is put out into the yard from the kitchen, which is also the scullery. An objectionable feature is an open ashpit within 4 or 5 yards of the pantry-window, and 5 or 6 yards of the back-bedroom window. If these were a little further off, and if the ashpits were so covered as to wholly exclude rainwater, while at the same time admitting a full and free play of air across and under the roofs, it would be a great improvement. But we believe it to be very unwise to provide workmen with houses rent free. It seems too much like providing stabling, &c. If a man is able to work he is able to pay rent, and what is wanted of colliery proprietors and other employers is that they should provide a healthy house at a moderate rent for every family, any one of whom is employed on the works. To induce men to continue to work at a particular colliery by finding them houses rent free is to be too kind.

Curiously enough, the water-rate,—2d. per week, each house,—is charged to the tenants. The water-supply is the first thing which should be made free. There is an incongruity, which is most striking, in providing houses rent free, and charging the tenants with the water-rate. It leads to this inference,—that it is necessary to the commercial success of the mine that persons be induced to continue to work it, but that the state in which they live meantime need not be considered. On this principle it follows that houses should be rent free, which at once strikes a blow at the freedom of the miner and makes him dependent, but that if he require the luxury of a supply of water he must pay for it. The device is worthy of a "political economist." And if the professor of a true science object that this device does not come within the scope of political economy, he has himself to blame in that he allows mere trade rules to be dignified with the name of his science.

The Midland district of England, of which, Mr. Thomas Evans, F.G.S., is the Inspector, comprises the counties of Derby, Nottingham, Leicester, and Warwick. The average number of tons of coal raised per annum per life lost during the last eighteen years was 113,525, whereas in 1874 the quantity was 222,405 tons. There were raised last year in this district nearly twelve millions and a quarter of tons. There were but but three fatal explosions of gas in the year, and they were attended with the loss of three lives; although twenty-nine other persons were more or less injured by explosions at different times. It was in Mr. Wynne's district, North Staffordshire, Cheshire, and Shropshire, where explosions of fire-damp made such havoc in the year 1874, causing at five collieries the death of seventy-eight persons, including fifty at the Astley deep pit at Dukinfield on the 14th of April, 1874, plans of which are given, showing the workings and the air-ways; and Mr. Wynne shows pretty plainly what was the cause of the accident.

Mr. Lionel Brough, F.G.S., Inspector of Mines in the South-Western district, comprising the counties of Gloucester, Monmouth, Somerset, and portions of Brecon and Glamorgan, gives 101,199 tons per life lost in 1874, in the coal, fireclay, and ironstone mines. In the other class of mines in his district there were raised 203,502 tons of hematite iron ore, 461 tons of lead, and 75,224 tons of oolite or Bath freestone, in procuring which one person was killed for 139,593 tons produced.

It appears that while many children of ten and under thirteen years of age are employed in most of the mines of Great Britain, few, in comparison with the numbers of older persons employed, work in coal-mines in Ireland. Mr. Joseph Dickinson, F.G.S., reports upon North and East Lancashire, and upon Ireland, that the following numbers of persons were employed in 1874 under the Coal Mines Act:—

	In North and East Lancashire.	In Ireland.
UNDERGROUND.		
Boys of 10 and under 12 years of age	278	0
" 12 " 13 "	1,012	1
Male young persons of 13 and under 16	3,184	61
Males above 16	22,692	1,055
ABOVE GROUND.		
Boys of 10 and under 13	139	1
Girls " "	4	0
Male young persons of 13 and under 16	282	24
Female ditto	24	0
Women above 16	120	2
Males "	5,093	504

Mr. Ralph Moore, Inspector of the Eastern District of Scotland, furnishes in some respects the best report; for he gives the mode of working each mine, the thickness of the seam, the particulars of the ventilation, the depth of the shafts, &c.

Mr. William Alexander, Inspector of the Western District of Scotland, gives a table showing that in one mining locality as many as five persons were killed in the year 1874 per 1,000, employed, although in other parts of his district the average was not more than 1·6 per 1,000, and these in both cases not by explosions, but by falls of the roof and sides, in shafts, &c.

In the Yorkshire district, including Lincolnshire, Mr. Frank N. Wardell, F.G.S., is the inspector, and he states the number of persons employed in the year 1874 at 62,499 above and below ground, who produced 14,827,313 tons of coal; 181,819 tons of fire-clay, and 212,777 tons of ironstone; making a total of 15,221,909 tons of mineral, which gives a proportion of about 244 tons to each person employed. The number of lives lost was 112, giving a proportion of one death to 135,910 tons raised. There were 88 fatal accidents, and in 85 of these one person was killed in each case. Of the remaining three, one occurred at the Oaks Colliery, where, by a very large fall of roof, two men were killed; one at Wincobank Colliery, near Sheffield, where an explosion of gas killed two; and the other at Rawmarsh Colliery, where an explosion of gas killed 23. On the 20th of November, 1874, there were about 460 persons at work in the whole colliery, and the amount of air which was passing up the up-cast shafts, of which there were three, was something like 110,000 cubic feet per

minute; and, trusting wholly to the good ventilation, the men were using naked lights. Colliers do not like the Davy lamp—the safety-lamp mostly used—because it does not give them sufficient light; but Mr. Wardell said in his evidence at the inquest that "I have a very decided opinion that it would be unsafe to work this seam here with any other lights than locked safety-lamps, and I recommend, after much experience of the qualities of different lamps, the Stephenson, as being, under all the circumstances, the safest which a miner can use"; and in his report he says, "Good ventilation is indispensable: there can be no two opinions about that; but it is not everything; and the use of safety-lamps ought not in any way to weaken it; the one is not a substitute for the other. The whole body of air throughout a mine does not require to be brought to the firing point before an explosion can take place"; and he further says "I am more than ever confirmed in my opinion that for the ordinary working collier the Stephenson is the safest lamp he can use, locked by the best known means, and that seems to me to be a rivet. . . . . I think that for the purpose of detecting gas there is no lamp so good as the common Davy, and for this reason I hold it to be the best lamp which a deputy or fire-trier can take with him in his examination."

"INDIAN NOTES" in *MACMILLAN'S MAGAZINE*.

Sir,—I shall esteem it a favour if you will publish this rather long letter for the purpose of eliciting precise information from some of your Anglo-Indian readers concerning the remarkable statements recently made in *Macmillan's Magazine* by Mr. James Routledge,—a gentleman who confesses to have written upon Indian topics as far back as sixteen years ago, and who has had "unusual opportunities" of testing the facts and possibilities he enumerates, and of which he is at once the historian and the prophet. Far from disputing the conclusions of his political arguments, I am disposed, probably from a too slight acquaintance with the subject, to agree with them; but I hope he has better authority for his premisses in matters of policy than he seems to consider necessary in archæological science.

In the first "Notes" published in the July number of *Macmillan* he is in conversation with the commandant of the Fort of Morar, who, while justly condemning the modern barracks and similar public works, points to "a certain domed building" which, says the commandant, "is the only rain-proof place I have for the Queen's Stores, although it has stood 2,000 years." It would appear, then, that there is a domed building in or near the Fort of Morar almost contemporaneous with the Parthenon,—for a traveller with unusual opportunities of learning the truth would hardly retail an absurd exaggeration. But from the very beginning of his notes, Agra is the one place to which he religiously turns, and Akbar the one being to whom he fondly recurs. In spite of statistics of population, which he must have by heart, he is astonished to find that "in going down the narrow streets of Agra, the very stones existing along which Akbar drove, you hardly meet with a European face,"—a note which he has developed in the August number of the same magazine, wherein he describes:—

". . . . The streets of old Agra paved with blocks of stone, like London streets now. . . . . You know that the stones under your carriage-wheels are the very same upon which the magnificent Akbar and others drove in days when other races ruled in this fine city; that the life, rich or poor, is identically the same life in nearly all, if not all, leading characteristics as that which existed here when the wolf and the wild boar held revel in England. . . . . You turn from this to the fort.—the fort of Akbar. . . . . From its walls you see the Taj, standing out like a fairy palace in the wilderness. . . . . You are shown the Somnauth Gates, which Lord Ellenborough made so famous; the guns captured by Sir George Campbell,—famous surely for that. . . . . Then you have that throne of Akbar, beyond all question the grandest judgment-seat in the world. . . . ."

Sir, the books I have consulted show that the great emperor came to the throne of Hindustân 319 years ago; and I infer that he sometimes rode upon an elephant. But the double picture of the "magnificent Akbar" driving upon and along the streets of Old Agra is entitled to the licence always accorded to poetical imagery, although an Indian gharry, even with a Mogul sovereign upon the box, savours less of the sublime than the ridiculous. Then what were his cattle,—bullocks, horses, or a camel? In London streets carriage-wheels do not roll over what are known as blocks of stone; and if the comparison be intended to apply to London footpaths, I venture to say that these are paved with slabs of stone, bordered with granite curbs; while at old Agra the red sandstone covers the whole surface of the roadway. To poor architects, who are taught to judge by analogy—by modes of construction, types of mouldings and ornaments—and by constant reference to historical facts, the slender verandahs, balconies, and kiosks, which grace the winding streets of the native city, do not seem to be those from which people doubtless witnessed the progresses of Akbar. Their delicate details seem to be rather of Shâh Jehân's time. And if there is very little left in Agra of Akbar's buildings, there is surely less remaining to show that the older city of the Afghan kings was situated exactly on the spot now occupied by native Agra,—which is on the right or western bank of the river Jumna. The Emperor Bâber, founder of the Mogul dynasty, and father of Humâyun, who immediately preceded Akbar, is said to have lived on the left or eastern bank (where the railway station is), and his body, before it was carried to Lahore, was deposited at the Râm-Bâgh, on the same side of the river. Is it not likely that Agra, the city of Akbar, was founded in the sixteenth century just as modern Delhi, the city of Shâh Jehân, was founded in the seventeenth upon a virgin site? If so, how about "the wolf and the wild boar"? In Calcutta, jackals still "hold revel" towards the small hours of the morning; and possibly, during the reign of Henry VIII., the wolf and wild boar had greater facilities of revelling in the suburbs of London than they enjoyed a century later. But is native life in Agra now exactly the same as it was even in the sixteenth century, when its streets must have been inhabited, not only by skilled artisans and rich merchants, but by other more ornamental, if less useful, members of society? And the fort, is it that of Akbar? The oldest buildings within it,—probably remnants of Akbar's palace,—are named after Jehân Gheer, his successor. They are of red sandstone, and portions are put together according to absolute principles of wood construction, resembling some of the buildings at Futtehpore Seekree, known to have been built by order of Akbar. But the external gateways and fortifications are veneered with slabs of red sandstone much thinner than the ashlar facing of a London house-front, and cannot be ascribed to workmen of his school. From those walls the Tâj may possibly appear to the eyes of a theatrical critic like "a fairy palace in a wilderness," whatever that may be. To mine, about two years and a half ago, it seemed to be laid amongst foliage and flowers richer and brighter than any to be found in the richest park and brightest garden in all England.

The reference to the "Somnauth Gates" is no doubt innocently made in the belief that every one knows the known facts of their story. But those pine-wood gates, carefully preserved in the fort at Agra, are covered with ornaments which (according to Mr. Fergusson, and lesser authorities) bear no resemblance to early Hindu work. Lord Ellenborough was, of course, sincere when he declared them to be the same gates which, report says, were carried away from India into Afghanistan by Mahmoud of Ghaznee, who lived at the end of the tenth and beginning of the eleventh centuries. That they are not is certain; and to quote Mr. H. G. Keene, than whom few Indian civilians have a better right to be heard upon archæological questions, there is no real evidence that Mahmoud, who destroyed the Temple of Somnauth, carried away from its ruins any gates at all. Then there are "the guns," which are "famous surely," because Sir George Campbell "captured" them! Why more famous than if any other member of the Civil Service of Sir George's age and experience had taken them? Or is the assumption only an adulatory figure of speech, acquired from residence in what florid correspondents call,—"the East"?

Sydney Smith, when in a serious vein, considered that the Emperor Aurangzeb was "an object quite as stupendous as the Alps." The throne of an ancestor ten times nobler than Aurangzeb, may, therefore, not improperly be called "the grandest judgment-seat in the world." But where did Mr. Routledge see Akbar's throne? It is certain that that emperor administered justice in public and in front of his throne, but there is even less to show that what is styled Akbar's throne at Agra is genuine, than that the extraordinary red-sandstone building, an exact copy of which is in the architectural room at the South Kensington Museum, was used for a similar purpose by the same emperor at his palace twenty-two miles from Agra.

Mr. Routledge takes infinite care to impress his readers with the fact that his notes are recent. He visited Cawnpore when "men of mark" (meaning possibly Mr. Disraeli's "superior person") believed that the real Nâna had at last been caught. He varied the monotony of a railway journey with "Dave Carson's jokes," which it seems even then maintained their hold of the Anglo-Indian mind. He went to a "calico ball" at Lucknow, where a gentleman dressed as a barrister was mistaken for Dr. Kenealy. He parenthetically explains that the "Secundra Bâgh," near that city, merely means "garden;" although a page or so further he is "shocked to find that Alexander the Great has left little in India but a name." Yet long ago works of sculpture were discovered, and others are even now being disinterred, which bear indubitable traces of Greek influence or inspiration; at least of men who had been familiar with the followers of Alexander. It is, perhaps, waste of time to carp at what after all is only slipshod writing. But let it be remembered that between this and the prince's return next summer tons of "copy" relating to India will probably be prepared for home consumption. Contributors to a publication so deservedly esteemed as *Macmillan's Magazine* should seek to instruct as well as interest their readers. "Notes" of a similar description, sometimes collected from between the Venetian blinds of a railway carriage, are gradually getting fashionable; and, interlarded with pig-sticking adventures and botanical addenda, are, doubtless, entertaining to a large number of educated people. But a man of "unusual opportunities," and an evident friend of India like Mr. James Routledge, ought not to treat its archæology in so loose a fashion as to perplex even those who can detect the padding, and read between the lines of his rhapsody.

William H. White.

P.S.—Agra has been called Akbarâbâd, the city of Akbar. Mr. Keene, above mentioned, the author of the newest "Agra guide," says that "it had been a residence of the Lodi kings, and was occupied by Bâber after he had defeated Ibrahim Khan, in 1526. The foundations of the Fort of the Lodis are said to be still traced on the *left* bank of the Jumna." He makes no allusion in his book to any buildings now existing within the fort of Agra older than the reign of Akbar. But Mr. Fergusson, in the Indian section of his "History of Architecture," says that "the finest, and perhaps the best of the palaces built by the Pathâns, in India, was that built at Agra by Sheer Shâh. . . . . Being the *first*, it had the misfortune to be placed on the highest spot within the walls of the fortress. Hence the present enlightened Government of India pulled it down and replaced it by a more than usually hideous brick erection of their own." Further on Mr. Fergusson alludes to "a fragment that remains"; and I conclude that this fragment is the red sandstone building called after Jehân Gheer. Anyhow, it is not older than the sixteenth century; for Sheer Shâh defeated Humâyun in 1540, and occupied his throne for five years. To quote Mr. Keene again, "It is believed that the founder of the fort was Saleem Shâh, son of Sheer Shâh, who held power during the interregnum of Humâyun (A.D. 1545-53). . . . It is not known that any fragments of the older buildings still remain, that mentioned by Fergusson as having survived the British demolitions being considered by the natives as having formed the drum-stand of Akbar's palace, and being entirely in the style of that monarch's time." W. H. W.

The Sale of Berwick Mansion and Estate.—The sale of Berwick mansion and estate, a fine residence in the county of Salop, took place at the Raven Hotel, Shrewsbury, on the 6th inst. It consists of a substantially-built mansion, and an extensive park. The timber was valued at 21,000*l.*, which was what it would realise in the market from any timber merchant. The rental is 2,965*l.* By various bids, varying from 1,000*l.* to 5,000*l.*, 171,000*l.* were reached, at which price the mansion and estate were knocked down amid much cheering. The amount given was exclusive of the value of the timber. The estate contains about 1,800 acres of first-rate land, and 190 acres of woods and plantations.

THE NEW MASONIC AND PUBLIC HALL, CAMBERWELL.

The New Masonic and Public Hall in Camberwell New-road, which has for some time been in course of erection, will shortly be completed and opened. That portion of the building intended to be devoted to purely Masonic purposes is already finished, and has just been inaugurated, and the hall for general public purposes is in a forward state, and will be ready for occupation during the approaching autumn. The Camberwell New-road elevation of the building is about 25 ft. in height, with a portico entrance in the centre, ornamented with carved Masonic emblems, and above, a tower, terminating with a conical dome and cresting, rises to a height of 54 ft. The front portion of the building contains the apartments intended to be used by the different lodges connected with the craft. These consist of a large banqueting-room, together with a decorated lodge-room, with several anterooms and corridors. The front entrance leads into a hall, or vestibule, which is elaborately finished and decorated, the floor being laid with ornamental encaustic tiles.

The public hall, now in course of erection, is at the rear of the building, and it will have a separate entrance at the east end, as well as that in the front, the first-named entrance being that by which the public will be admitted on occasions when the Masonic apartments and the public hall are in use at the same time. The public hall will be 80 ft. in length and 40 ft. in width, and will seat an audience of upwards of 1,000 persons. It will have a platform and orchestral accommodation at one end, together with retiring and cloak rooms, and at the opposite end there will be a gallery. It is intended to be used for public meetings, lectures, and musical and other entertainments.

Messrs. Payne & Clark are the architects; and the contractor is Mr. Oliver, of Camberwell.

THE HOLBORN SCHEME UNDER THE ARTISANS' DWELLINGS BILL.

The Metropolitan Board of Works on the 6th inst. took action for the first time under the Artisans' Dwellings Bill, recently passed. They adopted by a considerable majority a report from the Works Committee stating that, in the opinion of the committee, certain houses, courts, and alleys within the area represented by the medical officer of health for the Holborn District Board, are unfit for human habitation, and in such a sanitary condition as cannot be effectually remedied otherwise than by an improvement scheme for the re-arrangement and re-construction of the streets and houses within such area or some of them, and recommending that an improvement scheme be made in respect of such area, and that it be referred to the engineer and superintending architect for that purpose. The Board also took exactly similar action in regard to certain houses, courts, and alleys within the area represented by the medical officer of health for the Whitechapel District Board, brought before them in the same manner. Many years ago and often since we brought prominently into notice the frightful condition of most of the courts behind Gray's Inn Lane, using for the purpose the pencil as well as the pen. It is not likely, therefore, that we shall be regarded as desiring to throw any difficulties in the way of their removal, and the substitution of healthful residences, if we press upon the Board and its officers the necessity of moving by degrees. To pull down the whole of the houses in Mr. Isaacs's scheme, including the renovated Tyndall's Buildings, without first making some provision for lodging the inhabitants, would be to produce an amount of misery and distress scarcely calculable. The number of persons dispossessed, according to the schedule given with the original scheme, would be 3,661.

One item of this schedule has considerably annoyed the Society for Improving the Condition of the Labouring Classes (Lord Shaftesbury's Society), and has led to a correspondence. In this schedule Mr. Isaacs has entered Tyndall's Buildings as comprising nineteen houses, 151 families, and a population of 608. Mr. Charles Payne, on the part of the Society, states that the number of families is 86, and of persons only 321.

Dr. Gibbon, the medical officer of health, agrees with him in thinking that there must be some mistake in the schedule, and testifies to the excellent sanitary arrangements of the Court, but all the reply he can get from the surveyor is that "Mr. Stannard, the assistant inspector of nuisances, took the numbers, at my request, some two or three months ago, and he assures me he was very particular in his inquiries, as also in entering in his book the particulars which were furnished to him at the time"; and "that it is quite the custom of the tenants to deceive their landlords as to the number of their children; that is to say, on application for a room or rooms, a person will state that the family consists of one or two children, when in reality there are four or five."

Surely, however, Mr. Payne must know.

HOUSES WITHOUT SEWERS.

It transpired at the meeting of the Rotherhithe Vestry last week that there are a number of houses in that parish which are without sewer connexion. The attention of the Vestry was directed to the fact that the houses in Abbeyfield-road, Southwark Park, had been occupied for some time, but that the sewers had not been put in the road, the result of which now was that the temporary cesspools had overflowed, and the yards were covered with sewage. The surveyor explained that the work was not put in hand because the whole of the owners had not paid their instalments for the work. It was remarked that it was very hard upon those owners who had paid that the work should not be proceeded with, and it was resolved that the necessary work should be carried out, and the defaulting owners summoned.

SALE OF THE MATERIALS OF THE BOW AND CAMBERWELL HALLS.

The departure of Messrs. Moody and Sankey for America was followed last week by the sale of the materials of the two halls which had been erected for their services at Bow and Camberwell respectively by Messrs. Perry, the contractors. The sale took place by order of Messrs. Perry, who, under the building arrangements, were entitled to the materials. The sale was conducted by Messrs. Fuller, Horsey, & Co. The materials of the Bow Hall were divided into 158 lots, the slates not being included, and the sum realised was a little more than 1,000*l.* The materials of the Camberwell Hall consisted of 140 lots, which fetched about 850*l.* The contract price for the two buildings was about 6,000*l.*

WHITWORTH SCHOLARSHIP PRIZES.

We gave last week the names of the successful candidates in 1875 for Whitworth Scholarships; the following is a list of those who have gained Whitworth Scholarship prizes, 1875:—

William Martin, first prize, 100*l.*; William Sisson, second prize, 80*l.* (specially increased to 80*l.* for the great advance made since he obtained the Scholarship); Thomas L. Daltry, third prize, 50*l.*; Robert A. Sloan, fourth prize, 40*l.*; Frederick Stubbs, fifth prize, 30*l.*

UNDERGROUND APARTMENTS, OXFORD STREET.

As the workmen in the employment of the Chartered Gas Company were laying down a main pipe opposite to Stratford-place, Oxford-street (in the middle of the road) they came in contact with some brickwork of a very hard nature. Having ascertained that there was no sewer in that part of the road, the men applied their pickaxes with vigour, and it was discovered that they had come upon the crown of the arch of a brick subterranean building, containing several rooms in a fairly good condition. The principal chamber opened is described to us as about 17 ft. long, by 8 ft. wide, and about 7 ft. high. It included some small freestone pillars, the angles of which were chamfered, and some small (window?) openings. The apartments communicated one with another, and had about 2 ft. of water in them and much foul air. It is to be regretted that no one able to pronounce as to the age or purpose of the construction appears to have seen it. The Tyburn, a brook that rose near Hampstead, and ran south into the Thames (and which gave to the gallows at the end of the Edgware-road its name, Tyburn Tree), crossed Oxford-street at this same spot, namely, opposite Stratford-place, and made its way by Lower Brook-street to the Green Park. It may be supposed, therefore, that the constructions to which we have referred had some connexion with the brook. Another suggestion is that they were connected with the Lord Mayor's Banqueting House, which formerly stood near the spot.

CHURCH BUILDING NEWS.

Earlestown (near Warrington).—The foundation-stone of the intended new church at Earlestown, has been laid by Mrs. Legh, of Lyme. The church is to be dedicated to St. John the Baptist. The architecture is of the Transitional Early English Period. The portion now intended to be built, of Yorkshire stone, comprises half the nave and aisles, transepts, chancel, and vestry, and will accommodate 600 persons, a piece of land being reserved for a future addition. The site has been presented by Mr. W. J. Legh, the lord of the manor, who has also given a donation to the building fund of 1,500*l.*, and 500*l.* towards the endowment fund. Messrs. Whitley (son of the rector) & Fry, of Dover, are the architects. Mr. Joseph Pennington is the builder, and Mr. J. W. Randle, clerk of the works.

Redditch. — The increasing population of Redditch has rendered necessary extended church accommodation, and on the 30th ult., Lady Mary Windsor Clive laid the corner-stone of a new building intended at first to be used as a chapel of ease to the parish church, but in all probability to be developed into a separate living. The site of the new edifice, near the Beoley-road, was given by Lady Clive, and considerable progress has already been made with the work. About 3,000*l.* have been raised, and it is estimated that about 7,000*l.* will still be required to complete the building. The plans for the new church were prepared by Mr. F. Preedy, of London, the builder being Mr. T. Garbutt, of Malvern Link. The style will be Gothic, with clearstory and bell-turret at the east end of the nave. The church will consist of a nave, 70 ft. by 30 ft.; side aisle on the north, 70 ft. by 8 ft. 6 in.; choir and chancel, 30 ft. by 20 ft. 6 in. It will contain 400 sittings, 200 of which will be free. The building will be of the local Hewell rubble stone, with Bath stone dressings, and there will be an open-timbered roof. The aisle will not at present be completed, but the north will be built temporarily, so that the aisle can afterwards be added.

Ely.—The chief stone of the new church for the district of Colham has been laid, the edifice being dedicated to St. Etheldreda. The dimensions are:—Nave, 24 ft. by 48 ft.; chancel, 17 ft. by 24 ft. The church will be faced with Elton stone, with Bath stone dressing, and there will be a bell-turret at the west end for two bells. The roofs are to be constructed of open timber, stained and varnished, and plastered between the rafters. The vestry will be on the north side of the porch. The church will hold about 170 persons. Mr. W. Smith is the architect.

Killowen (Derry).—The parish church of St. John, Killowen, near Derry, having undergone extensive alterations, has been consecrated and formally opened by the Bishop of the diocese. The old edifice has been almost entirely rebuilt. Traceried cut stone windows of Early Decorated type supersede the old ones; the walls have been lowered; and a highly-pitched roof replaces the former one, with a bell-cot, 70 ft. high to apex. The east end of the church has been enlarged, a new chancel and robing-room having been added, as also a side-entrance porch. All the windows are filled with tinted rolled cathedral quarry lights. The roofs are open, that of the nave ceiled at the hammer-beam, with stained and varnished timbers. The open benches, pulpit, and fittings are of pitch pine varnished. The chancel will be inlaid with encaustic tiles, and also the porch and passages. The heating is by Porritt's underground stove. The church is lighted by florinted and gilt wrought-iron standards in the nave, and coronæ in the chancel and porch. The general works were performed by Messrs. M'Clelland & Co., Derry; the gasfittings by Messrs. A. D. Williamson & Co.; and the varnishing and painter's work by Messrs. J. & D. Baxter, Coleraine. Mr. J. G. Ferguson, Derry, was the architect.

Addlethorpe (Lincolnshire). — This fine old church has been partially restored. All the old oak benches, with their carved heads, have been carefully preserved, and where necessary restored.

The ugly deal pews have been swept away, as also has the rotten floor, and in their place a new floor and open benches have been introduced. The work is being carried out under the supervision of the curate in charge (the Rev. J. Whitworth), and the woodwork has been entrusted to Mr. Lowis, of Ingoldmells. The stonework of the south-east window has been rebuilt, Ancaster stone being used, and the whole has been completed by Mr. Smith, stonemason, Spilsby. The interior restoration will cost about 300*l.*

Roxby.—On the 28th ult. this village presented a festive aspect, on the occasion of the re-opening of the ancient parish church of St. Mary, after a thorough repairing, including new roofing and reseating, under the direction of Mr. Fowler, of Louth, the diocesan architect. The church consists of a short wide nave and aisles, a spacious chancel, western tower, and south porch, with a new organ-chamber on the north side of the chancel. A tower arch has been inserted in place of the old last-century doorway.

Dinting.—Holy Trinity Church, which was consecrated on the 31st ult., by the Bishop of Lichfield, has been built from designs and under the superintendence of Messrs. Mills & Murgatroyd, architects, Manchester. It consists of nave and clearstory, 74 ft. by 26½ ft., and 19½ ft. high to the apex of the roof; north and south aisles respectively 74 ft. and 60 ft. long by 8½ ft. wide, and 20 ft. high; chancel, with octagonal apex, 28 ft. by 18 ft.; organ-chamber, 16 ft. by 13 ft., forming externally a transept on the south side. There is also a vestry on the north side of the chancel. At the west end of the south aisle is the tower, 18 ft. square, with angle buttresses tapering upwards, and finishing with pinnacles, from the base of which springs the octagonal spire, measuring in all 137 ft. from the ground to the top of the vane. The exterior of the church is of stone. The style is that of the latter part of the thirteenth century. The main entrance-porch is under the tower. A spiral staircase leads to the belfry, in which is hung a peal of six bells, by Warner & Sons. In the interior, the piers dividing the nave from the aisles are of stone, circular, with moulded caps and bases. The walls are lined with cream-coloured brick, relieved by bands, &c., of warm brown, the arches, window-jambs, &c., being in moulded brick. The roof is open-timbered, lined with boarding, stained and varnished, the principal ribs carried on stone moulded corbels, the windows glazed with cathedral tinted glass, the seats open, of pitch-pine, varnished. The chancel roof has moulded groining ribs, filled in with boarding, all varnished, with carved bosses at the apex; the ribs are supported on stone corbels, carved with figures representing angels with musical instruments, &c. The building will seat 450 adults, and is warmed by one of Whitaker's convoluted stoves. The contract, amounting to about 6,500*l.*, was taken by Mr. Southern, of Manchester, the sub-contractors being Mr. Cordingly for masonry, Mr. Hamilton for brickwork, Mr. Lightfoot for plumbing and glazing, Mr. Dovey for gas coronal and vane, Mr. Oppenheimer for chancel tiling, &c. Mr. Bonehill, of Manchester, has carried out the carving.

Garlands (near Carlisle).—The new chapel, for the use of inmates of the Cumberland and Westmoreland Lunatic Asylum at Garlands, was opened on the 6th inst. by the Bishop of Carlisle. It stands in its own grounds on the left side of the road, in approaching the Garlands from Carlisle, and is quite detached from the asylum itself. Mr. Cory, the architect, has adopted a simple rendering of Perpendicular Gothic in carrying out the design, the chapel being planned with a special view to the reception of its inmates —a separate porch being made for each sex, and the passages being unusually wide. The nave is 80 ft. long by 30 ft. wide; the chancel is 26 ft. 6 in. by 17 ft. 6 in.; and there is a small vestry. The church is well lighted by side windows, and a large east window of four lights divided into traceried sections; and the timber of the roof, the top of which is 41 ft. high, is treated in a simple but ornamental manner. There is sitting accommodation for 300 persons in the nave; seats are provided in the chancel for the medical superintendent and his establishment, the reading-desk and pulpit being on either side of the chancel arch. A square tower, 41 ft. high, is surmounted by a spire 20 ft. higher. The building has been constructed of the red sandstone of the district, by Mr. Charles Armstrong, of this city. The estimated cost was 2,286*l.*

DISSENTING CHURCH-BUILDING NEWS.

York.— During the last three years the Wesleyan Methodists have held services in a school-chapel in the neighbourhood of Cemetery-road and Melbourne-terrace. To meet the requirements, however, of an increased population, it was resolved to build a new chapel, and the foundation-stone has been laid. Two plans were proposed by Mr. Edward Taylor, architect, Stonegate, in this city,—one for a building in the Gothic, and another in the Italian style,—and after discussion the latter was agreed upon. Tenders were advertised for, and out of forty the lowest amount was 6,688*l.* 16s. 9d., exclusive of site, internal fittings, &c. The chapel will accommodate 850 persons, and about 200 seats will be free. An additional schoolroom and several vestries have been added, so that 450 children will be provided for. The principal front will be in Melbourne-terrace. The internal dimensions of the chapel will be 87 ft. by 51 ft. 6 in., and 37 ft. high. The seniors' schoolroom, which will be on the ground-floor, will be 45 ft. by 27 ft., and 17 ft. high. The stewards' vestry, 23 ft. by 15 ft.; four class-rooms, 18 ft. by 13 ft. The tower will be placed over the principal entrance, and will be 90 ft. in height. The ceiling will be panelled and moulded, and the wood-fittings stained and varnished. The total area of the site is 1,604 square yards. The estimated cost is 7,000*l.*

Hatfield Heath.—The foundation-stone of a new Congregational Chapel has been laid here by Mr. Isaac Perry. The site is an extension of that of the old chapel, and the estimated cost is 3,300*l.*, the contract being for 3,000*l.* Mr. Cornell, of Bishop Stortford, is the contractor, and Mr. Banks the architect.

Halifax.—The increasing Stannary congregation having rendered the present building inadequate for the requirements of both chapel and school, the erection of an edifice on the adjoining vacant land for the purpose of the former was resolved on, and the corner stones have been laid. Subscriptions were promised to the amount of 5,737*l.*, which left a balance of only 2,300*l* to be raised. The plans of Mr. F. W. Petty, architect, were approved, and by these plans extra school accommodation will be afforded. From the basement a wide stone staircase will communicate with the church over, and forward to the gallery. The entrances will be from Stannary-street and Alma-street, communicating from side to side with wide lobbies, in which will be stairs to the galleries. An arrangement is also made for the scholars in the school adjoining to pass from the school floor direct into the gallery, to seats appointed for them. Seating will be provided for 1,500 people in the body of the church and galleries. The design is in the Gothic style. At one angle will be a tower with plated spire. Internally the building will be divided into aisles and nave, with iron pillars supporting moulded arches, in the spandrel of which will be clearstory windows. At the pulpit end of the church the recess usually occupied by organs in chapels is to be opened out, and a five-light stained glass window placed at the east end. The total amount of contracts is 7,000*l.*, distributed among the following: — Masons, B. & R. Hopkinson; joiner, James Smith; plumber and glazier, R. P. Stafford; slaters and plasterers, A. Bancroft & Son; painters, White & Stringer; ironfounder, J. Berry.

Norwich.—The new Baptist chapel which has been erected on the Unthanks-road, for the accommodation of the Rev. T. Wheeler and his congregation, has been opened. The building is from the designs of Mr. E. Boardman. The plan is that of a "church," with nave, aisles, and an apse, and is in the Early Gothic style of architecture. It is faced with Kentish rag stone, with Bath stone dressings. The nave has an open Memel timber roof, and is divided into panels by the moulded principals, purlins, &c. It is lighted on each side from above by ten clearstory windows. The arcading dividing the nave from the aisles is on either side supported by four red Mansfield stone columns, with moulded capitals. The apse is octagon-ended in form, and is lighted with three windows, filled with stained glass of geometrical pattern. Two of these are memoral windows. The string course along these windows is wrought stone work. All the windows are glazed with cathedral glass. The pulpit is on the north side of the entrance to the apse, in which are seats for the choir and space for an organ. Within the railing at the front of the apse is the baptistery. There is a small gallery at the south end capable of accommodating about sixty persons. Sunday school work will be carried on in suitable rooms below the church. The contract was for 4,770*l.*, but there are extras to the amount of 350*l.* The contractor was Mr. J. Harrison, and the sub-contractor for the brickwork Mr. J. Barnes, and for the stonework Mr. J. R. Childs. To Mr. Harvey was entrusted the glazing; to Mr. Pank, the gasfittings; and to Mr. North, the plastering.

Chester.—The congregation of the Independent chapel in Commonhall-street, finding that a new church, affording larger scope for usefulness, was imperatively required, the site in Upper Northgate-street was secured, and the work of building was commenced soon afterwards. The plans of Mr. T. M. Lockwood, architect, of this city, were adopted. The style of the building is that of the thirteenth-century Gothic. The gabled front to Northgate-street is of white Storeton-hill stone, and has on the north side of it a square tower of the same material, which, at the height of 42 ft., becomes octagonal, and is then pierced by eight or ten belfry-lights, terminating with a broach spire and vane, at a height of 100 ft. In the gable is a large five-light lancet window, having broad stone mullions, with detached shafts of red Mansfield stone, with carved caps and bases. Below, the vestibule, which is 7 ft. wide, is lighted by four lancet windows, and on each side of it are the main entrances, through porches, the doorways being enriched by shafts of red granite, with carved caps and bases. The length of the interior is 72 ft. 6 in., the width 38 ft. 6 in., and the height 32 ft. 3 in. to the ceiling, and 42 ft. to the ridge. The principals of the roof are shown, and, like the other woodwork, are of pitch-pine, stained and varnished. The pulpit, which stands in a recessed moulded arch, with black marble shafts and white stone capitals and bases, is of the same wood, carved. The seats are open, having book-rests and hat-rails. Accommodation is provided on the ground-floor for 500 persons. On each side of the church are six double-light lancet windows, having detached black marble shafts, with carved caps and bases of white stone, in front of mullions, which are of moulded bricks. On the exterior, these windows are divided by buttresses, capped with stone. Artificial light will be supplied by three large pendants from the principals of the roof, and the building will be warmed with hot air. The contract was let to Mr. Thomas Richards, of Upper Northgate-street, to erect the building for 3,240*l.*, subletting the stonework to Messrs. Cooke & Moulton, and the brickwork to Messrs. W. & J. Vernon. The total cost is estimated at 4,400*l.*

Halton.—The opening services in connexion with Trinity Wesleyan Chapel have been held. The buildings were erected from designs by Mr. C. C. Ellison, of Liverpool, architect, and consist of chapel, vestry, and school-room; the former having seats for about 300, and the latter 200 persons, all on the ground floor. The style is Gothic, and the chapel is arranged with an aisle on each side, entered by porticos and vestibules from the front, with a good hammer-beam roof, and diagonal-boarded ceiling, with perforated panelling in the centre, for ventilation. The front gable is filled in with two three-light windows with traceried heads, and the sides with couplets, the other end being occupied by a chancel, with moulded and decorated arch, polished marble shafts, Caen stone carved caps, &c., and a four-light traceried window, filled in with stained glass. A reredos fills in the space beneath the window, having a centre bay over the communion-table, and arcades on either side, all in Caen stone, with clustered shafts of variegated polished marbles, and the panels filled in with zinc plates, decorated in colours and gold. The pulpit and font are of Caen stone, each having polished marble clustered shafts and inlays of marble in the panels. The font is the gift of the contractor, Mr. C. Holland, of Chester. The woodwork is pitch-pine, stained walnut and parts ebonised. For the exterior, blue stone from Wales for walling is used, with dressings and mouldings of white stone, and shafts of polished red granite. Messrs. Brown & Downing, of Birmingham, supplied the metal work and gasfittings; and Messrs. Holloway, of Liverpool, the stained-glass work.

Constantinople.—Serkis Bey, the principal architect of the Palace, will, it is stated, be entrusted with the construction of the Bagdad Railway.

RUSTING OF IRON IN WATER.

With a view to investigate more fully the action on iron boiler-plates of soda, lime, chloride of barium, and other substances commonly used for the prevention of "scale," Professor A. Wagner, of Munich, lately instituted a series of experiments, which are detailed in recent numbers of the *Bayerisches Gewerbe u. Industrie Blatt*, and the *Deutsches Industrie Zeitung*, and of which the following is a summary :—

The mode of experiment adopted was to subject small strips of iron, cut from a single plate, to the action, first, of a given quantity of distilled water (75 cubic centm.), and afterwards of aqueous solutions of the various substances in use as "scale-preventives." In this way it was demonstrated how rust forms at ordinary temperatures. Subsequently, the conditions were varied: for one whole week the solutions were saturated with pure air, by means of an aspirator connected with a receiver containing potassium; for another week a current of air charged with carbonic acid was passed through them. At the end of each period, the strips were taken out, carefully, washed and dried, and weighed; the quantity of iron in each bath being determined by analysis at the same time. These were the results :—

In distilled water saturated with a mixture of atmospheric air and carbonic acid, iron was found to rust twice as fast as in distilled water saturated with pure atmospheric air.

In well-water concentrated by boiling the results were very different. Oxidation was there most active when the water contained pure air, and this irrespective of the salts present, except in the case of those having an alkaline reaction. In water containing chloride of barium and lime, and saturated with atmospheric air freed from carbonic acid, iron rusted very energetically. Oxidation proceeded less rapidly when the air contained carbonic acid. A contrary result was obtained with the chlorides of potash and soda, and even with sal-ammoniac and chloride of magnesia.

In one experiment oil was added to well-water, and the latter boiled down to the requisite volume,—75 cubic centm. Here oxidation was much less active in the presence of pure air than with an admixture of air and carbonic acid.

Substances with an alkaline reaction, as lime and soda, were found to prevent the formation of rust altogether. This has long been known. Hütten has asserted that the formation of rust is prevented only so long as the oxygen of the air is not absorbed by the solution, and that such absorption takes place more slowly in saline solutions than in pure water. Professor Wagner believes that he has proved that saline solutions absorb as much gas in given times as pure water.

Wishing to ascertain how far the foregoing results were modified by the presence of heat, the Professor instituted a second set of experiments, in which the water was kept boiling by day, and allowed to cool and absorb air from the atmosphere by night,—the conditions thus being closely analogous to those to which water in ordinary boilers is subject. With distilled water, the loss of weight in the iron, or, in other words, the amount of oxidation, was found to increase from week to week, so long as the trial continued. With well-water (giving 0 gr. 76 c. of residue) iron rusted more slowly, and the loss of weight at the end of six weeks was just one-half only of that it was in distilled water. The carbonate of lime in well-water is therefore, a pretty effectual preservative against rust.

On adding a little chloride of barium to the water, the iron at the end of six weeks was found to have lost about the same weight as in the preceding instance, but the comparison of the weights at the end of each week of the period showed that oxidation had proceeded more regularly and uniformly. In solutions of the chlorides of barium and soda the loss of weight on the iron, at the end of six weeks, was slightly less than in pure water; during the first two weeks it was very rapid, and afterwards slow and uniform in degree. On the other hand, in solutions of soda and potash, the loss of weight was greater than in pure water, and, as in the last case, more rapid at first than afterwards. This appears to confirm the popular view of the deteriorating action of sea-water on ships' boilers.

The same phenomenon was observable when a neutral solution of chloride of magnesia was used. At first the rusting was very energetic; then slower in its action; latterly, very slow indeed. In this case, as it was feared the magnesia might decompose with the heat, and liberate hydrochloric acid, sufficient lime was added to neutralise the effects of the latter should it make its appearance. In this way, the oxidation of the iron was somewhat retarded, but, at the end of the fourth week, the results were the same as though no lime had been added.

Sal-ammoniac caused the most rapid deterioration of the iron; it was also most rapid in its action at the commencement, but it continued fairly energetic throughout the course of the experiment.

In solutions having an alkaline re-action, such as lime-water and soda-ley, the iron underwent not the slightest change; it was effectually preserved from rust. The addition of a little oil to the water notably decreased the amount of rust, which, at first, did not show at all, and afterwards only in smaller quantities. An iron pipe half filled with distilled water, and exposed to the air, was found to rust twice as fast as a similar pipe completely filled. This illustrates the injurious effects of interruptions in the service of a boiler. After having thus tested the effects of various salts on iron in the presence of atmospheric air, with and without an admixture of carbonic-acid gas, Professor Wagner wished to try the action of chlorine compounds on iron, exposed to heat, but carefully secluded from atmospheric action. The results were positive with the chloride of magnesia, and negative with the chlorides of soda, potash, barium, and lime.

The foregoing experiments,—those at ordinary temperatures, and at a temperature corresponding to the boiling-point of water, alike,—show that chlorine salts, such as the chlorides of magnesia, soda, potash, barium, and lime, and the hydrochlorate of ammonia, all exert an injurious action on iron if exposed to the action of the air. This consideration is of some importance in boilers. It is a question whether the addition of barium chloride to the feed-water is always beneficial in its results,—whether the elimination of the sulphate of lime thus effected is not counterbalanced by the production of some chlorine compound? In water containing much magnesia, such addition must prove detrimental by inducing the formation of chloride of magnesia.

Well or spring water, it has been seen, is less injurious to iron than pure water. This, probably, is due to the precipitation of carbonate of lime in the form of scale. From this point of view, a thin deposit of calcareous scale would appear advantageous, as protecting the iron from oxidation.

The use of sal-ammoniac as a "scale-preventive" should be invariably rejected, as in every case ammonical solutions are shown to have a very injurious effect on iron.

Professor Wagner's experiments show that the addition of oil or fatty matter has no injurious effect on iron, and that it prevents the formation of rust. The experiments were not, however, extended to temperatures in excess of 212° F., consequently there is nothing in them to prove that such additions may not act detrimentally at higher temperatures, as many authorities maintain. Substances having alkaline reactions,—such as lime and soda,—effectually prevent the oxidation of boiler-plates; they may therefore be safely recommended as "scale preventives," so long as they are added in suitable quantities, and not in excess.

DWELLINGS OF DANISH WORKPEOPLE

A Danish pamphleteer has compared the dwellings of the Copenhagen workpeople with those of operatives in the old town of Edinburgh. The Dane is lodged in the back part of a several storied house, generally in the so-called cellar, or half underground apartment, which may open into a dingy court 9 or 10 ft. square. There is little light or ventilation, and the people keep their apartments as close as possible; if willing to open their windows they can hardly do so for the effluvia from the latrines and open gutters in the court. The general and special smells of Copenhagen are hardly to be matched in any part of Europe. The average number of cubic feet of air to an individual is 213; in very many cases, however, the number is 45 cubic feet and less. It is not uncommon for two unmarried Danish workmen to take a furnished room between them. Such a room will cost four or five dollars a month, say 10*s*. A separate room for one man will be about 6*s*. 6*d*. a month. Married men take unfurnished lodgings, which consist of two rooms and a kitchen, costing about six dollars, or 13*s*. per month. The furniture and adjuncts are very often hired; are all of a rough description.

To meet the wants of the working classes, building societies have been started, which between 1851 and 1870 gave lodging room for about 3,200 persons in Copenhagen, in the form of 71 houses with 777 apartments. The most important of these societies was started by Messrs. Burmeister & Wain, the largest employers of labour in Denmark. The object they had in view was to introduce the cottage system, then almost unknown in the country. In its original shape the society was exclusively for the workmen in the firm's factory where about 800 were employed. A loan on mortgage was obtained from the Copenhagen Savings Bank, and a piece of ground was presented by a philanthropic manufacturer, M. Holmblad. The plan was that every member should pay one mark or 4½*d*. a week, and a deposit of one dollar or 2*s*. 2*d*. The houses when finished or unoccupied to be drawn for by lot; the member winning to pay a fair rent for the house; the excess of the rent over the interest (6 per cent.) on the actual cost of the house to be credited to the occupier who in twenty-eight years would thus repay the capital and be entitled to a conveyance of the house in freehold. The houses are two-floored; and if the tenant prefer to let the first floor, he would be able to work off his debt in ten years. Members who do not win are entitled to claim the entire amount of their deposits after eighteen years, and in certain other specified cases; temporary suspensions of the subscriptions for special reasons are allowed; members may cede their rights to other members, and so forth. The Society has now been thrown open to the operatives of the capital generally. It has built thirty-six two-floored cottages in rows, each having a small court and garden, and two or three rooms with a kitchen, being in all accommodation for 280 persons. The rent of a first-floor would be about 7*l*. 10*s*., of a ground-floor 6*l*. 10*s*. a year. This system offers great advantages to operatives, for at the worst they have invested their money in a savings bank; at the best their first rent-charge is only 6*l*. or 7*l*. a year, whereas their less fortunate fellows must pay at least 8*l*. a year for much worse accommodation on a flat. Of the other enterprises of a like kind four have been set on foot by share companies; with three of these are associated baths and wash-houses. All these companies have been founded by the philanthropic efforts of capitalists, professional persons, and others, the operatives having, as a rule, hung back until the general arrangements were made. Everything, indeed, it is said, has been done for the working classes, nothing by them.

In the direction of co-operative stores great efforts have been made to benefit the workpeople. There are now in Denwark 37 stores on the Rochdale model. The Rev. Mr. Sonne, of Thisted, has the credit of having been the founder of the first Danish store, and the Government has acknowledged his zeal by decorating him with the order of the Dannebrog. He is, however, so far removed from the good graces of the trading classes as to be spoken of as a malignant incendiary. Mr. Sonne began operations by inducing 83 operatives to subscribe 3*d*. a week each to a share fund, of which he undertook the management. His next move was to contract with a baker, who, upon being guaranteed the custom of the Society, allowed the members large discount on all purchases of bread. The discount was saved up until after four months' delay it amounted to 6*l*., when the society ventured to lease a house, and to begin buying on its own account. As definitely organised, the society consisted of shareholders, with five shares at 11*s*. to be paid up in weekly instalments of 3*d*.; entrance fee 1*d*.: election by ballot; sales at current prices. After a quarter's business the Thisted store was able to pay 5 per cent. on capital, and to allow purchasers 2*d*. discount on the Danish dollar (2*s*. 2*d*.).

Danish wages are somewhat higher than what were paid a quarter of a century ago, especially for unskilled work. But the rise has not kept pace with the increased price of food and lodging (from 30 to 40 per cent. since 1850), so that the improvement in the artisan's condition has lagged behind that of the country at large. The labour market is generally glutted, partly, no doubt, owing to the constant influx of Swedish, and even of German artisans. The Swedish mechanic or field labourer can travel to Denmark for 2*s*. or 3*s*., he gets higher wages than at home, and can adapt himself at once to the local habits which, in fact, like the language, are nearly identical

with his own. The average earnings of good hands are:—for bricklayers, carpenters, paviours, 15s. 6d. to 17s. 6d. per week; smiths, 20s.; tailors, 15s. 6d.; shoemakers, 13s.; weavers, 22s.; painters, 17s. 6d.; helps, and all kinds of unclassified daily workmen, 8s. to 10s. 6d. The earnings, however, of some of the workmen are subject to great fluctuations, according to the season. In the months of May, September, or October, a first-rate carpenter might contrive to earn 26s. a week, and first-rate bricklayers 30s. Tailors may, at times, earn 22s.; shoemakers up to 17s. 6d.; smiths up to 26s.; all must be first-rate hands by piece-work, and for Copenhagen only. All things considered, where the English operative is earning 20s. a week, the Dane may be getting 13s., the English 36s. wage answering to 19s. or 20s. in Copenhagen. Provincial rates are somewhat lower than those in the capital, and the workman is, on the whole, not so well off. The provincial artisan not unfrequently lives with his master; a carpenter would, under this system, receive 9s. a week with board and lodging. The village artisans are generally agriculturists, with three or four acres of ground, leasehold or freehold.

Danish victuals are inferior to English victuals. First-rate meat cannot be procured in Copenhagen at any price. Rye bread is universally eaten, and it seems to be an unobjectionable kind of food, most Englishmen, prejudice apart, would prefer it to town-bakers' bread. Danish cookery is inferior and wasteful. The workmen's wives are not good economists, they generally buy at the worst shops, purchasing very small quantities at a time, such as a ¼ lb. of butter, a pennyworth of potatoes, and so forth. The operative's indispensable clothing costs him from 3*l.* to 4*l.* a year. When he has the means he is not satisfied with making a respectable appearance suitable to his position, but is anxious to dress so as to pass for a man of independent income on Sundays and holidays.

HYDE PARK CORNER.

"Something must be done," no doubt, before next season, to relieve the pressure of traffic at Hyde Park corner and Grosvenor-place. Although, as Mr. Sidney Smith would have said, we may not yet have heard of a Bishop being killed there, not only the episcopal bench but all other classes of her Majesty's subjects are in danger of such a catastrophe.

"Something must be done!" Quite true. But, by all means, let the "right thing" be done. It is a matter for congratulation that, even at the last hour, the Government scheme is not to be carried out "without the most careful consideration." This was the effect of Lord Henry Lennox's reply to Mr. Adam in the House of Commons the other night.

The Government scheme is,—to form a sunken road, or what, in railway phraseology, would be termed an open cutting, from a point opposite to Hamilton-place, across the Green Park, passing under Constitution-hill (which is to be raised to allow of the subway) and running into Grosvenor-place, at an ugly angle not even opposite to Halkin-street, but some yards above it. Very unwillingly we are obliged to say we do not like the scheme. The arrangement would not only be unsightly, but the open cutting would effectually cut up a pretty and much used part of the Green Park, and would leave the useless corner of the park, close to the reservoir, in its present ugliness. It would also make irremediable the dangerously narrow neck of Grosvenor-place; for, if Constitution-hill is to be heightened, Grosvenor-place can never be widened. The subway would also, we fear, involve nuisances of many kinds.

The Duke of Westminster's counter scheme of forming a broad descent from Piccadilly down to Grosvenor-place by throwing open ground on the east side of the arch, leaving that erection in the middle of the roadway, seems to us far more promising. Besides the immense public convenience which would be secured, the architectural effect of this scheme would be grand; and if, in connexion with it, the ugly wall of the Queen's garden, which bounds the eastern side of Grosvenor-place, could be replaced by a handsome wall, or by pretty railings worthy of the locality, with a bank inside, an urgently demanded public improvement would be carried out. London is greatly indebted to the Duke of Westminster for improvements which his Grace has carried out; and, on this ground alone, any improvement proposed by him is entitled to special consideration. The Duke has offered to contribute 3,000*l.* towards the widening of the neck of Grosvenor-place, and, no doubt, he and his tenants in Grosvenor-place would also contribute largely towards the improvement of the wall lower down in Grosvenor-place. At all events, it will be inexcusable if the Duke's project, backed up as it is by a handsome contribution, do not receive the most careful consideration from instructed and competent persons. By an alteration of the gradient, the road of Constitution-hill might still pass under the arch, for State purposes, if desired; and a road could be carried, on the level and not through a cutting, from opposite to Hamilton-place across the Green Park to Grosvenor-place.

We cannot resist a strong conviction that the sub-way as proposed would be a mistake, and one of no ordinary bigness.

THE PHAROS AT DOVER, AND THE REMAINS ON THE WESTERN HEIGHTS.

The following is the communication addressed by Mr. C. Roach Smith to Mr. Mackeson, the mayor of Hythe, and read by the latter at the recent joint meeting there of the Royal Archæological Institute and the Kent Archæological Society:—

In forwarding you Lieutenant (now Captain) Peek's plan of the Pharos, I may as well extract what Stukeley, in his Itinerary (1722) says about it. He was a good draughtsman; and in such matters may be relied on for accuracy. It is only in some of his theories he is not always to be relied upon.

"One part of the fortifications consists of a large circular work, in which stands the old church. There is not much doubt to be made that upon this hill was a *castrum* of the Romans, like that at Richborough, to guard this haven. The church was built in the first times of Christianity, out of part of the Roman ruins, whence there are huge quantities of Roman bricks laid into the work; the arches are entirely turned with them; the corners and many parts, both within and without, are built up therewith; and the remainder is of stone, originally cut by the Romans. But the greatest curiosity here is the *Pharos*, or Roman watch-tower, standing at the west end of the church. Notwithstanding it is so much disfigured by new daubing with mortar, casing, and mending, I discovered its primary intention the first minute I saw it; and sent the three prints of it, which I here present the reader, to Monsieur Montfaucon, at the instances of my most honoured lord, the Archbishop of Canterbury. I was in hope they would have been more useful to that celebrated author; for therein, at least, he might have found that the building which he first took for a *Pharos*, and whereof he gives us four views, is truly the tower of the church we were talking of. The description of this curious work, which I believe the most perfect of any left, in short is thus."

"In the forty-seventh plate we have shown the ground-plot upon which it is formed, and a section of the work, whence we may readily observe that the design is simple, but admirably contrived for its use and purpose; the base is octagonal without; within, a square; but the sides of the square and octagon are equal; viz., 15 Roman feet, which reduces the wall to the thickness of 10 feet. In this manner it was carried up to the top, which was much higher than at present; but it retires inward continually from all sides, with much the same proportion as an Egyptian *obelus*.* Upon four of these sides there are windows narrow, handsomely turned with a semicircular arch of Roman brick, 6 ft. high, so that the outside of it appears as in our forty-sixth plate.† The door to it is on the east side, about 6 ft. wide, very well turned overhead, with an arch made of a course of Roman brick and stone alternately, 14 ft. high. All the stones of this work are of a narrow scantling; and the manner of the composure, throughout, is perfectly the same as that lately described at Richborough Castle; there are, first, two courses of this brick, which is level with the bottom of the windows; then seven courses of hewn stone, which mount up to the top of the windows; then two courses of brick, seven of stone, alternately, to the top; every window by this means reaching to a stage or story. There are five of these stages left; the windows are visible enough to a discerning eye, though some be stopped up, others covered over, others have modern church-like windows of stone put in. I suppose the inside was entirely filled up with a staircase; the height of what is left is 40 ft. I believe there were 20 ft. more originally; and the whole number of windows on a side was eight. This building was made use of as a steeple; and had a pleasant ring of bells in it, which Sir George Rook procured to be carried away to Portsmouth. Since then the office of the Ordnance, under pretext of savingness, have taken away the lead that covered it and left this rare piece of art and masonry to struggle with the sea, air, and weather. Mr. Degg gave me a coin of Diocletian, found here. The Erpinghams' arms are patched up against one side of the Pharos, being two bars and a canton, so that I suppose it was repaired in Henry V.'s time, Lord Erpingham then warden of Dover Castle. I have heard there is another such Pharos at St. Andrews, in Scotland. Such a Roman *Pharos* is at Damiata, in Egypt, the view of it in 'Le Brun,' plate 70, letter A."

"On the other high cliff, opposite to this, beyond the town, has been another *Pharos*; some part of the bottom part of it is still left, called the Devil's Drop, from the strength of the mortar: others call it Bredonstone. Here the new constable of the castle is sworn."

"Upon another rock over against this, and almost of equal height, there are the remains of some very ancient building. One author, upon what grounds I know not, has called it 'Cæsar's Altar'; but John Twine, of Canterbury, a learned old man, who in his youth had seen it almost entire, affirmed to me that it was a watch-tower to direct sailors by night-lights (some part whereof is yet remaining, called Bredenstone). Such another there was over against it at Bologne in France," &c. (Gibson's "Camden," p. 250).

Thus far Stukeley. The "circular work" he speaks of is indicated in a plate by a turret; and the core of the wall (for such it must have been) is in part yet to be seen. But whether this was Roman work is a question easily solved by spade and pickaxe, the only interpreters we can appeal to with confidence in such cases. If there be such a Pharos at St. Andrews, in Scotland, it stands a reproach to the archæologists of the last century and a half that they have had so little enterprise as to allow it to remain undescribed. And another on the coast of Flintshire, recorded by Pennant, and engraved for an article by the late James Yate, M.A., for Dr. Smith's "Dictionary of Greek and Roman Antiquities," also of questionable origin, remains unchallenged. The appearance of the latter, as shown by the woodcut, begets mistrust; but it is remarkable that up to the present day we have no decided authority as to whether they are ancient or Mediæval. The name *Bredan*, I suppose, merely refers to the size of the stone, which if it be Roman masonry, would readily respond to a slight excavation, and reveal its real character and origin.

Although part of the Pharos may have gone to help build the church it is obvious that the great mass of Roman materials employed was taken from other buildings. There is yet to be seen to the N.E. of the Pharos, and close to the church, a large block of Roman masonry, which must, from its size and weight, be in its original site though overturned, apparently from undermining. To this I call your attention, and to the ramparts.

A few years ago a Colonel in command of the Royal Engineers, with happy inspiration, resolved to clear the Pharos of the surrounding accumulation of earth, the modern insertions of brickwork, to open the entrance, and to remove the modern wall connecting it with the church. This was done, mainly under the superintendence of Lieut. Peek, to whom we are indebted for the plan, and for the accompanying notes. His remarks:—"The removal of the masonry from the upper window on the south side has disclosed the Roman work in a perfect state. It presents two features of interest: one, a low, dwarf parapet wall of Roman tile across the external opening as if for the security of a watch-man observing the French coast, of which no traces are to be found in the other windows, and is also remarkable for the manner in which the reveals of the window are stopped short of the external face, an impediment which may perhaps have been adopted to hide the awkward effect produced if the external face were carried up in one uniform instead of perpendicular. As far as the different stories were concerned, I found an opinion rife that the original building had been square; and that its present octagonal

* *Obeliscus.*

† Are there windows on four sides? I think not. They cannot be properly termed *narrow*.—C. R. S.

form was due to the action of time in rounding off the corners, and to the improvement effected by the Mediæval restorer; but on digging down in one of the inner sides, the edges of the courses of Roman tile in a set-off of the foundations following the lines of the octagon disproved the supposition."*

"As far as I can judge, the original tower consisted of five stories, lighted on each of the cardinal sides by windows 2 ft. wide, except on the upper floor, where the width was increased to 4 ft.; and the ground floor, where an opening to the south, 4 ft. wide, served as a doorway. The south side differed from the others in having no windows on the alternate floors; and an increase of width to 3 ft. given to the middle window. A prominence is thus given to the south side, which may have some connexion with the fact that it looks directly on Cape Grisnez, the nearest point of France, if we suppose the use of the building as a watch-tower to have been intended in the original design. Particularly as the east and west sides are thus directly facing the two adjoining military stations, Richborough and Hythe (Lymne), which, though not directly in view, could, no doubt, give a signal by a beacon fire of any approaching enemy."

"The material used throughout is tufa, exactly similar to that found in the valley below, near Buckland, banded together by courses of tile every 4 ft.; and with a view, as I suppose, of drying the great mass of masonry, perforated by air-holes from inside to outside, at irregular intervals."

"The Mediæval reconstruction consisted in covering over the lines of the Roman Pharos with a casing of stone and squared flints, and blocking up the windows so as to form a dark tower, divided into two stories, which, from its doorway facing the west door of the church, may have been applied to the purposes of a crypt, or as a temporary resting-place for the bodies of persons to be buried in the graveyard adjoining. Above this, a light ornamental belfry was added. The sudden decrease in size at the bottom of the superstructure is probably the result of the upper portion of the Roman work having suffered from time, and being unfit to bear the additional weight, and having been, therefore, trimmed.—Yours very truly,

(Signed) W. Emerson Peek.

February 2nd, 1872.

To C. Roach Smith, esq."

We must all be deeply obliged to Captain Peek for the perseverance and skill he has shown, and for communicating the result so good-naturedly. I have only, in addition, to draw your attention to the very superior manufacture of the tiles. They are of very unusual size, and of superior workmanship, where all is good. In the Dover Museum is a perfect specimen, asserted to have come from the Pharos (if I mistake not), I have also figured one in my "Richborough, Reculver, and Lymne," copied from a plate in the "Archæologia," vol. v., for the sake of an inscription. No doubt the four circles upon it are projections, as in that in the Museum, reversed by error of the original artist. The tiles in the Pharos do not appear to be stamped. That referred to was from a building in Dover, probably of later date. This stamp of the makers, CL.BR., which is the only inscription found at Dover, occurred rather frequently upon the tiles found at Lymne. It refers to the British *Classiarii*, or Marines, whom we also find, at some unknown period, in the North of Britain (see Dr. Bruce's "Lapidarium Septentriale," p. 199).

As Montfaucon and the Pharos at Boulogne have been referred to above, it may be in place here to insert a note I made some time since.

The Pharos at Boulogne is described pretty fully by Bernard de Montfaucon in the "Mémoires de Littérature tirés des Registres de l'Académie Royale des Inscriptions et Belles Lettres" (1718 to 1725). Amsterdam, 8vo., 1731, tom. ix., p. 278. It was octagonal. Each side was, according to Bucherius, 24 ft. to 25 ft.,—its circuit therefore, 200 ft., and diameter, 66 ft. It had twelve entablatures, or kind of galleries, as is seen from without, not comprising the basement, concealed by the small fort built by the English, in 1545, around it. Each entablature formed by the thickness of the wall below was a sort of small gallery, of 1 ft. 6 in. wide. Thus this Pharos, like others, diminished in its stages. It was called *Turris ordens*, or *Turris ordensis*, probably from *Turris ardens*. The people of Boulogne called it *La Tour d'Ordre*. Eginard says that Charlemagne (A.D. 811) restored it, and placed a night-light upon its summit, as a guide for ships. Being undermined for stone, both the Pharos and the fort fell on the 29th of July, 1644. C. Roach Smith.

* The octagon was a favourite form of the Romans, and occurs very frequently in buildings, in sculpture, and in ornamental designs, especially in the tesselated pavements. The Pharos at Boulogne was octagonal.—C. R. S.

CRYSTAL PALACE SCHOOL OF ENGINEERING.

The summer term of this school was brought to a close on Saturday last, when, as usual, a number of the friends of the students and others interested in the school were invited to an inspection of the students' work, in the drawing-office and the different workshops, and to witness the presentation of the certificates awarded by the examiners, who, on this occasion, were Messrs Richard Hassard, C.E., and William Jacomb, C.E. Colonel C. Brisbane Ewart, C.B., R.E., presided at the closing meeting, and presented the certificates awarded to the students.

The first term of the three into which the year is divided is spent by the students in the drawing-office, in which a large number of drawings were shown, some of them of a high degree of excellence. The subjects relate to mechanical and civil engineering, including structures of various kinds. On entering the drawing-office the attention of the freshman is directed to some such document as the following imaginary "order":—

"Please design for me a queen-post roof, of 40 ft. span, the principals of which are to be 6 ft. apart from centre to centre. The angle of the roof is to be 30°, and the rise of the tie-rod in centre 2 ft. The covering is to be slate, on ¾-in. boarding; and there are to be two purlines of deal on each side, resting on the struts. The principal rafters are to be of T-iron, as also the struts. The general rafters are to be of wood, placed 1 ft. apart from centre to centre. The elevation of the principal is to be to a small scale, and details are to be shown of the connexions of all the parts."

Similar "orders" are given to the students for horizontal expansion engines, strong double-purchase crabs, hollow plunger pumps, and other objects within the domain of mechanical engineering. The students' replies are given by the production of the required drawings, accompanied by specifications and detailed estimates. The next term is spent by the student in the pattern-shop and foundry. The patterns exhibited were of a very miscellaneous character, some of them being for the trade. Many of them were beautifully made, and seemed likely to "draw" well. The third term is devoted to the fitting and smith's shop. In the fitting-shop the effective machine tools of the school were shown at work, driven by a horizontal engine of three horse-power, nominal, made by the students. Since the opening of the school, at the beginning of 1873, six of these engines have been made by the students. During last term they have made one engine and part of another. The civil engineering course requires attendance for two additional terms.

After the inspection the company assembled in the lecture-theatre of the school, Col. Ewart presiding. Mr. F. K. J. Shenton read the examiner's report. Thirty-one of the students were eligible to go in for examination upon the subject of "Railways: their Construction and Appliances." Of these twenty-six passed and received certificates, all but one of the number receiving a second certificate for merit in the particular department of the course he had been passing through during the term. The highest number of marks attainable for the "Railways" examination is 232. Mr. A. Brook was first with 201 marks, and had also a certificate for fitting; A. Marshall was second with 200 marks. The remaining twenty-four students were placed as follows, omitting the numbers of their marks:—H. E. Read, and second for drawing; C. B. Penlington, and for drawing; W. J. Bean, and for fitting; E. A. Thomson, and second for fitting; S. Firth, and for patterns; R. Moyes, and for patterns; H. Gay, and first for drawing; J. Mayhew, and second for patterns; W. B. Dutton, and for fitting; J. Suart, and for patterns; E. A. Brine, and first for fitting; F. S. Richardson, and first for patterns; L. Ewing, and for drawing; A. W. Payne-Gallwey, and for drawing; H. le G. Solly, and for drawing; A. H. Adams, and for fitting; A. W. N. Lewis, and for Civil Engineering, first term; H. Fenhoulet, and for drawing; J. H. Preston, and for fitting; F. A. Wythes, and for fitting; W. H. Payne-Gallwey, and for drawing; H. S. Vogan, and for patterns; H. Field, and for drawing; and P. W. Foster, "Railways" Examination, and for patterns. Thirteen certificates were awarded for drawing. In addition to the students named in the above group, certificates were awarded to J. E. Corker, A. G. Hudson, S. Hewitt, and E. H. Wallick. The following were, in addition to the students already named, included in the eleven to whom certificates were awarded for work in the pattern-shop and foundry:—P. Baylis, A. Emery, E. Wilson, and H. Barnett. For work in the fitting and smith's shop, certificates were awarded to ten students, including, in addition to those already named, S. P. Sheraton, and T. S. Tilley. In the Civil Engineering section, first term, the following certificates were awarded for general surveying, and the preparation of plans and sections for Parliamentary deposit:—H. J. Saunders, F. Fitzherbert, G. E. Bokenham, H. Edwards, and A. W. N. Lewis. For the same section, second term, for calculation of strains, and the preparation of general and working plans, specifications, and estimates of a railway and dock, the following certificates were awarded:—M. Harding and G. Marston, equal firsts; W. H. Fisher, and A. H. Wilson, second and third respectively. The Examiners conclude their report by saying:—"We have much pleasure in stating that the general proficiency of the students is evidence of the practical value of the course they are passing through, which should fit them for commencing their duties in the several branches of civil and mechanical engineering; we further express our satisfaction in the general training of the students, which reflects great credit on your able principal, Mr. J. W. Wilson."

After presenting the certificates, Colonel Ewart addressed the company congratulating the directors on the prosperity of this most useful school, that was just what was wanted to equip young men for entering upon the professions of civil or mechanical engineer.

Mr. J. W. Wilson, the principal, in replying to a vote of thanks, said he felt personally grateful to the examiners for the time and attention they had bestowed. Mr. Hassard had been at the trouble to work out all the questions for himself; that made the awards of so much higher value. He spoke in terms of special approbation of several of the students; amongst others, "young Vogan," who had been awarded two certificates, and who was so short as to have to stand upon a box to enable him to work at the bench. Mr. Wilson gave some interesting particulars as to the positions and occupations of some former pupils of the school.

THE INHABITED HOUSE DUTY AND POOR RATE.

WHAT CONSTITUTES A "HOUSE"?

The Court of Exchequer has just ruled that it is legal to charge house-duty and poor-rate on the same house on two distinct systems. The question came before the Court in the case of "The Attorney General *v.* The Westminster Chambers Mutual Tontine Association." The Association own the "Westminster Chambers" in Victoria-street, Westminster, a row of seven blocks of buildings, having seven principal entrances. Each of these blocks is divided into two ranges by an internal staircase, which has only one door at the principal or street entrance, and each block is in its internal arrangements structurally divided into different tenements or suites of rooms, which are quite distinct from each other, like chambers in the Inns of Court, and they are let and occupied separately as chambers, offices, or residences. Each tenement or suite of rooms has an open door opening on to a staircase common to all, and also an inner private hall or passage, a water-closet, and a lavatory. There are no means of communication between those tenements or suites of rooms other than the staircase common to all. Nearly all the tenements or suites of rooms are let and used as offices or chambers for business purposes, and they are locked and unoccupied during the night. A few only of the tenements or suites of rooms in three of the blocks are used as residences.

The outer or street door to each block of building is kept locked at night, and a porter, who is appointed by the Association, resides in a distinct set of rooms in the basement of each block of building, and has a key of and access to the suites or sets of rooms in such building in the occupation of the tenants as their servant.

The Association provide gas for the staircases, halls, and passages, and water for the entire buildings, and pay all rents and taxes in respect thereof, charging their tenants higher rents in consequence.

Power is given to the defendants to demise or sell any set of apartments separately from the rest of the house. None of the suites of rooms have been sold, but the greater number have been demised for seven, fourteen, or twenty-one years.

Each block is not inserted in the valuation list prepared under 32 and 33 Vic., c. 67, as one hereditament; but each of the 117 tenements or suites of rooms of which the seven blocks consist is treated as a separate hereditament and assessed accordingly, the name of the tenant of each such tenement or suite being inserted as the occupier and separately assessed to the poor-rate. It has already been held, by the decision of the Court of Queen's Bench, that each tenement or suite was, for the purposes of a poor-rate, a separate rateable hereditament. Many of the 117 tenements or suites are unlet, and some never have been let, and therefore the defendants derive no rent therefrom. The Crown contended (1) that for the purpose of inhabited house duty the property should be assessed as several dwelling-houses only on the defendants as occupiers under 48 Geo. III, c. 55, schedule B, rule 6; and (2) that the value of each of the seven blocks was properly represented by the aggregate sum of the values which appear in the valuation list as those of the separate hereditaments occupied by the defendants' tenants.

The defendants contended (1) that each of the 117 tenements or suites should be separately assessed on the tenants under rule 14 of the above-mentioned schedule; and (2) that, if the Crown was right on the first point, then, since many of the tenements were unlet, and the values in the valuation list did not represent the annual value of the blocks to the defendants, the Crown ought to make a separate valuation on the defendants of each block under 32 and 33 Vic., c. 67, section 76.

The majority of the court, viz., Barons Bramwell and Cleasby, held that the Crown was right on both points; Chief Baron Kelly, however, held that the defendants were right on the first point.

The result of this decision is that each suite of rooms may be assessed for poor-rate separately, while each block of buildings, whatever the number of separate suites, is to be charged house-duty on the total value of the various suites.

INNER CIRCLE COMPLETION.

A "LITTLE BILL," passed in the expiring session' gives powers to the Metropolitan District Railway Company to make a short junction line at Hammersmith, which will connect the Midland and the South-Western Companies' lines with the District system, and give them access to the Mansion-house Station. This station, because of its being a "dead end," is already subjected to a crowded traffic, greater than it can well bear, an inconvenience that would be completely obviated by the completion of the inner circle, and the Mansion House being made a way-side station.

There can be little doubt that this short, inexpensive link at Hammersmith will be constructed at once, inasmuch as a few months, six at most, will suffice to make it. Its making, and the demonstration it would be, of important traffic advantages that it would place within the reach of the Midland and South-Western Companies, always provided that the circuit is completed, should make those companies the allies of the Metropolitan Railway Inner Circle Completion Company.

The Midland, by the completion of this link at Hammersmith, and the filling up of the gap between the Mansion House Station and the Liverpool-street Station of the Metropolitan line, would have a London circuit communication. The South-Western, at present almost shut out from the North side of the Thames, and from the City, excepting by transfer to the South-Eastern Company at Waterloo Junction, would then have independent access to the City, and to the Great Eastern, King's-cross, and St. Pancras Stations.

It is also interesting to notice that the making of the short Hammersmith link and the completion of the inner circle would provide the outer circle of railway communication round London recommended many years ago by a joint committee of Lords and Commons. This outer circle would touch, or pass quite close to, the following among many other important points:—Victoria Station, Westminster Bridge, Charing-cross Station, the Temple, Blackfriars Bridge, Mansion House Station, Cannon-street Station, Eastcheap, Fenchurch-street Station, Aldgate, and then, turning to the north and west, the stations of the East London, communicating with the Brighton and South Eastern systems, the stations of the Great Eastern, North London, and London and North Western in Liverpool-street and Broad-street; thence, northwards, to King's-cross and St. Pancras Stations, Camden-road, and Kentish Town, Haverstock-hill, Finchley-road, Cricklewood, Harrow-road, Willesden Junction, Acton, Hammersmith, and on to the starting point at Victoria Station. It may be readily apprehended that a completed railway communication connecting such important points with each other would be a great public convenience, that those who travel most will be the readiest to appreciate. The advantages, however, that seem so nearly within reach are contingent upon the execution of the short link of the Metropolitan District line at Hammersmith, which that company will doubtless make at once, as an important feeder to its traffic from the west. An essential and more important requirement is the completion of the inner circle by a junction of the Metropolitan and District lines at their present eastern termini.

The Metropolitan Company, it appears, intend to continue their line to a terminal station at High-street, Aldgate, that will be a spur from the inner circle completion line. Whether this extension will prove remunerative, if constructed, remains to be ascertained, but it would seem, to say the least, open to doubt.

THE CHAMPION ROCK BORER.

IT may interest your readers to have some statistical information about this compact and well-arranged rock-borer, which is the property of Messrs. Ullathorne & Co. A thoroughly good rock borer is one of the most important mechanical contrivances which can be conceived, and it has so many requirements that it is very difficult to meet them all, but I must say that I was very much pleased with what I saw, during the crucial trial of this little apparatus, which I had the pleasure of witnessing a few days ago.

The No. 2 size Champion Rock-borer, which I saw in action, weighs 1 cwt. 3 qrs., and is connected with a telescopic tripod weighing 3 qrs., so that it is very portable, stands steadily upon any uneven surface, and will work with equal facility in any position, vertical or horizontal. The drill or chisel used was a round steel bar, flattened at the lower end and brought to a V-edge. The drill is made fast to the reciprocating piston-rod of the apparatus by means of an ingenious expanding clip, which ensures the whole being concentric and firm. The piston is packed with Ramsbottom's steel rings. The motive power is either steam or compressed air, and is admitted under the piston, so as to raise it the required height, and is then transferred to the other side so as to cushion the blow and overcome the inertia when the stroke is made. The drill and piston are rotated slightly during the upper stroke, so that the nose of the tool drops in a different position each time, and it is so arranged that in case of an obstacle occurring so as to prevent this motion, a friction clip secures the apparatus the danger of breaking. The feed of the drill is regulated by an ingenious automatic action, which only works in proportion as the drill enters the material upon which it is acting. It works on the upward stroke only, and is so arranged that if neglected, and the screw becomes jammed, a friction bar will rotate, and thus a breakage be avoided. The valves of this apparatus are cylindrical, and partially rotate, the motion being imparted by a rocking saddle, actuated by a stud from the lower part of the machine; an external stud enables these valves to be moved by hand, so that the cylinder can be cleared of water at starting.

During the experiments which I made with this apparatus upon a very hard piece of Guernsey granite, I obtained the following results:—the diameter of the drill used was a little under 2 in. and made a 2-in. hole. The piston reciprocated with from 600 to 800 strokes per minute, and had at the back of it 45 lb. of steam, and in three minutes the distance the drill entered the granite was 12 in. The tool had a fair edge at starting, but was quite round and blunt when the hole was complete; this did not, however, seem to interfere with the effect produced, which I believe was entirely due to the concussion and rotation. When this experiment was completed a smaller drill, 1½ in. was introduced, and this entered the granite 13 in. in two minutes and a half.

If I am not mistaken, we shall hear more of this little rock-borer; there is that about it which gives the impression that it is meant for work, and is what is called a likely tool; anyhow, it is well worthy of the consideration of engineers and contractors who are engaged in driving headings, making tunnels, or blasting.

J. W. WILSON,
Principal of the School of Practical Engineering, Crystal Palace.

THE PROPOSED SANITARY AND EDUCATIONAL EXHIBITION AT BRIGHTON.

IN connexion with the Social Science Congress, to be held at Brighton, from the 6th to the 16th of October next, it is intended to form, as on some previous occasions, an Exhibition of Sanitary, Educational, and Domestic Appliances. It will be set up in the Corn Exchange, adjoining the Dome of the Pavilion, Brighton.

The object of the Exhibition, as heretofore, is to bring under the notice of the public generally, and particularly those who are interested in the social, sanitary, educational, and economical questions, the latest scientific appliances for improving the public health, promoting education, and advancing social economy. These will be classified under the following heads, viz.:—

1. *Warming, Ventilation, and Lighting*, which will comprise registers, grates, stoves, valves, flues, furnaces, boilers, fuel economisers, steam warmers, hot air and water systems of warming, means of ventilation, regulators for preventing smoke and waste, air reservoirs, gas reservoirs and apparatus; lighting by candles, gas, oils, mineral oils, lamps, lanterns, lamp pillars, gaseliers, jets, reflectors, conductors, with drawings and plans, &c.

2. *Domestic Appliances and Economic Apparatus*, to consist of stoves, ranges, kitcheners, and ovens (heated with gas or otherwise) for roasting, baking, or boiling, &c.; natural and artificial fuel, economisers of fuel, food manufacturing machines, laundry machines and cleansing implements, household ware, culinary utensils, sewing machines, and articles of domestic utility and household economy; means of preventing injuries and diseases which specially attach to industrial occupations.

3. *Sanitary Architecture and Appliances*, for outward and interior ornamentation, including cisterns, lavatories, baths, closets, filters, fountains, indicators, paving and roofing materials, ornamental bricks and tiles, garden ornaments, terra-cotta, selenitic compounds, cements, plaster, concretes, slag, stoneware and clayware, building materials, models of dwelling-houses, cottages for the poor, &c.

4. *Sanitary Engineering and Methods of Disinfecting.*—All things connected with the supply of water, sewerage, drain pipes, tubes, valves, sinks, taps, traps, troughs, closets, commodes, urinals, filters, water-waste preventers, sewage and drainage contrivances, disinfecting apparatus, deodorants, antiseptics, &c.

5. *Food and Clothing.*—Specimens of food and confectionary, food for adults and children, conservation of food, condensed fluids, preserved meats, fruits, vegetables, and other articles of general consumption; beverages, analyses, and specimens of adulteration in various forms; articles of dress and clothing best adapted for men, women, and children, in all weathers; sanitary cloths, felts, waterproofs, India-rubber goods, and hygiene in clothing generally; beds and bedding for hospitals and tents, and appliances for the sick chamber and for the comfort of invalids; life-buoys, swimming-belts, and fittings for protection of life from drowning, and means for the prevention of accidents from fire, water, and other causes.

6. *School Furniture and Educational Apparatus*, comprising models and plans of school buildings; school desks and furniture, instructive toys, gymnastics, maps, drawings, books, stationery, prints, figures, and other articles used in teaching; school clocks and decorations.

The exhibition will be opened with an address, to be delivered in the dome, to which the public will be admitted free; and lectures on the various classes of exhibits are being arranged for.

The regulations and any desired information may be obtained from Mr. James Robinson, of 1, Adam-street, Adelphi.

We cordially invite our readers, whether for their own sake as manufacturers of such appliances or as desirous of the general good, to see in what way they can best aid in rendering this exhibition valuable.

New Law Courts for Liverpool.—A communication from the First Commissioner of Works was read on the 4th inst. before the Liverpool Town Council stating that so soon as the estimates for the next financial year were brought forward, the Board of Works would consider the erection of the proposed new Law Courts at Liverpool. The site chosen is that at present occupied by the Victoria Hall, where the Moody and Sankey services were held.

CONCRETE SLAB COTTAGES.

The economical construction of cottage dwellings is a subject which has of late years received a great deal of attention, but it must be admitted that the practical results hitherto attained have not been sufficient to satisfy either the philanthropist or the capitalist. It is essential to a successful solution of this question that a labourer's or artisan's cottage should fulfill the following conditions, viz. :—1. It should contain the requisite accommodation for a man and his wife with a family of say four or six children, separate sleeping-apartments being provided for the boys and girls. 2. The cost of construction should be so moderate as to admit of the cottage being let at such a rent as can be conveniently paid by the tenant, and yet yield a fair return for the outlay. 3. The mode of construction should be such as to avoid the necessity of frequent repairs. To these three principal requirements others of minor importance may be added, such as facility of construction without the aid of skilled labour, and also that the external appearance of the structure should be such as to please the eye without necessarily involving any great cost for ornamentation. It has been abundantly proved that proper accommodation for a labourer and his family cannot be provided at a suitable rent in cottages constructed in the ordinary manner, and of the materials usually provided for the purpose. 250*l.* appears to be the ordinary estimate for a pair of brick-and-timber-built cottages, with slated or tiled roofs, and although this sum may be considered a moderate price for the work done, there can be no doubt that it is in excess of what can usually be afforded for the purpose. When from the probable rent to be obtained are to be deducted rates and taxes and the cost of repairs, it will be evident that cottage-building, under such conditions, is not likely to become a very attractive investment.

The construction of the walls of cottages in concrete instead of brick has of late somewhat reduced their cost, but the use of this material involves the construction or purchase of a somewhat costly apparatus, and the walls, when erected, must be stuccoed, thereby requiring the aid of a skilled artisan.

By a plan recently invented and patented by Mr. W. H. Lascelles, of Bunhill-road, London, he professes to be able to dispense almost entirely with skilled labour; the assistance of a carpenter only being required to set up the skeleton framing of the structure. The framework of the building is constructed of wood much in the same way as the framework of a timber-built or lath-and-plaster house, except that the vertical standards or quarterings are about 3 ft. apart, instead of 1 ft. 6 in. or less, as is usually the case in wooden houses. The walls are constructed of concrete slabs about 1½ in. thick, made of fine ashes, or breeze, or crushed coke, with a proper proportion of Portland cement. The slabs are made about 3 ft. long by 2 ft. wide, and are cast in moulds, iron rods being embedded in the concrete, to strengthen the slabs, which are faced on both sides so as to require no further finishing. The face of the mould may be so prepared that the outer face of the slab would look like wall tiling, and a suitable colour may be added to the concrete to assist in giving this appearance should it be desired. The slabs are rebated at their sides and ends so as to fit into each other, and they are fixed to the uprights of the wooden framing by means of screws, the joints being made tight with cement. The inner partition walls are made of the same kind of concrete slabs, finished smooth on both sides. The ceilings and floors are also made of the same kind of slabs, but finished smooth on one side only. The roof is constructed of similar concrete slabs. The slabs may be easily cut with a saw, so that they may be used to form the chimneys, which are plastered on the inside.

The patentee claims that this mode of constructing cottages possesses many advantages, not the least of which is that a dwelling of neat and even ornamental appearance may be constructed at a cost much less than one built of brick in the plainest manner, as there is a great saving in the weight of material used, the mere carriage of which is an important item in some places. Another advantage is that increased space is obtained both in walls and in roof, and cleanliness is insured, as there will be no hollow spaces to harbour vermin. Dispensing in a great measure with skilled labour is also an important point; as one artisan to prepare and set up the wooden framework is the only skilled man that will be required; mixing the concrete, filling the moulds to form the slabs, and screwing the slabs to the wooden framework being simply labourers' work, in which they soon become expert. Mr. Lascelles is constructing several cottages at Croydon on his plan, which certainly appears to deserve inquiry.

TOOLS AND CONTRIVANCES USED IN HANDICRAFT.

The course of Cantor Lectures on "The Material, Construction, Form, and Principles of Tools and Contrivances used in Handicraft," delivered at the Society of Arts by the Rev. Arthur Rigg, at the beginning of the year, and referred to by us at the time, are now being published at the Society's "Journal." The first two, already issued, refer wholly to early nations, and will be found very interesting.

THE SHAFTESBURY PARK ESTATE COMPANY AND THE WANDSWORTH BOARD OF WORKS.

The Shaftesbury Park Estate Company and the Wandsworth District Board of Works are again at issue respecting the drainage of the company's houses, and the Board now threaten to cut off the connexions made with the sewers. It may be remembered that the houses on the estate were originally drained at the back, which the Board objected to, and the result of proceedings in Chancery taken by the company to prevent the Board interfering with the drains was, that the company were ordered to conform to the Board's regulations as to drainage. Not having done so, the company were last week desired to attend the meeting of the Board to show cause why the connexions with the sewers should not be cut off. Mr. Longcroft attended on behalf of the company, and stated that any alteration would greatly inconvenience the occupiers, and he suggested that some arrangement should be entered into between the company and the Board. Whereupon the chairman stated that it was the unanimous decision of the Board that the drainage must be in front of the houses. He added that everything that could be done had been done by the company to oppose the District Board, by the filing of bills in Chancery, and going before the Metropolitan Board of Works, and the company now came to the District Board and asked them, after the decision given, and after all the trouble they had been put to, to alter their determination. The answer of the Board simply was, that the order to disconnect the drains must be carried out. The effect of this decision will necessarily involve the reconstruction of the drains on the estate, and a large expenditure. Why were not the proper inquiries made in the first instance?

OLD BROMPTON, NOW SOUTH KENSINGTON.

We propose recalling another visit to what was lately known as Old Brompton.* Wending our way from the head of the Grosvenor Canal, the site of which is now spanned by the iron ribs of the Victoria Station, we cross some of the land appertaining to Ebury Farm, to the king's private road, and so on to the elbow of the road which crossed the Tybourne brook, whose meanderings might be traced through its sedgy banks on the site of the present Cadogan-place.

From the partially-built Sloane-square, we turn down a narrow lane of rustic buildings till we reach the back of Colville's nursery gardens on the left, and Blackland's house on the right. The fields of Box Farm, and the open Chelsea Common are before us, and the present Marlborough-road, at that time a country lane, brings us to the Admiral Keppel Tea-gardens. Hence, by the narrow lane with the pleasant garden-grounds and hedge-rows on either side of us, we arrive at Old Brompton at the very spot where the South Kensington train now lands its passengers.

The long country ramble, occupying some half to three-quarters of an hour, has been pleasant enough. The birds carol in the air, or chirp in the hedgerows, and sweet odours fall upon the sense in the freshly-mown grass, or from the blossoms in the gardens. The general business of life was slower certainly then than at present, when the return-ticket is available in a quarter of an hour perchance, and the same business is transacted within the sixty minutes, which in the old time would have occupied half a day.

We will not pause however to inquire if the general amenities of life have suffered by the change, or the artificial gained strength in our constitutions by that intimacy with the grim genius whose food is coal and water, whose pulsations are in the piston-rod, whose breath is steam, and whose scream is a lively imitation of sensation. We will defer moralising upon the abuse of the boon which genius gives to man, or it would bring us to the old old story of "Midas" over again. We will at present take things as we find them, and we are in the neighbourhood of the collection of the art-treasures—on the very ground which but a few years since held the largest collection of natural growth and artificial culture in the country, the proprietors of which were Messrs. Loudon & Wise. When enjoying the well-cooked chop in the artistic grill-room of the South Kensington Museum, and whilst noticing the excellent arrangements and agreeable accessories to comfort and convenience, we are surprised at the small space of time that has passed since this site formed a portion of walled-in private grounds in the occupation of a private gentleman, although of public name (Greenwood), the partner in the well-known firm of army agents and bankers, Messrs. Cox & Greenwood, Craig's-court, Charing-cross. It was here that the Duke of York and other celebrities of the times had been entertained.

From the year 1681, fifty-six acres of land, extending from the Kensington-road to the boundary of these private grounds in Old Brompton were devoted to horticulture. Curiously enough, the present Horticultural Gardens of South Kensington occupy the site of those once maintained by Loudon and Wise, whose collection of all sorts of trees and shrubs was spoken of by Evelyn with such eulogy, and whose artistic adornments at Kensington Gardens evoked the praise of Addison. The stock of plants and roots was so extensive, that, valued at only one penny each, it amounted to the sum of 40,000*l.* It was in those gardens that the gilly-flower was cultivated to such perfection as to obtain for it the well-known name of the Brompton Stock. The site of Trinity Church and Brompton-square were all market-grounds,—in the time when Farren, Mrs. Faucit, John Reeve, and Yates (all inhabitants of this locality subsequently) were young people, for Miss O'Neill, Mrs. Siddons, and John Kemble had disappeared from the play-bills, and Kean and Young had occupied the attention of the Town; nevertheless, the old names took precedence in the remembrance of the playgoer. But of Brompton Park Nursery, perhaps, more might be said than of any other in the kingdom. For 170 years it had flourished in all its beauty. It had been spoken of by two of the most renowned men of the time,—men as amiable as excellent, and men of extensive power and genius. That half-mile of wall grew the finest of vines, and they had thrown out tendrils to the soft summer air, and had withstood the winter frost undisturbed through all the stirring time of revolutionary action even before the weak and cruel simpleton James had been hurried unceremoniously from Whitehall by his son-in-law,—even to the change of dynasty from the house of Stuart to that of Hanover,—even to the period of the Great World's Fair in 1851, when the moral revolution in society became greater than any other which had preceded it.

To part with this old nursery was to part indeed with an old friend of many associations. Close adjacent was the nursery of Mr. Kirke, whose careful cultivation figures forth in many a number of the "Botanical Register," published in the year 1815. The editor of that journal of horticulture was Sydenham Edwards, whose grounds were in great favour at the period, and occupied the space which the present Hospital for Consumption and Diseases of the Chest, with the streets adjacent, has long since covered. These grounds, which extended from the Fulham-road to Old Brompton, remained much the same till 1844, when the before-mentioned Hospital was the first intimation of an altered site.

We must remain, however, in the Old Brompton-lane a little longer, so narrow at the Bell and Horns that you might fairly jump across it, with the elms and limes, and poplars and aspen boughs forming a green vista to look down from the hot and dusty Fulham-road. One mile from Hyde-park-corner in this suburb and you were shut away completely from the bustle and noise of the town, and had the sweet odours from the strawberries in the early morning, as the women passed you with their baskets on their heads, from the neighbouring grounds.

That most agreeable novelist, and master

* See vol. xxxii., p. 828.

OLD BROMPTON, NOW SOUTH KENSINGTON.



View of the Old Brompton-road, near the "Hoop and Toy," as seen from Onslow-terrace in 1833.

of literature, the late Lord Lytton, gives a very pretty picture of this suburban locality, in his novel of "Godolphin." Though slightly satirical, it was perhaps applicable to the period. "Lord Falconer rattled on, as they drove along the brilliant streets, through a thousand topics, of which Godolphin heard as much as he pleased; and Falconer was of that age and those spirits when a listener may be easily dispensed with. They arrived at a little villa at Brompton; there was a little garden around it, and a little bower in one corner, all kept excessively neat, and the outside of the house had just been painted white from top to bottom, and there was a verandah to the house; and the windows were plate-glass with mahogany sashes, only here and there a Gothic casement was stuck in by way of looking 'tasty,' and through one window on the ground-floor, the lights shining within showed crimson silk and gilded chairs, and all sorts of finery. Louis Quatorze in a nutshell! The reader knows the sort of house as well as if he had lived in it. Ladies of Fanny Millinger's turn of mind always chose the same kind of habitation. It is astonishing what a unanimity of taste they have; and young men about town call it 'taste' too, and imitate it in their own little *tusculums* in Chapel-street." "After having threaded a Gothic hall 4 ft. by 8 ft., and an oval conservatory with a river god in the middle, the two visitors found themselves in the presence of Fanny Millinger."



Part of Methwold's Almshouses (1870).

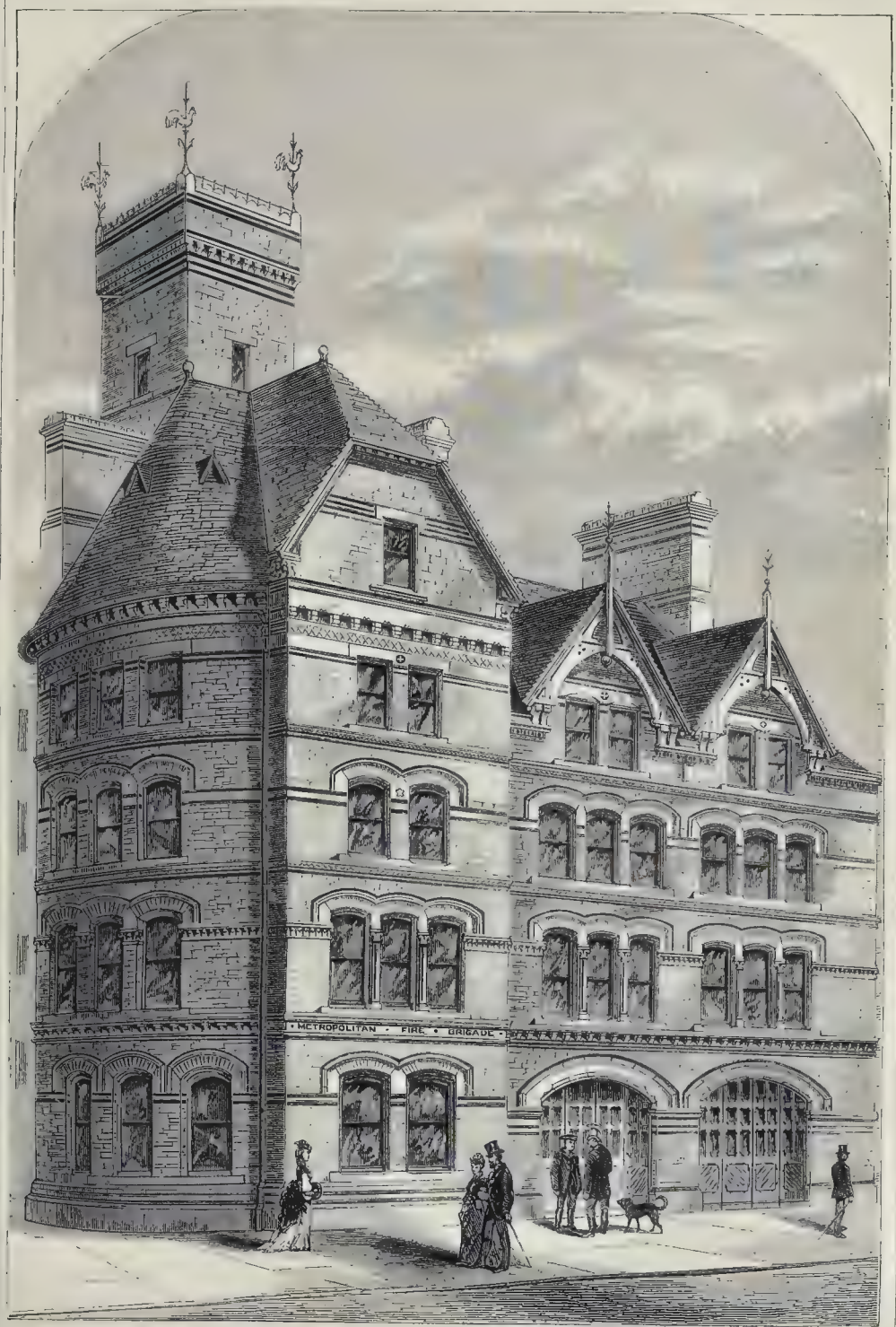
The repose and seclusion of "Old Brompton" were especially well regarded by all those whose lives were passed before the stage lamps.

Pass we on, however, to the lane which led by a wicket-gate into Ramsay's Nursery, celebrated for the careful culture of the yellow rose, before entering which, however, we must look at those quaint old Almshouses in the time alluded to at a much lower level than the ground adjacent, but since completely obscured by their loftier surroundings. So altered is the site that we had some difficulty in identifying it. Nevertheless, there they were, some twelve months since, bringing as it were the past and present in strange proximity.

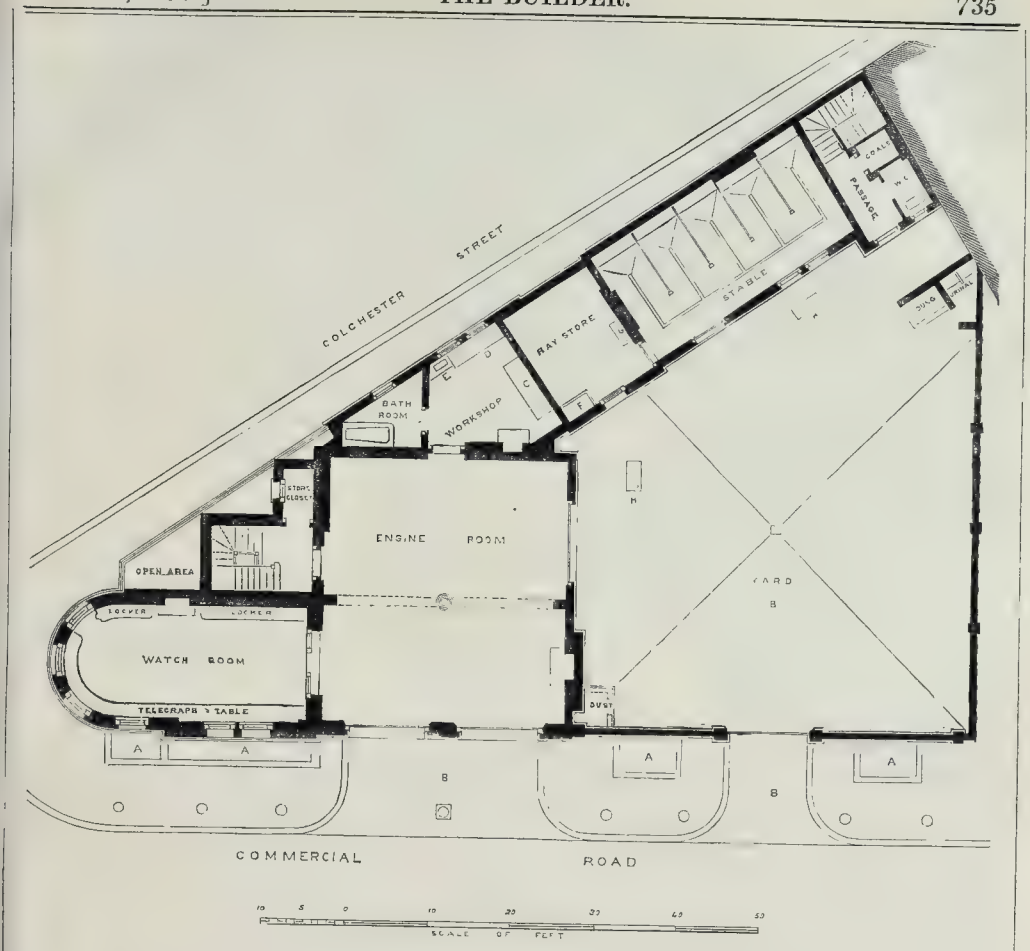
The houses of this charity of William Methwold, esq., bequeathed by will bearing date February 28, 1652, have but very recently disappeared. It was a hospital for six poor women, such to be single, aged fifty years, and of good repute. Sixteen acres of land were settled upon the charity, and each almswoman received 4*l.* per annum. Difficulties occurring in fulfilling the will, the parish filed a bill in Chancery, July 17, 1758, to obtain payment of the pension, and the decree at this date was fully effected. Subsequently the charity was paid by the proprietor of the Hall House Estate.

They occupied three sides of a small quadrangular space, and, surrounded as they were with pleasant garden-grounds in the nook of a retired country lane, formed a pretty little rustic bit to look upon.

The homely and picturesque spot has passed away, like many another; the nightingale warbles here no longer; and the sixteen acres of land are, doubtless, now of such a valuation as could never have been conceived, even in the wildest dream of William Methwold. It will not be amiss if one of these days we inquire as to the appropriation of the funds.



THE FIRE-BRIGADE STATION IN THE COMMERCIAL ROAD, LONDON.—Mr. George Vulliamy, Architect.



NEW FIRE-BRIGADE STATION, COMMERCIAL ROAD.—*Plan.*

A. Iron grating.
B. Mount Sorrel paving.
C. Movable table for cleaning hose.
D. Vice-bench.
E. Sink.
F. Corubin.
G. Cupboard.
H. Inspection pit.

THE NEW FIRE BRIGADE STATION, COMMERCIAL ROAD.

We give a view and plan of the new Brigade Station in the Commercial-road, London, which has been erected for the Metropolitan Board of Works from the designs of their architect, Mr. George Vulliamy. This is the superintendent's station of the C district, from which there is telegraphic communication with the chief station in Watling-street, and with each of the stations in the district. Accommodation is provided at this station for the superintendent, twelve firemen (six married and six single), one coachman, five horses, three fire-engines, and two fire-escapes. The superintendent occupies six rooms on the first floor. The single men have a kitchen and two bedrooms, and the married men have each a kitchen and two or three bedrooms, according to the necessity of their families.

LOOK AFTER YOUR CISTERNS.

Sir,—The value of a good supply of water, thanks to your efforts and those of other sanitary reformers, is much better appreciated than formerly, but the public mind still needs to be impressed with the fact that good store is not the only thing to be desired, obtained, and paid for, all further care concerning it being dismissed. Open cisterns require cleansing more or less frequently, and especially at this season, or else water, that very useful agent of health, may convey disease, as its very usefulness for cleansing depends on its readiness to absorb or combine with other matter. If cleansing was the only purpose for domestic water-storage, the amount of contamination derived through neglect of cleaning out cisterns would be of small account; but there is another use, inferior as to quantity, but all-important with regard to quality, namely, for drinking and culinary purposes. Contamination may take place when there is no visible source of uncleanness (as in the case of a soil-pipe ventilating through the waste-pipe), but generally a need of cleansing will manifest itself to the eye, *i.e.*, *when* the eye is brought to bear upon it; and here is the main cause of the neglect. A cistern in a kitchen, with the top edge about 6 in. from the ceiling is not very easily inspected, but without or even with a cover it is liable to receive dust caused by sweeping, besides being in some measure exposed to a tainted atmosphere; and yet there are few cisterns so placed as more readily to invite attention, though they may be more accessible.

It seems to be studiously contrived that, for good or for evil, cisterns should be placed out of reach or out of sight. Not always for evil. I have seen a cistern placed in a top room devoted to the purpose, kept very clean, and locked up to prevent the entrance of children. But, out of sight too frequently means out of mind, and then it requires to be seen to be appreciated, the amount of uncleanliness that can be tolerated, and the objectionable places chosen for cisterns, in a dark cellar, or under the roof tiles, without cover or partly covered, or outside on the top of some outbuilding, with wooden cover, but exposed to the hot sun, which promotes a green, slimy vegetation in the water, and a fungoid growth on the underside of the cover. These are some of the choice places where water is allowed to rest undisturbed and accumulate dust. It may be harmless coal dust, or it may be house dust, or road dust, charged with animal matter. Perhaps the worst position for a cistern is close to the ceiling of a room, with access by an opening in the floor of the bedroom over, just as large as the joists will admit of; it is a capital trap for blackbeetles, and even rats find a watery grave there, though the fact may not be known for a long while after; and as for dust, a sample may be seen on the thick veil of cobweb which has arrested some of it. But there is another source of evil, viz., unguarded communication with the water-closet. The cistern must supply the closet pan with water, and is too apt in return to be supplied with foul air, and if the waste-pipe discharges into the soil-pipe the evil is enormously increased; trapping the pipe is an untrustworthy remedy. Should the cistern be inside the house the danger from this nuisance

is greater than that of only fouling the water, as a current of air from the soil-pipe is diffused in the house; it is better to stop up the waste-pipe and stand the risk of an overflow. No mere cleansing of the cistern should be allowed to suffice in the case of foul air from the closet; an alteration of fittings is absolutely necessary, but in other cases constant vigilance will be beneficial, especially at this season.

The constant water-supply to some parts of the metropolis is, doubtless, notwithstanding certain well or ill founded objections to fittings, a greater boon to the poorer classes than they know how to appreciate, in doing away with the necessity for cisterns; yet cisterns, and even butts, are still preferred by many, and the need for their being cleansed is as great as ever. Unfortunately the cost of the complicated contrivances which are supposed to be necessary to adapt water-closets for the constant supply is prohibitive to owners of very small houses, and, in most cases where it is used, the apparatus reduces the high pressure to low pressure, a great loss of flushing power.

Is it necessary that water in store should be subject to contamination? Closed cisterns might, I believe, be used with advantage both for intermittent and constant supply. Wherever placed, they could be made to exclude all dust or foreign matter that did not come through the supply-pipe, and though difficult to inspect internally, that would not be necessary for years. Regard for your space prevents my giving details.

I hope this letter will induce some householders to look to and clean out their cisterns.

F. H. McLachlan.

LARGE FARMS AND SMALL FARMERS.

Sir,—I was impressed with the practical thoroughness of the article on "Peasant Gardens and Peasant Farms" in the *Builder*, and can confirm by a wide range of experience in farming, from a rood of land to 800 acres, that only extensive stretches of land will repay steam cultivation, and that high-farming—as stock-farming is often termed by the slang writers of the press,—can be best carried out on large areas.

But unless we admit an intermediate extent of homestead acreage, we shall be forced to the assumption that farming will be divided into two sections—the farm, and the garden; and the agricultural proprietors into two grades, the farmer, and the gardener or labourer. My experience points to an intermediate proprietary corresponding to the yeomen class of olden, and of the present time. Men who will cultivate the land around their homesteads aided by all the improvements of steam-worked machinery, and town sewage; who have a love for their occupation, not simply a vested interest in it; who dignify it by their sturdy toil, instead of being a bailiff of so many acres; men to whom science will lend its light and leverage to exalt the noblest occupations.

> From toil-turn'd muck, to win the food of man,
> And rich ripe plenty wrought by science' aid;
> The world, leave better than when he began
> The tiller's craft, and honest yeoman's trade.

While admitting that for small hedged-in plots the spade, prong, and hoe, are the only implements by which the ground can be worked, I wish to point out that small areas of ground, when undivided by hedge or ditch, may be worked by horse or steam, collectively. As facts are to theories, as substances are to shadows, I will give the result of seven years' experience of facts, carried out to elucidate the value of spade culture for gardens and allotments and small holdings, and the same ground worked by horse-power. I will at once state the result of my experience. That wherever it is possible to use horse-power, spade cultivation is a waste of human life, and wherever steam-worked machinery can be applied, the use of horse-power would be a waste of a nation's wealth; to this I add, that gardens in many cases may be worked by horse-power, and small farms by steam-power. What is a steam-cultivated farm of three thousand acres—owned by one man and managed by one bailiff—but an aggregation of small farms of some former period? Surely the method of cultivation does not necessarily compel divestiture of rights. Science, which is the hand-maiden of toil, dividing and diversifying toil, could find ample work for thirty yeomen proprietors on 3,000 acres. The absence of hedges and ditches on the 3,000 acres, so as to allow the steamer and drum to draw the "drain-plug" through the land from high to the low levels; the steam-worked ploughs, reapers, and tram-trucks,—the use of all these need not invalidate individual rights, and proprietary results. Every harvest sees a new field-measurement for crop acreage; hedges and ditches baulk rather than help the measurer. The yeoman would be reliant on correct measure for land or yield, the same as he is now to factors and salesmen for disposal of produce. Science would train one of the yeomen for surveying, another for chemistry, another for drainage or hydraulic engineering, another for steam engineering, another as an accountant, another as travelling buyer or salesman, another as a veterinary surgeon, another as builder, and so on; each with his distinct vocation. Thus steam and sewage would be well applied, instead of being applied at a loss of capital, from the want of a training which it would be unfair to expect from one manager of a large steam-worked farm; for we cannot gainsay the fact that until after several years' established operations, steam-farming fluctuates between gain and loss. In conclusion, I will detail how I obtained double crops from a garden which was *not* worked by the spade, but by the hough and horse-hoe at less cost than by the spade. The system adopted was what is well known as the "ridge-and-furrow,"—in straight lines, but the principle of cropping was to have crops in the furrow as well as on the ridge, with scarcely any intermission of growth. The result was superior crops, clear ground, and double produce from the same area of land. In some instances, crops which would not have lived if planted on the open flat ground, throve with vigour in the trench, and shade of the ridge crops.

J. Charles King, Author of
"How to Select a Farm and Manage it," &c.

THE FRENCH EXCURSION OF THE ARCHITECTURAL ASSOCIATION.

The head quarters of this excursion, under the guidance of Mr. Edmund Sharpe, M.A., will be Angoulême, where the party will arrive on Saturday, August 28th. The number is to be thirty only this year, and is made up already. The expedition promises to be of much interest in taking stock of some of the domed churches and their details, not measured and illustrated before.

"L'Architecture Byzantine en France," par Felix de Verneilh, Paris, 1851. 4to., may be referred to; also Fergusson's "Handbook," French Architecture, chap. ii., Aquitania.

The following is a list of the principal places which will be visited. Any spare time in mornings and evenings will be devoted to Angoulême Cathedral, &c.:—

Monday, Aug. 30th.—Fleac, Linars, Trois Palis, Nersac, and St. Michel.

31st.—La Couronne, La Palud, Roulet, St. Estephe, and Mouthiers.

Sept. 1st. — Moutiers, Plassac, Mainfonds, Champagne, and Bianzac.

2nd.—Puyperoux, Montmoreau, and Chalais. (Sleep at Chalais.)

3rd.—St. Quentin and Aubeterre.

4th.—Passirac, Chillac, Berneuil, Coudeon, and Barbezieux. (Return to Angoulême.)

Sunday, 5th.—At Angoulême.

6th.—Chateauneuf, St. Simon, and Bassac.

7th.—Bourg Charrente, Gensac, and Cognac. (Sleep at Cognac.)

8th. — Cherves, and Châtres (Cistercian Abbey). (Return to Angoulême.)

9th.—Plaizac, Rouillac, Gourville, and Lanville.

10th.—Ventouse, Cellefrouin, and Larochefoucauld.

Saturday, Sept. 11th.—St. Amand de Boixe, and back to Angoulême, where the final dinner of the excursion will take place at six o'clock.

Sinking an Artesian Well at Warrington.—Mr. Chapman, engineer, Salford, has just completed the sinking of an artesian well, for the brewery firm of Messrs. Walker & Sons, Warrington. The work of sinking the shaft was commenced on June 21st. It has been carried to a depth of 33 ft. and its diameter is 6 ft. A 12-in. bore-hole has been drilled to a further depth of 30 ft., and the level of the water stands at 32 ft. The supply is obtained from the new red sandstone. It is abundant in quantity, bright and pure, and free from surface impurity. About 200 gallons per minute are at present being pumped.

"THE UNIVERSAL ARTIST."

Sir,—In arguing for the domination of historical painting and sculpture in the realm of the formative arts, I do so in a wider sense than that of taking architecture out of the hands of the architect: I desire that they should hold the same commanding position in public estimation as they did in Greece and Italy, and even to take architecture into their hands when either painter or sculptor has the capacity for handling it in a masterly manner.

We may learn from the careful and comprehensive work of Müller that the highest formative arts were not included under the title of *tectones*,—did not belong to that company of workmen of whom the architect was the chief. This writer says, "I have tried to introduce the expression 'tectonics,' to denote a scientific notion which we can scarcely dispense with, although in doing so I did not overlook the fact that among the ancients, masons and joiners indeed, *but not workers in clay and metal*, were called *tectones*"; and in the same work we find that "Phidias the Athenian now appeared, an artist whose genius was so vast and his fame so acknowledged that the works of Pericles's age were *all* carried on under his direction, and *the entire host of artists of every kind assembled at Athens were occupied in following out his ideas.* He himself worked especially at colossal statues composed of gold and ivory, for the more perfect execution of which, *unexampled liberality on the part of the states*, and a more extended technical knowledge, lent their assistance." It is more than probable, therefore, that, contrary to "T. L. D.'s" opinion, Phidias did dictate the proportions of the Parthenon. For whose sense can be more sensitive to proportion than either the great painter's or the great sculptor's, to those proportions which are most in conformity with human taste? But in the days of Phidias proportion was not merely left to the decision of an intuitive taste. It was a science,—a science which art may recover when the nation can get time and patience to permit thought to dive deep below the filmy surface of things.

We may get some notion from the following passage, of how absolute the sway of Phidias was over the formative arts of his epoch. "Under his direction were weavers of variegated stuffs, embroiderers, whose tapestries must not be forgotten when we wish to call up an idea of the general effect of those temples and ivory statues." "The movable drapery of Pallas, according to Philocorous, was forty-four gold talents in weight, yet its thickness did not much exceed a line." From these facts it is evident that the relative position of the great artists of the human figure to workers in other branches of the formative arts was precisely the same both in the epochs of Phidias and Raffaelle. I arrived at the conclusion that this state of things must exist, when art attains to its greatest perfection, from studying the genesis of ideas and the natural order of interdependence in the arts, and from the evidence of the cinquecento, before I lighted upon the important facts which have been recorded of the age of Pericles, and quoted above. And it must be clear that the Greeks put the same value on their own saying of "Let every cobbler stick to his last," as I did in my letter of the 31st ult. It was intended as a caution to those beings of very limited powers, who were incapable of any effort beyond bungling and patchwork.

W. C. T.

BEWICK AND NEWCASTLE.

Now that the British Museum will be the custodian of the brothers Bewick's splendid art collection, considerable rivalry for possession of the cuts and original drawings has come to the front; and the Natural History Society of Newcastle-on-Tyne has almost claimed them. The University of Cambridge is also anxious to become their possessor, and if it had been a question of money an almost fabulous price could be obtained for them.

It is too true, however, that the town and district that Bewick's services to art have made famous, have never appreciated their townsman's merits, and the family of Thomas Bewick have not had much reason to bequeath this art collection to Newcastle-on-Tyne.

The workshop in St. Nicholas Churchyard, in which he laboured so usefully, was legally wrested from his children; and it is only necessary to take a stroll up West-street, Gateshead, at the present time to find an example of how the

corporation fulfil the conditions of an agreement between them and the Misses Bewick.

Thomas Bewick himself would, if alive, have unquestionably felt prouder of the present capabilities of wood-engraving than any monuments of stone or brass erected to his name.

It is not surprising to learn that very few of the inhabitants of Gateshead were aware that they had for neighbours two of the daughters of Bewick, until it was announced in the London papers, and now all are anxious to "leave their cards." L.

CAUTION TO BUILDERS AND THEIR HORSEKEEPERS.

The rapid rise in the value of draught horses used by builders and trades in connexion therewith is such as to make the loss of a horse a serious item against building profits, in many instances, draught-horses fetching at fairs as high figures as 100 guineas each, a price actually paid for the cattle belonging to the rollers and mud-carts of St. George's, Hanover-square. These giant horses, moreover, consume extra corn, hay, and chaff, and it so happens that *pari passu* has arisen the cost of provender. The present hay season is admitted to be a failure, few farmers stacking sufficient hay for their own use. To show the heavy cost of keeping horses, no better gauge can be had than the fact of hundreds of light horses now being in the market for sale at any price. The great London carriers and the London General Omnibus Company estimate this year's increase in the price of horse-provender, not by hundreds, but by thousands, of pounds.

To alleviate this state of things, our great corn, hay, and straw dealers have turned their attention to a foreign supply, and compressed hay has been imported from Hamburg to a large extent. It is to this provender the attention of builders, horsekeepers, and veterinary surgeons is particularly directed.

Near to the town of Barnsley, in Yorkshire, a large number of horses are kept for colliery purposes, and for several days last week all operations were stopped, and 500 men and boys thrown out of work at one colliery, in consequence of illness and deaths among the horses. On one day eight horses died, valued at 400*l*. On inquiry, it appears that seventy horses in one pit were healthy and in good work, when foreign hay was given them to eat. After partaking of the stuff for a few days, the whole seventy fell off in their food, and refused to eat the hay, and a few days afterwards a number of the draught-horses and ponies were attacked with influenza, followed by bronchitis, and pneumonia, after which typhoid fever of a very malignant character set in. The result was that several died and numbers are under veterinary treatment.

The veterinary surgeons have made a *post mortem* examination of the animals, and are all of opinion that the disease, in the first instance, was caused by the foreign hay eaten, and this view is supported by the fact that the hay in question was brought into the port of Hull, where recently a number of horses have died through eating the same Hamburg shipments.

Those who contract with hay-dealers should see that this foreign hay is not supplied.

NEW CONGREGATIONAL CHURCH, WELLINGBOROUGH.

This building, which is being erected from the designs of Mr. Edward Sharman, architect, at a cost of close on 9,000*l*., is making rapid progress. The principal frontage faces towards High-street, and the site is well elevated above the road. In its plan the shape of the church is an ovel, with north, south, and west projecting porches, over which are ways of access to the gallery and chancel, or apse-like recess at the east end, divided from the church by a lofty and well-moulded arch, in which the organ will stand. Thus it will be at once seen that the form of a Maltese cross will as nearly as possible describe the shape of the ground plan. The style of architecture adopted is Early English somewhat freely treated. The stone used in the construction of the building is of a warm yellow tint, and is of local extraction. It is known in the county as Duston stone. The dressings are Bath stone, from the Farley Down quarries. The columns to the window mullions are in each instance of red Mansfield stone. The entrance-gates and the gates to the main doorway are reached by a flight of some dozen steps. The doors are of deal framing filled in with V-jointed panels of wainscot oak. An ornamental wall of Duston stone, coped by worked and moulded brick, together with Bath stone capitals to the piers, separate the buildings from the road. A gallery, which takes the undulated wall line, is carried round rather more than one-half the building, supported by iron columns. The roof is not open. It is flat and panelled in plaster. The organ is recessed behind what one may term the chancel arch. This arch is supported by red Mansfield columns, and carved capitals, representing respectively wheat and grapes, and the lily. There is also a carved running ornament—ivy—up the soffit of the arch. The pulpit will be a feature; as yet it is not fixed. The seats are all open benches. Mr. John Beddington, of that town, is the contractor for the works. The carving has been executed by Mr. Harry Hems. Mr. Paine is the clerk of the works.

BAD MATERIALS UNDER METROPOLITAN BUILDING ACT.

Mr. Thomas Eyres was summoned by Mr. Knightley, district surveyor of Hammersmith, with respect to the quality of the mortar used in the construction of houses in Gratton-road. Two samples of the mortar taken from the buildings were produced, it being stated that it contained 20 per cent. of sand and 80 per cent. of loam. The defendant had been cautioned for using mould.

The defendant said they were not fair samples.

Mr. Knightley explained that the lower part of the wall was built with that mortar, but better mortar was used for the upper portion.

The defendant said he used lime, sand, and refuse of a brickfield in equal proportions to make the mortar hard.

Mr. Ingham left the Bench to inspect the work, and on his return made an order for the wall to be pulled down in seven days.

The defendant said he should take the case to another Court.

Mr. Ingham said he had done with the case.

SALARIES OF MUNICIPAL SURVEYORS AND ENGINEERS.

Sir,—As a constant reader of the *Builder*, I have seen with much satisfaction accounts of the proceedings of that newly-formed Association of Engineers and Surveyors to Municipal Authorities, but not being sufficiently acquainted with the object of their intentions, whether it be for the mutual interchange of opinions for the general good of sanitary science, or for the advancement of their own individual interests, or both, I do not know; but I have for some time taken a great interest in works connected with town improvements, and as the officers who design and superintend such improvements are necessarily engineers, I have often been and am surprised at the small proportion their salaries bear to the important and varied works they carry out.

Indeed, it is beyond the power of some of them to make provision for the time when age incapacitates them from performing their duty; and, looking upon the matter in a purely disinterested light, I would venture to suggest to this Association the advisability of taking steps with a view to obtain superannuation. I see a Bill is being passed in the present session to superannuate county surveyors in Ireland, and as the amount of their salaries favourably compares with those of borough surveyors, I fail to see the justice of providing for one and neglecting the other. Moreover, the duties to be performed by the surveyor to a corporation would be greatly improved, and the work more satisfactorily executed, were the said officers placed beyond the entire control of local influence. L. L.

CLAY A MINERAL.

A suit has lately been heard before Vice-Chancellor Hall (Linskill *v.* Charlton) which is interesting in its result, as it affects the brick trade.

The plaintiff, Capt. W. Linskill, Lord of the Manors of Great and Little Moorsom, in the parish of Skelton, in Cleveland, filed his bill for an injunction against the defendant, William Charlton, the owner of an encroachment of four acres, part of the Moorsom Moor, called the Low Moor, whose father (being then owner) had on the occasion of the Moorsom Inclosure signed (with other encroachers) an agreement to hold the encroachments subject to the right of the lord to the minerals under the same. His son, the defendant Charlton, acting (as the plaintiff contended) in contravention of such agreement, was proceeding to dig for and get clay, and to turn his encroachment into a brickfield.

The Vice-Chancellor made a decree in the plaintiff's favour, granting the injunction, thus deciding (in accordance with other decided cases) that clay is a mineral in the ordinary sense of the term.

GENERAL FOREMEN AND CLERKS OF WORKS.

BRICKLAYER *v.* CARPENTER.

Sir,—I have long been impressed with this fact, that whenever your advertising columns are used to invite candidates for the position of clerk of works, or general foreman, it is almost certain to be especially stated,—"A Carpenter and Joiner preferred."

Now, Sir, in past years, when in building construction timber framing, &c., was more the rule than the exception, and wood generally was used in greater quantities than modern architects deem essential, and the log timber was sawn and converted into its several uses, and the joiners' works prepared on the works, I admit the above position may have been well filled by a carpenter. But time has changed that order of things, and I contend that the above stipulation is neither justifiable nor necessary to obtain the fittest man.

Having been engaged as foreman in my own branch, general foreman, and clerk of works on important public and private works for twenty-five years, I can speak with some authority.

When I ask, why is the carpenter preferred, I am told they are the most respectable. No doubt, owing to the nature of their work being more clean than the other branches, they can appear more respectable, as far as dress goes. I am told they are the most educated; and, no doubt, time has been when there was some truth in that; but that they are now is open to question. It is said theirs is the leading branch. This I most emphatically deny. That a man can be perfect only in one trade is a well-known fact. The question is, "Which trade should be the most fit to hold the leading position, and to be entrusted with the superintendence of the whole?"

To be a competent joiner a man must pass all his early life in the shop, with perhaps an occasional turn in the building-fixing, when, mark, the superstructure is completed. When a joiner obtains his first appointment and emerges from the back of the bench, he must of necessity lack the practical knowledge of the most vital points in modern construction.

Is the joiners' shop the place to get experience in earthworks, concrete, brickwork, masonry, &c., the nature and behaviour of limes and cements,—in fact, any of the multifarious duties, the knowledge of which constitutes a genuine clerk of works or general foreman? It is all very well for a man to pick up a little smattering of technical terms from the leading workmen in the different branches, that he may be better able to answer questions when interrogated upon any particular point; but, is that sufficient?

Again, foundations, brickwork, masonry, form the largest financial items, and should be in the hands of a man that can adopt the most ready and complete systems to insure success and economy, instead of delegating it,—as a carpenter must necessarily do,—to a deputy, at, perhaps, 8*d*. per hour extra pay, who does not always feel an interest in the job. Why should he, seeing the other is to have the credit? Whether the work is good or bad, or comes out to pay or not, it is all the same to him. With very rare exceptions the joiners' work and framing, roofs in particular, are prepared at the builder's yard, which is frequently miles away, and are brought to the building ready to fix, so that the carpenter's work is the smallest item of labour done on the spot.

Surely a bricklayer, who serves the whole of his time on the building, and who, especially if he has been reared in the country, has to work his way through all the grades, even to making his own scaffolds and helping to make his own mortar, should be the man best able in after years to direct and instruct others, and to judge of a workman's ability to earn his wages without seeking advice from others. I say the bricklayer, if he would only grasp the opportunities he has at command to acquire the necessary practical knowledge of the other branches immediately in connexion with his own, should be the fittest man. And I make an earnest appeal to bricklayers to awaken themselves to the importance of these remarks, and see their true position and fit themselves to occupy it. To encourage them, they have only to look around and see its consummation in instances not a few, but if they were more general, the eye would not so frequently be offended by those frightful abortions that bear the name of brickwork.

The least they can do is to shake off the load of prejudice with which they are handicapped, in the race with the *carpenter*, for the leading position. The motto should be—"Let the best man win." A Bricklayer.

ALLEGED SYSTEM OF DEFRAUDING MASTERS.

On the 5th inst., at the Westminster Police-court, before Mr. Arnold, Edward Cummings appeared in answer to a summons charging him with obtaining the sum of 8*s*. 6*d*. by false pretences from Mr. J. P. Seagrave, proprietor of the Westminster Zincworks, 46, Rochester-row, Westminster.

Mr. W. D. Smyth, who prosecuted, stated that the case was an important one to masters who possessed a country business like the complainant, and the system pursued by the defendant was one by which masters were often defrauded. The defendant was employed by Mr. Seagreave, and on this occasion was sent to work at a public-house at Somers-town. The fraud complained of occurred on Friday, the 23rd of July, when the defendant by his time-sheet represented he had worked nine hours, whereas he had not worked at all, and had not gone to the job until late in the evening.

Proof having been given,

The defendant said that, although he was not at work, he was engaged on his master's business.

Mr. Arnold adjourned the case, ordering the defendant to find one surety in 5*l*. for his appearance.

MEDICAL AND ARCHITECTURAL SANITATION.

Sir,—There is an important sanitary suggestion just now brought under medical notice in Edinburgh that may be interesting to your readers as a hint in W.C. ventilation. Here so many of these closets being lighted and ventilated into the common staircase, that gives access to the different dwellings in flats, each W.C. requires gas light, which, when enclosed by glass in a veniduct or flue pipe, the mouth of which, opening at the seat, naturally carries away at once all vitiated air to the chimney where the flue terminates. Thus by the suction of a heated flue opening under the seat, not only are sewage emanations prevented from escaping into dwellings, but no person using this closet is immersed in vitiated air, and the household supply of water placed in W.C. cistern, so generally overhead, is no longer surrounded with a polluted atmosphere. The supply of fresh air entering near the ceiling, there need be no extracting foul-air flue but that opening under the seat of the closet, which may be made to act as powerfully as an Arnot stove, drawing even the fumes and smoke of tobacco into it. There is no great architectural difficulty in the introduction of such W.C. ventilation here any more than in the American cities, where it is adopted with success. J. K.

CREMATION.

Sir,—Professor Bernays, in a letter to the editor of the *Times* headed "Humation and Cremation," appears to think that cremation can never become the popular mode of disposing of the dead because it is opposed to a religious sentiment. Cremation is doubtless opposed by a prejudice, but by no means by a true interpretation of the injunction of "earth to earth."

This prejudice, however, would soon be overcome if the matter at issue were to be placed before the public in its broadest aspect. If the public were to be shown that in whatever way the body be disposed of after death it must be consumed, *i.e.*, in some sort be actually cremated; for nature resolves everything by combustion. Every human being, even during his existence, is over and over again consumed or cremated,—it used to be said once in seven years, it is now affirmed in a much shorter period of time. The only difference, therefore, between committing the body to the flames and burying it, is the difference between a quicker and a slower process of combustion.

Has education, scientific education, failed to help us to no broader interpretation of "earth to earth" than that of Mr. Seymour Haden? It would seem that it has not. The narrowness of that interpretation would convict thousands and tens of thousands of persons of having broken the letter of the law in consigning the remains of their relatives to graves of gravel, clay, and what not instead of to "earth." And in so doing, if Mr. Haden's interpretation were the correct one, they must have sinned against religion. And all who have consigned the remains of their relatives to vaults, catacombs, rock-cut tombs or lead, from the time of the patriarchs to the present day,—nay, even the disciples of our Lord themselves,—would stand condemned.

What, then, in their broadest sense, do the words "earth to earth" really mean? Why, nothing more than this, that all matters within, upon, and to the limits of the atmosphere of this planet is of the earth; and of the earth, earthy. That all living beings are composed of its elements, and must again be re-solved into them. Therefore, in whatever way we may dispose of the human tenement after the spirit has departed, we shall fulfil the sacred injunction of committing "earth to earth."

Mr. Seymour Haden's system would, if it were to be carried out to any great extent, be more noxious than the present one. The earth would become surcharged with animal matter, and infect the neighbourhoods, and beyond the neighbourhoods, of the cemeteries; for the earth,—even Mr. Haden's "earth,"— does not enter into chemical combination with the resolving elements, but for the most part holds them suspended till they can be re-appropriated by either vegetable or animal life.

Coffins of wood and lead to a certain extent prevent the earth from becoming surcharged with decomposing human remains. These receptacles part very slowly with their contents, and thus to some extent preserve the living from the evils of a free, but slow, combustion, under the surface of the earth.

The greatest evil of our present system of burial is this, that it withholds for too long a period those elements which are necessary for building up the tenements of a new generation, prevents them being quickly re-appropriated by the living. This is doubtless one source of disease and degeneration. The materials for 7,000,000 human beings are at this very moment thus withheld from circulation and re-appropriation in Great Britain. Cremation is, *par excellence*, the quickest mode of returning "earth to earth," for disseminating the material elements of the dead human body, so that they may be the most readily re-appropriated and utilised by the living. Moreover, to show in how general a sense the sacred injunction of "earth to earth," is to be taken, we have, as synonymous expressions, "ashes to ashes," "dust to dust," "clay," &c. It should neither be forgotten that nature has not implanted any instinct to bury, that for eons of time all animal life died and rapidly decomposed upon the surface of the earth. Seeing, then, that whatever mode of disposing of the dead be adopted, it must inevitably fulfil the injunction of "earth to earth," we have, as rational beings, to decide which mode will be the best for the common weal of humanity.

Cremationist.

TAYLOR'S AND TOBIN'S VENTILATORS.

Sir,—Upwards of twenty years ago, under the direction of the late Mr. George Taylor, schoolmaster, Leberton, Edinburghshire, I fitted up in the parish schoolroom there a number of upright flues or shafts rising 4 ft. from the floor-level, with openings 9 in. by 5 in., communicating with the external air, so that on entering the school the fresh air was thrown upwards, overhead of the pupils, without perceptible draught, rendering a sweet and pure atmosphere at all times possible without opening doors or windows.

The following description of what is called Mr. Tobin's inventions seems to me exactly an adaptation of Mr. Taylor's idea,—"Communicating with the open air, through a cellar-grating, vertical shafts 5 in. in diameter rise about 4 ft. above the floor, with open mouths, from which ascends to the ceiling an unbroken current of this outer air, like a fountain-jet, so that the interior air is kept as fresh and sweet as the external atmosphere around the building." I cannot say where my deceased friend Mr. Taylor got the idea, but I am certain that the merit of the invention is as much due to him as to Mr. Tobin.

Having long urged this plan of ventilation, I am glad to see its merits now disclosed *pro bono publico*.

James Kerr.

SCHOOL BOARD SCHOOLS.

High Wycombe.—The new Board Schools have been opened, and are designed to accommodate 1,000 children. Plans were prepared, and a contract entered into, for the erection of a block of buildings to accommodate 600 children for the borough only, with a master's house attached. But, a few months later, when the brickwork was reaching the ground-floor, the parish School Board decided to furnish a contingent of nearly 400 more children. The plans had to be enlarged accordingly, and an extended contract was entered into. The first contract amounted to 4,264*l.* 10s.; the second to 2,610*l.* 11s. 8d.; making the total cost of building alone 6,875*l.* 1s. 8d. From the rapid descent of the ground, the front elevation has a height of 60 ft. or more, with a range of six huge flying buttresses from the main building, the lower openings forming entrances to the covered playground underneath the front of the main schoolroom. This basement is some 70 ft. by 20 ft. in size, and will be a playground in wet weather. The buildings, being shaped like the letter L, have a frontage to the railway, and one also to the Cemetery-road, giving a total length on the two sides of some 250 ft. The style of the buildings is Early Gothic. The main staircases are of stone, and the material of the building is red brick, with slated roofs. All the windows have stone dressings, into which cast-iron casements are fitted. The whole of the fittings are of pitch-pine, varnished. The interior walls are painted to the height of about 4 ft. with the Imperishable Paint Company's paint of a purple-brown tint, finished with a black line, and the walls are coloured above. Between the floors, "sound pugging" is introduced, to prevent the voices in one room from interfering with school operations in the other. The contractor has been Mr. William R. Loosley. The architect was Mr. Arthur Vernon, of Wycombe.

Brynhyfryd.—On the 2nd inst., Brynhyfryd Board Schools were formally opened. A schoolroom was formerly erected at Brynhyfryd, and school work was for several years carried on there by a body of denominational subscribers; but some time ago the Swansea School Board took the schools into their own hands, and set about adapting them and further extending them to supply the accommodation required. The school-house then already built was capable of accommodating 264 boys, and the Board have since erected on the roadside, opposite the older buildings, a new girls' school, to accommodate 234 scholars, and an infant schoolroom, affording space for 220 infants. To these have been added a number of class-rooms, and residences for the masters and mistresses. Mr. George Harmain, the surveyor to the Board, is the architect, and Mr. White is the builder. The entire cost is something like 2,000*l.*

SCHOOL BUILDING NEWS.

Halifax.—The congregation of the Methodist New Connexion chapel, at King-cross, have had the memorial stones of a new school laid, which for a time will be used as a place of worship as well as a school. The school is designed in the Gothic style of architecture, the central window and gablet, with the flèche on the roof, being the salient feature in the design. On the sub-ground floor will be located the infants' class-room, and caretaker's house, with the heating cellars underneath. The ground-floor will comprise nine class-rooms, with appurtenances. The assembly-room will be over the class-rooms, and about 21 yards by 15 yards, and will accommodate 500 persons sitting, exclusive of the north and south galleries; the latter of which will contain the organ, the choir, and the scholars, the north gallery being pewed for regular members of the congregation. Underneath the south gallery will be placed the cooking kitchen, superintendent's room, and library. The rooms throughout will be fitted up with boarded dados, and the large room will have an open timbered roof, the ceiling of which will be boarded and stained. The architects are Messrs. Leeming & Leeming, of Halifax; the contractors are Messrs. Culpan & Sons, masons; Messrs. Dyson & Son, joiners; Messrs. Ackroyd & Mills, plumbers and glaziers; Mr. Ambler, plasterer and slater; and Messrs. Thornton, of Huddersfield, heating apparatus. The contemplated outlay is about 2,750*l.*, which includes land for a new chapel.

Kettering.—On Sunday, the 1st inst., special services were held in the Wesleyan Chapel, Silver-street, in connexion with the opening of the "Tordoff Memorial Schools." The new schools are situate in School-lane, being strongly built with red bricks and white freestone, at a cost of nearly 1,500*l.*, given by the gentleman whose name they bear, who also presented the ground on which the buildings stand. On the ground-floor, reached by a flight of four steps, there are six class-rooms, arranged three on each side of the central passage, leading from the front entrance to the infant school-room, which occupies the back part of the floor, and is fitted with gallery and other conveniences. On the second floor is a commodious room, 60 ft. by 30 ft., which is reached by means of two flights of stairs, one on each side of the entrance. This room is furnished with patent reversible desks, capable of being altered to serve the purpose of tables or high-backed seats, as occasion may require; and the whole building is to be heated by means of hot-water apparatus.

A Rotten Bressumer.—A few days since some workmen engaged in repainting Bouverie House, Rendezvous-street, Folkestone, noticed the "bressumer" supporting the façade of the building exhibited symptoms of decay. The services of Messrs Brooks & Slade were called in, and on examination it was found that the beam was seriously affected by dry rot. The upper part of the building was secured, and the replacement of the bressumer has been nearly completed. Had the rotten timber passed unnoticed for a few months longer a serious catastrophe might have occurred.

VILLAGE HOME FOR GIRLS, NEAR ILFORD.

Sir,—On my return to town a few days since my attention was called to a notice in your issue of the 17th ult. of the new Village Home for Girls which is now in course of erection at Barking-side, near Ilford, under my direction, as architect to the East End Juvenile Mission. The buildings are so well described by your notice that I will not trespass on your space by any recapitulation: I would, however, supplement your notice by informing your readers that the buildings include an infirmary, schools, and steam laundry, that the cottages are built of hollow walls in hydraulic lime throughout to insure dryness, that a deep well is being sunk, and that a complete system of pipe drainage will be laid down with filtered outfall. If any of your readers are interested in the work, I may add that the site is not difficult of access.

Ebenezer Gregg.

NEWBURY PUBLIC OFFICES COMPETITION.

This competition was decided in June last, the successful competitor being Mr. Money, a local man. I shall, therefore, be glad to know when the Newbury Corporation propose returning the plans, &c., sent in competition, and what reason they have in retaining possession of them so long?

I have heard that the motto attached to the drawings of the successful man (Mr. Money) was "£. s. d." Perhaps you, Sir, will know if this is correct?

A Competitor.

EUSTON SQUARE.

Sir,—I beg leave to call the attention of those more immediately concerned to the disgraceful condition of the south side of Euston-square, which has been for nearly twelve months converted into a rubbish-shoot, whereby many valuable trees have been utterly destroyed. Until the last few weeks two or more notice-boards were prominently exhibited, informing the public that a Mr. Martin was contractor for the Euston-square improvements; as they have been removed it leaves the public to conclude that the improvement, otherwise the work of desolation, is complete.

George Bartlett.

PURBECK MARBLE.

Sir,—As I have a large quantity of Purbeck marble fixed that will be exposed next winter to the weather, I should feel obliged if you would allow me, through the medium of the *Builder*, to ask what are the best means I can adopt to preserve the polish on the marble?

Casing with boards, or wrapping up with straw, is not sufficient protection.

Purbeck.

BUILDING SOCIETIES.

Sir,—Can I learn through your columns whether there are any building societies which erect houses for persons undertaking to lease them for a term of years when finished? A friend of mine wishes a house erected for him at Knaphill, near Woking, which he would take on lease for fourteen years.

W. G. Lower.

APPRENTICES.

Sir,—Being an apprentice to a builder, there is one question I should like some of your kind readers to solve: it is, How many hours per week am I bound to work; the men at the shop receiving 9d. per hour, and still working 56½ hours?

An Overworked Apprentice.

STAINED GLASS.

Elloughton.—The west window in St. Mary's Church has been filled with stained glass, the gift of Mr. John Hall. It contains figures of SS. Peter and Andrew, together with a small subject from the life of each. It is from the studio of Messrs. Powell Brothers, of Leeds.

Bradford.—An aisle window in St. John's Church, Horton-lane, has been filled with stained glass to the memory of the late vicar. It is one of a series of windows to illustrate the life of Christ. Messrs. Powell Brothers, of Leeds, have done the work.

Shepherd's Bush.—The east window of St. Luke's Church is now filled with stained glass, the work of Messrs. Powell Brothers, of Leeds. The following subjects have been chosen:—Entry into Jerusalem; Last Supper; The Agony; before Pilate; Crucifixion; Mary meeting Christ after the Resurrection; and, in the large tracery light, the Descent of the Holy Ghost. The subjects are relieved by ruby backgrounds. The ornamental portions are white.

Birmingham.—A memorial window, consisting of two lights, has just been erected in St. Mark's Church, King Edward's-road, by Mr. F. H. Griffiths, in memory of his late parents. The subjects respectively are "The Crucifixion," and "The Descent from the Cross," depicted under architectural canopies. Above the canopies are painted quarries, to form a background, the lights being of considerable length for one subject. In the centre of the painted quarries are treated a monogram in a medallion. The base of the window has in each compartment an angel holding a scroll. The work was executed by Mr. Swaine Bourne, who has also the commission for six stained-glass windows, for Drayton Bassett Church, for Sir Robert Peel, bart.

Books Received.

Practical Guide to Carlisle, Gilsland, Roman Wall, and the Neighbourhood. By Henry Irwin Jenkinson, &c., &c. London: Edward Stanford.

The author hopes that this handbook, accompanied as it is by a map, will enable a visitor to "merry Carlisle" and the adjoining district, to visit the many places of interest in the neighbourhood "without asking a single question, and to feel as though he had obtained the companionship of a friend thoroughly conversant with the neighbourhood." The book appears to be very completely done, and likely to bear out this promise, in the hands of travellers of ordinary intelligence and observation. It is divided into three sections, under the three heads given in the title. The author is a better guide in topography than in æsthetics, however, if we may judge from his quotation of Bulwer's "fustian" (it deserves no other name) about John Martin, on describing Haydon Bridge, where that painter was born. The third section of the book follows the Roman wall in a walk from coast to coast,—a good idea. The author recommends the walk to be taken from west to east, as the traveller then moves from the less to the greater, and his interest increases. Of course, Dr. Bruce's book remains the highest and completest work on the Roman wall remains; but the handbook of Mr. Jenkinson brings a great deal of information into a small and portable compass, and draws largely on Dr. Bruce and other archæological authorities. He contests a point with the former, indeed, in regard to what is generally regarded as the "vallum," and which he considers as being, though made at the same time as the fortification, not literally a part of it, but simply the road which for military purposes would have been necessary along the lines. He gives one or two statements of facts in support of this view, which would appear to have come to light since Dr. Bruce's investigations; for instance, that the Vicar of Gilsland had discovered on the site of the vallum the pavement of a road 14 ft. wide; and at the point where the road, if it were one, would have to cross the Poltross burn, the author observed a bit of Roman masonry, which was discovered by the men when quarrying close by, and which "appears to have been part of the abutment of a bridge." Dr. Bruce, he says, cannot have observed this, as "he remarks that there are no traces of a bridge over the Poltross." This is of course possible, especially as the supposed abutment seems only to have been discovered in the process of some new disturbance of the ground; but only a personal inspection can enable one to adjudicate as to the value of the discovery. The description of the manufacture of the clay cottages in the Drumburgh district, obtained from an old inhabitant, furnishes a curious picture of *al fresco* architecture. The cottages built in this way, of puddled clay with layers of straw at intervals, on a foundation of loose stones, are stated to be warm and comfortable (some are still in existence), and might afford a new hint for remunerative cottage building at low rents; though the picturesque of cottage architecture would hardly be realised, it is to be feared. At many of the farmhouses in the neighbourhood of Alston may be observed relics of the strange customs of an uncivilised age. The cowhouses are below the dwellings, access being had to the latter by stone ladders. In one house at Lonning Head, near Garigill, "the farmer and his cattle enter at the same door, the cattle turning off into the byre, and the farmer turning into the kitchen." This is a true remnant of the old pastoral simplicity; almost a pity, perhaps, that a few such customs should not be kept here and there in odd corners just for their historic interest, and to show how men used to live.

The chief interest of the district, however, is the Roman wall, which one can never see or hear of without a fresh feeling of admiration for the extraordinary people who carried out these great works, as regardless of time and cost as if they were assured that the world was theirs for good, and that a new country, once conquered, was a field for unrestricted future rule to be prepared for and made good by erections and defences, which seemed designed to last for ever, and which at least have long outlasted the use for which they were made. Mr. Jenkinson's book will be worth something to travellers in the Carlisle district, if it only assists them in following and comprehending the remains of the mighty fortification with which the temporary masters of the island designed to ensure their uninterrupted rule, by the simple expedient of "walling up" from seventy to eighty miles of country. Under the modern military system a line of comparatively few forts at intervals would accomplish the object. Before artillery, the thing could only be made complete by building continuously from sea to sea; and that being the case it was done, as a matter of course, and as a simple piece of necessary military strategy, by a people who never did anything by halves. The remark which Scott puts into the mouth of one of his characters, that "our modern labours seem as if constructed out of their fragments," is scarcely an exaggeration.

Papers on Subjects connected with the Duties of the Corps of Royal Engineers. Contributed by Officers of the Royal Engineers. New series, vol. xxii. Woolwich: Jackson & Sons.

In this annual volume we are always sure to meet with papers of practical value and interest, sometimes as much bearing on architects' as on engineers' work. As such we may class the description of the operation of straightening the brick chimney-shaft of the Arsenal Gas-works at Woolwich, attained by a very delicate process of removing piecemeal a course or two of bricks and replacing them by slightly thinner bricks set in sand with only a slight mixture of lime, subsequently raked away till the chimney settled to its bearings on the new bricks, which again were removed and still thinner bricks and thin tiles introduced, the sand filling being removed in the same way, till by repeated operations the chimney had been brought to the perpendicular. A much more elaborate paper, following the above-mentioned, viz., "Notes on Portland Cement Concrete," by Major Macquay, may equally be referred to with advantage by every one concerned in the practical operations of building. The paper is illustrated by careful diagrams. We cannot take the officers of the Royal Engineers as authorities upon architectural design, however; and Major Macquay's statement that concrete dressings have a very good effect with brick must be taken *cum grano*,—they may be made to have a good result, perhaps, but it must be by a special treatment, and not by imitating stone. The paper by Captain Millar on the "Simplification of the Scale of Shade" in map-drawing, and the discussion thereupon, are very interesting in themselves, and not without suggestiveness to all who are concerned in the representation of things, naturally or conventionally, on paper; though of course the considerations here are in direct reference to maps of the face of a country for military purposes. Captain Seddon's paper, on "Our Knowledge of Building Materials, and how to improve it," originally read to the Institute of Architects, is reprinted here. The volume keeps up the reputation of the Corps of Royal Engineers.

Monumental Designs. By Wm. A. Waddington. Published by the Author. Burnley, 1875.

This is a collection of twenty-five plates of lithographed designs for sepulchral monuments, commencing with the simpler form of mere headstones, and increasing in elaboration and scale up to an architectural monument with sculptural decoration. There is no preface or statement of any kind to indicate the footing on which the designs are published, and whether the author is a designer pure and simple,—an architect, in fact,—or whether he is an executor and vendor of monuments. The drawings are very neat, and there is a uniformity of style throughout which indicates that the designer has a definite creed and keeps to it; at the same time the type is not one that we can very cordially admire. It represents that kind of adaptation from French Gothic which has become habitual

here of late, and in which the characteristics of Early French Gothic are exaggerated into a heavy, lumpy, and inelegant style, which has its merit, perhaps, in its capability of being treated so as to procure solidity and massiveness of effect in small things, such as the headstones before referred to, but which becomes less interesting and more cumbersome-looking the larger the scale on which it is applied. Nothing could well be more inartistic than the detail of the angle pinnacles in No. 100, or the pinnacles and spirelet in No. 89. No. 92 is better; but the merit of the collection is in the smaller designs, some of which are good, and all solid-looking,—"too, too solid," in fact; there is cleverness, but want of refinement, in them. There is a good deal of work represented in the collection, which is very well got up.

L'Art: Revue Hebdomadaire illustrée. Nos. 30 and 31. Paris: Heymann.

No. 30 contains a very fine etching by Rajon, from M. Bonnat's portrait of "Mdme. Pasca," in this year's *Salon*. The portrait, which represents the lady full-length in an ample white satin dress, with darker fur trimmings, offers a good subject for effective treatment in etching, from the amount of light in it, which enables the etcher to adopt a free and unlaboured treatment of the principal surfaces. An article on Boulenger gives good and large-size woodcut illustrations of some of his rustic figures. Though in literary and critical power the periodical cannot pretend to rival the *Gazette des Beaux Arts*, its illustrations are of a somewhat kindred excellence, and the advantage of a large page is unquestionable in a publication of this kind. The same number contains an article on the artists connected with *Punch*, with reproductions of some of their works. No. 31 opens with an article on architecture in the *Salon* of the year, by M. de Bandot, presenting nothing special for remark, and not illustrated. A general article on the *Salon* is illustrated by some clever *croquis*, as the French call that rough style of illustration by which they give in a facile manner the spirit of a picture, without going to the time and expense of elaborate engraving. An illustration in this style of Detaille's "Le Régiment qui passe" shows much spirit and character. M. Soldi continues an article on Egyptian sculpture, commenced in a previous number. The larger illustrations in this number are rather deficient in interest, but the publication in general keeps up to its standard.

Miscellanea.

Fall of Churchyard Wall and Railings at Loughborough.—An accident of a serious character occurred on Sunday, the 1st inst., in front of All Saints' Church, Loughborough, by which several persons were injured. Two troops of the 7th Hussars, headed by the band of the regiment, were marched up Church-gate towards All Saints' Church. The street being very narrow, a crush ensued. Opposite the church a crowd congregated, and many persons mounted the churchyard wall,—a height of about 4 ft.,—and held themselves up by taking hold of the upper part of the iron railings, some 4 ft. long. The band on entering the churchyard was stationed near the entrance-gates and played while the soldiers entered the church. This was barely accomplished before a crash was heard, followed by shrieking of women and children. The weight of the people on the walls and their pulling at the top of the rails had had the effect of overhauling the railings, and with them the coping stones for a length of about 45 ft. Persons standing on the causeway were the greatest sufferers, the railings and their occupants being pitched upon them without the slightest warning.

Wells (Somerset).—The little chapel at the northern end of the Vicar's Close is about to be thoroughly restored at a cost of between 600*l.* and 700*l.* This chapel is one of the architectural gems of the city, partly built by Bishop Ralph, of Shrewsbury, in the fourteenth century, and part by Bishop Beckynton, in the fifteenth century. The chapel having fallen into a state of great dilapidation, a proposition was made by a gentleman connected with the Theological College for its restoration. The Vicars Choral, as owners of the chapel, accordingly granted a long lease at a nominal rent, and the work will be begun immediately, under the superintendence of Mr. B. Ferrey, architect.

Surrey Archæological Society.—The members of this society met at Croydon on the 5th inst. for their annual excursion, and proceeded in carriages to Sanderstead Church. A paper on the Manor of Sanderstead was read by Mr. G. Leveson-Gower, the High Sheriff of the county, and the route was then continued to Warlingham Church, which was described by Mr. Ralph Nevill, F.S.A. After refreshments at the Leathern Bottle, the party proceeded to Farley Church, of which Mr. Heales gave a description. Passing through a portion of Surrey and crossing into Kent, West Wickham Church and Manor House were visited, and here they were met by the Archbishop of Canterbury. At Wickham Court, a noble castellated building, Colonel Lennard entertained the excursionists, and gave a history of the mansion. Addington Church and Palace, on the invitation of the Archbishop, were next visited, where papers were read. Returning to Croydon, a collation at the Public Hall, Mr. Seymour Teulon presiding, concluded the proceedings.

Discovery in the Iron Trade.—In one of our iron-making centres experiments of great economic significance are being conducted under the supervision of the senior partner in the firm of Messrs. Rogers, Birchfield, & Co., ironmasters, of Leechburgh, Pennsylvania, who is on a brief visit to this country. Mr. Rogers has applied the natural well-gas of Pennsylvania as a fuel for all the purposes of his ironworks—the heating of furnaces, and the generating of steam; and by the application of blast, injected at the top of the furnace, he has used the principle of the blow-pipe in the making of finished iron, to the conspicuous economy of the working and the improvement of the quality. Mr. Rogers is now occupied in trying to ascertain if the blast can be used in a similar manner in this country, and the experiments made by him have thus far promised equal success in the two countries. If all should be realised which is anticipated, it will be possible to make finished iron of cheap slack instead of costly large coal.

New Franciscan Monastery in Chester. On the 3rd inst., the foundation-stone of a new Franciscan monastery, which is being erected in Grosvenor-street, Chester, was laid by Lord Feilding. The site adjoins the church of St. Francis, which was opened a short time ago by Cardinal Manning. The front elevation is to be of red brick with stone dressings, and three stories high. On the basement there will be small reception-rooms on either side of the main entrance, with dining-room or refectory to the right, and library to the left, and cloister to the rear. The cells, thirteen in number, will be arranged along the corridors in the second and third stories above. The building will cost about 1,500*l.*, of which 400*l.* have been subscribed, and the donors of 25*l.* each will have their names inscribed over the cells. Mr. J. O'Byrne, of Liverpool, the architect of the new church, prepared the plans, and the work will be carried out under the superintendence of Mr. Woolley.

The Borough Surveyor of Kingston.—"No man appears to us," says the *Surrey Advertiser*, "to deserve less the embittered and persistent attacks which have been made on him than Mr. Dunscombe, the borough surveyor of Kingston. With the highest qualifications for his office, and discharging them with the utmost zeal and efficiency, he is an officer whom the borough, or indeed any other in the kingdom, might fairly consider itself fortunate to be able to retain the services of. On Thursday evening, the 5th inst., a further unseemly scene was created by one or two members of the council renewing their absurd protests against this gentleman, but we believe that public opinion will emphatically support the more intelligent members in their determination to put down this feline species of attack on a meritorous officer, whose services are absolutely indispensable to the borough."

Art Union of London.—The exhibition of prizes now open in the Gallery of the Institute of Painters in Water-colours, Pall-mall, is an exceedingly interesting one. In the gallery will also be found Mr. Maclise's original picture in oil of "The Death of Nelson," from which he made the great wall-painting in the Palace of Westminster, companion to that of "Wellington and Blucher," the subject of the Society's last print. The new plate has employed Mr. Sharpe for five years to engrave it, and there is no room to doubt that its success will be at least equal to that of the companion print.

Engineers in Turkey.—Capt. Tyler, Chief Inspector of Railways, Board of Trade, has inspected about 900 miles of railway in that country for the Turkish Government, in company with Mr. Barlow and Mr. Vignoles, in order to report upon the requirements necessary to be executed before they could be definitely received by that Government, and upon the cost of such requirements. That work completed, he undertook, at the special request of the Grand Vizier, in company with Mr. Vignoles, M. Fradet, secretary, and Mr. Payne, to ride through Bosnia and to examine the nature and resources of the country. This journey was performed on horseback, and extended over 19 days, during which about 400 miles were traversed, principally of mountainous country, impassable for wheeled vehicles. To carry tents, cuisine, baggage, servants, &c., upwards of 50 horses were employed daily.

The Yarmouth Aquarium.—The Committee appointed at the recent public meeting to promote the Great Yarmouth Aquarium scheme having ascertained that the amount subscribed outside Yarmouth was only 5,000*l.*, have come to the following resolution:—"That in the opinion of this meeting it is to the interest of the town to promote to the utmost in their power the erection of an aquarium, but that in reference to the question now referred to them it is in their opinion only just and proper that the promoters of the undertaking be requested to show what amount they can raise before the town be applied to for subscriptions." There is a disposition among the Committee, if the shares already taken are increased a certain proportion, to do their best to make up the capital necessary to carry out the aquarium, skating rink, &c., which it is stated would cost 23,000*l.*

Presentation of a Fountain at Birmingham.—The Public Works Committee of the Birmingham Town Council had under their consideration at their meeting on the 3rd inst. an application by Mr. Arthur Ryland, on the part of his sister, Miss Ryland, to be allowed to erect a fountain at the junction of Bradford-street and Moat-row. The application was unanimously granted. It is understood that the fountain will be circular, about 10 ft. 6 in. wide. On each of two sides there will be a large trough for water for cattle and sheep, and the spaces between these troughs will be left open to enable persons to ascend two steps to a circular basin above, into which jets of water will issue. Near to the ground will be troughs for dogs, and the whole structure will be surmounted by an ornamental lamp, and will reach a height of 11 ft. 6 in. The material employed will be granite.

The Advance of Wages in Scotland.—At a meeting of the St. Fergus School Board last week, a letter was read from Mr. William Stuart, builder, stating that, owing to the great advance of wages and material since he had given in his offer for the mason work of the North School, it would be quite impossible to go on with the contract at the present price. He found that 10 per cent. would only be a fair addition, and he would only ask 44*l.* in addition, making the contract price in all 580*l.* Letters had also been received from Mr. Kellman, plasterer, and Mr. Reid, slater, asking certain additions to the terms on which they had offered to do their respective parts of the work of the North School, not exceeding 10 per cent. It was agreed to accept the increased offers.

The Evictions in Spitalfields.—The Great Eastern Railway Company, in evicting from their homes the inhabitants of the dwellings situated in William-street and Fleet-street, Spitalfields, in pursuance of the operations for carrying on the new line, appear to have produced a considerable amount of distress, owing to the fact that in many cases the tenants have been unable to obtain accommodation sufficiently near to their places of employment. Some ninety families, comprising about 500 persons, consisting of costermongers, match-makers, chair-makers, and sempstresses, have been suddenly called upon to remove from their habitations, which they have occupied in some cases for nearly forty years. It has been arranged to hold a public meeting to procure some alleviation of the present distress.

The Town Hall, Brading.—We understand that the inhabitants of Brading are about to take down their ancient Town Hall (which has become somewhat unsafe from age), and rebuild it; and designs for a new erection, after the old style, have been presented to the Corporation by Mr. Varney, of Newport.

Accident at the Dundee New Graving Dock Works.—On the 9th inst., it was discovered that a considerable portion of the floor of the new graving dock had been forced about 7 in. above its centre level, and that water was finding its way into the dock. In order to prevent any serious calamity, it was considered expedient to flood the dock to a slight depth. Mr. Cunningham, the engineer, states that it would not be prudent to make use of the dock until it is strengthened. The whole length of the floor was built in exactly the same way, but the work at the eastern end being recently constructed, was still comparatively green, and yielded to pressure. It was agreed that the opinion of Mr. Leslie, C.E., should be obtained in the matter.

Platform Accident at Scarborough.—Last week a serious accident occurred during the ceremony of laying the corner stones of Sunday schools in the course of erection in connexion with the South Cliff Congregational Church, Scarborough. A temporary wooden platform had been erected for the accommodation of those taking part in the ceremony, and just before proceeding to lay the fifth stone that portion of the platform or scaffolding on the interior of the building suddenly gave way, and precipitated eight persons to the ground, the planks of which the scaffolding was composed falling upon them. Several of the persons who fell were more or less injured by the fall.

Extension and Improvement of Shoreham Harbour.—The opposition to the extension and improvement of Shoreham Harbour, on a plan proposed by Capt. Wood and submitted to the shareholders and trustees by Mr. W. Hall, has been overcome, and there is now a fair prospect of the Port of Brighton (for such is Shoreham) being placed on such a footing as to be remunerative to its shareholders, and sufficient for the wants of the large populations which it ought to serve. The sum of 100,000*l.* is to be expended on its extension and improvement under the engineering auspices of Sir J. Hawkshaw. Things having been brought to this point, a Bill will be brought in next Session to effect these objects.

Strome Ferry Pier, Inverness.—The repairing of this massive structure, at which upwards of a dozen men have been occupied for the last seven months, has been completed, under the management of Mr. Alex. Rose, carpenter, and Mr. J. Macdonald, blacksmith, both of Inverness. The old wooden piles, which from a square of 12 in., were reduced since 1870 to a square of 3 in., which tends to show the strength of sea-water here—these old decayed bars were replaced by seventy-seven new ones of green heart wood from the West Indies, at a cost of 3,000*l.*, this wood being said to be the most durable and hard, next to lignum vitæ.

A Colonial Museum for London.—A deputation from the Council of the Royal Colonial Institute has waited upon Lord Carnarvon, at the Colonial Office, on the subject of establishing a colonial museum in London. The Earl of Carnarvon said he fully appreciated the objects of the deputation, having been in correspondence since he came to office with some of the colonies on the subject. There were difficulties in the way, but he was not without hope of bringing matters to a satisfactory conclusion. He might say that he had already received offers in support of the proposal to the extent of 9,000*l.* or 10,000*l.*, but that was barely more than one-third of the amount required.

Election of District Surveyor.—At the meeting of the Metropolitan Board of Works, on the 6th inst., the Board proceeded to elect a surveyor for the district of St. Saviour, St. George the Martyr, Southwark, and the northern portion of Lambeth. No less than twenty-two candidates were in attendance. The appointment ultimately fell to Mr. Roger Smith. Mr. Causeway, as chairman of the Building Act Committee, moved a number of new conditions to be observed, one being that the officer shall keep the district office open daily from ten till six o'clock, and these conditions were agreed to.

Cornwall House of Mercy.—On the 4th inst. the stone of the probationers' ward of this home was laid by the widow of the late Rev. Arthur Tatham, rector of Broadoak Boconnoc, and Prebendary of Exeter. The ward is built as a memorial of the esteem in which Mr. Tatham was held in the diocese of Exeter, and especially in the county of Cornwall, by his friends.

Little Hulton.—Proposed Sewerage Works.—The Little Hulton Local Board, at their meeting on Monday night, approved of plans submitted by Mr. Williams, C.E., for the sewerage of the district. They also accepted the terms offered by Mr. J. Smith, on behalf of the Bridgewater Trustees, for the lease of a plot of land for 21 years, as a sewage farm. The area of the land is about 18a. 1r. 13p., and the rental which the local board are to pay for it is 5*l.* per statute acre per annum. It was further resolved to apply to the Local Government Board for the loan of 9,000*l.* for the carrying out of the scheme.

Laying the Foundation-stone of the New Masonic Hall, Grimsby.—On the 2nd inst., the foundation-stone was laid of a building to be erected by the Pelham Pillar Masonic Hall Company (Limited), upon an eligible site in Osbourne-street, in close proximity to the Town-hall. The estimated cost of the building, which is to be a Masonic hall, is 3,835*l.* It is said that the progress which Freemasonry has made in the town renders the erection of such an edifice needful.

Opening of the Public Baths, Westbromwich.—The public baths in this town have been opened by Mr. T. Lloyd, a member of the Baths Committee of the Board of Commissioners. The building is adjacent to the new town-hall and forms a detached block. There are two swimming-baths, a first class and a second class. The baths are about 50 ft. by 30 ft., and to each there are about fifty dressing compartments. There are also twelve private baths—eight for males and four for females.

Greenham New Parish Church.—The small Parish Church of Greenham, which had for a lengthened period been a familiar object in the hill-side scenery to the south-east of Newbury, has been razed, the materials being required in the erection of the new structure, the foundation stone of which was laid by the Vicar (Rev. O. E. Slocock). The church will be built in the Early English style of architecture, from the plans of Mr. Woodyear. The contractor is Mr. Samuel Elliott, builder, of Newbury.

Art and Industrial Exhibition at Preston.—An exhibition of works of art and industry was opened on the 9th inst. at Preston by the Mayor, who was supported by the Mayors of neighbouring towns. Lord Winmarleigh, in an address, compared art as it was with what it is, and quoted a number of figures to show the increased value of art productions. Art and science contributed to the intellectual enjoyment and enlightenment of the masses.

Admission to Grosvenor House.—The Duke of Westminster has had a great number of cards prepared, and has sent them to the heads of large establishments, with the view of enabling the *employés* who are engaged, or who take an interest in art industry, to see the pictures and decorations of Grosvenor House. The card admits the holder and four friends on any day in August and September between the hours of two and six p.m.

An Ancient Burial Place.—A correspondent of the *Moscow Gazette* writes from Rjacsan that the workmen excavating ground for the new railway outside that town have uncovered an old burial-place of ancient warriors. Some forty skeletons have been found with implements of war and relics of armour dating from a remote period, namely, swords, arrows, spears, and ornaments worn on the head, made of iron and covered with silver filigree work.

Whitby Sewerage.—At a meeting of the Local Board last week, it was decided to engage Mr. Manser, C.E., London, to undertake the extensive scheme of town sewerage, in which the Board is about to embark. A communication was read from the Local Government Board, sanctioning the raising of a loan of 3,000*l.*, on security of the local rates, for the reconstruction of Spital Bridge, principal and interest to be paid off in thirty years.

The Carmichael Statue, Dundee.—The Committee of the subscribers to this statue having reported to a Committee of the Town Council that they would prefer a site for the erection of the Carmichael statue on the north-east plot of the Albert Institute grounds, the Committee of the Council agreed to grant the request, and have instructed the Town's architect to prepare a block plan of the Institute ground, with the view of regularity in the erection of statues generally.

Architect to the Feckenham School Board.—A meeting of the Feckenham School Board was held at Astwood Bank, on the 4th inst., to appoint an architect for proposed school at Astwood Bank, to accommodate 242 children and teachers' residences; also school at Crabb's Cross, for 350 children and teacher's residences. Several applications were received by the Board, who selected Mr. Ernest A. Day, of Worcester, as their architect.

Plans for the Whitstable School Board Schools.—Several meetings of the School Board were held last week, to examine plans for the erection of Board Schools. About twenty designs have been sent in, principally by London architects. From the number of plans the Board found it a difficult matter to choose the best; but, after due consideration, the design of Mr. Slingsby Stallwood, of Folkestone, was accepted.

The Alleged Bad Foundations of Liverpool Houses.—The Liverpool Health Committee have issued a report on their investigations into insanitary foundations in Liverpool, defending the Corporation from the allegations made by Mr. Alderman Bennett, of Liverpool, to the Local Government Board, to the effect that the foundations of houses in new streets were composed of street refuse and other organic matter dangerous to health.

The Whinbergh School Board.—The Education Department having duly approved of the plans and specification for the erection of a school, and teacher's house attached, as agreed upon by the Board, the formal contract has been signed, by which it is stipulated that the buildings are to be finished by the 1st of February next. The work is now fairly commenced, and the contractor is Mr. William Larner, of East Dereham.

The New Reservoir, Cowes, Isle of Wight. Mr. Richard Barrow, chairman of the Local Board, turned the first sod of the work in connexion with the building of this reservoir on Monday at three in the afternoon, immediately after which the contractors, Messrs. Grice & Woodhouse, set on a large gang of men to commence excavating without further delay, under the supervision of Mr. Manwaring, the engineer.

The late Fire at the Liverpool Landing-Stage.—One of the causes to be tried at the approaching Liverpool Assizes is a claim made by the Mersey Dock Board against the Liverpool Gas Company, the allegation being that the fire which caused the destruction of the stage arose through the carelessness of a plumber who was adjusting gas-pipes.

The Regent's Canal Bridge.—In reply to Sir T. Chambers, in the House of Commons on the 3rd inst., Lord H. Lennox said that steps were being taken to restore the bridge over the Regent's Canal destroyed by the explosion in October last, and since a legal decision had been come to as to who was to bear the cost the works would be proceeded with as fast as possible.

The late Floods.—The inquiry into the cause of the deaths by the floods at Cwn Carn, near Newport, has resulted in a verdict alleging that the Monmouthshire Railway and Canal Company did not keep their reservoir in a safe condition. It is alleged that numerous actions will be brought against the company to recover damages.

Tenders for City Sewers.—The tender of Messrs. Howell & Robson for the diversion of City sewers and the construction of new sewers between the London, Chatham, and Dover Railway and Southwark Bridge, for the sum of 26,500*l.*, was accepted by the Metropolitan Board of Works, on the 6th inst.

New Church at Eltham.—The Bishop of Rochester consecrated a new church at Eltham, near Blackheath, on the 3rd inst. The church, which is dedicated to St. John the Baptist, is from the design of Mr. A. W. Blomfield. The building, which will serve as the parish church, has been erected at a cost of 10,000*l.*

New Church Schools for Accrington.—On the 6th inst. the corner-stone of St. Peter's Church of England new schools was laid at Accrington, by Mrs. Hargreaves, wife of Colonel Hargreaves, of Broad Oak. The schools, when finished, will accommodate 600 children.

Strike of Six Hundred Locksmiths.—On Monday, the locksmiths of Wolverhampton, excepting those in the plate department, began a strike for an advance in wages of 10 per cent.

Convention of the American Institute of Architects.—We have before us a published report of the proceedings of the eighth convention of this Institute, and had prepared some extracts from it for publication. We are forced, however, to postpone them.

School, Todmorden.—The Hebden Bridge sites committee recommended the purchase of a site for a school at Lower Stubbins, to accommodate 500 children, and Mr. John Sutcliffe, architect, was appointed to draw a plan. The recommendation was approved.

Statue to Lord Mayo.—The late Governor-General of India (Earl Mayo), who was murdered by a native, is to have a statue at Cockermouth, with which is memory is associated. Lord Napier and Ettrick will unveil the statue on the 19th inst.

Alarming State of Wem Parish Church. A few mornings since a portion of the stonework of the top window on the south side of the steeple, fell on the roof of the vestry, and caused great destruction to the slates and rafters. The tower is in a very decayed state.

Margate.—At a meeting of the Council on the 3rd inst., it was resolved, on the recommendation of the surveyor, that sea-water should be used for the purpose of watering the roads.

Farming.—Mr. C. H. Birbeck, proprietor of *Berrow's Worcester Journal*, has offered a prize of 100*l.* for the best-managed farm in the county.

The London Roads.—For 11,500,000*l.*, given on p. 680 as the cost of maintaining the roadways, read 1,500,000*l.*

TENDERS

For detached villa residence, with studio, at Hampsteadhill Gardens, for Mr. J. Ingle Lee. Messrs. Batterbury & Huxley, architects:—

King (accepted)	£1,680 0 0

For reinstatement, after fire and alterations, to No. 10, Chenies-street, Tottenham-court-road, for Messrs. Hewetson & Milner. Messrs. Batterbury & Huxley, architects:—

W. & F. Smith (accepted)	£428 0 0

For the enlargement and additions to Sandy Schools, Beds. Mr. John Usher, architect:—

Haynes	£595 0 0
Knight & Boston	585 0 0
Withey	549 0 0
Coban	547 0 0
Cunvin	531 5 0
Twelvetrees	492 0 0

For Messrs. Sutton's new premises, King's-road, Reading. Messrs. W. & J. T. Brown and F. W. Albury, architects:—

Woodbridge	£2,980 0 0
Searle	2,951 14 0
Filewood	2,945 0 0
Barnicoat	2,912 0 0
Woodroffe (accepted)	2,799 0 0

For additions and alterations at Weston Lodge, Putney Park, Surrey, for Mr. S. Merriman. Quantities supplied:—

Hobson	£760 0 0
Adamson	750 0 0
Arlees	731 0 0

For additions and alterations to Avenue House, Church End, Finchley, for Mr. H. C. Stephens. No quantities:—

M'Lachlan & Son	£2,573 0 0
Hobson	2,407 0 0
Ploughman	2,420 0 0
Cooper	2,365 0 0

For new roof over carriage factory, Upper Montague-street, for Messrs. Peters & Sons. Mr. A. C. Cumings, architect:—

Benstead & Sons	£1,370 0 0
C. & N. Foster	1,320 0 0
Mark	1,183 0 0
Harris & Sons	1,182 0 0

For proposed new buildings: comprising two shops in Bell-street, and the formation of a mews with twenty-eight stables and thirteen shops, in Chapel and Burne streets, Edgware-road, with gateway, entrance, and workrooms over, and at the rear a warehouse building, with private stabling, workrooms, covered yards, &c., for Mr. D. B. Johnstone. Messrs. Bird & Walters, architects:—

Jackson & Shaw	£30,110 0 0
Hill, Higgs, & Hill	29,980 0 0
Macey	29,841 0 0
Ennor	29,387 0 0
Brass	28,882 0 0
Nightingale	28,750 0 0
Lawrence	28,720 0 0
Williams & Son	28,597 0 0
M'Lachlan & Son	28,430 0 0
Cooke & Green	28,378 0 0
Bangs	27,989 0 0
Newman & Mann	27,756 0 0
Adamson & Sons	27,000 0 0
Temple & Foster	26,000 0 0
Elkington	25,993 0 0
Mark (accepted)	25,950 0 0

For the erection of new premises, No. 63, Leadenhall-street, for Messrs. W. Morrison & Sons. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Foster	£1,866 0 0
Ashby, Brothers	1,847 0 0
Scrivener & White	1,752 0 0
Niblett & Son	1,750 0 0
Read & Son	1,747 0 0
Mortar	1,694 0 0
Ennor	1,686 0 0
Sharpington & Cole	1,668 0 0

For the erection of a villa residence, at Sutton, Surrey, for Mr. Arthur J. Allard. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Mitchell	£3,500 0 0
Peskett & Taylor	3,465 0 0
Sharpington & Cole	3,161 0 0
Hosking, Brothers	3,067 0 0
Legge	3,050 0 0
Jarrett	2,890 0 0

For the erection of a block of school buildings, Kirkdale-road, Leyton, for the Leyton School Board. Mr. J. T. Newman, architects. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Ashby, Brothers	£4,283 0 0
Reid	4,042 0 0
Arber	4,025 0 0
Hosking, Brothers	3,975 0 0
Rivett	3,973 0 0
Sayers	3,718 0 0

For Lambeth Infirmary, out-door labour-yard, and receiving wards. Messrs. Fowler & Hill, architects. Quantities for infirmary by Messrs. Lamb & Church; for out-door labour-yard and receiving wards, by Messrs. Fowler & Hugman:—

Stephenson	£ 8,776 0 0
Crockett	61,945 0 0
Oliver	60,280 0 0
Sherman	59,914 0 0
Howard	58,190 0 0
Crocker	56,565 0 0
Downs & Co.	56,550 0 0
Hart	55,840 0 0
Chapell	55,500 0 0
Nightingale	55,439 0 0
Pearson	55,153 0 0
Hill, Higgs, & Hill	54,400 0 0
Perry & Co.	53,848 0 0
Taylor	53,600 0 0
Tarrant	53,200 0 0

For the erection of new farm-buildings, at Redlands, near Ashwell, Herts, the property of Mr. James White, exclusive of sand and carriage of all materials. Mr. W. Watson, architect:—

Bailey & Son	£2,577 10 0
Sabey & Son	2,540 0 0
Redhouse	2,533 9 0
Dunham	2,377 0 0

For rebuilding the Red Cap, Camden-town. Mr. H. H. Bridgman, architect. Quantities by Mr. W. Barnett:—

Wilson, Brothers	£6,235 0 0
Manley & Rogers	5,884 0 0
Kelly, Brothers	5,730 0 0
Tomms	5,665 0 0
Crockett	5,529 0 0
Elkington	5,510 0 0
Bracher & Son	5,497 0 0
Tarrant	5,460 0 0
Scrivener & White	5,293 0 0
Atkinson & Walker	5,190 0 0

For rebuilding warehouses, Nos. 16 and 17, Windmill-street, Finsbury, for Mr. T. C. Usher. Mr. John Groom, architect. Quantities by Mr. B. A. C. Herring:—

Downes & Co.	£1,306 0 0
Marsland & Son	1,295 0 0
Chapman	1,250 0 0
Langmead & Way	1,237 0 0
Kelly, Brothers	1,220 0 0
Scrivener & White	1,174 0 0
Crabb (accepted)	1,109 0 0

For enlarging and building new school to Wesleyan Chapel, Southall, Middlesex. Mr. Baker, architect. Quantities not supplied:—

Brown	£1,040 0 0
Baker	770 0 0
Gibson	747 0 0
Taylor	694 0 0
Bailey	491 10 0

For the erection of school buildings, with teacher's residence, at Beguildy, Knighton. Mr. E. H. Lingen Barker, architect:—

Jones	£901 0 0
Birrell	898 18 5
Bufton	790 0 0

For alterations and additions to house, in High-street, Barnes, for Mr. W. H. Ratcliff. Messrs. Tress & Innes, architects:—

Tozer (accepted)	£940 0 0

For pulling down and rebuilding stables, &c., at Fairseat, Highgate, for Sir Sydney H. Waterlow. Messrs. Davis & Emanuel, architects. Quantities by Messrs. Linsdell & Giffard:—

Woodward	£1,790 0 0
Newman & Mann	1,735 0 0
Williams & Son	1,689 0 0
Southcott & Co.	1,598 0 0
Holmes	1,434 0 0

For the erection of school buildings, with teacher's residence, at Crugybyther, Radnorshire. Mr. E. H. Lingen Barker, architect:—

Jones	£1,024 0 0
Speake	983 15 7
Birrell	933 13 0
Bufton	800 0 0

For alterations and repairs to the Goat in Boots, Fulham-road, London. Mr. H. J. Newton, architect. Quantities by Mr. Budd:—

Boden	£565 0 0
Godden	550 0 0
Taylor	530 0 0
Shurmur	529 0 0
Hockley (accepted)	518 0 0

TO CORRESPONDENTS.

ERRATUM.—In "Report of Privy Council on Education," line 20, for "these *ten* years," read "these *two* years."

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Vol. XXXIII. No. 1698. Saturday, August 21, 1875.

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Light in London.

GOOD roads are, so to speak, the *backbone* of commerce. A town without the solid framework of well-paved streets, to connect its extremities, is a topographical jelly-fish, a mere polype of a city. But not only do roads make a commerce, but commerce, innately *polite*, returns the favour, and makes roads.

Good lighting, however, is as essential to the welfare of a town as good paving. The latter breeds intercourse, the former security of life and property. Without light vegetables grow white and sickly; in darkness *animals* prey. What the stars are to the seafarer the street-lamps should be to the wayfarer,—shining finger-posts, to direct him in his course.

Continuing amongst the marvels of London, we now purpose making a rough estimate as to what is the extent and cost of the entire lighting appliances of this great metropolis,—what the total number of gas-jets fringing its 2,500 miles of streets, like the string of illumination-lamps which border the gravel-walks of the gardens at some suburban place of amusement on a "gala night"; what the united length of the gas-mains buried, like a huge knot of lob-worms, in the soil beneath its thirty-seven millions'-worth of pavement; what the aggregate quantity of gas which is consumed in making the monster capital shine every night, as if it were the decomposing body of some enormous leviathan of the deep, glowing with all the phosphorescence of that wondrous process of *cold* combustion known as "natural decay"; and what the gross cost, or, rather, what the gross amount of money which is *burnt* night after night in the collective street-illumination of London,—ay, burnt as consummately as if the whole of the gold had been blown into the air, in fire-dust, in the form of some brilliant pyrotechnic display.

Let us premise, however, that those who have seen London in the day-time only, with its flood of life streaming through its bricken veins to its restless stony heart, know it not yet in *all* its grandeur and solemnity. They have still, in order to comprehend the multiform sublimity of the great city, to contemplate it by night; under its different aspects. And, more particularly, far off from an eminence—such as Highgate-hill, or Hampstead-heath, on a bright winter's evening; for then, though the stars be shining in all their infinite numbers in the cold clear vault of the heavens above, there is another firmament spread out on the earth below, with its millions of brilliant points of light glittering, like a carpet of constellations, at the feet. Line after line of the long avenues of lamps sparkles in thin fibres of flame, like the trails left by November meteors, cutting and crossing one another till they are lost in the haze of the distance, so that the whole seems as though it were a net-work of fire, or some vast spider's web covered with countless specks of hoar-frost which are all aglow in the rays of the morning sun. Over the brilliant plain, too, there hangs a large lurid cloud, red and luminous as if the monster metropolis were in flames; and looking from afar as though it were one of those huge "fire-mists," or *nebulæ*, out of which the elder Herschel fancied planets to have been consolidated.

Again, it is at night that the strange anomalies of London life are best seen; for it is when the hum of life in the great city grows faint as the murmur of a sea-shell in the ear, and the shops darken, and the glaring gin-palaces thrust out their ragged and squalid crowds to pace the streets, that London puts on its most solemn look of all. On the benches of the parks—in the niches of the bridges—and amid the litter of the markets, or else all along some "hot-wall" at the sugar-bakers', are crowded (we can hardly say nestled), the homeless, shoeless, and penniless. There, on a doorstep, may be, dozes some wretched tatterdemalion child whose day's begging has not brought him enough to pay even for the twopenny "doss" to which his young companions in misery have long since gone whistling off; and where the paving-stones have been taken up and piled high in the roadway, while the mains or the sewers are being mended, and the gas streams from the tall iron pipe in a long flag of flame, there a ragged crowd is gathered round the glowing-red coke-fire—some smoking, and some half asleep as, with out-stretched hands, they stay to warm themselves beside it until the policeman comes round.

Then, as the lamps are put out one after another, and the streets grow steel-blue with the coming light, and the church-spires and roof-tops begin to stand out against the clear sky, with a sharpness of outline which in London is seen only before its three or four million of chimneys have thrown a pall of smoke over the town—then come shuffling and yawning forth the unwashed and unkempt poor; some with greasy wallets at their back, to hunt over each dustheap, and eke out lives which one would hardly think worth the eking, by seeking refuse bones, rags, and bits of old iron. Others, again, on their way to their work, stop at the corner of some street to refresh themselves with a cup of hot coffee, and there they stand grouped round the early breakfast-stall, blowing at the steaming saucerfuls of the mysterious black liquid drawn from the tall tin-cans, which have the redhot charcoal shining, like discs of crimson foil, through the holes in the fire-pan beneath; whilst already the little slattern girl, with her ragged "shallow" slung before her, goes screaming "Water-cresses"! through the still-sleeping streets.

Such is a rough pen-and-ink sketch of the grim and picturesque features of London by gas-light; and now for a jotting, historically traced, of the salient points of the metropolis before gas was thought of.

It was not till just upon 200 years ago that the City was *even partially* lighted with lamps; for in 1694 the "Orphans' Fund" was established, and by the Act of Institution we find that the sum of 600*l.* per annum was assigned towards that fund, as arising from a lease granted by the Corporation of London for twenty-one years, concerning "certayne lyghtes to be kept burning in y^e^ Stretes of y^e^ Citie." The City authorities would appear in those days to have derived a revenue from delegating the privilege of public lighting to private individuals, who must have obtained their remuneration from the householders.

Then in 1716 (on the expiration of the aforesaid lease) an Act was passed ordaining that every citizen should hang out a "lanthorne" before his door, with oil and sufficient cotton wicks to it to burn from six in the evening till eleven at night,—though even this rude form of street illumination was allowed to be discontinued between "ye seventhe nyghte after each and everie new moone, and ye thirde nyghte after ye moone was atte ye fulle"; whilst those who failed to hang out such "lanthornes" on all other nights in each month were to be fined the sum of 1*s.* for each offence.

A few years after this, however, a company seems to have been established which, in return for the munificent stipend of 6*s.* a year, to be levied from each and every householder "in y^e^ Citie rayted for y^e^ support of y^e^ poore," engaged to provide a sufficient number of lamps, and to keep them "ryghte well lyghted" from six p.m. till midnight,—the company undertaking on its part to pay, in consideration of the privilege of taxing the citizens to this extent, the yearly sum of 600*l.* before mentioned to the aforesaid Fund for the orphans.

Nor was it till the year 1736 that the Corporation itself was empowered to set up as many public lights as might be deemed necessary, and to keep them burning throughout the year "from the setting till the rising of the sun"; in return for which boon the City authorities were allowed to levy an annual rate upon each householder, according to the value of his premises. So thoroughly, too, was the work considered to have been done, that for seventy years afterwards, we are told, London was held to be "the best lighted city in all Europe"—though what the state of street-illumination in the other European cities could have been, those who can remember the "darkness made visible" by the oil-lamps burning till the year 1825 in Portman-square may be able to imagine.

Of gas companies the first chartered Corporation is known to have been instituted in the year 1812; but London was not even *partially* lighted with gas till some three or four years afterwards—nearly a century subsequent to the date (1739), when Dr. Clayton is said to have *first* evolved "spirit, black oil, and phlegm," from the destructive distillation of coal—the said spirit being the "inflammable air," as it was afterwards termed, and collected in bladders, so that it might be burnt "by pricking holes in them"; whereas the so-called "black oil" was the coal tar, and the aforesaid "phlegm," ammonia-water.

Still, it was not till nearly the end of the last

"year-hundred" that Mr. Murdock, of Redruth, in Cornwall, applied this same "spirit" to the purposes of illumination, and having collected it in a gasometer, with pipes and jets attached, lighted up his house with the "air"; after which Messrs. Boulton & Watt, in 1798, engaged the ingenious Cornish engineer to illuminate their works at the Soho Foundry, in Birmingham, by the same means. Then the success of the Warwickshire experiment induced Messrs. Phillips & Lee, of Manchester, in 1805, to instruct the same gentleman to set up 1,000 burners in their cotton-mill.

But though, after this, the "inflammable air" gradually got to be regarded as the best means of illuminating large factories, where there was plenty of ventilation, still the noxious smell which accompanied it (owing to the then-defective method of purifying it), the headache and nausea which attended the burning of it in close rooms, as well as the smoke and dirt caused by it (owing to the rude construction of the jets) not only prevented the new mode of illumination being forthwith generally adopted in houses, but the explosive character of the agent caused it to be regarded as of so highly dangerous a nature that it was not till some years later on (1807-9) that it came to be used even as a means of street illumination. For the then-most-eminent chemist of the day, Humphrey Davy, having declared that if public gas-works were set up in London, a mound of earth as large as Primrose Hill would not be sufficient to prevent the danger of the gasometer exploding, it required all the energy and zeal of Mr. Winsor—a speculative German, who took the matter up, and proposed to establish, upon the "inflammable air" principle, a "National Lighting and Heating Company,"—every 5*l.* share of which, it was asserted in the prospectus, would infallibly insure to each shareholder an income of 550*l.* per annum!—it required all the energy and zeal of such a man, we say, not only to raise as much as 50,000*l.* towards so apparently madcap and incendiary a scheme; but, even when sufficient capital had been got together for the purpose, to induce the authorities to allow him to light up Pall Mall with such a foul, fetid, and fatal compound. However, the German had a large stock of patience and perseverance, and at length, in the year 1809, this, the first great street in London, was lighted with gas—to the wonder of all London, and all the world besides. And no sooner was it a *fait accompli* than the new method of street illumination spread—literally like wild-fire—from one parish to another, till, in a few years, the Metropolis really became "the best-lighted city in Europe."

But who thinks of the wondrous novelty of gas now?

Artificial light and heat are such common appliances in these times—from a lucifer-match to that elegant chemical ingenuity, a Döbereiner's hydro-platinum lamp—from a baby's food-warmer to an oxybydrogen gas-furnace—that those who are nowadays accustomed to play with combustibles almost from their childhood, can hardly understand how difficult it must have been to have kindled the *first* flame; or how fire should in the earliest ages have been looked upon with such sacred awe as to have become an object of positive worship.

Tradition refers the origin of artificial light to a tree having been struck by lightning; but whether this be fable or fact, the power of dispelling darkness by other than natural means must assuredly have been an accidental discovery, rather than an excogitated invention. Savages are known to obtain a light by rubbing two pieces of wood together; but let even civilised people try to produce a flame by such means, and they will soon find the extreme difficulty of the task; so that it is no wonder that in the literally "dark ages," when a light had, by some marvellous means, been once obtained, it should have formed part of almost every early religion to keep it perpetually burning; or that the ancient Mythologists should have instituted a special corps of virgins, called "Vestals," to maintain the sacred lamps, as well as the sacred fire on the altar, in a state of continual ignition. The monkeys in the forests are wont to come down from the trees and warm themselves at the fires which the woodmen have lighted, and left smouldering behind them at nightfall; but never one of the four-handed brutes has been known to have sense enough to put a single log on the burning fagots, in order to prolong the pleasure of the artificial heat.

Light and heat are almost inseparable, and yet there *are* such things as *cold* flames; as in the sheen of the glow-worm and the jewel-like splendour of those winged little *cold* sparks, the fire-flies.*

Still, artificial light is well-nigh invariably the result of rapid combustion; so that with each of the higher degrees of heat some specially-brilliant colour is associated; as, for instance, the bright cherry red, which marks a temperature of 1,200° F.; the glowing golden-orange, which is the hue of heat at 1,700°; the glittering primrose-yellow, which is the luminous lustre of 2,500°; and the dazzling white, which is like a snowball of fire,—the blindingly-brilliant light which accompanies a temperature of 3,300°. Whether what chemists call "*erema-causis*," *i.e.*, the process of burning by *slow degrees*—the gradual oxidation which attends natural decomposition—has any light and colour essentially connected with it human eyes will probably never be able to detect. But, despite the apparent anomalies of phosphorescence, and, so to speak, the "optics of caloric,"—the transparency of certain luminously-opaque bodies to heat, and the opacity of other luminously-transparent ones to it—as evolved by Melloni; all light, natural as well as artificial, seems to be the "necessary consequence" of heat; for astronomers talk of the combustion of the orb of day as if it were an ordinary charcoal fire; and have even begun to calculate how long the fuel in it will be likely to last—the same as, a few years back, geologists were wont to do as to the coalfields of this country. The elder Stephenson delighted to call the warmth and illumination produced by burning coal so much "bottled sunshine"; and there can be no doubt that the heat and light which we now obtain from our Wallsend, Silkstone, and other forms of fossil carbon, were absorbed from the rays of the sun which illumined the vast primæval forests of this island countless ages before the foot of man ever trod the earth. A burning rushlight, a gas-light, and an electric light,—dim as is the glimmer of the first, and blinding as is the brilliance of the last—all owe their luminosity to the same principle, viz., to the incandescence of the tiny particles of carbon which are continually passing, and being rendered red, or white, hot in the course of their passage through the flame. Even so, in the case of the old flint and steel, a *spicula* of metal torn off from the mass, by the force of the collision, or "disruptive discharge," was suddenly raised to the temperature and luminosity of red-hot iron.

And this brings us by "easy gradients" to the improved modes of artificial lighting which are so peculiar a feature of the present age. What the convenience of the modern lucifer-match was in comparison with the old tedious knuckle-chipping process of obtaining a light by means of a tinder-box: such was the advantage of gas relatively to candles. But even candles themselves are, proportionately, a modern luxury—having been first used about the year 1300, previously to which date rushes or splinters of wood, soaked in fat, were the sole means of illumination among the poorer class in this country, whilst the rich lightened their darkness as a special luxury with pieces of string steeped in bees'-wax. Gas, however, as we have said, is an innovation within the last sixty years. So, too, the introduction of lucifers is a novelty. But the accommodation of being able to kindle a flame instantaneously, and at a cheap rate, is only a little younger than that of having one's light and one's fuel (for gas-stoves) laid on like the water to one's house; and not only the entire of this enormous town illuminated with an "air," the reservoir for which may be miles away, but the streets rendered as safe to travel by night, and the shops as showy as they are in the daytime.

The poetical pagans who allegorised the Sun as Apollo, the golden-haired god of poetry and music; as Adonis, the beautiful boy-god, the type of everlasting regeneration, youth, and grace; as Abaris, the undying and unflagging wanderer, who was for ever doomed to make the tour of the earth without getting either bite or sup; as the Ship perpetually sailing in quest of the Golden Fleece; as the Phœnix, the one bird of its kind that was eternally flying through the heavens, and rose continually from its own ashes—what pretty myths would not these pagan poets have created concerning this same wonderful Fire-air of modern times, which is not only a Night-Sun to us, but which, though as explosive as gunpowder, is carried in safety into the midst of our houses, and buried in miles upon miles of tubes under the pavement at our feet.

Some talk as to the cost of lighting the entire metropolis at present we shall reserve for another time.

* There are two artificial compounds notable for this property of shining in the dark, known respectively as "Canton's" and "Homburg's Phosphorus" (from the names of their discoverers); the former consisting of what chemists call the "protosulphide of calcium,"—*i.e.*, a simple combination of sulphur and the metallic basis of lime ("equivalent to equivalent"),—and the latter of "chloride of calcium." Moreover, sulphur, when rubbed in the dark on a heated brick, or other substance, which is not sufficiently hot to inflame it evolves an extremely weak blue flame accompanied with a peculiar odour. This flame, however, is not occasioned by combustion, but merely attends the evaporation or sublimation of the sulphur itself; for a cold body held above it becomes covered with "flowers of sulphur," thus showing that no oxidation has occurred; neither is there any sulphurous acid ($S\,O_2$) formed under such circumstances, and that must assuredly have ensued had such flames arisen from *combustion*.

PROFESSIONAL PAPERS ON INDIAN ENGINEERING.

Between the construction of bridges and other works that have no future, and architectural design that has no precedent, the doings of the engineering profession in India, the military branch especially, have frequently presented more occasion for criticism than for congratulation. The engineering college at Rourkee may be looked on as an important agent towards improvement, under its present management, and the papers on professional subjects of recent experience, published* under the editorship of Major Lang, the principal of the college, form an interesting and varied series of records of operations, some of them of rather an unusual kind, and affording instances of the reduction of theory to practice under conditions peculiar to districts only partially cleared and cultivated, and into which engineering operations are, to a great extent, being carried for the first time.

The professional papers issued from the Roorkee College Press are published in a quarterly octavo volume, averaging about 100 pages, with a considerable number of sufficiently carefully executed illustrative diagrams. We have before us the publications for August and November of last year, and February and April of the present year. The papers, in these numbers, include a considerable variety of subjects, from the manipulation of rivers and irrigating canals to the modification and improvement of working gear, both for the engineer and the labourer—the adjustment of levelling instruments, and the contrivance of a wheel-barrow fitted to the bodily capabilities of the "coolie," as distinguished from the "navvy."

The larger branch of subjects, to which we first referred, and which deal with what may be termed the manipulation of the face of the country in regard to the formation of means of communication, and the modification and control of its water-courses, necessarily occupies a considerable place in operations dealing with such great districts of comparatively uninhabited land. It is not too much to say that until a satisfactory basis is laid for a system of roads, and a definite experience gained of the changes to which the face of the country is subjected through natural causes, and the extent to which these can be controlled, the permanent inhabitation, and (consequently) the thorough civilization, of a district, are impossible. If we imagine such floods as have recently devastated some of our agricultural districts, as things possible and probable in those districts any year, with no certain indication of their extent or limits, instead of coming as the unusual result of a very abnormal state of weather, we may realise the condition in which some of the districts of India referred to in these engineering reports may be said to be, and the kind of task which is before the Indian engineer in endeavouring to acquire the information necessary for taking precautions against such invasions of nature, and to develop schemes for ultimately combating them. One of the first papers we come to is a short one by Mr. Burge, resident engineer of the Madras Railway, in which an attempt is made to find and express in a formula "a proportion between the maximum discharges through all bridges of and above 80 ft. aggregate span, on a section of the Madras Railway 110 miles long, and the terms representing the area and shape of the different basins they drain." Of course, as the author remarks, such a formula can never supersede the decision, guided by practical

* Professional Papers on Indian Engineering: Second Series, Nos. 13 to 16. Edited by Major A. M. Lang, R.E., Principal of the Thomason Engineering College, Roorkee. Printed and published at the Thomason College Press. Calcutta: Thacker, Spink, & Co. London: E. & F. N. Spon & Co.

xperience, of an engineer inspecting the site nd noting defined floodmarks, and the local raditions regarding exceptional freshes. We ll remember George Stephenson's laconic re- ark in reply to the information of the friend ho had driven him through part of the district r a new line of railway, and cautioned him gainst taking the then state of the streams as ny indication of their volume of water in winter. Pooh! didn't I see your bridges?" But here there are not friends or existing bridges o give information of this kind, the case is not o simple. The gist of Mr. Burge's formula, rather of the reasoning on which it is based, that all previous rules regard the discharge proportional to some root of the drainage *rea* alone; whereas he considers, judging from is own experience, that the shape as well as the ea of the basin is an important factor in the sult. "As an exaggerated instance, let a asin be supposed one mile wide and a ndred miles long; it will, with a free tfall, slope the same, and *cæteris paribus*, scharge *per second* a quantity not very dis- milar from that flowing from one of one mile uare, though of course the larger area will ke much longer to get rid of its flood." For e details of the application of the formula we ust refer readers to the publication; it is suffi- ent to say the required factor of the shape of e basin is embodied with sufficient approxima- on for practical value in a formula in which the ea of the basin in square miles is combined ith the length of the main river in miles,—two ta easily ascertainable, in most cases, from isting maps. The same volume contains a ng and full account of the head works of the gra Canal, by Major Helsham Jones, R.E., who as engaged on this part of the work. The nal is for navigable purposes, and "is a link the chain by which it is intended hereafter to nnect the Punjáb system of canals with that the N.W. Provinces." The "Mooltan inunda- on canals," intended for agricultural purposes, rm the subject of another paper by Mr. E. A. bold, which gives some information on the litical economy, as well as the engineering nnected with the subject. The difficulty in ranging the rates for irrigation, and propor- oning them among proprietors in many sepa- te villages, appears to have been considerable. The share system, where a number are con- rned, whether worked by the hour, by area igated, or by fractional shares in the stream water, gives rise to too many disputes. Where igation is introduced into a new country, a refulness in granting water-rights, though at e time apparently obstructive cantion, will obably avoid future complication." At the me time, the introduction, through European gineering, of systematic irrigation into the orer agricultural districts of India evidently s its bright side in its important econo- ical and social results.

"The cultivators are, as a rule, hardy, energetic, and anly, and the canal officer who possesses tact and for- arance has little difficulty in earning their confidence d esteem. His canal improvements are so readily and rmly appreciated, that he can scarcely help feeling mself enthusiastic in his work, and he requires to exer- se all his conservative feelings to restrain himself from ering too much at one time. Identified as he is so timately with the agricultural prosperity and very life the people, and brought into such frequent contact th them, the canal officer is the one to whom, in a liare of crops, the people naturally look for counsel, assistance, and for relief. The Laugreals, near Mylai on e Sutlej, once noted cattle-lifters, are now contented d industrious agriculturists. It is, however, a serious atter to develop irrigation in a rainless tract, where a llapse of irrigation works may cause an amount of ffering as disastrous as the Orissa famine."

To make irrigation successful, however, the erson in charge must have authority to settle l disputes on the spot. Private (native) enter- ise has only been successful, it is stated, in e case, that of a large landed proprietor; hose canals, the author says, will at his death e ruined by the Mahommedan laws of inherit- nce, which will give rise to litigation, pending e settlement of which the canal will collapse r want of maintenance. The people in general e so well aware of the drawbacks arising from ch complications, that in one case of a pro- sed new irrigation canal of some extent, a mber of landowners who would be concerned its success, volunteered to subscribe and posit in the Treasury the estimated amount equired, on condition that it was made and ranged by the Irrigation Department. "They ipulated that during the first four years of its orking, any outsider should have to pay a ipulated sum as compensation to the original romoters of the canal, but that after four years Government should have the right to manage it like the rest of its canals. They calculated on deriving so much benefit from it in this space of time, that it would be worth their while to hold out this inducement to Government to take it up. Tempting as the scheme was, the chances of litigation prevented them from undertaking it directly themselves." Such instances of the important bearing of English engineering and Governmental operation upon the well-being of the country districts of India, coming as they do in an incidental way in the midst of a directly practical paper, are certainly not without interest at present. The faith of the Indian agriculturist in Government seems indeed to be carried a little too far at times. It is hard to convince the people, on some occasions, that an apparent local or temporary loss is to be balanced by a general gain. "They see, in a way, the bearings of the case, but the people have a childlike faith in the idea that Government is willing to compensate with or without cause." The idea certainly has its counterpart among the opponents of public works, new railway routes, for instance, in this country.

Among the papers connected with similar subjects is an interesting account, by Mr. H. C. Graham, of the "Sutlej river-training works at Adamwahan," a report of the means employed to persuade the river to select permanently one of the various channels between which it oscillated, as well with the object of keeping a good and deep channel, as of bringing the current down in a normal direction upon the intended Sutlej railway-bridge, which would be endangered by its frequent changes of course and impact. The means employed were the formation of artificial "spurs" and weed beds in the side channels, in the hope of silting them up before the next floods. We may quote a portion of the description of this rather curious branch of operations.

"It was intended to adopt Colonel Brownlow's system as far as possible; to imitate the growth of weeds, to obstruct the channel without suddenly deflecting it, and thus to silt up the side channels. To effect this it was necessary to provide the weed itself, with means of anchoring it, and of keeping the upper end from sinking through being water-logged. This was done in the following manner:—The 'weed' consisted of a strong rope, or hawser, of moonj, generally 8 in. in girth, and of a length varying with the depth of water and strength of current up to 90 ft., with from two to ten bushes or small trees lashed to it by their butts, the largest bushes being placed lowest. The hawser was made fast to an anchor formed of a netting from 6 ft. to 2 ft. square, of 2 in. to 2½ in. moonj rope, with meshes from 4 in. to 6 in. square; in this loose bricks were built up as closely as possible, from 16 to 65 cubic feet being used in each net. To keep the weed from sinking when the hawser and bushes became water-logged, one or two empty casks were lashed to the upper end of the former. The casks, as a rule, remained perfectly tight, but as a precaution they were wetted daily, where it could be done without much expense.

Besides the above, fixed brushwood and net spurs were also used. The former were simply constructed of bushes and trees laid with their butts up stream, and kept in place by some of the anchors before described, to which they were made fast; as the bushes settled down, others were piled over them. The net spurs were made of netting similar to that above mentioned, in lengths of 100 ft. by from 6 ft. to 20 ft. wide, several being sometimes joined together. A hawser was passed through the lower meshes for the whole length of the net, and another through the upper ones; to the former anchors of the kind already described were made fast; to the latter, casks."

These means appear to have had very quickly the effect of cutting off the current from one of the obnoxious side channels, so far as to cause it to disappear in a space of about two months, from a process of natural silting up. The sections of the river bed at Adamwahan, from the 7th of August to the 12th of October last, given at intervals of a few days, show curiously the exceedingly treacherous and shifting character of the bed, and what the difficulty and risk must be in constructing a railway bridge which should form a secure passage over a river which was thus playing at hide-and-seek with the engineers all the time. From a note appended to the paper, by Lieut.-Col. Peile, R.E., Engineer-in-Chief to the Indus Valley Railway, it appears that the channel has been driven to as favourable a position as could be desired in the neighbourhood of the bridge site; and the result of the season's operations "affords good ground for hope that the oscillations of the river may be restrained with some degree of certainty within fixed limits;" but the whole account, with Mr. Graham's illustrations, affords a curious chapter on some of the difficulties of railway engineering in India. In the paper called "Notes on Bhaugulpore," by Mr. Sibold, and in "Leaves from a Superintending Engineer's Note-book," by Lieut.-Col. Medley, R.E., we find the same source of difficulty dwelt upon; the former especially naming the Kosi river. "Marvellous tales are told of its treachery and violence. Its great floods are probably due to heavy rain in the outer ranges of the Himalayas, as all its floods are preceded by a change in the colour of the water, due to the washings of the low hills, which give warning of a flood at least a day before. Its deposits are not fertilising like those of the Ganges, owing to the much shorter time the silt is held in suspension. On the Kosi, the silt could not be carried more than a hundred miles; on the Ganges it is carried hundreds of miles. The constant changes in the river are due to the configuration of the country, and to the effects of the backwater of the Ganges in flood. A deep, well-defined channel and declivity are both wanting, to give a high velocity to the stream." Water, in short, seems to have a marvellous faculty of getting into the wrong place in India; of appearing where it is not wanted, and being scarce where it is. It is an item in Lieut.-Col. Peile's notes that "the water supply of many towns in the Northern Punjáb is in a very unsatisfactory state. For Peshâwur a scheme is now in progress for leading water from the Bara river, six miles off, through concrete ducts and iron pipes. In Rawal Pindee, the unhealthiness of the city is chiefly attributed to the unsatisfactory state of the water supply. The wells are 100 ft. deep, and often dry up just before the rains,—the people use the water of the Leh Nullah, which, as it is also used for bathing and clothes' washing, is fearfully polluted. A scheme is now under consideration for bringing in a supply from the Rawal Pool, nine miles distant." The prejudices of the natives often prevent them using means within their power for procuring water. In the notes on the Bhaugulpore district, just referred to, it is mentioned that "not a single appliance for raising water by animal power is to be seen in the district, the natives believing that bullocks are killed by walking in a circle."

The directly architectural work which, as our readers know pretty well, comes in India almost entirely under the control of the engineering profession, shows, as illustrated in the present number of the Roorkee publication, some definite attempt at consistency and purity of style. The most important work, in scale, is the proposed new chief court at Lahore (the present one being temporary only), of which we are told that,—

"The general plan was prepared in communication with the Judges, and has been approved by the Government. The style of architecture selected is the Gothic-Arabic [sic] of the fourteenth century, of which style Venice affords some of the most splendid and best known examples. It is believed that it is especially well fitted for India, the arcades giving the shade which is indispensable, while at the same time affording ample means for lighting and ventilating, being, moreover, highly ornamental. The great drawback to verandahs in general, at least in the remarkably dry heat of the Punjáb, is that they retain the heat long after the sun has gone down, and when the temperature of the surrounding atmosphere has cooled considerably, rendering it impossible to open any of the doors or windows of the main building which open into them. In the Gothic-Arabic style the open tracery work of the upper portion of the arcade affords ample means by which the heated air, accumulated during the day, can pass off, while the actual protection to the walls of the main buildings is almost as perfect as in the ordinary verandah; the arcades are, moreover, better lighted, and this is a great advantage, when it becomes necessary to light the rooms from the verandahs."

If it is really the fact that the verandah in its usual form shuts in and retains heat to the extent described, after the rest of the atmosphere has cooled, we can only say that the Anglo-Indian house-builders have been an uncommonly long time finding it out, and have gone on with a remarkable perseverance in building in a manner which it appears simple observation shows to be inconsistent with a part at least of the very result arrived at. The employment of the style named here seems a logical and sensible endeavour to combine architectural design with practical suitability for the purpose; and the general elevation of the new court for Lahore (the illustrations of which, by the way, are wretched specimens of architectural drawing and engraving) shows a sensible and purpose-like grouping of the blocks of building, and the plan is a good one; so far as one can judge from the inadequate illustrations, however, it would appear that the details of the "Gothic-Arabic style" will receive little mercy, and that ideas of proportion of parts, and delicacy of detail, have not been developed in the engineering mind of India much more at the present moment than formerly. A more successful architectural structure seems to be the design for the Maharaja's private railway station at Ulwar, which is in the Hindoo style, "the details taken from some of the best known and most admired types." It consists of a central room, with a dome over, and a waiting-room for the ladies and gentlemen of the Maharaja's suite

respectively, opening from this at each side; the dome is to be of brick, faced with marble, with a copper gilt pinnacle, and the sub-structure of the best description of sandstone; the interior finish to be plaster, with an enamelled surface to imitate polished marble (the vices of the West imported, we see, into Eastern architecture), and the floor of sandstone flagging, in an ornamental pattern, composed of pieces varying in colour so as to contrast with one another. It seems to be a tolerably successful revival of the Hindoo style in an appropriate situation. The design is the result of a competition, 500 rupees being offered for the best design; the one selected being by Teekaram, "the head draughtsman in the engineer-in-chief's office of the Rajpootana State Railway," on which the station was to be erected. That is really quite like an English competition. Another item of architectural news, which serves to show that some of our architectural shortcomings are at least not peculiar to Europeans, is found in a paragraph in the "Notes on Bhaugulpore," to the effect that, within the last few years, in that district, a number of temples have been built by the more wealthy natives, and that "some of the designs are very striking; but the effect is spoiled on closer examination, as the bricks are bad, and every ornament and projection is of plaster, like the icing of a Christmas cake. As these temples owe their construction to the desire of the wealthy to outdo each other, and not to a devotional feeling, there is no attempt to ensure permanence." It must be deeply touching to the English architectural wanderer in India to find the practice of his own dear native land thus vividly recalled to his recollection.

Among the papers which describe operations of a special kind, may be noticed one on the "Sleeper Slides in Jounsar Forest," by Mr. C. Bagshawe, assistant conservator of the forests. These were slides constructed to carry down an immense number of sleepers of deodar wood cut in the hill forest of Mundhol, and intended for the Rajpootana Railway. The carriage of these sleepers by hand was found to be impossible for want of the requisite number of men, and would have been a very slow business in any case. The plan ultimately adopted was a trough "slide," some miles in length, 12 in. wide inside, and fed with water at intervals from a stream near which it was carried, and thus to convey the sleepers down with no trouble but launching them at the top and taking them out at the bottom. The plan succeeded admirably, and saved much time and expense. One or two mechanical points in regard to it are worth quoting. The slide was at first 17 in. gauge inside, but it was found that the sleepers, from the play which they obtained from side to side, damaged both themselves and the trough, especially as the bottom of the latter was formed with two slabs, and the middle joint was opened by the battering of the descending sleepers against the alternate sides, while the sleepers were liable to jump out at the turns of the slide. The 12 in. gauge was then adopted, and rendered watertight by the simple expedient of hollowing each edge of the bottom slab about ¼ in., and wedging it up tightly against the side slabs so as to compress the edges against the latter. It was found that the slide required to be fed with fresh water at intervals, as when the sleepers acquired considerable velocity in the lower part of their course they threw the water out of the slide. The trough itself was composed of pieces of the size and scantling of the sleepers, to be eventually taken up, when done with, beginning at the top, and the pieces shot down the remaining length, so that the whole would be eventually utilised as sleepers. One other contrivance illustrated in these papers, we may mention: a very ingenious boom-grating "for stopping floating logs near the head of the Ganges Canal," by Mr. T. S. Beresford, C.E. Much damage has been done to the works on the Ganges Canal by large logs, generally of heavy deodar wood, which come down with the current. More than once a boom was constructed to stop these, but gave way after a very short time, the difficulty being in getting anything strong enough to resist the impact of the logs, sometimes weighing eight or nine tons, without at the same time offering so much resistance to the current as to be weakened and carried away in a little while, or rendered liable to be broken through by a log of unusual size and weight. Mr. Beresford's remedy was the construction of a grating depending into the waterway, fixed in and hanging from a heavy beam above the water. "This beam has its ends fixed into toothed rockers of cast iron, carved to a radius of 2 ft., and these rest and roll in corresponding cast-iron segments, curved to a radius of 4 ft. The grating, which dips a foot or two into the water (depending on supply), is thus free to rock backwards and forwards, but in doing so the whole beam, grating, &c., is lifted through a certain height;" in other words, the action of the rockers is such that when the whole is at its natural centre of gravity, the grating points up stream at an angle of nearly 45°; but when a heavy log travelling down the stream strikes the grating, it forces it into an upright position, and in doing so rolls the rocker up in its seat to the extent of about a vertical foot, in which operation the whole momentum of the largest log likely to come down stream is exhausted, and the grating is strong enough to retain it after the shock of the first impact is thus broken. The diagrams, of course, give a better idea than mere description of this exceedingly ingenious yet simple contrivance.

The peculiar nature of the problems to be dealt with will render these reports of Indian engineering of some interest to all concerned in practical construction, and may offer suggestions for the treatment of problems of a kindred nature in other parts of the world.

SOME NOTES ON THE EARLY USE OF PORTLAND STONE AND OTHER BUILDING MATERIALS.

Limestones and other freestones have undoubtedly been used in this country since structures of stone were first built and lime first burned for building purposes; but at what particular date Portland stone and other cognate oolites were first brought to London for use in public works does not clearly appear. We are told in some of our standard books, historical and technical, in connexion with building matters, that previously to the early years of the seventeenth century Portland stone does not appear to have attracted any attention. Though we are inclined to agree with the statement that the use of Portland stone was not general in London till the time of Inigo Jones, still we have proof that it was used centuries earlier in conjunction with other limestones from France and the South of England. Casting about recently for some early mention of the use of Portland stone by name, we found in the City records "an inventory and valuation of stones belonging to the works at London Bridge, delivered to the wardens thereof by the outgoing wardens" (see Riley's "Memorials"), 24 Edward III., A.D. 1350, in which there is a distinct mention of squared and unsquared pieces of Portland stone, along with other building materials, the list of which, from their then odd names and value, will interest the building reader, and will not be out of place if reproduced. The old Bridge House Court and its adjuncts contained 400 great pieces of oak timber, value 40d. by the piece, making 100 marks; also a pile of timber lying in the garden close adjoining to the water of the Thames, valued at twenty marks. Also timber for fourteen shops, fully wrought and framed for immediate building, 36*l.* [This last item is very suggestive in these days of shop architecture and wood-working machinery.] Also, divers pieces of timber lying in various places in the said court, valued at 19*l.* 6s. 8d.; also 120 pieces of elm for piles, at 2s. the piece, 12*l.*; also, in the Grange, 125 rakes [used for catching the refuse on the Moor Fleete, Walbrook, and other streams], at 5d. each, 52s. 1d.; also divers boards of oak and of "estrichesborde," value 6*l.* 12s. 4d.; also, 57,000 "herth-lathes," value 4s. per thousand, 11*l.* 8s.; also 30,000 sap-lathes, value 2s. per thousand, 3*l.* The total of the items before mentioned being 169*l.* 19s. 1d. The term "estrichesborde" was probably applied to deal boards from the Baltic or the Eastern countries. The "herth-lathes" were the superior laths made from the centre or heart of the timber, and the sap-laths were those inferior ones with the sap in the wood. The inventory continues: "Also 690 ft. of stone of Porteland, hand-worked and squared, as also 1044 ft. of stone of Porteland, not wrought, the total being 1,734, value 5d. per piece, 36*l.* 3s. 11d. [a mistake, 36*l.* 2s. 6d.]; also 600 of coynston [quoin or corner stone], value 5s. per hundred, 40s. [30s.]; also eighteen great stones of Bere [suggested with a good show of reason as being Bere Regis, in Dorset], weighing eighteen tons, value 6s. 8d. per ton, 6*l.*; also a heap of mixed mortar, value 4*l.* 8s.; also 12,000 tiles, value 8s. per thousand, 4*l.* 16s.; also cement for the bridge, 3*l.*; also seven barrels of pitch, value 4s. per barrel, 28s.; also two boats of ragstone, value 23s.; also a boatload of chalk value 7s. 6d. The total of stone and other items being 59*l.* 6s. 5d." To summarise the other items we find 7½ weys of old lead, valued at 6s. 8d. per wey; 12,000 "plaunchees-nails" (plank-nails or spikes), valued at 4s. per 1,000; 3,000 "dor-nails" (door-nails), at 2s. 6d. per 1,000; 400 large nails for the drawbridge at 12d. per 100. Further on we have mention of "wyndou-nails" (window-nails), valued at 2s. 6d. per 1,000; a stock of "travers-nails" (tree-nails), at 8d. per 1,000; "grapes" of iron (prongs or grappling-irons), at 1d. each. The total value of the building materials in the Old Bridge House, which were all enumerated, was estimated at 250*l.* 18s. 2d.,—a large sum when considered in view of its purchasing power in those days, either in the way of materials or labour. Among the articles not valued, were one great boat, a small boat, a "shoute" or "schuyt" (a timber barge, perhaps), two engines, with three "rammes" for ramming piles, two cauldrons for melting pitch for cement, one presser for fixing, five pots of brass, and four posnets, old and worn out. We consider this inventory of building materials a very interesting one. Long before the above-mentioned period, in 1329, we find in the City records proceedings were taken against Hugh de Hecham, a lime-burner, for extortion and intimidation. The petition that was presented or delivered to the mayor of the city, John de Grantham, is rather long for quotation here, but it commences to the following effect:—"Show unto you the good folks of the Ward of Tower as to the great grievances which Hugh de Hecham, lymbrennere, has committed, in that he caused all those who are of his trade to make oath, that whereas people used heretofore to have one sack of lime for one penny, or at the rate of 3s. 6d. per hundred, at the time when sea coal [sea-borne coal] was selling at 40d. the quarter, now one is not to have of the said Hugh any sack of lime for less than 1½d. or 2d., or else at the rate of 6s. or 5s. the hundred; seeing that the present value of sea-coal for this year is no more than 16d." [by the quarter]. It appears that the redoubtable Hugh succeeded by menaces to prevent the workers of lime of Greenhithe who used to bring lime from that place to London to sell, from coming thither, but those who did come to London with lime, as a forestaller he embraced or made friends with these people and thereby secured the trade for himself at his own terms. Hugh, however, after due investigation was found guilty of the charge imputed against him, and it was awarded that he should lose his freedom and go to prison.

In the 30 Edward I., 1302, there is an agreement to indemnify the City against fire, and to roof houses with tiles. One Thomas Bat, before John le Bland, the mayor, and certain aldermen bound himself, and all his rents, lands, and tenements, to keep the City of London indemnified from peril of fire, and other losses which might arise from his houses covered with thatch in the parish of St. Lawrence, Candelwykstrete, and he agreed that he would have the said houses covered with tiles by a certain stated time. If he failed, the Mayor, sheriffs, or bailiffs of London were to cause the said houses to be roofed with tiles out of the issues of the rents. In the fourth year of the same reign, 1272, we find that playing with tiles was a sort of pastime. From the fatal accident that gave rise to the entry it would appear that the throwing of the tile was a species of a game of quoits, tiles probably rounded for the purpose.

In the account rendered by William Sunnyngge, a carpenter, as to moneys expended by him as trustee on the repairs of a house in the parish of St. Michael, Cornhulle (Cornhill, London), 33 Edward III., 1359, we have a number of very interesting items as to the cost of some building materials and workmen's labour. From this curious document we find that a tiler for two days' wages received 14d., or 7d. per day; his man for the same time, 10d.; for their drink (beer money we suppose), 2d. The cost of 500 tiles was 4s.; a cartload of sand, 4d.; 6 sacks of lime, 12d.; 2 small wedges, the same; 2 slates for a gutter, 2s.; 4 cartloads of stone for the pavement, 10s.; 24 cartloads of gravel, 8s.; paviours' work, 6s.; timber and *ponchouns* (puncheons, or posts driven between the small timbers like stays inclining inwards) to mend the walls, 3s.; for 1,500 lathes (lathe), 2s. 3½d.; for 1,500 trasson nails (trecnails), 16d.; for 1,500 sprigges (brads, or nails without heads), 16d.

other nails, 4d. A carpenter's wages for 2 days are put down at 14d.; 12 cartloads of *lom* (loam), 4s.; 9 sacks of lime, 18d.; 3 cartloads of sand, 12d.; for one workman's wages for daubing [daubers were layers on of a mixture of straw and mud to a framework, or betimes the layers on of a better compost approaching modern plaster], 9 days at 7d. per day; the dauber's man received 5d. per day. Farther on, in the same account, we find a carpenter's wages charged at 8½d. per day. This was 1½d. per day more; so it would appear that in these early times there was a classification, and no uniformity for bad and good workmen. For soldering a gutter, 12d. is charged; candles used for doing it, 1d. A tiler and his man for one day received 13½d. The next is an entry of some interest: for heightening a room of the said tenement, and for two engines hired for the same for 2½ days, 2s. Now what were the two engines? Were they a species of screw-jack, or some early shoring apparatus for lifting and "needling." Three men were paid for setting piles and for ramming (*ramnag*) the same, 2s. Again, we find a carpenter, for 2½ days, 20d.; two carpenters, for 2½ days, at 7½d. per day, 3s. 1½d.; for their drink the same time, 2d.; and for six piles and four bases, 5s. In the foregoing items we find three distinct rates of wages for the carpenters of 1359,—viz., 7d., 7½d., and 8½d. per day. Possibly, the account, though rendered in the above year, extended back over a considerable time.

Reverting to the subject of Portland stone, in these early days its use, of course, must have been limited in London. Taking into consideration the history of Portland Island and the connexion with the church of Winchester, for some time before the reign of Edward the Confessor the island or promontory belonged to that church, we might deduce reasons for believing that Portland, as well as Caen, in Normandy, was resorted to for a supply of building limestone. We believe there is scarcely any mention of Portland Island in our annals before the time of Ingulphus, who lived in the reign of Edward the Confessor, and was chaplain to William the Conqueror. He tells us it was used as a landing-place by the Danes, whence they sallied out against the defenceless inhabitants. In the reign of Edward I., Portland Island was purchased by Gilbert de Clare, Earl of Gloucester, but it has been for a long time back the property of the Crown. The quarries now on the island are either worked by the Government, or leased to private parties, who pay a royalty of 1s. on every ton of stone raised, half of which goes to a trust fund for the islanders. This was a slight compensation for the destruction of the pasture land, and was granted in the time of Charles II., in those reign the quarries first, to any large extent, were worked, and principally for London building purposes. The qualities of Portland and Bath oolite were, doubtless, well known by that great prelate and builder William of Wykeham, both in his character of Surveyor of Royal Buildings for Edward III., and as a great church builder at Oxford, Winchester, and elsewhere. The introduction of Caen stone into England probably dates from the time of the Norman Conquest, for it appears to have been the favourite material with the architects or workmen who followed the fortunes of William Duke of Normandy and his successors for some time. Its introduction into Ireland is believed to be somewhat earlier, contemporary with the introduction of the Norman and Lombardian styles to the sister kingdom. According to Mr. G. Wilkinson's "Ancient Architecture and Practical Geology of Ireland," limestone has been employed in most of the ancient structures in Ireland, the doorways of round towers and churches showing excellent examples of Norman buildings and other work belonging to a period anterior to the introduction of that style into England. Sandstone, however, appears to have been a favourite material for sculptured work and ecclesiastical or monastic buildings previously to the introduction of the Early English style, after which time limestone was more often employed. The oolite limestone used in the interior of Christ Church Cathedral, Dublin, presents the appearance of Bath stone; but Caen stone has a very great resemblance to Bath and Cheltenham stone. The cream-coloured oolitic or jurassic limestone in the old interior work of Christ Church Cathedral was either imported from Normandy or this country, for it is not uncommon to meet with the oolitic stone in structures of the eleventh or twelfth centuries in Ireland. Christ Church was founded about the year 1038, and a great portion of the old structure, at least, was built in the Anglo-Norman style. It has been said that the cream-coloured oolitic limestone in the old work of this ecclesiastical edifice is identical with that of the West of England. Among the limestones of Ireland there is but little of the oolitic kind. Mr. Wilkinson gives some instances of the occurrences of the latter variety along the shores of Killala Bay, in the West of Ireland, and this oolitic variety has been used in the construction of the ruined Abbey of Moyne, beautiful still, though in ruin. The sharpness of the sculpture and ornamentation is still retained in the oolitic limestone of this ancient structure.

Portland and Bathoolite, we contend, have been used in these countries for centuries back, and though supplanted after the Conquest by "tender Caen stone . . . more beautiful than durable," to use the words of Sir Christopher Wren, yet through the taste, influence, and energy of Inigo Jones, and the architect of St. Paul's, the use of native limestones, [Portland, Bath, and other cognate kinds, for ecclesiastical or civil building purposes, was revived. The former architect repaired a portion of old St. Paul's, casing the exterior and adding a Corinthian portico to the lowest part in Portland stone. St. Paul's Cathedral, and most of the churches built in the reign of Queen Anne, are built of Portland stone, but it is a fact that the stone so much used by Sir Christopher Wren, was superior to the description now used. The quarries that supplied the stone for St. Paul's Cathedral and other buildings erected by the great architect, are not now worked. "It does not pay" modern builders to work or to pay for the working of such hard oolite. Old Westminster and Blackfriars bridges were built with Portland stone, and Thomas Cooley, the assistant of Robert Mylne, the architect of Blackfriars-bridge, used Portland stone in his first great public work, the Royal Exchange of Dublin, for which he competed, and won the first prize, in 1769. James Gandon, his contemporary, or successor, in Dublin, used it in the Custom-house, his additions to the Irish Houses of Parliament, and other public works. Long previously to this, it was used by Sir Edward Lovet Pierce, in the columns and portico of the main building of the Parliament House in Dublin, commenced in 1729. Portland stone is also used in the frontage of some of the buildings of Trinity College, and other later buildings in Dublin. We believe that the columns of the old City Tholsel, in Dublin, built in 1683, were of Portland stone, and, if we are not mistaken, the same stone was used to some extent in the ornamental work of the Royal Hospital, Kilmainham, built about the same period. There appears to have been an interchange of trade in stone between England and Ireland for a considerable period, and of other building materials also. Irish oak was an old importation, and in return for English oolites some carboniferous limestones, including black marble, flagstones, and even burned lime were exported from Ireland to Holland and this country. From the limestone group of Ireland, which consists of three divisions,—the lower, the middle, or "calp" (the common building stone of Dublin), and the upper limestone,—a great variety of building stone is obtained. The calp is liable to rapid decay, but it yields in some localities a valuable hydraulic lime. The lower or upper division, according to Professor Hull, the director of the Geological Survey of Ireland, produces a good crystalline greyish limestone, sometimes dolomitic, and in a few instances oolitic. The carboniferous limestones of Ireland contrast unfavourably as regards colour with those of England, but as a source for the production of marbles it is valuable in an architectural point of view. The steps that formerly ascended to the entrance to St. Paul's were said to be from the limestone quarries of Red-Cow, near Dublin. The black marble or flagging used in connexion with Bird's statue of Queen Anne, opposite St. Paul's, is stated, according to the specification or particulars of that work, to be from Ireland. Ireland still imports a quantity of building limestone, Portland, Bath, or other kinds from England; and the trade in Irish marbles, grey, black, and variegated, is increasing yearly for building and ornamental purposes. Irish granites, Donegal and Dublin, and other coloured varieties, are contesting the field with the Aberdeen kinds. This interchange of trade is also, as in the early days of the introduction of Caen stone, leading to an interchange of workmen. The London limestone stone-carver or mason makes but poor progress in the working of Dalkey, Aberdeen, or Jersey granite, and the artist or artificer that is constantly manipulating the harder material is not fitted to render the delicate touches with chisel and mallet that working in the softer or freer limestone requires, particularly in undercut moulded and elaborate tracery and foliation. With workmen of this class, when for long periods they are engaged on the same material, mind and hand become attuned, so to speak, and there is a conscious *weight* of feeling in each blow they give. Any sudden transition from hard to soft material, from the hardy granite, "the noblest of all the rocks," to the tender Caen or cognate oolites, will not tell favourably for the temper of the workman or his tools, the satisfaction of the employer, or the satisfactory execution and finish of the work. The art of building is an old art, and its history is the history of its architects and workmen, but what should have been learned first of it, as its basis, the geology and structure of our building stones, is being learned the last, to the great injury of architecture as an art.

BRITISH ARCHÆOLOGICAL ASSOCIATION AT EVESHAM.

The Corporation of the quaint old town, Evesham, received, on Monday last, the members of the British Archæological Association with an address, in which they said,—"The Vale of Evesham has long been famed for its fertility and for the beauty of its scenery, and from very early days it has been a busy centre of life. The earthworks and ancient camps of the hills which enclose the vale testify by their number and size to its importance in the eyes of the ancient Britons; the Roman occupation is to be traced on every side by the ruins of the buildings, the names of places, and the large number of coins found scattered over the country; and in the Middle Ages the famous Abbey of Evesham was one of the principal centres of religious life in England. Few neighbourhoods afford the opportunity of a visit to so many sites of abbeys and other spots connected with historical events of great and abiding interest. Our own abbey church has unfortunately disappeared, the little that remains of it, after having been used as a stone quarry for one hundred years, lying buried beneath the ground; but our town still contains many relics of the buildings connected with the Abbey, and these and the site of the battle of Evesham will be visited with interest, as will also the spot where lies the body, though now unmarked by any memorial, of Simon de Montfort, the founder of the House of Commons. If the accommodation which our town affords to visitors is small, we feel that the attractions which it presents to the members of such a society as the British Archæological Association are great indeed, and it will be our endeavour to afford you every facility that lies within our power to make your visit here both agreeable and profitable."

The Marquis of Hertford, as president of the Association, then delivered an excellent inaugural address, in the course of which he said,—"You, perhaps, think I bear too close a resemblance to one of my ancestors and predecessors at Ragley, the first Viscount Conway, who was Principal Secretary to James I., and of whom, in consequence of his not having the gift of a ready pen, the King complained 'that "Steenie" had given him three notable servants—a Gentleman of the Bedchamber, Clark, who could not untruss a point, he had but one hand; a chaplain, Dr. Preston, who could not say prayers, for he scrupled the use of the Liturgy; and a Secretary of State, Conway, who could neither read nor write, having been bred a soldier.' I also have been bred a soldier, and you are now suffering from my education, or rather from the want of it. We are standing on the confines of Worcestershire, Gloucestershire, and Warwickshire, in the picturesque town of Evesham, which has been so well chosen for our meeting, not only for its own intrinsic merits in the eyes of antiquaries, but from its neighbourhood to so many objects of real interest. To-day we shall visit the Abbey, the old churches, and other antiquities, and shall hope to see the grounds and museum of Mr. Rudge, so rich in reminiscences of the famous battle of Evesham of 1255, a subject on which I will not dilate, seeing that we are promised a paper on that historical subject by Mr Herbert New. During this week we hope to visit Broadway, Buckland, Stanway, Hailes Abbey, Winchcomb, Sudeley Castle (where my

ancestor Lord Thomas Seymour, the brother of the Protector Somerset, lived), Wyre, Pershore Abbey, Deerhurst Saxon Church, and thence to Tewkesbury Abbey, several of which interesting places are, as you know, in Gloucestershire." After expressing a hope that the buildings and records of the neighbourhood might derive fresh illustration and additional interest through the visit, the Marquis added, "but knowing we have so many first-rate archæologists like Mr. Evelyn Shirley, of Ettington; Mr. Matthew Bloxam, of Rugby; the Rev. Mr. Brodie; the Rev. A. H. W. Ingram; Mr. Tom Burgess, of Leamington; the Rev. F. Kittermaster; the Rev. Leigh Colvile; &c., and have likewise whole societies devoted to antiquarian research, like the Warwickshire and the Malvern Field Club, and the Warwickshire Natural History and Archæological Society (whose excellent museum and library may be visited at Warwick), I fear that the ground has been too often gone over to afford much novelty during the present visit. The Society which I have the honour of addressing was established in 1843, and bears the name of the original society, from which the Archæological Institute sprang. Perhaps England is rich enough and broad enough to maintain two bodies similarly engaged in the useful pursuit of antiquarian knowledge, but I hope you will forgive me expressing a hope that those who know more about it than I do will, before long, see their way to reuniting the two societies, and so make each more practically and beneficially useful.

Lord Hampton, in an appropriate speech, proposed a vote of thanks to the Marquis for his address. He added that he rejoiced to see the noble residences in this noble land occupied by those of ample means and ability. There was a time when Ragley was only a name; now it was a reality. The Association had done well in choosing Evesham for its place of meeting, and they could not have done more wisely than in selecting the noble marquis to preside over them, and he was glad that he had thought it is duty to accept it.

Mr. George Godwin, in seconding the motion, said the Association were not at all distressed to hear of the number of similar societies now at work, because they recognised in these societies their own offspring. He alluded to the necessity which existed for Sir John Lubbock's Bill, and urged that all local societies should petition in its favour. He also made an appeal in favour of the preservation of Cæsar's camp, at Wimbledon.

The party proceeded to the battle-field in Abbey Manor grounds, which had been thrown open by Mr. Rudge. An obelisk has been erected, bearing an inscription recording how the battle was fought on the 24th of August, 1255, some bas reliefs, and the following lines from Drayton:—

"Great Lester here expired with Henry his brave sonne,
When many a high exploit they in that day had done,
Scarce was there noble house of which those times could tell
But that some one thereof on this or that soil fell.
Amongst the slaughter'd men that there lay heap'd on pyles,
Bohuns and Beachamps, were Basets and Mandevilles,
Hartreshull, Crepping, Despenser, Baliol, Rowele,
Inde, Tregoz, Erneiyeld York, Bermingham, Tressell,
Segrave. And Saint Johns seeks upon the end of all
To give those of these manes their Christian burial,
Ten thousand on both sides were laid and slain that day,
Prince Edward gets the gole, and bears the palm away."

Here Mr. New gave a brief account of the incidents of the battle.

In the grounds of Mr. Rudge were found scattered many remains of the abbey,—the bases of columns, ugly gurgoyles, parts of niches, tracery of windows, old coffins. The abbot's chair, and two carved figures, from the Bell Tower, stand in the porch of the mansion. The Earl's Well was found to be in a very neglected state.

At a dinner in the evening, given in the Town-hall, the Marquis presided, and various speeches were delivered by the chairman, Lord Hampton, Sir E. Lechmere, Mr. Brock, Mr. Geo. Wright, Mr. Godwin, the Vicar of Evesham (the Rev. J. W. Holland), and others.

Mr. Holland expressed a hope that a monument to Simon de Montfort might one day be erected on the spot where he died, and a subscription to begin the movement was at once offered by a member of the Association.

On the following day, Stratford-on-Avon was visited, and a most enjoyable day spent; papers being read in the evening. Mr. Halliwell-Phillipps, F.R.S., Mr. Thos. Blashill; the Rev. Canon Ingram, Mr. Edward Roberts, F.S.A., Dr. French, the Rev. Dr. Collis, and others assisted in the work, but we reserve particulars for next week. The hotel accommodation at Evesham proved to be limited, but this was supplemented most kindly by a number of the inhabitants. And it deserves mention that the Duke d'Aumale, who has a residence close to the town, placed it at the disposal of the Council, ten bedrooms being prepared in it for their use.

OPENING OF THE FIRTH PARK, SHEFFIELD.

The visit of the Prince and Princess of Wales to Sheffield has been a memorable event, and served to give its teeming population an opportunity of showing that in all that goes to make up good and loyal citizens, they are quite equal to the people in any other town in the kingdom. When Mr. Mark Firth was elected Mayor of the borough, and on a subsequent occasion purchased the Page Hall estate, he announced his intention of presenting a portion of it to the town, and of asking their Royal Highnesses to do him and the town the honour of coming down to open it; and when it was known that the invitation had been graciously accepted and the day fixed for the ceremony, even the most sanguine could not have hoped that the men of Sheffield would, at the sacrifice of so much money and time and labour, produce such a display. The decorations were carried out with commendable spirit. We may mention those of the Lady's Bridge and the Shambles, the cost of which was borne by the Duke of Norfolk. The designs were prepared by Messrs. Hadfield & Son, architects, and the carrying of them out was entrusted to Messrs. Tyler & Co., of Manchester. On the site near Lady's Bridge stood the old Sheffield Castle, and it was attempted to reproduce the massive frowning gateway, with its arches and its towers; its inner walls rising height beyond height, and other surroundings of the ancient site. The chief feature in the design was a three-span arch, stretching from the hotel to the shambles wall, and which represented an old baronial gateway or city bar. The height to the battlements was 60 ft., and to the top of the flagstaff over 100 ft. The centre arch had a span of 20 ft., and each of the side arches was 11 ft. wide. The centre arch was 25 in. high inside; the depth of the arch 27 ft. Springing from the square of the arch were four round castellated towers, 40 ft. high, and 10 ft. diameter, terminating with spiral roof, and surmounted by gilded vanes. In the centre of the four round towers was a square tower, with roof, painted to represent old-fashioned red tiles. Over the centre of the archway, on each front, were placed the arms of the Duke of Norfolk; and on each side of the arch six shields, correctly displaying the arms of De Busli, De Lovetot, Furnival, Nevil, Talbot, and Howard. The structure was strongly built of wood, covered with canvas, and painted to represent stonework. At a distance of 54 ft. from the arch, in the direction of the Shambles, was another tower, rising to a height of 40 ft. above the elevation of the permanent wall. The permanent castellated wall of the Shambles had been cleaned, and on the roof of the Shambles had been erected a platform 5 ft. wide and 300 ft. long. At the back canvas walls had been raised to a height of 50 ft., in two lengths, to represent the interior walls of an old castle. The inner wall had been continued 294 ft., and terminated with another tower of a castellated form, 25 ft. square and 90 ft. high. It had a massive and solid-looking appearance, and formed an appropriate termination to that line of the decorations.

After the arrival of the procession in the park, and the reading of the addresses, the mayor handed to his Royal Highness the deed of gift, by which he dedicates the Firth Park for ever to the public use and enjoyment of the inhabitants of the town. The Prince presented the deed to the town clerk on behalf of the corporation, and formally declared the park to be open. The deed of gift provides "that no political meeting shall be permitted to be held, and no intoxicating liquor shall be permitted to be sold, in the said park, or any buildings or erections thereon, at any time, and no game or music shall be permitted to be played therein on any Sunday or Good Friday."

Fire Brigade Station, Commercial-road. The contractors by whom this building, illustrated in our last, was erected, are Messrs. Stimpson & Co.

EAST GRINSTEAD.

The Rural Sanitary Authority for East Grinstead some short time back advertised for schemes to be submitted to them by engineers for the sewerage of the town, and for the disposal of the sewage, on the understanding that the author of the scheme chosen should be employed to carry out the works.

Schemes from sixteen engineers were sent in for the consideration of the Sanitary Committee, who have decided to recommend the Board to adopt one submitted by Messrs. Smith & Austin, of Hertford. The accepted scheme proposes to sewer the town with small earthenware pipes upon the "separate" system, and to dispose of the sewage by irrigation upon land rather more than a mile from the town.

NEW WORKHOUSE AT SHIELDS.

The Guardians of the South Shields Union have resolved upon the erection of a large new workhouse in consequence of the existing structure being inadequate for the purposes of the union. At the meeting of the members of the Board last week the committee reported that the Ecclesiastical Commissioners had offered a site, ten acres in extent, for 2,200*l.*, which the committee recommended the guardians to accept, and also to authorise them to invite architects to send in plans and designs for a new workhouse to contain 700 inmates, offering for the first selected design 100*l.*, and for the second 50*l.* The recommendation was confirmed, and Mr. J. H. Merton, architect, of South Shields, was instructed to prepare the necessary specifications for the guidance of the competitors. The estimated cost of the building is from 28,000*l.* to 30,000*l.*

INCOME AND EXPENDITURE OF THE CORPORATION OF LONDON.

An account of the produce and expenditure of the City's estates for the year ending the 31st of December, 1874, has been published, under the authority of the City Chamberlain. The document is one of a voluminous nature. The City's receipts are enumerated under various heads, and details are given in every case. Among the receipts are rents and quit rents, 93,510*l.* 17*s.* 7*d.*; renewing fines, 3,438*l.* 13*s.* 5*d.*; premiums for granting leases, 1,200*l.*; Metropolitan Cattle Market, Islington, 37,351*l.* 12*s.* 11½*d.*; Metropolitan Meat and Poultry Market, Smithfield (exclusive of tolls), 40,455*l.* 13*s.* 11*d.*; the total receipts being 313,917*l.* 7*s.* 9*d.* On the same side of the account is given a statement of loans raised, amounting to 263,872*l.* 4*s.* 6*d.*, so that the grand total was 577,789*l.* 12*s.* 3½*d.* Among the charges for expenditure are,—the expenses of the Civil Government of the City, amounting to 49,304*l.* 7*s.* 4*d.*; expenses in relation to Epping Forest, 12,260*l.* 19*s.* 6*d.*; Guildhall Library and Museum, 2,810*l.* 16*s.* 3*d.*; erection of the new library and museum, 6,570*l.* 19*s.* 3*d.*; the total being 274,238*l.* 0*s.* 3*d.*; but, in addition, under the head of loans discharged, are charges relating to the enlargement of Billingsgate Market, 60,034*l.* 10*s.* 11*d.*; western extension of Metropolitan Meat Market, 47,755*l.* 17*s.* 8*d.*, bringing the total expenditure to 554,044*l.* 3*s.* 5*d.*

Disposal of Refuse on Building Sites, Liverpool.—Alderman Bennett, in reply to the report published by the Health Committee under the above title, reiterates his assertions:—He adds, "I wish to say that every statement contained in my two letters to the Local Government Board is strictly correct, the space of land covered, the varying depths of deposits, the description of the ashpit offal, and the class of streets from which sweepings have been extensively used, spontaneous combustion, the number of persons not in the corporation employ earning a livelihood by picking out a portion of the organic matter, and that the Health Committee, owing to frequent complaints, did discontinue carting for a length of time. I will add, the straw taken out of beds when fever in the town was rife, are all matters so easily proved that the Health Committee, in my opinion, would have acted more wisely in admitting all to be true, and defended their course of action, if they could, upon its advantages and merits, if it has any."

AN ARCHITECTURAL NOTICE OF ST. SEPULCHRE'S CHURCH, LONDON, AND OF ITS RESTORATION.

The parochial church is dedicated in commemoration of our Saviour's sepulchre at Jerusalem. It was founded in 1100.

Roger, Bishop of Salisbury, in the reign of Henry I., gave the patronage to the priory of St. Bartholomew, in West Smithfield, who established a perpetual vicarage, until the dissolution of monasteries by Henry VIII., when it fell to the Crown until 1610. James I., in the seventh year of his reign, granted the rectory and its appurtenances and advowson to Francis Philips and others. After which, the parishioners purchased the rectory, and held it in fee-farm of the Crown; and the advowson was purchased by the president and fellows of St. John Baptist's College, Oxford, who are still the patrons. In 1636, this impropriation, held in fee-farm, was worth 440*l.*; and the vicarage, endowed with a third part of the tithes, &c., was worth 179*l.* 14*s.* 6*d.* At present, the vicar receives 200*l.* per annum, in lieu of tithes, as settled by Act of Parliament.

This church, says Stow, was re-edified or built about the reign of Henry VI., or of Edward IV. One of the Pophams was a great builder there, namely, of one fair chapel on the south side of the choir, as appeareth by his arms and other monuments in the glass windows thereof, and also the fair porch of the same church towards the south; his image fair graven on stone, was fixed over the said porch, but defaced and beaten down; his title by offices was this,—Chancellor of Normandy, Captain of Vernoyle, Pearch, Susan, and Bayou, and treasurer of the king's household. He died rich, leaving great treasure of strange coins. Sir John Popham was buried in the Charterhouse Monastery, and his monument was placed in the cloister.

The church erected in 1450, consisted of an embattled tower with four octagonal embattled turrets surmounted by octagonal crocketed pinnacles, angular buttresses, &c. Nave, with north and south aisles; chancel, with north and south aisles, separated by screens. Chapel on the north side of the north aisle. Porch, with parvise, and a room over; winding staircase enclosed in a turret. The staircase to the upper room was enclosed by a door on the parvise landing, as well as doors to the rooms. Fireplaces, one in each room. Windows on the south and east sides only. The porch-windows pointed, in three cinquefoil-headed lights with Perpendicular tracery. A niche over the outer doorway containing a stone statue of Sir John Popham. The roof was a low span, with diagonal and angular buttresses, with pinnacles and embattled parapets. The porch was groined with fan tracery, with 17 bosses, at the intersections, consisting of angels supporting shields; one of them has a saltire, one has a crescent and a dagger; on another shield is a fleur-de-lys; on another a wreath of foliage, enclosing a shield, on which is a fess and a bird. On others are foliage, knots, and various devices. There are two small niches inside the porch, over the outer and inner doorway, with kneeling figures. The former contains a male figure with flowing beard, supported by a bird with wings expanded; the latter has a female figure holding a book, and under this niche is an oval shield, with a cross and dagger sculptured thereon, in resemblance of the city arms. On the outside over the doorway was a black marble slab, 4 ft. 3 in. long, by 2 ft. 6 in. wide, and 3½ in. thick. There was formerly an inscription upon it.

The nave and chancel were separated from the aisles by clustered columns with moulded capitals and bases, supporting pointed arches, and surmounted by an open-timbered roof. The windows of aisles and chapels were large and well proportioned, being 17 ft. by 9 ft. 3 in., in three cinquefoil-headed lights, with Perpendicular foiled tracery over. The chancel and aisles comprised three bays or compartments at the east end, separated from the nave and aisles by screens. The east wall has been rebuilt in a slanting direction, depriving the south elevation of one window. The aisles were embattled the same as the porch.

The font, designed by Wren, now stands at the west end of St. Stephen's Chapel; it is octagonal, of Portland stone, and large enough for total immersion, with water-drain stopped up. The font consists of a bowl and stem, moulded; the bowl is curved and convex fluted in the Roman Doric style. The lid is of oak, of an octagonal inverted ogee form, the ornaments on the top and angles being gilt. Spread on the eight sides of the base of the lid is the following inscription in gilt letters:—

> "The Native of this Parish,
> Gave this Type and Font
> In the year: 1670:
> The Steward then being
> Joh. Clear, Joh Stringer,
> Thos. Sarwick, Joh. Dyer,
> Josi. Priest, Geo. Reade,
> Joh. Blincoe, Rich. Johnson."

At the east end of the chancel, in the floor, is a blue monumental stone to the memory of Captain John Smith, Governor of Virginia, who died June 21st, 1631; his romantic and chivalrous adventures are recorded by Stow in an epitaph, now gone. In the wars of Hungary, in 1602, he in three single combats overcame three Turks, and cut off their heads. For this, and other brave deeds, Sigismund, Duke of Transylvania, allowed him to bear three Turks' heads as his shield of arms. Upon the above monumental stone is sculptured a large shield with three heads.

Stow gives four other monumental inscriptions, which, with Captain Smith's, are inserted in "Maitland's History of London." Stow also says that William Andrew, Stephen Clamparde, Lawrence Warcam, John Dagworth, William Porter, and Robert Scarlet, lie buried in this church.

In the various drawings and views of London before and after the Great Fire, the church of St. Sepulchre can be discerned. In the Sutherland collection, Bodleian Library, Oxford, is a drawing of London in 1543, by Anthony Den Wyngrerde. A view, drawn by R. West, in 1737, of the south front, was published in 1739.

The church was much damaged by the Fire of London in 1666. The tower, south porch, St. Stephen's Chapel on the north side, and the walls were capable of reparation.

In 1670, a general reparation was made, as asserted, under the direction of Sir C. Wren, but not with his usual good taste.

In 1790, sixty-seven years after the death of Wren, the church was in a great state of decay; in this year the walls of the church were cased with Portland stone, and all the windows were taken out and replaced by others, with plain semicircular heads. The battlements were taken down, and a plain stone parapet substituted. The roof at this time was wagon-headed. The angle piers of the tower being weak, they were strengthened by inserting within the five pointed arches semicircular arches and Bath stone Tuscan columns.

In about 1837 an entirely new roof was erected; these alterations are detailed in Godwin's "Churches of London." The model of the new roof is in the roof of the present body of the church.

In 1859 the large east window was filled with stained glass by Messrs. Lavers & Barraud, at a cost of between 300*l.* and 400*l.*

The churchyard next the Holborn Viaduct was formerly, says Entick, enclosed with a high brick wall, without allowing any footway for passengers on the outside. In 1760 the wall was removed, and the churchyard laid open; and in 1802 it was again enclosed by a dwarf wall and railing. Formerly, a nosegay from this churchyard was presented to every criminal on his way to execution at Tyburn. There is another burial-ground belonging to the parish, given by Sir William Selby; it is situated on the north side of the church.

In 1762, Parsons, the officiating parish clerk of St. Sepulchre's, was pilloried three times in one month, and imprisoned two years, and his wife one year, for the imposture of the Cock-lane ghost, which was managed by their daughter, under their direction.

In a report of the Holborn Valley Improvements, dated November 18, 1872, the line of the Viaduct involved the appropriation of a portion of the churchyard of St. Sepulchre's Parish, and the consequent re-interment of the bodies necessarily disturbed. A faculty was obtained from the Bishop of London for their removal to the City Cemetery at Ilford. A monument to their memory was erected in 1871.

In clearing the ground for the Viaduct, the western front of St. Sepulchre's Church tower was temporarily opened to view. The Estates Committee paid, in 1873, 4,200*l.* on behalf of the parish to the City so as not again to build in front of the church-tower.

On the boarded sides of the walls in the first stage, the bell-ringers' room, are inscriptions recording names, dates of new ropes, &c., from 1741 to 1830.

There were no masons' marks found on the masonry of 1450; but on the Portland stone reparations of 1670 and 1790 were discovered the cross with stopped ends, equilateral triangle, rhomboid, hour-glass form, the letters I, S, and T, the figures 2 and 3, &c. The masons employed on the recent restorations, have used twenty-nine different marks, all being cut in on the bed of the stones. Most of these marks are similar to those set forth in the "Archæologia," vol. 30, p. 113.

In 1873–5, the whole of the upper portion of the tower, from the main cornice, including the parapets, octagonal turrets, and pinnacles, were taken down and rebuilt. The scaffolding was entirely new, 200 ft. high, and erected entirely round the tower. There were 600 poles, containing 16,973 ft. run, at an average cost of 3*d.* per foot; sixty deals for transoms; 2,088 scaffolding cords, weighing 47 cwt. 12 lb., at a cost of 97*l.* 12*s.* 8*d.*; 260 scaffolding-boards, 5,000 wedges, 10,000 nails. It occupied eight men two months in fixing.

The turrets and pinnacles were found to be cased with Portland stone, averaging 8 in. in thickness, and cramped with wrought-iron cramps, 10 in. long, 2 in. wide, by ¾ in. thick, set in about 4 in. from the external air. The core of the turrets and the pinnacles was filled with rubble, and some of the crockets, embattlements, and gargoyles with lions' and other heads, belonging to the Perpendicular church of 1450. The crockets were so slightly worked as scarcely to bear resemblance to leaves. Portions of two finials were found, octagonal, plain, and not foliated. The hole for the vane-staff in one was drilled, and the other punched. Prior to the Fire of London, before the removal of the embattlements on the turrets, they had been partly restored with Portland stone.

The pinnacles and vanes were more modern than the tower. Strype records, "anno 1630, the charge of taking down and new building of one of the great pinnacles of the steeple appeared, by the accounts and bills examined, to be 139*l.* 19*s.* 4*d.*" The remaining three were rebuilt 1632 and 1633, when "three vanes" were set up, answerable to the former vane on the other pinnacle.

The histories of London give various measurements of the height of the tower. Entick, in 1766, says that "the height of the steeple to the top of the pinnacles is 146 ft."; Noorthouck, 146 ft.; Clarke, 140 ft., &c. These are all incorrect; the height from the ground to the top of the pinnacles, accurately measured before they were taken down, was 152 ft. 9 in., thus:—

	Ft.	In.
Height of the tower to top of parapet	115	0
Height of octagonal turrets from top of parapet	12	6
Height of pinnacles from turrets to caps of pinnacles	25	3
	152	9

Exclusive of the vanes, which were of copper, 9 ft. 6 in. high, and 4 ft. 9 in. long, with a ball and a cross on the top. The parapets were 14 in. in thickness. The width of the tower is 26 ft. 4 in., equal to four squares in height. The internal dimensions are 16 ft. 5 in. by 16 ft. The walls of the tower are 6 ft. thick, cased with Kentish rag 8 in. thick, and filled with chalk; the belfry is internally of brickwork.

The tower originally stood upon large pointed arches, open to the nave and aisles, but now filled up and supported by piers. Upon scraping the tower over the arches the masonry was found to be of Kentish rag, nicely squared and dressed. There are eleven bells, but one is not rung with the rest. Weight of tenor 32 cwt. One bell for many years has announced the executions of prisoners at Newgate.

Mr. Robert Dowe, in 1605, left 50*l.* to the parish for the delivery of an address (printed in Maitland's "History of London") to the prisoners in Newgate, on the night previous to their execution. Mr. Dowe was buried in the church of St. Botolph, Aldgate.

The internal length of the church, exclusive of the tower, is 126 ft., and the width 62 ft. 4½ in. St. Stephen's Chapel is 36 ft. 6 in. by 15 ft.

Let into the Portland stone cornice round the tower was a band or belt of wrought iron, 5 in. by 1½ in.

The original floor of the tower was 14 in. below the present level. Several ornamental encaustic tiles were found belonging to the floor of the original church. The turret staircase begins in the south-west angle; fifty-six steps, with 8½-inch risers, conduct to the first stage, or floor; crossing the floor to the staircase continued in the north-west angle, thirty steps lead to

the second stage; crossing this floor to the north-east angle, thirty-one steps lead to the belfry-stage, and forty-one additional steps conduct to the lead flat of the tower; making a total of 158 steps. All the doorways of staircases have Tudor arches. The ceilings of turret staircases were of stone, and groined. In the south-west turret were formerly two openings: one a hagioscope looking into and through the tower, and the other was a doorway leading to the west window.

All the windows of the first, second, and belfry stages were pointed in two heights, with cinque-foiled heads. The tracery in the window-heads was panelled and trefoiled. An original window was found in the first stage, west side; and in the second stage, south side. This latter was discovered on removing the clock. The clock front was of Farleigh Down Bath stone, in good condition, set in Roman cement. It had a crown in half relief on it. The tablet had an architrave and pediment, supported by trusses; on the architrave was A. R.

In the second stage on the south side, by the turret-door is the Curfew-bell. And in the angle of the north window is a lead urinal inscribed with

$$^{17}\,S\ P\ S\,^{85}$$

The parapets are now embattled, and pierced with cinquefoil-headed and quatrefoiled openings. The turrets are 7 ft. in diameter, panelled in two heights, cinquefoiled, and embattled, with bosses at the angles 1 ft. in diameter. The pinnacles are crocketed with finials and vanes. On the main cornice are twenty-eight bosses, 1 ft. 6 in. in diameter. All the bosses, sixty in number, are boldly carved with the heads of lions, fleurs-de-lys, roses, Tudor flowers, foliated heads, and cruciferous and other flowers; no two are alike; they have been sculptured from my detailed drawings, and selected from buildings in this country, of the fifteenth century date. The weight of the four turrets and pinnacles is 280 tons.

The total height of the tower to the top of the pinnacles, as restored, is 149 ft. 11 in., exclusive of the vanes, which are 10 ft. high. The original windows of the tower were of Kentish rag, 12 ft. by 5 ft., the tracery being of Ketton stone. After the Fire of London, or just before, plain pointed windows in two lights were inserted, without tracery or mouldings, all being of Portland stone. The central mullion was retained in its position by a wrought-iron bar passing horizontally through the centre of the mullion, 1¼ in. thick, flat, and 1 in. in diameter, circular through the window openings, and at each end in the form of a spade jagged on the edges, and inserted in each side jamb of the window openings. These iron bars were much corroded.

Of the west window, excepting the internal jamb mouldings, the original opening, 17 ft. 6 in. by 9 ft. 7 in., only remained. A new window is now inserted, in four lights, transomed, with cinquefoiled heads. Perpendicular foiled tracery fills the window-head. The west windows of the north and south aisles are new, in three lights, cinquefoiled, with tracery in heads.

The west doorway, of which much remained, was entirely of Kentish rag. This has been entirely restored; the label is in one stone, 11 ft. 6 in. in length.

The whole of the tower windows are new, in two cinquefoil-headed lights, with transoms and tracery as before, surmounted by finials, and crocketed labels, with foliated bosses or terminals. The external facing of the tower was principally of Kentish rag. The buttresses have been repaired, and gablets 6 ft. by 4 ft. added, with finials, crockets, and foliated bosses.

All the remains of the Gothic churches in London and Westminster which were damaged by the Fire of London were barbarously spoliated by Sir Christopher Wren, and however excellent his geometrical knowledge of construction and of Italian architecture may have been, he was grossly ignorant of the details of Gothic architecture.

To return to the porch; the walls, 3 ft. wide, were found to be in a ruinous state, and veneered or cased with Portland stone 1½ in. thick. The pinnacles, embattlements, niche and statue of Sir John Popham, were all swept away, and a semicircular-headed Italian window, with a bull's-eye window substituted; and the beautiful example of fan-tracery, and its bosses, nicely (!) compoed into an ignorant "restoration."

The porch as now restored has an entirely new circular Portland stone turret-staircase leading to the lead flat. The embattlements, all the pinnacles, the outer doorway, and the whole of the windows are new, all their features being restored. The bosses or terminals on the pinnacles are now decorated with the leaves, flowers, and fruit of the bramble, ivy, maple, oak, passion-flower, shamrock, whitethorn, vine, &c. There are two rooms over the porch, 18 ft. 6 in. by 12 ft. The room immediately over the porch is arched in 9 in. brickwork, with stone ribs. The haunches are filled with earth. The room is 9 ft. 10 in. high. It is to be regretted that an oriel window has been substituted for the niche and statue of Sir John Popham over the outer doorway. The latter were restored in the contract drawings and included in the restoration, but, notwithstanding my protest, the churchwardens insisted upon having an oriel window, which however well adapted for gentlemen's halls, is entirely out of character in a porch. The statue of Popham, similar to "Old London stone," formed one of the landmarks of the City, and would have vied with the statues recently introduced on the Holborn Viaduct.

The Council of the "London and Middlesex Archæological Society," usurping beyond its orthodox functions, submitted plans and sections for the re-modelling of the body of the church, and urged that "it would be undesirable to make the church itself to match the old tower and porch in style of architecture, for several reasons; but principally because the interior is more than an average fine specimen used by Wren in rebuilding the City churches after the Great Fire." The incapacity of an "Archæological Society" to express an opinion on architecture *per se* was never more apparent than in the present instance. Now, in what does this "more than average fine specimen of the style" consist? All the remains of Wren's work are a dozen *quasi* Doric columns, and the altar-piece. All the windows are the old Gothic openings, with semicircular heads added, without a single moulding; the whole of the roof over the entire body of the church was put on in about 1837, and consists of lath-and-plaster groining, with doves, &c.; the springing of the arches rising from the centre of each window opening!

The tower and porch having been restored, there can be but one opinion respecting the body of the church, viz., to restore it to its original state; all the old walls and finely-proportioned window openings remain, including St. Stephen's Chapel.* An open-timbered roof, and the clustered columns in their original positions, would complete the restoration of the nave and aisles as formerly. In 1836, 12,000*l.* were asked for, to restore the nave of St. Saviour's Church, Southwark, and in 1839 a tender was accepted to destroy it, and to build a new nave in its place, at a cost of 8,000*l.* Upon the completion of the building it cost 12,000*l.*, being the same amount that would have restored the ancient nave in its original entirety.

The whole of the stone used in the restoration of the tower and porch was from the Ancaster stone quarries, viz., the fine white and crown freestone, weather bed, laid on its natural bed. All the mullions of the windows are of Ketton stone, and glazed with lead quarry lights by Mr. Denton. All the carvings were executed by Mr. Hibbins. The vanes were made by Messrs. Hart & Son. The contractor was Mr. Lidstone, and the clerk of the works Mr Mallcott. The total cost was 4,726*l.* The whole of the works have been executed from my designs and superintendence. W. Pettit Griffith, F.S.A.

* The view given on p. 755 shows the body of the church as suggested to be restored.

OR SAN MICHELE.

Or San Michele is like no other church in Florence. It is like no other church the world over. It was never intended for a church, but was built by Arnolpho, by order of the Signoria, for a corn-exchange, as we should call it. Taddeo Gaddi turned it into a church, and it was still further altered at a later period by Orcagna. It makes but a small church, though it is a very lofty building, but there are two other floors above the church, which only occupies the ground story. In Or San Michele you breathe the atmosphere of ancient Florence, which you cannot do in the neighbourhood of the railway-whistle and the brand-new houses of the English and Americans. Among all the old places in the old city none is less changed than Or San Michele. It stands in the busy Via dei Calzajuoli, and thus occupies a position between the two most famous piazzas of the city,—the Piazza della Signoria and the Piazza del Duomo. On its western side is the ever noisy Mercato Vecchio, and scarcely more than a stone's throw from its eastern front are the fragments of the most interesting house in all Florence, that of Dante.

The building is almost square. The ground-story is divided into lofty arches, which spring from massive piers of masonry, thus preserving the tradition of the old Loggia. These arches that were once open to the floor within, are walled up to the springing-line of the arch, and the head of each arch is filled with unusually rich geometrical tracery and stained glass. In the centre of every pier, at about a man's height from the ground, there is a white marble niche, with an overhanging canopy, built into the thickness of the pier. Each niche has a bronze statue in it, or more than one. Donatello's St. George is the only marble statue in the series. The walls around are black and stained with the rain and smoke of centuries; but the niches glitter with the whiteness of Carrara marble and gold mosaic. Ages ago, when the Arti Maggiori and Minori were flourishing and rich corporations, they dedicated each a statue to their protecting saints. These money-changers and silk-mercers, farriers and butchers, selected their men of art, as your noble connoisseurs might do now, and drove hard bargains with a Giovanni da Bologna, a Ghiberti, a Donatello. The butchers gave a St. Peter,—a grand old fellow, book in hand. The dust of ages lies thick upon the folds of his robe. Above the pointed gable of his niche are the arms of the guild in a circle of Robbia ware. The shoemakers gave a St. Philip. The joiners, the stonecutters, the masons, and the smiths clubbed together and filled one niche with four saints, who can scarcely find standing-room. On the base of the niche their various pursuits are carved. The mason builds his wall, the joiner smoothes his wood, the carver carves his statue. This is a glimpse into the workshops of five hundred years ago. The armourers and sword-makers dedicated a marble St. George,—the famous St. George of Donatello. There is a plaster cast of this statue in the South Kensington Museum, but perched as it is on a couple of exhibition-cases and divorced from its beautiful niche, it has little of the effect of the famous original. The youthful saint fills his niche with an air of splendid alertness. He is bare-headed, and wears a cuirass and greaves. With his left hand he grasps his red-cross shield. The marble canopy above him is carved in many intricate ornaments, and little angels spread their wings and fold their arms upon its pinnacles. The money-changers gave a St. Matthew. Their arms are conspicuous above the niche,—a shield thickly sown with golden florins. The Guild of Wool dedicated a St. Stephen. The blacksmiths gave a St. Lo. The furriers gave a St. James. The rich Guild of Silk gave a St. John. The justices and notaries gave a St. Luke. These statues are a series of ideal forms, of varying merit no doubt, but yet the work of mighty artists, and the gifts of mighty traders. The stone blackens and crumbles away by degrees. The carved marble is eaten into by wind and sunshine, but these graven apostles will outlast the very rocks. Long ago, when the church was still a loggia, and busier than the busiest of the remaining loggie are now, there was a wonderful Madonna upon one of its piers. She was a compassionate saint; she wrought miracles,—at least, everybody in Florence believed that she did. The grandest artist of the time was commissioned to build a shrine for her, which is the glory of Or San Michele to-day. This tabernacle is a jewelled pyramid that flashes its hundred rays through the dimly-lighted church. Open arches on three sides, springing from the angles of the shrine, support a roof, vaulted below, but domed on the exterior, that overshadows the altar within the parallelogram. The picture of the Madonna is placed over the altar, surrounded by worshipping angels, bearing lilies and palms, and musical instruments. Numerous heads of the apostles and seers lean with their mottoed scrolls from the arches and piers. The history of the Madonna is carved on the base. The marriage and annunciation, and the death and the assumption, the birth of the Holy Child, the visit of the kings, and the presentation in the Temple. These are all sculptured in the creamy marble, soft and shadowy with age, and the blue and rose, and amber and gold, of mosaic form a border about them. Devotion, Temperance, Perseverance, Humility, Truth, Docility, are the virtues that stand at the angles of the piers.

This is the Capo d'Opera of Oreagna, in marble. Through ten years he wrought with his own hands in the carving of the bas-reliefs. The cost of the entire work was 86,000 gold florins. Before leaving, the visitor should seat himself for a moment on one of the benches that are placed parallel with the sides of the shrine, and look through to the painted window beyond. By so doing the Tabernacle receives its glorification, and is a truly beautiful vision. The arches appear to enclose the richest, most mysterious colours, the very splendour of the setting suns. Eternity is typified in the marble calm of the shrine, and life, and its mystery of sadness and fugitive brightness, in the colours of the window. All the windows, with one or two exceptions, still retain their ancient glass. Although the area of the glass bears but a small proportion to the size of the space between the piers, the windows are by no means ineffective. Each one glows, jewel-like, in its setting of grey wall and shadow. S. D.

DISCOVERY AT LAVENHAM, SUFFOLK.

The Suffolk Archæological Institute have had an excursion, and, amongst other papers laid before the meeting,

Mr. Dewing read the following notes relative to a recent interesting discovery at Lavenham:—A short time ago Professor Churchill Babington drew my attention to the discovery of an early kiln or oven at Lavenham, intimating that from the description he had received, it might turn out to be the work of the Romano-British period. This discovery was made upon the property of Mr. William Biddell, of Lavenham Hall, and by his kindness I had an opportunity of seeing it. The kilns or ovens were found when digging for gravel in a pit close to Lavenham Hall, and near the site of the house of the De Veres, the remains of which are still visible in front of the present hall. Entering the gravel-pit from the road, the kilns are seen in section on the opposite side, and a stranger may well be forgiven if his first impressions are in favour of Roman work. The kiln is double, like two wagon-shaped steam boilers lying side by side. In fact, the section is very much that of a wagon-boiler. A single course of hard floor-bricks is laid upon the surface of the gravel, on a thin bedding or layer of clay, which the heat has rendered hard and friable, subject to the original deposition. Over this floor two barrel arches are turned, 5 ft. wide by 2 ft. 3 in. high, the crown of the arch being somewhat depressed. The depth of the kiln and the length of the barrel are not less than 12 ft. I have said that the floor is of hard bricks. These measure 10 in. by 5 in. by 1½ in., are unglazed and more burnt on one surface than the other from the heat of the kiln. The arch itself is entirely formed of flat roofing tiles of a red coarse make, averaging, I should say, 6 in. square, but as I could not extract a perfect specimen, I am not quite sure about the dimensions. They are ¾ in. to ½ in. thick, and average 14 courses to the foot, so that the layer of clay (for the tiles as well as the floor bricks are laid in clay) is nearly as thick as the tile. The haunches of the arches are filled in with a soft red brick, measuring 9 in. by 5 in. by 2½ in. The surface of the ground around is covered by broken pieces of tiles, and below the surface may be traced a layer of shells, the whelk and oyster predominating. I found no pottery, but had little time for search: one piece of glazed tile I picked up, but I think it accidental. The Roman theory of the origin of the oven I must think untenable. The character of neither the bricks nor the tiles supports it; nor does the form of the kiln agree with such accounts of Roman kilns as I am acquainted with. On the other hand, the bricks are not modern. The tiles might pass for modern flat roofing tiles, but the hard bricks are certainly not modern. Similar bricks of modern make measure 9½ in. by 4½ in. by 1⅝ in., whereas these measure 10 in. by 5 in. by 1½ in., &c., they are longer, wider, and thinner than modern-made hard bricks. At first I thought, and by the large quantities of broken tiles lying about, that the kilns might have been connected with tile-making. But the same thing occurs elsewhere in the neighbourhood, and the kilns do not appear adapted either by their form or by their heating powers, for the burning of tiles. It will be observed that there is no furnace nor apparent means for heating these kilns; we are, therefore, driven to the conclusion that they must have been heated somewhat after the manner of a modern baker's oven—by wood. Some years ago a kiln was discovered at Malvern, which was so far similar to these that there was an aperture for the escape of smoke, and it was evident from the remains that charcoal had been used for firing. Charcoal was, therefore, in all probability, the heating medium at Lavenham. It would seem not unlikely that these Lavenham ovens were used in the manufacture of the soft common pottery which satisfied the wants of the district about the seventeenth century. If so, it is remarkable that the kilns differ in form from those in use among the early Staffordshire potters, which were of a round coped form, about 6 ft. wide and 8 ft. high; were it not for this difference I should have put forth this suggestion with some confidence, as it is borne out by the name of the Potters' Field, which the place bears. As it is I hesitate, and leave it to others to supply my deficiencies.

Professor Babington, being called upon by Mr. Dewing, said he could have wished to say nothing about the matter until he had had an opportunity to make more accurate investigations, but he thought from their surroundings,—pieces of pottery, &c.,—that the remains spoken of by Mr. Dewing were unmistakably Roman. The arches seemed to be Roman, and the occurrence of whelks with oysters, in thick layers, encouraged this presumption, for these were commonly found about Roman villas. The professor produced a fragment of the neck and lip of a vessel picked up on the spot, which he thought might have been the site of a Roman villa, and of a manufactory of pipes or something else at a later period. The structure of the tiles did not seem to be Roman, and the whole matter required further investigation. He was inclined to think they were hypocausts.

SALES OF FREEHOLD ESTATES AND BUILDING LAND.

On the 10th inst. Messrs. Farebrother, Clark, & Co. offered for sale at the Mart, Tokenhouse-yard, several valuable freehold estates, situated in the counties of Middlesex, Hertfordshire, and Wiltshire respectively, the estimated value of which was upwards of 200,000*l.*

The first lot of property submitted was a residential estate, together with a quantity of building land, situated near the village of Great Stanmore, Middlesex, containing an area of a little more than 11 acres. The property was stated to be about three miles from the Harrow Station of the London and North-Western Railway, and within two miles of the Edgeware and Highgate line, and was further described as being well adapted for building purposes, in consequence of additional railway communication which would shortly be opened out, bringing it within easy access from the metropolis. The upset price was 4,000*l.*, and the property was sold for 4,350*l.*, being at the rate of about 400*l.* per acre.

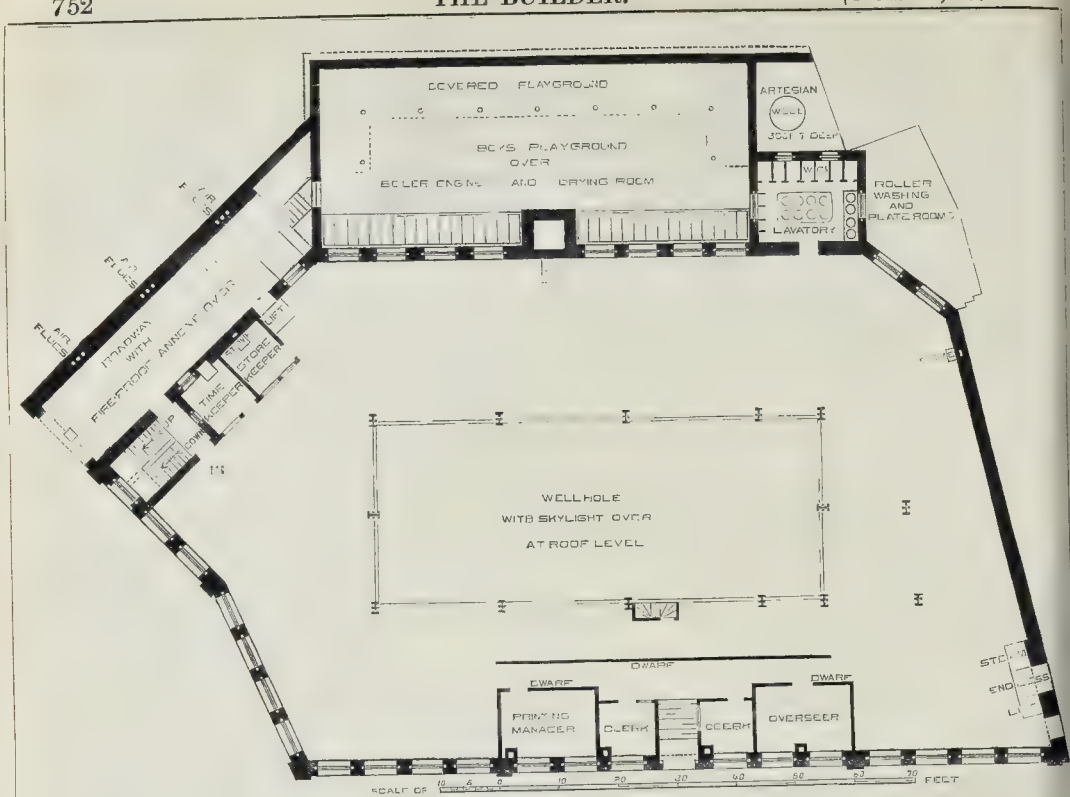
A number of extensive estates in the parishes of Aldbourne and Wanborough, Wiltshire, containing in all 2,330 acres, were submitted to competition. These estates were in five lots, the several lots containing respectively 790 acres, 537 acres, 184 acres, 390 acres, and 425 acres, the aggregate annual rental being stated to be 2,054*l.* The first lot, containing 790 acres, was put up at 13,000*l.*, the biddings going on by advances of 100*l.* each, until the property stood at 16,000*l.*, at which sum it was knocked down. The first offer made for the second lot, containing 537 acres, was 12,000*l.*, and the property was ultimately sold for 13,500*l.* The offers for the three next lots not reaching the reserve, they were withdrawn. The sum realised for the lots sold amounted to about 25*l.* per acre, as compared with 400*l.* per acre which the Middlesex property commanded.

London Bridge.—The Bridge House Committee have just issued a report. According to it, there are, on an average, 116,284 horses led or ridden, and of vehicles of every description, and 611,217 foot-passengers passing over the bridge every week. Mr. Horace Jones, the City architect, and Mr. C. H. Gregory, civil engineer, concur in thinking that the reference to the committee would best be met by widening the bridge to the extent of 22 ft.,—11 ft. on either side,—but not on the cantilever principle, since they viewed with serious apprehension the possibility of a balcony sustaining a load of upwards of 500 tons. They would not tamper with the stability of the present structure, and suggest a scheme that would cost 55,000*l.* The committee agree that this expenditure should be incurred.

A NEW MODEL PRINTING-HOUSE.

The new printing-house of Messrs. Cassell, Petter, & Galpin, is situated on the site of the ancient Carrier's Inn, known as the New Inn, Old Bailey, and of several houses on the south side of Fleet-lane. It abuts on the north end La Belle Sauvage-yard, the present publishing and printing-house of the firm. It has a frontage of about 232 ft. to Fleet-lane; a view of which we give, together with plan of the ground-floor. The London, Chatham, and Dover Railway runs parallel with and forms the west side of Fleet-lane. The site was formerly the sloping bank or cliff of the Fleet, and at the base of the cliff at a depth of 18 ft. below Fleet-lane, retaining wharf walls were traced, which had adjoined creeks or docks of the Fleet. The necessity of keeping the basement floor at the same level as that of the existing premises necessitated an immense excavation, the whole of the cliff was removed over the entire site, the depth of the excavation at the east end exceeded 40 ft., the quantity of earth removed was 18,378 yards, and in consequence of the difficulty of access thirteen months were taken up in the slow and tedious process. A Roman sarcophagus was opened about half-way down the cliff, and is now in the museum at Guildhall. The skeleton of the Roman found within the coffin was plundered piecemeal, by antiquaries and others and dispersed. To obtain a reliable foundation for the massive walls of the building, it was necessary to excavate a still further depth, until the blue clay was reached, and the trenches were filled up with concrete. On the east of the site a spring of water was cut through, strongly charged with salts, especially nitrates. This spring has to be pumped up continuously to the level of the sewer in Fleet-lane. Its medicinal qualities are not appreciated. The principal purpose of the new building, to which all others are to a certain extent subservient, was to obtain a machine-room for thirty-six large printing-machines, arranged under supervision of one commanding superintendent, the great desiderata being to secure an abundance of light, so as to avoid the use of gas as far as possible. This machine-room occupies the area of the basement of the new building (12,600 ft.). There will be no bands or shafting visible in the machine-room, the bands to each machine working in trenches sunk beneath the floor, and the work will therefore proceed without vibration. The flooring will be of hard bricks, with teak-wood pathways. The walls are lined with glazed white bricks to a height of 7 ft. The machine-room is lighted by a central well, 70 ft. by 30 ft.; roof carried up to the top floor, and covered with a light glazed roof. There are five floors above the basement. The ground-floor will be principally occupied as the printing-office warehouse. The space over the drying-room is to be an open playground for the boys.

The first floor contains the administration, both financial and editorial; here also will be the library, private rooms, and conference rooms, a large schoolroom, two dining-rooms for the men, kitchen, &c. The second floor is given up almost wholly to stock. On the third floor will be placed the hand-presses where the lighter kind of work in printing is to be done; and the whole of the fourth floor will be the composing-room, well lighted, ventilated, and regulated in temperature, every means to these ends having been considered, and, where practicable, adopted. The large tower at the south-west contains a nest of separate airy and spacious reading-rooms for the "readers"; there is an annexe of fireproof character on the east side on all floors forming a buffer against the spread of fire, where only the new building abuts on adjoining property. These fireproof-rooms will be used as stores for plates, woodcuts, &c.; also for stereotyping, electrotyping, and other processes. The water-closets and lavatories are contained in a tower of nine stories, having access from each floor, but separated from it by a lobby. The water supply to the whole building has been happily secured by an artesian well. The water will be stored in five wrought-iron tanks, containing together 80,000 gallons, the highest tank being at an elevation of 110 ft. above the basement floor. There are two fire-cocks on each floor and on the roof, and tons of water can in one minute be thrown upon any point. The access to the building is by a fire-proof workmen's staircase at the north-east angle, and a stone public staircase at south-west angle, but there is also a continuous steam-lift for the use of the



NEW PRINTING HOUSE, FLEET LANE.—*Plan of Ground Floor.*

establishment only as fixed at the General Post-Office. The method of heating and ventilating is a modification of Captain Galton's system, as applied to the latest barracks. The elevations to Fleet-lane are of a massive business-like character. The material used is Portland stone to the level of the first floor, and white Suffolk bricks and terra cotta above. The whole is being carried out from the designs and under the superintendence of Mr. Francis Chambers, architect, who is represented on the works by his assistant, Mr. J. R. Wilson.

The arrangements for carrying on the various mechanical processes, &c., within the building have been so contrived as to economise manual labour as much as possible. The paper, as it comes from the mill, will be placed in a series of basement warehouses, from which it will be taken as required, and passed into the wetting-room, then smoothed by means of steam rolling machinery, and driven upon tramway trucks to the printing-room. Having been printed upon, it will be raised by a steam lift to the counting-room, and passed through a drying process. It will then ascend to the next floor, and be pressed by powerful hydraulic machinery, after which it will be carried, by means of the endless lift, to the binding-room, and thence conveyed down to the publishing-offices, thus making a circuit of the building.

The printing machinery is of various kinds, the most part being especially constructed for producing works illustrated with fine wood-cut engravings, the whole being, as before mentioned, driven by shafting placed beneath the basement level, and resting upon isolated foundations.

The boiler-house, which is outside the walls of the main building, contains three of Galloway's boilers, each measuring 22 ft. by 6 ft. 6 in., and adjoining is the engine-house, to contain two pairs of Tangye's horizontal engines, each pair being of 36 H.P.

The composing-room, which is noteworthy, will accommodate 200 workmen. It is well lighted, well ventilated, and fitted up with every necessary appliance besides especial provision for the personal convenience and comfort of the men.

The "readers," whose fate it is too often to be located in small, ill-ventilated closets, exposed to the noise and vibration of machinery, will occupy a suite of quiet rooms (at the summit of a tower), which have been constructed with a special view to their health and comfort.

The process of electrotyping, which involves the escape of irritating gases, will be carried on in a separate building, so arranged as to reduce its deleterious effects to a minimum.

Provision has been made for a workmen's kitchen, where food will be provided for the men and boys at the lowest rate, and the boys will have the use of a playground and gymnasium during the dinner-hour—and thus avoid the common practice of running about the streets.

The total number of persons employed upon the premises, including men, women, and boys, will be about 750, and some idea may be formed of the extent of the operations carried on by the mention of the fact, that exclusive of the production of an array of volumes in almost every department of English literature, the separate parts of the magazines and serials issued each month considerably exceed half a million. The paper shavings trimmed off the edges of the serial publications amount to 25 tons a year, while the other waste, including paper accumulating from the strict rejection of all imperfect impressions, exceeds 50 tons.

THE CONTRACT FOR THE LAMBETH NEW INFIRMARY.

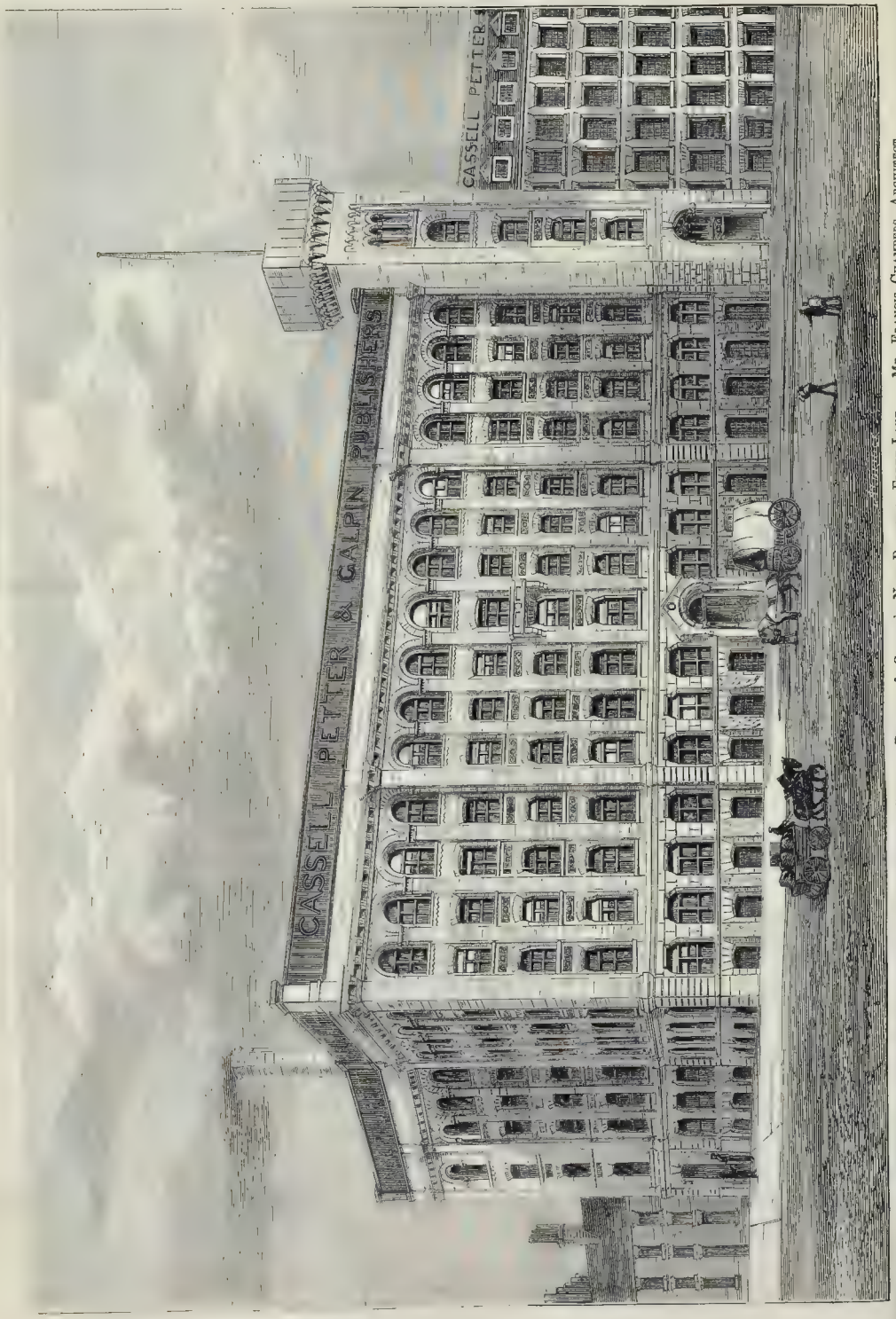
At the meeting of the Lambeth Guardians last week, the tenders for the new infirmary, outdoor labour buildings, receiving wards, and other buildings, which are about to be erected from the designs of Mr. Fowler, architect, were opened. They were fifteen in number. The tender of Mr. J. H. Tarrant, of New Kent-road, to erect the infirmary for 51,200*l.*, the receiving wards and other buildings, 1,540*l.*; and the outdoor labour buildings, 460*l.*; the total being 53,200*l.*, was accepted, subject to inquiries into Mr. Tarrant's financial ability proving satisfactory. A conversation ensued with respect to the question as to whether the other contractors might withdraw their tenders, and the Board be compelled to go through the process of inviting tenders again, in the event of the inquiries respecting Mr. Tarrant's financial position proving unsatisfactory. In order to overcome this possible difficulty, Mr. Taylor suggested that the Board should not definitely accept any particular contract until they had made all the inquiries they intended to make, and that the contractors be informed that the Board would decide the question at their next meeting. Mr. Taylor's suggestion was ultimately adopted.

WARRINGTON SCHOOL OF ART.

PROPOSED NEW BUILDING.

On the 11th inst. a meeting of subscribers and others interested in the Warrington School of Art, was held in the Museum, for the purpose of receiving a report from the sub-committee in reference to the erection of a new building for the use of the School of Art. The chair was taken by the mayor (Mr. Chandley), and there were also present—Mr. Alderman Holmes, Rev. O. H. Cary, Rev. J. B. Johnstone; Messrs. Bleckly, John Rylands, Brewtnall, S. Webster, Chas. White, Sharpe, Marson, Whittle, Crosley, Ellison, and Edward Milner, hon. sec.

Mr. J. Rylands proposed a resolution, "That it is desirable at once to secure the land, or a portion of it, offered by Lord Winmarleigh, and that the council of the School of Art be requested to open a subscription list, and proceed as soon as possible to secure the land"; which was carried, as also that proposed by Mr. Marson,—"That the Council of the School of Art be requested to prepare plans of the building required, and when ready submit them to a meeting of friends and subscribers after they have been approved by the Department of Science and Art."



STREET ARCHITECTURE, LONDON.—Messrs. Cassell, Petter, & Galpin's New Premises, Fleet Lane.—Mr. Francis Chambers, Architect.



ST. SEPULCHRE'S, HOLBORN VIADUCT.—Tower and Porch, as Restored by Mr. W. P. Griffith, F.S.A., Architect.

[See p. 749, *ante*.

ON HAMMERS.*

It is hardly possible to draw a distinction between a tool and a machine; the former is more simple than the latter. They so merge each into the other that it is difficult to say where the one ends and the other begins. A lathe, for example, is a handicraft tool, and yet in its ramifications and developments it becomes a very complicated machine. As a machine we are not concerned with it,—as a tool it might legitimately be classed in this course of lectures. It was, however, one of the earliest to be erased from the first list; now, however, it has for associates a goodly number of tools in far more general use than itself, which one by one have been set aside. It may be asked, What is a tool? How is it defined? Questions not easily answered. For our present purpose, it will suffice to state that an implement by which the power of man is enabled to change the physical forms of materials is a tool. If to this implement there be added appendages, which either extend its range or vary its mode of application, these appendages are "contrivances." There may, however, be contrivances not connected with tools as now defined, and then they are elevated to the dignity of tools. For example, a chisel or a hammer is a tool; the boxing with which the former is surrounded, as in a plane, and the handle attached to the latter, are contrivances, for by them the modes of application of a chisel and the powers of a hammer are extended and varied. A vice, a soldering-bit, a nail, a square, are not tools, but "contrivances" only.

Viewed thus, it may be said that by means of tools and contrivances man is enabled to increase and vary the human power, to economise human time, and to convert substances apparently the most common and worthless into valuable and useful products. Without tools the hand would be nearly powerless; add to it a hammer and a cutting instrument, and its capacity is increased many fold. Whoever contrived rollers as a means for moving heavy blocks of stone added a contrivance which very largely extended the powers of men. Whoever first applied grease to bearings and surfaces enabled man to utilise a much larger portion of his power. Whoever first, in truly geological prehistoric times, made an eye and a point in and on a strip of bone or shell, gave to man as a tool an invention far exceeding in importance and value anything yet accomplished by heat or electricity. Whoever in these same times applied a barb to a spear and a hook, introduced a contrivance of very high and inestimable importance.

The most ancient of tools is the hammer. In all parts of the world and amongst all people hammers may be found in use. So general are they that even the name "hammer" seems to have a pre-historic origin, for etymologists tell us that the word "hammer" is common to all the northern languages.

A tool more simple and more useful than the primitive or handicraft hammer cannot be found. Yet it has been so little esteemed during the countless ages since the first was made, that so far as your lecturer's researches have penetrated, the hammer does not possess any literature. This may be illustrated by reference to the encyclopædias, *e.g.*, "The Penny Cyclopædia" in its thirty volumes, and "The Edinburgh Encyclopædia," do not contain in alphabetical order the word "hammer." The "Encyclopædia Metropolitana" and the "London Cyclopædia" dwell upon the word "hammer" chiefly in its figurative sense. "Rees's Cyclopædia" has "hammer, an instrument of iron with a handle of wood, used in most mechanic arts to beat, stretch, drive, &c." The "Encyclopædia Britannica" and the "Oxford Cyclopædia" use terms similar to those employed in Rees. "The English Cyclopædia" speaks thus disrespectfully of this most primitive, ancient, and universal tool:—

> "*Hammer.*—It will not be necessary to notice the hammer as a mere tool, but its importance as a machine renders a description necessary."

More recently, and in a book specially devoted to the tools and contrivances used by artisans, and which volume has both a table of contents and a comprehensive index, the hammer is not even named in these. Like the scaffolding of a building, the simple hammer seems always to be cast aside, and the writers of the articles in the "Encyclopædia" have correctly interpreted the universal treatment. The machine contrivances worked by other than human power, and to which they attach importance, are those with which this course of lectures is not to be concerned.

Before considering such views as may have suggested many of the various materials and forms of hammers now in use, it will be well to regard the hammer in, and of, and by itself. We are so apt to look upon it as a rude implement, necessarily associated with a superior class of finishing tools, that the materials, forms, and scientific principles involved in its construction and use, not only as an adjunct to other tools, but as a sole independent and final tool, are much overlooked.

In some handicrafts, and those too involving a high class of finished work, the hammer is the only tool employed. That great artistic skill in the use of the hammer, as a finishing tool, can be acquired is manifest from the beautiful illustrations of *répoussé* work to be found.

But we should be ignoring the skill of those who have gone before us, if we allowed ourselves to dwell exclusively upon the work done by hammers as finishing tools in modern days. As the hammer was in all probability the first formed of handicraft tools, so it was with equal probability the first tool used for the formation and ornamentation of articles which, whilst still intended for use, were also regarded as worthy of ornamentation.

It may, perhaps, appear somewhat out of place to refer to the shield of Achilles, so fully described in the "Iliad" of Homer, book 18, in the last 150 lines.* But if any one can appreciate the value of a hammer—as an independent tool—then he will read either the original description of the metal work on this shield in the language of Homer himself, or, failing in ability to do that, he will be amply repaid by a thoughtful perusal of the translation, given by either of our late Premiers, Lord Derby or Mr. Gladstone.

Homer flourished about 960 B.C. (*i.e.*, 960 + 1875) 2,835 years ago, and although the shield to which allusion is now being made may not have been actually fashioned, nevertheless, the description is of that which a hammer was poetically supposed capable of accomplishing. Indeed, the forge in Homer's day is described as not inferior to some of those at our large armour-plate and "Woolwich Infant" manufactories.

The late Earl of Derby gives us as Homer's description of the forge at which Vulcan wrought,—

> "The bellows then directing to the fire,
> He bade them work; thro' twenty pipes at once
> Forthwith they pour'd their diverse-temper'd† blasts;
> Now briskly seconding his eager haste,
> Now at his will, and as the work required.
> * * * * * * *
> Then on its stand the weighty anvil placed;
> And with one hand the hammer's pond'rous weight‡
> He wielded, while the other grasp'd the tongs.
> And first a shield he fashion'd, vast and strong,
> With rich adornment . . . . . .
> . . . . . of five folds the shield was form'd;
> And on its surface many a rare design
> Of curious art his practised skill had wrought."
>
> *Book* 18, *line* 528, *&c.*

The account of the shield itself is too long, but Mr. Gladstone has condensed (as a table of contents) the incidents embossed upon it by hammering and inlaying. These incidents, it will be observed, are very unlike the "various shields" in the hosts of Satan, for the latter were "with boastful arguments portrayed" (Milton's "Paradise Lost," book 6, line 84).

The scenes wrought upon the shield of Achilles are—1. The earth, sea, and heavenly bodies. 2. In a city at peace there are—(*a*) Marriage festivities; (*b*) A judicial suit or trial. 3. In a city at war there are—(*a*) A scene before the ramparts; (*b*) An ambush and surprise; (*c*) A bloody fight. 4. The ploughing of a field. 5. The harvest and the meal in preparation. 6. The vintage, with music and a march. 7. A herd of cattle attacked by lions. 8. Sheep at pasture and their folds. 9. The dance. 10. The great ocean river encompassing the whole, as, in the mind of Homer, it encompassed the earth.

Mr. Gladstone remarks:—"Never was outward fact so glorified by the muse. Nowhere in poetry is there such an accumulation of incidents without crowding. Of the twelve pictures on the shield, almost every one contains a narrative." All this is described as the result of hammer-work.

Although hammers and hammer-work have been in past ages thus highly esteemed, yet whilst hitherto, in modern times, literature has disregarded the tool pure and simple, the wealthiest in the land pay very marked respect and honour to the tool itself. The diamond within gives to the casket its worth, and the value of a gem may often be inferred from the setting in which it is placed. Judged by this standard, the hammer holds a patriarchal pre-eminence amongst tools,—a pre-eminence to which its antiquity and usefulness fully entitle it. Not royalty alone, but all who derive their authority either from royalty or wealth, and who adopt an English view, that honour is shown by excessive display and paraphernalia, cover with valuable cloth the box containing the hammer to be used in case their carriage meets with an accident. The sides of this cloth which covers the hammer, and the doors of the carriage which enclose the owner, are alike emblazoned with heraldic arms. Is it from deferential respect to this most ancient of tools that on the hammer-cloth is often a more expensive emblazonment than on the doors of the carriage?

For examples of the use of hammers in the production of works of great variety and extent on a large scale, see the ancient hammered wrought-iron gates, hinges, panels in the architectural room in the Museum at South Kensington, or (only of a different character, but still hammered work) the gates recently erected near the courts in Lincoln's-inn; also the various suites of mail and chain armour in the Tower of London; also the iron panels on the table, especially the beautiful iron spray formed out of the solid, without either welding or brazing; also the raising and embossing of metals to which your attention has been directed; the formation of gold leaf, the springs of carriages, and the stiffening of saw-plates.

The nature of work to be done by hammers calls for very great differences, not only in the form, material, and weight of the hammer-head, but also in the appendages to these. There are the material and form of the handles, the angle at which these handles shou'd intersect the axial line of the hammer-head, the position of the centre of gravity with respect to the intersection of this axial line, the length and elasticity of the handle. If the centre of gravity is not in the central line or longitudinal axis of the hammer-head, then there is a tendency to bring the hammer down on the edge of the face and not on the face. If this defective construction were great, the muscles of the wrist may not be strong enough to counteract the tendency. If the defective construction is slight, then the work is often marked with angular indents. Arrangements, too, may be required for modifying the intensity of the blow, whilst retaining the effects resulting from a heavy hammer where a light one would be inefficient.

As the principles which govern the operation of small things may be best studied in large ones, so here. For this purpose we may at the outset regard the hammer as a weight at one end of a rod, of heavy or light, of elastic or non-elastic material, the position of the hand on this rod varying according to requirements (as the fingers of a violinist on the strings of a violin) and so modifying the effects of the hammer. Speaking generally, the effect is produced by allowing what we must call the head to fall through a space, and then come in contact with the material to be influenced by the blow. Perhaps, the object to be accomplished by the blows of hammers are more varied than those to be effected by any other single tool. It may be questioned whether there is any handicraft operative who carries through any branch of his trade without using what he calls, or what we may call, a hammer. Although under this general name each artisan understands a certain tool employed in his own trade, it does not follow that he generalises, and so extends his views as to comprehend all the varieties, both in material and form, which present themselves between the heavy two-handed maul and the smallest tapping-hammers of the jeweller and watch-maker, file-maker, and diamond-splitter.

It is curious to see how in the same trade the hammers are for different purposes made of different materials. The engineer, for example, uses hammers faced with steel hardened, the stone-breaker (or mineralogist) hammers faced with steel softened (or rather not hardened). Again, in another part of his progressive work, the steel hammer with which the engineer com-

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* From the third lecture of the course of Cantor Lectures on "The Material, Construction, Form, and Principles of Tools and Contrivances used in Handicraft," by the Rev. Arthur Rigg, M.A.

* See Lord Derby's "Iliad," book 18, line 528, &c.

† The expression must be limited to the intensity of the blast, although it reads as if Homer was as familiar with "hot-blast" as we are; perhaps, he may have been.

‡ It would not have accorded with the acknowledged power of Vulcan to have represented him as needing the help of a sledge-hammer man.

menced his operations gives place to a bronze or copper one, and this is sometimes displaced by one of lead alloyed with tin, and the usual handle entirely discarded. It then assumes in all respects save material the form and mode of handling as described in the account of the prehistoric stone maul. This leaden cylinder, about 2 in. in diameter and 6 in. long, is the primary form of this second maul, which is about 3½ in. in diameter and 3 in. long, the ends being very much spread out. There is no handle to this tool; occasionally it is made of a mixture of lead and tin, in order to impart a hardness not possessed by lead alone. To strike where required the bright part, in the erecting of heavy machinery, the engine-fitter makes use of this contrivance.

The plumber dismisses all these, and for direct action upon the material employed in his trade he uses a hammer of wood, discarding not only the material, but also the form of hammers used in allied crafts. Indeed, one of his hammers serves a double purpose, for if at one moment it is a hammer, at the next it is used as a swage. In some cases, as in the working of copper vessels which have been silver-plated or gilt, the coats of the precious metals are so thin that, although the weight of a hammer-head is required, yet even the wooden hammer of the plumber, or the still softer leaden hammer of the engineer, is equally unsuitable, and therefore the workers in these metals cover the face of their hammers at times with one or more layers of cloth held on by a ring which slips round the ordinary hammer-head as the hoop on a child's drum. The covering of the hammer-head with cloth, to preserve the material on which the blow is struck, is not, however the only use made of a jacket over the hammer. For one purpose when a leather jacket is employed, even a leaden hammer might prove inconveniently noisy.

In a case brought before the Lambeth Police-court on the 19th of January, 1875, Edward Simpson, shoemaker, and others were charged with house-breaking. The implements used in this occupation were produced, and the newspaper report states that "one feature of the exhibition was a leaden hammer capped with leather, which it was stated was used for the purpose of driving wedges into safes, the leather causing the blows to be almost noiseless."

The veneering hammer, again, is compound, one end being formed of metal and the other of wood. This hammer is used, the one,—or metal,—end as a squeezing hammer (if such a term may be employed), the other as a tapping hammer, in order to ascertain by the sound produced where the veneer is adhering, and where it is not.

The stonemason seems to claim a universal choice, both of material and form. As to material, he has and frequently uses hammers made of wood, of iron (steel-faced), and of an alloy of lead.

In some cases the hammer and the anvil mutually change places, the hammer of wood, the anvil of metal, or the converse. Nor is the wood always of the same character. As varied as are the characters of the woods themselves, so varied are those chosen by different crafts for the employment of each craft. Even the varying density of the woods gives place more frequently than otherwise to lead, and we meet with metal hammers used on lead-covered anvils.

In the last journals of Dr. Livingstone, he mentions (page 89) that on one occasion he saw a bushwoman, in Cape Colony, using as a digging-hammer a round stone with a hole through it. Through the hole a rod was inserted. The end of the rod was used for digging, the weight of the stone assisting the muscular effort. He also states that these people prefer stone hammers and anvils because they do not burr up as iron ones do. In vol. i., page 146, there is a wood-cut illustrative of the mode in which these stone-hammers and anvils are used. It differs materially from the plans supposed to have been adopted in the Stone Age. The hammer stone seems to be selected with careful reference to its shape, which approximates to that of a truncated cone. It is then bound round with the strong inner bark of a tree, and handles being formed of loops on opposite sides, the man, using both hands, raises the stone hammer above his head, and thus by muscular exertion, aided by gravity, he gives a blow of the requisite intensity. A heavy stone sunk in the ground forms the anvil. The bellows consist of two goat-skins, with sticks at the open ends, which are opened and shut at every blast.

On page 155 of the same journal, is the wood-cut of a mallet used by the same people for separating and softening the fibres of bark by a process of tapping. The head of the mallet is often of ebony, with the face cut into small furrows, smaller, but similar to those used on our meat-hammers. There is what we may call a mallet (although differing in form from those we use) which was brought very many years ago from Otaheite. This also is cut on its four sides into small longitudinal furrows; each side is not an exact counterpart of the other. There is also the felted cloth made by the use of this mallet from the bark of trees. The mode of proceeding in the manufacture is identical in principle in the interior of modern Africa and in long past days in Otaheite.

THE PUBLIC HEALTH OF TOWNS.*

One of the grandest mistakes the public can fall into, is to consider that the work of sanitary reform, and the carrying out of all good sanitary measures and appliances, belong solely to corporations and sanitary inspectors acting under them. Every person can promote public health by attending to his own health; to the cleanliness of his own individual home, and working premises; and to the tidy condition of the accesses, courts, and grounds attached thereto. Co-operation is much valued by sanitary inspectors. Unfortunately, however, many do not co-operate and assist them who could, and who, from their social position and intelligence, ought to do so. And many again look upon them as a parcel of intruders,—impertinent and interfering fellows,—and set themselves to thwart them, and to evade statutory requirements, as far as they can. The want of co-operation of the kind alluded to may be accounted for in various ways: by the blindness of such persons to the dangers from unhealthy surroundings; by their fear of being led into expenses on account of improvements; by their firm determination not to be dictated to in the management of their own properties; or by, it may be, imprudent dealing at the hands of an inspector, or some of his staff. As sanitary improvements, however, are carried into effect, the beneficial results following thereon will do much to remove existing obstacles from the way. Education will also do more; and now that so great interest is being taken in schools by the public, and so much attention is being paid to them by school-boards and others, it would be well to have the pupils attending such schools taught the principles of health; and habits of cleanliness and respect for outward tidiness should be inculcated and impressed upon them with the view of promoting both present and future improvements on the sanitary condition of the people.

The sanitary officer will succeed best by exercising great care, neither to exact from people unreasonable nor needlessly expensive works, nor to cause them to make unnecessary alterations on their properties. And he should endeavour, as far as possible, to deal courteously with the public, and to carry them along with him. In this way he will strengthen his position, and gain the moral support of the community. Official work under the department of public health is rapidly developing itself, and new channels of operation are daily being opened up. This development is, in many places, ahead of the sanitary staff employed, and the consequences are, that the working staff is ofttimes overwhelmed by the magnitude and ramifications of the work to be overtaken and discouraged by more being expected of them, than they can really accomplish under the circumstances. But I am confident, when corporations come really to see the magnitude and difficult nature of this work, and consider fully its importance and urgency, and the chronic insanitary habits of a large section of the people, they will rival each other in their liberality to provide and support a sufficient staff of men, characterised by intelligence, activity, prudence, and common sense; and in giving them every encouragement amidst the dangerous and disagreeable duties they are called to perform. The duties of sanitary inspectors are neither pleasant nor safe; and it may truly be said of the most of those officers, that in the exercise of their important duties they carry their lives in their hands.

We cannot expect that all towns and populous places will be equally healthy, even under regulations and appliances of the highest sanitary order. There are other circumstances which will materially affect their condition of health, over which there may be no control; and, therefore, the death-rate alone cannot be taken as the gauge of sanitary efficiency. A man who has a bad constitution, and is far gone in consumption, would not likely prove a very promising patient for the physician. Just so, some towns and populous places have very bad constitutions. They stand on damp soils, are subjected to fogs, occupy low positions, are studded all over by manufactories, are overcast by smoke and deleterious gases from chimneys, have narrow irregular streets, and long narrow closes in near proximity, bounded by high dwellings in rickety condition, with low ceilings, badly lighted, and without means of ventilation, and are but partially and badly paved. Such towns are not easily dealt with. Much time is required to cope with what can be reached; and only, in many cases, with a new constitution in the shape of the demolition of the insalubrious parts, and the introduction of wide streets and new buildings having ample ventilation, can a moderate average rate of mortality be attained. But the death-rate is not on this account to be left out of calculation. I consider that, to have towns mapped out into small districts, and tabulated with the death-rate per month opposite each, information of the most valuable kind will be got, and the insanitary condition of special localities indicated, and the attention of sanitary inspectors called to them. In addition to this, it would also be of value to have a quantity of rainwater occasionally intercepted as it falls in each of the districts (at the same time), and subjected to analysis, in order to discover what impurities may be floating in the atmosphere; and whether the atmosphere of one part of the town is more impure and injurious to health than another, and how such has come to be the case. Such analysis would no doubt point to some causes, which might at least be modified, if not altogether removed.

The health of a town will be beneficially affected by wide streets; and it is therefore of the greatest importance, that corporations and police commissioners should have ample powers to regulate the widths, and to fix the directions and levels of every new street within their respective burghs,—nay more, I think it is essential that they should have powers to open up necessary leading thoroughfares, under fixed statutory powers, through open lands within their jurisdiction. Where a number of properties lie in the lines of such thoroughfares, it is highly probable that the owners thereof may not be of the same mind regarding these; and so, independently, each lays out new streets, or submits plans thereof, in the lines which he considers will bring him the best return; and thus, in many instances, streets are laid out which do not run into each other,—having no leading connexion,—and no proper sweep of ventilation. Now I hold that the interests of the owners of such grounds are not the only interests to be considered; these lands take their value from the town and their proximity to it; and the enhanced value of such lands may well afford proper lines of thoroughfare, and ample breathing spaces for the population which will in the course of time gather on them, and whose health will greatly depend thereon. It is also of sanitary importance to have all new streets laid out and sewered before building operations are allowed.

Even greater powers than do exist in Local and General Acts are still required to regulate, amongst other things, all classes of buildings, and the open spaces in rear of dwelling-houses. It is requisite that ample and well-defined powers should be granted to, and exercised by, those regulating such matters. According to present custom in most towns, all sorts of buildings are huddled together, side by side with dwelling-houses. Sometimes there are erected on either side of dwelling-houses, warehouses, workshops, manufactories, or other such premises, of much greater width and height; and leaving only small, confined, and ill-ventilated courts in rear of them, which cannot fail to be highly injurious to the health of the occupants. Now, in the laying out of new building-ground, the existing evils in the older parts of towns should be avoided. Therefore public works and workshops ought to be, to a very great extent, if not altogether, grouped in various districts; and shops and dwelling-houses in others. Such an arrangement would greatly improve the health and comfort of the people.

The heights of all buildings should generally

* From a paper by Mr. William Mackison, C.E., Burgh Surveyor, &c., Dundee, read before the Sanitary Inspectors' Association for Scotland, at the first annual meeting.

be regulated by the widths of the streets on which they abut. And I think it most desirable that dwelling-houses should not be of a greater height to the eaves than four-fifths of the width of any new street; nor warehouses and manufactories higher than the full width, where dwelling-houses are built on the opposite side. Where, however, the latter class of buildings are erected on both sides of a street, the height of such buildings might be somewhat greater. But minimum widths should be fixed for both classes of streets, so as to secure proper ventilation and thoroughfare. The chimney-stalks of all public works should be built sufficiently high, to carry the smoke and bad gases emitted therefrom over the tops of the dwelling-houses; and every effort should be put forth by sanitary inspectors to have all furnaces fitted up with the best appliances for consuming their own smoke.

The healthy condition of dwelling-houses will to a large extent be determined by the widths of the open spaces left in their rear, and the manner in which these are occupied and kept. Where ground is to be laid out for fouing purposes, and where building sites are sufficient to admit of minimum open spaces in rear of proposed dwelling-houses, co-extensive therewith, and at least equal in depth to the widths of the streets on which they will abut, such open spaces should be required. And Boards exercising jurisdiction over the erection of dwelling-houses should have power to insist on ample open spaces being provided in rear of such buildings. Each of these open spaces might, with advantage, be divided into two parts: the one, say one-fourth of the width next to the houses, to be formed into a paved court, for the benefit of the children, and the other, or remaining three-fourths, to be laid out as a washing-green, or for garden purposes, as circumstances might require, and having the washing-houses and coal-cellars built along the side-walls, and the ashpit and other necessary conveniences suitably placed and screened at the back wall, with paved walks thereto. Where grass will not grow on the spaces for washing-greens, and where these are not or cannot be kept in good condition, such spaces should be paved, or covered over with asphalte. Again, where the business requirements of the town render the addition of saloons to shops necessary, these might, in certain circumstances, be allowed to be built to the height of one story, with flat roofs, over portions of the back courts, on condition of the areas of the paved courts thereby affected being extended backwards in equal proportions to the spaces thus taken off them. This system of fouing would, as a matter of course, spread the town over a larger area; would promote the healthy condition of the people; would benefit the feuars; and would also allow the superiors a fair value for their lands.

The ventilation of all single-room dwellings should be insisted upon, and ample provision made for admitting the fresh air free of draughts, and for carrying off the vitiated air. In such dwellings—which are in most cases very unsatisfactory in their conditions—many persons are ocuped up in the most indecent manner. Such rooms should be large, and have each a space sufficient for a bed and for dressing purposes, partitioned off by a movable screen of the height of 7 ft. or so, to afford privacy, and promote common decency. The promoting of morality will always advance the good sanitary condition of the people. If the houses of the working men with families consisted of three rooms instead of two, and these were rightly used by them, it would greatly tend to promote the physical and moral well-being of those families.

I have no doubt that the great mortality amongst children is partly caused by their being often exposed to cold draughts in houses, and left sleeping in rooms with damp floors and open doors and windows. Provision to render it imperative on all persons building new dwelling-houses to have them officially examined and duly certified as fit for habitation before occupancy is most desirable and necessary.

UNDERPAID SURVEYORS.

Sir,—As your correspondent "L. L." is often surprised at the low salaries paid to town surveyors, I beg to send you an advertisement, taken from the *Bristol Mercury*, of the Radstock Local Board requiring a surveyor and sanitary inspector, who must devote the whole of his time to the duties of the office, and be acquainted with road-making, sanitary work, and accounts, at a salary of 60*l.* per annum. I may state that the person who was elected is the son of a grocer and draper living in the place. Can any one be surprised at the *insanitary* state of some of our towns and villages?

Surveyor.

PUBLIC IMPROVEMENTS AT NEW MAROKE.

Of the numerous mining villages springing up in Cleveland few are improving more rapidly, and making greater provision for the social and spiritual wants of the inhabitants, than that of New Maroke. The village is in close proximity to the Upleatham mines of Messrs. J. W. Pease & Co., and, though of very recent growth, it has already a population of 1,600 inhabitants. A little church, the gift of the Earl of Zetland, has just been completed, and will shortly be consecrated; and the Primitive Methodists, who form a rather strong body at the place, are building a commodious chapel, which is expected to be finished in the early part of next month. Through the liberality of Messrs. J. W. Pease & Co., the village will also possess ere long a literary institute. The new building, which will cost something like 2,000*l.*, has already been commenced by the contractor, and will contain library, reading-room, lecture-hall, recreation-room, and ante-room. The lecture-hall will be 42 ft. by 9 ft., and 29 ft. wide, and the gallery 29 ft. by 22 ft. The reading and other rooms will be large and spacious, and afford every comfort for the members. A neat cottage for the attendant will adjoin the institute. The architect for the building is Mr. Carrington, of Maroke. Mr. E. Yockney is the contractor for the mason work; and W. Harrison, Guisborough, for painting and glazing.

SANITATION OF HOUSES.

At the recent meeting of the British Medical Association in Edinburgh, Mr. W. Eassie, C.E., of London, read a paper "On the Sanitation of Houses, especially with Reference to Drainage." He said:—The evils of improper drainage are best observed in houses that have been from time to time added to until the cottage has become almost a mansion. One is then able to trace the first awakening up of the inmates, when the patrimonial cesspool has filled up and choked the drains. When this happened in villages, all that was done was merely to partially empty the receptacles and clean out the drains. And when this had occurred several times, and the sides caved in, a new dumb-well was sunk, and the drains led into it, the old pit being covered up with a stone. It was cheaper to do this than to fill it up; and, besides, this procedure did not necessitate the absence of the family. It was the same in towns, and only a week ago I laid bare in a West-end London house three cesspools which had been dug in most brotherly proximity, and abandoned in rotation as they filled up with ordure and filth. Four cartloads of nightsoil were removed, which could not have seen daylight for a century. Nor would it new, had not the rats formed runs in their vicinity, and allowed horrible smells to invade the house by way of a long-forgotten back drain. The reason why these ancient nuisances are found inside houses in towns and cities was not because they could not be accommodated outside the house, but because the slops from the kitchen and bath and laundry wastes were insufficient to flush the more solid wastes outside the walls. In nearly every case, too, the drains were of brick, laid with uneven bed, and through the joints of which the fluids percolated. We will take an instance. A cottage is drained into a cesspool in the kitchen, and when that is full another is dug, until the place is honeycombed with them, the subsoil saturated, and the well poisoned. A common privy is used in the yard, and this performs the same evil functions. By-and-by waterclosets are introduced and earthenware pipes, and the cesspool for these is now dug down in the garden, with a lower one for an overflow, and both cemented down airtight fashion. There is no ventilation either, except through the trapping water of the syphons at the foot of sink waste, soil-pipe, or rain-water stack. And here I may say that the drainage into a cesspool is not necessarily dangerous, provided only that the waste-pipes of the sinks deliver outside over a trap; provided too, that the soil-pipes are carried roof high, and a foul-air withdrawing cowl fixed upon them all would be well. It might, in some cases, be absolutely necessary also to ventilate the cesspool by an upright shaft, or a ventilating charcoal trap in the stone cover, and it might even be wise occasionally to ventilate the march of the drain. Where a common privy is used, an earth or ash-closet ought to replace it. The next difficulty arises where a parish sewer is put in the main road, and the value of the land enhanced so much as to make it worth while to add an extra wing or two, to convert the old stables into servants' offices, and to erect new stable accommodation. When this has happened, sometimes the one-half of the house is drained into the sewer and the other half into the old cesspools. The old cesspools have not, however, been dug up in the basement of the house, neither the urine catch-pit in the stables. The result of this is not difficult to imagine. Even should the whole of the cottage chrysalis, but now winged, mansion be drained into the new sewer, it is just possible that the drains are laid without fall, or with backward fall; syphons put in where they ought not to have been; rectangular bends instead of acute ones; and a ventilating shaft not only forgotten, but the sinks, baths, and lavatories taken direct into the drains: and the result, if not disastrous in the matter of health to the inmates, has proved sufficiently annoying to compel the dismissal of the builder and the attendance of the engineer. It is very easy to so arrange the plan of a house that the whole of the wastes shall deliver immediately outside the house, and to have nothing but the outside wall between the water-closets, lavatories, and sinks. When it is found advisable to drain the basement, it can be disconnected from the main drain so to speak by interposing over the junction a ventilating shaft. The sinks and lavatories should all deliver over an open chamber. For the rest the walls of the house should be built hollow, and protected from *rising* damp also by a proper damp-proof course.

REDCAR RACE-GROUND.

Considerable improvements have been made on the race-course at Redcar. The old wooden stand has given way to ranges of permanent buildings. Two lofty brick and iron stands have been erected, which together will accommodate over 5,000 persons. The architect for these erections is Mr. Adams, of Stockton-on-Tees. The large stand for the general public, in design, is similar to that at the Alexandra Palace race-ground. The steps for the accommodation of the spectators spring from a low terrace, rising only a few feet from the ground, and they are continued upwards to a great height, giving accommodation for a dense body of people. They are surmounted by a balcony, intended for the press and trainers, and to which entrance is obtained by a staircase from the weighing-room. The stand is placed at such an angle with the course that from any portion of it the entire circuit of the course can be seen. The whole building is substantially erected, and we believe that the cost is under 3,000*l.* The new stewards' stand is a two-storied erection, with ornamental balconies and with spacious retiring-rooms in the basement. The enclosure is spacious and capable of accommodating a large assemblage.

DECORATION OF ST. GEORGE'S HALL, LIVERPOOL.

The interior of St. George's Hall has been re-decorated by Messrs. Alexander White & Sons, of that town, under the superintendence of Mr. Thomas Shelmerdine, jun., the Corporation surveyor. The length of the large concert-hall is 170 ft., the width on the ground-floor 77 ft., and the width on the gallery floor from wall to wall 100 ft. The height of the ground-floor to the crown of the arch is 95 ft. Messrs. White's estimate for decorating the large and the small concert-rooms, including all extras, is 3,745*l.*, and they have carried out the work in a manner to satisfy the Corporation. They were, however, rather hampered in their progress by a strike of labourers, which delayed the erection of the scaffolding for upwards of a fortnight. At length that part of the work was proceeded with, the scaffolding being erected in three sections, commencing at the north end of the hall. There are fifteen large panels emblazoned with various coats of arms, the principal one being the Royal arms in the central crown of the arch. Next are the Liverpool arms in various panels, those of the House of Lancaster, St. George and the Dragon, and the arms of the Prince of Wales. All the armorial bearings, which are in relief, have been emblazoned in heraldic colours. The chandeliers in the great hall have been re-burnished and re-fixed. It was impossible to introduce more window-light without interfering with

the exterior of the hall; but, after consideration, it was deemed desirable to take out the small diamond patterns of glass which had originally been introduced in the windows, and which interfered considerably with the light. This has been done, and large plate-glass windows, set in oak sashes, have been put in, and now when the visitor enters he finds that there is nothing sombre or gloomy in the aspect.

COMPETITIONS.

Brighton School of Art and Science.—Mr. J. S. Gibbons, of the firm of Goulty & Gibbons, of London and Brighton, architects, is the author of the first premiated design for the proposed new building to be erected for this institution in the Grand Parade; Mr. J. Toner, of London, taking the second award. Ten designs were submitted in competition. The limit of the amount within which the architects were confined was 4,200*l.*

Bridgend Schools.—Sixteen designs were submitted in competition for the new buildings for the Bridgend School Board, which was to accommodate 300 children, with a master's residence. Several designs were rejected at an early stage, and finally the designs marked "Y. Y.," and "A Midsummer Night's Dream," were awarded the first and second premiums. The author of "Y. Y.," who is to be entrusted with the execution of the work, is Mr. Henry C. Harris, of Cardiff and Cooper's Hill, Staines; "A Midsummer Night's Dream" being the work of Messrs. Haddon, Brothers, of Hereford and Malvern. Among the local competitors, Messrs. James, Seward, and Thomas, of Cardiff, submitted three designs; and Messrs. Wilson & Willcox, of Bath, two. The design, "To be or not to be," we believe by Mr. W. D. Blessley, of Cardiff, was placed third.

LONDON SCHOOL BOARD SCHOOLS.

Stoke Newington.—A new school was opened on the 10th instant, in the Gainsborough-road, close to Victoria Park, and overlooking Hackney Downs. The building consists of three stories, with ample playgrounds, and a separate building forming the caretaker's house, The ground-floor, in which are placed the infants, has a large schoolroom and two class-rooms with recesses, lighted from above, for galleries. The girls on the first, and boys in the second floors, have a like accommodation (except the recesses), with ample cloak-rooms and lavatories approached from their respective staircases. There are also rooms for the master and mistress. The style of architecture employed is that of Queen Anne, the architect being Mr. E. R. Robson, and the contractor Mr. Ennor, of Commercial-road; Mr. Ellson was the clerk of works. The school will hold 730 children at a total cost, including purchase of ground and other expenses, of 10*l.* 11*s.* 5*d.* per head. The amount of the contract was 5,930*l.*

Lambeth.—On the 13th inst, Mr. E. H. Currie, vice-chairman of the Board, presided at the opening of a new school in Walnut Tree-walk. In the course of a long address, he said that the school was, perhaps, the most peculiar one in its way that the Board had built in London, because it was intended exclusively for girls and infants. The building in which they had met would accommodate 779 children,—namely, 235 girls and 544 infants. Notwithstanding the present accommodation, there were nearly 1,000 children who were deprived of means of proper education. At present the Board had accepted contracts for the erection of 135 schools to accommodate something like 110,000 children.

THE BAINBRIDGE MEMORIAL CHAPEL, BYKER, NEWCASTLE-UPON-TYNE.

The Wesleyan chapel, which has been erected at Byker, as a memorial of the late Mr. Cuthbert Bainbridge, was opened on Tuesday, the 10th inst. Some time ago the Wesleyan Methodists of the Newcastle district resolved to remove from their old place of worship at St. Lawrence, and to open out a mission chapel at Byker, with the view of ultimately erecting a new place of worship there. The building opened to the public comprises, on the ground floor, a chapel, designed to accommodate about 320 persons, approached from the turnpike road by a double flight of stone steps, and having an inner porch, a vestry for the minister, with w.c. and lavatory, and staircase leading to the floor below. The schools are arranged upon the basement floor, with an entrance from Edwin-street, and, with the classrooms, will give accommodation to about 400 scholars. A spacious area has been formed round the building to give light and ventilation to this portion of the building. The warming will be effected by means of a hot-water apparatus placed in the boiler-house in the sub-basement. The building has been designed in the Gothic style of the thirteenth century. Messrs. N. & R. Reed have carried out the works in the most substantial and satisfactory manner as sole contractors, employing as sub-contractors, Messrs. R. B. Charlton & Co. for the plumbing and gas-fitting; Mr. Beck for the slating; and Mr. J. Messenger for the painting and glazing. The cost of the building has been 2,920*l.*; and it is satisfactory to add that there are no extras over the contract amount. The total cost, including price of land, building, architect's fees, and other items, will be about 3,700*l.* Mr. Thomas Oliver was the architect.

HORTICULTURE AT THE INTERNATIONAL EXHIBITION, PHILADELPHIA.

Mr. Cunliffe Owen, C.B., the British Executive Commissioner, is making known to foreign intending exhibitors in the Horticultural Department what will be best appreciated there, and those concerned should obtain the circular.

Besides plants, *Adornments of Horticulture* are asked for,—Garden statuary, fountains, vases, pedestals, summer-houses, and window gardening as applied to dwellings. *Garden Requisites*,—such as horticultural buildings, propagating-houses, hot-beds, &c.: the best mode of heating them; and as to *Art and Science of Horticulture*,—Designs for laying out gardens and the improvement of private residences; designs of rustic constructions and adornments for private and public grounds, public squares, parks, &c., showing arrangement of commercial gardens or nurseries, and for the parterre; examples of planting and the ornamental grouping of trees, plants, and shrubs; and the treatment of water for ornamental purposes.

BRIDPORT SCHOOL OF ART.

The exhibition of the works of the students and the annual meeting took place in the Town Hall on the 13th inst. The works were inspected by a large number of visitors. In the course of the proceedings the Rev. R. L. Carpenter (secretary) read the report of the committee, in which they say "They have now to record a further advance. In the local examinations, in April, 36 students were successful, whilst 26 was the highest ever reached before; 543 works were sent up for inspection to South Kensington, while, till last year, 200 was the average; on these 21 industrial students earned grants, and 16 students were awarded prizes, while the works of eight students were selected for national competition. Two ladies in former years have obtained the national book prizes; but this year, for the first time, medals have been gained—a silver medal by Mr. J. H. Dunham, and a bronze medal by Mr. F. H. Newbery; both these students are making art their profession."

CASES UNDER METROPOLITAN BUILDING ACT.

Surveyors' Fees.—Noah Moss, of 6, Montague-road, Victoria Park, was summoned by Mr. John Turner, one of the district surveyors of Islington, as being the builder or workman engaged for erecting or doing certain work to a house on the west side of Alson-road, Islington.

Mr. Turner said he had found the defendant on the building at work as a carpenter, and when he asked him who was the builder he said he did not know, but he could point him out to him. The contractor should have given him two days' notice of his intention to build before the building was commenced, but that was not done. The defendant was summoned, as he could not find out the master's name. The Act provided that the master builder, or any person who executed any part of the building, might be summoned. The defendant was very civil to him, and he had reason to believe that he was only the workman, and not the builder.

The defendant, said, in reply to the charge, that he was not the master builder, and was only employed on the building as a journeyman.

Mr. Barstow fined the defendant 10*s.* and 2*s.* costs, or in default ordered him to be imprisoned for ten days.

The defendant, who said he had no money, was removed in custody.

CHURCH-BUILDING NEWS.

Gloucester.—In consequence of many complaints respecting the defective state of the roof and the ventilation of St. Mary De Crypt Church, it has been determined to remedy these defects. This work is to be carried out under the direction of Mr. Waller. Further restoration being desirable, a committee has been appointed to consider the additional work suggested by Mr. Waller. His chief recommendations are thus summarised:—(1.) Restoration of the roof and improvement of the ventilation; (2.) Thorough cleansing of the interior walls, including the pointing of the old stone work; (3.) A new system of lighting the whole church by means of lines of gas jets in the chancel and coronæ of light round the pillars of the nave; (4.) Additional improvements and repairs in the chancel and other parts of the church. To effect the restoration between 500*l.* and 700*l.* are required. Mr. Waller also recommends that the whole of the church be well cleaned, and that the white and yellow wash be carefully taken off the dressed stonework, defective stones, of which he believes there are but few, being reinstated, and the joints of the stonework pointed; and also the removal of the western gallery.

Awbridge (near Romsey).—The memorial stone of a new church, to be named All Saints', has been laid by the Rev. T. H. Tragett, of Awbridge Danes, who gave the ground. The site of the church is on the borders of the grounds of Awbridge Danes, in the parish of Michelmersh. The design is treated in the Decorated style of Gothic architecture. It consists of a nave, chancel, vestry, porch, and vault under the vestry for the warming apparatus. The nave is 58 ft. in length, by 21 ft. 9 in. in width, and is arranged to accommodate 145 adults and forty-two children. The chancel is 23 ft. by 20 ft., with choir-sittings for sixteen. In all the church contains sittings for 203 worshippers. The exterior of the building is faced with Swanage stone, with Bath stone dressings. All the roofs are open-timbered trussed rafter roofs, covered with tiles. An oak bell-turret, with a shingle spire, on the west of the nave-roof, will carry three bells. The church has been designed by, and its erection will be carried out under the superintendence of, Mr. John Colson, of Winchester, architect, and the contract has been taken by Mr. John Crook, of Northam, Southampton, at 2,250*l.* The clerk of the works is Mr. John Williams, of London.

Preston.—St. Saviour's Church has been re-opened after cleaning, completing, and erecting a reredos. The reredos is from the designs of Messrs. Myres, Veevers, & Myres, of Preston. It is executed in Caen stone, and divided into three bays, each with enriched centre panels, the centre one being surmounted by a crocketed gable and a moulded arch, supported upon a triple cluster of columns, the outer columns being of green polished marble, each having a foliated cap and moulded base. The reredos is surmounted by a perforated and foliated cresting. On each side the space to the level of the east window is covered with Maw & Co.'s majolica tiles in patterns. The work of the reredos has been carried out by Mr. H. T. Miles, of Preston, from the architects' drawings, and under the supervision of Mr. T. H. Myres. The south chancel window has been enlarged. The decorations have been carried out under the architects' supervision by Messrs. R. E. Lucas & Co., Preston. On each side of the tower doorway is a cluster of caps, carved with natural and conventional foliage by Mr. H. T. Miles. The heating apparatus has been enlarged. Exclusive of the reredos, 112*l.* have been expended.

Rogate.—The parish church, which during the last sixteen months has been rebuilt, with slight exceptions, has been re-opened. The old church was built in 1160, and one of the arches of the original structure is still left standing. It is said to be a fine specimen of Norman architecture. During the progress of the work, some interesting relics were discovered, amongst them a stone cross of the fourteenth century, and one previously to that date. The latter has been worked into the south wall beneath the tower. The architect was Mr. Penford, of Westminster; the builders were Messrs. Lewis, of Westmeon; the clerk of works was Mr. Charles Bridger, Haslemere; and the foreman of works, Mr. W. Bridger. Some of the work has been entrusted to local tradesmen; the windows, with the exception of the east, to Mr. Otben, of Midhurst. The hot-water apparatus is by Mr. Toop, of Rogate.

Christleton.—The parish church at Christleton, which is now in a very dilapidated state, is shortly to undergo considerable improvement. Its exterior defects are hidden by a mantle of ivy, which gives to the church a rustic and venerable appearance. In the inside the pews are so narrow that to sit in them with comfort is difficult. There is a fine arch in the east wall of the tower, which some church restorer of the past has blocked up with an ugly gallery, shutting out the west window. As so many alterations were suggested, it was decided to consult an architect, who advised the parishioners to entirely rebuild the body of the church, but to preserve the tower—which is in a tolerably good state of preservation, having been built in the sixteenth century. The following tenders have been received for the restoration, according to drawings supplied by Mr. Butterfield, the architect:—

Cooke & Moulton	£8,278 0 0
Wood	7,770 0 0
Readdie	7,749 0 0
Thompson	7,345 0 0
Roberts	6,891 0 0
Holland	5,489 0 0

Since added for tower, 577*l.* Lowest estimate, 6,066*l.*

Eccles.—The ancient parish church of St. Mary, which has been closed for three months for internal repairs, has been opened by Earl Mulgrave. The whole of the plaster and whitewash has been removed, and the red sandstone walls were cleaned and repointed. The modern walls have been tooled and pointed. New oak screens have been placed on each side of the chancel. The pulpit has been lowered and provided with new oak steps. The gas-brackets and communion standards have been burnished and decorated, a new stone chancel-arch has been introduced; oak wall-boarding, shoulder-high, has been carried round all walls where they abut against the seats; and the ancient monument in the Ellesmere Chapel has been cleaned and painted in heraldic colours. The east wall of the chancel has been decorated by Hardman, of London, from designs furnished by the architects, Messrs. Maxwell & Tuke, of Bury, under whose guidance all the works have been conducted.

HEIGHT OF ROOMS.

Sir,—A paragraph at the foot of p. 686 of the *Builder*, headed "Houses unfit for Habitation," in which the height of the rooms of the houses referred to is stated to be only 6 ft., leads me to suppose that it may not be generally known that local authorities have not, legally speaking, any power over the height of rooms in new buildings. Hitherto, as you are aware, it has been customary to include in every series of building by-laws, a clause regulating the height of rooms intended for habitation; but such a by-law is no longer allowed by the Local Government Board, as, on legal authority, it is declared to be *ultra vires*, the height of a room having, as is alleged, nothing to do with ventilation. I could instance many cases in which such a by-law, having been proposed by local authorities, has been struck out by the Local Government Board, and the endeavours of those who know the value of the regulation to get a special clause inserted in the new Sanitary Act have failed.

A Surveyor.

RECOVERY OF COMMISSION FOR SALE.

THORNHILL *v.* CARTER.

This was an action, before Mr. Justice Brett and a common jury, by an estate agent to recover the sum of 500*l.* as commission on the purchase of an estate. The plaintiff had offered the defendant (a retired officer in the army) an estate in Buckinghamshire on his signing a "bonus-note," as it is called, in these terms:—"That, provided he purchased the estate, he would pay, by way of bonus, the sum of 500*l.*" The plaintiff then gave the defendant information of the estate, which the defendant afterwards purchased, and the plaintiff then claimed the 500*l.*, which the defendant declined to pay, on the ground that he had, on the first negotiation with the plaintiff, declined to purchase, and had afterwards entered into direct negotiations with the owner, whose agent the plaintiff was not.

Mr. Murphy, Q.C., and Mr. Lumley Smith were for the plaintiff; Mr. De Michele was for the defendant.

The defence set up was that the contract was when the defendant declined to purchase put an end to before the estate was bought by the defendant for 19,000*l.*; but

The Judge told the jury that there was no defence, as there was no revocation of the contract by mutual consent.

Accordingly, the verdict was entered for the plaintiff for 500*l.*

The Future Management of the Institute of Architects.—The committee appointed to inquire as to this have now completed their report. We understand that they are not unanimous.

THE POPULATION OF TYNDALL'S BUILDINGS.

Sir,—My attention has been directed to a paragraph in your last number, in which objection is taken to the accuracy of the number of persons returned as living in Tyndall's-buildings, Gray's-inn-lane, given in the schedule forming part of my report on the application of the Artisans' Dwellings Act to this portion of the metropolis.

I have to inform you that the Metropolitan Board of Works, who, as the Local Authority, are charged with the execution of the Act, are at this moment engaged in taking the numbers of those living in this and the other courts and alleys affected by my improvement scheme; and that, in due course, the result of their labours in this particular will be made public.

I have no wish to anticipate the return now being made by the local authority, but would simply remark that it will be valueless, unless the numbers are taken late at night (certainly not earlier than the closing of the publichouses), until which time the habitations proposed to be removed under the provisions of the Act do not receive their full complement of occupants.

A considerable per-centage must also be added to the total arrived at, owing to the exodus which takes place at this season of the year for harvesting, the majority of those who leave London for this purpose also assisting at hop-picking. It is well known that large numbers of men, women, and children, migrate from Gray's-inn-lane into Kent and Surrey, at this time, with the object I have stated.

Meanwhile if Lord Shaftesbury and Mr. Payne would like to learn how some of the rooms in Tyndall's-buildings are occupied, let them visit the ground-floor of No. 1, where they will find the following persons living in one apartment:—

John O'Donnell, aged 43.
Hannah O'Donnell, aged 40.
John O'Donnell, aged 18.
Patrick O'Donnell, aged 15.
Jeremiah O'Donnell, aged 14.
Daniel O'Donnell, aged 13.
Honora O'Donnell, aged 7.
Margaret O'Donnell, aged 4; and
An infant 6 weeks old.

I am not ungenerous enough to say that this is to be taken as a sample of the whole, nor would I attempt to deduce from this example the moral *ex uno disce omnes*.

But that there is an amount of overcrowding even in Tyndall's-buildings, of which the president and secretary of the Society for Improving the Dwellings of the Labouring Classes little dream, I am as certain as that it exists to a still greater extent in the courts and alleys by which it is surrounded.

Lewis H. Isaacs.

Miscellanea.

St. Thomas's School-Chapel, Flint Common.—The opening of St. Thomas's School-Chapel, the foundation-stone of which was laid on Whit Tuesday, 1874, took place on the 4th inst., and the ceremony was very imposing throughout. The morning service was attended by a large congregation from the parish of Flint and surrounding parishes. The building consists of a nave, chancel, vestry, and north and south porches, affording accommodation for 300 worshippers, and 230 children when the edifice is used as a school. Being built of local stone, with buttresses, the appearance is substantial. The style is Early English. The chancel is separated from the nave by a wall of unpolished Halkyn marble, having a coping and plinth of the same material, but polished. The chancel gates are of wrought-iron and polished brass; the lectern is of polished brass. There is a stained glass window in the east end, set up in memory of James Eyton, some time town clerk of Flint, and Mary, his wife, and of Sophia Eyton, late of Cornist. The architect, Mr. John Hill, of London, was presented with an épergne, in recognition of his services as architect.

Lillie Bridge Skating Rink Club.—A new club has been formed under this title, the Duke of Montrose being the chairman of the committee. The club has taken premises next to the polo ground at Lillie Bridge, and has already erected a large tent for the accommodation of the skaters belonging to the club. The committee are now arranging for the erection of a permanent building, with club premises in front, which we are told is to be built after the style of a Swiss chalet. Mr. Walter Emden is the architect employed.

The Sussex Archæological Society.—The annual meeting of the Sussex Archæological Society was held at Lewes last week. One of the chief points of interest was a loan museum arranged in the county hall, in which there was a collection of tapestry, formerly the property of the Duke of Newcastle, and presented to the Society some years since by Lord Chichester. A collection of Celtic, Roman, and other coins, collected in the county, was also on view as well as several valuable books, manuscripts, and relics, among them being the ancient staves of office used by the high constables and head boroughs of Lewes. The places visited included Lewes Castle, built by William de Warrenne, several churches in the town containing ancient monuments, as well as other buildings, and, of course, Southover Church, with the Gundrada Chapel, containing the remains of William de Warrenne and Gundrada, his wife, all well-trodden ground offering no hopes of novelty. The dinner was held in a large tent erected in the Priory grounds, which was a point of considerable interest, as being the site of the ancient and extensive priory of St. Pancras. The dinner was presided over by Mr. J. G. Dobson, M.P.

The Hermann Monument.—The Hermann Monument, near Detmold, was inaugurated in the presence of 40,000 people. Her von Bandel is the sculptor. The *Times* correspondent says,—The statue is described as an imposing work of art; 80 ft. high from the point of the uplifted sword to the legionary eagle trodden under foot by the victor. This gigantic Hermann in form and countenance is intended to impersonate the frankness and strength attributed to the ancient Germans by their Roman enemies. His costume, being the old Saxon tunic, with bear-skin mantle and helmet, leaves arms and legs uncovered, and gives full effect to the huge proportions of this the tallest figure erected since the Rhodian Colossus. The circular cupola temple, which forms the pedestal, is 89 ft. high, and is supported by a foundation 66 ft. in diameter. The figure, being of chased copper, derives solidity from a complicated system of iron tubes placed in the centre of the body. The copper used in making the statue weighs 237 cwt., the iron, 1,133 cwt. A national reward has been conferred upon Herr von Bandel.

Fatal Accident at Bishop Auckland.—The new building which is in course of erection in Newgate and Victoria streets, Bishop Auckland, for Mr. George Moore, and which is intended for a large commercial hotel, was on the 13th inst. the scene of a fatal accident. A large number of men are employed on the work, and the building is nearly ready for the roof. Three young men, named Watson, Patterson, and Durkin, were engaged above the second floor on a scaffold, building up a chimney-breast. They were attended to by a man named James Brown. By some means unknown the wall below them gave way, letting out the joists, when the scaffold fell, and the men, together with the scaffold and about 15 ft. of the wall, were precipitated into the cellar, a distance of nearly 30 ft. The fallen *débris* had smashed out nearly every joist in both floors. Brown was killed and the other three men sustained serious injuries.

The Pease Statue at Darlington.—The bronze statue to be erected in Darlington to the memory of Joseph Pease was successfully cast, on the 14th inst., at Messrs. Cox & Son's foundry, Thames Ditton. The statue is to be placed in a conspicuous part of Mr. Pease's native town, Darlington, the birthplace of the railways of the world. The unveiling will take place on the fiftieth anniversary of the running of the first passenger train, the 27th of September next, on which day the "Railway Jubilee" is to be celebrated at Darlington. The statue itself will be erected on a pedestal 9 ft. high, of finest axed granite, having four bronze panels at the sides delineating the various phases in Mr. Pease's eventful career,—1, emancipation; 2, education; 3, his political and Parliamentary career; and 4, mining and railways. The work will cost about 3,000*l.*

Savile Park Building Club, Halifax.—A scheme is on foot for the erection of a large number of dwelling-houses, of various sizes, near to Savile Park. The buildings are proposed to be erected on the club principle, of a certain deposit down, and the remainder by instalments. The first lot are to be nine semi-detached residences, each of the value, with the land, of 1,000*l.*, on the west side of Savile Park-road. The architect is Mr. J. W. Gough.

Pollution of the River Lea.—A Government court of inquiry has just been held at the Local Board offices, at Tottenham, by Col. H. Ponsonby Cox, into a complaint made by the Lea Conservancy Board to the Secretary of State, that the Tottenham Local Board were not carrying their sewage works in compliance with the provisions of the 51st section of the Lea Conservancy Act. The Local Board had provided additional depositing tanks, but made no attempt to filter. There were more than twenty-four places which had sewage outlets into the Lea above Tottenham; fifteen of them using no disinfectant process, three using the lime process, and four irrigating. Mr. Read, for the Conservancy Board, said his Board declined to recognise any process in particular. The Commissioner said it was requisite that samples should be taken from time to time, and therefore some time must elapse before he could make his official report and decision.

Self-acting Cinder-sifting Ash Closets.—We are glad to find that these closets, made under Morrell's patent, are employed largely for use on ground-floors and yards at gentlemen's houses, and at workmen's cottages in villages. For mills, schools, and institutions in special localities they may be recommended. The principle of the dry-ash closets, the invention of Mr. Conyers Morrell, C.E., consists, our readers may remember, in the utilisation of the house-ashes as a deodoriser. This object is attained by an ingenious but very simple contrivance. The ashes are thrown on a sloping-screener, at the rear of the seat. By an arrangement of levers this screener is moved every time the seat is occupied, and the ash-dust is separated from the cinders, and falls into a receptacle from which it is meted out in the exact quantity required when the seat is vacated. The cinders pass off the screener, and may be again used as fuel.

Sewage Deposits in the Thames.—An elaborate report has recently been issued by Sir Joseph Bazalgette, the engineer to the Metropolitan Board of Works, in reply to a communication addressed to that Board by the Thames Conservancy, alleging that the accumulation of deposit on the river bank opposite Crossness outlet, between 1870 and 1874, amounted to 240,000 cubic yards, equivalent to a depth of between 7 in. and 8 in. spread equally over the bed for three-quarters of a mile. Sir Joseph Bazalgette, while admitting the statement, adds that the increase of deposit is not uniform nor permanent, and the amount of deposit was less by 313,000 cubic yards in 1874 than it was in 1872, showing a natural deepening of the river equivalent to 10 in. between 1872 and 1874. He adds that the evidence goes to show that the sewage discharged into the river at Crossness tends to scour it rather than to form deposit.

The Clock at Holy Rood Church, Southampton.—This clock is now on the point of completion. It has been supplied by Mr. J. Blount Thomas, of the High-street. The dials, fixed in stone rims, weighing about three tons each, are 5 ft. 4 in. in diameter, of solid copper, and weigh each about a hundredweight. The two faces, one in the front of the tower facing the High-street, and the other on the front looking towards Bridge-street, are specially made of opaque glass, the centre being in one piece, and not like most illuminated clocks having four lines from centre to circumference, which at a distance are not unfrequently confounded with the hands. The lighting is on a self-acting principle, turning on and off the gas as required, and is accomplished by six copper lamps, with glasses and reflectors to utilise the rays. Most of the work has been done in the town, by Messrs. Lankester, Buchan, & Thomas; the masonry being by Mr. Bostock.

The New Schools for Darlington.—A meeting of the governors of the Darlington Grammar School was held on Monday, at the School Board offices, Northgate, Mr. David Dale presiding. The plans of the proposed new schools were submitted to the meeting by Mr. Hoskins, architect. It was stated that Mr. Hawkins, the architect of the Charity Commissioners, did not approve of the proposed large hall, which he thought was more a luxury than a necessity. He also objected to the proposed sleeping accommodation. It was stated that the building would cost about 14,000*l.*, of which only 10,000*l.* were subscribed, exclusive of scholarship subscriptions. After some discussion, it was decided to send the plans back to the Charity Commissioners, to secure the approval of the alterations made.

Mr. Bateman's Proposals for Improving the Ipswich Dock and Navigation.—With respect to the works necessary for improving the dock entrance and the navigation of the river, the Dock Improvement Committee rely upon Mr. Bateman's report and estimates. His minimum estimate includes 40,000*l.* for new lock, with entrance-gates; 16,000*l.* for one dredger, with two hopper-barges; 3,000*l.* for dredging in the lower end of the present dock; 20,000*l.* for dredging in the channel; altogether, including 8,000*l.* for a portion of contingencies, amounting to the total sum of 87,000*l.* But this does not include provision for unloading large vessels at the present merchants' quays, nor for deepening the upper end of the dock, nor for a pair of intermediate gates, to divide the new lock into two; neither does it appear to include the timber jetty, for protecting the entrance to the dock.

The Sanitary State of Hackney.—Dr Tripe has presented to the Hackney Board of Works a report on the sanitary condition of the district. The public health of the district has not been quite so good as in the two previous years. Still, the death-rate is not so high as for all London. The population is estimated at 137,571, being an increase in the decade of nearly 40,000 persons. The density of the population has augmented in the same period from 22·8 to 34·9, and is increasing at the rate of one person per acre per annum. Dr. Tripe says that during 1875–6 a much larger mortality from scarlet fever must be expected. The river Lea has been, and is still, in a very bad state. The overcrowding cases at Hackney were not numerous, but some of them were very bad. The overcrowding was in all these cases quickly remedied.

Banbury Temperance Hall.—Tenders for this hall and buildings were invited from Banbury builders only, and sent in as follows:—C. Claridge, 2,375*l.*; J. & T. Davis, 2,383*l.*; T. & S. Orchard, 2,397*l.*; A. Kimberley, 2,686*l.*; T. H. Kingerlee, 2,875*l.* The committee were divided as to the choice of the lowest two tenders, the difference being nominal, and a consideration of certain matters between the committee and Messrs. Davis (who formerly occupied the property), influenced the decision arrived at to accept their tender as being practically the lowest, and not any preference as to the capabilities of the builders. When builders are invited no question of this sort should be entertained; the lowest tender should be accepted.

The New Law Court, Stafford.—On the 16th inst. was opened the new Police Court. It is more commodious than the old one, and this appears to be the only improvement. The approach to it is by a long, narrow, winding staircase, at the top whereof are two small doorways, and by this passage every one having business at the court must reach it,—magistrates, solicitors, policemen, and prisoners, together with the crowd of visitors, jostling one another *sans cérémonie* in the narrow entrance. The interior arrangements are in keeping with the approach. The accommodation for magistrates, solicitors, and reporters, is at present the same as heretofore. No rooms have been provided for witnesses in attendance or for the magistrates in which to retire to consider their decision.

The Dwellings of the Poor.—Dr. Hardwicke held an inquest on the 16th inst. at the Wellington Hall, Brooke-street, Holborn, on the body of Mary Ann Matthews, aged five weeks, daughter of a barber living at 22, Brooke-street. Mary Ann Matthews, the mother stated that the deceased was her first child, and they lived on the ground floor of the above address, using the front room for business purposes, and the back for a living and sleeping apartment. Mr. T. G. Davis, M.R.C.S., said the cause of death was suffocation from want of fresh air. The coroner said that the statistics showed that under such circumstances three if not four out of six children died, and but for having the run of the streets the others would soon follow. A verdict of "Death from accidental suffocation" was returned.

Explosion of Paraffin from Heat.—On Sunday night an explosion of paraffin occurred on the premises of Mr. J. Smith, oilman, situated at the corner of Rodney-street and North-street, Walworth, by which the basement was destroyed and the shop severely damaged. The explosion was caused by a leakage of paraffin, which ignited in consequence of the heat of the weather.

Shoreham.—A new R. C. church was opened here on the 11th inst. by Cardinal Manning. It is dedicated to St. Peter, and was erected at the sole expense of the Duchess of Norfolk. The church, built in the style of the latter end of the thirteenth century, is of flint with stone dressings, and will accommodate 400 worshippers. Its total length is 90 ft., of which the chancel occupies 30 ft. The altar is sculptured from Painswick stone. It is divided into three arcades, the centre one being filled by a representation of the release from prison of the church's patron saint; whilst symbolic designs, including the crossed keys, the sword of St. Peter, &c., are disposed at various parts. The church was built by Mr. R. Blaker, of Worthing, the architect being Mr. C. A. Buckler, of London. In close proximity to the church schools are being constructed.

Barwarton, Bridgnorth.—Rapid progress has been made in the building of the new church, by Messrs. George Smith & Co., of London, for in a few weeks' time the internal decorations will be completed. It is the gift of Lord Boyne, and is built of a warm-coloured stone, quarried from Burf Hill, close by, belonging to his lordship. The style is Gothic, with a square tower 70 ft. high. The west end of the church from the tower to the chancel is 88 ft., and from north and south aisle 56 ft. The stone carving is executed by Mr. Dayman, of London. The chancel and organ-chamber arches are supported by Purbeck marble supplied by Lord Edon. The reredos over the communion-table will be in mosaic. There are also carved sedilia supported by three marble columns. Mr. Salvin, of London, is the architect.

Building Scheme at Hipperholme.—It is proposed to establish a building-club at Hipperholme, for the erection of first-class dwelling-houses. The site is between the Leeds and Whitehall road and the Hipperholme tunnel, and has extensive views east and west, and large gardens or grounds to the front. Plans have been drawn by Mr. W. H. Howorth, and as the site is about 200 ft. in depth, and is well wooded, it will not only afford extensive but pleasant front grounds, whilst at the back there will be ample room for stables, &c. It is intended to erect two blocks, each containing nine houses, and that the cost of each house shall be between 500*l.* and 600*l.*

St. Stephen's, East Hardwick.—The chancel window of East Hardwick Church, Pontefract, is in the Early English style, and consists of three long narrow lights; the centre one has been filled with stained glass, representing events in the life of St. Stephen, and is the gift of pupils of East Hardwick school. It is proposed to place two figured lights one on each side of the St. Stephen light, to make the window complete. Parallel with the stonework of the window, and as a relief to the border, there is a line of semi-transparent glass set in squares, on which are shown small patterns of monograms, &c. Messrs. Edmundson & Son, of Manchester, are employed.

Burton-upon-Trent.—On Monday afternoon the two principal foundation-stones of the proposed new Wesleyan chapel and schools, Horninglow, were laid with the usual ceremonies. The site of the new structure is that of the old chapel and additional land in the rear, and the erection has been entrusted to Mr. Potter, of Horninglow-road, from plans prepared by Mr. Wills, of Derby. It is intended to accommodate 200 persons, and to be supplemented by two school-rooms and a class-room. The building will be of brick, with wrought Derbyshire stone dressings, and, with the cost of extra land, will represent an outlay of about 1,000*l.*

Proposed Restoration of Flyford Church, Worcestershire.—A meeting was convened by the rector of Flyford Flavell, on the 3rd inst., to consider what steps should be taken towards the restoration of that church. The following proposition was made and carried unanimously:—"That the body of Flyford Flavell Church be taken down and rebuilt; that landowners be applied to to assist in carrying out this object; and that those who have already promised to subscribe be applied to for their subscriptions, and that it be paid to the account of the Church-building Committee."

Iron Railing on the Holborn Viaduct.—The railing and gates in front of the City Temple, on the Holborn Viaduct, have been well executed by Messrs. Andrew Handyside & Co., of Walbrook.

Hadleigh.—The opening services of the Primitive Methodist new chapel and school-room here have been held. The chapel is a substantial red brick building, with white dressings to the doors and windows, and roofed with slate. There is a neat lobby; the benches have reclining backs; and there is also a rostrum. The floor is boarded. The chapel is lighted with eight circular-headed windows. The woodwork inside is finished with a light oak stain, varnished. Accommodation is provided for about 250 persons. The schoolroom is about 28 ft. by 14 ft. inside, carried up to the same height as the chapel, with bond, &c., for the ground-floor, when needed. It is fitted with gas, fireplace, cupboards, with provision for hot water for persons who may stay to dinner on the Sabbath, and for tea-meetings. The design of the buildings and specifications were by the Rev. M. Warnes, the late minister; and Mr. W. Baalham was the builder.

Improvement of Birmingham.—*On dit* that one of the newest projects for the improvement of Birmingham is one of the boldest that has yet been thought of. It is nothing less than an immense boulevard, which, stretching in a north-easterly direction from the neighbourhood of the New-street railway station, would sweep away a number of the "back slums," in its course, and give a wide and noble thoroughfare, bordered on each side with trees, &c., in the Parisian style, in their stead. The carrying out of this project, says the *Birmingham Gazette*, would also afford an opportunity for an extensive application of the Artisans' Dwellings Act.

A Window Improvement.—In the Sanitary Department of the Yorkshire Exhibition, Leeds, is exhibited what is called the "Sanitary Window," patented by Mr. J. James Cousins, banker. Besides the advantage of being free from rattling or shaking in stormy weather, the patentee says this window can be wound up with ease and quietness by a young child, whilst the strongest man is unable to force either sash up or down unless by using the key, the simple withdrawal of which firmly locks the apparatus. The window requires no pulley or cords, and obviates the nuisance caused by upper sashes getting out of order.

A New Unitarian Church at Coseley.—The opening services in connexion with the new Unitarian Church took place on the 10th. In October last, the building of the new church was commenced by Messrs. G. & F. Hyam, Wolverhampton, from plans prepared by Messrs. Bidlake & Fleeming, architects, of the same town. The new erection is in the Gothic style of architecture of the thirteenth century, and is built of stone. It affords accommodation for about 300 people. The total cost was about 1,600*l.*, all of which has been subscribed.

Sale of the Hotel du Louvre.—The immense block of buildings in the Rue de Rivoli, known as the Hôtel du Louvre, in Paris, was sold on the 14th inst. As had been previously announced, it was put up at 15,000,000 francs, and 2,500,000 francs for the goodwill of the business. M. Benoit, representing MM. Chanchard & Heriot, proprietors of the Grands Magasins du Louvre, bid 50 francs, and was declared the purchaser. The new owners are stated to have the intention of continuing the business as at present conducted. The costs are not included in the 17,500,050 francs.

Reduction in the Price of Gas.—Through the efforts of Mr. Applegate, the Trowbridge Gas Company's tariff has been reduced both to public and private consumers. The contract price for lighting the streets is to be 2*l.* 15s. per lamp, or a reduction of 5s. on each lamp. This will effect a saving of about 50*l.* in this year's contract. The price of gas to private consumers is to be reduced from 4s. 7d. to 4s. 2d. per 1,000 cubic feet, the reduction to take effect from the 1st of July last.

Gas Explosion at a Hospital.—An explosion of gas took place on the 16th inst., in the matron's room at the North Cambridge Hospital, Wisbeach. Two persons were seriously burnt, the windows were blown out, and great damage was done to the room. The explosion was caused by the porter, who, being called to an escape of gas, struck a match to look for it. When will people understand that to apply a light to escaping gas without first opening windows and doors, is the same as applying it to gunpowder?

Property and Trade Income.—In 1814 the gross value of lands and houses, &c., including quarries, mines, ironworks, canals, gasworks, and railways, in Great Britain, was 60,138,330*l.*; in 1844, 95,300,248*l.*; in 1854, in the United Kingdom, 124,871,885*l.*; in 1864, 161,397,345*l.*; and in 1873, 212,922,851. The gross annual incomes from trade, professions, &c. (excluding the provisions of 29 Victoria, cap. 36) were in the same periods,—from 1814 to 1873,—respectively 37,058,989*l.*, 65,095,191*l.*, 91,280,131*l.*, 124,075,550*l.*, and 197,237,339*l.*

Florentine Needlework.—In his "Ariadne Florentina," just published, Professor Ruskin gives a description of three pieces of Florentine needlework, which attracted his attention in the bedroom in which he slept at the King's Arms Hotel, Lancaster. The Professor, while staying at this old inn, was engaged in revising a lecture on "Design in the Florentine Schools of Engraving." It was in this inn, also, if we remember rightly, that Dickens and Mr. Wilkie Collins wrote one of their joint stories.

A Relic at the Thames Embankment.—The workmen engaged in clearing out the foundations for the new opera-house on the Thames Embankment at Westminster, have discovered, at a depth of 35 ft., a sword of curious workmanship. It is said to have a handle of gold, covered with heraldic engravings, and apparently of about the time of Edward II. or III. The blade is of fine Spanish temper, is straight, and double-edged, and is still sharp, although much disfigured with rust.

The Paving and Lighting of London.—Early next session Sir William Fraser will call attention in the House of Commons to the paving, lighting, and cleansing of London, and move that, in the opinion of this House, the parochial system is unsuited and inadequate to the reasonable requirements of the inhabitants of the metropolis, and that the subject deserves the immediate attention of Her Majesty's Government, with a view to remove by legislation the great evils that at present exist.

New Docks at Dundee.—A wet dock named the Victoria in honour of the Queen, was formally opened at Dundee on the 16th inst. by Lord Strathmore, the lord-lieutenant of the county. The new works have cost upwards of a quarter of a million, and the sum expended on the harbour from first to last has been nearly a million. Lord Strathmore said the Queen had intended to be present, but had been reluctantly obliged to forego the pleasure. Four launches took place, and the proceedings passed off with great success.

German Art Education.—An annual sum of 40,000 thalers has been granted by the German Government for the carrying out of the proposed project of having plaster casts taken of all the most important monuments of architecture and sculpture in Italy. The Italian Government has given permission for this work under certain conditions, one being that a copy of every one of the works reproduced should be given towards the formation of a museum of casts in Italy.

West Bromwich.—A new Town Hall and public buildings, comprising commissioners' offices, free library, open and covered markets, and public baths, erected at a cost of some 30,000*l.*, have been formerly opened at West Bromwich, when a dinner in honour of the occasion was given by Mr. R. Farley, the chairman of the Local Board of Improvement Commissioners.

The Science and Art Department.—We understand that the appointment of Art Director of the Science and Art Department, vacant by the resignation of Mr. R. Redgrave, R.A., has been offered by the Committee of Council on Education to Mr. E. J. Poynter, A.R.A., Slade Professor at University College, London, and are glad to hear that it has been accepted by him.

An Irish Home.—A sanitary officer from Clare reports having found ten human beings in a tottering mud edifice, 13 ft. by 7 ft. Seven slept in one bed, and a younger member in a hencoop. The roof was decayed and riddled with holes, and a dung-hill of putrid matter outside emitted a terrible stench. One child was quite naked. The family had been receiving out-door relief.

Extensive Alterations at the Hamilton Barracks, Scotland.—The policy adopted by Government in concentrating certain districts of the country into military depôts has led to great alterations in the barracks at Hamilton. The buildings for which contracts have been accepted by the War Office include quarters for fifty-six married soldiers. The total cost of the proposed additions is roughly stated at 20,000*l.*

New Wesleyan Chapel at Chesterton.—On the 16th inst. memorial stones of a new Wesleyan Chapel, at Chesterton, were laid. The chapel is being built by the Rose Hall Brick and Tile Company, from the designs of Mr. G. B. Ford, of Burslem, and it will seat 500 people. The entire cost, including 400*l.* for the site, will be 2,400*l.*

Monument to the late Mr. Platt, M.P.—Mr. D. W. Stevenson, sculptor, Edinburgh, has been selected to design the public monument,—a bronze figure with granite pedestal,—proposed to be erected at Oldham in memory of the late Mr. John Platt, M.P., the inventor and manufacturer of cotton-spinning machinery, to whom Oldham is indebted for a school of science and art.

Lighting Malmesbury Abbey.—This building is now lighted up with gas, the fittings and burners being arranged on the same principle as those of Gloucester Cathedral. The work has been carried out by Mr. Gough, of Westgate-street, Gloucester. The burners are placed in the cornice, above the pillars in the nave, and continue on both sides along the entire length of the building.

New Mission-room, Bradford.—Mr. B. Wood, of Frizinghall, has just had completed at his own cost a building to be called St. John's District Mission, which will be used as a day and Sunday school, and for the celebration of divine worship. The cost of the structure is about 1,800*l.*, and it will accommodate 330 children.

The Extension of the Western Piers, Swansea.—It was decided at the meeting of the harbour trustees, held on Monday last, that the important work of extending the piers another thousand feet will be forthwith proceeded with. The work will be carried out by the Harbour Trust themselves, and the total estimated cost is about 30,000*l.*

Want of Sewers in St. Pancras.—At a meeting of the St. Pancras Works Committee, on the 9th inst., Mr. W. B. Scott, the chief surveyor, reported that there was no sewer in Diana-place, Euston-road, and suggested a continuation of the sewers in the locality, at an expense of 440*l.*, which was agreed to, as also improvement of the sewerage in the Junction-road, at a cost of 460*l.*

New Schools in Kensington.—Princess Mary of Cambridge has laid the corner-stone of a second set of Church of England schools in the parish of St. Clement, Kensington Potteries. The schools are intended for about 700 children. The architect is Mr. F. Rogers, who expects to have the buildings completed at the rate of 3*l.* 10s. per child.

A Village Destroyed by Fire.—On the 13th inst. the village of Chudleigh Knighton, Devon, was in great part destroyed. Some children experimenting with a box of fusees set fire to a cottage, and before help could arrive not only was it entirely destroyed, but many others were much damaged.

The Old Baptist Chapel, Guildford.—The Old Baptist Chapel, in South-street, is being rebuilt with the addition of a schoolroom, and on the 13th inst. the memorial-stone was laid by Mr. W. Crowther, of Gomersall, Leeds. The building will cost about 700*l.* Messrs. Ayling & Jenkins are the builders.

Sowerby.—Increased chapel and school accommodation being required at Steep-lane Baptist Chapel, the congregation have erected and opened a new chapel to seat 600 persons, and a school, with class-rooms, to accommodate 350 scholars. The total cost of these has been about 2,500*l.*

The Foresters' New Hall, Bridport.—The foundation-stone in connexion with a Foresters' New Hall was laid on the 12th inst., by Mr. P. Ralli, M.P. for Bridport. For some time, owing to the large increase of brothers, there has not been sufficient accommodation at the old court-room, and hence this step was rendered necessary.

New Union Church at Lenzie.—A new church, built at Lenzie, for the use of the Union congregation, of which the Rev. Mr. Miller is pastor, at a cost of over 3,000*l.*, has been opened. The church is in the Gothic style, and has been seated in the area as well as in the end gallery, for about 600 persons.

The Management of Epping Forest.—Three important schemes have been forwarded to the Epping Forest Commissioners for the future management of the forest from the Corporation of the City of London, the Metropolitan Board of Works, and the Forest Fund Committee.

Norton Parish Church.—The tender of Mr. W. Fream, jun., builder, for the restoration of the ancient parish church of Norton, has been accepted. Tenders were sent in by three other firms. The work will be at once proceeded with, and is expected to occupy about four months.

The New King's School, Chester.—The large space of ground in front of the Town-hall, selected as the site for the new King's School, has been handed over to the contractor, Mr. Farrimond. On the 9th inst. the work was formally commenced.

Mr. Edward Newton, architect, of 104, Queen Victoria-street, E.C., writes to explain that he is not the Mr. Newton concerned in the case of "Newton *v.* the *Hornet*."

TENDERS

For warehouses, &c., in Clavering-place, for R. Robinson & Co., Newcastle-on-Tyne. Mr. J. E. Watson, architect :—

Whichillo	£4,850	0	0
Jackson	4,400	0	0
Scott	4,395	0	0
J. & W. Lowry	4,383	0	0
Simpson	4,327	17	1
Kyle	4,300	0	0
Norvel	4,234	0	0
Messrs. Mitchison	4,150	0	0
M'Mullan	3,966	1	4
Harbottle	3,964	19	10
Lee	3,809	9	0
Elliott	3,785	0	0
Grisdale (accepted)	3,718	0	0

For Long Eaton Working Men's Co-operative Stores, Derbyshire. Messrs. Robert Clarke & Son, architects :—

Hodson & Facon	£5,197	0	0
Slight	4,890	0	0
Jelley	4,913	0	0
Messom	4,748	0	0
Vickers	4,690	0	0
Slim	4,390	0	0
Duke	4,370	0	0
Pozen (accepted)	4,300	0	0

For the rebuilding of Moyriesk House, near Quin, county Clare, for J. F. Vesey Fitzgerald, D.L. Mr. W. Fogerty, architect. Quantities by Messrs. Gribbon & Butler :—

Gahan & Son	£2,800	0	0
Carroll	2,780	0	0
Wallace	2,680	0	0
Ryan & Son	2,591	0	0
J. & J. Hayes (accepted)	2,373	0	0

For works to premises, Burlington-street. Mr. S. Dyball, architect :—

Lister	£1,598	0	0
Abraham	1,584	0	0
Merritt & Ashby	1,548	0	0
Falkner	1,511	0	0
Kelly, Brothers	1,496	0	0
Scrivener & White	1,444	0	0
Rudkin	1,435	0	0
W. & F. Croaker	1,397	0	0

For villa residence, Sydenham. Mr. B. Fletcher, architect :—

Jerrard	£1,697	0	0
Fish	1,681	0	0
Brass	1,650	0	0
Kilby	1,630	0	0
Patrick	1,589	0	0
Hill, Higgs, & Hill	1,569	0	0
W. & F. Croaker	1,459	0	0

For repairs and alterations to St. Mark's Church, Tollington Park, N. Messrs. W. Waymouth & Son, architects :—

Dove, Brothers (accepted)	£745	0	0

For new Lecture Hall and alterations at the Strood Workmen's Club and Institute. Mr. Bulmer, architect :—

Ames	£1,050	0	0
West	900	0	0
Wilkins & Son	850	0	0
Callmed (accepted)	850	0	0
Sollitt	779	0	0

For basement story, coal vaults, and foundations to master's house, and men's infirm wards, at Marylebone Workhouse, for the guardians of St. Marylebone. Mr. H. Saxon Snell, architect. Quantities by the architect and Mr. Robert Griggs :—

Cronker	£2,230	0	0
Bamford	2,050	0	0
Aitchison & Walker	1,955	0	0
Wall, Brothers	1,897	0	0
Crockett	1,849	0	0
Hart	1,825	0	0
Dunkley	1,795	0	0
Timewell (withdrawn)	1,660	0	0

For new sewer between the London, Chatham, and Dover Railway and Southwark Bridge, in the City of London, for the Metropolitan Board of Works :—

Mowlem & Co.	£29,900	0	0
Webster	29,250	0	0
Nowell & Robson (accepted)	26,500	0	0

For alterations and additions to No. 85, Holland-road, Kensington. Mr. William S. Cross, architect. Quantities supplied by Mr. Joseph Waghorn :—

Kinninmont	£844	0	0
Howard	787	0	0
Richards	754	0	0
Weekes	625	0	0
Thompson	575	0	0

For the erection of a manufactory in Bromley, Middlesex, for Messrs. A. C. Engert & Co. Messrs. Hills & Fletcher, architects. Quantities supplied :—

Patman & Fotheringham	£5,250	0	0
Perry & Co.	5,198	0	0
Abraham	5,180	0	0
Sheffield	5,125	0	0
Wood	4,975	0	0
Bangs & Co.	4,725	0	0
Grover (accepted)	4,494	0	0

For alterations to East London Soap Works, Bow, for Messrs. Edward Cook & Co. Messrs. Hills & Fletcher, architects. Quantities supplied :—

Bangs (accepted)	£1,700	0	0

For additions to house in Bow-road, for Dr. Batteson. Messrs. Hills & Fletcher, architects :—

Craig	£169	10	0
Barrow	165	10	0
Selby (accepted)	159	0	0

For office fittings, 17 and 18, Basinghall-street. Mr. Wm. C. Banks, architect :—

	For new fittings.			Allowance for Old Materials.		
Drew	£162	10	0	£22	10	0
Colls	157	10	0	7	10	0

For additions and alterations to "Glenthorne," The Avenue, Upper Richmond-road, Putney, for Mr. S. Merriman. Messrs. Karslake & Mortimer, architects. Quantities by the architects :—

Hobson	£760	0	0
Adamson & Sons	750	0	0
Aries (accepted)	731	0	0

For the erection of a detached residence in Upper Richmond-road, Putney, for Mr. R. Heath. Mr. S. Wood, architect. No quantities :—

Davies	£2,935	0	0
Aries (accepted)	2,517	0	0
Sutton	2,260	0	0

For new Presbytery, Tyler-street, North-East Greenwich. Mr. Henry John Hansom, architect. Quantities prepared by Mr. Henry Smith :—

Dove, Brothers	£1,695	0	0
Smith	1,599	0	0
Lathey, Brothers	1,520	0	0
Gregory	1,493	0	0
Tyerman	1,440	0	0
Beale (accepted)	1,118	10	0

For the erection of a cottage in South Penge Park, for Mr. Gilson. Mr. H. S. Benison, architect :—

Iles (accepted)	£600	0	0

For alterations and additions to the Lord Nelson, Nelson-square, Blackfriars-road (second tenders). Messrs. Ingram & Hollands, architects. Quantities supplied :—

Abraham	£759	0	0
Moreland & Nixon	739	0	0
Cook & Green	722	0	0
Patrick & Son	684	0	0
Harris & Wardrop	612	0	0
Hunt (accepted)	594	0	0

For erecting premises on the site of Nos. 68 and 69, Old Bailey, for Messrs. Larington. Mr. Thomas Renton, architect. Quantities supplied by the architect :—

Hill, Higgs, & Hill	£7,860	0	0
Newman & Mann	6,864	0	0
Morter	6,653	0	0
Scrivener & White	6,669	0	0
Nightingale (accepted)	6,647	0	0
Foster (withdrawn)	5,797	0	0

For new vicarage at Hampstead. Mr. T. K. Green, architect. Quantities supplied by Mr. Charles Poland :—

Burford	£3,159	0	0
Merritt & Ashby	2,999	0	0
Downs & Co.	2,981	0	0
Dove, Brothers	2,975	0	0
Browne & Robinson	2,970	0	0
Scrivener & White	2,900	0	0
Cowland	2,880	0	0
Waldram & Co.	2,856	0	0
Sharpington & Co.	2,832	0	0
Adamson	2,694	0	0
Newman & Mann	2,670	0	0

For new warehouse in Farringdon-road, for Mr. A. Burton. Mr. G. B. Williams, architect. Quantities supplied by Messrs. Franklin & Andrews :—

Turner & Sons	£10,881	0	0
Clemence	9,947	0	0
Conder	9,266	0	0
Ashby & Horner	9,100	0	0
Patman & Fotheringham	9,085	0	0
Macey	9,038	0	0
Ashby, Brothers	8,982	0	0
Lucas	8,965	0	0
Browne & Robinson	8,937	0	0
Coleman	8,888	0	0
Newman & Mann	8,834	0	0
Brass	8,664	0	0
Little	8,630	0	0

For alterations and additions to Nos. 44 and 45, King's-road, Brighton, and the erection of an Art Gallery and other works, for Messrs. Lewis & Sons. Mr. Thomas Lainson, architect. Quantities supplied by Mr. John George Gibbons :—

Barnes	£6,775	0	0
Newman & Mann	6,560	0	0
Merritt & Ashby	6,400	0	0
Cheeseman & Co.	6,130	0	0
Chappell	5,061	0	0

For dwelling-house and shop, No. 38, Hanway-street, Tottenham-court-road, for Mr. W. H. Parker. Mr. Alfred Skingle, architect. Quantities supplied :—

Weeks & Son	£1,180	0	0
Ellis	1,096	0	0
Scrivener & White	1,085	0	0
Newman & Mann	1,066	0	0
Deards	1,064	0	0
Niblett	1,041	0	0

For the formation of a new road, 70 ft. wide and 2,675 ft. in length, and sewer under, upon the estate of Sir John Maryon Wilson, bart., and Mr. Spencer Maryon Wilson, Hampstead :—

Anderson	£9,991	0	0
Hiscox	£9,500	0	0
Killingback	9,490	0	0
Watts	9,475	0	0
Nowell & Robson	9,225	0	0
Culverhouse (accepted)	8,987	0	0

The tender of Messrs. Guynan & Son (Oxford Steam Works), for the whole of the blinds to the Convalescent Home for Children at Norbiton (Mr. H. Saxon Snell, architect), has been accepted.

TO CORRESPONDENTS.

E. A. J. B. (an area 1,369 ft. by 700 ft. is not an incorrect expression. Information as to the new docks and extension works at Portsmouth is by no means willingly afforded).—Jesse (the Building Act provides a mode of proceeding. Take proper advice).—J. D. & Sons.—E. W. T.—A. F.—W. B.—W. A.—J. C. H.—E. P.—J. M.—R. L.—H. H.—R.—J. B.—C. & Son.—M'L.—C. S.—H. B. W.—J. L.—B. A. P.—S. J. (in type).—J. K.—C. Z.—T. W. A.—S. & A.—W. C. B.—R. S. W.—J. G.—E. C.—J. S.—E. L.—C. Y.—W. B. (send particulars).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c must be accompanied by the name and address of the sender, not necessarily for publication.

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Halfpenny stamps accepted for amounts under 5s. Any larger sum should be remitted by Money Order, payable at the Post Office, King-street, Covent-garden, W.C. to DOUGLAS FOURDRINIER.

Advertisements cannot be received for the current week's issue later than THREE o'clock p.m. *on THURSDAY.*

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BY MEANS OF

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The Builder.

VOL. XXXIII. No. 1669. SATURDAY, AUGUST 28, 1875.

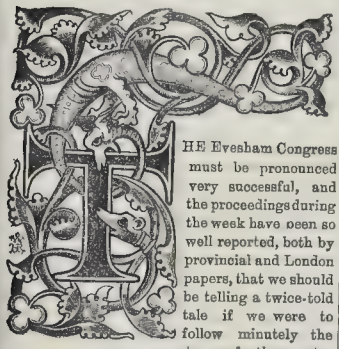
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Congress of the British Archæological Association.



THE Evesham Congress must be pronounced very successful, and the proceedings during the week have been so well reported, both by provincial and London papers, that we should be telling a twice-told tale if we were to follow minutely the steps of the party. We shall confine ourselves to a point or two here and there.

Stratford-on-Avon.

The Mayor here was particularly happy in his address to the assembled members. It is not, he remarked, too much to say that we regard it somewhat in the light of a duty to welcome so distinguished a body, which numbers amongst its members men to whom Stratford is much indebted, prominently amongst them being the name of Mr. Halliwell-Phillipps. It is one of the sweets of life to turn aside for a time from the whirl of busy ceaseless activities, and seek recreation and repose in a loving contemplation of the genius of our forefathers, enshrined as it is in the countless monuments of this and other lands; and to search for, with filial fondness, those footprints on Time's sands which they have left us, a rich heritage indeed,—bright and ever-burning lamps,—so to speak, which, while they enable us to read the, in some cases, pale-faced handwritings of the past, reflect, as from some rich antique mirror, light which will enable many a student to inscribe the pages of time present and time to come. Ladies and Gentlemen, while it is the glory of our ancient corporations that they embody the principle of local self-government, which had its origin in a protest against the oppression of feudalism, and thus enshrine all that tends to manliness and self-respect; so in the culture of religious qualities, which, in England's people, have contributed more than anything else to England's greatness, they faithfully and wisely conserve and represent all that is oldest and best in the past, and foster and cherish what is newest and most worthy of aspiring to in the present. So is it with associations like your own, which combine a fond, tender veneration for the glorious memories of by-gone years, with an equally earnest longing desire to promote all that can ennoble and elevate mankind in the fleeting present and the peeping future. Permit me to remind you that you have come to visit a town, in size and population small, yet "big to fulness" with historical associations. These records so beautifully, so admirably arranged and tabulated by Mr. Halliwell-Phillipps, by the sanction of the Corporation, and under the care of Mr. Joseph Latimer, the Chamberlain, have been placed on these tables for your inspection. These records will take you back almost to the Conqueror's time. In their pages you will learn what an important Church history Stratford possesses, and most of England's early history is intimately connected with that of the Church. You will read how its present Collegiate Church was built upon the site of one which dated back to Saxon times; of its Chantry of Priests founded by that great ecclesiastic and statesman, John de Stratford, Archbishop of Canterbury; of the College wherein they found a congenial home, built for them by Ralph de Stratford, Bishop of London; of the Guild of the Holy Cross, and its chapel, so greatly indebted to one Robert de Stratford; and of the Grammar School, founded by good Priest Jolyffe.

A Vice-President of the Association responding to the Mayor's kind greeting, expressed regret at the absence, through indisposition, of the Marquis of Hertford and of Lord Houghton. He assured the Mayor and Corporation that it gave the members of the Association resident in London and other places, the greatest satisfaction to see how well the people of Stratford discharged their great responsibility in carefully preserving the antiquarian treasures connected with Shakspeare.

Clopton.

The visit to Clopton House, now the seat of Mr. Arthur Hodgson, after a long examination of Stratford and its old buildings, proved a very interesting and agreeable episode in the day's proceedings. Mr. Hodgson and his lady received a party of about 100, specially invited, at four o'clock, when a *déjeûner* was prepared in a tent erected outside Clopton House, and here, after entertaining his guests in most hospitable fashion (a peculiar feature in the entertainment being specimens of Australian wines), the paintings and Shakspearian relics in the house were inspected, and before retiring Mr. Hodgson read a very entertaining paper on the history of Clopton House, written in a genial vein, and eliciting the unanimous admiration of his audience. Mr. Hodgson, after going into the genealogy of the residents of Clopton House, and tracing the decadence of the Clopton family, mentioned some curious facts illustrative of the enhanced value of real property in modern times. He stated that in 1830 the Clopton estate of 280 acres was sold to a Mr. Lloyd for 16,500*l*. In 1873 he (Mr. Hodgson) bought the estate by auction for 38,000*l*. (more than doubling the value in forty years), exclusive of the value of the timber and the furniture, which in 1824 sold for 57*l*., but for which he had to pay 8,300*l*. in September, 1873.

The Bell-Tower at Evesham.

At the first evening-meeting for papers, Mr. Blashill read a memoir by the Rev. Mackenzie E. C. Walcott, B.D., F.S.A., on "The Mitred Abbey of Evesham." The paper was remarkable for the research which it exhibited. It was illustrated by an excellent plan. One of the most important points raised by the writer was as to the age of the bell-tower, which is commonly assigned to Abbot Lichfield. An elaborate argument was brought forward to prove that it was built about a century earlier, probably by Abbot Zatten, a view which was also taken, he said, by Mr. J. H. Parker.

The Rev. A. H. W. Ingram combated the argument that the bell-tower was not built in Lichfield's time, and quoted from a Latin treatise, written by a monk of Evesham, in the twenty-second year of Lichfield's rule, and translated by Thomas Talbot, a Northamptonshire antiquary of the time of Elizabeth, who added the fact that "in his (Lichfield's) time the new tower of Evesham was built, which as yet is left untouched." He (Mr. Ingram) contended that the tower was more likely to have been built in settled times under the Tudors, than when the Wars of the Roses prevailed.

The Rev. N. G. Batt said there were many instances of a great amount of building having been done during the Civil Wars, as at St. Alban's.

The Chairman (Mr. Godwin) said it was of no use the British Archæological Association coming to the town if such a point as that could not be settled. He would rather trust to masonry than M.S., and suggested a careful examination the next morning, which was agreed upon.

At the following evening-meeting, Mr. Blashill reported that, as arranged on the previous evening, Mr. E. Roberts, Mr. Godwin, himself, and others, who were conversant with the architecture of the period, had examined the bell-tower that morning, to form their own opinion as to its date, and had come to the conclusion that the tradition in Evesham, that it was built by Lichfield, was undoubtedly correct. He was glad to be able to confirm this tradition, and he sympathised with the feeling that prevailed in the town, as to the work of the most active and useful of the abbots of Evesham. The goodness of the architecture, notwithstanding some minor details to the contrary, would lead some at first sight to think that the tower was many years older than it was; but this might be accounted for by the supposition that it was built during the early part of Abbot Lichfield's career, which would be about the year 1514. He felt that he need not say anything to stimulate the people of the town to take care of the tower. It seemed to be an extremely rare specimen of the class of buildings to which it belonged. As it was almost the only real and nearly perfect remainder of the abbey, every inhabitant of the borough should feel an interest in it, and endeavour to develope its beauties and prevent its being hidden from sight. The walls on either side of it were detrimental to its appearance, and he could only express a strong hope that they would be removed, as well as every other obstruction which marred the beauty of this unique and noble specimen of architecture, so that its grand proportions might be displayed to their fullest extent.

The Rev. A. H. W. Ingram said he was glad to find that the documentary testimony he had produced was confirmed by the architectural evidence of the tower itself. To add to the proof already adduced, he found that Tindall, the historian of Evesham, gave the Latin inscription on the tomb of Abbot Lichfield, which translated, was as follows:—"Pray for the soul of the priest in whose time the new tower of Evesham was built."

Sir Stafford Carey said that in Dingley's as well as in Grosse's "Antiquities" there were views of the Evesham bell-tower as a specimen of architecture of great interest, and in both cases the tower was represented as being without the obstructions of the walls now on either side of it.

Mr. Blashill said it was due to Mr. Walcott to state that he argued that the words "new tower," quoted by Mr. Ingram, referred to the central tower in the Abbey, and not to the bell-tower. The question had, however, been decided upon the architecture of the tower itself, and not upon the rather vague documentary evidence.

Mr. Ingram said it was palpable that the words could not apply to the central tower, because Talbot, the antiquary of Elizabeth's time, referred to Lichfield's structure as the tower "which is left untouched"; whereas the central tower had then been demolished. He was confident that had Mr. Walcott himself been present he must have acknowledged himself satisfied by such convincing proof as had been brought forward to upset his contention.

The Vicar of Evesham said that they were perfectly alive to the importance of preserving the bell-tower. When they had finished All Saints' Church, they would have this tower thoroughly restored. But in the meantime a new roof would be placed upon it to make it water-tight.

The Abbey of Evesham.

Several papers were of course forthcoming on this subject. At one of the meetings,—

The Rev. N. G. Batt, M.A., vicar of Norton, read a very able paper on "The Abbey of Evesham, illustrated by the Lives of a Triad of its Abbots." The following is a summary:—The little town of Evesham is chiefly recommended to archæologists as the seat of a great abbey which, though scanty remains of it are left, flourished for more than 800 years, from its foundation in 701 to the dissolution in the sixteenth century. Its abbots were amongst the most powerful and wealthy barons in the midland counties. They were fifty in number. We shall consider the lives of three,—Egwin, Egelwin, and Lichfield,—who represent the beginning, the highest prosperity, and the fall of the institution. The story of the foundation of Evesham Abbey resembles the account of the apparition of the Blessed Virgin at Lourdes, in our own time. She was first seen of the swineherd Eoves, and then of his master, the Bishop of the Wiccians, Egwin, whom she charged to build a church in that place, then deserted and overgrown with thickets, but doubtless recommended by its agreeable situation in the fertile valley of the Avon, where the abbeys of Pershore and Tewkesbury were afterwards founded. The legend of St. Egwin's penance, when he locked his feet together, and threw into the river Avon the key, which a fish of the Tiber miraculously restored to him, was suggested by the gospel story of St. Peter finding a piece of money in a fish's mouth. Similar tales are related of other saints. Egwin, both in life and death, was very anxious to secure his abbey from spoliation, and to maintain its privileges. Thus, when an old countryman attempted to swear away land from the monastery, his beard suddenly dropped off in the presence of the saint's relics. The smiths of Alcester were punished for interrupting the saint's sermon, by an anathema which long prevented any one from carrying on the trade in that town. Norton Church is dedicated after St. Egwin, and his likeness is to be seen on the ancient lectern there, which once belonged to Evesham Abbey. He appears to have been a man of real piety, and of great energy and influence among his contemporaries, and may be regarded as the originator of civilisation and improvement in the Vale of Evesham. Egelwin, the last Saxon abbot, presided over the abbey at the time of the Norman Conquest, and was famous for his prudence and knowledge of law. He continued to be in favour with Edward the Confessor, Harold, and William the Conqueror, who did not deprive him of the office, like most of the other Saxon abbots and bishops, but gave him charge of the Abbey of Winchcomb in addition to his own, and advanced him to the government of several counties. So that it is recorded that no Saxon nobleman was so much trusted by William. Egelwin made a good use of his great wealth and authority, and fed a multitude of poor starving people, who had escaped from the devastation of the northern counties by the Conqueror. His kindness to the orphan children is particularly commended. He added to the possessions of the abbey and successfully defended them against usurping Normans. His successor, the first French abbot, mistrusting the genuineness of the abbey relics, which had not saved the English from defeat, submitted them to the ordeal of fire, out of which they emerged triumphant. Egelwin was the ablest of the abbots, and his mixed character has been too hardly dealt with by modern historians on account of his supposed want of patriotism. Clement Lichfield was the last real abbot of Evesham, and to his time belong the bell-tower, the chantry chapels in the parish churches, grammar school, the chief remaining buildings once connected with the abbey. It is wonderful how he was able to do so much, and embellish the choir of the abbey church also, since he was subjected to continual and heavy exactions by the King and Wolsey.

Buckland.

The excursion on the third day included Buckland, and the party on arrival proceeded at once to the church, where they were met by Mr. J. O. Halliwell-Phillips, who, as lord of the manor, welcomed the visitors, with the majority of whom he was well acquainted, through previous archæological sympathies. Here Mr. J. Robinson, architect, read a short paper on the history of Buckland, and described the church, which is a building of the thirteenth century, as regards the earlier portion, but it is also made up of specimens of many architectural periods, having been restored and repaired at different periods, and having thus become a rather remarkable and interesting illustration of various styles of architecture. In the chancel or east window are some beautiful specimens of stained glass, of a date antecedent to that of the church. This glass is supposed to have been brought from Hailes Abbey. It was evidently never intended for the window in which it now does service. Proceeding onwards, the party next inspected the Grange, at Broadway, formerly belonging to the Abbey of Pershore, and until recently used as the parish workhouse. Shortly after two o'clock, the party having all mustered at the Lygon Arms, Broadway, a *déjeûner* was served, after which,

Mr. Isaac Averill read a paper, prepared by Mr. J. O. Halliwell-Phillips, on "The History of Broadway." The main subject of the paper was a disquisition on the enormous labour required in order to do justice to a history of either town or village, and the immense number of records to be examined, the references to be made, and the time occupied in such investigation. The writer concluded with some curious particulars, showing that Shakspeare was quite familiar with Broadway and its neighbourhood, which might well have been the case, considering their proximity to Stratford-upon-Avon.

The old church at Broadway, disused for religious worship since the new church was built nearer the centre of the village, is principally remarkable for its monuments of the Phillipps and Russell families. The present pulpit appears to have been made out of the rood or chancel screen. The nave of this church is of Early English character, but the aisles and chancel are of the Late Perpendicular of the Tudor age. Some amusement was created by an ancient-looking inscription, which at the first glance appeared like a sepulchral inscription on a Roman columbarium, but which when read was as follows:—

"ASTHOWARTSOWASI, ASIAMSOWILTTHOWBE."

On Thursday Hailes Abbey, Sudeley, and Winchcombe were visited. Concerning the former,

Hailes Abbey,

Mr. Loftus Brock read a careful paper, and at the close conducted the party round the ruins, pointing out their character and history with much perspicacity and eloquence, and closing his remarks by expressing the hope that the noble owner of the property would cause the ruins to be excavated, and their foundations laid bare, as he felt certain that much valuable information would, by these means, be obtained. Mr. Brock's paper, and his remarks were greeted with well-deserved applause. The excursionists next proceeded to Sudeley Castle, the noble residence of Mr. J. Coucher Dent, where they were hospitably received and entertained by Mrs. Dent (Mr. Dent being unhappily detained on the Continent by ill-health) at a luncheon prepared for them under a tent erected for the occasion, in the quadrangle of the Castle. After luncheon, Mr. Cripps, on behalf of Mrs. Dent, bade the Association welcome, and after proposing the health of the Queen, which was most heartily responded to, and that of the Association, which was acknowledged by Mr. Morgan, F.S.A., the treasurer, Mr. Roberts proposed the health of Mr. and Mrs. Dent, in appropriate terms, in the course of which he remarked, amid loud applause, that Mr. Dent had in preparation, and intended shortly to publish, the history of Sudeley Castle, than which he could not conceive any more interesting addition to our historical literature. Next the historical, archæological, and art treasures contained in this noble pile, and forming the fit garniture of such a casket, were examined, but the number of the visitors, and the time at their disposal, permitted only a most cursory glance at the numberless objects of interest and beauty here assembled. To be appreciated the beauties and treasures of Sudeley must be seen, and this sight, be it recorded to the great credit of Mr. and Mrs. Dent, is never denied to those who seek it. After this inspection, Mr. Edward Roberts read an interesting paper on the history and archæology of the castle. Mr. Roberts dwelt at some length upon the architectural details of the castle, calling particular attention to the oriel window now in ruins, and which overlooked a pleasaunce, the site of which now formed the beautiful flower-garden which had been laid out with rare taste upon the lines of the old pleasaunce. He also detailed the history of the occupants of the castle from the creation of Ralph, Lord Sudeley, in the 26th of Henry VI., mentioning its grant to the Duke of Gloucester, afterwards Richard III., and the death and burial of Catherine Parr within its walls, and as an incident of note that her funeral sermon was preached by Miles Coverdale.

Friday was a day marked out for considerable work, including as it did Pershore, Deerhurst, and Tewkesbury. The party was divided, some going by water and others by carriages. The latter, in consequence of the refusal of the drivers to go so far as was needed, did not see

Deerhurst,

and, under the circumstances, we cannot do better than adopt the account of it given in the *Standard*, by a well-known local antiquary:—Not a student of Gothic architecture in England is unfamiliar with the existence of Deerhurst church. Its double angular windows, which look from the tower into the nave of the church, have been engraved many times as specimens of the architecture of the Saxon period of English history, and there are many who are inclined to give to Deerhurst an antiquity as a Christian Church, which is denied to Canterbury and Winchester. It is remembered that when Augustine came on his mission from Pope Gregory, and under the auspices of Queen Bertha and her husband founded the great monastic pile at Canterbury, he came northward, and found himself confronted by an organisation of bishops who belonged to the Christian Church, which had survived not only the persecutions of Diocletian, but the fire and sword of Pict and Saxon. It is said that Augustine met the British bishops in some portion of the Wiccian territory—some say in the neighbourhood of the rude stone circle which still exists at Rollrich, and others at an oak tree in the neighbourhood of Hentlebury, the present seat of the Bishop of Worcester. Whichever place saw the conference of the Christians of the older Church with the missionary of the Pope, it was not far from this old church of Deerhurst, whose tower still raises its head in the rich alluvial vale near the confluence of the Avon and the Severn, which, in far-off times, must have been secure from the invasion of strangers by the swamps which surrounded it. The church bears unmistakable evidence of belonging to the period which elapsed between the departure of the Romans and the advent of the Norman style of architecture. Its windows are rudely formed with slabs of stone, some placed anglewise so as to form a rude pointed arch, others form rectangular openings by the same means. The more elaborate specimens of masonry consist of the now-blocked-up chancel

arch, a door or two at the western end formed in the manner known to architects as long and short work. The rude masonry of the exterior shows many examples of "herring-bone" work. There cannot be a doubt that the church is of pre-Norman date, and, though subjected to many alterations and enlargements, yet presents the essential features of the original. The walls of the nave have been pierced with arches which date from the thirteenth century, whose curious caps are excellent models for the students of this era of architecture. The dip font is clearly Norman, and is placed upon what appears to be an older one of the same pattern of tracery. The tower was a point of great and singular interest. It is divided from north to south and from east to west. Passing up a rude newel staircase, the visitor speedily found himself in a small apartment, containing the double angle-headed window so well known to architects. On either side were circular-headed aumbries. It was pointed out that the fluting of the mullions of the windows was similar to the ornamentation of the chimney-pieces at Polesworth Abbey left unfinished when the dissolution took place—a remarkable instance of Roman influence on the earliest and latest work in our Christian edifices. One gentleman suggested that the room was the cell of an anchorite, but Mr. Edward Roberts, to a subsequent party, thought it was a place for refugees who sought the right of sanctuary here. This is the more probable as the small Priory of Deerhurst was not unknown in connexion with the shelter of persecuted persons in Mediæval times. This idea receives confirmation from the existence of two singular corbels on the west side of the tower, the appearance and form of which suggested that they were hoists employed to convey food and necessaries to the inhabitants of the tower. In the farm-house adjoining, which has been made out of the conventual buildings, there is a rectangular window of large size, filled with flamboyant tracery, and in the garden the corbels which supported the wooden roof of the cloisters on the south side.

It was quite late in the day when the majority of the party reached time-honoured Tewkesbury, and many had not time to do more than to glance at the Abbey Church. But Tewkesbury is full of interest. Some of its old houses are as picturesque as any in Bristol, Chester, or Shrewsbury, and well repaid inspection. The church of the old Abbey, now undergoing restoration, was the great centre of attraction. Its massive tower rears its head as it did in the days of Fitzhamons, its founders, at the latter part of the eleventh and beginning of the twelfth century. The immense circular arch at the west end, now filled in with a Perpendicular window, is a marked feature in the exterior of the church. The interior alone gives the visitor an idea of the grandeur of the old Norman buildings. Like Oxford and Gloucester, Tewkesbury still retains the massive circular piers of the aisles. These immense piers rise 30 ft. from the floor of the nave.

To Mr. Blashill's paper on Tewkesbury we will return. We must now hasten on to say, without notice of wonderful Alcester, that on Saturday, the modern mansion of Ragley was thrown open to all holders of Congress tickets and invited guests of the noble president, the Marquis of Hertford. At a little after two o'clock not fewer than 200 visitors thronged the saloon, galleries, and terraces of Ragley, where they were received by the marquis and marchioness, the Earl and Countess of Yarmouth, and a distinguished party of guests. A sumptuous repast was served in two of the largest rooms of the mansion, and after the toast of "The Queen," the Marquis gave, in the library, an interesting and graphic account of the treasures of the house; its association with Jeremy Taylor, with Horace Walpole, and other distinguished visitors, together with the history of the Conway and Throckmorton papers now in the national collection. The greatest archæological attraction was a fibula and other ornaments found with a few bones, strap-buckle, and daggers on the estate about thirty-eight years ago. The fibula is one of the finest known, and was pronounced Celtic in design and workmanship.

As Mr. George Wright's "cheerful horn," which had been most valuable during the whole week, gathered the party together for the last return to Evesham, there was but one feeling amongst them as regarded the evenly and universally extended kindness of the President-host and the Marchioness of Hertford.

The local *Journal* (in which good reports of the proceedings appear) says, after congratulating the town and neighbourhood, and the members of the Association, upon the success and pleasure attending the Evesham Congress,—"Amongst its results are a feeling of increased respect for the important work of the Association, and a quickened interest in the archæology and history of our town and neighbourhood." That is just the result which the founders of these congresses anticipated and desired.

SANITARY AND INDUSTRIAL RESULTS OF THE SESSION.

BRITISH MONEY ABROAD.

If the object and purpose of a Session of Parliament be the enactment of the greatest possible number of brand-new laws, the Session of 1875 presents a falling off, as compared with some of its predecessors.

But if the most useful functions of a body that is very far too large and indiscriminate in its composition to legislate, except in a very rude and empirical manner, be the elucidation of important questions by public discussion, and the enlightenment of that public opinion which is the actual source of legislative action at the present time, our reflections on the past Session may take another tone. There has been an intolerable amount of sack, indeed, to the half-penny worth of bread. But it is not so sure that the sack of discussion has not been of more national utility than the bread of positive enactments. As a general rule, the nation has been taught how impossible it is to give due consideration to all the details affected by a great measure, if forced and hurried through Parliament. If this lesson had been truly learned, even had it been the sole result of the debates of 1875, they might have proved truly useful.

The Royal Message on the 13th of August takes credit for the passing of some fourteen measures through Parliament. Of these, three relate to the improvement of the law, as regards the transfer of land in England, entail in Scotland, and the procedure of the Civil Courts. Two are financial, bearing on the diminution of public debt, and the regulation of loans for public works. One concerns a local detail of ecclesiastical organisation, but has great interest in an architectural point of view, as it converts the most ancient abbey, and largest ecclesiastical building, in England, into a cathedral; which we may hope to see restored to something like its original beauty. Two are mercantile; one being the stop-gap and temporary measure for regulating merchant shipping, as to which so strong a feeling was awakened in the country; and the other relating to the registration of trade marks. The remaining six enactments have more direct reference to the industrial and the sanitary condition of the country, which has thus received a large proportion of the attention of Parliament.

Of these six new laws, the most considerable, in point of length, is simply consolidation. It has garnered up the large library of sanitary enactments into a single book. In so doing, as we pointed out when the Bill was under discussion, it has simplified the subject, made it more easy of comprehension, and more fit for well-considered improvement in detail. A positive gain, if not all that could have been desired, has been secured by this Bill. In connexion with the same subject, the main principle which must underlie any wise and adequate sanitary legislation on a large scale,—the demarcation of watershed districts,—has for the first time been acknowledged by the administration, in a clause of the postponed Bill for preservation of Rivers, which was unhappily swamped, in the absence of any such enthusiastic advocate as has taken up the cause of unseaworthy ships.

The Artisans' Dwellings Bill we discussed when introduced.

In the new laws relating to Friendly Societies, to master and servant trade offences, to the Law of Conspiracy, and to the conditions of agricultural holdings, there has been a total absence of incisive or violent change. Whether any real advance has been secured by either or by all of these measures remains to be seen. At all events, much discussion has been allowed. The views of different parties have been brought into publicity, and the difficulties attendant on all organic changes have received more attention than has been the case for some years. It is probable that discontent will be to some extent alleviated; but certainly we have had ample proof that it is not within the power of Parliament to offer that *panacea* which certain persons consider is to be attained by legislation.

More important, if rightly grasped, than any actual legislation of the session, has been the tremendous *exposé* of the unblushing robberies committed under the name of Foreign Loans. We feel a double interest in this matter. First, because the constant drain of the accumulating wealth of the industrial and trading classes of this country, which has been effected by the foreign "borrower," has prevented that outlay of the capital upon the soil of our own island which would have insured a tenfold return. Secondly, we may be permitted to add, because we have always endeavoured, so far as our voice was heard and our influence could reach, to warn the English public against that disposition of their available savings of which the "Loans" of the South American States form the most complete and full-blown example.

Intimately connected with this question of Foreign Loans, and of the importance which the press gives to the debates and reports of Parliament and Parliamentary Committees by publishing the warning thus addressed to the unwary, is the subject of that Roman Improvement Scheme, as to which we addressed a warning to our readers in our number of the 20th of March last. A more recent number very fully justifies that warning. We wish our readers to feel assured that we speak with, at least, as much positive and direct experience of the procedures of those who invite English capital to flow abroad as does the Committee on Foreign Loans. Colossal as may be the roguery in some instances which they have pilloried, it differs only in degree, not in kind, from the ordinary routine. Foreigners who ask for English money mean to keep it, if they can get it. That is a safe general rule. What they may be induced to pay for the use of it, depends mainly on the chance they have of borrowing more, by dint of keeping up a decent character. When no more capital can be "borrowed" the amount of interest paid on that already obtained rapidly tends to a vanishing point. That lesson is so old, so repeated, so unvaried, that it is a marvel that men are always ready to burn their fingers in the same way.

It should be borne in mind that, apart from the question of absolute necessity, the laws, the sentiments, and the habits of business of all foreign nations differ materially from our own. A man of integrity and honour, apt to the discharge of business in this country, even if he be familiar with the language of any part of the continent, is as incompetent to carry on business abroad, until he has served a long apprenticeship to the particular occupation and locality in question, as a fine boy of eighteen, fresh from Eton, would be to manage a City bank. We can see, in a moment, where an English engineer is likely to have been misled, from the very straightforwardness of his nature, and his expectation of a similar conduct in those whose names he had learned to respect. Thus we find the receipt of instructions "in the presence of an English gentleman" mentioned; the idea being that the evidence of a third party would be decisive. Nothing can be further from the fact in Italy. Personal evidence, as a rule, can always be thus obtained in any sense that is wished. If a disputant rely on the probity and high character of a single witness, he will be discountenanced by the preponderance in *number* of the utterly unexpected witnesses who will appear in Court to contradict him. Thus the case must really depend on the "instructions in writing" alone. If these are clear, precise, legal, and formally bind General Garibaldi to pay the professional costs of the English engineer, the latter may have a hold on that patriot under Italian law, and possibly, in some ten or a dozen years, may obtain judgment, if his debtor be then alive. If there is the least screw loose in them, he had better put up with his present loss and disappointment, and set both down to the cost of professional education.

But even if a positive liability were formally contracted by Garibaldi towards Mr. Wilkinson by a written instrument, it would remain to be seen how far, if at all, this was condoned or modified by the demand of the 12th of April, and the concurrence of Mr. Wilkinson in presenting this demand to the Minister of Public Works. This demand, however "favourably received," seems never to have been formally accepted. The Italian view, no doubt, would be that Mr. Wilkinson had incurred his own risk, in a sort of quasi-partnership with the Italian would-be *concessionnaires*, and that the whole thing fell to the ground together. This upshot, unless every

nail were clinched as soon as it was driven by an able Italian counsel, would certainly have occurred on the tempting though imaginary offer of a quarter of a million of francs.

All the subsequent steps, down to the characteristically just and considerate promise of a transfer to a company which should make a large outlay in the vague hope of a concession, are so exactly according to the regular routine in such matters, that all we can suggest, as at present advised, is that Mr. Wilkinson should publish the fullest details of the whole affair. If he, like other men in his profession whom we could name, is to be nailed to the door of the barn, let us at least hope that the operation may be effective, by way of scarecrow, to keep other English engineers and capitalists from following the same path,—a path like that to the lions' den,—in which all the footsteps point in the same direction.

Whether we look to the English or the Italian Parliament, to sanitary and river protection Acts, or to concessions for reclamations, ports, and harbours, we see everywhere the same indications. We are looking in the wrong direction for the employment of our money. We are in such a hurry to become rich, that we remain, or worse, become, poor. Our own island offers a fairer field for the remunerative outlay of capital than is to be found, as a rule, in any other part of the world. To drain, irrigate, plant, cultivate, build, at home, promises a sound, certain, and ample return,—wisdom directing the application. If we venture our sovereigns abroad, it will probably make little difference, a few years hence, whether it is to make a ship canal in America or a port in the vicinity of the Pontine Marshes.

THE FURNITURE RENAISSANCE IN FRANCE.

For several years, a revolution in public taste,—to which, in Paris, the above rather pompous title is given,—has been taking place among the wealthier classes in France, against the flimsy, showy, tricky style of furniture so long characteristic of that country. But it is only of late that the reaction has reached a high and wide development. Most persons are familiar with the ordinary components in the arrangements, for comfort and decoration, of a Parisian drawing-room; a profusion of gilt and mirrors; of richly-coloured damask or velvet; of elegant tables, chairs, and trifles, very choice of aspect from the upholsterer's point of view, by no means cheap, and better calculated to look than to wear well. At several successive Exhibitions, including that of the present season, attempts have been made to introduce a better fashion, and, without abandoning splendour, to combine it with solidity. It was as a protest, indeed, against the modern or sham method, that a class of purchasers arose who refused admission into their houses, whenever possible, to nineteenth-century fabrications, and who ransacked the remotest quarters for specimens of the older and more substantial manufactures. There was, perhaps, a touch of pedantry added to the dislike of that which is popularly called the gim-crack order of things, with a little admixture, possibly, of affectation; yet certain it is that, in France especially, anything having about it the odour of an ancient château was competed for by greedy buyers in the great bric-a-brac market,—if that term may be extended so far. The wonderful progress in the art and mystery of cabinet-making, in the manipulation of wood, in the production of thin veneer, in staining and imitation of every kind, resulting in work which would not withstand the slightest shock, or the least change of temperature from wet to dry, or the contrary, was carried in fact too far, and French furniture became nothing less than a byword for meretriciousness and, comparatively speaking, worthlessness. Of course, as in all such cases, the new idea speedily grew into exaggeration, and equally, of course, it called forth a supply as spurious as are thousands of relics in Italy, and thousands of antiquities in Egypt. The genuine treasures of past centuries were naturally soon exhausted; and when all had been bought that could be repaired, patched, vamped, and strengthened by invisible braces, the shops were gradually filled with another description of bargains for the amateur; objects looking older than the oldest that had really once belonged to the family castles of Provence or Tourraine; huge chests and cabinets drilled with artificial worm-holes, covered with iron clamps of Mediæval appearance, requiring a good deal of labour to rub off the rust of time; and chimney pieces browned by the wood-smoke of ages ago. The fraud may not have been a particularly heinous one; but it was felt by the higher class of manufacturers that it might be practicable to supersede the "red-and-gilt" style, as it was contemptuously called, by one which, while it restored the old characteristics of French furniture, should not pretend to be based upon any except new materials. This gave rise to the experiment of working "in the solid." Not that it had not been practised, to a considerable extent, previously, in France as elsewhere; but that it had left the general fashion untouched, though, as we have said, a taste for the antique had spread so far that, according to a Parisian satirist, even the grandest salon was regarded as incomplete without, at least, one stool, with twisted legs, that dated from the Middle Ages. Artists, no less than mechanics, were required to effect the innovation, and they were found before long, for the genius of the French workman is exceedingly plastic. At starting, on all hands, marvellous mistakes were made, and the promoters of the Furniture Renaissance fell into the error of imagining that nothing could be an improvement on the gew-gaw mode unless it were sternly Mediæval, while, on the other hand, an eclecticism sprang up founded upon equally ridiculous principles. There is one well-known example of this in a large and brilliant villa, thoroughly Italian in its architecture, on the outskirts of the capital. The proprietor, who designed the building, externally and internally, prescribed, also, the way in which it should be furnished. The ante-chamber, the dining and smoking rooms, and the library,—all spacious apartments,—were assigned to the age of Louis XIII.; the drawing-room, in white and gold, to that of Louis XIV.; the bed-room, profuse in carving and gilding, to that, again, of Louis XIII., or the commencement of Louis XV.; and the boudoir to that of Louis XVI., with three other chambers, one Chinese, another Persian, and a third purely fantastic. As a sarcasm upon this, a neighbour boldly ordered his abode to be furnished, from roof to basement, in "the style of Napoleon III." It does not follow, however, that a design was tasteful because it was in vogue under any "Louis." A notorious dance of our own time derived its name from an arm-chair, with hideous sprawling legs, called a Can-can.

But these were not the most important points which related to the design and construction of furniture, and led to the education of a large class of Parisian artisans. A few enterprising firms took the lead, collecting models, drawings, manuals, and so forth, chiefly directed against the use of veneer, and to the revival of a purer taste. It is interesting to visit a workshop where, on a large scale, the process of manufacturing from the solid wood is carried on. Every incident in the history of the tree, from the felling in the forest, is illustrated here, or in the adjoining yards; the stripping off the bark, the rough-hewing of the trunk, the sawing into planks or squares, the drying and seasoning. These last are, it is needless to say, highly important details, the French system differing somewhat, however, from the English. Their technical phrase is "mummifying" the timber. Occasionally they employ heat and the smoke of burnt sawdust, when the necessary result is obtained in about two months; but the cases in which this method is practised are special: the approved rule is for wood to be converted into furniture, to be stacked, with ventilating intervals, in the open air, for fifteen years, which, however, keeps stagnant an amount of capital so large that few manufacturers can afford it. He would be a fortunate inventor, in France, who should teach its great furniture firms how to hasten the process without, as they express it, cooking the wood, and decomposing its fibre. For it is this that renders the best qualities of make so costly. Indeed, not many houses can allow their money to lie thus at rest. It is like the planting of trees, and waiting for their growth. In one yard, a little beyond the old barriers, may be seen stack upon stack, belonging to a single firm, of oak, walnut, pear, beech, elm, alder, maple, linden, and willow, worth from 800*l.* to 1,000*l.* each, continually dwindling, and as continually replenished. Each log, or plank, as its turn comes, is piled in a covered shed, with palisaded sides, through which a current of air constantly flows, having been previously, however trimmed by the axe, to get rid of any decayed parts, and, in company with the commoner sorts, are mahogany, amaranth, sandal, and cedar wood. Here they remain until sent for. A customer has come with an order: he selects, from the books of design, one which suits him; sometimes it is the architect himself who undertakes this responsibility. A plan on a small scale is sketched, and submitted; if approved, one of the full size is drawn, and given to the joiner, who goes to the yard with an order for the wood he requires. Then, through sheets of cardboard, each marked in pencil as a part of the pattern, and stretched on the planks, panels, or blocks, fine holes are pierced, indicating exactly where the saw should pass, and much ingenuity is shown in economising material. It is unnecessary to follow out the process in detail. The saw does its work, and the several pieces are taken to the joiner, who finishes them up to a certain point, whether by hand or by machinery; the latter, in some of the Parisian factories, being surprisingly effective and simple. But a minute description of it would go beyond our purpose. Every fragment is now ready, so far as the joiner is, at present, concerned with it, and the whole is passed over to the chief, or foreman, of the carvers, or "sculptors," as the Parisians prefer to call themselves. There are, in some establishments, more than 200 of these employed; but they do not all work in the shop. Many take their task home, to complete, single-handed, or with the aid of assistants. They come to "the house," take the parts assigned to them, with the original designs, and bring them back when finished. Still, the interior of a large workshop presents a scene sufficiently animated, and even grotesque. You see an enormous block, which a "sculptor" is converting, by means of a chisel, into a trophy of figures and foliage. It is not far advanced, but is evidently intended to be a chimney-piece, on the most massive scale. That which we particularly noticed was a "commission" for the painter, Gerome. The wood is treated precisely as though it were marble, and behind it, a little raised, is the model, in plaster, from which the artist works. The whole is in a single, solid piece. The walls are covered with similar models, in plaster or terra-cotta, of the human figure, animals, flowers, and ornaments; while, hanging from the roof-beams are masks, bas-reliefs, and squares of cardboard enriched with elaborate drawings. Against a partition dividing the joiners from the carvers, lean statues of nymphs, goddesses, and heroes, often of full size, and the half of an oaken Venus swings like a figure-head from between two beams. Two long tables run between the partition and the windows, covered with tools and pieces of wood, of various dimensions and in various stages of manipulation, which are passed from hand to hand as they progress. Thus, one may carve a face, and pass it on to have an animal, or a garland, or some ornament combined with it, and, of course, a greater nicety is required when the sculpture is to remain in its simplicity, without being painted or gilded; but one principle is invariable: if a panel requires, so to speak, a foundation and a cornice, all three must be wrought from the same piece of wood; there must be no nailing, no glueing, no veneering. The carvings finished, they are returned to the joiners, who put them together experimentally, with glue; for this, as we have said, is forbidden, as well as pegs, in the completed work, which ought to fit into itself, everywhere. That, at any rate, is the theory of this Parisian Renaissance. They next "try on," to use a tailor's term, the ironwork, manufactured often by the same firm, — locks, hinges, screws, and castors. The piece of furniture is then finally built up, and lowered into another shop, to receive the last touches for beautifying and preserving it. And when this has been done, the contrast is evident, to the most unpractised eye, between, for example, the deep, glossy, smooth-surfaced black, dense as ebony, of some furniture displayed at recent Exhibitions, and that of another quality which has been painted black and then varnished; but the process required by the former, calling in the services of powdered charcoal, logwood, dissolved in oil, sulphate of iron and gall-nut, linseed, and essence of turpentine, and endless brushings with dog's grass, and rubbings with flannel, is, of course an expensive one, though the result is equivalent; a surface indelibly tinted, and a substance unassailable by insects. These, at all events, are the pretensions put forward in the *ateliers* of the new fashions in French furniture. Oak and walnut, it need hardly be said, are variously treated, while other woods, finely veined by Nature, receive only the treatment necessary for

their preservation. Not, however, to be betrayed into lingering among these minutiæ, interesting though they are, attention may be pointed to the fact how extensively this comparatively new style is to be met with in the better shops, and, therefore, in the better houses, of Paris; whether in the shape of chests (the French always had an almost Venetian fondness for them, and put them everywhere possible), tables, chairs, bedsteads, panellings, wainscot, doors, and cornices, to the dire defeat of gilding, which peels off, of that ghastly white paint, which turns to a ghastlier yellow, and that poor pretence of richness which deceives the eye in French hotels and English taverns. And with this, a gradual change is manifesting itself in another,—and it will, perhaps, be thought a more questionable respect,—the more general introduction of carpets, though, in what has been said, no idea existed of instituting any comparison between English and French furniture, or French and English furniture custom, if the phrase be permitted. The object was to point out a distinct and remarkable growth of taste, in Paris especially, and a wide, though far from general, repudiation of that style, which, a few years since, was almost universal, and for which, on account of its very frivolity, and its shallow ostentation, the French claimed the palm of elegance,—a style made up of cheap velvet, cheap gilt, and bad cabinet-work. But it may be worth repeating, that a very superior order of art-mechanics has been created by this movement of fashion and taste in France. Formerly, they would, or a large proportion of them, have been sought for from abroad, from Italy, or from the Low Countries. As it is, they have sprung almost exclusively from the industrial ranks of France herself. Nor are their numbers inconsiderable. One Parisian establishment alone employs upwards of six hundred, in the several degrees, at wages varying from 5f. to 25f., or 1l. a day; and to indicate the rapid advance of this Renaissance (the term in its special application here is not our own), it is necessary to say no more than that the manufacturers complain of a pressure upon their resources which interferes with the development of artistic progress in the design and fabrication of furniture.

FRENCH CRITICISM ON THE ART OF *PUNCH*.

In noticing one or two recent numbers of the serial entitled *L'Art*, we mentioned that one of them (No. 30) contained an article on *Punch*, under the head of "*La Caricature Anglaise contemporaine*." It is interesting, in more ways than one, to know how the designs of our leading satirical paper strike a foreign art-critic. What M. Champier, the author of the article in question, first remarks on is the good-humour of the caricature in *Punch*, as compared with most foreign work of the same class, and with English caricature of a past generation. In the latter, everything that could give grotesque and almost brutal force to the caricature was unsparingly employed. The artists of the present day, among whom are specially mentioned Messrs. Keene, Sambourne, and Du Maurier, follow what the critic thinks a special tendency in England to emphasise purity of form at the expense of *gaieté*." M. du Maurier, above all, "in his scenes of child-life, of such pure and graceful drawing, seems bent on withdrawing his art from the freedom of caricature to enclose it within the stricter limits of realistic representation, insomuch as his sketches are not so much satires as charming *genre* pictures." Looking to one or two of the artists who have passed away, M. Champier compares Cruikshank with Leech, and observes that the latter carried on the talent of the former with another quality added, viz., the power of beauty, which had hardly before his time been found co-existent with that of satire or caricature. In the early illustrations to Dickens by "Phiz" (which cognomen, with true French exactitude in such matters, is given as *Phy*), "feminine beauty is as rare as in the works of Hogarth" (is it so rare in these latter?); whereas Leech's young women have genuine charm.

M. Du Maurier, however, occupies the bulk of the article and the illustrations, as in fact we might expect. A few facts are recapitulated as to the life of "Georges Louis Palmella Busson Du Maurier," who is a native of Paris and was educated as a mining engineer, but gave up his profession for the study of drawing, and became in 1857 a pupil of Gleyre, and after some travels in Belgium and Germany for further study, settled (fortunately for us) in England. He ought to be considered, says the French critic, "as the most authorised representative of the contemporary caricature of manners in England. Nothing can surpass the charm of some of his infantine scenes. We recognise the influence of the celebrated painter from whom he received lessons, and one comprehends the precision of his efforts in learning what minute care the artist bestows upon them. In a letter which we received from him lately, he says, 'I design my figures with as much care, and look out for models as conscientiously, as if I were going to make an oil painting.'" This we can readily credit, though in regard to the infantine scenes we may say that Leech has done things which M. Du Maurier has never equalled; and the same in regard to ladies, who have far more variety of style and character in Leech's hands than the type, elegant and graceful as it is, to which M. Du Maurier almost entirely confines himself. The succeeding remark of M. Champier is worth attention:—

"We cannot but say, however, that this is not caricature. The artist will object, perhaps, that he is condemned to a good deal of reserve by the very journal to which he is a contributor, and which, having the *entrée* of all the family circles, must be such as can be turned over without danger by young girls. We should reply that the field of caricature is vast, and that it cannot be traversed by an artist (whatever his talent) who confines himself to representing small and rebellious children, ladies of a refined beauty, with low foreheads, necks like a tower, long and delicate arms, garments of subtle shades which surround their persons with glancing reflections, and in the languid grace of which one discovers, as an English critic lately observed, a taste of the old Chinese and Japanese affectation."

We should have said the *new* Japanese affectation; but the criticism is a true one; and though we should be very sorry to see our friend *Punch* parting with the unblemished purity of his manners, and rendering himself a questionable guest in any English family, the fact of the intellectual limit imposed on caricature by the influences named can hardly be doubted. In England, in fact, literature and art are fenced in at all points by certain canons of respectability and propriety. The result is an undoubted gain to the majority, but it involves some loss to a rather important minority, including the artists themselves. We are quite ready, however, to regard the moral gain as more than balancing the artistic loss; and may point out that French critics of greater calibre (M. Taine, for example) have referred to the purity and good manners of English caricature as a notable point of superiority over that of their own country.

The designs by Du Maurier selected for republication in the French serial include a shop scene, a schoolroom scene (the definition of "duty"), and two *scènes de salon*, one being the celebrated episode of "The Misses Bilderbogey," which name again the French writer, with characteristic error, metamorphoses into "Rilderbock," thereby, of course, losing the significance of the semi-German compound, in its indication of the æsthetic character of the young ladies. One of Mr. Sambourne's most masterly costume caricatures, the half-length of a girl with a "coiffure à la Marlborough," forms another illustration, but only gives one side of that artist's remarkable and admirable talent.

The article, in spite of its general title, is specially directed to the caricature of *manners*, not to political satire, which we presume is the reason why the name of Tenniel is passed over; the omission, except on such a supposition, would, of course, be simply absurd.

A HITCH IN THE LAMBETH NEW INFIRMARY CONTRACT.

The contract for the new infirmary at Lambeth is causing some difficulties and misunderstanding. We stated in last week's *Builder* that pending inquiries into the financial position of Messrs. Tarrant & Son, whose tender was the lowest, the Guardians had postponed their decision as to the acceptance of any particular tender. At the meeting of the Board last week the special committee appointed to investigate the capability of Messrs. Tarrant & Son to carry out their tender, recommended that the tender should be accepted; and on Mr. Tarrant being called in he stated that he had read the conditions of the contract. Subsequently, in answer to a question, he said he was not prepared to execute the work in eighteen months, as stipulated in the articles of contract, which he had not before had an opportunity of reading. It was then represented to him that if the building were not finished within that period the penalties would be rigorously enforced, whereupon Mr. Tarrant stated that in that case he would withdraw his tender, at the same time stating that he could complete the building in two years. After he had left the board-room, a discussion took place on the subject, when the chairman observed that eighteen months was a very short time for the erection of such a building. On the other hand, Mr. Taylor, one of the members, stated that the tenders had been invited upon the understanding that the work should be executed within eighteen months. If the time were extended every one of the firms who tendered ought to be apprised of the fact, inasmuch as if some of them were aware that a longer time would be allowed they might be able to reduce the amounts of their tenders. Having determined upon the question of time they ought not now to reconsider it. Mr. Higgs said he had been given to understand that not one of the firms who tendered was aware of the time in which the works were required to be finished, but Mr. Fowler, the architect, said that was not so. It was then decided to inquire into the capability of Mr. Taylor, who had sent in the next lowest tender, to execute the work. It may be stated that there is only a difference of 400*l.* in the tenders of Mr. Tarrant and Mr. Taylor, the former being 53,200*l.*, whilst that of the latter is 53,600*l.*

SALE OF FAIRLAWN COTTAGE, KEW-GREEN.

Fairlawn, a well-known historical residence at Kew, was sold by auction last week, at the Mart, by Messrs. Fuller & Fuller. Fairlawn, with the grounds attached to it, immediately adjoins the residence of H.R.H. the Duchess of Cambridge, on the south-east side, the Tichborne and Doughty estates being on the north-west. The conditions included a statement to the effect that one portion of the property was vested in the vendor "under an assignment from the trustees of the will of the late Roger Charles Tichborne, esq., deceased, for the residue of a term of 1,000 years," and the condition added that "the purchaser shall assume that the said Roger Charles Tichborne died on or about the 26th of April, 1852, and that the said term passed by his will, as part of the Doughty estates, thereby devised and bequeathed for sale, and that the same is free from any of the incumbrances and powers of charging in the said will mentioned." The property was put up at 800*l.*, and after some spirited bidding was sold for 1,330*l.*

ENLARGEMENT OF THE HASTINGS INFIRMARY.

The Governors of the East Sussex, Hastings, and St. Leonard's Infirmary having decided upon a material enlargement of the building, or erecting a new one, resolved upon consulting Captain Galton as to the capability of the present structure for enlargement, or the erection of a new building on a new site. After inspecting the building and other sites, Captain Galton has just reported to the Governors, in which report he speaks favourably of the present site on the sea-shore, well sheltered from the north, and with a nearly due south aspect. He had inspected two other suggested sites, but they were open to objection from their exposure to northern winds, and also cut off by houses in front from the view of the sea, which, he states, together with its sheltered position, is the striking characteristic of the present site.

After suggesting several structural alterations in the internal arrangements of the existing building, with the view of improving its sanitary condition, the introduction of ventilating fireplaces, and the cutting off of the hospital drains from the main town drains by efficient traps, he recommends the addition of another story to the building, and the erection of a new wing, to provide two large additional wards, and a small ward, which together would give seventy beds, as against thirty-two, which is the present amount of accommodation. The expense of the new wing cannot, he states, be assumed at less

than 3,800*l*. The erection of the extra story would not be less than 3,000*l*., whilst the minor alterations suggested would amount to between 300*l*. and 400*l*., including the reconstruction of the dead-house, and the re-arrangement of the basement, which would be necessary to provide the required kitchen accommodation. The total estimated expense of the enlargement and alterations would thus be about 7,200*l*.

HOUSES IN THE PHILIPPINE ISLANDS.

The inhabitants of the Philippine Group are, as a rule, bad masons, and but indifferent carpenters. The houses of the better class are fairly constructed, but the huts of the masses are much the same as those of the Malays of Borneo and other parts of the Indian Archipelago. They have plenty of timber, enormous forests being still untouched in most of the islands, and an abundance of cheap Coolie labour to render the cost of transport comparatively light. Apart from the bamboo, one of the most precious productions of the country, from its adaptability to the wants of the Indians, they use to a large extent molave, a wood of extraordinary durability against damp and wet, even when enclosed in mud and masonry. It is very hard, of a short, close grain, of a pale yellow colour, and susceptible of a high polish. It is much prized for piles, and for columns or piers, forming supports to houses. They have a beautiful hard yellow wood, spotted with large blotches of black, which makes very handsome furniture. It is called camagon, some specimens of which resemble the walnut; and another kind also well adapted for furniture, panelling, &c.,—a red wood, with close grain and visible pores. Some varieties have been confounded with mahogany, from the appearance of the veins.

But the bamboo is the material used by the great masses of the people, and with it they construct scaffolding, houses, bridges, cables, tools, and weapons. In the pueblos or villages which form the suburbs of Manilla, the native dwelling is raised from the ground on wooden supports, and is reached by a ladder. Bamboos form the scaffolding, floors, and principal woodwork, the walls and roof being clothed with the leaves of the Nipa palm. A mat, a table, a rude chair or two, some pots and crockery, pictures of saints, and some trifling utensils, comprise the domestic belongings. Almost every house has a garden, with its bamboos, plaintains, and cocoa-nut trees, and some with a greater variety of fruit. Each pueblo has its *gallera*, or amphitheatre, for cock-fights; for this is the favourite amusement, nay, the delight and business, of the male population. The galleras are large buildings constructed of palm-trunks, bamboo, and nipa-leaves, consisting of a hall lighted from windows in the roof. In the centre is a stage raised about 5 ft. high, surrounded by bamboo galleries for the convenience of spectators. From these places the Government draws a considerable revenue, such is the craze for cock-fighting among the Philippinos. Indeed, it is carried so far, that while a man's children are crawling about his house and garden, and the women hard at work, he will most probably be seen lounging about with his game cock under his arm, or meditating on the prowess of the *gallo* in attendance on the *gallinas*.

The better class of houses in Manilla are substantially built of stone, brick, and tiles. They are usually rectangular, having a court in the centre, round which are shops, warehouses, stables, and other offices, the families occupying the first floor. Towards the street there is a corridor, which communicates with the various apartments, and generally a gallery in the interior looking into the court. The rooms have all sliding windows or frames, fitted with *concha* or plates of semi-transparent oysters, which admit an imperfect light, but are impervious to the sunbeams. A large cistern in the court holds the water which is conveyed from the roofs in the rainy season, and the platform of the cistern is generally covered with jars of flowering plants or fruits. The first and only floor is built on piles, as the fear of earthquakes prevents the erection of elevated houses. The roof is ordinarily of red tiles.

Though there is some variety in the houses of the natives in the interior, according to their opulence, they preserve a common character, having bamboo floors, nipa roofs, and wooden pillars to support them. Either supported by a post, or projecting from a window of the house, is usually to be seen a little bamboo frame, containing a supply of food or fruit from the Indian garden which invariably surrounds the dwelling. Any passing traveller may help himself, paying nothing if he be poor, but otherwise leaving such compensation as he may deem proper. This surely is a very pleasant custom.

Although naturally an indolent people, the Philippinos might be brought to a more energetic condition were the Government to perform no more than its own natural functions. As it is, it occupies the anomalous position of merchant and ruler. The commercial system is, in consequence, confined within official channels, and the great agricultural resources of the islands are but partially being developed. The tobacco leaf is one of the principal productions in these regions. The provisions for its culture are very arbitrary; in some provinces the people are permitted, and in others prohibited, to engage in its cultivation. The leaf must be furnished to the Government at rates which are anything but remunerative to the producer, and finally it is manufactured and sold by the authorities. When it is said that the peasant is often compelled to borrow money at exorbitant rates to enable him to support his family until such time as he becomes reimbursed for the value of the tobacco supplied by him to the Government, it must be admitted that the condition of the growers is by no means enviable. Nothing, however, in the shape of land-tax presses on the shoulders of the inhabitants. Permission is only granted to the peasant to hold land during the time he chooses to cultivate it. Should he neglect cultivation for the space of two years, it is liable to be forfeited to the Government,—a regulation which has the effect of preventing large tracts of country from falling uselessly into few hands.

The price of land in the vicinity of Manilla and in some of the more fertile parts of Bulacàn is valued at 140 dollars the acre. In Pangasinan its average value is about 30 dollars; in Negros it varies from 2 dollars to 16 dollars the acre; but where population is scanty, as in parts of New Ecsija, it is to be purchased at an almost nominal rate.

The price of skilled labour varies from 37½ cents to 62½ cents a day for carpenters and masons. Coolie labour costs 4 dollars per month and maintenance. Shipwrights working in the river receive 50 cents a day; if working in the bay 1 dollar.

Various stuffs, called pina, sinamais, and nipis are manufactured in the islands of Panay and Luzon. Pina is made from the fibre of the pineapple tree, and when worked with silk is a very elegant commodity. But many of the native manufactures being anything but durable, and, moreover, very expensive, they are becoming rapidly superseded by European goods. Hemp cordage is wrought in the provinces of Albay, Camarines, and Manilla; and great dexterity is displayed in the making of mats, baskets, hats, cigar-cases, &c.

NEW LIBERAL CLUB IN WARRINGTON.

The necessities of an increasing number of members of the Liberal Club having for some time past outgrown the original provision made, several of the leading men connected with the party secured the residence of Mr. Rylands in Bewsey-street. Messrs. Pierpoint, Hughes, & Pierpoint, were entrusted with the preparation of plans, and the contract for carrying out the work was given to Messrs. Ostle & Taylor, builders, Warrington. A new billiard-room has been erected, 69 ft. by 35 ft., in which five billiard-tables will be fitted up. A platform, 4 ft. wide and 1 ft. above the level of the floor, runs round the room, and will afford ample accommodation. The room is lighted by a continuous skylight on each side of roof, whilst the artificial lighting will be provided for by means of a gas sunlight over each table, and attached to the ventilators in the roof. Underneath the floor are three compartments. The centre part will form a heating chamber, and the warm air from the hot-water pipes will be diffused throughout the billiard-room by means of perforated grids, one being placed under each billiard-table. The two side chambers will be supplied with cold air, and by means of movable ventilators in the floor the temperature of the room can be regulated with nicety. The walls are stuccoed and finished so as to prevent the appearance of stonework. An adjoining room, 24 ft. by 20 ft., will also be fitted up as a billiard-room, and will be provided, as well as the larger room, with lavatories and closets.

The reading-room, which adjoins the entrance-hall, is 24 ft. by 18 ft. It was used as a drawing-room by the late occupant, and some historical pictures are painted on the walls. A refreshment-room, 24 ft. by 11 ft., also occupies the ground floor, immediately adjoining the kitchen. The principal room on the first story will be 27 ft. by 20 ft., and it is intended to be used as a conversation-room.

The structural alterations and additions, and the fitting up of the establishment, will cost something like 1,500*l*.

FRENCH ASSOCIATION FOR THE ADVANCEMENT OF THE SCIENCES.

This Association, the plan of which is a close imitation of the British Association for Science, has been holding its congress at *Nantes*, and a number of valuable papers have been read. In the programme of the first day appears the intimation, "Punch will be offered to the members of the congress at the Hôtel de Ville," a precedent for which does not exist in the British arrangements. We take no exception, however, to it, being ourselves of a rejoicing turn of mind, and well disposed towards all friendly junketings. The punch was given in the evening in the *garden* of the Hôtel-de-Ville, which was brilliantly illuminated with lamps and Chinese lanterns, and the statues were brought into relief by coloured fires. The punch (hot) was followed by a speech from the mayor, and then came champagne.

The theatre was decorated tastily for the president's address, and brilliantly attended.

On Saturday, the 21st, one of our countrymen, Dr. Phené, delivered an address on the habits of the cave-men of Western Europe, in the Anthropological Section of the Association.

The chief point of the lecture was to show, from a similarity of *crania* and works, that the customs of the people of the neolithic age were the same both among the Dolicho-Cephali, or long-skulled people, and the Brachy-Cephali, or broad-skulled people.

The discoveries of Dr. Broca, Dr. Prunières, and others, were quoted in the presence of those *savants*, and compared with cave explorations made in France and Spain by the lecturer.

Admiral Ommanney, in the discussion on the paper, gave some detailed particulars of the discoveries in the Genista caves at Gibraltar, at some of the explorations in which he had been present with Professor Busk.

Dr. Jackson, F.R.A.S., read a paper on "Falling Stars," and exhibited the rare maps, published by the British Association on Astral Science.

THE NEW RESERVOIR FOR THE LIVERPOOL WATERWORKS, AT RIVINGTON.

Although the Corporation of Liverpool have resolved upon the construction of new waterworks at Bleasdale, about fifty miles from the town, in accordance with the report and designs of Mr. Bateman, C.E., they are at the same time not failing to increase the sources of supply at their existing works at Rivington, which are situated about twenty miles from the borough, and a large new reservoir in the neighbourhood, 65 acres in extent, which has been in course of construction for the last seven years, has just been completed. This new source of supply, which is called the Yarrow Reservoir, is situated not far from the present Rivington Reservoirs, and forms an almost natural basin of great capacity. It was designed to store the supplies from the converging branches of the river Yarrow, which have hitherto chiefly run to waste. The engineering character of the works have been of a heavy and formidable nature. At the lower end an embankment was necessary, and in the construction of this part of the work there have been much difficulty and a great expense incurred. In the first instance, a depth of about 150 ft. had to be trenched, in order to find a good foundation. The height of the embankment itself is 110 ft., which will give some idea of the stupendous nature of the works. The greatest depth of the reservoir is 93 ft., and its estimated capacity of supply 1,000,000 gallons per diem, or 7,000,000 gallons per week. Its construction has involved an expenditure of 200,000*l*.

It was originally suggested by Mr. Duncan, C.E., the late water engineer to the Corporation, and has been carried out by Mr. Jackson, C.E., with Mr. Robert Martin as resident engineer.

CONVENTION OF THE AMERICAN INSTITUTE OF ARCHITECTS.

The annual address at the Eighth Annual Convention of the American Institute of Architects was read by Mr. H. A. Sims. In the course of it he said,—

Before a desire for good art can be expected among an essentially utilitarian people, some enlightenment must take place, some enthusiasm must be awakened. With either of these incentives a desire for good and real architecture is sure to follow. There is an old Florentine proverb, "That you might as well physic the dead as attempt to instruct the old." The hope for more appreciation of our art in the future, I take it, is rather to be looked for from such means as have been adopted at Cornell University in this country, and at Oxford and Cambridge Universities in England—engrafting on to schemes of general education for the young a certain amount of art teaching. Very little is to be hoped for from instructing those who are old, set in their opinions, and established in a total disregard of art matters.

The journal which we propose shortly to commence will be our first real step towards addressing the public. Will it be a success? The question can only be answered by us architects. I make no doubt, if our serial is conducted in the proper spirit, and contributed to by the best architects throughout the continent (I say this advisedly, for this Institute is intended to embrace the architects of the continent, and the journal issued under its auspices should be supported by all)—if it is so supported and so conducted it will be a success. It must effect much good in disseminating orthodox ideas on architecture. The full and proper appreciation in this continent of our art, or, indeed, of either of the other fine arts, is as yet very far off.

The majority of us are of Anglo-Saxon lineage, and our race has always been more characterised by an appreciation of the practical, of the utilitarian, and of the useful, than of the beautiful. A railway, a bridge, or a steam-engine, is much more admired and appreciated by the generality of our race, than the grandest cathedral would be. It is so in Great Britain, and it is so here. As a race we have no natural and instinctive love for the beautiful. I think it was Goethe who made a remark to the effect that we should foster a care for the beautiful, for the useful would take care of itself. Goethe addressed his idea to his own countrymen. It might have been applicable to them, but I am very sure that it would have been more applicable to our people of the Anglo-Saxon race than to Germans.

I once knew a New England millwright living in a small city in Canada. He had amassed a considerable fortune, and was having a large house erected for himself on one of the principal streets. His neighbours remonstrated with him upon the unsightly appearance of the building. His reply was:—"That he intended to live inside the house, not outside; the inside would suit him very well, and he did not care a button who liked the outside." I feel sure that man may be accepted as a fair average of our countrymen as they are found outside the larger cities, and of all of them who are uninfluenced by fashion or the desire for advancement in social position.

The first idea with the practical American is, that his building shall be well and substantially constructed; secondly, that it shall be conveniently arranged for his purposes. The appearance,—or, in other words, the architecture,—he cares nothing about. The high moral doctrine enunciated by Mr. Garbett, the English architectural writer, that a man has no right to shut out a portion of the light of heaven from his fellow-men, or spoil a landscape by erecting a building, unless he does all in his power to compensate for that deprivation by rendering the building sightly, if not beautiful.

I fear that Mr. Garbett's idea would hardly find favour with the majority of our countrymen, and I doubt if very many of his own countrymen would be willing to adopt his views, although no doubt both Englishmen and Americans will admit the beauty of the idea; but will say it is not one for practical business men, but rather a notion for young ladies to expatiate upon. Yet even though the great Anglo-Saxon race, as a race, does not sufficiently appreciate the beautiful, as was done by several of the races of ancient times, and by the Latin races of our own day; yet I think the fact will be conceded that the Anglo-Saxon race and the English language are the race and the language of the commerce of our day. Yet the fact must be admitted that architecture in all past ages has always marked the progress of civilisation. The rude hut or tent of the savage marks plainly the barbarity of his life. The ugly yet ingeniously constructed buildings of the Chinese and other Mongolian races mark the step in advance of the savage, as their structures are better than his hut.

In all past ages, the style of art exhibited in the architecture of a nation, or a race, was, to a great extent, an index of the culture, civilisation, and enlightenment attained. Greece produced her finest buildings when she was in the meridian of her greatness. Europe, in the thirteenth and fourteenth centuries, when the best mediæval work was produced, not only held the power of the world, but all its learning. Mr. Taine says,—"The more we contemplate architectural works, the more do we find them adapted to express the prevailing spirit of an epoch."

In a new country like ours, which must be opened and rendered habitable before it is embellished, our brethren the engineers have rather shorn us of some of our importance, and are doing what architects were called upon to do, before the division took place in our profession. Giotto, Bramante, Brunelleschi, Michelangelo, Palladio, and all other great architects of the Italian Renaissance, executed engineering as well as architectural works. They erected bridges and fortifications, as well as palaces, churches, and theatres, more purely in our line. Architects, therefore, as those who add grace and proportion to utilitarian structures, as well as engineers, have played and are playing a very important part in the history of civilisation. It is they who erect the milestones in the history of the world's advancement. I esteem that the part of the architect is of a higher order than that of our brethren the engineers.

The public does not appreciate architects. Our own people and the British people are nations of shop-keepers, and as a race, we appreciate only what gives back in money a fair return for the money invested. Our people, as a people, really esteem architecture only so far as it pays. This is a hard condition to exact from art,—a condition in which it cannot be expected to flourish in at all a healthy way. But I am sure that we can see the dawn of a brighter day, a day in which art will be loved and appreciated for its own sake only.

Various reports were read. In the *Report of the New York Chapter* it was said,—"Without entering into the detail of the difficulties encountered by the Committee on Examinations in the way of securing anything towards its advanced aims,—difficulties arising from the low state of public education, as regards the æsthetical, scientific, and sanitarian requirements of good building art, and from the conflicts of political and municipal conditions,—nowhere more potent or more destructive than in our locality,—it may be sufficient to say here that, with the help of the Building Department of the City, and of the Board of Fire Underwriters, an important step in the right direction has been gained. At the very close of the last session of the State Legislature, an amendment to the Building Law was passed, subject to the Governor's signature, which was afterwards added, providing for the formation of a Board of Examiners, consisting of the Chief of the Building Department, a member of the Committee on Examinations of this Chapter, one of the ex-Presidents of the New York Board of Fire Underwriters, and two members of the Mechanics' Exchange, one a master-mason and the other a master-carpenter. The power entrusted to this Board is the discretionary one to modify or vary the different provisions of the Building Act to meet the requirements of special cases, where the same do not conflict with the public welfare,—a power formerly vested in the late Chief of the Building Department alone, and which, as will readily be appreciated by all who have been brought in contact with the routine of the building trade, might with uncontrolled facility be wielded to an enormous extent in the interest of the individual and against that of the public."

The *Boston Chapter* showed, in their report, that, by interference, they had obtained satisfactory conditions for a competition in that city.

The *Albany Chapter* gave a report from their Committee on Education. The committee express regret that students will not remain long enough in the College of Architecture of the Cornell University at Ithaca. Speaking of the ordinary course pursued in offices, the report says:—"The office-student is too apt to liken his case to theirs, and to go along, month after month, trusting that his six or eight hours a day of drawing and tracing will presently have brought him where he needs to be. He does not consider that what is for his companions a permanent condition of life, which they can afford to take quietly, is for him a temporary relation, full of opportunies, but opportunities the full fruit of which is only to be gathered by the diligent worker, avaricious of work. If instead of knocking off work when the office closes for the day, and devoting his leisure time and thought to other things, the office-student would consider that his own day's work, the work that will tell for himself, is just beginning, and sedulously give his evenings to the study and examination of just the things that he is occupied about by day, he will find that a year of office-life will profit him more than three years will profit another. The resources of the office are naturally open to him; that they shall be, should be a part of his agreement on entering it. By making himself thoroughly familiar with what they contain, and throwing in the light to be obtained from the books and from the practical papers constantly appearing in the professional journals, he could inform his mind and ripen his judgment to an extent that would soon surprise both himself and his employer. And these studies would immediately make themselves felt during the day. In the first place, his rapidly increasing powers would put him along rapidly in the path of advancement, and more responsible work would be entrusted to his care. In fact, here, as heretofore, the more he knew the more he would be able to learn. Secondly, he would be in a position to profit to the utmost by the experience and knowledge of the mechanics with whom he was brought in contact."

A Report of the *Committee on Professional Practice*, read on the second day, agreed as to the desirability of adhering to the system of charging by commission. The report ended thus,—

"It is, of course, essential to the maintenance of any custom that it should be adhered to, and that the practice of setting aside should not itself grow into a recognised custom. Usage, like confidence, is a plant of slow growth, and what it has taken many generations to build up may be thoughtlessly destroyed in one. But the reasons which have led to its establishment are always the best arguments in its favour. If the reasonableness and practical convenience of a custom do not cause it to be honoured by observance, we can hardly ask men to cherish it merely for the sake of keeping it alive. These customs are, in fact, the only protection that either we or our clients possess against intolerable nuisances of bargaining and chaffering, a plague from which the very shopkeepers have had sufficient self-respect and firmness to rid themselves, and which is utterly destructive of proper professional relations. To call attention to the basis of reason and convenience on which they rest, and to show that they subserve the best interests both of the architect and of his client—for in the long run their interests are the same, and are bound up in the good of the work—is, as it has seemed to us, the best service that this committee, or the Institute, whose servants we are, can perform. It is thus, and not by an arbitrary legislation, conceived in a hostile and aggressive spirit, that such uniformity of practice as may prove possible is to be brought about. This association is not a trade-union, selfishly combining against the public. It is an enlightened and public-spirited body, seeking by co-operation and mutual consultation to advance the public interests committed to our professional charge."

Mr. Sims, as Secretary for Foreign Correspondence, read a report. In it he said,—I have been favoured by a Swedish architect, at present resident in this country, with certain facts connected with the architecture and building of Northern Europe, which I think may not be uninteresting to you. He informs me that few or no buildings were erected thirty years ago excepting of bricks, which were stuccoed and elaborately worked out in details imitating the finest Italian marble, cut with the greatest artistic ability. The bad quality of the bricks and the rigorous climate prescribed these conditions. As a further precaution, the bricks were very often painted with oil-colours. In St. Petersburg this latter is a law, and every house-owner is obliged to repaint his house every second year. This system of facing a building gives the city and the numerous country-seats a gay and luxurious

appearance, but at the expense of durability. Buildings are now frequently constructed of free-stone, and also of chalkstone. Some of the former and all the latter are covered with oil-paint. Although granite abounds in the northern countries, buildings erected of that material are unknown. Basements are often built of this material, and foundations always are. The habit of suburban residence is very general among the wealthier classes of Northern Europe. Persons inhabiting the cities occupy their villas only during a few months of the year. But, like the English gentry, many spend the greater part of the year at their country seats. Between the two classes the country is sprinkled over with country seats, castles, and palaces; many of them making great pretensions to architectural merit. Many of these establishments have fine parts and much elegance. Many have gardens, vineries, and greenhouses. In late years, there have been often added winter gardens in immediate connexion with the reception-rooms. Formerly all the houses for the peasantry and poorer classes were constructed of solid timber, from 7 in. to 10 in. in thickness, plastered on the inside, and covered externally with boards. The timber, however, is so rapidly disappearing that the system of construction has to a great extent been superseded by the ordinary frame construction in use on this continent. In the southern part of Sweden the terra-cotta construction of Germany and Denmark has been tried, but it is thought that the system will not prove permanent or lasting, owing to the united effects of the salt air and extreme cold. The city dwelling-houses are generally upon the apartment system, of large size, with very heavy brick and external party walls. The municipal regulations as to these, the size of open yards, and the precautions against fire are very strictly enforced. These apartment-houses are from four to six stories in height. The ground-floor is usually devoted to shops, and very seldom to living-rooms, the first-floor being the choice flat for residence. It is very rare to find the basements used as living-rooms."

The annual dinner of the Institute took place at Delmonico's, and, after dinner, addresses were made by several guests and members.

THE BUILDING TRADE IN MAINE, UNITED STATES.

It is surprising what a difference of opinion exists among British consuls respecting the nature and value of their functions, and one is almost tempted to ask what sort of instructions they receive when they obtain their posts, and to regret that England does not train her sucking diplomatists in the consular school as some Continental powers do. But we choose to bestow our consulates in a peculiar way, to restrict our consuls (with very rare exceptions) to an inferior branch of the public representative service, and, as a natural consequence, we have gathered the most heterogeneous collection of commercial foreign officers in the world, and invest gentlemen of all grades of capacity with the honours of representing this country in foreign ports, of hoisting the national flag and of receiving salutes on stated occasions. A time may come when we shall "reconstruct" the consular department, but until it arrives we must be contented to accept any queer document as a consular report, and must not be surprised if a cool representative at an important port summarises the commercial news of the year in a single line stating how many ships were entered and cleared, while a zealous servant at a minor town fancies we shall be interested by cuttings from the local papers. Those who have studied the consular reports of the past year can judge of the justice of our criticism generally. At present our object is merely to call attention to and to summarise one of the best and most interesting trade reports of the year, which has been written by Mr. Murray, our consul at Maine, who has spared no pains to supply useful information to the trading classes of this country, and who has often, when official data were wanting, taken great trouble to render his picture accurate.

Taking only those parts of the story which suit such a journal as this, we find that there is abundance of timber in Maine, if the estimate be correct, that a billion and a half feet of pine are standing while the supplies of hemlock and spruce are "practically inexhaustible," while hackmatack, yellow birch, rock and bird's-eye maple are very plentiful. The year 1874 was unfavourable to the lumber business, for the building trade was depressed, and consequently manufactured lumber was slowly sold. Some of the biggest saw-mills therefore closed operations early after filling their wharfs as well as all the orders they could get. The deficit in sawn wood for the year is said to fall little short of ten million feet from the average. The deal trade was good, some twenty-eight million feet having been shipped to Liverpool during the season, which was four times the amount sent over during the previous year.

The total saw-mills in the State in 1873 was 1,109; the capital invested in them, 7,629,442 dols.; steam power, 3,403 horses; water power, 41,383 horse; long lumber manufactured, 667,420,000 ft.; short lumber, 72,405,000 ft.; value of production including shooks, staves, and headings, 9,672,235 dols.; hands employed, 7,844; wages, 2,851,000 dols. It is calculated that the total amount of sawn lumber on hand in the spring of 1873 was about 70,000,000 ft., while 592,000,000 logs were ready for sawing. The amount of capital invested in the trade is very large, and is being increased although the traffic is diminishing. It is said that they are being cut down so fast that the supply of timber will be exhausted in from five to ten years; but the inhabitants of the State live in security because the same prophecy has been made for years, yet Maine has gone on yielding an average yearly product of some six hundred or seven hundred millions of feet. Maine has the largest proportion in area of any of the lumbering States, and hopeful people assert that although the destruction of woodland has been in progress for over half a century, with new growth the forest area is so great and so prolific that it cannot be stripped of all its mercantable lumber for at least another fifty years.

The clays of the State furnish materials for an immense number of bricks, which are exported to a considerable extent. The number of brickfields is set down as ninety-three, with a total capital of 317,185 dols., giving employment to 917 hands, and manufacturing 71,549,000 bricks annually. The market for Maine bricks is in the State of Massachusetts and the southern ports. Limestone is found in fourteen counties out of sixteen, and is extensively manufactured into quick lime. The stone furnishes 50 per cent. of pure lime, and burning it constitutes one of the most important industries in the State, giving employment to a multitude of workmen, and furnishing freight for a large number of coasting-vessels. Maine lime even reaches this country, and the trade is rapidly increasing. The official returns from twenty-five establishments show an invested capital of over a million dollars, seventy-nine kilns, and nearly two million dollars' worth of the manufactured product made. It is stated that there is granite enough in Maine to build all the cities of the world, and certainly the granite formation is an extensive one, traversing large portions of the State. Blocks of immense size have been split out, some weighing more than 100 tons each. The granite quarried is of good quality, of fine grain, and good colour. Most of the quarries are on the coast. Some of them employ over a thousand men, some of whom receive 4 dols. a day. Not less than three million dollars are annually expended for the wages of workmen engaged in this industry. The stone is all hewn into proper shape in Maine, cut to fit its place in the intended building, then boxed and hooped, and shipped to its destination. Immense quantities of paving-stones are also shipped to the south. Marble is found and worked in various parts of the State, but it is generally considered better adapted for building than for ornamental purposes. A very good article of verd-antique marble has been found at Deer Isle, the annual production being about 26,500 dols. worth. Roofing slate is found in Maine in immense quantities, and of a superior character in colour, grain, and cleavage. The principal belt extends more than eighty miles. Instances exist of slabs being slit into very large squares, and manufactured into tables, black-boards, &c. The slate industry is rapidly growing in importance. The average annual earnings of blacksmiths are 670 dols.; those of brickmakers, 225 dols.; those of quarrymen, 292 dols.; and those of sawyers, 730 dols. Water-power is much more in use than steam-power, and represents the force of 75,000 horses. It is said that there are 3,100 water-powers in the State. A local statistician has calculated that the industries of Maine engage 2,656,200 horse-power, equivalent to the working energy of over 34,000,000 men labouring without intermission from year's end to year's end. Tidal power is also employed, and can be utilised at small expense, the mean height of the tide being nearly 12 ft.

IMPROVED PLASTERING FOR BRICK WALLS.

Some years ago the "Verein zur Beförderung des Gewerbefleiss in Preussen" (Society for the Promotion of Prussian Industry) offered a prize for the best composition of plaster for brick walls. The conditions imposed at the time were,—

1. That the composition should not be affected by the weather, and present an even, smooth surface when applied, becoming neither cracked nor loose by exposure to sun or frost.

2. That the composition should admit of a uniform durable colour being applied to it, the colour to penetrate either through the whole mass, or at least to a depth of $\frac{1}{10}$ in. from the surface.

3. It was further stipulated that, although the application of this composition might somewhat exceed the cost of ordinary painted plaster, still its use should be cheaper than "stucco lustro."

The silver medal of the forementioned society, supplemented by a money prize of 75*l.*, was awarded to Ambroselli, a mason of New Barnim (near Wriezen), after his plaster-composition had been proffered to the society, and stood a practical test of several years' exposure to the weather. It is, moreover, stated that prior to this crucial experiment, it had already been applied to the Abel Villa, near Potsdam, and had served for plastering over most of the architectural decorations of this villa.

A German contemporary has been lately favoured with some particulars of this Ambroselli-plastering method from the inventor himself, and, since it appears to be well received on the Continent, we propose giving the following notice of this plaster. Before proceeding with its application, it may, however, be well to remark that no new principles or materials are advocated in this composition; but, on the other hand, its application demands great exactness of workmanship, and a careful selection of the ingredients. Moreover, the laying-on process demands that the wall-surface on which it is applied be built of hard, well-burnt bricks, free of marl, and previously thoroughly dried. The materials used are lime and sand, which must be entirely freed of all impurities by special cleansing; and, as the following description will show, three different kinds of mortar are prepared from three qualities of sand.

With these preliminary remarks, we may now proceed to describe one of its most difficult applications, namely, in the imitation of sandstone dressings. For this purpose, the brickwork itself should bear as much resemblance as possible to the profile desired, so that the laying on may be conducted in as uniform a manner as can be obtained. The wall-surface being priorily well damped with water is now ready to receive the first plaster-coating. This is composed of one-third of well-slacked lime (which should be slacked at least a fortnight previous to using it), and of two-thirds of the sharpest sand. After this mass has been thoroughly mixed together, Portland cement is added in the proportion of one-fourth the volume, and the first mortar-composition, after having been thus prepared and well mixed up, may be applied in a wet state to the surface of the wall as even as possible. To prevent air-bubbles or cracks occurring, the different layers should not be applied too rapid, and time should be always allowed between the layings on, in order that the mortar may somewhat set.

The desired profile having been nearly attained with mortar No. 1, a finer mass (No. 2) may now be laid on. The latter is prepared by adding to two parts of lime and two parts of fine sand, 0·12 parts of Portland cement, and so much of the prepared liquid paint as is necessary to produce the desired tint when stirred together with mass No. 2. Two layings on with this second mortar will suffice in ordinary work to bring the desired profile to the form required, and it need only be remarked with regard to this composition that this mass should also be kept wet, and so laid on.

For very fine work, however, a third coating is used, which is made of one part of the finest sand, one part of fine-sieved lime, 0·0[illegible] parts of fine-sieved cement, with the addition

of the requisite colouring matter to ensure the desired tint when dry. This addendum must, of course, be determined by experiments made beforehand, which will give the necessary mixing proportion required. The most complete intermixing of these ingredients is absolutely necessary, and with two coatings of this mass No. 3, an experienced hand will finish the dressings in the most elegant manner.

Having thus explained the laying on of this Ambrocelli's plaster, it will be well to remember that it is advisable to divide the laying on surfaces into so many days' work, since each portion begun must be finished the same day, for reason that the composition cannot be touched up after a certain lapse of time.

With regard to stencilling, very clean effects may be obtained by using good stencil-plates, made of hard wood and fastened with iron, but the greatest elegance is said to be only attainable by using polished steel plates. By means of these and the fore-mentioned description, dressings can be made able to stand all kinds of meteorological influences, besides preserving a lively appearance.

The foregoing description renders the application of this plaster to smooth surfaces self-evident. No doubt it will be more extensively used in this respect than in the other, for architectural decorations in this plaster will always be too costly for buildings of ordinary kinds, whereas, in buildings of prominent standing, imitation dressings are becoming daily more obsolete.

SCHOOL BOARD ECONOMY.

Some local bodies, *quasi*-public persons, and private ratepayers, have been much exercised of late on account of the alleged extravagant expenditure of the London School Board, who are accused of building schools where they are not needed, that fight unequally against existing denominational schools, and of erecting buildings larger and more costly than are required. These views are in curious contrast with the criticisms that the Board had to meet in the first two years of their existence. They were taunted that they talked a great deal, but did nothing; that they theorised concerning schools, but built none. The nature of the case imposed great difficulties upon the School Board. Their work was to elaborate and establish a system of elementary schools and instruction that would embrace the whole of the young people of the metropolis of the school age who were not taught at home, or in some efficient private, denominational, or other school. The Board had no data available upon which to base their scheme of schools. They had to ascertain by the best means open to them the educational wants of particular districts and localities. As yet, on the whole, they have planted their schools with sound judgment. It would have been something little less than miraculous if in the first essays of their tentative scheme they had not built some schools that filled almost at once to overflowing, and others that took some time to fill. The Board have already a good defence against the charge of extravagance; the effluxion of time is unlikely to fail to strengthen their defence, and even to extinguish the charge against them of extravagance. The Western subdivision of the Greenwich Educational Borough furnishes a notable illustration,—a pioneer illustration, it may be believed,—of this allegation.

The Board schools first opened in this subdivision, in August, 1873, were those situated in the Creek-road, and in Clifton-road. Since then Board schools have been opened in Kender-street, Hatcham, Hughes's Fields, and Duke-street, Deptford, and another is nearly complete on Blackheath-hill. We have to do herein with the Clifton-road School, which is situated on the outer edge of the populous parts of Lower New-cross. On the west of the school is a large area, occupied as market-gardens, and intersected by the Joint South-Eastern and Brighton Railways. On the east side the school premises are bounded by a large field that will be built upon eventually, but that is now in grass. Notwithstanding the comparative sparsity of the population in the immediate neighbourhood of the Clifton-road school, it was filled almost at once. The nearest Board schools, on the west and east respectively, are Kender-street, Hatcham, and Duke-street, Deptford Lower-road, both of which are full, and incapable of taking the overflow of pupils from Clifton-road, for which there is no other Board school available. The Board came to the conclusion, upon which they have acted, that the best mode of meeting the exigencies of the case was to enlarge the school to the size now reached, that some friends of education may possibly consider excessive. The school was built from the designs of Messrs. Elliott & Warren, of Westminster, and in style may be designated Domestic Gothic. The style of the original building is followed in the additions, that consist of a wing to the east front, and a retangular tower in the angle formed by the junction of the wing with the main building.

The magnitude of this suburban school may be conceived from the statement that the space now provided will accommodate 342 boys, 342 girls, and 410 infants and babies. In each of the three departments the maximum number of pupil teachers allowed has been reached long since. The teaching staff of the enlarged school will consist of a master, four assistant-masters, and six pupil teachers, in the boys' school; a mistress, four assistant-mistresses, and six pupil teachers, in the girls' school; and a mistress, three assistant-mistresses, and seven pupil teachers, in the infants' school. Total, 1,094 scholars and thirty-three teachers.

The selection of the site of the new Board school in Deptford, upon which building operations have been most recently commenced, reflects credit upon the Board, and is a good illustration of their determined purpose to gather in the children of the lowest class of the population. It is situated between Regent-street and Stanhope-street, in what may be pronounced the worst quarter in Deptford, containing a larger proportion of pariahs and gutter-children than any other. It is precisely such a situation as demands the establishment of an efficient day school, with compulsory attendance. It is also such as is left to itself by the religious denominations, such as is avoided for a school site by the National and the British and Foreign School Societies. It is true that a Sunday school has been in operation in the district for a number of years. Those who are most familiar with its operations are the most deeply convinced of its utter inadequacy as an agency to instruct and train efficiently, and especially to make amenable to discipline, the rising population of the district. The comparatively small expenditure incurred in carrying on this school is derived from eleemosynary contributions, and the teachers are volunteers that take the duty by turns,—a system very unfavourable to a teacher's influence. The experiences of some of these teachers in connexion with the Giffin-street Sunday School illustrates the character and quality of the young people that are the objects of their solicitude. One of the teachers, some time since, when the crowd at the entrance was larger and more unruly than usual, took his station at the door for the protection of such of the female teachers as had not arrived. A lot of young roughs promptly knocked off his hat, and danced upon it in their own playful manner, while another group, of larger growth, pelted him with brickbats. Part of the teacher's clothing was saturated with blood before he had finished the evening's exercises with his class. It has been, in another instance, an experience of a teacher that the youths in his class have taken the bit between their teeth, otherwise have ignored his presence, and have made the subject of conversation for the evening their experiences in Maidstone Gaol, from which they had been released during the preceding week. Notwithstanding these traits, the School Board have already proved, by a temporary school in the district in question, that this class of children, caught early, provide an efficient schoolmaster with most hopeful material; that there is no class of children more apt, it may almost be said as apt, to receive elementary instruction. As a rule, they take the lead in the start upon a school course, but are left behind by the children of the higher classes in the pursuit of more advanced educational attainments.

Whatever may be said of other parts of London, it may not be said with truth concerning Deptford, that Board Schools are either too large or too numerous. The buildings are sightly, substantial, and commodious, but not ornate or unduly costly.

Where the Money Goes.—The *Philadelphia Public Ledger* admits that about 50 millions sterling of non-dividend-paying American railway bonds have been foisted on to the English public. We believe the actual amount to be much more than that sum.

CARDIFF AND ITS PROSPECTIVE IMPROVEMENTS.

The Cardiff Improvement Act, which was passed a short time before the prorogation of Parliament, confers important powers upon the municipality of that borough, which will henceforth be more than treble its present area, with a corresponding additional population, whilst the street and other improvements to be carried out under the provisions of the Act are of the most comprehensive character. The Act extends the municipal borough, so as to include the parishes of Roath, Canton, part of Llandaff, and a portion of Ely, an area extending four miles and a half east and west, and three miles north and south. The old borough, or what has hitherto been known as Cardiff proper, contains an area of 2,300 acres, including 423 acres covered by water and dock space, thus reducing the land built upon, or available for building purposes, to 1,877 acres. To this is now added, on the west, the district of Canton and part of Llandaff, with an area of 1,912 acres, and on the east the whole parish of Roath, with an area of 3,500 acres. The present estimated population of Cardiff is 42,500. Canton and Llandaff will add another 12,000, whilst Roath will contribute 13,000, bringing up the population of the borough as enlarged to 67,000. In Cardiff, there are 5,800 dwelling-houses in Canton, Llandaff, and Ely, 1,730; and in Roath, 2,160, making a total of 9,690 dwelling-houses in the united and enlarged borough. The present average in Cardiff is six persons in a house, whilst in Canton it is seven. The rate of increase in the number of houses built in Cardiff during the last four years has slightly exceeded the increase in population, reducing a little its density, as the census returns of 1871 give to Cardiff an average of seven persons to a house. The area of land at present built upon in Cardiff is nearly three-quarters of the whole, but of this a large portion is covered, not by dwelling-houses but by docks and works. In Canton, which has been added along with Roath, not more than one-quarter of the ground is covered, and in Roath, not more than one-fifth. Taking as a criterion the area of ground already built upon, the number of houses, and population upon it, there is on the unbuilt portion ample space for 70,000 houses, and a population of 500,000 persons, or a town eight times the size of Cardiff, Canton, and Roath combined at the present time. The population of the area now included in the municipal borough was, in 1871, 55,000. In the four years since that period it has progressed at the rate of 4 per cent. If this progressive rate of increase is maintained in the next forty years the whole area of land from east to west, and from north to south, will be covered with streets and houses, and the main thoroughfare east and west will be more than four miles long.

The Act contains special provisions as to the erection of buildings, in addition to general street and other improvements. Up to the present time the Local Board have had no supervision over the elevation of buildings, their powers being limited to the ground plan, and to the sanitary arrangements of dwelling-houses. But the new Act gives the Corporation large powers both as to the height and general elevation of buildings to be erected in future within the enlarged borough. It also contains provisions for the purchase by the Corporation of the Canton Market, together with the extinction of the market tolls hitherto collected in the Cardiff streets. It also removes the toll bars immediately outside the borough.

Several street improvements are at once to be commenced under the powers conferred by the Act. These will include the widening of main thoroughfares, and the construction of a number of entirely new streets. Several bridges crossing the canal and archways over and under the South Wales Railway are also to be widened, and in some cases to be entirely rebuilt, so as to improve and continue the thoroughfares between the old and new portions of the borough.

Fine Arts applied to Industry.—The Society of Arts has already held with success annual Exhibitions of Fine Arts applied to Industry, and in considering the whole subject of the examinations, arrangements are in contemplation for holding examinations in fine arts applied to industry. In this way the whole field of arts, manufactures, and commerce, the special province of the society, will be connected with a scheme of annual examinations in the future.

THE WEST BROMWICH PUBLIC BUILDINGS.

We briefly noticed last week the opening of the new public buildings here, which comprise a new Town Hall, a Market Hall, Free Library, and Baths. West Bromwich has grown in importance in a surprising manner, and notably within the last quarter of a century. The population of the place is now 50,000; at the beginning of the century it was only 5,000. When the question of erecting public buildings was first mooted, it met with some opposition, but this obstacle having been overcome, the erection of the public buildings was determined upon. A site was secured upon the Lodge Estate, opposite Christ Church, and on the recommendation of Mr. Ewan Christian, architect, of London, the Commissioners selected, out of about thirty competitors, the designs of Messrs. Alexander & Henman, of Stockton-on-Tees and Middlesbrough, for the Town Hall; those of Messrs. Weller & Proud, of Wolverhampton, for the Free Library and markets; and that of Mr. Pincher, of West Bromwich, for the baths. Tenders were afterwards obtained for the erection of the various buildings, and that of Messrs. Trow & Son, of Wednesbury, was accepted, the stipulated price being about 40,000*l*. The design of the Town Hall externally is of bold proportions, having at the outer corner a massive tower rising to a height of over 130 ft., the upper stage being ornamented with a continuous arcade of detached columns and trefoil arches, with a moulded cornice above. The windows generally to the basement and ground-floor have moulded stone lintels, and those of the first-floor semicircular arched heads of brick and red terra-cotta, leaving an ornamental hood mould of the latter material, of which also the string courses, the cornices, the arcading to the tower, &c., are made. Red pressed bricks are employed for the general facings, and green slates, with red tile castings, form the covering of the roofs. A flight of steps, 12 ft. in width, gives access from the principal entrance to a corridor 9 ft. wide, laid with an encaustic tile pavement, by Messrs. Maw & Co. Opening from this corridor are porter's lobby, waiting-room, surveyor's office, and offices for the sub-clerk, rate collector, inspector of nuisances, &c. The muniment-room, which is of fire-proof construction, opens out of the surveyor's office. The corridor above that on the ground-floor gives access also to the hall (but on a level with the gallery), and also to the board-room, 36 ft. by 18 ft. 6 in.; to the committee-room, 23 ft. by 18 ft. 6 in.; to the clerk's office, and two retiring-rooms. Spare offices are provided in the upper part of the tower. The main staircase is lighted by large windows filled with stained glass, supplied by Messrs. Dunn & Broughall, of West Bromwich. Two stone staircases, beside the main staircase, lead to the galleries, which are continued around three sides of the hall. The latter is in size 81 ft. by 48 ft., and is internally the main feature of the building. The ceilings, the iron-work, the walls, the doors of the hall, the pillars, &c., have been decorated (from designs by the architect) by Mr. S. Broadbank, of Stockton-on-Tees.

The Free Library and News-room lies to the left of the Town Hall and adjoins the Market Hall, and the entrance is in High-street. The reading-room is 45 ft. long by 25 ft. wide and 23 ft. high, lighted from the roof. A handsome staircase, convenient to the entrance, leads to the reference library, &c. The building has been carried out from the design and under the superintendence of Messrs. Weller & Proud, architects, of Wolverhampton, by Messrs. Trow & Sons, contractors, of Wednesbury; the heating by Messrs. R. L. Jones & Sons, of Monmore-green, Wolverhampton; and the gasfittings by Mr. Eaton, of Darlington-street, Wolverhampton.

The style of the Market Hall is Gothic, freely treated of a slightly Continental character. The hall is 90 ft. wide and 151 ft. long, having the principal entrance in the end towards High-street. The interior is divided into a central avenue, 40 ft. wide and 45 ft. high, on either side of which are arranged aisles, each 25 ft. wide, divided from the central avenue by handsome arcading, supporting by iron columns, 18 ft. apart.

The Baths occupy a large piece of ground in a pleasant part of the town between the District Hospital and the Public Buildings. The estimated cost is 3,550*l*. Each swimming-bath is 50 ft. long by 30 ft. broad. The engine-house is a firmly-built structure, surmounted by a tank, which is about 28 ft. long by 18 ft. broad, and capable of holding 20,000 gallons of water. An artesian well, 60 yards deep, is sunk for the supply of water, which is pumped up by means of a 16-horse horizontal engine into the cistern, and conveyed from thence to the various baths, which are heated by hot water through a warming apparatus from two boilers.

PREMIATED DESIGN FOR THE GERMAN PARLIAMENT HOUSE.

Some time ago the German Government invited designs from architects of all countries for their Parliament House, proposed to be built in Berlin. From a large number sent in, five designs were selected, and received premiums. One of these was the work of our distinguished countryman, Sir G. G. Scott, R.A., produced in conjunction with his son, Mr. John O. Scott, and in our present number we give a general view of the design. On another occasion we shall publish the plan of the principal floor, which will make clear the general arrangements. In response to a request from us, Sir Gilbert enables us to state, in his own words, the principles which guided him in making his design:—

In making this design it was intended to adopt or develop a style which really never appeared in the series of developments in German architecture; that is to say, a fully matured pointed style, founded on really German elements. The Germans, at the commencement of the thirteenth century, were on the high road to a noble form of Gothic architecture wholly their own, but were disturbed by the importation of French architecture. My object has been to imagine this interruption to have been *nonexistent*, and the following extract from the explanatory remarks which accompanied the design will more fully elucidate the idea:—

"The most truly national period of German architecture may be said to extend from the days of the first Otho to the end of the reign of Frederick Barbarrossa; though, for our immediate purpose we may take the buildings about the time of the last-named emperor as our type. No form of Mediæval architecture is more marked in character, and, to a German, none should be more dear, inasmuch as no style could be more truly national, or in its main characteristics more noble. As, however, it wanted one feature, the pointed arch, and as it did not yet possess many refinements and inventions, which rendered many subsequent buildings more perfect, though perhaps less characteristic, we seem to want a more advanced form of art as the groundwork of any modern revival of the style, and such more advanced development *did* commence in Germany during the early years of the thirteenth century, as we see at Limberg on the Lahn, the cathedral at Bamberg, and numberless buildings; and it is only because this natural and logical course of development was too early checked by the amalgamating process I have already alluded to, that the attempted development I am now advocating became necessary.

What, therefore, I wish here to urge is the desirableness of *continuing* and following up in our own revived works the development commenced so nobly immediately after the time of Frederick I., but too much discontinued in works in the middle and end of the thirteenth century, a development uniting in one the perfection of style which we find in such works as St. Elizabeth's Church, at Marburgh, with the more natural characteristics of Limburgh, Gelnhausen, Barnbergh, Andernant, St. Martin's, St. Severins, &c., at Cologne, and a host of edifices which have rendered Mediæval Germany illustrious in the annals of architecture.

I beg, therefore, that my design may not be judged by archæological rules, as it has been my object, while adopting a style founded in the thirteenth century, to retain in it those especially German characteristics which may be viewed as more properly belonging to the twelfth, though nevertheless extending themselves far into the thirteenth century, and thus raising and standing by the national banner against the advancing fashion of amalgamation, which eventually effected their extinction.

The other development I have to advocate is one of an opposite character. It is the absorption into the old German style, not only of modern systems of construction, and modern appliances, so far as they are good and desirable, but of at least one feature of modern architecture, which I view as being so noble and august that no style can be considered perfect that rejects it. I refer to the cupola, as it has been developed in latter ages, a development of which the greatest examples may be said to be seen in the Cathedral of Florence, and St. Peter's, at Rome.

That the Mediæval architects of Western Europe did not reject the cupola we have innumerable proofs in Italy, in Germany, and in France. I need not, therefore, argue this point. The particular development of the cupola to which I now refer, was semi-mediæval in its origin at Florence, though its more complete realisation at Rome was in another style. This form of cupola may be defined as that which renders it an equally noble and magnificent feature when seen from within or without,—that form which Michelangelo described under the similitude of raising the Pantheon on the Temple of Peace.

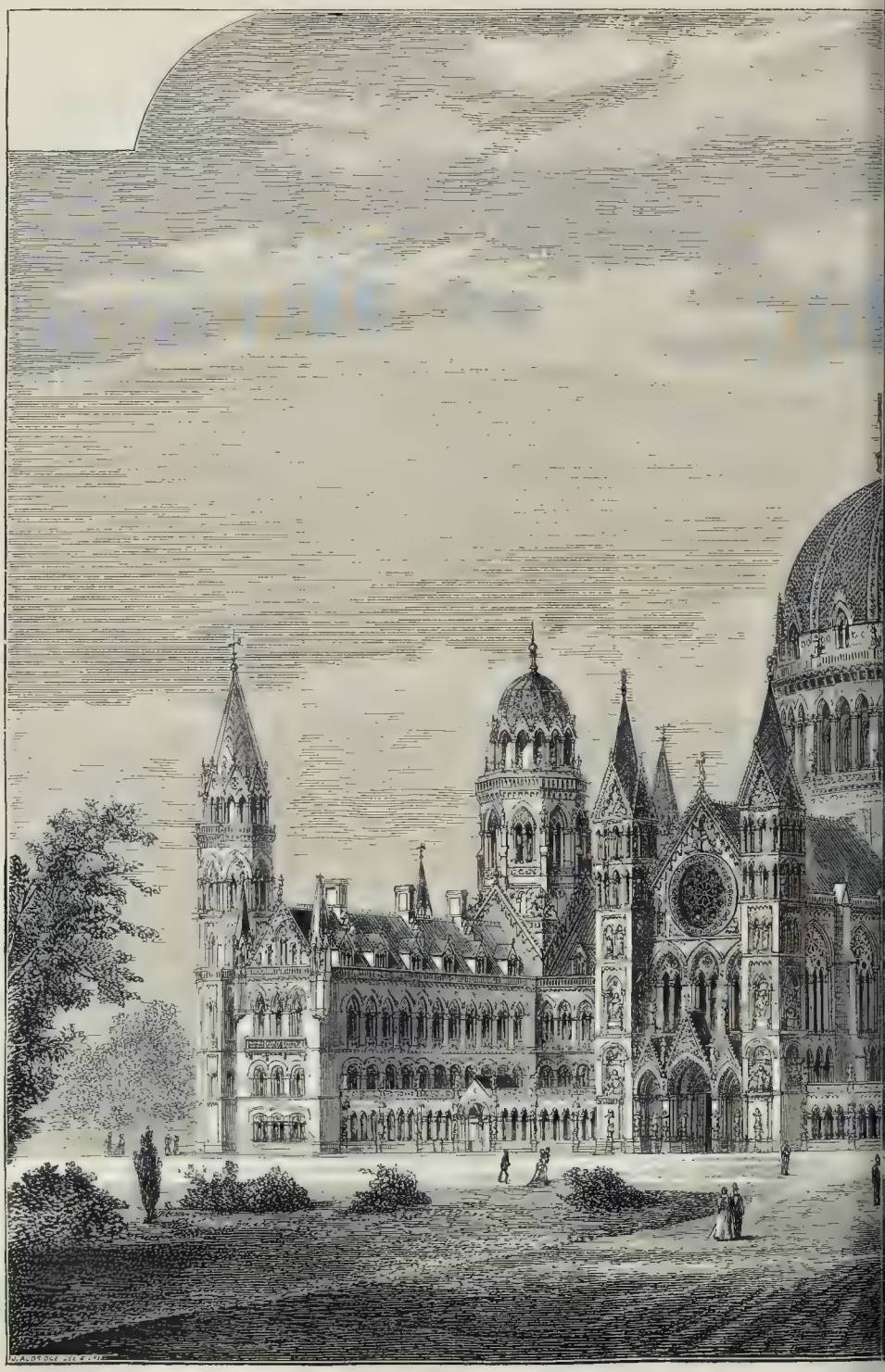
For a great and dignified national structure I can conceive of no feature so appropriate or so desirable as a vast and lofty central cupola. Externally, all other forms would culminate in and do homage to this, while internally no other form could with equal majesty canopy the central hall of a palace of legislature. I have, therefore, devoted my attention (with what success I leave others to judge) to accommodating this glorious form to the details and sentiment of Old German architecture.

Of my great cupola I may say that externally and internally, it is in some degree like that of St. Peter's would be if translated into Early German style. I have so far departed from my type as to sever the internal from the external cupola, and to support the lantern which crowns the whole by a system of construction interposed between the two. The system has usually been attributed to Sir Christopher Wren, who adopted it in building the Cathedral of St. Paul in London, and has subsequently had numerous followers; but the same idea had been struck out centuries before in St. Mark's at Venice, where the very same thing had been carried out in timber, which has since become so popular, though carried out in other materials. The great advantage of the system is that it enables the designer to make the height of his cupola to suit the eye both within and without, which has always been the great difficulty to overcome."

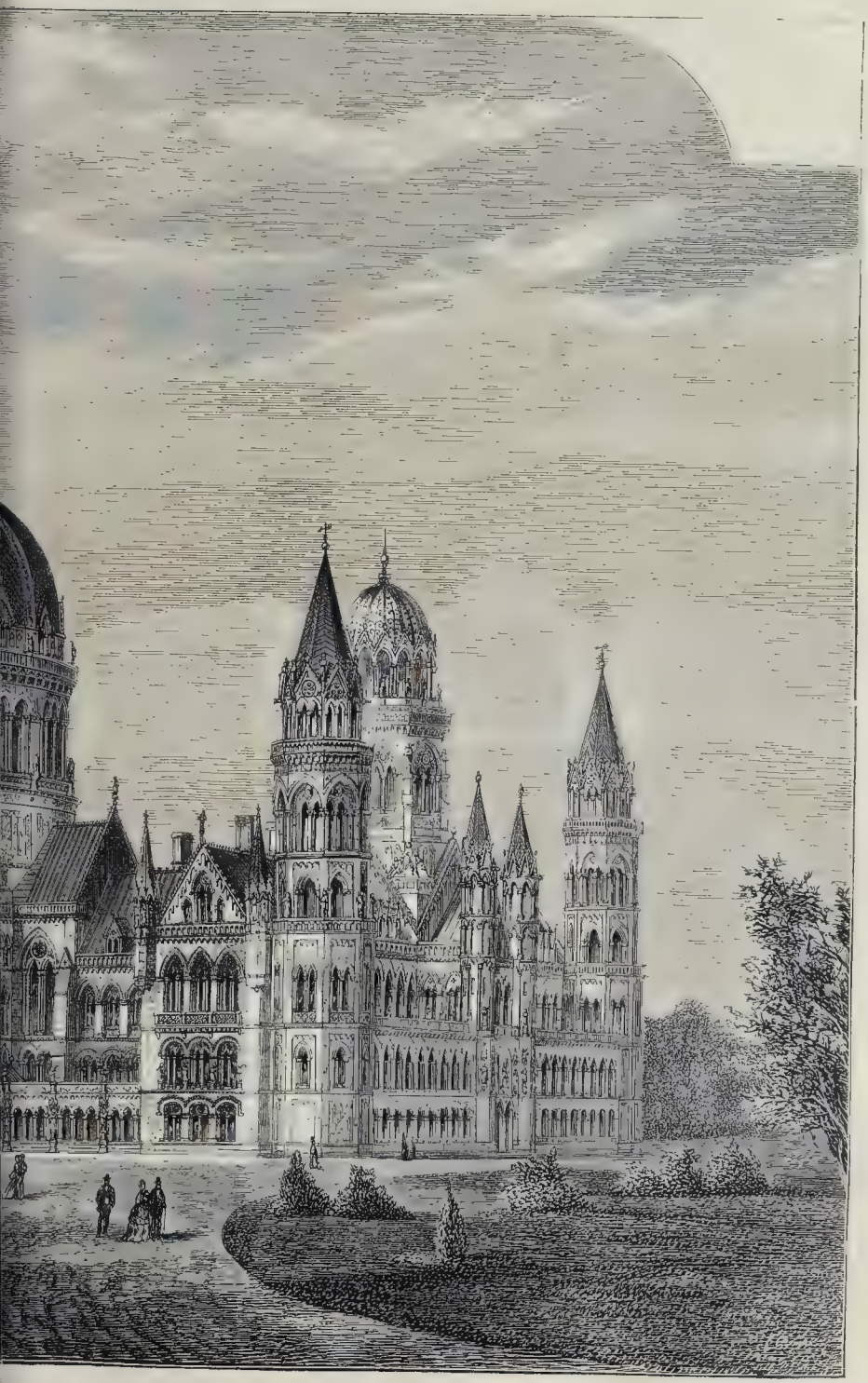
It is reported that another competition, *confined to German architects*, is to be invited.

EFFECT OF BLOWS ON IRON.

In the course of one of the Cantor lectures on tools to which we have already referred, the Rev. Mr. Rigg said,—Besides the surface work produced by hammers, there is some hitherto mysterious and as yet uninvestigated internal work done by them. It is easy to make clear the fact, of which, however, no satisfactory explanation has yet been offered. There is on the table an ordinary magnetic needle, the ends being directed, as usual, to magnetic north and south. If, now, this common iron poker be held in the hand, and the lower end directed towards the north, but inclined about 67° below the horizontal line, the poker may be said to be in the line of the dip of the magnetic needle. Now strike the poker two or three blows upon the upper end with an ordinary engineer's hammer; it will be found that some internal change has taken place. Direct first one end of the poker and then the other to the same pole of the needle, and repulsion will be manifested in one case, and attraction in the other. Now reverse the poker, making what was the lower end the upper one; strike it as many blows as were given to it before, apply it to the magnet, and it will be found that both ends attract the balanced needle, thus showing that some change has taken place, for the poker has lost all trace of magnetic polarity. Give two or three more blows, and it will be found that the magnetic effects are the reverse of those in the first case. Such a simple experiment in the private room prepares us for results, equally unaccountable in cases where metals are subject to hammer impact, or that which is equivalent thereto; hence, for example, it is apparent why the compass needle on iron ships may be affected in consequence of the tremor to which the vessel is subjected owing to blows from waves. Nor is it a question of apparent phenomenon alone which has to be regarded *in* this inexplicable work of hammers. These magnetic manifestations seem to be accompanied with internal material changes which sometimes make their existence too clear by fractures as unexpected as they are dangerous.



PREMIATED DESIGN FOR THE GERMAN PARLIAMENT HOUSE, PROPOSED TO BE



ERLIN.—By Sir G. G. Scott, R.A., in conjunction with his Son, Mr. J. O. Scott.

PROTECTION FROM LIGHTNING.

Sir, — The number and intensity of the
nderstorms which have raged over this
untry during the season, as well as the
cidents which have accompanied them, have
en so far above the average that they have
tracted very properly an immense amount of
terest on the subject of lightning, and the
eans we adopt, or that are at our disposal, to
otect ourselves and our buildings from the
structive effects of electrical discharge. Day
ter day have the daily papers been replete
ith details of casualties to both human life and
operty, for not only have trees been shattered,
ttle destroyed, public buildings injured, and
ivate houses struck, but human beings have
en killed in such numbers, that, if tabulated,
ey would form a most disastrous list. Hence
e duty of every householder to protect himself
d his family.

Now, as regards human beings, we cannot, it
true, whilst out of doors, carry about with us
y available means of obviating the calamity;
t as regards buildings it is notorious that in
o case has damage arisen where the structures
ad been provided with lightning-conductors,
hilst on the other hand in no single case where
ischief happened was there any conductor.
he conditions that determine a perfect light-
ng-conductor are:—

That it shall expose on some prominent posi-
on of a building a metallic point, and that it
hall offer from this point to the earth a path
f little or no resistance to the passage of the
rrent.

The conductor must be solid and continuous
om its point to the ground, *i.e.*, there should be
o joints, unless it be a well-soldered one, in the
hole of its path.

Its connexion with the ground must be sound
nd good; in fact, in "telegraphic" language, it
ust make a good "earth," either by having its
nd coiled up or buried in a hole in moist earth
nd surrounded by coke, at a depth from 8 ft. to
2 ft., or by being wrapped round a gas or water
ain, to which it should be well soldered, or by
eing carried down a well or to some adjacent
ver or water-course. In applying conductors
s a means of guarding against the destructive
ffects of lightning, the principle to be carried
ut is to bring the given building into such a
ate of passive electrical resistance as it would
ave supposing it were metallic throughout.
ow, this is best accomplished by connecting
gether metalically, as far as possible, all large
etached masses of metal in the fabric, such as
oofing, metal ridges, spouting, gutters, leads,
restings, &c.,—at least, those in the line of
robable discharge. These should be carefully
onnected to the main conductor or conductors,
are being taken that all joints are thoroughly
ound. Each conductor,—if there be more than
ne,—should make, if possible, a separate
earth," and should be connected together either
bove or below the ground line.

The practice adopted by some people of insu-
ating conductors, not only complicates matters,
ut is quite unnecessary. The area protected
y a conductor is a radius equal to the height of
he conductor above ground. Thus, for moderate-
ized houses, one conductor is enough.

If the finial or point project 2 ft. or 3 ft. above
he chimney, it will be sufficient.

The question now arises, What is the best
orm of lightning-conductor? I say unhesi-
atingly a galvanised iron wire rope of sufficient
ectional area. There is no need to go to the
nnecessary expense of copper; a stout gal-
anised rope will carry away any discharge, and
y its use cost is reduced, and a means of pro-
ection placed within the reach of all.

A finial of brass or copper, electro-gilded so
s to avoid oxidation, is affixed to the highest
oint of the building, and the wire rope being
oupled thereto is to be carried down the side of
he structure, to which it should be closely
astened by stout hooks. As before observed,
are must be taken to preserve continuity, as
he path of the electrical discharge is always in
he line of least resistance. This line may not
lways be the shortest lineal distance, but it is
n all cases the shortest electrical distance; that
s to say, that lightning picks out its shortest or
asiest path to earth, selecting in its transit,
with the nicest discrimination, metal cramps
nd fastenings, and by its expansive power
hattering and destroying inferior conducting
ubstances, such as stone, brickwork, or wood.

Now, what is the cost of all this, may be
nquired? Merely a sum of 4*l.* will suffice for the protection of any moderate-sized house, not exceeding, say, 60 ft. to 80 ft. in height, including all cost.

The question now naturally arises, "Why do we not protect our buildings when the cost is so trifling?" The damage done to property, let alone the question of human life, during a single storm would more than pay for the erection of efficient conductors over dozens of houses. A small outlay, it will be seen, may purchase an absolute immunity from a danger which may at a moment when we least expect it number us among those who are gone from us.

Frank Russell, C.E., Assoc. Soc. Tel. Eng.

ABANDONED.

Few men, even speculating builders, intending to build a tower, or other edifice, fail, in these days, to sit down and count the cost thereof before commencing operations on the site; on paper, however, many structures are fashioned for those who have taken no adequate means to ascertain their willingness or ability to carry out the designs.

Many building schemes are abandoned, and with them, if possible, the architects whose services have been employed. Some would-be builders endeavour to make an express stipulation to the effect that no charge shall be made for the drawings, unless the works they represent are executed; and very often they succeed. Men young in the profession, and blind as yet to their own interests, agree to this, and learn by experience what bad policy it is to become a party to irregular proceedings.

But why should a practice, looked upon as dishonourable by the members of another profession, among architects be considered as optional? If a solicitor undertakes a cause on the understanding that he is to receive his fees only in the case of his client proving successful, he loses caste. It is not that he has committed an act in itself base; but he has, for personal objects, done a thing injurious to the profession of which he is a member. Should not an equally high standard of professional conduct be reached by architects?

In many instances in which the intention to build is abandoned, although no stipulation has been made to meet the contingency, the client expresses great surprise at the amount of the charges which he is requested in due course to disburse. He points out, quite unnecessarily, that he has received no benefit from the labours of the architect, and promises to him future gain in compensation for a lenient consideration of the present case. The architect argues that the Institute "scale" has provided for the possibility of works being abandoned, and that he has made his charge in accordance with it. The client retorts that he hates paying "for nothing."

At length the matter is ended by the architect sorrowfully either braving the wrath of his late employer, or making an abatement from his just fees; so that as William Cowper says of the parson and farmer on tithing-day,—

> "he who takes, and he who pays,
> Are both alike distress'd."

Of the alternatives, that of incurring the displeasure of the economist should always be chosen. Would any medical man remit the whole or part of his fees because the patient had died? Would he not very truly say that he was a loser by the death, and that he had hoped to attend the sufferer through his recovery? And might not an architect say as truly that he is a loser by the abandonment of works, and that his hope was to superintend them, and to obtain his full commission?

RAMBLES OF AN INVALID.

It sometimes startles, and not uselessly, those who stay at home, when they hear where less quiet souls have been ranging within a given period. The following portion of a letter from M. Cesar Daly, of Paris, to an old friend in London, will probably have a similar effect:—"In April last year," says M. Daly, "I had a sharp touch of my old bronchial complaint. At the beginning of July I started for Sweden by Germany, where I found hundreds of our cannon forming monuments of every description. I visited Denmark, Sweden (from west to east), going through all the lakes, and assisted, in August, at the Prehistoric Congress of Stockholm, in the name of the Société Centrale des Architectes. Thence I started back through Holland and Belgium, joined my family in the Pyrenees, and, after a month's stay in the mountains, carried my smala off to Algiers, where the boys followed the Lyceum studies. I visited the antiquities in the environs of Algiers, and on the 1st of February started with a military commission through the Eastern Sahara, as far as 800 kil. south of Alger. Two months under tent. Three days after my return, I started with your consul-general, Col. Playfair, for the Aurex mountains, and visited all the principal Roman antiquities of the province of Constantine, taking sketches and notes everywhere. Again two months under tent. I came back through Kabylia with my eldest boy, who joined us at Constantine."

INSPECTION OF THE COVENTRY SEWAGE WORKS BY THE GOVERNMENT COMMISSIONERS.

On Thursday in last week, Mr. Clare Sewell Reade, M.P., Mr. R. Rawlinson, C.B., C.E., and Mr. S. J. Smith, C.E., the commission appointed by the Local Government Board to inquire into the disposal of town sewage, visited the Coventry Sewage Works, which have been established by the General Sewage and Manure Company to put into practical use a plan for the purification of sewage that had been invented and patented by Dr. M. F. Anderson. The commission were accompanied by the Town Clerk of Coventry (Mr. T. Browett), and the city surveyor (Mr. E. J. Parnell), Dr. Anderson, Mr. J. C. Mallins, C.E., and Mr. E. F. Coddington (manager, sewage works), were present to conduct the Commission over the works, and make explanatory observations.

The Commissioners have been appointed to inquire into the disposal of town sewage by three methods, viz.:—1. By irrigation (sewage farm); 2. By precipitation and filtration; 3. By chemical processes. They have visited Bedford, Doncaster, Harrogate, Leeds, Bolton, Chorley, Edinburgh, Glasgow, Wrexham, Banbury, Kendal, Rochdale, Birmingham, Leamington, and Warwick; and on Thursday they inspected the Coventry Sewage Works, and proceeded thence to Rugby. It is expected that they will finish their English tour in about a week, and will then go to some of the principal towns on the Continent; and they hope to be able to make their report before next session of Parliament.

The sewage, as it flows from the city at the rate of about 2,000,000 gallons every twenty-four hours, was first seen, and the visitors were afterwards conducted to a building containing one of Latham's solid sewage extractors, where the straining and extricating of the solid matter was witnessed. The sewage and chemicals having been duly mixed and passed through the precipitating tanks, samples of the effluent water were exhibited in glass test tubes. The effluent water is subjected to a process of filtration, and for the purpose is conducted to a properly-prepared filter-bed. Four and a half acres have been found to be sufficient for the filtration of the effluent water from the sewage of Coventry, but nine acres have been prepared for the purpose of having a second filter-bed ready when the one last in use requires rest or repair. The Commission were conducted to the filter-beds, whence the effluent water could be seen passing into the river Sherbourne from the three large mains of the filter at the rate of about 30,000 gallons per hour. The mode of collecting and drying the precipitated matter was also exhibited. The deposit amounts to about thirty tons or more daily, and if it were to be allowed to accumulate in a semi-fluid state, a nuisance would be created almost as bad as that of polluting the river. It is therefore absolutely essential that the sludge produced shall be daily converted into a portable and unobjectionable condition. It is, therefore, dried, ground into fine powder, and sold as an agricultural manure. The quality of the sewage manure so produced is said to be worth about 40*s.* per ton. Although there is a fair demand for such manure growing up in the neighbourhood, and also in the hop-growing districts, it has been found by experience that it is too low-priced an article either to bear long carriage or to command the farmer's special attention. Therefore, at the Coventry Sewage Works it is now fortified with other fertilising agents, to enable it to compete with artificial manures. It is fortified by a process patented by the company, and its value can be raised to the extent required. We shall hear by and by what the Commissioners thought of the arrangements.

HANDRAILING.

The cutting out of wreaths for handrailing is admittedly one of the most refined geometrical problems that the practical joiner has to master. Hitherto the system chiefly pursued has been that invented by the venerable Peter Nicholson, for numberless years the joiner's sole guide. In the work now before me* Mr. John Jones states "that having more than 1,000 ft. of handrailing to work for the Commercial Bank, Liverpool, in 1847, he studied how to get out the wreaths with less labour and timber and with more accuracy than cutting them out cylindrically." The result was that he discovered any wreath can be cut out square from a plank of the same thickness as the diameter of a circle enclosing the section of the intended handrail. Or, in other language, a handrail circular in section can be cut out of a plank the thickness of its own diameter: so from this it is self-evident that any mould which could be worked upon such a circular handrail could also be got out *de novo* from the same plank.

To those who are practically acquainted with the usual mode of getting out a wreath, the advantages of this system will be self-evident. Peter Nicholson evidently looked at the question more from the geometer's point of view than that of the practical joiner, considering it as a spiral cut out of a hollow cylinder, the section, in the first place, being a parallelogram enclosing the intended finished section of a handrail. It is a difficult matter to explain without the aid of models; but the advantages of Mr. Jones's system can be seen when it is stated that, supposing a handrail, circular in section, were required to be worked by the usual mode, a plank, thick enough to contain this square section and its twist in the length of the wreath, would have to be provided, and then the circular rail would be worked out of it. In sawing it out of the plank, the saw would have to traverse the plank at angles varying to the plane of its surface, the extra depth of sawing required at the point of greatest twist being a very serious matter.

By Mr. Jones's system this labour is reduced to a minimum, the plank being only the thickness of the diameter of the handrail, and being sawn out square the whole length of the wreath. This is an extreme instance given to illustrate the system. No doubt, were handrails perfectly square in section,—which they never are,—the advantages of the new system would be at a minimum; but still, though no wood might be saved, there would still be a saving in labour. In the real practical work of handrailing there is a saving of about one-third of timber, and fully one-half in time, by the adoption of the new system. It will perhaps bring it clearer to the mind how this saving is effected, if we consider that whatever be the section of the handrail as it advances up the spiral, the section revolves on its own axis. Evidently, then, if our system starts on the principle of an enclosing square, the wreath must be cut out of a plank sufficiently thick to contain that square, through the amount of revolution or twist from one end of the wreath to the other.

I have purposely abstained from any technical description of the mode of setting out the wreath by curves and ordinates, for which I refer those interested to the book itself, where all these practical matters are fully and clearly set forth. The invention is an eminently practical one by a practical joiner, who, I believe, taught it for some years at the Technical School of the then Mechanics' Institute in Liverpool. The system is practised now by some of his pupils in Liverpool. My object in writing has only been to let those interested know what can be done in handrailing through the labours of a thinking mechanic. Would that there were more such to make building the scientific pursuit it ought to be.

T. Mellard Reade, C.E.

* Handrailing cut Square to the Plank without a falling Mould. By John Jones. E. & F. Spon.

Monument to the late War.—The monument to be erected near Metz, but on French soil, in memory of the battles of Mars la Tour, Gravelotte, and St. Privat, has been temporarily placed in the Champs Elysées. It represents France in an erect attitude placing a wreath of *immortelles* on the head of a wounded soldier, whom she is supporting in her arms. At her feet two children seated on an anchor are catching the rifle falling from his hand.

SUDDEN DEATH OF AN ARCHITECT.

Mr. James Woodward, who has acted as architect and estate agent to the Duke of Cleveland, at Raby Castle, for a great number of years, on Monday week left the Castle, in a conveyance, accompanied by a coachman to Cockfield, apparently in exceedingly good health and spirits. Having transacted some building business, on his return, and when near Riverstone, he fell into the coachman's arms, exclaiming "Oh, George!" and instantly expired.

The driver, dreadfully alarmed, was much relieved by Dr. Copeland driving up at the time, and whose opinion is that the deceased died from a diseased heart, and that no inquest was necessary.

UN-SANITARY SIGNS.

(*For the use of the School Board Schools.*)

When streets are foul and scavengers are few,
When drains are choked and sewer-gas leaks through,
When human dwellings have a noisome smell,
You 'll likely find the houses "built to sell."

When infants pine upon their mother's breast,
When parents' looks show illness and unrest,
When doctors prosper where they starved before,
You 'll likely find that deaths than births are more.

When party broils and wars of creed are rife,
When rulers shirk the laws of human life,
When duty means the greed for private wealth,
You 'll likely find a blighted public health.

But if the truth and conscientious deeds
Are shown by men to meet all healthful needs,
Then, and then only, will the sun-burst warm
Break o'er the land in Sanitive Reform.

THE CAMBRIAN ARCHÆOLOGICAL ASSOCIATION.

The thirtieth annual meeting of this Association was opened on the 20th inst., at Carmarthen. Lord Cawdor having taken the chair, the Bishop of St. David's delivered the inaugural address, in the course of which he said,—He might ask them to consider the question, What was the proper work of a Cambrian archæological association? It was very gratifying to observe the progress which the Association had made from very small beginnings. Its organ, the *Archæologia Cambrensis*, had nearly completed the thirteenth volume, and had shown no symptom of failing for want of matter. A great deal of the work which the Association had to do was local in its character; and although in these days it was not easy to say where Wales ended and England began, it still had to be treated in many ways as a separate power of itself. In Cornwall, Wales, or Brittany, on the one hand, and in Ireland, the Highlands and the Hebrides, and the Isle of Man, on the other, we find the lost relics of a widely-diffused group of nations in a greater or less degree of purity, but still in a purer condition than was the case anywhere else. How far were the inhabitants of these countries, say of Gaul and Britain, homogeneous at the period when the light of history first broke in upon them. That light revealed certain ethnological differences between the inhabitants of certain districts. In what did such differences originate? Were they in some measure owing to the partial absorption of a pre-existing race? What remains exist of the pre-existence of such an earlier race, or was it possible to trace it in the feature, habits, or language of any among the present inhabitants of these countries, or in their local nomenclature? What light did monuments throw upon the question? It was necessary that the law should now be put in force for arresting the wanton destruction of national monuments. One class of such monuments only needed to be let alone. If camps and other earthworks were not levelled or ploughed away; if cromlechau were not blown up or turned into gateposts; and if inscribed stones were simply protected and undisturbed, nothing more was wanted or could be expected. He could not conceal his regret, as an archæologist, that the zeal for church restoration had not at all times been according to knowledge. He believed it required a greater architect to restore a church than to build one. An architect who dealt with one of the rude, solemn, quaint Welsh country churches, wanted not merely artistic skill, but something of poetical feeling. Those churches needed to be treated with the most reverent care. He thought their Society had done a great deal, but he was quite sure it had still very much more to do in the way of stopping unadvised and hasty restoration.

After an excursion to Llanstephan Castle, and the mansion of Sir James Hamilton, there were various meetings and papers read, followed by discussions, the history of Wales being considered as deserving to be written.

HYDRAULIC LIFTS FOR CANAL VESSELS.

The trustees of the River Weaver navigation have recently applied the principles of hydraulics to an invention in lifts that may, in time, supersede the builders' crabs and windlasses for lifting masonry and other heavy materials. The site of this new invention is at Anderton, where the Trent and Mersey Canal, on its way to Runcorn, approaches the River Weaver, and where there is a considerable transit proceeding from the iron and pottery districts to the sea at Liverpool; but as the canal is more than 50 ft. above the river, the whole of the trade has had to be transhipped at a great expense and labour.

The river vessels are now raised at one lift up to the level of the canal, and also lowered again. The lift consists of two wrought-iron tanks, or open pontoons, situate side by side, and each of equal section with the canal, and of a length sufficient to receive the longest of the vessels which navigate the canal. One pontoon descends while the other ascends, the time occupied in making the ascent and descent being, on an average, about three minutes. Each pontoon is fitted with ends that lift up when connexion has to be made with the canal or the river, thus allowing a free passage for the vessels out of or into either. These lifting ends, and the junction of the pontoon with the iron branches of the canal, are all made perfectly water-tight by means of very ingenious arrangements of india-rubber packings, which are brought into operation by the motions of the lift and the pressure of the water.

The practical construction of this lift has been divided between Mr. Edwin Clark and his representative, Mr. T. Duer, under the inspection of Mr. Sandemann, the engineer of the Weaver Trust. The works were carried out by Messrs. Emmerson & Co., builders and contractors.

THE REMOVAL OF THE SEA.

Sir,—That bottling off of the sea to which you referred in your issue of July 31st, is by no means a very difficult or great undertaking, and will in all probability turn out a very can-tankerous affair.

But there is another more important tapping of the sea in contemplation, in order to fill up that vast sandy flat and vat, the Great Desert. Even this would not in itself be a very stupendous feat; nevertheless, I am not exaggerating when I say that the tapping of the ocean for such a purpose would not only involve momentous changes, but tremendous consequences, even to the possible disturbance of the balance of all terrestrial things. Whether this contemplated removal of the sea would be for good or ill to mankind may possibly be within the powers of calculation of some of your astronomers. The submergence of the desert would certainly affect the earth's orbit, its axial rotation, the tides, and the sea margins. As Nature has herself emptied the Desert of the Sea, I would rather myself trust to her engineering, than revert to a præ-historic state, to a stage in the earth's development, which Nature has long since cancelled. But a poor camel is not blessed with that human reason which can probably demonstrate that this projected removal of the sea would not only be of advantage to the merchants of London and Timbuctoo, but that the Universe would be benefited by the change; they tell me that science has long since settled all the troublesome details of fact, and is now entirely deductive in her proceedings. Men have only now to ask themselves if anything be of advantage to the English trader, and if it be it will necessarily follow that it will also be for the benefit of the vested interests of the entire Universe. Otherwise I should have suspected that if this project of swamping the desert were to be carried out, the white populations of the Globe would have to look black as well as those of the Niger. I should like to inquire of Mr. Darwin for what special purpose we camels were created, and why we were called the ships of the desert? Is our

kind to be wrecked in the way proposed? The submergence of the desert would certainly take a great weight off our humps and shoulders, but our occupation and seven stomachs would be gone. But what matters that, as long as there are turtle, and there are aldermen? To save us, Mr. Editor, please tell the aldermen that if the sea be removed, turtle will, in a few days afterwards, be extinct everywhere but in aquaria.

A Camel.

INLAND NAVAL ARSENALS.

Sir,—It is, on all hands, agreed that England ought to be made as impregnable as human skill can make her. All our great naval arsenals are too much exposed, and, therefore, ship-building might be considerably impeded in the case of war. The defence of our present dockyards is difficult, and to effectively fortify them is a work of enormous cost. I would suggest that one or two *inland* naval arsenals should be established on the lakes, which are in the midst of our island fastnesses,—of our natural fortifications. There fleets could be built, and lie in safety till ready for sea, or even under some circumstances the fleet itself might form a ship citadel. Thus, in the event of any reverses in the south, our position in the north might be rendered completely impregnable, and enable us, either by land or by sea, to retrieve possible reverses. Coal and iron would be at hand, and therefore could be readily and economically utilised.

W. Cave Thomas.

GENERAL FOREMEN AND CLERKS OF WORKS.

BRICKLAYER *v.* CARPENTER.

Sir,—Your correspondent, under this heading, very truly remarks that a carpenter and joiner is generally advertised for, and preferred, to occupy the position of clerk of works. I am quite willing to endorse this statement, but, I think, those that follow, pointing to the bricklayer as the proper person for the place, are not altogether correct. This question should be viewed from a broader basis than that assumed by "Bricklayer," which can be best done by noting the effects of the two trades upon the minds of the respective workmen.

The carpenter and joiner in preparing himself to be a competent tradesman, has to obtain a thorough knowledge of the principles of construction, and also to apply those principles in the timbering of the floors and partitions, trimming for the various openings, and more especially in the construction of the roof, which not unfrequently calls into play a great deal of brain power and mechanical ingenuity. The roof holds a very important position in any building, and it is there that the science of construction culminates.

It is not an ordinary mind which can grasp the formation of an elaborate roof in its entirety, and also in detail, and it is in such cases that the knowledge and training of the efficient clerk of works is called into requisition.

Your correspondent states that a competent joiner passes all his early life in the workshop, and does not appear upon the building until the superstructure is complete. It is very certain that a number of years must elapse before a man attains that manipulative skill and practical knowledge which qualify him for a joiner; but his education is not even then complete. After acquiring that knowledge he has to gain a large experience in fixing, &c., before he is in a position to accept a leading situation. It is necessary for him, therefore, to be a carpenter as well as a joiner before he attempts this.

Now, a carpenter's advent upon a building occurs almost as soon as the bricklayer's; for, has he not to prepare the centreing, lay the joists, and erect partitions, as the work proceeds? Indeed, if it were not for the carpenter the bricklayer's operations would soon reach their limit.

I have had some experience both in bricklaying and carpentering, and I am of opinion that the former is by far the most mechanical trade, and is much more readily acquired than the latter. Again, the ordinary bricklayer has not nearly the facilities of the carpenter for acquiring that extensive and varied knowledge of the attendant trades, which is absolutely necessary for a man holding so responsible a situation as clerk of works.

You see the bricklayer's ordinary work, consisting, as it does, of such a continual repetition, does not compel any mental exertion, consequently the mind does not become educated, and the man settles down with quiet contentment to lay bricks. Besides, should a bricklayer endeavour to acquire the necessary command of other trades, the difficulties he has to contend with are far greater than those of the carpenter, inasmuch as the latter has already acquired that practical knowledge of construction which is the key to all building operations.

It is quite possible for an ordinary carpenter to construct a good house by himself; but I think if a bricklayer were to attempt the task he would be somewhat troubled.

I have purposely written this letter to apply to ordinary house-building, as the more elaborate the work becomes the greater is the knowledge demanded, and the tradesman who is not qualified to control a small building would certainly be incompetent to take charge of larger works.

On buildings where stone is used in lieu of bricks, the mason supersedes the bricklayer, but the carpenter still retains his leading position. My previous remark respecting the education of the mind is still further evidenced by the mason, as the more he studies and thinks of his work, the more nearly he approaches to the standard of the art-workman, leaving far behind the mechanical drudge whose work is truly manual labour only, giving no evidence of the higher powers which, through disuse, are nearly obliterated.

How is it that the mason puts not forth his claim? It is because he truly understands his relative position, and does not endeavour to force his work (being chiefly artistic) into collision with the more scientific labours of the carpenter.

One word in respect of the "load of prejudice" under which the bricklayers labour. It is certainly a fact, and one to be lamented, that bricklayers, as a rule, do not receive the education which carpenters and joiners do; besides the nature of their occupations, being so monotonous, has a tendency to dull the brain, and does not excite that active interest which is awakened by the ever-recurring novelty of the joiner's work. I therefore say that it is not prejudice, but a stern fact, that the bricklayer is not so well qualified as the carpenter to be recognised as the leading tradesman. This is so very generally acknowledged, both by precedent and present custom, that comment is unnecessary, but still I join with "Bricklayer" in saying, "Let the best man win."

E. L.

THE WIDENING OF LONDON BRIDGE.

Sir,—It appears to me that the plan proposed for the widening of London Bridge will, if it be carried out, destroy its fine aspect. The employment of iron girders, which should saddle the bridge, and whose ends would only have the appearance of cantilevers, would be a very strong form of construction, and one which might be made ornamental. This plan would admit, too, of longitudinal girders being connected with the transverse, so as to strengthen the entire structure of the bridge.

Hundredweight.

LIABILITY TO REPAIR ROADS.

THE KENSINGTON VESTRY *v.* THE VESTRY OF ST. MARGARET AND ST. JOHN, WESTMINSTER.

At the Hammersmith Police-court, Mr. Harding, the Clerk to the Kensington Vestry, stated that their parish claimed of the defendants the sum of 87*l.* 6*s.* 9*d.*, being their apportioned expenses for the repair of Marloes-road under the compulsory powers of Acts provided. Under the Westminster Improvement Act, the parishes of St. Margaret and St. John had power to purchase a site for a new workhouse. The Act also specified that the land should be deemed as part of those parishes. In pursuance of that power, plots of land were purchased in Marloes-road, and a workhouse was built upon the site, the whole being in the parish of Kensington. The road had lately been repaired by the parish of Kensington, and the sum sued for was the estimated share apportioned on the parishes of Westminster.

Mr. Bridge said it would be very hard on the owners of houses in Marloes-road if they were called upon to pay the whole amount, and he had no hesitation in deciding in favour of the Kensington Vestry.

Mr. Rogers, Vestry Clerk for the Westminster parishes, asked for a case for the opinion of a superior court, and contended that his parishes were not liable. Another objection was that they feared that the Poor-Law auditor might not pass the amount if once paid, and would surcharge those who signed a cheque for the amount.

Mr. Bridge expressed surprise, but was quite willing to grant a case; but the effect of this miserable quarrel would be to saddle the ratepayers with heavy costs. He thought his order would protect the Vestry from being surcharged.

An order for payment was made.

STRIKE AT TUNSTALL.

On Thursday evening, the 12th instant, Mr. Grosvenor, builder, of this town, unexpectedly received notice from his bricklayers and labourers working at the Primitive Methodist new schools and a number of houses in Henry-street, for an advance of wages, the bricklayers 1*d.* per hour (from 7*d.* to 8*d.*), the labourers ½*d.* per hour, increase. On Saturday morning they demanded a satisfactory answer. Mr. Grosvenor at once told them most decidedly he should not give any advance under such circumstances, and referred them to the rules of the society agreed to by masters and men, which require six months' notice for any alteration of terms, such notice to be given at other times than in August. The men replied that some sub-contractor on the railway was giving the increased wages, and therefore they required the same. Mr. Grosvenor still refusing the advance with such notice, the men left him at a few hours' notice, thereby putting him to great inconvenience, he having large contracts in different parts of the country.

SOLIDIFIED CEMENT.

Sir,—Strolling out one evening last week from Darlington, I came to a railway bridge crossing the river Tees at Low Conniscliffe; upon going to the water's edge I noticed a number of what seemed to be sacks of flour, but, upon examining them, I found them to be blocks of solid stone, with the fragments of the sacking still upon them, the marks of the sacks, the seams, the shape at the bottom, and the tying at the mouth being complete. On inquiring I learnt that five or six years ago, when the foundations of the bridge were being made, the sacks of cement were on the water's edge, when one night a freshet came down the river, covering the sacks, and turning the cement into stone, a fragment from one of which I enclose, it taking a deal of labour to chip off. The remains of a dozen can be counted.

T. B. B.

CLAIM FOR PERSONAL INJURIES.

IMPORTANT TO BUILDERS.

In the County Court, Walsall, Harry Walters, slater, Walsall, sued James Tute, builder, of the same town, for 25*l.* as compensation for personal injuries, the issue being sent down for trial from the Court above. The plaintiff's case was, that in February last the defendant had a contract for the building of some houses and outbuildings at The Flock for Mrs. Bowen, his contract requiring him to provide all materials. During the erection of the buildings he made a contract with Mr. Oliver Joynt to do the slating, and on the 6th of the month named, as the plaintiff, who was with Mr Joynt, was cutting off the ends of some laths which projected from the brewhouse, a rafter upon which he had occasion to rest broke through the middle, and he fell down on to the floor of a sort of passage, a distance of 10 ft., and sustained a compound fracture of the right leg. While he lay upon the ground, immediately after the fall, he picked up a broken rafter, and found that at about the middle of it there was a large dead knot, extending from side to side, and within ½ in. of the top, and to within ⅝ in. of the bottom; but afterwards when an attempt was made to find it, it had disappeared. By consent, a verdict for 30*l.*, including costs, was entered for the plaintiff.

A SUB-CONTRACTOR IN A FIX.

At a meeting of the St. George's Union last week, the clerk read the following sub-contractor's appeal:—

"*To the Committee of Building Works, St. George's Union.*

31, Church-street, Chelsea.

I have taken the liberty of addressing you respecting the following:—I unfortunately entered into a contract with Messrs. Thorn & Co. to execute the plastering of the above works, and have now executed work with materials on the ground to the amount or about 250*l.*, towards which I have received nothing.

Being a serious loss to me, I beg to ask if you will allow me to remove my materials not used, and also my plant, which would be of about the value of 40*l.* By so doing I would be truly thankful.—W. J. Taylor."

The applicant was informed that the guardians could not give the permission; that he was in the same position as the contractors, Thorn, whom alone could be recognised.

Mr. Jas. Fergusson.—The Fould Prize, awarded triennially by a commission of the Paris Academies of the Inscriptions, Sciences, and Fine Arts, for an historical work on the Fine Arts, has not been awarded this year. According to the *Times*, Mr. James Fergusson's "History of Architecture" has been found the work of most merit, though not fully answering to the conditions, and the revenue accruing from the bequest has accordingly been awarded to him for three years.

CHURCH-BUILDING NEWS.

Grosmont (York).—The new church of St. Matthew was opened on the 13th inst. by the Archbishop of York. The church consists of nave, north and south aisles, chancel, organ chapel, and vestry in the lower chamber of the tower. The exterior of the edifice is plain. The church is built upon an acoustic principle derived from a musical chord, and discovered by Mr. Armfield. The aisle walls are built upon the foundations of the original church; the length of the nave has been increased as far as the outer wall of the old tower; the aisles are divided from the nave by an arcade of four bays on each side, carried on cylindrical columns, with carved caps and bases. The nave roof, is of a hammer-beam construction, with curved ribs, the portion below the hammer-beam forming groins starting from the capitals of shafts, each alternate one of which is carried down to the ground in front of the columns supporting the nave arcade and clearstory. The portion above the hammer-beam is boarded to the curve of the principals. The seats are open framing, and varnished; the heating is by the Derwent Foundry Co., Derby. The chancel is entered through a lofty moulded arch of two orders, the outer order carried on a checked pier ornamented with banded shafts, the inner order is carried on a respond. There is a rise of seven steps to the altar. The three-light east window and the triple-light in the north wall, are filled with stained glass. The chancel is built of cleansed local stone, and in the sacrarium are sedilia and piscina. The roof is curved to the same radius as the chancel arch, and is divided into panels with moulded ribs. The stalls and organ screen are of moulded oak. The floors are laid with Maw's encaustic tiles. The works have been designed by the architects, Messrs. Armfield & Bottomley, of Whitby, and carried out under their superintendence by the following contractors:—Mr. William Barton, mason; Mr. William Robinson, joiner; Mr. David Richardson, joiner; Mr. John White, joiner; Mr. Joseph Hardgreaves, slater; Mr. J. Brown, plumber; Mr. I. Bolton, plasterer.

Blackwood (near Newport, Monmouthshire).—On the 16th inst., a foundation-stone of a new church here, to be dedicated to St. Margaret, was laid by Miss Williams, of Maesruddud. The church, which is designed in the Early English style, will consist of a nave, 58 ft. long by 24 ft. 6 in. wide, a chancel, 28 ft. long by 20 ft. wide, a small vestry and organ-chamber, and a south porch. The gable, at the west end of the nave, will be surmounted by a bell-cot. The church will be built of a local stone obtained from a quarry at the back of the site, and Bath stone dressings. The walls of the nave will be 15 ft. in height to the wall plate, and will carry an open-timbered roof. The height from floor to ridge will be 35 ft. Accommodation is provided for 224 persons, but at present it is only contemplated to build the nave, which will hold 200 adults. Mr. Bowes A. Paice, of London, is the architect, and the contract has been taken by Mr. Esau Hargest, builder, of Merthyr Tydvil.

Wimborne.—The foundation-stone of a church about to be erected in the New Borough, Wimborne, has been laid. Mr. Walter J. Fletcher, the county surveyor, is the architect, the builder being Mr. Augustine H. Green, of Blandford. The building is dedicated to St. John the Evangelist, and the cost is estimated at about 3,000*l.* The site has been presented by the Hanham family. The style of architecture is to be the Early Decorated, the ground-plan being in the form of a cross, with two transepts, north and south. There will be no aisle. From the west wall to the apse the extreme length of the church will be 82 ft., the width being 24 ft. Fareham red bricks, with exterior Doulting stone dressings, will be used in the construction, the interior dressings consisting of Corsham Down stone. The roof will be open-timbered, plastered between the rafters. There will be open seats to accommodate 400.

Alstonefield.—The chancel of this church has been re-opened after restoration. The original building was Norman. The chancel arch and a doorway in the south wall are all that remain of the original structure, if we expect a gurgoyle in the tower and fragments of the churchyard cross, one of which is built into the north aisle wall, and several others which have been discovered, during the restoration of the chancel, built into the wall over the chancel arch. The chancel is Early English, and three small lancet windows, deeply splayed, remain. The tower is Decorated, and the body of the church, speaking generally, Perpendicular, with a very plain clearstory, but, in the wall of the south aisle, two elegant windows of that period. The pewing of the church is of carved oak of the time of Charles I., and is in excellent preservation. The restoration of the fabric of the chancel has been carried out at the expense of Sir John Harpur Crewe, bart., the lay impropriator. Mr. Edward Purchas, of London, was the architect, but shortly after the completion of the designs he was disabled by illness, and the superintendence of the work devolved upon his brother, the Rev. W. H. Purchas, vicar. The walls of the chancel have been made sound, some interesting Early work has been disclosed, a new open-work roof has been put on, and in place of a debased Perpendicular window at the east end one of the Decorated period has been inserted. The east window has been filled with stained glass by Burlison & Grylls, of London. The centre light contains a picture of the Crucifixion, and on either side stand St. Peter (to whom the church is dedicated) and St. John. Beneath are three groups representing the Journey of the Wise Men of the East towards Bethlehem, their Adoration of the Infant Saviour, and their Appearance before Herod. The builder is Mr. Woodisse, of Hope, Alstonefield.

Middle Littleton.—The church of Middle Littleton was reopened, after having undergone further restoration, on the 13th inst., on which occasion an additional piece of burial-ground, given by Lord Northwick, was consecrated by the Bishop of the diocese. The present work has included a more thorough restoration of the edifice than that carried out some time ago, with the exception of the tower, which is still much in need of attention. The parishioners, under the direction of the vicar (the Rev. H. E. Godfrey Faussett Osborne), have already restored the other church, of which Mr. Osborne has the charge as well, and built new schools. The chancel has been adorned by the addition of a reredos, and other improvements have been effected. The designs for the restoration were prepared by Mr. Preedy, the architect.

Campden.—A contract has been entered into for the restoration of this church, which has been commenced. The present contract extends to the repair of the roofs of the north and south aisles and north transept, the restoration of the parapet and turrets of the tower, the enlargement of the vestry, the formation of a dry area around the church, the reglazing of the whole of the windows, the putting in of heating apparatus, and the fixing of a lightning conductor to the tower. The north gallery has already been removed. The work of restoration will consist of the removal of the western gallery, the opening out of the west window, the repewing of the church, and other matters. Messrs. Patman & Fotheringham, of London, are the contractors; and Mr. Habershon is the architect.

Birmingham.—The work of renovating and decorating St. Thomas's Church, though not yet completed, is so far advanced that the building was re-opened on Sunday last. Hitherto St. Thomas's has been devoid of all internal ornamentation to relieve the plainness and cold appearance of the building, beyond what was furnished by whitewashed walls and a whitened flat ceiling. The panels of the ceiling are painted a rich blue, with buff "styles" or margins, the larger bands being a French grey, with gilded intersections and fret ornamentations at returns. The cove has Greek honeysuckle enrichments on a buff ground. The walls generally are a French grey, the architraves of the windows being worked in buff, with a leaf enrichment. The gallery fronts, which before were simply oak-grained, are now worked in a combination of colours, consisting of browns, maroon, and blue, with an enrichment worked on a gold ground, while the columns supporting the galleries are a bright blue, with gilded capitals and maroon bases. The centre panel of the ceiling bears the monogram "I.H.S." in gold, and on the panels on either side there are devices worked in gold on a blue ground. The pews are painted a dark colour and varnished. The cost will be about 500*l.* The architect was Mr. Yeoville Thomason, from whose designs the work has been executed by Mr. Seers.

WATERTIGHT PONDS.

Sir,—Having lately constructed some Ponds with concrete on a large farm, for agricultural purposes, and as yet they do not prove a success, not being perfectly watertight, could any of your readers give me any suggestion in making them so, at the least expense, by any other means than cementing them? We have at least the advantage of a good firm bottom to work on. E. S. W.

DISSENTING CHURCH-BUILDING NEWS.

Broughty Ferry.—On the 26th ult. the foundation-stone of the Queen-street United Presbyterian Church, which is being erected for the congregation worshipping in the Public Hall, Broughty Ferry, was laid by Provost Cox, of Dundee. The church is in the Geometrical Pointed style of architecture. The entrance, being at the south-west corner, gives access under the spire to a corridor, in the centre of which is the inner door to the area; passing over the tower porch is a gallery staircase; contiguous to the corridor are ladies' cloak and retiring rooms. At the opposite or pulpit side of the church are an organ apse and choir-room, approached by special entrance at the end. There is a third external door, intended to communicate with future vestry and lecture-hall, but in the meantime serving as means of egress to the congregation. The church has been arranged on plan as nave and aisles, separated from each other by iron columns. This arrangement is expressed externally by gables pierced with vertical and circular windows. At the entrance, or south-west angle, are the tower and spire. The church is to be arranged to accommodate 575 sitters. All modern church appliances have been provided for. Messrs. Maclaren & Aitken are the architects, and the designs are being carried out by Messrs. A. & J. Black, masons; Mr. James Steven, joiner; Mr. Murray, plumber; Mr. Fyffe, slater; and Messrs. Adam & Son, plasterers. The cost will be about 3,500*l.*

Rossett.—For about sixty years past there has been at Rossett a Presbyterian church, situated by the side of the turnpike-road, near to where there was a ford which had to be used by vehicles. Accidents having taken place, it was considered advisable to erect a bridge, for which purpose the road was diverted: the chapel was therefore not in so favourable a situation as it was previously, and it was found necessary to erect a new building. Mr. Alexander Balfour, of Liverpool, gave the site, which was purchased for 260*l.*, and is situated in a prominent position on the high road. The building is estimated to cost 800*l.* The architect is Mr. Douglas, of Chester, and the chapel, which will accommodate 250 persons, will be of Gothic design, its outer walls being of rubble faced with Cefn stone.

Dorchester.—The foundation-stone of a new chapel about to be erected by the Primitive Methodists in Durngate-street has been laid; the site has been given by Mr. H. G. Sturt, M.P. The building is designed in the Early Gothic style. Externally it will be built of Broadmayne bricks with stone dressings, the walls built hollow and at a ground level a course to exclude damp. The gabled front has four buttresses, the two corner ones have quadrangular pinnacles with carved finials; the apex of the gable an iron ornamental finial. The front entrance, in addition to the stone jambs and arch, will have a column on each side with carved cap and moulded base. Over this doorway is a triple window with traceried head. The spaces between the buttresses on each side of the door have lancet windows. There are five buttresses projecting on each side, and between each are two-light windows. The roof will be covered with Bangor slates, with courses of Penmoyle green slate, the ridge having ornamental tile cresting. The roof principals are partly exposed. The walls are boarded from the floor above the pews, and the upper part stuccoed. The internal fittings are of pitch pine, stained and varnished. The chapel is 31 ft. by 39 ft., and 17 ft. high; at the sides of walls 26 ft. 6 in. to ceiling; and will accommodate 200 persons. Mr. Samuel Jackson, of Weymouth, is the architect; and the work is being executed by Messrs. Davis & Son, of Dorchester, the contract price being 600*l.* Ground is reserved for extension of the chapel, and erection of a school-room.

Eastwood (Rotherham).—Four memorial stones have been laid of a new Weslyan chapel here. The building will accommodate about 800, and will have a gallery all round; the one at the north end, which is over the vestries, will be for the organ and singers. Under the chapel is a large school-room, with class-rooms; also heating-cell, kitchen, lavatories, &c. The chapel is approached in front by a wide flight of steps leading from the street, and the fittings are pitch-pine varnished. The cost, exclusive of site, will be 3,000*l.* The architects are Messrs. Tacon & Rawson, of Rotherham; and the builder is is Mr. Thomas Saul, of Mexborough, near Rotherham.

Chesterton.—Latterly, from the increase of the population of Chesterton, the Wesleyan chapel has become much too small for the congregation connected with it. Consequently the trustees have decided upon the erection of a new place of worship. The site is near the present chapel, and occupies a commanding position in the district. The memorial stones, four in number, were laid on the 16th inst. The building will be erected from the designs of Mr. G. B. Ford, architect, Burslem. The design of the chapel is Italian in character. The gallery will be extended on three sides, and the building will seat about 550 persons. The chapel will be erected by the Rose Vale Building Company, and the cost, inclusive of 400*l.* for the site, will be about 2,400*l.*

NEW ASSIZE COURTS AT NEWCASTLE.

The present assize court sat Newcastle for the transaction of the county and town business, having for some time been found to be altogether unsuitable for the purpose, the county and town authorities contemplate the erection of entirely new courts, in which the assize business of the county of Northumberland as well as that of the town of Newcastle, shall be conducted under one roof. It appears that the existing courts are not only small and inconvenient in themselves, but that their situation, in immediate proximity to the railway, has frequently called forth complaints from the judges on circuit, owing to the constant annoyance kept up by the railway whistle. The subject was taken into consideration last week, at the Midsummer sessions of the county of Northumberland, when the presentment by the assize grand jury recommending the erection of new courts was discussed. The mayor of Newcastle, one of the magistrates present, said it was on every ground desirable that new courts should at once be built, and there would be no difficulty whatever in raising the money required, which it was estimated would be from 100,000*l.* to 120,000*l.* The only difficulty would be the making of arrangements between the county and the town as to joining in the cost. It was finally agreed that new courts should be erected, and a committee of magistrates of the county was appointed to confer with a committee of the Newcastle town council as to the best means of carrying out the object.

SALE OF PERDISWELL HALL.

Perdiswell Hall, near Worcester, one of the most ancient seats in the county, and which has been identified with the family of Sir Offley Wakeman for many generations, was last week brought to the hammer. The house was rebuilt about sixty years ago, at a cost of about 20,000*l.*, and it was stated at the sale that it had taken the Wakeman family nearly a century to get the property together. In offering it for sale, the auctioneer stated that, if divided, the estate ought to fetch 200*l.* per acre, and in that event it would realise about 24,000*l.*, the estate comprising an area of 120 acres. After some active biddings, the property was knocked down to Mr. John Skipworth Gibbons, of the Leasowes, Halesover, Worcestershire, for 24,000*l.*, in addition to which the purchaser had to take, under the conditions, a portion of the timber on the estate valued at 1,350*l.*

THE OPENING ADDRESS: BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The truth is not always pleasant: still it ought to be told. Sir John Hawkshaw's address at Bristol, on Wednesday, was a failure, and is so considered by all who heard it,—quite unworthy of himself and the Association, as, although containing some curious matter, it can, for the most part, be found in elementary works.

Foundation-stone, Stanley.—On the 17th inst. the foundation-stone of the new church of St. Thomas, to be erected at Stanley, near Crook, was laid. The parish is entirely a new one, and has a population of about 4,500. The building, which will seat between 300 and 400 persons, will be erected on land given by Messrs. Bolckow, Vaughan, & Co., large coalowners in the neighbourhood, and when finished will cost nearly 3,000*l.*, 2,000*l.* of which sum have already been subscribed.

THE STAR THEATRE AND MUSIC HALL, BRADFORD.

A new place of amusement has been erected near the bottom of Manchester-road. The music-hall portion was opened on Monday last. This section of the building is for all practical purposes separate from the theatre that will be erected on the top of it. To adapt the building somewhat to the shape of the piece of ground upon which it has been built, the main façade has been erected in the form of a crescent. The front is not a very ornate one, strength and simplicity seeming to have been the qualities more particularly aimed at by the architects. There are two arched doors in the centre of the front, entered on a level with the street, one of the doors leading to the pit, and the other to the upper seats,—balcony, promenade, boxes, &c. There is also an arched door at each corner, opening directly into the street, the one on the left being the stage-door, and the one on the right an extra exit door for the pit. The pit is reached by a descent of twenty-eight steps, and the arrangements are such that if visitors find on reaching the bottom of the first staircase that the seats in that quarter are occupied, but there is room on the other side of the hall, they have simply to pass on through a corridor that runs under the stage to get into the pit on the opposite side to that on which they entered. The music-hall will accommodate over 2,100 persons, 1,000 in the upstair seats and 1,100 in the pit seats; besides which there are private box occupiers. The height of the building from floor to ceiling is 32 ft.; it has an average width of 70 ft. The stage is 6 ft. from the floor of the pit, and the proscenium opening is 26 ft. wide by 21 ft. high. From wall to wall the width of the stage is about 50 ft. and it is 19 ft. in depth. The balcony or gallery of the hall is raised 8 ft. 6 in. from the bottom of the pit at the front, and 10 ft. at the back, being supported by a number of massive iron pillars. There are six rows of seats round the balcony, each 2 ft. 8 in. in depth, and from 18 in. to 22 in. in height, one above the other. At the top of the balcony there is a promenade capable of accommodating a large number of spectators. The balcony will seat 400 persons. There is a fall of 4 ft. 6 in. from the back to the front of the pit. The hall is lighted by twelve sun-lights,—three on each side on the upper floor, and the same in the pit, the hot air being carried off by sheet-iron flues.

The scenery has been painted by Mr. Samuel King, of Bradford. Mr. Charles Fox, of London, has painted the act-drop. Messrs. Jackson & Longley, of Bradford, are the architects; and the following Bradford tradesmen have done the various works in connexion with it:—Mr. H. Birkby, mason; Mr. John Shepherd, joiner; Messrs. Howroyd & Sons, plasterers; Messrs. Sutcliffe & Wilkinson, plumbers; and Mr. Samuel Oddy, painter.

BURSTING OF A RESERVOIR AT CARDIGAN.

On the 17th inst. the upper or new mill-pond, in connexion with the Cardigan brickworks, about a mile and a quarter from the town, burst. This reservoir, in extent about seven acres, is formed in a natural hollow about 150 yards above New Mill, a barrier across its mouth damming up the water, and was provided to supply water to the machinery at the brickworks. Below New Mill is another pond, formed some years ago to provide water for the Cardigan flour-mill; below this the stream flows under Tregibby Farm to Stepside Farm, and thence to the Mwldan brook and brickyard. Owing to the heavy rains in the night the upper reservoir had become full, and on the men going to open the sluices to relieve the pressure against the embankment, it was observed to be giving way, and the men had scarcely time to escape to give notice at New Mill before the whole front of the pond gave way, and the water rushed down in an immense wave, destroying the waterwheel of Capel Farm in its course to New Mill, and committing great havoc, and destroying the Stepside Bridge. At the brickworks the damage done is immense. Passing the brickyard the water assumed the appearance of an immense wave, flooding portions of the Bathhouse Farm, and carrying away a rick of hay as it stood, which, in its course downwards, struck against a house, which, with its contents, was utterly demolished. From here down to the river Tivy, every house in the Mwldan was flooded, and two lives were lost. The slaughter-house and Middle Mwldan bridges are thoroughly destroyed, and the Upper Mwldan bridge partially so.

The Town Council took immediate steps to shelter the people who had lost their all. The loss is estimated at 12,000*l.*

THE RUINS IN IONA.

In the summer of 1873, the Duke of Argyll requested Mr. R. Anderson, architect, Edinburgh, to visit the island and report as to the best mode of dealing with the buildings, which, up to that time, had been left for the most part to fight their own battle with the elements and other destructive agencies. Operations were commenced in the following season, and were continued through the months of August, September, and October. April of the present year saw the work resumed. The general results attained are of a satisfactory character. The accumulations of soil and rubbish which concealed large portions of the ruins have been cleared away, so that the plans of the nunnery and monastery can now be made out. Four of the seven chapels have also been restored to view, and, in the case of these, as well as the other buildings, steps are being taken to preserve the walls from further decay. One cause of dilapidation has been the removal, for ordinary building purposes, of the squared stones forming the jambs of doorways or the angles of walls. The gaps thus created have been filled up with solid masonry similar to that which had been picked out, and in this way the walls have been put in a better position to resist the effects of rain and frost. The freestone for this purpose has been obtained at Carsaig Quarry, on the island of Mull, from which, it is understood, the material for the building was originally procured. In the course of the excavations which have been made, a large number of sculptured stones have been turned up, and these, of course, have been carefully preserved.

CASES UNDER METROPOLITAN BUILDING ACT.

Mr. Thomas Jenner, the builder of three houses in Shirland-road, was summoned on August 21, before Mr. Mansfield at the Marylebone Police-court by Mr. Horsce Gundry, district surveyor for Paddington, for omitting to render the backs or outsides of the flues as required by the 4th rule of the 20th section of the Metropolitan Building Act.

The defendant argued that the proceedings were premature as the plastering of the houses was not even commenced, but the district surveyor pointed out that such parts as are covered by the floors and roofs should be rendered before the timbers are fixed.

Mr. Mansfield asked what was the object of plastering those parts, and the district surveyor explained that it afforded a great security against the escape of smoke and heat.

Mr. Mansfield ordered the work to be amended in seven days, and the defendant to pay costs.

ARCHITECTS' RESPONSIBILITIES.

PRANGNELL *v.* STRATTON.

The plaintiff in this case, at the Bristol Assizes, was a brickmaker, living at the Isle of Wight, and the defendant was an architect, carrying on his profession at Newport, in the Isle of Wight. In the month of May or June, 1873, the defendant was employed to build a house for Mr. Alpe at Freshwater. The defendant called upon the plaintiff's wife, and, saying he was about to build a house, inquired whether the plaintiff would supply the bricks. She asked who was to be the builder, and Mr. Stratton said Mr. Kennett. In consequence of something she said the defendant stated that he would be answerable, and the bricks were supplied. Defendant paid for some by a bill of 45*l.*, which was honoured, and a cheque for 75*l.* He accepted another bill for 49*l.*, and there was a balance due of 119*l.*, upon which sum 6*l.* interest had been charged, and it was to recover these amounts that the action was brought.

For the defence it was contended that the credit was given Kennett, and that all that defendant had undertaken to do was to stop back money for the bricks supplied by the plaintiff from the instalments becoming due to Kennett for the building of the villa, and that in that way he had given the acceptance for 45*l.* and a cheque for 75*l.*

The jury gave a verdict for plaintiff for 119*l.*

A Church Struck by Lightning at Blundellsands. — The new church of St. Nicholas, Blundellsands, was struck by lightning during the recent heavy storm. The stone cross which surmounts the gable at the west end was knocked down, and broken in pieces, doing some damage to the roof in its fall, and a strip about 2 ft. wide of the slates, from the pitch of the roof down to the gutter, was entirely removed, the broken slates being scattered in all directions. Some men who were sheltering under the wall narrowly escaped injury.

SANITARY AND ÆSTHETIC SCHOOLS WANTED.

Sir,—The parish school named in the *Builder* of the 14th inst., as Leberton, should have been Liberton, little known to fame further than in Scott's "Heart of Midlothian," where it is mentioned as the scholastic field where Reuben Butler, the sweetheart of Jeanie Deans, taught as assistant dominie.

Visiting the school-house yesterday, I was surprised to find that the recently formed school-board had ignorantly removed the vertical fresh-air shafts of the Taylor (?) Tobin (?) system, such being far a-head of their conceptions in ventilation, where there were windows that could be opened if wanted, and the regulation holes in ceiling, and air-gratings provided in floors. In fact, the School-boards throughout Scotland, now building with undue haste so many hundreds of schools, have no other system of ventilation, even where the walls and windows are low, and the ceilings carried up to the roof-ties. No consideration is given to provide opening windows flush with the ceilings of those inverted bucket-like roofs so as to dislodge the vitiated air that lurks so much there.

At the very time when a general desire is expressed to educate the mind by works of art in our streets, it is curious to see the bust of George Heriot taken from the old High School yards in Edinburgh and placed in a chimney-pot fashion* on the gable apex of a new school in a recently-built locality. Such is a poor lesson, indeed, from the governors of the richest scholastic institution in Scotland; and then we have the ostentatious Free Kirk Normal School, located in Moray House, Canongate, disregarding the Architectural Associations of 250 years ago, that surround them; for, like Vandals, they have ruthlessly rough-cast over and coated with lime-wash the fine carved scrollwork on the stone lintels, that ought to have been cleaned and tricked out as lessons for this imitative age of masonry.

J. K.

FROM AUSTRALIA.

Melbourne.—The *Illustrated Australian News* of June 14 gives illustrations and descriptions of improvements in progress in Melbourne, including the new Art Gallery just opened.——According to the *Melbourne Age*, a substantial addition to the first-class business premises in Melbourne has just been completed in Collins-street West, for the firm of Edward Cohen & Co., auctioneers. The roof over the upper story is constructed on semicircular iron principals; and there being skylights in the roof, not only is this floor well lighted, but also the lower room and offices through the well-opening in the upper floor. The whole of the premises, with the exception of the front offices, has been rebuilt under the superintendence of Mr. Charles Webb, architect, by Mr. Cunningham, the contractor, at a cost of 6,000*l*.——The tender for the construction of the eleven miles of railway from Tarrawingee to Beechworth is at a lower sum than was expected, the exact amount being 70,108*l*., although the opinion of most experts was that the line would cost at least 100,000*l*.——The foundation stone of the Toorak Presbyterian Church was laid on May 24, in the presence of a considerable number of people. Messrs. Reed & Barnes are the architects for the building, and the style is Early English, cruciform in plan, the nave being 72 ft. by 28 ft., and the side aisles 60 ft. wide, divided from the nave by piers, columns and arches. Accommodation is to be provided for 450 persons, and the total estimated cost is 5,500*l*. The portion now being built is the nave and side aisles as far as the transept. The tower will not at present be carried higher than the first story, 32 ft. This portion will afford sitting accommodation for 250 persons. The contract for these works has been taken by Mr. James Bonham for 2,648*l*.——The sale of Crown lands has been resumed. The lots north of the cemetery realised higher prices than those obtained in Canning-street. The average price obtained for the lots at Carlton was 1*l*. 15s. per foot, the upset being 1*l*. per foot; the highest price obtained was 4*l*. 7s. 6d. per foot. The lots at Coburg, offered at 20*l*. per acre, realised 27*l*. and 29*l*. respectively. The amount obtained by the sale was 5,382*l*. 6s.

* It may surprise your readers to know, even in these days of Orientations and symbolisms in architecture, that on the east gable of the *quad sacra* Kirk of Ladhope, Galashiels, there is a massive sculptured cross which is actually a chimney!

Books Received.

Practical Geometry and Engineering Drawing. By G. Sydenham Clarke, Lieut. R.E. Spon & Co.

Lieut. Clarke is instructor in geometrical drawing at Cooper's-hill College, and a few words from his preface will best explain the origin as well as the plan of his book. "In dealing with large numbers of students, the writer felt the want of "a text-book which explained first principles fully and systematically, which preserved a clear and logical sequence throughout its pages, and which furnished examples bearing directly on the subject-matter of each chapter. Existing works did not satisfactorily meet the case. Some supposed the student to know too much, others gave him credit for knowing nothing. . . . . The objects of the writer have been to bring general principles into prominence, to illustrate those principles by a variety of problems fully explained, pointing out at the same time any peculiarities worthy of remark; and finally, to append to each chapter a number of problems, with occasional hints as to their solution." The plan thus sketched out is systematically adhered to, each chapter in the section on solid geometry starting from principles and definitions, going through explanations in detail, and concluding with examples. Two chapters on the methods of execution of engineering drawings, and the selection and use of drawing instruments, furnish the student with common-sense practical hints on subjects which, though secondary, are not unimportant in regard to rendering drawings clear, neat, and intelligible. Here, also, Lieut. Clarke teaches by example:—"Care has been bestowed on the plates, that they may be as far as possible examples of drawing, and not mere Euclid figures. By a strange irony, illustrations to works of the kind are too often more fitted to serve as warnings than as guides to the student. The two elements of success in draughtsmanship are sound theory and continued practice. No text-book can supply the place of the latter; but due attention to written instructions will at least save time—and paper." In another respect the volume is a protest in favour of care in details, for it is one of the most clearly and cleanly printed instruction-books we remember to have seen; everything is properly grouped in regard to type, and the fine paper and wide margin give quite an *air de luxe* to this engineering lesson-book, which certainly will not, on that account, be either less attractive or less useful to the students for whom it is intended.

The Mechanic's Guide: a Practical Hand-book for the Use of Engineers, Mechanics, Artisans, &c. By W. V. Shelton. Charles Griffin & Co.

The compiler of this treatise, who is foreman of the Imperial Ottoman gun-factories at Constantinople, states as his object "the gathering into one connected *whole* the principal subjects relating to various branches of the mechanical art, and placing before readers who may not have much leisure for study a concise and simple explanation of general principles, together with illustrations of their adaptation to practical purposes. . . . The book is the work of a practical mechanic, who may not have the language of a professor at command, but who has tried, to the best of his ability, to supply, honestly and thoroughly, information such as he knows to be greatly needed by intelligent mechanics at the present day." The book is, in fact, intended to be to the working mechanic what Molesworth's and other pocket-books are to the engineer and architect. It is a book of reference giving arithmetical formulæ and practical instructions for the carrying out of a great many problems in mechanical work, especially in regard to the setting out and proportioning of parts of machinery. Numerous tables, of the weights and specific gravities of materials, the circumference and areas of circles, &c., are added in an appendix; and the volume appears to be the result of considerable thought and care, as well as practical experience. Short treatises on arithmetic, practical geometry, and mensuration, precede the experimental chapters. The book ought to be of much use to artisans, but in some respects will hardly be actually made as useful as it might be, for we suspect few of those for whom it is intended will take the trouble, for instance, to go so much into the theory of such an operation as setting out the spurs of a wheel, as the author does. The theory is interesting as a matter of investigation, but in practice there is so much room for getting over an inaccuracy of theory by adjustment, that experience is likely to be the guide with most men; and so in some other matters. The artisan who wishes to know the reason and philosophy of his operations, however, will find much instruction here given without pedantry or pretension; and there is a great deal of purely practical information, the value of which, in this comprehensive form, will be obvious to every one.

The Mechanic's Friend: a Collection of Receipts and Practical Suggestions, with numerous Diagrams and Woodcuts. Edited by W. E. Axon, M.R.S.L., F.S.S. Trübner & Co.

This is a small volume giving practical illustrations in a great variety of mechanical problems, large and small, rather for the information of amateurs in mechanics than of the regular workman. The variety of subjects dealt with is very great, and the book is so far different from a number of popular handbooks of a similar kind, that it is not the work of a single, and perhaps not very "admirable" Crichton, but is a record of the experience of a number of persons, each in regard to the particular branch of work he has familiarised himself with. The substance of the volume has appeared in the *English Mechanic*, and the miscellaneous articles of which it is composed have been collected and edited by Mr. Axon. There is a considerable fund of information in the book, some of it useful and suggestive, nearly all of it interesting, in one way or another.

Miscellanea.

Damage to an adjoining House.—The case Crickett *v.* Coleman tried at the Trowbridge County Court recently, and adjourned, has been decided as follows:—The defendant purchased a house in the Market-place, next door to that which the plaintiff owns, pulled it down, and rebuilt it; and in doing this the workmen damaged the adjoining house, for which the plaintiff claimed compensation. The defendant employed a contractor, and it was part of the contract that a parapet should be made projecting over the roof of the plaintiff's house. This was a trespass. So, too, originally, plaintiff's house was the taller, and had eaves projecting over the defendant's house; the defendant told his contractor, by the contract and the plans, to build up his house higher than the plaintiff's. To do this, the contractor was compelled to cut off the plaintiff's eaves, and consequently all through the winter the water entered at the top of the house and poured down the staircase, and did permanent damage to the house. For all acts of this kind ordered by the defendant the judge (Caillard) held the defendant liable. The plaint averred also many other acts of a different character. The defendant had paid 5*l*. 10s. into court, not specifying under which particular head or heads of damage it was paid in. The judge decided that the payment into court did not estop the defendant for setting up the defence that he was not the person liable, and that the contractor ought to have been sued instead. For all acts, directly or indirectly ordered by the contractor, the defendant was held liable; and all his other defences in fact falling to the ground, the case ended in a verdict for the plaintiff for 21*l*., and costs.

Social Science Congress.—The following have consented to deliver addresses on the various classes of exhibits at the Exhibition of Sanitary and Educational Appliances, to be held in connexion with the forthcoming Social Science Congress at Brighton: 1. Warming, Ventilating, and Lighting,—Captain Douglas Galton, C.B. F.R.S.; 2. Domestic Appliances and Economic Apparatus,—Mrs. Amelia Lewis; 3. Sanitary Architecture and Appliances,—Mr. George Godwin, F.R.S.; 4. Sanitary Engineering and Methods of Disinfecting,—Mr. Baldwin Latham, C.E.; 5. Food and Clothing,—Dr. William Hardwicke; 6. School Furniture and Educational Apparatus,—Professor W. B. Hodgson, LL.D. The Mayor will preside at the opening of the Exhibition, and Sir J. Cordy Burrows will address the assemblage.

National Federation of Trades Unions.—The Trades Unions Parliamentary Committee have issued a manifesto to the officers and members of the trade societies of the United Kingdom as a preface to their proposed code of rules for the government of the federated trades.

sspools Advocated!—At a special meet- of the Rural Sanitary Authority, Beverley, ie 18th inst., under the presidency of Mr. on, J.P., the subject of the drainage of h Cave was taken into consideration. A t was received, from which it appeared that hairman, the medical officer of health, the , and the inspector of nuisances, along with of the members of the parochial com- ee, had recently inspected the parish. They l that there was no public pump in the ge, and that much inconvenience was caused e inhabitants in consequence. Some of the es had private pumps, and many of the bitants derived their water supply from the ge beck, which was polluted by the drainage a number of houses, including a slaughter- e. The parochial committee was of opinion the best plan would be to cover up the main r in the market-place, and cut off all com- ication from this and the private drains with beck, and leave the occupiers of the houses ach side to make cesspools behind their ises. This they could do at a trifling cost pared with the plan proposed by Mr. Harrison, r a discussion it was agreed by the authority, the Parochial Committee should have three ths given them to complete such a system of nage as they deemed most desirable.

ailways.—The Board of Trade has issued a mary of our railway returns for the last nty years, showing the remarkable progress e in that time. In 1854 there were, in the ted Kingdom, 8,053 miles of railway open raffic, and at the end of 1874 there were 49 miles, or more than double the former ber. The ordinary stock has only risen n 166,030,806*l.* in 1854 to 248,528,241*l.* in 4, the increase of capital having been chiefly hat which has a fixed rate of interest. Thus guaranteed and preferential stock has in- sed from 49,377,952*l.* in 1854 to 200,930,629*l.* 874, or fourfold. The receipts from traffic e arisen from 20,215,724*l.* in 1854 to 99,498*l.* in 1874, or, adding rents, tolls, navi- on, &c., 59,255,715*l.* The working expendi- e constituted but 47 per cent. on the receipts 1860, and was the same in 1871; but prices e risen, and in 1872 the expenses reached per cent.; in 1873, 53 per cent.; and in 1874 y were 55 per cent. Still, the net receipts, ch were but 4·19 per cent. on the paid-up ital in 1860, reached 4·37 per cent. in 1874. recent rise in prices has materially affected cost of construction and working of railways. he year 1874 the gross receipts of the railway panies of the United Kingdom amounted to rly sixty millions sterling, and the net receipts ceded half a million a week.

A Builder Committed for Stealing terials.—Joseph Windred, a builder, of nslow, was charged on a summons at the ntford Police-court on Saturday with stealing ndle of slate battens, the property of Capt. Vansittart, of Montpelier-row, Twickenham. e defendant was employed to carry out certain rations at some house in Montpelier-row, ickenham, so far as the work and labour were cerned, the complainant finding all the ma- als. Amongst these were eight bundles of e battens, supplied on the understanding that at was not required should be taken back and wed for. A man named William Neighbour, o had been in the defendant's employ, stated t seven bundles only were used, and the other ndle was removed by order of Windred to his n premises at Hounslow, and converted into ten-house by witness for the defendant's rds. At the same time he removed 100 slates order of defendant. For the defence it was ted that there was an agreement between the ties for the work to be done for the sum of l., and that complainant still owed defendant alance, and an unstamped document to that ect was produced, but it was not signed by ner complainant or his wife. The justices mitted the defendant for trial.

Opening of the Temperance Hall at wbury.—This hall was formally opened on 17th inst., amid much enthusiasm in the perance circles. The building, which stands ing the south, in Northcroft-lane, was for ny years used as the National schools for this rough, and latterly as the Gospel-hall; but, der the hands of Mr. James, builder, of Pound- eet (with Mr H. Flint, jun., as architect), its pearance has been entirely changed, and where e stood a dilapidated school-room is now cted a very substantial, as well as useful and amental, hall.

Fatal Walk through Plate Glass.—Mr. Edward Holmes Baldock, formerly M.P. for Shrewsbury, who died recently at his residence in Grosvenor-place, at the age of sixty-three, was the son of the late Mr. E. H. Baldock, by a daughter of the late Mr. Gorringe, and was born in the year 1812. A few weeks ago he went to Kensington Palace Gardens to inspect the residence of Alexander Collie, which was then open to the public previously to being put up for sale. Among other additions to one of the apartments was a conservatory, filled with superb exotics. Mr. Baldock, advancing to the door to examine them more nearly, walked through a large sheet of plate glass which filled the aperture, and of which, there being nothing to denote its existence, Mr. Baldock was of course unaware. The ill-fated gentleman severely lacerated one of his legs just above the knee, and, though the arteries escaped, it would seem the nerves and tendons were injured to an alarming extent. The best medical skill was speedily called in; but erysipelas set in, which could not be reduced, and death ensued. We know two or three houses where a similar accident may occur any day.

A Yorkshire Antiquary.— Mr. Robert Davies, an antiquary of local celebrity, died on Monday at York, at the age of eighty-two. The deceased gentleman was formerly a solicitor in York, and was town clerk from 1827 to the year 1848. After his retirement from business, in archæological research he spent a very large portion of his leisure time. In the muniment-room of the ancient Guildhall at York he might be found almost any day; and in this manner he made a special acquaintance with the modern history of the city, about which he possessed more knowledge than any living man. His whole time was given up to literature, and as a result he has left a number of interesting works behind him. The first of these, published in 1846 or 1847, may be said to be the "York Records," which consisted of a number of papers illustrative of the history of York in the fifteenth century, or the time of Richard III., derived from the records of the York Corporation. Then he issued the "Memoirs of the York Press," which consisted of a list of the works printed in York, and notices of their authors. This the public received so recently as 1868.

Strike of Bricklayers' Labourers.— A fortnight since the bricklayers employed in the erection of the new Chester Workhouse applied for an increase of wages from 34s. to 36s. per week, and last Saturday they were paid at the rate of 36s. per week. Since then they have been placed on the hour system, and will be paid at the rate of 8d. per hour. The bricklayers' labourers were getting at the same time 23s. per week, but as the bricklayers were put upon the hour system they asked to be treated similarly. This was agreed to, and they were offered at the rate of 5½d. per hour, which would bring their wages up to 23s. 10d. per week; but they refused to work under 5½d. per hour, which would bring their salary up to 25s. per week. This Mr. Tomlinson, the contractor, refused to agree to, as well as the second proposition of the men that they should work day-work at 24s. per week. The men have, as a consequence, struck, and the result is that the bricklayers are also out for want of labourers.

Bad Mortar.—A successful prosecution of a builder for *using bad mortar*. What next! says the *Sherborne Journal*. "Why everybody will be obliged to be honest. A pretty state of things this for a civilised society living in a land of liberty. By-and-by we shall hear of successful prosecutions of house-proprietors for taking extravagant rents for dwellings no better than pig-sties. In the case we refer to it was stated that the mortar contained 80 per cent. of loam (which is a term often applied to road dirt). The Stipendiary, a London magistrate, Mr. Ingham, saw the wall and ordered it to be pulled down in seven days. He did more by that decision than Government has done all this session in the way of sanitary reform." [It was time for some one to interfere, for half the suburbs of London are built with mortar with a very small element of lime in its composition.]

Sewage pumped into the Thames.— According to returns furnished by the engineers of the Metropolitan Board of Works, the average daily quantity of sewage pumped into the River Thames was 310,567 cubic mètres at Crossness and 347,079 cubic mètres at Barking, equivalent to about as many tons by weight.

The Laird Memorial.—The committee of the Laird Memorial Fund has now on view, at the Birkenhead School of Art, near the park entrance, a number of models sent in by artists in competition for selection for the intended bronze statue of the late Mr. John Laird, M.P., to be erected near Woodside Ferry. The models are in plaster, sixteen in number, one being a bust, and the others the full-length figure. In consequence of the whole of them having been designed from photographs, any person who was intimate with the personal appearance and *tout ensemble* of the late Mr. Laird will at once notice that none of the models now on view are all that could be desired. Two approach nearer to an ideal likeness than any of the others. The committee of selection met on Tuesday, to decide which of the models, if any, should be selected. We understand that the committee have received subscriptions amounting to nearly 2,500*l.*, and with that sum they ought to be able to place on the site selected a monument worthy of it.

Winter Gardens for Blackpool.—Negotiations have just been completed for the purchase of Bank Hey, the residence of Mr. W. H. Cocker, J.P., Blackpool, with the land adjoining it, as a site for winter gardens, the amount of purchase-money being 23,000*l.* The new company will have a registered capital of 50,000*l.* in 10,000 shares of 5*l.* each, and many applications for them have already been made, and the scheme is looked upon as a very good speculation. Bailey's hotel, which was recently suggested as a site for winter gardens, has been sold to a company in course of formation in Rochdale for 62,000*l.* The proposal to form the winter gardens on the site of the Lane Ends Hotel and Hygiene-terrace will now be abandoned.

Accidental Death of a Builder in the Farringdon-road. — Mr. Langham, deputy-coroner, held an inquest on the 20th inst. at St. Bartholomew's Hospital upon the body of Edward Rees, aged 32, a builder, of Fenwick-place, Clapham-rise. From the evidence it seemed that the unfortunate man was standing on the roof of a newly-erected goods warehouse in the Farringdon-road on the 19th inst., giving directions to some men about a pillar which was being hoisted. By some mischance the deceased let go his hold of the scaffolding and over-balanced, and pitched head foremost to the stones below, a distance of 48 ft., and was so dreadfully injured that he expired in three minutes. A verdict of "Accidental death" was returned.

Holy Trinity Church, Wimbledon Park. A Munich window, the gift of Madame Lind Goldschmidt, has just been placed in this church, in memory of the late Dr. Wilberforce, Bishop of Winchester. The subject chosen is the Transfiguration of our Lord on Mount Tabor, with Moses and Elias on either side. In the extreme lights are figures of St. Boniface and St. Swithin, while beneath is a representation of the late Bishop confirming children. Under the figure of the Saviour are the words,—"He that believeth on the Son hath everlasting life." The window was executed by Messrs. Mayer.

Threatened Stoppage in the Cabinet-making Trade.—The Manchester and Salford branch of the friendly society known as the Operative Cabinet and Chair Makers, Carvers, and Wood Turners of Great Britain and Ireland, has issued a notice to the employers demanding an advance of 2s. per week upon the present rate of wages. The employers deny that the operatives are underpaid in comparison with workmen in the building trades, and they assert that the cabinetmakers are in many respects better off than other workmen, their time being more certain and their work being less liable to be broken.

Munificence of the Mayor of Sheffield.— In addition to the Mayor of Sheffield's gifts of a park and almshouses to the town, it was announced at a meeting on the 18th inst. that Mr. Firth had promised to provide, at a probable cost of some 15,000*l.*, a building for the lectures and classes commenced there and elsewhere by the Universities. It is understood that Mr. Firth will also subscribe 1,000*l.* towards a scholarship fund if 9,000*l.* are raised by the town for this purpose.

The Clerkenwell Surveyor.—At the last meeting of the Clerkenwell Vestry, Mr. G. I. Cox, assistant surveyor, Vestry-hall, St. Luke's, was appointed, from nearly thirty candidates, to the office of surveyor of the parish, in the place of Mr. Sanders Beven, deceased.

British Association.—At the meeting now going on in Bristol, Mr. Leone Levi will lay before the Association the report of the committee formed to inquire into the "economic effects of combinations of labourers and capitalists, and on the law of economic science bearing on the principles on which such combinations are founded." The chairman of the committee is Lord Houghton. A conference was held between the leading parties from both employers and employed, and the report deals with all the questions then raised and discussed.

The Mayo Memorial.—The statue itself is 9 ft. in height, its weight three tons, and it is carved from a solid block of Sicilian marble. The Earl is represented clothed in his robes as Viceroy of India, the long robe or cloak falling from his shoulders in effective masses of drapery, giving great importance and grandeur to the work. The left hand rests on the hip, the right holding a scroll emblematical of the statesman. The *pose* of the statue is effective, and the likeness good. The sculptors are Messrs. W. & T. Wills, of London, and the cost is 800 guineas.

Sulphur in Gas.—The experiments which have been recently made at the joint expense of three of the principal gas companies of the metropolis, and conducted by Mr. Vernon Harcourt and Dr. Siemens, in order to ascertain the best means of eliminating sulphur impurities from gas, have failed to be immediately productive of any practical result, and have been discontinued. The experiments were estimated to cost between 500*l.* and 600*l.*, but they have exceeded 3,000*l.*

The Abingdon Surveyor's Salary.—At a meeting of the Town Council last week the town clerk read a letter from Mr. William Townsend, the surveyor, asking for an addition to his salary on account of the increase of his duties. After some discussion, it was agreed to increase Mr. Townsend's salary as surveyor from 40*l.* to 50*l.* per annum, payable quarterly, on the understanding that Mr. Townsend should be subject to three months' notice.

New Congregational Chapel at Weston-super-Mare.—The memorial stone of the new Congregational Chapel, Weston-super-Mare, was laid on the 18th inst. by Mr. T. Rowley Hill, M.P. for this city, in the presence of a large assembly. The chapel now in use in High-street, which accommodates 350, having been found entirely inadequate for the attendance, it was resolved to build the new chapel, which is to cost between 7,000*l.* and 8,000*l.*

A New Cattle Mart in Perth.—A magnificent auction mart, erected by Messrs. Fraser & Macdonald, has been opened in Perth. The market is the largest in this country, and is very complete in its arrangement,—including in the building a spacious hotel, lodgings for servants, house for shepherds' dogs, stabling for 40 horses, and market space for 15,000 sheep and 1,500 cattle. The sheep-pens cover three-quarters of an acre.

Tenders for Bricks.—The Brighton Watch Committee have received five tenders for the supply of bricks, and they have accepted the following, the contract to include cost of delivery at the Corporation stores:—Messrs. J. Brace & Co., Funtley Works, Hants, 200,000, at 3*l.* 6s. 6d. per 1,000; Messrs. J. & R. Norman, Chailey, 50,000, at 3*l.* 9s. per 1,000; and Mr. John Gravett, St. John's Potteries, 100,000, at 3*l.* 8s. 6d.,—approved.

Good Service Pensions.—Mr. Douglas Galton has retired from the appointment of Director of Public Works and Buildings with a pension of 1,000*l.* per annum. His salary was 1,500*l.* per annum. The office of Director is not to be filled up. Mr. R. Redgrave, R.A., retires from the office of Director to the Art-Division of the Education Department with a pension of 750*l.* a year.

Fenton Town Hall.—The *South London Press* states that the Urban (Staffordshire) Sanitary Board have awarded the premium offered by them for public competition to Mr. J. W. Stevens, of 6, Wigmore-road, Camberwell, having accepted his design for the new Town Hall, police-station, engine-house, &c., to be erected at Fenton, Staffordshire.

Mr. David Campbell, Master of the School of Art, Worcester, has been appointed Professional Assistant Examiner for Art at the Science and Art Department, South Kensington. His departure from Worcester will be much regretted.

Statue of Sumner.—The Committee of Design on the proposed statue of Sumner at Boston (U.S.) threw open on the 2nd inst. the twenty-six models sent them by artists in response to their invitation. The models comprise the works of Millmore, Ball, Wood, Miss Hosmer, and others, and many of them are meritorious works of art.

Signs of Danger.—On Saturday, last week, some alarm was caused in High-street, Birmingham, by the falling of a large sign from the front of the premises of the National Clothing Company. Fortunately no serious injuries were sustained by persons in the street, two ladies, however, who were passing having a very narrow escape.

The Burning of the Liverpool Landing Stage.—The action against the Liverpool Gas Company by the Mersey Dock Board for the loss by fire at the landing-stage in July last year, was opened on Thursday in last week, before Baron Huddleston. The claim is for 200,000*l.* The liability of the gas company has been established.

Danger of Wooden Eaves.—A large corn warehouse in Gloucester has been burned down with a loss, by fire and water, of 25,000*l.* The fire is attributed to sparks from the chimney of the engine-house igniting the dry wooden eaves of the warehouse, which smouldered for a time and then broke into flame.

The Widow of the late Mr. Burchett.—A memorial, powerfully signed, has been presented, soliciting the grant of a Civil List pension to the widow (second wife) of the late Mr. Richard Burchett, the Principal of the Art-training School at South Kensington.

Sandown (Isle of Wight).—A stained-glass window, the gift of the Imperial Crown Prince and Princess of Germany, has been placed in the parish church of Sandown, Isle of Wight, in commemoration of their visit last season. The subject is Moses lifting up the brazen serpent.

A Statue of William the Conqueror is to be erected at Falaise. This statue, the work of M. Rocher, was finished in 1851, but, owing to lack of funds, could not be put into position until the present time. It is spoken of as very fine, is over 24 ft. high, and weighs seven tons.

Campden.—A contract for the restoration of the church has been entered into, and the work commenced. But the funds at present subscribed will not admit of engagements for doing all that is required. Messrs. Patman & Fotheringham, of London, are the contractors.

Stainland Cross.—This ancient cross, the only one remaining in the Halifax parish in anything like its former state, is to be restored at the expense of a gentleman resident in the neighbourhood. Mr. W. S. Barber, architect, Halifax, has the direction of the works.

Opening of new Churches in Cleveland. Two new churches were opened on the 20th inst. in Cleveland.

Wotton.—The work of enlarging Wotton Church has been entrusted to Mr. B. Inkpen, of Abinger.

TENDERS

For repairs to eight houses, Bridge-road, Battersea. Mr. S. Hewitt, architect:—

Dawson	£413	16	0
Richards	340	0	0
Copping	320	0	0
Pearce	280	10	0
Parrett	250	0	0
Feltham	250	0	0
Baker	250	0	0
Garrod & Smith	249	0	0
Short	245	0	0
Linfield	240	0	0
Haye (too late)	232	7	6
Simons	227	10	0
Vincent	208	0	0
Becker	196	0	0
Britton	175	0	0
Banner	169	10	0
Farley	165	0	0

For part rebuilding No. 7, New Compton-street, Soho, for Trustees of the late Mr. W. G. Nixey. Mr. S. Hewitt, architect:—

Macey	£819	0	0
Titmas	634	10	0
Cooper	633	0	0
Foxley	623	0	0
Patman & Fotheringham	593	0	0

For chapel, school-room, and class-rooms, at Newton Moor, near Manchester. Mr. J. Wills, architect, who also supplied the quantities:—

Robinson & Sons	£2,455	0	0
Marsden	2,398	0	0
Storrs (accepted)	2,169	0	0

For a tower and spire to St. George's Church, Tufn Park, N. Mr. George Truefitt, architect:—

Carter (accepted)	£2,500	0	0

For additions and repairs to 79, Hamilton-terrace. M George Truefitt, architect:—

Carter	£670	0	0
Bird (accepted)	640	0	0

For the erection of vinegar works, Peckham, for M Woodham. Mr. Arthur Kinder, architect. Quantit by the architect:—

White	£2,479	0	0
Bartlett	1,963	0	0
Timewell	1,688	0	0
Hart	1,677	0	0
Unwin	1,669	0	0
Riley (too late)	1,649	0	0
Dover, Son, & Co.	1,645	0	0
Dunkley	1,632	0	0
Kirk	1,599	0	0
Bysh	1,563	0	0
Cropper, Brothers	1,555	0	0
Thomas	1,530	0	0
Aitchison & Walker	1,495	0	0
Kellaway	1,420	0	0

	Iron Girders.	Iron Colum
Lucy & Co.		£57 13
Macnaught, Robertson, & Co.	£56 17 6	
Clay	59 0 0	43 0
Head, Williams, & Co.	53 5 0	48 5
Gardner & Co.	53 3 0	46 0

For repairing roads and laying surface drains for t Swindon New Town Local Board. Mr. W. H. Rea architect:—

Phillips (accepted)	£596	1	0

For two semi-detached cottages at Broome Sewa Farm, for the Old Swindon Local Board. Mr. W. Head, architect:—

Haynes	£369	10	0
Barrett	366	18	0
Wiltshire	363	0	0
Thomas	345	0	0
Kent (accepted)	336	0	0

For Board-room, offices, and manager's residence, Bath-road, Swindon, for the Swindon Water Compa (Limited). Mr. W. H. Read, architect:—

	With Cellar.	Without Cellar.
Haynes	£1,150 0 0	£1,115 0
Phillips	1,065 10 0	1,041 0
Barrett	1,053 18 0	1,021 18
Wiltshire (accepted)	1,049 0 0	1,030 0
Forshaw	1,043 0 0	1,023 0

For office fittings, 24, Cannon-street. Mr. Sext Dyball, architect:—

Lascelles (accepted)	£1,186	0	0

For a dwelling-house at Upper Tooting [Park, Surre Messrs. Wadmore & Baker, architects. Quantities su plied:—

Scrivener & White	£2,700	0	0
W. & F. Croaker	2,645	0	0
Colls & Sons	2,593	0	0
Downs & Co.	2,520	0	0
Bowyer & Sons	2,374	0	0
Messom	2,132	0	0
Wagner	2,093	0	0
Smith	1,997	0	0
Mitchell (accepted)	1,987	0	0

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Halfpenny stamps accepted for amounts under 5s. Any larger s should be remitted by Money Order, payable at the Post Off King-street, Covent-garden, W.C. to DOUGLAS FOURDRINIER

Advertisements cannot be received for the curre week's issue later than THREE o'clock p. *on THURSDAY.*

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The Builder.

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The Company of Stationers.

STRONG light is thrown upon the manners and customs of our forefathers by the history of the various London Companies, and doubtless much additional light might be obtained from the hidden archives of these ancient guilds. It is not, however, too much to say that the history of the Stationers' Company is of more interest to the literary world than that of all the other companies put together. It is not merely the history of an individual company, but the history of English literature for several centuries. The Registers, which happily were saved from destruction at the time of the Great Fire, are of inestimable value for the entries they contain of books and ballads, more especially those of the Elizabethan age. Thomas Warton, author of the "History of English Poetry," was the first to quote these Registers extensively, and Steevens, Malone, Douce, Chalmers, and Ritson used them with good effect in illustration of their various researches; but it was left to Mr. Payne Collier to extract such book entries as related to the drama and popular literature down to 1586, which he printed for the Shakspeare Society in 1848-49. It has long been felt by literary men that a more complete transcript of these priceless volumes was required, not merely for convenient use, but that what now exists only in perishable manuscript should be put into permanent print. Mr. Edward Arber, with enthusiastic energy, has set himself to supply this requirement, and he has privately printed for his subscribers the first volume of his "Transcript of the Registers for the years 1554-1596." He proposes to carry the work down to 1640, after which date the entries are more numerous and less interesting. After this preamble, we will set ourselves the task of tracing the early history of the only London company which is now entirely restricted to the members of its own craft. The Stationers' Company was incorporated by charter of Philip and Mary on the 4th of May, 1556, and on the 8th of February, 1560, was created by the Lord Mayor one of the liveried companies of the City, but its history dates much further back than the first of these years. The writers of court-hand and text letters, and limners or illuminators, are mentioned as early as the year 1357 as united in some way, and on the 12th of July, 1403 (5 Henry IV.), the reputable men of the craft of writers of text-letter, those commonly called "limners," and other good folks citizens of London, who were wont to bind and sell books, presented a petition to the mayor and aldermen. In this same year, apparently in answer to the petition, the Lord Mayor gave them authority to form themselves into a Guild or Fraternity, which there is every reason to believe was the precursor of the craft of stationers. When the successors of Caxton began to multiply, they felt the necessity of being united as a guild, but in place of forming one for printers alone, they joined themselves to the stationers, and so the old name has been continued to our own day to represent all the trades that go to the production of a book. The Stationers' Company appears early to have taken a good rank in the order of the London companies. In a document dated 1501-2 we find it numbered 53, or seventh in order of the companies without liveries, and in 1574, the fourteenth year of its existence as a livery company, it stood in the first class of the minor companies. An assessment was made in this latter year of the proportion of 400 men appointed to be sent to "the queen's majesty's ships." The twelve principal companies were to supply from fifteen to forty men each; then followed the Leathersellers with thirteen, and the Brewers with ten; after these the highest number was five, at which amount were assessed the Stationers, Dyers, Tallowchandlers, Cutlers, Pewterers, Sadlers, Cordwainers, and Coopers. The twenty-one other companies were all assessed for smaller numbers, some, such as the Curriers, Plumbers, Masons, Weavers, &c., supplying only one man each. In 1591 the City of London furnished six ships and one pinnace towards the fleet, under the command of Lord Thomas Howard, which cruised all the summer about the Azores. 7,500*l.* were required for this purpose, of which sum the twelve principal companies supplied 5,174*l.* After these the largest contributors were the Dyers, Brewers, Leathersellers, and Girdlers; then came the Stationers, Whitebakers, and Barber-surgeons, who were each assessed at 80*l.* The remaining thirty-six companies were set down for much smaller sums. In a list dated 1602-3, the Stationers are numbered 49; but their assessment is as high as any after the first twelve.

The first Master of the Stationers' Company was Thomas Dockwray, who was neither a printer nor a publisher, but a Notary Public and Proctor of the Court of Arches, and it is a noteworthy fact that the company, which has since stoutly resisted the intrusion of lay members, should have chosen a stranger for their first master. The Stationers qualified to vote for members of Parliament are only outnumbered by the Spectacle-makers, and of the present livery of 312, upwards of 300 are in the trade. Formerly the freedom of the company was obtained (1) by serving an apprenticeship of not less than seven years; (2) by patrimony, whereby any son born subsequently to his father's freedom could claim his own freedom by virtue of being freeborn without serving any apprenticeship; (3) by redemption or purchase. The members elected under this third head usually paid a largely-augmented fee, but the celebrated Sir Thomas Smith, one of these redemptioners, merely paid the usual fee of 3*s.* 4*d.* on the 23rd of April, 1571, and the Rev. Robert Crowley, the well-known printing clergyman, was admitted to the freedom on the 27th of September, 1579; and afterwards to the Livery, without the payment of any fee. At present no one is admitted to the freedom unless he is connected in some form with the production of books, or takes it up by patrimony. There was of old a class of "brothers" in which were incorporated Continental workmen, then technically known as "Strangers," and English workmen coming from "beyond the liberties of the City," who were called "Foreigners." Many of the exiled Dutch and Huguenot workmen appear to have been enrolled as brethren of the Company. These brethren were not entitled to bind apprentices, but they might teach and employ them on behalf of freemen.

The Stationers have not always been located in the immediate neighbourhood of Paternoster-row, and the present building in Stationers' Hall-court is the last of a series of halls used by the Company. In the early days of the Corporation, when it was only a craft, it possessed a hall in Milk-street, Cheapside, the street in which Sir Thomas More was born, "the brightest star that ever shone in that *via lactea*," says Fuller. In 1554, two years before the incorporation of the Company, the Brotherhood purchased by voluntary subscription their second hall in St. Paul's Churchyard, but they still retained possession of the house in Milk-street, and on the 26th of May, 1611, a "committee was appointed to contract for the sale of the lease of the hall in Milk-street." Nothing would appear to have come of this resolution, for Nichols, in his "Literary Anecdotes of the Eighteenth Century," writes:—"The Company still possess two houses in Wood-street and three in Friars-alley and Clement's-court, in Milk-street, built after the Fire of London on the site of their original Hall." St. Paul's Churchyard, in the middle of the sixteenth century, and for many years afterwards, was a quiet enclosed place like the closes we still see in the old-fashioned cathedral towns. It was probably very similar to the beautiful surroundings of Salisbury Cathedral, though certainly not quite so extensive. Old St. Paul's, with its noble spire, was not unlike the Wiltshire Cathedral, and the noble trees in the yard went to make the resemblance more near. The house which the Stationers purchased was on the south-west side of the churchyard, and was known as Peter's College, it having been originally a college for chantry priests belonging to St. Paul's. In 1549, William Seres printed at Peter's College before he moved to the sign of "The Hedgehog" close by, and during his occupancy six men were killed by the falling of earth upon them while engaged in digging a well in the garden. Seres was a benefactor to the Company, and probably had much to do with their movement to the college, which was rebuilt for them. In May, 1570, the Company paid 20*s.* 1*d.* "for the payvynge of the longe cawsey betwene Powles Church dore and the

Stacioners' Hall," containing 98 yards. After the Company left the building it was converted into the Feathers Tavern, and according to Nichols ("Lit. Anec.," iii., 554-5), "covered the spot now (1812) occupied by the garden of the deanery, and the small court in which, after the Fire of London, four houses were erected by Dean Sancroft for the use of the minor canons." St. Paul's Churchyard, before the Fire, was chiefly inhabited by booksellers, and therefore the Company of Stationers were amongst their own people. Several of the first editions of Shakespeare's poems and plays were published by different booksellers in this place, as "Venus and Adonis," and the "Rape of Lucrece," at the White Greyhound; the "Merry Wives of Windsor," at the Flower de Luce and Crown; the "Merchant of Venice," at the Green Dragon; "Richard II.," at the Fox; "Richard III.," at the Angel; "Troilus and Cressida," at the Spread Eagle; and "Lear," at the Red Bull. The churchyard, however, was not large enough to hold all the stationers, therefore they overflowed into Paternoster-row, where, besides makers of rosaries and pictures of saints, dealers in books established their stalls. According to Stow, the houses in this street were first built outside the wall of the churchyard, by Henry Walles, mayor in the year 1282. When the Stationers' Company purchased Abergavenny House, at the west end of Paternoster-row, and left St. Peter's College, they still kept in the immediate neighbourhood of their own members. On the 26th of May, 1611, a committee was "appointed to be overseers for the companye and directers of the buyldinge, alteracons, and reparacons of Bergavenny House." Stow describes the place in the following words:—"At the north end of Ave Mary-lane, is one great house builded of stone and timber, of old time pertaining to John Duke of Britaine, Earl of Richmond, as appeareth by the Records of Edward II. Since that it is called Pembrookes Inne, nere unto Ludgate, as belonging to the Erles of Pembroke in the times of Richard II. the 18 yeare, and of Henry VI. in the 14 yeare. It is now called Burgaveny House," and belonged to Henry Neville, sixth Lord Abergavenny, who died in 1587. The house was altered by the Company, and "a new faire frame of timber" was added to suit it to their purposes. This,—the third hall,—was destroyed in the Great Fire, and on its site the present hall was built in 1670; but the front that is now seen in Stationers' Hall-court was added by Robert Mylne in 1800.

We will now turn to the consideration of the Registers, the perusal of the pages of which will give us a lively idea of the enterprise of the early printers. It must often have struck those who have handled the massive old folios of a former age how great were the labour and risk undertaken by the Barkers, the Tottles, the Fields and the Days of the sixteenth century. These honoured names frequently occur in the Registers of the Stationers' Company, which contain a large mass of materials towards a history of bookselling in England. Mr. Arber has not been content to produce a mere transcript of the Registers, but has illustrated the main entries by the insertion of important documents; for instance, pages 41-42 being blank in the original, we find in place of white paper in the transcript a copy of Christopher Barker's Report on the Printing Patents of 1558-1582. Barker shows how his office of Queen's printer has been shorn of its chief emoluments, and gives some interesting particulars. He writes, "Proclamations come on the suddayne, and must be returned printed in hast: wherefore by breaking of greater works I loose oftentimes more by one Proclamacon, than I gayne by sixe, before may serventes can comme in trayne of their worke agayne, and in many yeares there hapeneth not a proclamation of any benefit at all." He goes on to point out how large a sum was required to print the whole Bible, yet he "did [as some have termed it since] gyve a desperate adventure to imprint fower sundry impressions for all ages, wherin I employed to the value of three thousande pounde in the terme of one yere and an halfe or thereaboute, in which time if I had died, my wife and children had ben utterlie undone, and many of my frendes greatlie hindered by disbursing round sommes of money for me."

It would be difficult to over-estimate the value of the Registers, for not only are they the final authority in questions of dispute about books, but being the account-books of the Company, they also contain a large amount of information concerning prices and the manners and customs of our forefathers. We cannot attempt to analyse their contents, but we may point to some of the chief matters of interest.

1. As to their Illustration of Literature.—The present volume of the transcript stops at the year 1596, and does not therefore contain some of the most interesting entries concerning literary history. We find innumerable notices of old ballads, proclamations, almanacks, and such books as "An Abstracte of the Geneolege and Race of all the Kynges of *Englande from the Floude of Noe unto Brute*," "Ye Cosmographie of the Worste Parte of the Worlde," "The Natures and Properties of all Wynes yat are commonly used here in England." Mr. Arber proposes to show, when he has finished his great task,—"How far the Registers are deficient as a record of their total contemporaneous literature, and the why and wherefore thereof.* Who were the greatest publishers? Who were the greatest printers? What kind of books were generally issued by each publisher? The answers to these queries, with a list of works now apparently lost, will constitute the consummation of this inquiry." Sometimes we come upon an entry that throws some light upon the family life of the old stationers; for instance, two sons of two celebrated fathers,—both Royal printers, and both among the founders of the Company,—obtained their freedom, on the same day, the 18th of May, 1565, viz., John Cawood, the younger, and Reginald Wolfe, the younger.

2. Illustrations of the history of the Company. The receipts largely consist of fines for various offences, such as printing without a licence, and selling contrary to ordinances. The fee for admittance into the livery has gradually increased from 15s. in 1560 to 51*l.* 3s. in 1875. The payments show us how the Stationers fared at their dinners, what they had to eat and drink, and what they paid for each article. They paid 5s. to the cook and his man for dressing the dinner, and 2s. for a bushel and a half of roses, with pot flowers for the windows. On another occasion, the cook and his men received 5s. and the minstrels 12s. The Company required some building done for them occasionally, and the items of expense are all set down. In 1560, the carpenter and plasterer received each 1s. 2d. a day, and the labourer 6d. In 1570, the price of 100 tenpenny nails was 8d.; of 34 yards of wainscot, 3*l.* 8s.; of two wainscot doors, 36s.; and the charge for painting all the lower end of the hall with green, yellow, and red, was 2*l.* 5s. On the 10th of January, 1571, the Queen visited Sir Thomas Gresham, and the Company erected a scaffold on the occasion, which cost them 3*l.* 4s. 6d.

Thirdly, the registers contain matters connected with the general history of London, as the assessments to which we have already referred. Besides these, the companies had to procure soldiers and fit them out completely: thus, in 1560, the Stationers were ordered to send two men to the English army who were about to besiege the French troops in Leith. They paid 9s. 4d. for two jerkins, 4s. for "two caps and skulls," 12d. for a dagger, 12d. for a pound of powder, 29s. for two new guns, 2s. 8d. for a doublet of canvas, besides other items duly set forth. Mr. Arber wishes to place the men of business by the side of the men of action in public estimation, and to rank the Cawoods, the Days, the Denhams, and the Barkers with the Drakes, the Hawkinses, and the Frobishers. We are not prepared to follow him to this extent, but all lovers of books must cherish a kindly feeling for the men who at some risk to themselves placed the works of genius in such an imperishable form that they can be enjoyed by us in these latter days.

The world has outgrown the companies and guilds of the Middle Ages, but they did valuable work in their time, and mixed up with their private history are particulars which the world would not willingly let die.

Working Men's College, Blackfriars-road.—The ninth year of this college will begin on Monday, September 6. We are asked to mention that there are night schools for men and women, for the study of arithmetic, book-keeping, reading, Latin, algebra, drawing, history and geography, French, German, physical science, and English literature.

* This question is partly answered by the fact that in early times all books of importance were protected by a special privilege which exempted them from the jurisdiction of the Company

THE CHANNEL TUNNEL: POSITION OF THE ENTERPRISE.

At length this vast enterprise, which, if completed, will certainly confer upon the engineering genius of the nineteenth century a conspicuous fame, has a chance of triumph over all the obstacles that have been predicted. The latest measures in connexion with the project have been of the utmost importance. A Bill has passed the two Houses of Parliament, authorising the acquisition of certain lands in the parish of St. Margaret-at-Cliffe, in the county of Kent; and, at the same time, the French Assembly, before its dispersion, gave at least nominal effect to a scheme for opening similar works on the opposite shore of the British Channel at Sangatte. Neither in the English nor in the French Reports or Bills is there found a full explanation of the plans, as they lie now, in manuscript, at the Board of Trade; but an examination of the documents, or the raw official materials of which they are composed, suffices to inform us as to the actual state of the question. It is simply this:—In the year 1862 a company was incorporated to construct an underground, and also submarine, tunnel between England and France, with all necessary approaches, accessories, and conveniences, so as to afford the means of perfect land communication between the two countries, and the powers it proposed to claim were legally justified. It would be superfluous to enter upon the legislative wranglings over plans, Acts to be abolished or construed, purchases, and costs, since the principal importance of the subject to the public consists in the mighty mechanical work to be undertaken. This will not be, at the outset, it may be as well to explain, an attempt directly to tunnel beneath the Channel for a railway line. It is only contemplated, according to the last statements deposited at the Board of Trade, to examine into the probabilities, or possibilities, of opening a way for the locomotive and the train at a safe depth below the sea. The present idea, then, is to sink, on both sides of the Channel, at particular points which are indicated, shafts through the grey chalk, or that which is almost nonporous and impermeable by water, and thence to conduct an excavation tending to meet from opposite ends, which should equal,—as it would, if triumphant, more than equal,—the perforation of Mont Cenis. However, the lawyer's aspects of the question are, at this stage, of little importance; the two Governments are agreed, and the thing has now only to be done. But what millions have been sunk in an effort to cross the British Channel, and conquer that "thin streak of sea-sickness," which, as popular tradition still asserts, frightened the famous Boulogne flotilla! Leaving out of consideration four of the Channel ports,—Hamburg, Rotterdam, Antwerp, and Ostend, as well as Havre and Dieppe, upon which this achievement, by the way, would not inflict any great injury, because they are commercial, rather than passenger, ports,—it is the narrowest sea which is the most formidable, which is, indeed, the "moat" of the Continent. The sufferers who, in default of a subway or drawbridge, endured the tortures of this brief passage, amounted last year to nearly half a million, and no number of *Castalias* or *Bessemers*, no matter how scientifically built, can meet the demand for those who feel an ineradicable hatred of salt and swelling water. There are excellent steamers, no doubt, employed upon the Channel service already, but where and what are the harbours? It is not the mere Channel passenger who finds himself inconvenienced. The invalid from Australia, or India often declares that this bit of chopping sea current is the most trying part of his voyage. He hates it worse than the rollers of the Atlantic or the sultry nights of the Red Sea. Thus affirms, at any rate, Captain Tyler, whose report is in course of preparation for the next session of Parliament. His estimates concerning this little water journey between France and England are of peculiar interest. There is an average, he says, in the course of the year, of thirty storms; of 100 days bringing with them heavy seas and troublesome breezes; of 108 moderate days happening in succession; and 90 of cold weather. The two opposite coasts, so to speak, are hostile in character,—what with their cliffs, bars, sands, necessity for breakwaters, masonry, piers, curves, capes, and shallows; and the problem has been, for many years, how to avoid the dilemma so long felt. Calais is, undoubtedly, so to speak, the English harbour of France. I

may be, geographically, a little less direct on the road to Paris than Boulogne; but it has been selected, whether for one reason or another, as the great centre of communication, by way of Brussels and Cologne, for Strasburg, the Rhine, the North of Europe, and North and South Germany. There is nothing, therefore, to be wondered at in the circumstance that so constant desire should have existed, or so continuous an endeavour been made, to abridge and facilitate this traffic, which, it may be said without exaggeration, is vital to the common life of Europe.

In the first place, however, it was deemed necessary to ascertain the probability of successful excavation. Geologically, the bed, and, nautically, the depths, of the Channel, are well known; yet sufficient has been ascertained, in other respects, to induce an opinion that the experiments should be undertaken, not precisely at Calais, but at a point near Ambleteuse, near the familiar village of Andresselles, where the deepest water, near that coast, is to be found. Originally, as every one is aware, the project was regarded as an impossibility, and enormous steamers, or ferry-boats, were suggested, which would have involved a world of new piers, basins, and sluice-gates; indeed, the fluctuation of ideas upon the subject has been the chief cause of its being left so long to wither in the pigeon-holes of speculation. After the great ferry scheme had broken down, the designs of Mathieu, the French engineer, for a Channel tunnel were deliberately brought upon the carpet, but as deliberately brushed away; for they were lost, and have never been recovered. Gamond came next, with a series of geological demonstrations, which have sustained the criticisms of time and science, and, at his instance, a Commission was granted by the late Emperor of the French, "which," in the language of the report, "appears to have come to the conclusion that it was desirable to test his investigations by sinking shafts and driving short headings under the sea, at the joint expense of the two Governments." But this is a French rather than an English view of the matter. Another countryman of our own, Mr. Low, also laid a plan before the Emperor, in 1867, as Sir John Hawkshaw had done, with even more elaboration, in the previous year, and Mr. Remington in 1865,—and their rivals, whose names deserve to be noted, although their ideas cannot be here described at length, were, — MM. Franchot, Tessier, Favre, Mayer, Dunn, Austin, Sankey, Boutet, Hawkins Simpson, Boydon, and Brunlees. It is worth while to observe the list, because, if the work has not yet been accomplished, it has evidently not been for want of ingenuity and will. It has miscarried, however, to a certain extent, through the variety and contradiction of the schemes projected. Apparently, this difficulty has been overcome, and the resolve has been arrived at definitely to pierce the stiff grey chalk. Mr. Remington, as appears from the printed remarks forwarded by him to the Board of Trade, would have selected the line from Dungeness to Cape Grisnez, in order to avoid the chalk and the fissures which he dreads encountering in the bed of the Channel, and to work in the Wealden formation, which he believes would afford a greater chance of success. Such is the latest aspect of the matter, as presented to the Department at Whitehall. But the report does not stop short here. It recapitulates the dreams, as some of them may indeed be termed, of other adventurous engineers. There were two or three who proposed bridging the Channel, and one actually professed himself prepared to build a "marine viaduct" from Dover to Cape Grisnez, with iron girders propped on 190 towers, 500 ft. apart, and 500 ft. above the water, and he estimates the cost of such an edifice at simply 30,000,000*l*.! Again, there was, as already mentioned, Mr. Hawkins Simpson, with his submarine tunnel on a pneumatic system, called by him, however, the "Eolian" principle, for which he claims the merits of cheapness, expedition, superior ventilation, and easier utility. It is interesting to note the inexhaustibility of inventors in these respects. There is Mr. Alexander Vacherot, who has submitted to the Board of Trade a scheme which, we ought to say, he laid before the Emperor of the French in 1856, for "laying on the bed of the sea a tunnel made, or formed, so as to constitute, so to speak, a monolith." He would "construct it on the shore," and "complete it in sections, to be drawn down into their places when finished." The representative officer of the department dismisses most of these projects with a critical, yet downright, denial of their practicability, and his language may be worth quoting:—"Although it was desirable to advert to these various expedients, it is not necessary, in this place, to say more in regard to them, than that, while I am unable to convince myself of the feasibility of any bridge scheme, I conceive that it might be wise to test the practicability of a tunnel by means of preliminary driftways." This is precisely what it has been agreed, by both Governments, both Legislatures, and the united companies, shall be done. It is true that not far from forty years have elapsed since M. Thomé de Gamond first attempted to prove that a submarine thoroughfare, between the two countries, was possible; but gigantic advances have been made, during the interval, no less in opinion than in science and mechanics. No international fears are now created by the Mont Cenis excavation, or the Suez Canal. They are regarded, indeed, as treaties and pledges among the Powers of civilization. The shores of the Atlantic have been united by a cable; the barrier of the Alps has been virtually destroyed; and, with reference to the latest and, perhaps, grandest project, a careful geological survey has shown, at any rate, the possibility of cutting a tunnel through the narrowest, or almost the narrowest, part of what are sometimes designated as the Straits of Dover, a distance of twenty-two miles, or slightly more. Trial borings and soundings taken at different points by Sir John Hawkshaw and the late Mr. Brassey indicate a bed of chalk as the stratum through which, after leaving the coasts on either side, the perforation is to be made. Of course, on the freedom of this bed from accidental fissures, dislocations, and "faults," the success or failure of the vast experiment depends; but there is every reason for believing that it lies in a mass, continuous and compact, between, as it were, two impenetrable ramparts of clay. From the boring on the English coast, in St. Margaret's Bay, a great unbroken depth exists,—175 ft. of "upper" chalk, and 295 ft. of "lower" or grey, chalk which is occasionally confounded with the clay itself; while the workings on the French side, near Sangatte, show 270 ft. of the upper, and 480 ft. of the lower. Experimental shafts, on a narrow scale, resembling somewhat the borings for an artesian well, have been carried to a depth of 600 ft.; but these supplemental demonstrations, in point of fact, were superfluous, the main object being to ascertain the depth and nature of the Channel bottom, which, at its deepest, is 180 ft., and its average rather more than 100 ft. below the surface of the water. No sudden changes of profundity, and no reefs or banks, are discernible, to the knowledge of the most experienced men, and the bed of the "thin streak" is shown to be a gradual and almost equally rising and falling concavity between the two coasts. Under these conditions, as the reports inform us, and taking into account the deep homogeneous strata to be bored—about 500 ft. thick—not less anywhere than 200 ft. between the crown of the arch and the bed of the Channel (allowing for the precipitous cliffs on either side)—every hope may be entertained that the enterprise, though so incomparably superior in its magnitude to that of Isambard Brunel for constructing a Thames subway, will be successful. The Thames Tunnel was, indeed, in some respects, a more hazardous enterprise. Little was then known about sub-aqueous boring; the materials were more shifting than those which the Channel excavators will have to encounter, — irregular strata of loose earth, masses of sand, gravel, mud, and clay, liable to constant disturbance; and a formidable tidal action. In remembrance of these obstacles, it was thought that a tunnel beneath the sea must present insuperable difficulties. But we have gone through the great submarine galleries of the Cornish, Cumberland, and other mines, and observed no more drip than would be evident in any cavern of the Derbyshire Peak. For instance, the mine of Shiel Lode runs to a length of 80 fathoms below the level of the sea, at a depth of less than 18 ft. from the water. It has never been inundated, nor have the workmen (workwomen also, we are sorry to add) suffered through deficiency of ventilation, space, and provisions for their comfort. To conclude, practically, however, the first boring is to be about 9 ft. each way, which dimensions are asserted are the least that can be depended upon as a test, or even as an experiment. Then will follow the work of enlargement, along the walls and roof, through the agency of a machine which, it is affirmed, can bore chalk at the rate of a yard, or more, an hour. A difficulty, however, may still have to be met. The most costly labour of any will be the removal of the excavated stone, clay, and soil. Tunnels driven underground have usually shafts, at intervals, through which the disturbed earth is raised, and their frequency, by enabling the excavation to be broken up into short lengths, reduces considerably the arduousness of the work. Such advantages, however, will not exist in the case of the projected Channel Tunnel. All the earth, or rock, or clay, or chalk will have to be removed to the terminal shafts at either end, and this toil and expenditure must increase as, by progression of industry, the headings are removed to greater distances from the ends. Nevertheless, the task is now fairly in hand, and we may rely upon the spirit and the genius of the age in which we live to carry it through effectually.

THE MASONIC FRATERNITY IN THE OLD WORLD AND THE NEW.

In writing of an order which claims an existence away down the centuries further back than even the building of King Solomon's Temple, whose badge is more ancient than the Golden Fleece or the Star and Garter, whose secret mission covers the world, and whose principles embrace mankind, we beg to premise that it is not our object to seek to advise any non-Mason to embrace the "Science of Symbols," nor, we need hardly add, is it our remotest intention to reveal any of the secrets of the craft. We have a different purpose, as the reader will presently see. Both in the old and the new world certain events have taken place of late that have done more to bring Freemasonry before the eyes of the world, and to prove its power and popularity, than anything in its history has ever done before. To begin with our own country. The vast gathering of the brethren in the Royal Albert Hall, and the gorgeous and solemn ceremonial when the Prince of Wales was made the head of the order, will be long remembered by the Masonic brotherhood of the United Kingdom. The fact also that two more royal princes have likewise become brothers of the mystic tie,—the Duke of Edinburgh and Prince Leopold,—has contributed not a little to give additional strength and popularity to the craft. Nor must we overlook the recent presentation by the Baroness Burdett-Coutts of official chairs to the master and wardens of the Lodge which bears her honoured name,—in itself an incident in the history of Freemasonry which, bearing in mind the character of the donor, ought, one would think, to make the craft find greater favour in the eyes of some ladies,—particularly married ladies,—than by all accounts it does. The benevolent baroness is not, however, the only lady who has practically and substantially shown sympathy with the order and its objects. On the occasion of the dedication of the new grand Masonic temple in New York the other day, a number of the fair sex of that city presented the Grand Lodge with a beautiful banner, and the Lodge acknowledged the gift by a special vote of thanks. Touching the dedication of this new temple, the New York journals agree that never in the history of the country or the craft has there assembled such a congregation as that which participated in the solemn and peculiar ceremonies observed on the occasion. From England and Canada, and from almost every State in the Union, came representatives of the order. Clad in various regalia, the majority in the garb of the master workman, and thousands in the attire of knights, who symbolically illustrate the chivalric achievements of ancient story, bearing mystic emblems, and laden intellectually with legends and lessons that unite the present with the dim and misty past, the vast procession marched through the streets of New York, and was regarded with an interest unparalleled by any other public demonstration. The very name of their order signifies that they are builders, and although the order has long ceased to be practical masons, consistency compels them to give heed to the architecture of their own buildings. Accordingly, the new temple, we are told, is the best specimen of good masonry that has ever been dedicated in America to the observance of the Masonic ritual. It combines the requisites of solidity and taste more perfectly than any other structure of the kind, is the costliest Masonic edifice in the United States, and no unworthy type of the social and moral fabric which the Freemasons claim to have constructed.

Among our American brethren Freemasonry is a much more extensive and flourishing institution than it is with us. In the United States alone there are no fewer than 8,069 lodges, with 524,649 members. In England, Scotland, and Ireland there are only 2,136 lodges, and 131,150 members, which membership, however, includes (under the registry of England) lodges in Australia, New Zealand, China, New South Wales, Spain, South Africa, Burmah, Jamaica Barbadoes, Demerara, Brazil, and other countries. It will be found that nearly all the greatest American citizens have been brothers of the mystic tie,—Franklin, Washington, Lafayette. Daniel Webster, Henry Clay, being among the number. Especially interesting is the connexion of Franklin and Washington with the craft. When only in his twenty-sixth year, in 1731, we find Franklin writing thus:—"There seems to me at present to be a great occasion for raising a united party of virtue, by forming the virtuous and good men of all nations into a regular body, to be governed by suitable, good, and wise rules, which good and wise men may be more unanimous in their obedience to than common people are to common laws. I at present think that whoever attempts this aright, and is well qualified, cannot fail of pleasing God, and meeting with success." Franklin was made senior warden of the Tun Lodge, Philadelphia, in the following year, and in 1734 provincial grand master of Massachusetts, master of all the Masons in Philadelphia. It is worthy of note that the first Masonic book published in America was printed this year by the great philosopher, then in a humble way of business in Philadelphia. It is a small quarto, a reprint of the English Constitutions of Masonry. A few copies still exist in antiquarian collections. Moreover, the first written warrant granted in America by provincial authority was to Franklin, and the oldest American Masonic letters that have been preserved were written by him. He afterwards became Provincial Grand Master of Pennsylvania, and he was honoured with the like rank by the Grand Lodge of England when he visited this country for the second time in 1754. During his residence in Paris as American Minister (1776-85) he became affiliated, either as a special or honorary member, with the Grand Orient of France, and was presented by his French brethren with a medal, bearing on the obverse a fine bust of Franklin. Reverse, Masonic emblems, the serpent's ring, carpenter's square and compass; in the centre a triangle and the sacred name in Hebrew, &c. Legend—"Les. Mac. Fran. à Franklin, M. de la L—— des 9 Sœurs O. de Paris 5,778." The name of Washington is held in even greater esteem by his Masonic countrymen, who speak of him as "the great master workman," just as the nation at large speaks of him as the "father of his country." He early sought admission into the fraternity, and never lost an opportunity of advancing the interests or promoting the honour of the craft. While commander-in-chief of the American Revolutionary army, Washington countenanced the establishment and encouraged the labours of a travelling Lodge among the military, believing that it would be the means of checking the ferocity of soldiers, and alleviating the miseries of war. The Lodge was named Washington's War Lodge, Morristown, New Jersey, and it still flourishes. While his army was encamped here an interesting incident occurred which showed that the great General was true to his principles. A party of American troops was sent out on a foraging expedition. By and by, they encountered a number of British soldiers, who had been placed on guard over some baggage. A skirmish ensued, and the British were taken prisoners, and, with their baggage, carried to the American camp. On an examination of the baggage a Templar's sash and a Master's apron were discovered, and excited some surprise among the soldiers, who immediately took them to the tent of the Commander-in-chief. As soon as Washington's eyes fell upon the articles, he gave instructions that the baggage should be carefully protected from injury; that inquiries should be made after the owner of the Masonic articles, and if found that he be brought immediately to his tent. The owner soon made his appearance; kind words and friendly greetings attended his reception. He was treated with the greatest kindness while a prisoner, and shortly afterwards sent home to England on parole. This person was Sergeant Kelly, of the British army, who after his arrival home, lived to a good old age, and preserved the sash and apron with the greatest care. On his dying bed, Kelly exacted a promise from an old friend, a brother of the mystic tie, that he would forward, after his death, the sash and apron to Montgomery Lodge, New York, with a letter stating them to be a memento to the fraternity of the kindness and fraternal regard of George Washington toward a humble brother and a stranger. The relics were presented to the Lodge in 1838, where they are duly treasured with several other memorials of the Revolutionary war.

The oldest Masonic Lodge in the state of New Jersey, though not in America, is St. John, No. 1, Newark. It is fifteen years older than the Republic, and possesses a national interest from its relation with Washington, and his illustrious Franco-American compatriot General, the Marquis de Lafayette. The latter was initiated by the Fredericksburg Lodge in Virginia when he was only twenty years of age. He had just landed in the States to fight for the Republic. Three years afterwards he was made a Master Mason, Washington performing the ceremony. It took place at Morristown aforesaid, though the jewels used on the occasion were those belonging to St. John's Lodge. Some years ago the lodge-room was broken into, and all the jewels were carried off, including those used by General Washington. This Lodge boasts of having been the first organisation of any kind in America to celebrate the birthday of the father of his country, and it has done so ever since the year 1792, seven years prior to the death of their most illustrious brother. Remembering what he has done for the craft, as well as for his country, little wonder that American Masons should exult that the name of Washington stands enrolled in the list of brethren, and that they cherish the remembrance of his virtues and his services as a rich legacy for their emulous example.

A few figures will show at a glance the relative strength of Freemasonry in different countries in the Old and the New World. It may be stated that in England Freemasonry has from early times occupied a prominent position. As our readers are aware, the principal office-bearers at present are,—Grand Master, H. R. H. the Prince of Wales, K.G.; Deputy Grand Master, the Earl of Carnarvon; Senior Grand Warden, Lord Henry Phynne, M.P. The Grand Lodge of Scotland has for its Grand Master Sir. R. M. Shaw Stewart, bart.; Deputy Grand, the Earl of Roslyn. The Grand Master of Ireland is the Marquis of Abercorn; Deputy Grand, R. W. Shackleton; Senior Grand, Lord Viscount Powerscourt. The Grand Lodge of Prussia has for officers, His Imperial Majesty the Emperor William, Protector; the Crown Prince Frederick William, Deputy Protector. The following figures represent pretty closely the number of lodges and memberships in the countries mentioned:—

	Lodges.	Members.
United States	8,069	524,649
England	1,345	91,730
Prussia	309	35,193
Scotland	419	21,000
Ireland	372	18,000
Canada (Ontario)	323	14,530
Quebec	37	1,731
Italy, 65 Ldges., 151 Chaps.		12,050
France	266	10,800
Norway and Sweden	25	10,800
Spain	108	4,200
Portugal	57	2,800
Belgium	74	2,185
Nova Scotia	63	3,113
New Brunswick	30	2,038
Switzerland	28	1,800
Mexico	13	626
British Columbia	10	510

There are many places which eclipse some of the above, though we do not happen to have the returns of membership. Thus, South Africa is said to have 25 lodges; New South Wales, 31; Hungary, 33; New Zealand, 50; the Netherlands, 66; India, 63; Peru, 71; South Australia, Tasmania, and Victoria, 95; and Brazil, 104 lodges; while, according to a recently-printed statement, Arabia is said to contain 20,000, and Persia 50,000 Masonic brethren. When we add that a few months ago even his sable majesty, King Kalakana, the ruler of the Hawaiian Islands, was (having been duly vouched for), received as a brother Mason by the Grand Lodge of New York, enough has surely been said in support of the statement with which we started—that the secret mission of Freemasonry covers the world, and that its principles embrace mankind.

THE EXCURSION OF THE ARCHITECTURAL ASSOCIATION TO THE NEIGHBOURHOOD OF ANGOULEME.

THE sixth excursion of the Architectural Association has commenced, with favourable prospects, at Angoulême. Our readers will remember the very remarkable exhibition of the results of the 1874 excursion in the north of France, which were brought together at a meeting held in Willis's Rooms in December last, when Mr. Sharpe recounted to the Association in general, and to a large company of visitors, what the delegates of the Association had done in investigating the principal churches of the Transitional Period of architecture over a line extending from Laon to Chartres; and when by his own exertions, and those of various members of the party which had accompanied him, the walls were completely covered with a series of very effective and accurately executed detail drawings, obtained by enlarging a great number of carefully drawn and measured subjects selected from the sketch-books of the excursionists. On the present occasion, as on the former, the president of the Association and the secretaries accompany Mr. Sharpe, and as the number is necessarily more limited than an excursion party nearer home would be, every member understands that he must consider himself in a peculiar sense as a delegate, and that it is incumbent on the body in general to endeavour, by combination, to surpass the results obtained last year (valuable as those were), and that something should be produced of an intrinsic and exceptional value. Mr. Sharpe fully expects to do this, both on account of the peculiarity of the district now visited, and by the more systematic arrangement of the work to be distributed amongst his pupils—for such for the time being they are, and evidently do not wish to be thought anything else. The excursion, commencing Monday, August 30, will end on Saturday, September 11. During a similar period of last year materials were collected from which no less than eighty plates are to be engraved. It is true that last year there were sixty excursionists or more, and this year the number is limited to thirty. The latter number, however, includes most of the chief contributors to last year's work, and the losses may be said to be more than made up by fresh accessions. Some also who last year were young and inexperienced and comparatively ineffective, promise to be very useful. Another favourable circumstance is that the ground to be gone over is much less, so that probably at least one-half of the time taken up in moving from one place to another will be saved. Forty-two churches are to be visited, according to the list which has been given out. The district is almost unknown to the English artist and archæologist. Three of the churches, viz., Fleac, Roulet, and Angoulême, are slightly illustrated in the late Mr. Petit's work on French churches. The real discoverer of the architectural value of the district is Mr. Sharpe, who has been over the ground minutely with a view to this excursion.

The peculiarity of the architecture of these churches consists in their being derived from that very remarkable building, St. Front at Perigueux, a church which unhappily has suffered the very worst extremities at the hand of the modern French restorer. The peculiarity chiefly consists in the absence of aisles, and in the nave, choir, and transepts being vaulted by a series of domes, with a larger and loftier one at the crossing. St. Front itself was derived from St. Mark's, at Venice, and is only a very little later in date to that church. These churches in the Angoulême district are, again, a little later than St. Front, but amongst themselves nearly coeval, namely, of the twelfth century. Thus they form an exceedingly valuable step in the history of architecture, and it is hoped that the result of this excursion will be a complete illustration of this particular type. The time is very opportune, because many of the buildings to be visited are as yet untouched by the levelling hand of the French restorer. He is on the road, however, and has begun in bad earnest at Angoulême Cathedral, of which a large part has been pulled down, not from structural necessity, but to show how cleverly it can be built up again. We have had occasion sometimes in England to protest against a case of church restoration when it has seemed to be carried to an unnecessary extent, but even the least conservative of English restorers would hesitate to do what is done in almost every town in France. Let us hope that the influence of the excursionists, who are everywhere received with the

greatest courtesy, may be of some use in encouraging a healthier feeling amongst the French architects and clergy in this particular. Whether this result, however, can be obtained or not, it cannot but be of very great importance to English art that so considerable a number of students should be trained under such a director as Mr. Sharpe, and amongst such monuments as are presented by one of the most interesting districts of France. The first day's work, consisting of a round through Fleac, Linars, Trois Palis, Nersac, St. Michel, and back in the evening to Angoulême, has been duly followed out. Every one was ready for the early start at 6·30 a.m., and the hot sun,—for in this latitude the mid-day sun *is* hot,—did not hinder those whose duty it was to measure or sketch in the open air from doing their parts thoroughly. The description of the buildings visited may be properly reserved for a future opportunity; but it may be well to mention that two buildings in particular appeared to command the greatest admiration, namely, Trois Palis,—a small but interesting parish church, perfectly authentic and untouched,—in very bad repair it must be allowed, and one grieves to think what must soon happen; and St. Michel, a very remarkable octagon building, reminding one of the baptistery at Parma, with seven apsidal chapels and one wagon-vaulted entrance. This, however, has not the charm of complete authenticity, having recently been restored; still, the leading masses and some of the original detail remain, and it formed a very interesting *finale* to the day's work.

OLD BROMPTON.

IN our last gossip of Old Brompton, now South Kensington,* we spoke of standing by Methwold's Almshouses, and we would yet linger upon this spot for awhile to contemplate the extraordinary transformation. The parish boundary-post lay prostrate among the stumps of the old trees which, with the litter of boughs, bricks and mortar, and scaffold-boards, made a strange commingling when we viewed the site some time since; and one of the trees yet stands close by the newly-erected church which serves to identify the locality. In imagination we must remove the mansions of the Queen's-road, and reduce the breadth of it to the narrow lane, which at this point ran in a tolerably straight line till it terminated in the Gloucester-road, immediately opposite Victoria-grove. Underneath that group of lime-trees, at the corner of Cromwell-row, we trace its course past the pollard elms to the wicket-gate of Dunn's garden, where you might gather your strawberries for the small fee of sixpence. It was here, among the elms and the limes and the thick underwood, that the nightingale sweetly warbled in the soft spring night, and where, in the field adjacent, the wheat or barley was sprouting soon to assume its golden hue, with its garniture of poppies and field flowers. While contemplating the remarkable change the sounds of a piano fluctuated on the still air. Pleasantly enough fell ever and anon the strain, but it was not the melody we had heard there before. Even the Swedish nightingale, who often broke the stillness of Old Brompton with her charming notes, would admit that art can never rival even if it may approach nature.

But to resume our survey. Leaving the buildings of Hale House on the right, not forgetting the grass field, with the big walnut-tree, where the cows grazed, and passing up the shady Cromwell-row, we come to the five-barred gate, with the words, "No thoroughfare," and at the angle and junction with the Gloucester-road stood Gloucester Lodge. Built on the site of the Florida Tea-gardens for the Duchess of Gloucester, it was subsequently tenanted by the Princess Sophia, and afterwards by the Hon. George Canning, who was visited here by Queen Caroline. In the great statesman the Queen doubtless found an estimable adviser and an earnest friend. Sometime before 1851 the place had become deserted, and the groves tangled and neglected wildernesses. The house had the questionable character of being haunted, for the doors would slam of themselves, and the creaking of weird steps might be heard in the corridors by the affrighted nightwatchers. In fact, that active, restless, and malevolent spirit (dry-rot) had taken possession, as it does of many an old domicile, from one end to the other. The premises were pulled down in 1852. This residence, surrounded as it was by a thickly-wooded grove, formed a principal feature in the view of Old Brompton from the north-west. Standing on the slightly elevated ground at the corner of Victoria-grove, then (1850) but recently built, the range of panoramic view, backed by the undulating Surrey hills, formed a most agreeable picture.

The eye ranged from Brompton Church on the extreme left, to Colherne House at Earl's-court and the more distant towers of Walham-green Church; and Chelsea Church stood a little to the left of the centre of the picture, whilst all the middle distance was broken by occasional old buildings interspersed with foliage in the most picturesque manner, the russet and grey tones of the former mingling most harmoniously with every tint that may be found in the woodland.

But when twilight fell upon the scene and distance became increased by the "sinuous veil," the proximity to the town could scarcely be realised. It was lonely enough in the night season. We remember an anecdote related by an old gentleman who for some time was the private secretary of Mr. Wilberforce. Passing daily to and fro between Kensington-gore and Old Brompton he was sufficiently used to the loneliness of the Gore-lane to feel no alarm generally. From some circumstance or other which had recently taken place he felt unusually apprehensive, and on a dark and unfavourable night for the pedestrian carried home with him the cavalry sword which he occasionally used in his military exercises. The darkness of the night appeared to increase after leaving the old tenements at the Kensington end, and as he emerged into that portion of it which skirted the carpet-ground on one side and Mr. Kirke's nurseries on the other, he heard footsteps approaching him in the opposite direction; then as suddenly stop. Upon his halting the footsteps again approached, then again stopped, and so on, until, worked up to concert-pitch of alarm, he suddenly drew the sabre. This was enough; the "swish" from the steel scabbard solved the problem at once. A sudden rush through the hedge into the carpet-ground, and a scamper which seemed to mock pursuit, indicated that the alarm had been at least equally shared.

This Gore-lane entered the Old Brompton-road immediately opposite Thurloe-place, and all trace of it is now lost in the present Exhibition-road. Finding ourselves at this point, and close to the South Kensington Station, we pause to look at the rapidly-increasing mass of building on the site of Brompton Hall.

The enclosure at Onslow-gardens recalls something of the pleasantness of old, but in the extraordinary increase of the surrounding property we can scarcely identify the old sites. Yet in passing into Onslow-square we recognise some old friends in those elms of beautiful form and growth which still ornament its enclosure, and whose venerable appearance call to mind the time when Brompton had its Heath. In this enclosure we also find a portion of the fine avenue which formerly extended from the grounds of Cowper House to the Fulham-road, where it terminated opposite Hollis-place.

It was a few yards to the westward of this residence that a small row of houses were built about 1834–35, known as Sussex-terrace, and at this period it was considered a somewhat hazardous, if not doubtful, speculation, so little dreamt of was that change in the value of the land which ultimately turned the locality into a vast and populous suburb. At this period Bute House and grounds were in existence, where the aloe in blossom brought visitors from London, about the year 1838–9. The grounds adjoined those of Brompton Hall, and Bute-street arose on the site of this property. From the windows of the houses westward of this a very extensive view was obtained over Kensington, whose church might be seen in the rising grounds among the trees, after the eye had wandered over the rural little vale beneath. The Swan Tavern has but very recently disappeared, and its bowling-green and alcoves are now lost in the Queen's-road. It was opposite this tavern where we remember to have seen a little cottage at that time retaining the name of Heath Cottage. The old farmhouse, which at this point lay back from the road, and of which the aforesaid cottage formed a part and parcel, had been removed some years previously. The whole of this site has been converted into a handsome square, under the wand of Mr. Freake.

We pass on to that portion of the neighbourhood where the late Alfred Bunn received his dramatic guests, and where the "Swedish Nightingale" warbled her melodies, where the acacias and the willow overarched the road, at a time when Old Brompton might be fairly named as a secluded spot and the haunt of the Muses.

A little distance hence, and at the corner of the lane opposite Drayton-terrace, lived for some time William Jerdan, the editor of the *Literary Gazette*. In an old-fashioned house, overshadowed by a huge elm, the growth of two centuries, one of the most useful men at that time in connexion with the press, he carried on his literary labours. It was here that he first became acquainted with the fragmental posey of "L. E. L.," then a young girl, whose genius was of too brilliant a nature to escape the vigilant eye of the painstaking editor, who first brought her verse into estimation through the medium of his journal. But at this date the Brompton-road was a purely country road, and remained so for many years subsequently. Less than forty years since the site of Drayton-terrace and Drayton-grove were unbuilt on. Thistle-grove terminated the building from the Fulham-road hither, and we remember an old friend who used to say that the adjacent field was never without a hare, and that he had often from his window in the morning counted six brace of partridges rise from "Boltons," now the site of scores of residences and St. Mary's Church. This site was not disturbed for building purposes until 1850–51, when the speculation was considered so uncertain in its results that some of the houses in Boltons were sold for 1,350*l.* each,—houses which have since brought 3,000*l.* apiece and more. Even at this time, however, that thick double edge which fenced in the market-grounds of the late Robert Gunter, Esq., remained undisturbed; and not till within the last five years or so had any change taken place, when lo! the wand of Midas touched the soil, and up rose mansions in the place of cabbages.

Even to Colherne House (the extent of our present ramble) has spread the great suburb; and where of old we have stood catching the southerly breeze as it swept over the meads, spreading out to Walham Green, we find fine houses, a couple of churches, and the busy population of a town.

THE THREATENED DESTRUCTION OF CÆSAR'S CAMP, WIMBLEDON.

IT is to be feared that unless prompt and immediate action be taken, the injunction which was recently obtained on application to the Master of the Rolls to prevent building materials from being carted across a certain road on Wimbledon-common to the "Camp," will be practically unavailing. It appears that the parties who claim the right to build on the Camp have succeeded in getting the materials laid down on the spot by taking some other route, for it seems that at the present time building operations are actively in progress, the foundations of several houses having already been laid on the south side of the Camp, and the superstructures of the same have been commenced. In addition to this, steps are also being taken for building on the north side, workmen being employed in excavating the ground, and felling the trees, preparatory to the commencement of actual building. In order to save the Camp, as a part of the common, and which it is alleged has been illegally taken possession of, it is suggested that the same course should be adopted which was recently successfully pursued with reference to Epping Forest, but if any steps are to be taken, it is manifest that action must be prompt and immediate. The right of the persons claiming to build is decidedly questioned by those acquainted with the subject, and a meeting of the parishioners is contemplated. It is also stated that in case the parties claiming the right to build should establish such claim, the amount necessary to buy up such rights, and so preserve the camp, would be readily forthcoming, so anxious are the wealthy inhabitants of the district to secure the preservation of this historical spot. A very few weeks, or even days, must, however, determine the question whether the "Camp" is to remain, or to be a thing of the past.

The Ordnance Survey.—Major-General Cameron, R.E., C.B., has been appointed Director of the Ordnance Survey of Great Britain and Ireland. He has been for many years engaged on this important duty, and has honourably earned the respect and esteem of his colleagues and subordinates.

* See p. 731, *ante*.

NEW BUILDINGS FOR POOR-LAW ADMINISTRATION.

Highgate.—MR. H. Saxon Snell estimates the cost of the new infirmary at Highgate for the Holborn Union, and for which he has prepared the plans, at about 60*l.* per bed for 566 patients, equal to 33,960*l.*

Newington. — At the last meeting of the St. Saviour's (Southwark) Guardians, held on the 26th ult., the assistant clerk submitted plans which had been sent in by Mr. H. Jarvis, architect, showing the additions and alterations necessary at the Newington Workhouse, in order to meet the requirements of the Local Government Board with regard to the proper classification of the in-door paupers of the union. From these plans it appeared that the architect considers that the best course under the circumstances will be to run a corridor through the centre of the workhouse and the present board-room, and to erect wards at the front and back of the same. In this way the expense which would be entailed by the erection of an additional block to the present buildings would be saved. Mr. Jarvis also proposes to erect in front of the establishment, and completely isolated from the workhouse, a board-room, with waiting-room, committee-room, and office. As Mr. Jarvis was not in attendance, the Board deferred the consideration of the plans.

Lambeth.—The contract for the erection of the new Lambeth Workhouse Infirmary, to which we have referred in the last two numbers of the *Builder*, is at length settled. At the meeting of the Lambeth Guardians on the 25th ult., the committee appointed to inquire into the tenders for erecting the new infirmary and other buildings brought up a report recommending that, Mr. Tarrant having withdrawn, the tender of Mr. James Taylor, which was the next lowest, be accepted. The amounts of this tender were: 50,000*l.* for the new infirmary, 1,000*l.* for the out-door labour buildings, 2,600*l.* for the receiving wards, the total being 53,600*l.* The committee also recommended that Mr. Gladwell, who acted as clerk of the works for the present workhouse, when in course of erection three or four years ago from plans by Messrs. Parris & Aldwinckle, be appointed clerk of works for the new infirmary, of which Mr. F. H. Fowler is the architect. The report was adopted.

KIRKCALDY FINE ART ASSOCIATION.

THE fourth annual exhibition of this association has just been opened, and promises to be even a greater success than last year's, while the quality of the works exhibited is better than ever. In all about 340 works are exhibited, among the most notable being those by W. Fettes Douglas, R.S.A.; J. C. Wintour, A.R.S.A.; Peter Maccab; C. E. Johnson; J. B. M'Donald, A.R.S.A.; John Smart, A.R.S.A.; Arthur Perigal, R.S.A.; H. M'Culloch, R.S.A.; James Cassie, A.R.S.A.; W. Beattie Brown, A.R.S.A.; Geo. Reid, A.R.S.A.; W. E. Lockhart, A.R.S.A.,; Kenneth Macleay, R.S.A.; Waller H. Paton, R.S.A.; R. T. Ross, R.S.A.; Clark Stanton, A.R.S.A; Sam Bough, R.S.A.; J. C. Noble; Geo. Aikman; C. N. Woolnoth, &c. In addition to this, the committee have been fortunate in procuring (on loan from Mr. J. Boyd Kinnear) two early examples of Sir David Wilkie. Local art is also well represented, especially in sculpture. The want of a proper exhibition-room is very much felt, and until it can be found the committee cannot possibly do full justice to the contributors or fully develop the usefulness of the association.

THE ASSESSMENT OF ST. THOMAS'S HOSPITAL.

THE Assessment Committee of the Lambeth Vestry have just reduced the assessment of St. Thomas's Hospital from 10,900*l.* to 7,000*l.*, being a reduction of 3,900*l.* The assessment has been reduced after the amount at which the hospital should be assessed had been settled in the Law Courts, and the reduction by the Assessment Committee has been the subject of a warm discussion in the Vestry. Several members contended that had good house property been erected on the site of the hospital, the amount of the rateable value would have been far in excess of what the hospital was rated at before this reduction took place, and Mr. Turner, one of the members, observed, that before the embankment was made, and any alteration took place, when the "old shanties" which the hospital had displaced were in existence, the place was rated to the parish at 8,000*l.* Mr. Akerman defended the action of the Assessment Committee, and stated that the number of the inhabitants of Lambeth who had received relief from the hospital in various ways, who would otherwise have had to be assisted by the parish, was very considerable. The vestry should bear in mind that there was a noble building at no cost to the parish; and although the assessment had been reduced, it was still rated at more than was the case when the old houses were in its place. He deprecated the notion of the vestry wishing to make a profit out of the hospital. Mr. Turner questioned the legality of the meeting of the Assessment Committee at which the reduction was agreed upon, and intimating his intention of causing another meeting to be called, to rescind the resolution of the previous meeting, but the clerk stated that the meeting was perfectly legal, and that the reduction must now be regarded as final.

ACCIDENTS.

AN inquest was held on the 26th ult. at the General Hospital, Birmingham, on the body of Isaac Wesbury, aged 31, painter, Vincent-place, Vincent-street. The deceased was engaged on the previous Monday afternoon painting a house in Sheep-street, when he fell off the ladder and fractured his skull. He was removed to the hospital, where he died in an hour after his admission. Verdict, "Accidental death."——On the 26th ult. a man named Richard Miles, employed by Mr. Avard, contractor, Maidstone, was severely injured by a circular-saw which he was attending.——A foreman mason in the employment of the Shotts Iron Company, named George Lamb, aged 39, has been instantly killed by a fall in the engine-house of the Shotts Iron Works, by which his skull was fractured.——A somewhat alarming scaffold accident occurred on Wednesday, the 25th ult., at Priestfield Colliery, Blantyre, occupied by W. S. Dixon (Limited), whereby four men,—namely, John M'Alpine and Robert Black, bricklayers, along with James Brown and Michael Cairns, sinkers, all of Blantyre,—were precipitated from a scaffold on which they were working in a new air-shaft to No. 5 pit, to the bottom, a distance of about 30 ft. M'Alpine got two of his ribs broken on the right side, and his right arm buised. Brown's right ankle and right arm were injured, and he was also slightly cut about the head. Black and Cairns' injuries were so slight that they were able to walk home. William Simkin, who was also on the scaffold when it gave way, managed to cling to the bell-rope, and thus escaped injury of any kind.——By the fall of a wall in Dunlop-street, Glasgow, on the 21st ult., a child, two years old, named John Kerr, was killed, and several persons were seriously injured. The accident is attributed to the pressure of a quantity of sand heaped up alongside the wall, and it seems that a load had just been emptied when the wall fell.

WATER-TIGHT PONDS.

FOR the information of your correspondent, "R. S. W." in your last issue, may I briefly describe how perfectly water-tight ponds are constructed in the China clay-works of Devon and Cornwall? The sides of the pond, or "*settling-pit*,"—usually round,—are built up with stone and *moss*, in short, are "dry walls," with the joints stopped with moss. The wall, as it rises, is "backed up" with 2 or 3 ft. of coarse *sand*, the bottom is treated similarly, and then the clay stream is turned in. Of course, there is leakage at first, but it *very soon ceases*; sufficient clay being carried back with the leaking water to form a natural and practically impervious cement with the sand. This is now the universal method adopted, with entirely satisfactory results, which have not been obtained where cement was used.

If "R. S. W." applied any modification of this plan he would find it successful. The settling-pits above referred to are equally tight with clear water, after they have been used for the clay a few times. FELDSPAR.

THE writer of the question has not said what was the substratum to his concrete, nor how he allowed the concrete to dry. Perhaps too much lime was used in his concrete, which would allow the water to filter through it.

If clay, such as pottery is made of, is handy, he can coat the pond bottom 2 in. deep with it, or cement will be the only other remedy.

Allow me to remark that in forming ponds, clay will hold water, but sand, chalk, gravel, or peat require claying, even if concrete be used after as a top coat. Do not let the concrete dry by quick evaporation of moisture, or it becomes porous; but keep it wetted for a few days, to dry slowly throughout, and avoid anything breaking the set of the concrete, such as a plank end dropping on it, or it will be a leaky place.

J. CHARLES KING.

COMPETITIONS.

The Laird Memorial Statue.—We referred in last week's *Builder* (p. 785) to the models sent in in competition for the bronze statue of the late Mr. John Laird, M.P. We understand that the Committee of Selection have chosen the design of Mr. Albert Bruce Joy, of London, and that Mr. Joy has been entrusted with the execution of the work. There were seventeen designs submitted in competition. Mr. Joy was a pupil of Foley. The statue will be 10 ft. high, and will be placed on a pedestal 13 ft. high.

The Proposed New French Postage Stamp.—Four hundred and thirty-one designs for the new French postage stamp have been sent in. Of these, twenty-five were selected and reserved for final examination. The design which obtained the first prize of 1,500 francs represents Peace and Commerce leaning on a terrestrial globe with an equatorial band, whereon the words "République Française" appear. The second prize design represents Abundance supported by a shield. The third design shows France, as a nude figure, holding a flambeau to light the world. On all the prize drawings the words "République Française," and the price of the postage, are inscribed.

ST. SEPULCHRE'S CHURCH.

SIR,—Perusing the account of St. Sepulchre's Church and its restoration (by the architect) in your number of August 21, errors occur which I will endeavour to correct, and also supply a little additional information. To begin, the income of our esteemed vicar is put at 200*l.* per annum. This is not so; if it were, there is scarcely a parishioner who would not gladly contribute to supplement such a miserable pittance. With regard to the substitution of an oriel window for the niche and statue of Sir John Popham, it did not rest with the churchwardens alone: the entire restoration is entrusted to a committee of twelve, including those officers and the vicar. What the artistic merits of the statue that was to have vied with those already on the Viaduct might have been, it is impossible to say; but the window was the more costly, as the substitution caused an addition of some pounds to the contract.

Concerning the London and Middlesex Archæological Society, some of its members being also parishioners, they naturally felt interested in the interior restoration of their noble parish church. The Council paid a visit of several hours' duration, and afterwards, at their own expense, sent a report, accompanied by drawings, to the Restoration Committee, as a private and friendly communication. The remarks about their "orthodox functions and incapacity" are wholly uncalled for. I regret to add that, unknown to the vicar and senior churchwarden, an unfair use was subsequently made of the Society's report and drawings.

Few enter our church without admiring its fine, lofty interior. There is not the remotest intention of sacrificing it for Gothic. With the galleries removed, the useless lobby and St. Stephen's Chapel thrown in, we shall have no mean approach to the grandeur of a cathedral. The design for the tower and porch was (very unwisely) accepted by the Restoration Committee without competition. For the interior, three architects sent in designs. Those of an eminent firm have been selected, and from their large experience in building new churches and restoring old ones, a successful result may be anticipated.

As to the work just completed, though more ornamental, it is, in my opinion, less imposing than formerly, whilst the absence of string-courses in so lofty a tower, windows minus the usual sloping sills, the window-like clock canopy, and heavy tracery in the porch windows, are much to be regretted. T. J. W.,

One of the Restoration Committee.

Proposed Widening of Goswell-road.—At a meeting of the Clerkenwell Vestry, on the 26th ult., Mr. Gillingwater suggested that, as a number of houses between Percival-street and Compton-street had been pulled down, to clear the site for the erection of large blocks of workmen's tenements by the Improved Industrial Dwellings Company, a good opportunity was offered to widen Goswell-road at that part. He hoped the vestry would put itself in communication with the Metropolitan Board, in order that the new buildings which are to be erected might be set back from the old line of frontage. He moved that the matter be referred to the Committee of Works. The motion was adopted.

TEWKESBURY ABBEY CHURCH.

MR. THOMAS BLASHILL, in his paper on Tewkesbury Abbey, read at the recent Congress of the British Archæological Association, said,—The history of this church, now nearly all that remains of a noble monastery, begins with the end of the eleventh century, or perhaps the commencement of the twelfth. For some 400 years before that time a small establishment of monks had existed here, at first as an independent foundation, but subsequently as a dependency of the Benedictine Monastery of Cranbourn. About the year 1084, Geraldus, the abbot of Cranbourn, came here and began the construction of a more important establishment, and three years later, in 1087, the Honcur of Gloucester (of which the Lordship of Tewkesbury formed a part) having been given by William Rufus to Robert Fitz-Hamon, his relation in blood and by marriage, he appears to have at once promoted the idea of the abbot. Thus the monastery progressed until the church was completed, the chief bulk of which remains in its original condition to this day. A monk named Alfred was the "master of the works." If we may read this as "architect," it is an early and rare mention of such a person by name. In 1102 the monastic buildings were fit for occupation, and Tewkesbury became, instead of Cranbourn, the residence of the abbot and his monks,—they being fifty-seven in all, as given in the charter. In 1107, Robert Fitz-Hamon, the "second founder" of Tewkesbury, died, and was buried in the Chapter House, the church not being completed. Leaving daughters only, Mabel, the eldest, was married to Robert, a natural son of Henry I., who was created Earl of Gloucester, and is known in history as the champion of his half-sister, the Empress Maud, in her struggles against King Stephen of Blois. Earl Robert carried on the buildings, and the church was consecrated in 1123, being then probably completed except as to the tower, which would occupy a few years more. We may infer this much from the general severity of design throughout the church, the archaic character of such ornament as does exist, and the greater richness of the upper stages of the tower. A wooden spire, covered with lead, is said to have been built by Earl Robert before his death in 1147, but whether this was the one which fell on Easter Day, 1559, may be doubted. The church then comprised the nave and aisles, divided by tall and massive circular columns; over them was a very simple and insignificant range of coupled arches in place of the triforium usually adopted, and a clearstory, of which we can fairly estimate that it carried a wooden roof at the height of, perhaps, as much as 10 ft. above the soffit of the present vaulted ceiling. A similar arrangement to this was adopted at Pershore and at Gloucester, but here it is carried to an extreme, the height of these columns being 30 ft., which is 3 ft. more than those in the nave at Gloucester, the diameter of these being about 6 in. less. The original intention of the designer of the western façade is a puzzle which cannot easily be solved. The western façades of large churches of early date are, perhaps, their least satisfactory point. This is the first and almost the only case where an immense arch was formed so as to gain an importance which could not be otherwise obtained. It seems to have been actually filled in with a wall pierced with windows, but I cannot think this was the original idea. Such a wall set back for a few feet behind the arch, and a pair of western towers, of which the rudiments seem to exist here, would have produced a magnificent effect, as may be judged from the west fronts of Lincoln and Peterborough, where experiments of this kind were tried, but there is no evidence of the recessed wall in this case. The towers were not actually built, a mere turret being carried up over each of the side staircases,—the present terminations to them, including the highest window openings, being evidently a modern imitation of twelfth-century work. Dingley's sketch of the church shows the tops of these turrets crocketed like those on the angles of the central tower. There is a fine north porch corresponding in date with the church; by it the townsfolk had access to the nave, which was their parish church. It has a dark room over it accessible only from a narrow wall gallery. The stone seats in the porch are said to be, and probably are, portions of the ancient slab of the high altar, but no dedication crosses can be traced upon them. The aisles, like the nave, had wooden roofs, and not the half-barrel vault which has been inferred from the existence of the half-arches thrown across them to act as buttresses to the central tower. The transept was exceedingly severe in design. It had the usual apsidal chapels in its eastern face, and the church was completed to the east with a very short choir, or rather presbytery, consisting of only two arches beyond the tower, and an apse which is not semi-octagonal, as is usually said; but semi-hexagonal, an unusual but a more convenient form. Over the arches of the presbytery were the usual triforium and clearstory. An ambulatory was formed round the presbytery; it also may have been semi-hexagonal, and no doubt had three small apsidal chapels. From the floor of the church a fine view of the interior of the tower could be had, showing two tiers of arched openings and a tier of windows above them, throwing light down into the church. Traces of the twelfth-century monastic buildings of important size are found on the southern face of the church. In the south-eastern angle of the transept is the turret stair, by which for over 400 years the monks descended direct from their dormitory to the early morning services, their choir being between the two arms of the transept, and under the central tower. Such was the church as left by Earl Robert of Gloucester at his death in 1147. Earl William, his son, did nothing to it, for nothing needed to be done, so complete and solid was the work. In 1178 the monastic buildings were burnt, and traces of this fire are plainly visible on the adjoining walls of the church, but no remains that I have seen show the characteristic work of Henry II.'s reign, which would be the style of the new buildings if any were then erected. In 1183 Earl William died, and leaving no son, the husbands of two out of his three daughters were successively Earls of Gloucester. Our associate, Mr. Planché, Somerset Herald, has recently shown that the first of these was Prince John, who had married Isabella, and became King of England; then followed Almeric de Montford, the husband of Mabel, and Geoffrey Mandeville, the second husband of Isabella, after her divorce from King John. On the death of this last in 1216, Gilbert de Clare Earl of Hertford, the son of Earl William's other daughter Amice, became Earl of Gloucester.

According to Mr. Planché (see *British Archæological Association Journal*, 1870), the Clares would be Lords of Tewkesbury from 1216 for a period of ninety-eight years. They adopted this as their place of burial, and lie side by side between the two westernmost arches of the choir—the first Gilbert and his son Richard, then Gilbert the second (the Red Earl) and his son, Gilbert, the last Earl of Gloucester and Hertford, who at the age of twenty-three was killed while leading the fatal charge of the English horse at Bannockburn, in 1314. The work that required to be done here during the time of the Clares was not very considerable, but it was important, and we can see from its mutilated remains that it was carried out in the richest and most elegant manner of the thirteenth century, towards the middle of the reign of Henry III. I venture to think that the nature of the work then done has been misunderstood by all the historians of the abbey. The ancient Register, known as the "Annals of Tewkesbury," gives but a meagre account of the buildings executed. It records that in 1219 Abbot Peter built the dormitory and back offices, which work has been destroyed. Also, that in 1237 Prior Sipton rebuilt the chapel of St. Nicholas, and this is assumed to have been the work done on the site of the old apsidal chapel on the east side of the north transept. But the most important work of this period was a building which extended along the north face of the transept, and beyond it as far as the eastern face of the chapel last named. This building has been thought to be the two chapels of St. James (or of St. Nicholas) and of St. Eustache. It consisted, in fact, of a chapel to the east, approached through a large ante-chapel, the two forming a beautiful model of a small church, having a nave and chancel. I can find no reason for the dedication of such an important building to any of the saints to whom it has been ascribed, but I think that a close examination will clearly indicate the motive for building it, and the cause of its peculiar form. During the twelfth century, the interest of the laity in the public worship of the church had greatly increased, and the enthusiasm of both clergy and laity in honour of the Virgin Mary was vastly augmented. The small eastern lady chapels became inadequate to the increased demand for this means of worship. In those churches where the eastern termination was apsidal there was some difficulty in constructing a large lady chapel, and if the church was monastic the laity could not gain access to a lady chapel so placed without some interference with the portion of it kept apart for the use of the monks. Although these two objections were in several instances overcome, they are set forth very neatly in the case of Durham, where a chapel to Our Lady having been begun at the apsidal east end, the walls began to crack, from which it was inferred that St. Cuthbert objected to anything which would bring women so close to his shrine. The chapel, which is called the Galilee, was therefore built at the western end of the cathedral. The most convenient position for a chapel of Our Lady which might be used by the people was on the eastern side of the transept, farthest from the monastic buildings. So it was at Worksop Priory and at the Abbey of Bury St. Edmund. It could not be so placed at Tewkesbury without destroying a chapel already existing. If that had been possible, the transept would have formed the ante-chapel, or place for the people; but as it was necessary to place it beyond the transept, an ante-chapel had to be provided, and the result is the beautiful arrangement of which we now see the mutilated remains. The "Annals" record that in 1239 "the Church of Tewkesbury was dedicated, with the major altar, in honour of the glorious Virgin Mary." Perhaps we should understand by this, not that the Church with the high altar thereof was re-dedicated, for which no reason seems to have existed, but that the church, *with the major altar to the Virgin*, was dedicated. If so, that would clearly refer to this lady chapel, for (as was the case at Bury St. Edmund's) the old eastern lady chapel would also be retained for the use of the monks. We are greatly indebted to Messrs. Collins & Cullis, the contractors, who have very kindly made such excavations as were necessary to clear up doubtful points in this investigation, and to Mr. Collins for great personal trouble in the matter. I am much inclined to think that the Chapel of St. Eustatius, built by Prior Henry de Banbury, in 1246, was built between the eastern part of the new lady chapel and the north aisle of the choir, including the site of the old apsidal chapel. If so, it would be entered by the ancient archway of that chapel, now blocked up. In that case the chapel of St. Nicholas must have been one of the small chapels in the ambulatory of the choir. But so many changes have evidently taken place at that spot that further investigation is desirable.

This, then, was the condition of the church when the last male of the line of De Clare was buried here in 1314. Seven years afterwards his eldest sister, Eleanor, was married to Hugh le Despenser the younger, the favourite of Edward II., who was created Earl of Gloucester, and had the Tewkesbury lordship, and the patronage of the Abbey. The Despensers were here till 1414, a period of ninety-three years. In five years this Hugh was hanged at Hereford, with a wreath of nettles round his head, for his attachment to his sovereign. His body was dealt with in the extreme of the barbarous fashion of that age, such parts of it as could be collected being buried to the south of the high altar. I am hardly prepared to admit that the monument which exists there at the back of the sedilize is his memorial. His son, Hugh, Baron Despenser, died in 1449, and his widow (who was a Montacute) married Sir Guy de Brien. She and her first husband, Hugh Despenser, lie buried under the handsome monument to the north of the high altar, which is the first that can be identified of the series of grand historical memorials for which this church is famous. The monument facing this on the other side of the ambulatory is attributed to Sir Guy de Brien, who survived his wife for nearly thirty years, dying in 1490. The extensive works done to the church in the time of the Despensers are attributed to the three persons just named, especially the last. Sir Guy de Brien was a person of considerable position, having his own residence at Castle Welwyn, in Pembrokeshire, being a Knight of the Garter, and constantly engaged in the service of the sovereign. He was, as might be expected, one of the benefactors of the church, leaving to it some property at Bristol, for the support of certain of its services, but why he, whose connexion with Tewkesbury was so short, and, as it seems, so slight, should do so much for it, and should even be buried here, requires to be better explained. I can now only endeavour to elucidate the history of the works undertaken about this time, and as they present considerable

difficulties to the archæologist, careful attention to their details will be necessary. For some reason it was now determined to greatly increase the magnificence of the buildings and the number of altars in the ambulatory of the choir. The increasing wealth of the community, derived chiefly from the benefactions of the Lords of Tewkesbury, would sufficiently account for this, but I suspect that the building which I have called the new lady chapel had become dilapidated through failure of the foundation of the north wall of the transept. . . . . Of the monastic buildings the remains are slight; the great gateway is the most important, and it has been substantially repaired. The buildings adjoining it on both sides are of the latter period of Gothic architecture, and were connected with the business portion of the monastery rather than with the discipline of its inmates. We shall perhaps best conclude our inspection by lingering over the exquisite specimen of the latest phase of Gothic before its day of decline, which is seen in the north-eastern angle of the cloister, and which was thought worthy of being copied in the new Houses of Parliament, the most important modern attempt to emulate the glories of this past and once almost forgotten age. And yet we should not omit the opportunity afforded by the sight of the work now going on here of expressing our sense of the obligation which is owed by archæologists to those who are now so carefully and conscientiously carrying on the work, as well as our wishes that funds may be found for its completion in their own time, so that the grand old nave may be filled with the parishioners as of old, who will then see the ancient choir of the monks, and the further presbytery stretching far away in such a magnificent vista as few churches in England can show the like.

TRANSPORTED BRIDGES.

It may seem anomalous that bridges that are to do duty in various parts of the United Kingdom, and in the four quarters of the globe, for generations to come, should be erected first on the Isle of Dogs, on the banks of the Thames. Yet so it is. In the yard of Messrs. Westwood & Baillie, London-yard, Poplar, iron bridges have been erected that have been sent to Japan, India, La Plata, Trinidad, Mauritius, and various other countries, as many as 1,600 bridges having been thus fitted up for the Bombay, Baroda, and Central Indian Railway alone.

In the yard of this firm there is at present, quite near completion, the superstructure of a lattice girder bridge for the municipality of Calcutta, that is remarkable alike for its great strength, and for the excellence and precision of its workmanship. This bridge,—the Hastings-road,—is 174 ft. long, with a clear span of 162 ft. The lattice girders are 16 ft. deep. One pair of the diagonals, which are the same throughout, are of rolled iron bars 8 in. by 2½ in., the other pair are of bars 8 in. by 1 in.; the angle-iron bracing is 3 in., and 3 in., by ½ in. The flange of the main girders is 2 ft. 8 in. wide. The cross girders, which are 18 in. deep with 9 in. flanges, are placed at 4 ft. 4 in. between centres. They project on each outer side beyond the lattice girders 5 ft. 3 in., and 6 ft. 10 in. alternately. These projecting ends carry a footway floored with spaced planking 9 in. by 3 in. The footway is fenced by a handsome wrought-iron railing 3 ft. 8 in. high. At each alternate cross girder, with the extra projection, the railing is supported by an ornamental cast-iron standard, with a neat cap, that does duty as a sort of vertical bracket. There are about twelve tons of wrought iron in the hand-railing. The footways on each side are 5 ft. 4½ in. clear; the carriage-way, between the lattice girders, is 24 ft. 9 in. clear, and the clear headway under the three cross-ties at the top 18 ft. 6 in. The ties are a quarter-circle at the ends, and straight along the top; they are latticed along the straight part, and have plate webs at the ends, with flanges at top and bottom; they rise 3 ft. from the spring.

The roadway is formed of segmental plates, of $\frac{5}{16}$-in. iron, laid across the bridge, and riveted to the cross girders; they rise about 9 in. The haunches will be levelled up with concrete and covered with ballast. The brick piers will rest upon 6 ft. of masonry on a broad concrete foundation, and a thick cast-iron bed-plate. The bridge is designed to bear nearly three times the strain or load of a railway bridge.

On the next berth in the yard to that occupied by the Hastings-road Bridge is one of the spans of a bridge for a region that is to be soon one of the Prince of Wales's hunting-grounds. It is to cross the river Kalutara, in the island of Ceylon. It is a trussed girder, of twelve spans, 106 ft. each between centres longitudinally, and 21 ft. 10 in. between centres laterally. The girders are 11 ft. deep. The cross-girders are fish-bellied, 1 ft. 9 in. deep, and set at 5 ft. apart between centres. The web is of ¼-in iron, with top and bottom angle-irons, 3½ in. and 3½. in. by ½ in. The girders are covered with corrugated ¼-in plates, laid longitudinally. Each plate goes over two cross-girders. These will also be levelled up with concrete and ballast. The bars of the principal girders are 12 in. by ⅝ in. The top and bottom plates are 20 in. wide, and trough-shaped, one plate at the ends, strengthened to three in the centre.

The bridge will rest upon cast-iron cylinders, to be filled with concrete. The cylinders are 6 ft. in diameter, and are cast in three segments. They will be joined vertically and horizontally by bolts through flanges. The piers formed by these cylinders will average about 50 ft. high. Ten thousand bolts will be used in fixing them, and about 16,000 tons of wrought and cast iron will be used in the entire bridge.

The Kalutura Viaduct will be used, in the first instance, as an ordinary roadway for carriages and horses, and, possibly, elephants and other animals, but in anticipation of its being on the line of a future extension of the railroad from Colombo, it has been designed to serve for railway traffic if required. The line is now only about twenty-five miles from the locality where the bridge is to be erected.

Another bridge in hand by this firm has not to be taken so far afield. It is for the Great Eastern Railway Company, to span the Ouse at St. Ives. Its principal feature is a bow-string girder 104 ft. long. It will have nineteen other spans of 30 ft. each. The wind-tie bracing in the principal span will all be of wrought iron. The cross-girders will be 6 ft. 8 in. apart, with rail-bearers between. The principal piers, of brick with stone caps, will be 6 ft. wide, the others about 3 ft. There will be about 400 tons of iron in the structure.

A characteristic of the bridges built by Messrs. Westwood & Baillie, it is not claimed to be a peculiarity, is that every one of the vast number of separate parts is an exact counterpart, in shape, bolt and rivet holes, and in every other respect of every other part of the same sort, the whole work being made and prepared by template.

ACTS FOR SPENDING MONEY.

Of the 257 Bills for which petitions were presented to Parliament in the recently-expired session, 189 have become Acts, exclusive of powers granted under confirmed provisional orders. Of these there are seventy-one Railway Acts, seven Tramways, thirteen for Gas and Water Supply, seventeen for Gas Supply, twenty-five for Water Supply, sixteen for Dock, Pier, and Harbour Works, eighteen for various purposes to Corporations and Local Boards, and twenty-two miscellaneous.

Among the most important railway Bills passed, in so far as extent of works and amount of additional capital to be raised are concerned, are the two Bills of the London and North-Western Company, for making fifty miles of new line, in various localities, and for raising 4,500,000*l.* sterling of additional capital in shares and loans. By the Midland Act powers are obtained to make sixteen miles twenty-five chains of new lines and other works, including a connecting line at St. Pancras, a station branch at Brixton in connexion with the London, Chatham, and Dover line, with branches between Royston and Darfield, Barnsley and Worsboro' Dale, at Burton, with other works; new capital in shares and loans 2,400,000*l.* The North-Eastern Act authorises the construction of short railways at Berwick, Newcastle, Tynemouth, and other places; proposed new capital, 1,665,000*l.* The Regent's Canal and Dock Company Act empowers the company to improve the canal and dock, to enlarge Limehouse basin, to build a river wall, to make railways to the Great Eastern Railway, and to use portions of that railway; also, to create a "Rent-Charge Stock" and a "Capital Stock A" for the purchase-money (of the Regent's Canal) of 1,390,540*l.*, and an "Ordinary Capital B" of 900,000*l.*, and to borrow 300,000*l.* The omnibus Bills of the principal railway companies are of less than their usual importance. The extent of the new works they contemplate is partly indicated by the capital powers asked for by their Bills. The Caledonian Company for various works propose to raise 88,000*l.*; the North British Company had only a very small Bill this year, additional capital 50,000*l.*; the Great Eastern have obtained an Act in which borrowing powers are not asked for. The Great Northern Company have obtained an Act to execute a number of comparatively unimportant works; new capital in shares and loan 400,000*l.* The Great Western Act authorises the construction of about 9½ miles of line in the county of Monmouth, at Rowley Regis, and for other works; new capital 600,000*l.* The Lancashire and Yorkshire Company have obtained powers to construct various works, and to raise 666,666*l.* of additional capital. The South-Western have also an omnibus Act for various works, and powers to raise additional capital. The Cheshire Lines Committee, the Brighton, and the Chatham companies, have obtained Acts in which powers to add to their capital are not asked for. The South-Eastern Company have obtained an Act authorising the construction of 14½ miles of new lines, from Maidstone to Ashford, and at Sandgate, with powers to raise 466,000*l.* of additional capital. The Sheffield Company have obtained an Act authorising the construction of 6 miles of new line, additional capital 266,000*l.*

The largest new railway schemes sanctioned, in so far as mileage is concerned, are Irish. The Bundoran and Sligo Railway, of 20½ miles, promoted by an independent company, capital 270,000*l.* was unfortunately thrown out in the Lords on standing orders; the Derry Central Railway, promoted by a new company, for a line of 33½ miles, capital 340,000*l.*, has passed the Parliamentary ordeal, and the "clerk of the Parliaments" has sonorously pronounced concerning it the authoritative regal formula, "La Reine le veult." The Sligo, Leitrim, and Northern Counties Railway, a new one, have obtained an Act to make 42½ miles of line, starting with the fabulously small capital of 300,000*l.*, which, even for a single line, is a remarkably low figure.

The Tramway Acts passed relate to Belfast, Glasgow, Hull, Liverpool, Middleton, and Stockton, North Dublin, and Salford.

The Gas and Water Acts relate to Inverness, Millom (Cumberland), Cardiff, Manchester, Hindley, Ashton-in-Makerfield, Broadstairs, Barrow-in-Furness, Birmingham, Pontefract, Rochdale, Widnes, &c. The Gas Acts passed refer to Alford, Bath, Carmarthen, Cleethorpes, Cleveland (Skelton), Colchester, Heckmondwike, Longton, Longwood, Marlborough, Newport (Monmouthshire), Tunbridge Wells, Worthing, &c.

The Acts for water-supply relate, in addition to those mentioned as for gas and water, to the following places, among others:—Blackburn, Busby, Chelsea, Eastbourne, Greenock, Hamilton, Kilmarnock, Leicester, Maidenhead, Market Rasen, Oldham, Osset-cum-Gawthorpe, Oxford, Pemberton, Pontypridd, Portishead, Rotherham, Slough, South Staffordshire, Stroud, Truro, Weardale and Shildon, and Worksop.

The Dock, Pier, and Harbour Works Acts relate to,—Bristol Port and Channel Dock, Burntisland, Cork, Gravesend, Leith, London (London and St. Katherine's Docks), Lymington, Liverpool (Mersey Docks and Harbour Board), Milford, Romford (Canal), Southampton, Staffordshire and Worcestershire (canal navigation), Sutton Bridge Dock, Tees Conservancy, &c.

The miscellaneous Acts passed embrace a wide variety of subjects, including patents, charities, estates, assurance societies, roads, drainage, schools, Acts for a cemetery, an aquarium, a college, for bridges, and divers other objects.

The additional capital proposed to be raised under the Gas and Water Acts passed is comparatively small. Under the Bath Gas Bill power is given to raise 75,000*l.*, and to extend the limits of supply. The British Gaslight Company (Norwich station) is empowered to raise 100,000*l.*; the Cleveland Company, 62,500*l.*; the Commercial Gas Company (London), 562,500*l.* The Imperial Gas Company, by the Bill that they withdrew, asked for powers to raise 1,408,000*l.* of additional capital, and when the new capital has been subscribed, &c., 430,000*l.* more. The Millom Gas and Water Company have power to raise 50,000*l.*, and the Newport Company 62,500*l.* to be expended on works for the greater part. The capital to be raised for Waterworks' Bills include the following:—Barrow-in-Furness, 60,000*l.*; Blackburn, 250,000*l.*; Broadstairs, 15,000*l.*; Chelsea,

200,000*l.*; Eastbourne, 31,000*l.*; Greenock, 65,000*l.*; Leicester, 133,300*l.*; Manchester, 500,000*l.*; South Staffordshire, 250,000*l.*; Stroud, 90,000*l.*; Truro, 20,000*l.*; Weardale and Shildon, 750,000*l.*, &c. In a majority of the cases referred to, the additional capital will be expended upon new works.

The number of local Acts passed is below the average of the past five years, and the contests have been, with a few exceptions, fewer and less protracted and determined.

ENSEMBLE.

BY force of circumstances an architect is frequently compelled to adopt a certain standard, and his work should be judged accordingly. This is a rule too often lost sight of, and the critic is apt to take it for granted that the designer has had everything his own way, whilst he has been reluctantly forced into doing what, of his own accord, he would not have done. At the same time, it may be remarked that a man possessed of originality and force of character will, in whatever circumstances, stamp his work with his own individuality, and that he who is deficient in these qualities yields too readily to any obstacle in his way.

It is too often overlooked that the chief merit in architecture consists of beauty of form; elaboration is mistaken for beauty, whereas greater elegance and taste are more generally found in a plain building than in one profusely detailed. No amount of elaboration will make an ill-proportioned building otherwise than ugly, although, if judiciously applied, it will enhance the value of good proportion. Ornament ought to be considered a luxury, which is to be used sparingly, and not lavishly expended. To fritter away the principal masses with elaborate detail is inimical to grandeur and repose. In every case the ornament should be placed in subordination; "wherever the eye can rest, there place your ornament." By its delicacy it should enhance and give additional value to broad surfaces, upon which mainly depend the strength of the structure. A rectangular surface, for example, appears larger when bordered by a narrow frame. The narrowness of the mouldings, by contrast, enhance the breadth of the surface, the eye is arrested, and does not wander away from the confined space as it otherwise would be disposed to do. Hence the value of simple mouldings as ornamental features.

"The highest finishing is labour in vain, unless there be at the same time preserved a breadth of light and shadow," says Sir Joshua Reynolds; and if this be true of painting, much more so is it of architecture. The degree of finish should correspond to the size of the ornament; if it is large it should be broadly treated, if small, with delicacy. Exaggeration of parts is, however, to be carefully avoided, for when any member or feature of a building is increased beyond its due proportions, grotesqueness or deformity is sure to be the result. The proportions of natural objects used as architectural details are often exceeded, and necessarily so, as they must be in proportion to the other features, and conventionalised so as to produce the desired effect; for as the perceptive powers do not increase in proportion to the size of the object regarded, it is necessary, when the scale is increased, to simplify the details, and accentuate the leading lines. This conventionality of treatment should be kept up throughout when once adopted, so as to avoid confusion by the presence of different standards in the same design.

On the other hand, by reducing a grand design below a certain scale, a toylike effect is produced and the taste is offended. The elements of a fine building consist of grouping and contrast, or depth of light and shade; without these, grandeur is impossible, and the use or abuse of these will be found to constitute the true test of excellence in every building, ancient or modern. Grouping consists in arranging the masses of a building so as to produce an effective composition; and light and shade is produced by contrasting the masses so as to give to each its due effect, and generally by bringing into prominence the bearing members required in construction.

If a building, then, is well proportioned, gracefully grouped, and effective in light and shade, it possesses the requisites of good architecture, however plain it is. And yet, withal, it may not be a fine building in the truest sense of the word. There is a certain individuality, originality, call it what you will (that no originality is displayed in modern works we cannot admit), without which the charm is wanting. It is doubtless of advantage to promulgate general rules and axioms, but the mere observance of these is not all sufficient. The architect has other things to consider besides proportion, grouping, and chiaroscuro. The success of his work depends as much upon expression as does the work of the painter, and no rules can be laid down for such—the power to give it must be inborn with the man, a part of his nature.

Every landscape-painter is aware of how much a scene may be made or marred by a building. If judiciously placed and in good keeping, it may be the centre-point of the composition; an object which renders the scene more attractive than before; but, on the other hand, it may be so placed, and of such a character, as to spoil the finest of landscapes. Travellers to the Highlands at this season, in passing Stirling, may observe a striking example of this kind. Upon a wooded crag, situated in a picturesque amphitheatre of hills, is placed a brobdignagian tower, in imitation of a keep. This monument, which is erected to commemorate Wallace, the national hero, is of such size and obtrusiveness as to spoil a most beautiful landscape. On a less dominating site this erection might have formed a picturesque addition to the spot; it is an eyesore where it now stands.

So, too, in street architecture, the surroundings of a proposed structure are matter of grave consideration. Style is not so much to be considered as the leading lines, which should all tend to one result,—not always to mathematical exactness, but to harmony and gracefulness of composition. One of the most beautiful groups of buildings in the world is that of St. Mark's Place, Venice. Yet the buildings are very various as regards style, and are not symmetrically arranged. It is not given to any one architect to produce such a result, but he may contribute towards it, or he may render its ultimate fulfilment impossible. The last comer may spoil the whole. An architect, then, should have the eye of an artist and the imagination to conceive of the possibilities and probabilities of the situation. He should aim at producing picturesque combinations rather than in obtruding his own work upon the observation. It is this obtrusiveness and self-assertion in most modern work which destroys the general effect upon which a group of buildings depends. Each new comer strives to outbid his predecessors, irrespective of other considerations, and, after all, the result is generally unsatisfactory. Even as regards the building itself, its height may be out of all proportion to its breadth, or the façade overloaded with staring details, and the spectator, if possessed with good taste, looks upon it with disgust rather than with admiration.

In designing a building for an isolated position, there is not the same temptation to self-assertion and obtrusiveness as where other architectural works are in juxtaposition. Still there are many instances to the contrary besides the Wallace Monument above referred to. Not only is that structure too large, but the general conception is essentially bad for the position, which was previously fixed upon. Its leading lines are perpendicular, and enter into competition with the surrounding hills, a feeling which is still further suggested by the tower being surmounted by a serrated crown. The Greek temples so situated never seem out of harmony with the surroundings, their low horizontal lines and simplicity of contour do not come into competition with the undulating lines and aspiring summits of the hills, but contrast with and add value to them.

The Gothic cathedrals and churches are also admirably fitted for their situations,—it is upon the plains that we find the lofty spire, as at Salisbury, and upon the heights the massive and less aspiring tower, as at Lincoln, and so was it elsewhere. If a spire was the culminating feature of a Gothic church situated upon a height, it was where no work of nature came into competition with it, and even then the leading lines of the composition were carried out, as at St. Michael's Mount.

It is not enough, therefore, that a building should be beautiful as an architectural design simply, but its masses, leading lines, and details should be so arranged as to be in harmony with the surroundings, and produce an effective *ensemble*.

Royal Architectural Museum. — The Council of this Museum have abolished the entrance fee of 6d., and now admit persons free daily between ten and four.

THE ANGLICAN CHURCH IN ZANZIBAR.

OUR readers may be glad to know that the Protestant church which is in course of erection from the designs of Mr. C. Forster Hayward, F.S.A., in Zanzibar, under the auspices of the Central African Mission, is making satisfactory progress. Bishop Steere, in a recent letter says:—

"The church in the Slave Market grows space, and is the subject of much attention to both Europeans and natives. I hope we shall make it a really noble building. We are spending at present about 100*l.* per month on the building; it is already much admired and wondered at by the townspeople; the native masons are getting proud of their work, and so are taking more and more pains. Our school and preaching go on in the room adjoining, and I get very attentive congregations in spite of a vigorous effort of the leading Arabs to keep the people away. The Sultan is said to have warned his friends not to come near us; and one of the learned men in the town who is a great friend of mine told me that the Sultan asked him, 'how he, a teacher of their own, could go to hear the Gospel expounded;' and that he replied, 'the Gospel was good and right, and therefore it could not be wrong to listen to it.'"

In opposition to this we are glad to hear from Mr. Hayward that the Sultan accepted a set of plans from him personally, and said his "Thank you," very distinctly.

DEATH OF MR. H. H. VALE, F.R.I.B.A., OF LIVERPOOL.

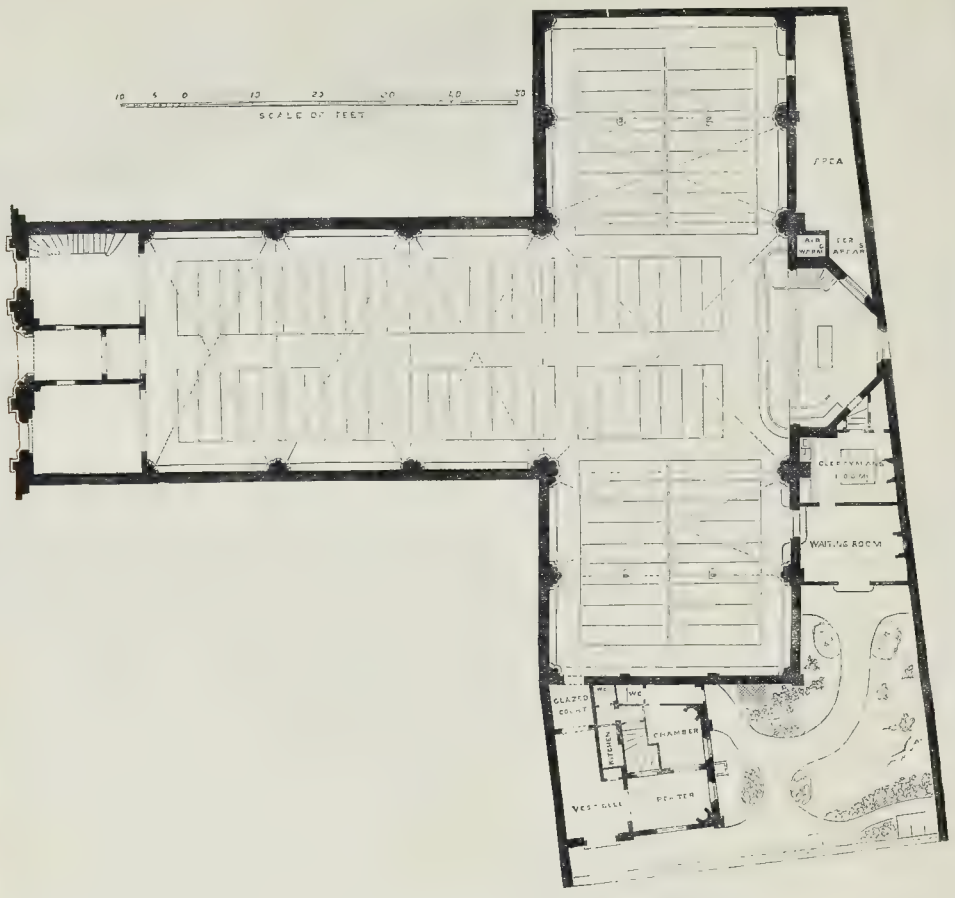
WE regret to announce the death, under somewhat mysterious and painful circumstances, of Mr. H. H. Vale, of Liverpool, who was found drowned in a pit near his residence at Fairfield, Liverpool, on Friday morning, the 27th ult.

It is stated that for some time past Mr. Vale has been in bad health, and as a consequence, or an accompaniment, has exhibited a strangeness of demeanour. This was chiefly shown in an indisposition to see visitors, and a general feeling of dislike to business and society. On Thursday afternoon, while walking in the grounds of his residence, Stanley House, Oakhill Park, Old Swan, a lady called to inquire as to his health. Mr. Vale left her to be entertained by his daughter, and going into the house went upstairs. Immediately afterwards, however, he went out again, and as some time passed without his returning, the members of his household became alarmed. This feeling was deepened upon its being found that Mr. Vale had left his watch and guard behind him, and that a vial containing laudanum was missing. Search was instantly made, and continued until Friday morning, when his body was found at half-past nine o'clock in a pond behind his residence. The missing vial was found empty in his pocket, and the presumption is that after taking the laudanum Mr. Vale threw himself into the pond. The water in which the body was found was about 8 ft. deep. In conjunction with Mr. Sherlock, Mr. Vale designed the Walker Art Gallery, of which we gave a view, and was a past President of the Liverpool Architectural Society.

Amongst Mr. Vale's other works in Liverpool and the neighbourhood are the Oxford and Cambridge-chambers, the Young Men's Christian Association Hall, Mount Pleasant (now in course of erection), and many churches. Mr. Vale's kindly disposition and affable manners made him many friends, by whom his death, under such melancholy circumstances, will be greatly regretted.

At the inquest which has been held upon the body of the deceased, it was stated in evidence that for the past two months he had been in very bad health, and had not been to his office for about three weeks. Dr. Haywood, his medical attendant, considered that he suffered from an over-wrought brain. The jury returned a verdict to the effect that deceased committed suicide by drowning himself while in a state of unsound mind.

Memorial of the late Earl of Hardwicke.—It is proposed to re-erect the grand Early English tower of Haddenham Church, near Ely, to the memory of the late Earl of Hardwicke, as recommended some time ago by the present Bishop of Winchester. The site chosen for this monument is on the highest point of the Isle of Ely, and the tower, when completed, will form a prominent landmark. It was originally erected about A.D. 1272, and many of its principal features were carefully preserved when it was found necessary to take it down some time ago in consequence of its ruinous and unsafe condition.



THE CHURCH "DE L'ÉTOILE," PARIS.—*Plan.*

EVANGELICAL CHURCH DE L'ÉTOILE, PARIS.

THE façade of the Evangelical Church of l'Étoile, in the Avenue de la Grand Armée, has been recently completed. It is 22 mètres in height, by 11·50 in width; the first design was 25 mètres in height by 12·50 in width, but the architect was obliged to lessen it, from motives of economy. The style partakes both of the fifteenth and sixteenth centuries, seen through French eyes, and the façade is entirely constructed in freestone.

The gablets of the two side entrances are supported by the apocalyptical symbols of the four evangelists,—the angel, the eagle, the ox, and the lion; the great moulding of the principal entrance is carved with a garland of wheat and vine leaves, typifying the communion; two angels support the gablet of the centre portion, the one bearing the motto,—"God is love," and the other,—"Peace be with you."

If the dimensions of the façade leave something to be desired, the interior dimensions gain by contrast. The nave is 38·50 mètres in length and 10 wide, the transept 30 mètres in length and 10 in width, forming a Latin cross; the whole, including the organ gallery above the principal entrance, furnishing seat room for 1,400 persons.

The walls of the building being intended to serve eventually as party-walls to neighbouring constructions, windows were inadmissible in some parts, and have been replaced in the interior design by wall arches, forming spaces for inscriptions from the Bible.

The cost, which was determined beforehand, not permitting the construction of galleries in the transepts, the latter have been built so that the galleries can be added afterwards, if thought necessary, giving 200 seats in addition, and raising the total of sittings to 1,600.

The vaults of the choir are blue, with a gilt star powdering, and in the three windows of the same portion are placed stained-glass designs representing the birth, death, and resurrection of Christ; the rest of the windows are filled with diaper-work in grisaille.

A second entry is made on the side next the Rue Poisson, by the sacristan's lodge, and through a garden into the porter's entrance-lobby. The garden is intended as the site of a Sunday-school to be ultimately built.

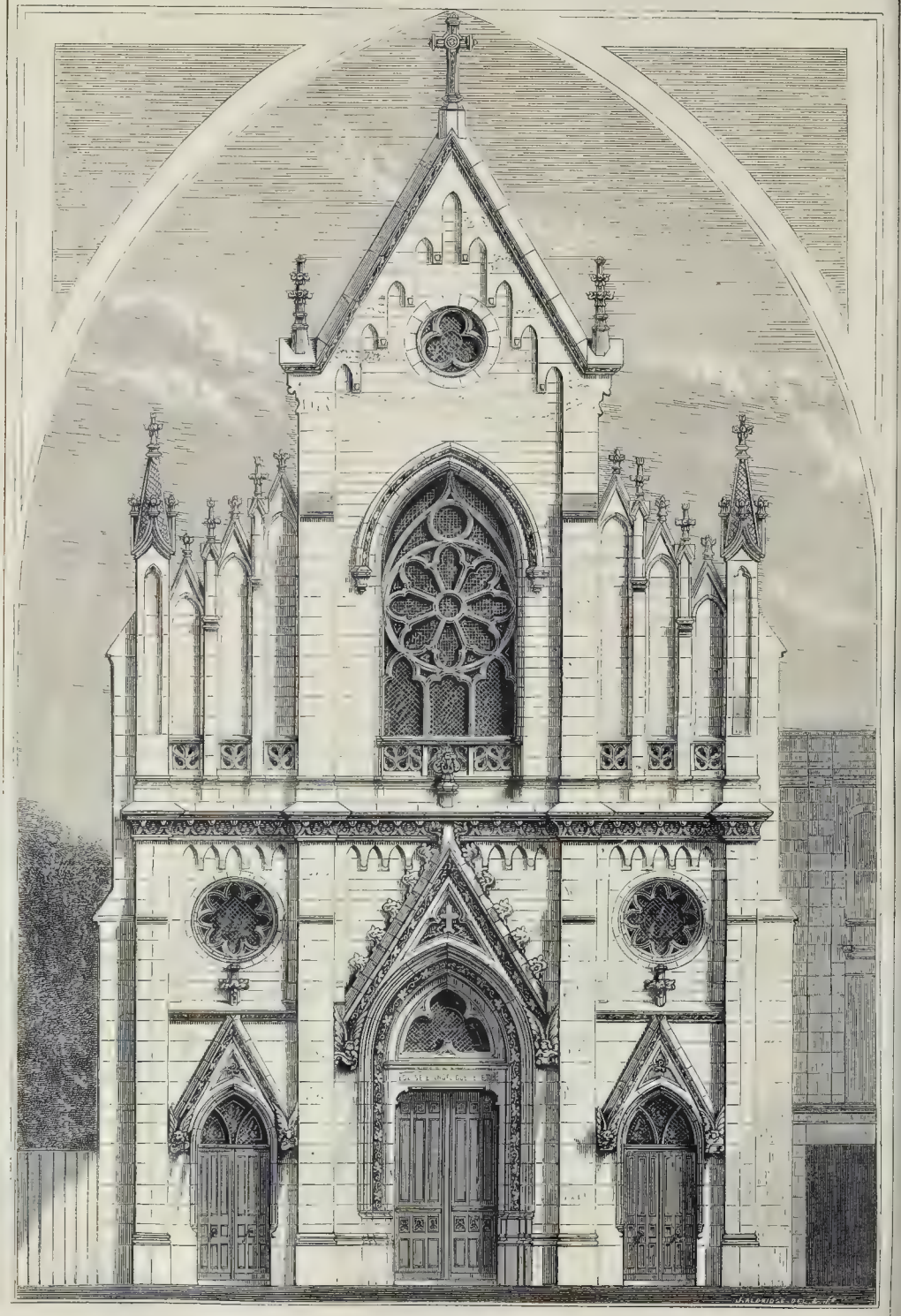
The cost has been about 190,000 francs,—a very moderate sum, considering the surface of ground covered, and that the foundations had to be taken to a depth of 9 mètres. The collection of the necessary funds has been entirely owing to the exertions of the minister, M. le Pasteur Berrier, who has for a long time past found the existing chapel far too small for his congregation.

M. W. Hansen, of Paris, is the architect.

THE GERMAN SANITARY CONGRESS.

THE following subjects will be discussed at the third meeting of the German Sanitary Association, to be held at Munich on September 13, 14, and 15:—1. The determination of a plan for the investigation of the occurrence, as to place and time, of epidemics of typhus: reporter, Professor von Pettenkofer, Munich; co-reporter, staff-surgeon, Dr. Port, Munich. 2. Hygienic requirements of new buildings, especially in the new quarters of large towns: reporter, Dr. Varrentrapp, Frankfort; co-reporter, engineer Bürkli-Ziegler, Zurich. 3. The demands of public health in relation to food, in orphan asylums, barracks, prisons, and almshouses for old persons, and also in public kitchens: reporter Professor Voit, Munich. 4. The aims, means, and limits of sanitary police control over certain important articles of food, especially bread and meat: reporter, Dr. Heusner, Barmen. 5. Public slaughter-houses, and the introduction of a general regulation of the slaughtering of animals; also the compulsory examination of meat, with special reference to the obligation of the district authorities to recompense the butchers: reporter, Herr Gobbin, Görlitz; co-reporter, Dr. P. Börner, Berlin. 6. The formation of a general registration of deaths in Germany, with, if possible, medical certificates of the causes of death.

The Tay Bridge.—On the 26th ult. the first of a series of fourteen piers to support the large central spans of the Tay Bridge was safely launched and towed out to the middle of the river, where it was moored, as the weather was too stormy to permit of its being satisfactorily lowered into position. This is the largest pier yet constructed. The next pier will be ready for launching in a week or two. Sixty-four piers have now been sunk, and only twenty-five more have to be added to complete the bridge, the total number being eighty-nine.



THE EVANGELICAL CHURCH "DE L'ÉTOILE," PARIS.—M. Hansen, Architect.



THE CHURCH OF NOTRE DAME, AT HAL. A.D. 1341 TO 1409.

NOTRE DAME AT HAL.

THE Church of Notre Dame at Hal, about twelve miles from Brussels, although not a very large building, is a singularly beautiful and valuable example of the perfected Gothic of the fourteenth century. The church consists of a nave and aisles, western tower, with an octagonal baptistery at the west end of the south aisle, and a chancel with aisles of the same width as those of the nave, of which it is in other respects a continuation. There is a large chapel opening out of the north aisle of the choir, and two porches, one of which, that on the south side, is a very elaborate and splendid example of late fourteenth-century work. The aisles of the chancel are not carried the whole length, but end in chapels at the second bay from the chancel arch. The chancel terminates to the east, with an apse of remarkable beauty. It is two stories in height, the upper one being a continuation of the clearstory. In place of aisles there are internally deep arched recesses, filling up the spaces between the buttresses.

Internally, the church is singularly rich and elaborate, the whole of the walls above the arches being covered with tracery, and in the choir elaborate arcades of open tracery are carried in front of the clearstory windows. The church is singularly rich in furniture. The ancient rood is still in existence, supported upon a beam with excessively elaborate pierced tracery. The high altar is a remarkably-beautiful example of very Early Renaissance work, adorned with charming bas-reliefs in white alabaster; at the back is a singular vaulted loft for the exposition of relics, which is at present concealed by a hideous reredos, an example of the very worst taste of the last century. In the centre of the choir is a fine old eagle lectern of brass, and there are some good Mediæval candlesticks, and a remarkably fine corona of iron richly decorated. The font is of brass, ornamented with statues and canopies, and has a lever of iron, to lift off the cover, which is ornamented with a statue of St. John the Baptist. This font is somewhat similar to one we illustrated some time back in the cathedral at Boisle-Duc in Holland. There is an ancient lectern of iron in the baptistery, and the screen is a good example of workmanship executed in the same metal. There is a "Pieta" carved in stone near to the west doorway; it is the work of the fifteenth century; but perhaps the finest things in the church are the "wind porches," these, which are generally such very ugly features, are here singularly beautiful. They are in the Early Renaissance style, and are ornamented with panels, filled with very delicately-carved arabesques and foliage, niches, statuettes, masks, &c., all carved in oak, most highly and delicately finished. This fine and interesting church was commenced in the year 1341 and completed in 1409.

THE DISCOVERIES AT CLEEVE ABBEY.

SOMERSETSHIRE ARCHÆOLOGICAL SOCIETY.

THE twenty-seventh annual meeting of the Somersetshire Archæological and Natural History Society has been held at Frome. The Earl of Cork and Orrery, as president, delivered a valuable address, which is reported, together with other proceedings of the Society, in the *Bath Chronicle*. In the course of the meeting,

Mr Danby Seymour read the following observations on the recent discoveries made at Cleeve Abbey by Mr. C. H. Samson, of Dunster:—"I accompanied the Rev. Mackenzie Walcott, Precentor of Chichester, to these interesting ruins, for the purpose of making a plan of what he considered to be the remains of the church, which until now has been a matter of doubt to many who have visited the spot and written upon the subject. The owner of the property, G. F. Luttrell, Esq., of Dunster Castle, who takes the keenest interest in the matter, at once placed a gang of labourers at our disposal, and in a short time the most important parts of the foundations of walls and columns were exposed to view. I send with this communication a plan of the whole of the buildings, both ecclesiastical and domestic, and the following explanation, taken principally from the notes of Mr. Walcott. The church was 161 ft. in length, of the purest Cistercian type, consisting of a nave of five bays, with aisles 100 ft. by 58 ft. 6 in., a central tower, a transept of 95 ft. by 40 ft., with two eastern chapels, 13 ft. 6 in. square, in each wing, and a short eastern presbytery, 29 ft. by 17 ft., without aisles. The pillars of the nave were round; a beautifully moulded base nearly perfect was discovered in place, and, like the rest of the stonework found, there was no trace whatever to be seen on the surface of the ground of what lay beneath; here and there were indications of masonry, but on examination they only proved to be masses of fallen walls; portions of three other bases were found in their places. The aisles were 11 ft. wide, and the central alley 30 ft. A portion of the foundations can be seen on which the stalls and rood screen stood; the space enclosed is 14 ft. by 12 ft. 6 in., and is partly covered with encaustic tiles, evidently on the proper floor level, although not as they were originally laid: a portion of this space is under a huge piece of fallen wall. A large quantity of encaustic tile paving has been found, either dug up out of the earth or built into modern walls; there seem to be as many as fifty different patterns,—heraldic, geometric, and others, in various colours,—black, red and white, and glazed green; many of the same patterns were found in the old chancel of Dunster church. Among the heraldic tiles are the arms of Raleigh, Clare, Pointz, Trevet or Treble, Sydenham, Bardolf, Cary, Beauchamp, Fitz Nicholas, Furneaux, Peverill, Palton, Botetler, and Richard Earl of Cornwall, many of whom had lands in the county, and under the Mohun family; some of the tiles bear capital letters, B, C, T, I, O, M. The walls of the south aisle of nave remain, with traces of the two processional doors, and three windows about 4 ft. wide between the inside splays, and about 14 ft. from the floor level; they are at present walled up, and no traces of the outer faces are visible. The west and south walls of the transept also are standing, with a portion of an eastern aisle chapel 13 ft. 6 in. square, with part of a piscina, remains of a stoup, and the foundations of the altar; there are remains of clearstory windows in the south wing. The western jamb of the eastern cloister door remains, with a portion of the outer arch, and the springer of the inner arch. The south wall of transept shows the central door into the sacristy. The cloistral and domestic buildings have already been the subject of an elaborate paper by the late Rev. F. Warre. I need, therefore, merely describe the subsequent discoveries made while clearing out some of the rubbish which has accumulated during the time the buildings were used as a farm homestead, which is now happily no longer the case; in a short time Mr. Luttrell intends to remove the modern walling, and other unsightly innovations, now no more needed for cattle sheds. On the east side of the cloister garth, which is 78 ft. square, is the dormitory, on the upper story; it is a magnificent room, 137 ft. 6 in. by 24 ft. 5 in. The north wall contains the door opening on the night stairs to the transept, and a skew door probably for watching the church lights. The substructure includes—(1) the sacristy, 22 ft. 4 in. by 12 ft., with a round window, the hood moulding only remaining; a large double aumbry in the west wall, which had shelves and wooden doors; an aumbry and water-drain on the south, and to the north another locker, and the door into the transept. (2) A chamber, 22 ft. by 10 ft. 6 in., lighted by a single lancet; the original large entrance arch has been filled in with one of smaller dimensions. (3) The chapter-house, vaulted in two spans, on which traces of wall painting are visible; the foundations of the eastern end are now laid bare, which shows the whole building to have been 46 ft. 10 in. in length, by 21 ft. 4 in. in width. (4) Day stairs to dormitory. (5) Parlour 16 ft. 11 in. by 11 ft. 7 in., lighted by a double lancet window, and having a locker on the north, and a deep recessed arch at the side of the door. (6) The slype to the cemetery, 29 ft. 8 in., with two double aumbries in the north, and a pair with a door in the south wall, opening into the (7) day or common room, 60 ft. by 22 ft. 6 in. It was vaulted in two spans, with a central arcade resting upon three pillars. In the east and west walls, at the south end, are two doorways, opposite to each other. The original floor-level is several feet deeper than the present; the doorways are at least 7 ft. high. The south side of the garth is principally occupied by the refectory, over an Early English substructure, which includes (1) the tresaunt to the conventual garden, 30 ft. 8 in., by less 3 in., with a south door and loop and bench where the porter of the cloister sat. (2) The calefactory, divided into three chambers, the first, 22 ft. 8 in. by 8 ft., contains a window, with seats, and a garderobe. The central compartment, 22 ft. 2 in. by 15 ft. 4 in., is entered by its special door, and also by a skew-door, pierced in the partition-wall, on the west, and adjoining the entrance to the next chamber, 22 ft. 2 in. by 16 ft. 5 in. Each of these two divisions has a fireplace set between two windows. Mr. Walcott's impression is that, in the changes of the Perpendicular period the original day-room, being divided into bays by woodwork screens, and this room, originally a long cellarage, had their destinations interchanged. At the south-west corner there is a door, opening into a passage, 6 ft. 6 in. wide, under the hall-stairs, which contains a window and garderobe. Next is the (3) entry to the abbot's kitchen, with a door opening on the hall-stairs, and having a corresponding door opposite to it. Outside the refectory-stairs are traces of a large porch, with a gabled front over the door, and a second building, forming a serving-room, with a five-light window, of timberwork, which connected it with the conventual kitchen. The western alley of the cloister shows a buttressed front, with an upper range of chambers, occupied by the converts or lay brothers, much mutilated. It is pierced by a gateway-porch, with woodwork, retaining some carving on the south, and a panelled Perpendicular arch on the north. Southward of it is the conventual kitchen, 33 ft. 11 in. by 13 ft. 6 in. The arches which enclosed its window remain. They resemble the west side, which were filled with Perpendicular windows, of four lights, and portions of this tracery remain. These four bays formed carols for study. At the south end is a straining arch. The north alley has been entirely swept away. In the centre of the south wall of the nave is a trefoil-headed seat, for the abbot or claustral prior, in cloister time.

CASTLEFORD AND WHITWOOD MAIN DRAINAGE COMPETITION.

ON Thursday, the 26th of August, a meeting of the local boards of Castleford and Whitwood was held for the purpose of deciding upon the first and second best schemes for the joint drainage of the two districts. Twelve schemes had been submitted, with estimates varying from 7,000*l.* to 29,000*l.* These had been considered at different meetings and reduced to two, which were to be decided upon. The Boards, after a short consultation, awarded the first premium (100*l.*) to the plans sent in under the motto of "Union," and the second (50*l.*) to the plans sent in under the motto "Experience." The authors of the successful designs are Messrs. Malcolm Paterson, of Dewsbury, and Mr. Wm. Wheater, of Leeds; the authors of the second being Messrs. Brierley & Holt, of Blackburn.

The position of the two districts at the confluence of the rivers Aire and Calder, with a large extent of flat alluvial land, renders them difficult of drainage. The scheme adopted comprises two separate intercepting sewers, storage tank, two pumping stations, and thirteen acres of land for treatment of sewage by intermittent filtration. The estimate for these works is 22,684*l.* The present population of the two districts of Castleford and Whitwood is 12,000, with a ratio of increase estimated at 100 per cent. in fifteen years.

THE WHITELAW TESTIMONIAL FOUNTAIN AT COATBRIDGE.

A HANDSOME fountain in commemoration of the many valuable services rendered to the inhabitants of Coatbridge by Mr. Alex. Whitelaw, M.P., has been formally inaugurated by Col. Buchanan. The fountain has cost between 2,000*l.* and 3,000*l.*, and so liberally have the inhabitants responded to the appeal made to them, that after paying that amount there was a sufficient balance on hand to pay for two marble busts of Mr. and Mrs. Whitelaw, from the studio of Mr. Ewing, of Glasgow, and also to defray the expense of making a square about the fountain to be called the Baird-square, in honour of a wealthy relative of Mr. Whitelaw, and who is the head of the firm to which he belongs. The testimonial fountain itself is built of Aberdeen and Peterhead granite, and is erected from designs by Mr. Hugh H. McClure, architect, Glasgow, the granite work having been executed by Messrs. Milne & Wishart, Aberdeen. The pedestal is placed on a basement of two well-elevated steps, which lead up on four sides to an equal number of red granite drinking-basins. The pedestal, which is about 10 ft. square, is raised on a floor or platform to a height of 12 ft. above the level of the street. The pedestal is ornamented with rusticated corners and raised

enrichments, having on each face the head of a lion, the water flowing from the mouth into the drinking-basin below. There are four large tablets above the lions' heads which contain the inscriptions. Surmounting these is an arched canopy supported on four massive red granite columns, having moulded bases and finely-carved capitals; both the arch and cornicing over the canopy are enriched with carved key-stones and cantilevers. An octagon blocking course rises above this entablature over which is carried a pear-shaped dome, enriched with massive and handsomely-carved red granite vases. The height of the whole erection, from the level of the street to the top of the vase is 38 ft. The following is the inscription on the fountain:—"Erected by subscription in honour of Alex. Whitelaw, esq., M.P., in recognition of the many valuable services rendered by him to the community. Inaugurated 10th August, 1875."

SUGGESTIONS FOR THE BETTER CONSTRUCTION OF DWELLING-HOUSES.*

The subsoil of every area intended for the erection of dwelling-houses thereon, should be properly drained before the buildings are begun.

If the soil be clay, it should be burnt, and a layer laid down to improve the drainage, and purify foul waters.

The entire site of every dwelling-house should be covered with concrete, Portland cement, or other impermeable material.

The footings of every house should stand upon concrete.

Every wall should have a damp-proof course of slate, asphalte, or otherwise.

No staircase should be less than 3 ft. wide, with proper openings for ventilation, and should be always external to the rooms.

No habitable room should be less than 9 ft. in height, or less than 150 ft. superficial area. It should be provided with a window at least 16 square feet in size, and a fireplace.

Every room in a basement, having an external wall and provided with a window and fireplace, should have an open area from 6 in. below the flooring along the whole length of the external wall, and at least 4 ft. wide. The ceiling of such room should be at least two-thirds of the height of the room above the top of the area wall, or surface of pavement of street. The surface of the said area should be covered with cement concrete.

Every house intended for human habitation, unless every room can be lighted and ventilated from a street or open space, should have an open space in the rear thereof, of at least 150 square feet in area, and never less than 10 ft. in width in any part. Such space to belong exclusively to the house.

All block buildings, meaning thereby, buildings intended for the occupation of numerous families, and more than 25 ft. wide in their largest frontage, should have staircases and passages external to the walls of the house, to provide ready escape in case of fire, and to prevent the spread of disease.

A suite of rooms in such houses intended for the occupation of a separate family should have no communication with other rooms; and each suite of rooms should be entered directly from the street or outer staircase. The houses and rooms should be so arranged that through ventilation is secured.

In the case of block buildings, at least half of the superficial area should be left open for ventilation, and a space of at least 30 ft. in depth should be left between the wall of each block, or of one block and of any other house, back and front.

The water-closet, or other contrivance for the like purpose, should be always detached from the house, or so situated that there should be space for a current of air between the house and the closet.

The water-supply for drinking, cooking, &c., should be separate from the supply to the closet, and should be constant.

No house-drain should be carried under the basement of a house, but have a fall to a sewer in the rear.

The inverts of sewers should be made of Portland cement or of other impermeable substance.

In all new neighbourhoods the paving of the roads and foot pavements should be completed before the houses are permitted to be occupied.

No new house should be allowed to be occupied without a certificate from a Medical Officer of Health or a surveyor, that the regulations have been complied with, and that it is fit for human habitation.

* By George Ross, M.D., Medical Officer of Health for St. Giles' District.

A PROCESS FOR PERMANENTLY PRESERVING IRON FROM RUST (OR OXIDATION).

Dr. Wm. H. Sterling is making known his system for preserving the entire structure of iron. He says:—

"The nature of my invention consists in the impregnation and saturation of the structure of the metal, iron, with a *non*-oxidising or *non*-oxidisable substance or substances by means of forcing these *non*-oxidising or *non*-oxidisable substances into the intercellular or interstitial spaces of the metal by suitable pressure while the iron is in a properly heated and expanded condition, induced by heating the iron in a vacuum, or in a simple chamber, as hereinafter described."

As this invention is capable of being variously mechanically applied, as the different forms of iron articles to be preserved, and the non-oxidisable substances used may require, it is not necessary to describe all of the various mechanical means which can be used in its application; he therefore gives only one of the methods by which his invention may be applied, and which he recommends as being eminently practical and useful:—

"A vessel of iron, or any suitable material of sufficient strength, is made in the form and size best adapted to the shape and dimensions of the iron article to be treated, with the lid so constructed that the vessel may be closed hermetically, and at the bottom suitable pipes are arranged for conveying steam and water, alternately, for the purpose of heating and cooling the interior, as hereinafter described."

Suitably connected with this vessel is a power pump or forcing apparatus for producing the necessary pressure, also the proper appliances for obtaining a vacuum. The iron to be treated is now heated to the desired temperature, as hereinafter stated, and placed into the above vessel, the top closed hermetically, and dry or superheated steam turned into the above-described pipes at the bottom, to keep the metal at the required temperature; also, at the same time, an atmospheric vacuum is produced by an ordinary air-pump connected with the chamber; the proper quantity, sufficient to fill the vessel, of pure parafine or parafine in solution with one of the pure heavy mineral oils, having been also previously heated to the required temperature, is now let into this chamber and forced, under the proper pressure from the forcing pump, into the intercellular or interstitial spaces of the iron, those spaces having so greatly enlarged by the expansion of the metal from the heat and removal of the atmospheric pressure as to most readily admit the subtle, penetrating *non*-oxidisable hydro-carbon preservative in sufficient quantity to for ever after protect the entire structure of the iron from oxidation or rust by any of the ordinary corrosive or oxidising elements. When the iron has remained under this liquid pressure a sufficient time, it is gradually cooled by turning cold water instead of steam into the pipes, the pressure being kept up, however, until the iron is cool.

Certain qualities of iron may be treated without the atmospheric vacuum, but as the iron expands very much more and greater pressure is obtainable by its employment, and the additional cost not to be considered, he recommends its use as most desirable.

We do not know to what extent the value of the process has been proved by time.

THE YORKSHIRE ARCHÆOLOGICAL AND TOPOGRAPHICAL ASSOCIATION AT BEVERLEY.

This Association held its ninth annual excursion on Friday, the 27th ult., Beverley being the *locale*. At half-past one o'clock the Association was officially received by the ex-mayor (Mr. Silvester) and corporation. The charters and other muniments of the borough were exhibited, together with objects of antiquity found in the district, and illustrative of the prehistoric, Celtic, Roman, and Mediæval periods. These were arranged by Mr. W. Stephenson, of Beverley, and included, amongst others, the corporation maces, two silver chains formerly belonging to the borough, and the silver chain of the "Ancient Company or Fraternity of Minstralls in Beverley," a guild which is said to have extended from the Trent to the Tweed, and which had its head-quarters in this town and borough. The reception being concluded, a visit was paid to

St. Mary's Church.—Mr. Fairless Barber, after describing the chief architectural features of the church, made some observations on the works of restoration now in progress. He said the members present all knew, and had the greatest respect for, Sir Gilbert Scott, under whose direction the restoration was being carried out; but it could not be denied that, in the present instance, Sir Gilbert had materially altered the character of that church. He did not wish to say a word against the method he was pursuing in doing it; but he merely wished to draw attention to the fact that the fabric was being materially altered. The effect, no doubt, would be exceedingly pleasant to the people of Beverley, but there was a distinct alteration in the line and the form of the church. He had no doubt there might be reasons for it, and there might be some particular wishes of the inhabitants of Beverley which Sir Gilbert Scott would be bound to carry out: but at the same time there was a distinct departure from the original form of the fabric. He thought it was their duty to call attention to circumstances of this kind, and he hoped the people of Beverley would make it clear to everybody who visited the building that it was in an altered condition, so that no unwary stranger might be misled to think he was in a church arranged as it was when the original fabric was built.

On leaving the church the company proceeded to the Norwood Rooms for luncheon, at the conclusion of which they visited

The Minster.—Mr. Fairless Barber again acted as *cicerone*, and pointed out the varieties of style in the architecture of the building. The Lancet, or Early English style, he said, was as pure and as beautiful an example of Gothic work as could be found anywhere. The other work was equally beautiful and pure in its particular style. One feature in the Minster, which was not apparent at first sight, and which was only disclosed by the investigations of Mr. Petit, when the town was visited by the Archæological Institute in 1847, was that the original plan seemed to have been to stop short of the second transepts, and to have simply an ambulatory round the altar, which would stand somewhere where the present screen stands; in point of fact, that the second or eastward transept, with its chapels, was an addition to the original conception of the builders. With reference to the history of the church, there was nothing earlier than what they saw of it above ground. There was nothing whatever of any former building remaining, unless, indeed, it was the font, which appeared to be of an earlier date than anything else in the fabric. The misereres were certainly unique in the charming humour with which they illustrated the social life of the period to which they belonged. Mr. Micklethwaite, referring to the alterations which were going on in the edifice, said he hoped the old rood-screen would not be removed, for to remove or destroy it would be to obliterate an important part of the history of the church. Other portions of the minster were individually inspected, and the party returned home soon after six.

THE WATER-SUPPLY OF OLD LONDON.

THE BAYSWATER CONDUIT.

Mr. George Musgrave, M.A., has written an interesting letter to the *Daily News* on this subject, suggested to him by the recent discovery of the subterranean chambers beneath Oxford-street, which formed part of the system of water-supply from the far west to the centre of the metropolis. The water was derived from springs in the gravelly soil of St. John's-wood, and took the direction of Grosvenor and adjoining squares on its way to Cheapside. Mr. Musgrave says:—"I am old enough to remember the stone-built conduit house, from which Conduit-passage and Spring-street, Paddington, derive their designation. It stood in a meadow, described in an old document in my possession as situate between Paddington church (close to the present vestry hall) and the north side of Kensington-gardens; but it will be more correctly pointed out by my stating that the said old relic stood on a slanting grassy bank about 100 ft. distant from No. 4, Craven-hill, at the back of the line of dwelling-houses now bearing that name. It was erected and, up to the year 1798, and nearly

twenty-three years later, was kept up by the Corporation of London, 'to preserve a large spring of pure water which rose at the spot, and was formerly conveyed by leaden pipes (cast in Holland) to Cheapside and Cornhill.' It was one of the most ancient springs in the vicinity of London, and being situate in a manor once belonging to the Sanford family, and subsequently to the Earl of Craven, was granted to the citizens by one Gilbert Sanford in the 21st year of the reign of Henry III., A.D. 1236. Reference is made to it in Lysons's 'Middlesex,' p. 331; also in Pennant's 'London,' and Stowe's and Marshall's records. I drank of the little rivulet in the year 1804, and recollect perfectly the haystack-shaped monument overshadowing the stone pipe from which it issued, the security of which was threatened by the roots of a very old pollard elm. It exists no longer. When the Craven-hill estate was parcelled out for building purposes this stone conduit-house was pulled down, and the stream was led either into the main sewer or into the River Serpentine, which rises much further up in a north-easterly direction, and now rushes, occasionally with great impetus, under the centre of the roadway in Kensington-garden-terrace, close to my own residence, and, crossing the Bayswater-road, enters into Kensington-gardens where the fountains are. A stone tablet on the south side, exhibiting the City of London shield of arms, bears a date 1782—doubtless a period at which repairs were made. A plain stone tablet over the pointed arched door is inscribed with 'Repaired 1637.'"

THE TEES CONSERVANCY WORKS.

THE members of the Cleveland Institute of Engineers, to the number of about eighty, on Monday, the 23rd ult., had an excursion down the Tees, in compliance with an invitation from the Tees Commissioners and the Diamond Rock Boring Company, for the purpose of inspecting the blasting operations being carried on at the Eighth Buoy Scarp, a reef of rock lying right across the bed of the Tees. Steaming down the river, the various improvements effected by the commissioners were pointed out. They landed, and inspected the sea-wall of concrete, which is being formed for the purpose of protecting the breakwater towards the sea. Here Major Beaumont delivered a lecture on the Diamond Rock boring apparatus, giving an account of the various modes of removing rocks. It may be mentioned in passing that Major Beaumont's apparatus is at present being used in boring for salt in the rocky strata near to Port Clarence, on the northern side of the Tees. The buzzer from the barge announced that they were ready for blasting, upon which the party returned to the scene of operations, and witnessed the firing of the holes which had been bored. Within the time the party had left the barge until they returned—being about 3½ hours—nineteen holes had been drilled, each 7 ft. 6 in. in depth. The whole of these went off in the form of seven audible explosions. The holes were 10 ft. apart from each other, so that about 100 square feet of rock was shivered to atoms to a depth of 7 ft. 6 in. The rock thus exploded is removed by a bucket dredger, which takes the place of the barge. After witnessing the explosion the party returned to the ferry landing at Middlesbrough, whence they had started.

ST. JUDE'S CHURCH, SOUTH KENSINGTON.

ONE of the large windows in the south transept of this church, of which we gave illustrations some time ago,* has lately been filled with stained glass, the gift of a member of the congregation. It consists of six lights with elaborate tracery in the head, and contains figures of the Apostles SS. Peter, Andrew, James the Great, John, Philip, and Bartholomew. Beneath each of these is a group illustrating an incident in the Apostle's life, with an appropriate legend. Thus, St. Peter released from prison by an angel, St. Andrew going to martyrdom, the martyrdom of St. James, St. John leaning on our Lord's breast at supper, St. Philip bringing the loaves and fishes to our Lord to feed the multitude, and St. Bartholomew's prayer under the fig-tree. The figures are inclosed in a border of rich foliage broken by numerous figures of angels bearing musical instruments, censers, &c., and in the tympanum our Lord is represented seated on His Mother's knee and adored by angels. The window, which deserves praise, is from the studio of Messrs. Lavers, Barraud, & Westlake, who have four others in progress for the same church. Should the remaining transept windows be filled with stained glass at any future time, it is proposed to complete the series of Apostles on the south side and to place the Prophets on the north.

Subscriptions are being obtained to complete the tower and spire; their non-completion is somewhat of a reproach to Mr. Forrest's large and well-to-do congregation.

* See vol. xxviii., p. 547, and vol. xxix., pp. 366, 367.

EXTENSION OF THE BIRMINGHAM EXCHANGE.

OF late the accommodation afforded for the transaction of business inside the Birmingham Exchange has been found insufficient to meet the continually-increasing demand, and a great deal of business has had to be transacted in the street, much to the obstruction of the thoroughfare to the New-street Railway Station.

The Exchange, as it now stands, was erected from the designs of Mr. Edward Holmes. It has a frontage of 63 ft. towards New-street, and of 186 ft. towards Stephenson-place. The style is Gothic, partaking of a Continental character. The main front has a tower 100 ft. high over the centre to the Exchange, and end wings which rise one story above the other portion of the front.

The new building will be constructed of Hollington stone, and it is stated to be so designed as to carry on the lines of architecture of the school, and blend them by a judicious compromise, so as to make the two styles of the school and the Exchange gradually harmonise with each other. The new erection will be of the same height as the school, and will form a sort of wing to the Exchange. The designs have been prepared by Mr. J. A. Chatwin, architect, Temple-street; and the contractor is Mr. B. N. Smith, builder, of the Crescent.

A PRETTY SAMPLE OF A CHURCHYARD.

INTERFERENCE is seriously needed at Talland, West Looe, Cornwall, for, according to the statements of the Rev. H. Mayo, vicar of Talland, his churchyard is the last resting-place of over eight thousand bodies, interred in little more than half an acre of ground. The usual depth of grave is about 4½ ft., deeper graves being impracticable, owing to the friable quality of the earth, and to its being continually turned over by the sexton.

There are no spaces between the graves, and whenever a person has to be buried, the remains of others have, of necessity, to be disturbed. The gravedigger adopts a scientific plan of finding out whether he will be safe in opening any particular spot, by driving down a long iron teater to the requisite depth, and if this bar only goes through some decayed coffins and "old mortalitys," then that spot is selected by the sexton as suitable for a "new-comer," and it may be that a grandchild's bones mix with its grandmothers, or no relatives whatever.

These repeated burials have raised the soil to such an extent, that the old church is almost at the bottom of a charnel pit; and the vicar declares that the polluted atmosphere arising from the putrid dead renders the sacred edifice unfit for public service. There is, he says, constantly oozing from the graves in the higher part of the yard a horrible slime, which came on the floor of the belfry, and he is obliged to keep disinfectants and brandy for the safety of the ringers. Fresh primroses and exotics, which were gathered and placed in this delightful mausoleum, for church decoration, on Easter Sunday, were almost black in a few hours, and chemists had given their opinion that it was owing to the presence of sulphuretted hydrogen in the atmosphere in such quantities as to endanger human life. On Ash Wednesday, so fœtid was the air in the church, that the congregation was obliged to withdraw. Only last week, the vicar says, he saw a poor woman beside a newly-opened grave weeping bitterly, because the remains of one dear to her had been ruthlessly exposed.

Knowing all this abomination, the vicar of Talland called a vestry meeting of the Cornishmen of East and West Looe, and entreated of his parishioners to form a burial board; the ratepayers, however, were determined to spend no money, and defeated the vicar's proposition.

If this meet the eye of the Home Secretary, it is to be hoped he will use a Cornish refrain, and at once learn "the reason why" this horrible graveyard is not closed. Decency and public health call aloud for the removal of so great an evil.

NEW JEWISH SYNAGOGUE, BRIGHTON.

THE new synagogue in Middle-street, Brighton, is rapidly approaching completion, and will be consecrated on September 23rd, by the Rev. Dr. N. M. Adler, Chief Rabbi. The structure is in the Byzantine style, the materials employed being Chichester brick and stone. The lower portion of the front is formed of three blocks. The central block forms the principal entrance, over which are two circular-headed windows, arched with coloured bricks; and similarly built windows are inserted in each of the outer divisions. The entrance-hall, paved with coloured tiles, is immediately connected with the ground floor of the synagogue, whilst a spacious staircase, on the right-hand side, leads to the gallery and the committee-room. The ground-floor, as usual, is devoted exclusively to the male worshippers, whose seats are ranged longitudinally under the gallery; the inner area, which is covered with black and white marble, being occupied by the reading-desk, &c. At the eastern end is the sanctuary, the approach to which, reached by two white marble steps, is semicircular, and inlaid with mosaic work, the sanctuary itself being guarded by rosewood doors, the sombre tint of which is relieved by gilt beading. Scagliola columns, with capitals of carved stone, stand on both sides, supporting a block of stone, on which is inscribed, in Hebrew characters, "Know before Whom thou standest," the whole being surmounted by a fanlight of coloured glass. Above this are two windows, which will be filled with amber-tinted glass, on which, in white letters cut out with chocolate, will be the Ten Commandments. Under the galleries on each side of the sanctuary is a semi-headed window, with lapis-lazuli columns; and one portion of each will be filled with white marble, on which will be inscribed the prayer always used in Jewish synagogues for the Queen and Royal Family, one inscription being in Hebrew and the other in English. The gallery (for the ladies' use) is supported by iron pillars, painted in imitation of marble, their capitals being decorated by wreaths of acorns, figs, cacti, &c., of stamped iron, heavily gilt, each wreath being of different character. The gallery columns are of a like construction, the front of the gallery being of cedar. The windows are circular-headed, and glazed with rough plate cathedral tinted glass, arranged in geometrical design. The artificial lighting will be effected by sun-burners. The synagogue, which is estimated to cost (including site) some 12,000*l.*, will accommodate 500 persons. The ground floor and gallery each contain about 250 seats, which are of open-pew shape, fitted with lockers, and made of stained deal. The building is about 62 ft. in length, is 40 ft. wide, and about 42 ft. in height. The architect is Mr. Lainson, and the builders are Messrs. Cheesman & Co., of Brighton and Uckfield, whose foreman of the works is Mr. Hampton. A house for the minister, together with schools for boys and girls, have been erected in the rear of the principal structure. The decoration of the synagogue was undertaken by Messrs. Sendall & Son, Duke-street; the heating arrangements by Messrs. Packham & Son, Western-road; and the gas-fittings were supplied by Messrs. C. & J. Reed.

STATUE OF THE CONQUEROR AT FALAISE.

ROCHET'S statue, which, according to your paragraph of last week, is "to be erected," has really been erected in the Place de la Trinité for many years, probably since its execution, which you mention, in 1851. It may be that they are now going to give it a new site or a better pedestal.

It is worthy of notice as a rare instance of an equestrian statue in which the rider is looking to the rear, a point which occasioned some criticism in the case of Foley's statue of Lord Clyde. It is a ponderous affair, and in spite of its fine modelling (said to be founded, as regards costume, on the Bayeux tapestry) gives one the feeling that horse and man are labouring under a heavier load of flesh and accoutrements than they can well bear.

THOS. BLASHILL.

THE GUINNESS TESTIMONIAL.

THE statue of the late Sir Benjamin Lee Guinness, bart., intended as a memorial of his munificence in restoring St. Patrick's Cathedral, Dublin, has now been completed and placed in the position assigned to it within the railings in front of the southern or principal entrance of the cathedral. The statue, which is the work of the late Mr. J. H. Foley, is of bronze. It represents the lamented deceased in a sitting posture. The attitude is easy and graceful, and the likeness is good. The figure, which is a little more than life-size, rests on a pedestal of Aberdeen granite. The pedestal has been erected by Messrs. Sibthorpe & Sons, of Dublin. The cost of the statue was 1,000*l.*, and of the pedestal, 100*l.*

THE NEW FOREST.

THE report of the Select Committee which was appointed in the early part of this year to inquire into and report upon the present condition of the New Forest, with especial reference to the vexed question as to the right of the Crown to resume portions of it for the purposes of plantation or enclosure, has just appeared. It forms a bulky volume of nearly 280 pages, and will be found to contain some curious antiquarian matter relating to the early history of this tract of land, which, as is well known, was desolated by William the Conqueror in order to form a royal chase, when Winchester was still occasionally a royal residence. It appears to have remained in the same wild state in which the early Norman sovereigns had left it down to the reign of Charles II., when, in order to repair the destruction of trees consequent on the licence of the civil wars, it was found necessary to plant a great supply of oak-trees, lest there should be no timber for the "wooden walls" of old England. The first resolution finally agreed upon and embodied in the report to the House is to the effect,—"That the New Forest shall remain open and unenclosed except to the extent to which it is expedient to maintain the existing right of the Crown to plant trees."

CARLISLE AND ITS DEATH-RATE.

THE *Carlisle Journal*, in a leading article on the sanitary state of the Border city, points out that the death-rate of what may be called the urban district of Carlisle during the last quarter reached the high figure of 28·4 per thousand. True, there has been an epidemic of measles, but the *Journal* cannot acquit the Urban Sanitary Authority of all blameable share in the excessive death-rate of the district; because the fever epidemic with which the Urban Sanitary Authority dallied so long still shows its black mark upon the return, and the recent fresh outbreak—happily once more reduced to small compass—seems to indicate that the stringent precautions which were for a time in force have been somewhat relaxed.

A NEW ART EXHIBITION.

THE Royal Aquarium Company at Westminster are about to invite artists to send pictures and sculptures for exhibition there, and, as inducements, they propose to offer the Society's gold medal and 100*l.* for the best oil painting exhibited; the gold medal and 50*l.* for the best water-colour drawing; and the gold medal and 50*l.* for the best statue. Other medals will also be placed at the disposal of the committee, who are to be appointed to make the awards, and 3,000*l.*, it is stated, are to be distributed amongst the season-ticket holders by a sort of art-union. It might be thought that the attractions of the institution would suffice, at all events in the first instance, to draw the public, and that the promise of prizes might be kept for a later day.

Saw-Mills in Chichester.—The saw-mills recently erected by Mr. W. Johnson on his premises in St. John-street, are now in full work, and will supply a want long felt in the neighbourhood. We understand that the machines now put down, comprising both vertical and circular saws, form but the first portion of those intended to be erected. They are driven by a powerful horizontal engine, supplied by steam from two large Cornish boilers. The machinery was put down by Mr. Buchan, of the Caledonian Ironworks, Chichester.

INJURIOUS COMPETITIONS.

SIR,—In the advertisements of competitions in the last number of the *Builder*, are two examples, more flagrant than usual, of the degradation into which the competition system is likely to fall. The first is from the Skenfrith School Board, Monmouthshire, who invite *tenders* (evidently assessing architects' brains at so much a pound) in competition from architects "to be sent to their clerk before the 3rd of September next, stating in a lump sum their charge for preparing plans and specifications," and so on. The last sentence of the advertisement says:—"The Board do not pledge themselves to accept the lowest or any *tender*." In fact, the Board want to obtain high talent at the cheapest price, and I wish they may get it. But the advertisement preceding it is perhaps worse. "To Architects. Mr. S. Brooks invites specimens of plans from the above for the erection of a modern detached villa, at Pilesthorne. Mr. S. B. does not bind himself to accept the lowest or any plans.—For full particulars, apply to Mr. Bettle, Chemist, Fore-street, Wellington, Somerset."

What is the use of talking about the dignity of the profession when a public board and a private individual evidently have such a low opinion of architects in general? Still, I fear there may be some who will respond to this "liberal" appeal from possible employers. But my principal object in writing this letter is to urge the necessity of some immediate action being taken in respect to this miserable competition system. The subject has not come within the scope of the recent Special Committee on the affairs of the Institute; but when reforms are talked about, the present is a favourable time for considering *competitions*. I should also hope ere long to see some readjustment of the scale of professional charges for such works as church reparations involving small expenditure. The remuneration of 5 per cent. for the labour involved, and the great skill and experience required to really restore an old church, is wretchedly inadequate; 10 per cent. would be nearer the mark. I should add that I am no interested party in competitions, never having had the enterprise to engage in them. EDMUND B. FERREY.

THE POPULATION OF TYNDALL'S BUILDINGS.

SIR,—In reply to Mr. Isaacs' letter on the population of Tyndall's-buildings, I frankly admit that gentleman's general arguments as to the difficulty of ascertaining the exact population of any given place, and to the variable numbers from time to time, but these circumstances do not alter the facts in question to any material extent.

The main points are that we stated the population of Tyndall's buildings to be 321, and Mr. Isaacs stated it to be 608, an excessive discrepancy.

On the 17th of August our superintendent made a night census, in accordance with Mr. Isaacs' suggestion, and he reports that he found not one more sleeping in the buildings than his weekly return shows, viz., 323 persons in nineteen houses. He adds that in Nos. 11 and 12, lodging houses for single men, where there are thirty-three beds, there were only twenty-five inmates. Our figures are thus fully confirmed.

As regards the special instance in which Mr. Isaacs cites the numbers and ages of a family (the O'Donnells) occupying the ground floor of "No. 1," this is no doubt a case of overcrowding, which it would have been better to have avoided. This family came in on the 14th of June, and misrepresented their numbers to our superintendent. We should be glad to determine the tenancy at once, but the mother being paralytic, we shall be unable to do so until time has been allowed to procure another lodging. There will be, however, no avoidable delay. I may state that there is another family in the buildings which has outgrown the accommodation, but who have been our tenants for many years. This family is, notwithstanding, under notice to quit.

These are incidents that are certain to occur in the management of this class of property, and it is this constant liability that creates the necessity for our superintendence.

Our President, Lord Shaftesbury, always manifests a lively anxiety that our instructions in respect to overcrowding should be strictly observed; and it is much to be regretted, whenever, from unexpected circumstances, his wishes cannot be carried out.

In this matter, moreover, we are subject to the supervision of the officers of the local authority, and we are at all times glad to receive notice of any case of overcrowding that may come to their knowledge. In this instance no notice has been given except in the form now adopted by Mr. Isaacs. We cannot be in any way answerable for overcrowding in Gray's-inn-road.

With respect to the general management of Tyndall's-buildings, I have much pleasure in quoting a sentence from a letter dated July 24th, and addressed to me by Dr. Gibbon, the Medical Officer of Health for the Holborn District. That gentleman says:—"I still gladly testify to the excellent sanitary administration of this court." CHARLES PAYNE, Secretary.

Society for Improving Condition of the Labouring Classes.

WHO LOOKS AFTER BEDFORD STREET?

SIR,—Permit me to inquire if there be any surveyor, parish or otherwise, in charge of Bedford-street, Covent-garden, and its neighbourhood? On Monday last holes were made in the roadway leading to Garrick-street, with the utmost complacency by a party of (probably inspired) working men; and not even a policeman appears to have been consulted thereon. They were closed towards three in the afternoon, when other holes were made in the pavement, and some of these were left unguarded, to the astonishment of other wayfarers besides myself, who nearly fell into one. Of course I am delighted to see the improvements gradually being effected in London, and will not complain when an old house, which would tumble down of its own accord, if permitted to do so, requires several months to completely demolish and dispose of to the "old clo'" portion of the building community. The dust that is thereby generated tickles and does not annoy me. But I think those who are compelled to live within earshot of the carters and nose-scent of the carts that for long hours thrice a week block every original thoroughfare to Covent-garden, have a right to complain when even the footpaths are taken from them by speculative builders, who pull down but do not rebuild, and who offer no better excuse for the fact than a huge notice-board, which informs the passers-by that premises suitable to a public company will be one day erected upon this or that site provided application be made to a certain Mr. Howard. At the corner of Bedford and Chandos-streets a hoarding has existed for at least eight months. It is placed upon the footpath so that no one can walk upon the narrow strip of stone which remains. No apology even for a building seems to be yet contemplated; and this waste piece of land, like other waste bits upon this portion of the Bedford estate, is a mere receptacle for animal and vegetable matter. Please raise your voice, Sir, against a similar state of things, and, at the same time, supplement the indignant protest lately made by "Bedford Street" in the *Times* regarding the barbarous character of London underground. W.

HEIGHT OF ROOMS.

SIR,—In reply to a letter in the *Builder*, signed "A Surveyor," regarding the power of local authorities over the heights of rooms, I beg to state the result of my experience has been quite contrary to that of "A Surveyor," as nearly all the authorities which I have known have had a by-law regulating the height of rooms intended for habitation. The authority with which I am at present connected has only been in existence a little over two years, and our by-laws, which have been duly approved and sanctioned by the Local Government Board, contain restrictions regulating the height of ceilings, and which are enforced in my district.

A SURVEYOR TO A SANITARY AUTHORITY.

*** The fact, as already stated, that by-laws for regulating the height of rooms are held to be *ultra vires*, as they are not within the application of the statute (which authorises by-laws as to *ventilation*) is, we believe correct. The explanation of such a regulation having been confirmed by the Local Government Board, as mentioned above, probably is, that it was submitted to the Local Government Board shortly after the power of confirming by-laws was transferred to that Board, and before they had departed from doing precisely as their predecessors had done.

NIGHTLY LODGINGS.

SIR,—I see by an article in the *Advertiser* of Saturday, August 11, that the Peabody Trustees contemplate purchasing the greater part of South Bloomsbury. They are said already to have purchased the ground-rent of the area enclosed by Prince's-street and Duke-street, Great Queen-street, Drury-lane (from Prince's-street to Great Queen-street), and on the east from Duke-street to Great Queen-street. May I suggest that, in erecting the new dwellings, that due consideration be given to the wants and necessities of the large class of persons who pay nightly. This class of unfortunates has hitherto suffered rather than benefited by the changes which have been wrought. Such persons do not consist wholly, as you are aware, of vagrants and tramps; it includes many who are simply under a cloud, and who are striving and hoping for better times. I have known many who have been forced temporarily into the lodging-houses about to be removed who were gentlemen in everything save their purses. Cannot the Peabody Trustees, in their contemplated new dwellings, occupy a portion of the site in which men with proper credentials can be accommodated in a way that will lessen the amount of misery entailed upon them by the misfortunes under which they temporarily labour?

A FRIEND IN NEED.

FALSIFICATION OF ACCOUNTS BY A BUILDER'S FOREMAN.

At the Middlesex Sessions, on the 24th ult., Frederick Burns, foreman to Messrs. Colls, builders, was convicted of falsifying certain time-sheets, and thereby defrauding his employers. He was brought up for judgment on 26th ult., when Mr. Hamilton, the manager to the prosecutors, was called, and stated that the prisoner's honesty had been doubted for some time, but he had only looked into his last week's accounts. He believed these robberies had been going on for more than three months. The Assistant-Judge sentenced the prisoner to hard labour for eight months.

GRINDING MONEY AGAIN.

At the Lambeth police-court last week, Mr. B. E. Nightingale, builder, of the Albert Works, Kennington, was summoned for refusing to pay to the complainant 9d. for one hour's grinding money, due to him as wages.

Mr. Hicklin (Messrs. Hicklin & Washington) appeared for the complainant, and stated that the question really was whether men employed in the building trade should have two hours' notice for grinding tools on their discharge. Mr. Brydges had given a decision in favour of the men, and so had Mr. Woolrych.

Mr. Chance asked how it would be if a man was engaged for a day. Would he then require to have two hours' pay for grinding money?

Mr. Hicklin contended he would be entitled to have it. The edges of the tools used by him would be taken off, and he would require time to have them placed in a condition to work with before he could go on other work.

Mr. Chance said under those circumstances if a man was employed each of the six days by different masters he would have twelve hours' pay also for grinding his tools. Was he (Mr. Chance) to understand that if a man was engaged one hour for a master, and then discharged, that he was to be entitled to two hours' money for grinding his tools?

Mr. Hicklin contended that he would, unless a special bargain was made.

William Gordon, the complainant, said he was a carpenter and joiner, and was engaged by the foreman in the shop. No one called his attention to any rules placed up in the shop. Nothing whatever was said to him about such rules.

Mr. Hicklin pointed out that the question as to grinding money was settled in July of this year at a conference between deputations of the carpenters and joiners of London and the Central Association of Master Builders. All masters were invited to attend that meeting, but a large number did not attend.

George White, shop foreman to defendant, said the complainant was taken on to work according to the rules of the firm. Those rules were placed upon the walls, and one of them specified that one hour's notice only would be allowed to collect and sharpen tools when discharged. He could not say that complainant had his attention called to such rules when he was engaged. When discharged, he was paid one hour for grinding money, and many of the large firms gave no more.

Mr. Chance said that might be, but it must be proved that he had read the rules. The safest course for firms who had rules would be to point them out to men when first engaged. Masters had a perfect right to make rules for conducting their several establishments. He strongly advised that masters or their foremen, when engaging men, should point out these rules. He should order the payment of the additional one hour, but no costs beyond the amount for the summons.

The Berwick-upon-Tweed Surveyorship. Mr. Jas. Lawrie, Edinburgh, has been appointed surveyor, &c., to the Urban Sanitary Authority of Berwick-upon-Tweed. There were forty-three candidates for the office. The salary is 140*l.* per annum.

LAWSUIT AGAINST A SURVEYOR FOR TRESPASS.

LIPTROT *v.* NICHOLSON.

THE plaintiff in this action, in the Wigan County Court, is a farmer, and the defendant is assistant-surveyor to the Pemberton Local Board. The claim was but for 5*s.* alleged wilful damage done to crops in a field. Two counsel were engaged, and at the opening of the case Mr. Peace, for the surveyor, objected to the jurisdiction of the Court, on the ground that the Railway Clauses Consolidation Act, 1845, which was incorporated in the Pemberton Local Board Act, provided that the compensation for damage done when levelling and surveying for the purpose of the Act should be settled by the justices of the peace.

The Judge, Mr. Ffoulkes, said before deciding the objection he should hear the evidence.

Witnesses were called, who proved that the defendant and a boy were in a field of the plaintiff's on June 18 last, and drawing a surveyor's chain along a potato bed, and committed damage to the amount claimed in the summons.

The defendant stated that he was merely surveying the land in connexion with the Pemberton waterworks, that the survey was performed in an ordinary and proper manner, and that no unnecessary damage was committed.

The learned Judge said the plaintiff sued for a trespass committed by the defendant in bringing a chain across his potato-field, by which he damaged the crop. Assuming that the surveyor had no right to enter the field, the claim was no more than the damage sustained; but the surveyor relied upon a local Act, which incorporated, among other Acts, the Waterworks Clauses Act; and under the 12th clause of that Act the surveyor was empowered to go upon the plaintiff's land and take the necessary surveys and levels, for the purpose of constructing waterworks. The Act further provided that compensation was to be given for all damage done in the execution of the work; but under the Railway Clauses Consolidation Act they were required to go before the justices to recover the compensation. The only claim the plaintiff could bring in the County Court was for wilful trespass, which was not done strictly in the execution of the work. He could not say he understood much of surveying with the chain, but he knew something of military surveying, and it was a fact that the person surveying did not wish to disturb the chain while the measurement was being taken from point to point. The evidence of the defendant seemed to him to show that he only did what was proper in carrying on his survey, and the plaintiff did not show that the surveyor did anything else. His judgment would be for the defendant, and he should order the plaintiff to pay costs.

VARIORUM.

The *Technical Educator* says, as to the gates of canal locks:—The timbers forming the gates of locks will vary in size according to the dimensions of the opening, and their respective depths below the water-level, the lower rails having to support a greater pressure than those above. The weight of water supported by each horizontal rail will be found by multiplying their length, the interval from one to the other (usually 38 in. from centre to centre), the height of the water above the centre of the rail, and the product by 62 lb. (the weight of a cubic foot of water), the last product of these measures giving the number of pounds which the rails ought to support throughout their whole length. For small gates, the timbers or rails may be from 4 in. to 5 in. square, and for larger, from 7 in. to 8 in., the latter being sufficient for a fall of 10 ft. 6 in., with a width of 17 ft. between the hanging-posts, six rails being put in the height. Whilst, on the one hand, it is desirable to have an excess of strength above the calculated requirement, it is, on the other hand, undesirable to make this excess excessive, as so much more weight is injurious to the supporting collar and the masonry to which it is attached. The diagonal direction of the braces may be dispensed with by the substitution of a bar of iron placed diagonally from the supporting collar to the lower end of the shutting-post. The escape of water through the gates must in every way be guarded against. It is very difficult, indeed almost impossible, to prevent its escape through the joint of the shutting-posts, because of the difficulty of making them touch throughout their own length. To obviate this, they should be cut in a circular form,—one concave and one convex. The curvature should be with a radius of about 12 ft. The rails are mortised into the uprights, and are further strengthened by strong angle-irons and T-pieces.

——Cassell's *Family Magazine* gives a useful hint as to how to clean a window. It seems a simple thing to clean a window, but in truth all those who essay do not succeed, for the glass looks dim and streaked afterwards, instead of being bright and clear. Do not tell me that this failure is owing to the quality of the glass, for, excuse me, it is not. I suspect that the window-cleaner is not up to the work. I should imagine that the boy or the maid has plunged a wash-leather into a bowl of water, and soused the panes, with an idea that that process was the proper one. It is this error of rubbing a very wet leather over dusty glass which causes the effect one so often sees. Let a duster be first used, and when the glass is tolerably free from dust, then let a damp washleather remove all specks and spots, and lastly, let a soft dry cloth give the finishing rub. The windows will then reflect a proper amount of credit, and will cheer the passers-by with their bright, sparkling panes.

——The *Daily Recorder* says:—"From present signs, the building trade seems likely to receive a large and constant development from the carrying out the Artisans' Dwellings Improvement Bill. Already the Town Councils of the great manufacturing towns have announced their intention to carry the measure into extensive operation. Corporations hitherto prevented by lack of funds from emulating the action of London now find themselves empowered, under the provisions of this Act, to raise sufficient means for public improvements known to be ultimately profitable. The planning and the surveying have for the most part been already executed; so that, one half-year being given to settling the purchase, clearing the ground, excavating foundations, and the many small but important matters that are not seen above ground, the actual business of building will commence briskly with the next spring, and a general move onwards and upwards take place in almost every trade, consequent on so large an outlay, amounting to several millions. At this period much will depend on the action taken by the working men connected with the building trade in its various branches. For now six years past that trade has been flagging, and almost brought to ruin by a succession of perverse strikes, the unions altogether refusing to recognise the falling off in demand and the rise in material."

Miscellanea.

Hardened Glass.—Messrs. Powell, of Whitefriars, who are experimenting on this process, say:—Hardened glass is not "unbreakable," it is only harder than ordinary glass, and though it undoubtedly stands rough usage better, it has the disadvantage of being utterly disintegrated as soon as it receives the slightest fracture; and up to the present, until broken, of being undistinguishable from ordinary glass, unless a certain pink tone noticeable in hardened flint glass can be taken as an indication. This glass is known as "toughened" glass, and we have seen the terms "malleable" and "annealed" applied to it. Nothing can be more misleading than these unfortunate epithets. The glass is hard, and not tough or malleable, and is the very opposite to annealed glass. Annealed glass is that the molecules of which have been allowed to settle themselves: the molecules of hardened glass have been tortured into their position, and until the glass is broken, are subject to an extreme tension. It is the sudden change of temperature that "hardens"; glass heated up together with the oil may be annealed, but decidedly is not hardened. A piece of hardened glass is only a modified Rupert's drop, *i.e.*, it is case-hardened; the fracture of both is identical, both resist the diamond, and both can be annealed. Moreover, in the middle of imperfectly-hardened glass, a line is plainly visible, which seems to mark the extent of the case-hardening. This line resolves itself, under the microscope, into a mass of bubbles and striæ, it seems to be the nucleus of breakage, and consequently, as soon as the cutting-wheel approaches it, utter destruction ensues.

The Ely Local Board of Health Surveyorship.—At the meeting, on the 25th ult., of the Ely Local Board of Health, part of the business related to the appointment of a surveyor, Mr. G. Mather (son of the late surveyor) having offered himself as a candidate for the vacant office. The late Mr. Mather occupied the position of surveyor for the City of Ely for twelve years, commencing at a salary of 120*l.* per annum. This sum was subsequently increased to 150*l.* The question now arose as to Mr. Mather's eligibility for the vacancy; and it was pointed out that he had for years been engine-driver under his father at the Angel Works; that he had acted as his father's deputy; that in some respects he possessed qualifications superior to those of his father; and that he had given satisfaction in the performance of his duties. It was stated that he was now the landlord of the Dolphin Inn; and he had signified his intention to give up the inn if he should be appointed to the vacant office. The Board did not come to any decision.

The New Law on Land Titles and Transfer.—This important statute, among the last passed on the day of the prorogation, has just been issued. It makes further provision for the simplification of the transfer of land in England. There are 129 sections in this Act, which is to come into operation on the 1st of January next. It is divided into five parts, each containing numerous provisions on the following subjects:—1. Entry of land on the register. 2. Registered dealings with registered land. 3. Unregistered dealings with registered land. 4. Provision supplemental to foregoing parts of the Act. 5. Administration of the law and miscellaneous. A land registry is to be established, and any person may apply to be registered under the Act as to freehold land, provided that in case of land contracted to be bought the vendor consents to the application. A separate register is to be kept for leasehold land, and certain persons may apply for registration. There are numerous provisions in the several parts, and a land registry is to be created and officers appointed by the Lord Chancellor. The present land registry, it is understood, will be utilised with the staff of officers, and they may be appointed and new rules framed at any time after the passing of the Act, but not to take effect till the 1st of January next. The further provisions now made to simplify title and facilitate the transfer of land are of a permissive character, and may be adopted.

Sanitary Matters in Spain.—A correspondent of the *Morning Post*, describing the siege of Seo de Urgel, has something to say on the sanitary condition of the place. He says that although crammed with soldiers to overflowing the place is perfectly healthy: this is due, no doubt, to the mountain air and dry atmosphere. When the refuse left in the middle of the street to rot, *à la mode Espagnole*, becomes offensive, a very simple process is adopted by the authorities to remedy it: a torrent of water is let out through the streets from the irrigating canal constructed many years since to water the fruitful valley in which the place is situated. The Spaniards are more Arabs than Europeans in their dwellings, and have not the slightest idea of taste in the exterior or interior of their homes. The climate renders it unnecessary for them to make use of paint as a preservative for the woodwork of their houses; consequently, when once they are built they become more and more begrimed every year, and as no new house appears to have been built in this town for the last two or three centuries, it is easy to imagine what the state of them is. The inhabitants—even those of the better class—partake of the character of the houses, and appear never to change their garments.

Dynamite.—The increased amount of work done with dynamite as compared with either gunpowder or gun-cotton has frequently been noticed, but the precise relative economy of the several explosives is, perhaps, less generally known. The St. John del Rey Mining Company, during the last two months of 1870, when they were sinking the two new shafts, sunk with gunpowder 10 fms. 2 ft. 4 in., at a cost of 68*l.* 3s. 6d. per fathom; during the following two months they sunk with dynamite 20 fms. 3 in., at only 43*l.* 14s., so that double the work was done, and there was a saving of 24*l.* 9s. 6d. per fathom. The contractors for the railway tunnel under Clifton Downs used gunpowder, gun-cotton, and dynamite successively,—the boreholes being drilled by machinery to the same dimensions and depth,—and the results were that 756 lb. of powder drove 8 yards, thirty-one shots per yard forward being put in; and 169 lb. of gun-cotton drove 14 yards, eighteen shots per yard being put in; and 165 lb. of dynamite drove 15 yards, seventeen shots per yard forward being put in. For driving 15 yards forward, estimating powder at 5d. per lb., and gun-cotton and dynamite at 2s. per lb. each, it would cost 29*l.* 10s. 7d., with powder, 18*l.* 2s. 2d. with gun-cotton, and 16*l.* with dynamite. The saving in time is even greater than the saving in cost.

Sadlers' Wells Theatre.—At the Mart, Tokenhouse-yard, among the sales announced for Tuesday last was the lease of Sadlers' Wells Theatre, which was described as being held for an unexpired term of thirty-six years from Midsummer last, at a ground-rent of 277*l.* per annum, and the estimated rental value of 1,000*l.* per annum. The theatre was withdrawn at 1,020*l.*, the auctioneer remarking that he expected to have got 3,000*l.* for it.

New Goods Depot, Farringdon-road.—The new goods station which has been for some months past in course of construction in Farringdon-road, is now nearly completed. It belongs to the Great Northern Railway Company, and will cost upwards of 100,000*l.* (exclusive of land). It will be one of the largest railway goods depôts in England, covering an area of 25,000 superficial yards, or rather more than five acres. The site, which is on the west side of the Farringdon-road Station, was purchased from the Metropolitan Railway Company, and junctions have been effected with that portion of the Metropolitan Railway used by the Great Northern, London, Chatham, and Dover, and Midland Companies. Much engineering skill has been brought to bear, and the whole of the retaining wall in Farringdon-road, from the middle-level sewer to Charles-street, has been underpinned. In clearing the earthwork down to the rail levels, upwards of 55,000 cubic yards of soil have been removed. For the foundations of the basements of the piers it has been found necessary to go much below the rail levels, owing to the shifting nature of the ground. Extensive warehouses, built by Messrs. Kirk & Randall, of Woolwich, rise on piers, arches, and columns from the railway level below.

Northampton Operative House Painters' Society.—This society, which is in amalgamation with the General Alliance of Operative House Painters, the head-quarters being at Manchester, held its anniversary on the 21st ult. The Northampton society has now been in existence some eight years, and has been uniformly successful. It numbers at the present time some sixty paying members, with a correspondingly good state of funds. Fresh benefits have lately been added, by which the relatives of a member meeting with a fatal accident while occupied at his trade are entitled to the sum of 10*l.* from the Alliance, and a further 4*l.* from the local society. It has been the custom in former years to hold the annual dinner at the club-house, but this year the committee determined upon holding it at the Melbourne Gardens, where exactly fifty members sat down to dinner. The number of societies in connexion with the General Alliance was said to be upwards of seventy, containing upwards of 7,000 members.

Mr. Poynter, A.R.A.—Although Mr. Poynter has been appointed Inspector-General of Schools of Art in place of Mr. Redgrave, he will (according to the London correspondent of the *Birmingham Daily Gazette*) continue to hold his Slade professorship at University College. He delivers his introductory lecture on October 5, and the classes for drawing, painting, and sculpture will begin on the following day. Those who want to attend these lectures should apply at once, for of late the accommodation has proved quite unequal to the demands made upon it. Mr. Felix Slade, who founded this professorship, founded also six scholarships of 50*l.* a year each, tenable for three years, for proficiency in drawing, painting, and sculpture. Two of these scholarships will be awarded in 1876, and the conditions of competition are, that the competitors must have entered the Fine Arts Class at University College before November 16 next, and not be more than nineteen years old next June.

The Prout Memorial.—Mr. Dillon Croker has given two readings in aid of the Prout Memorial Fund at the Royal Cork Institution, and greatly pleased his audience. The chair was occupied by Richard Caulfield, esq., LL.D., who introduced Mr. Croker in a few brief remarks. At the time of the commencement of the reading, the bells of Shandon, made ever memorable by Father Prout's well-known stanzas, rang out the time-honoured melody of "The Groves of Blarney," to which air words have been set, and Mr. Croker, meeting the occasion, read the poem with capital effect. The other pieces in the programme included "Nicholas Nickleby at Dotheboys Hall," "Peg of Limaviddy," one of "Mrs. Caudle's Curtain Lectures," &c., all of which were read by Mr. Croker in a manner that proved him to be a master of the art of public speaking of first-class merit.

The City Library, Guildhall.—The City Library, Guildhall, which has been closed since the 22nd of July, was re-opened on Monday last. During the recess it has been thoroughly cleansed and repainted, and the library itself re-organised. The Corporation of the City of London have granted 400*l.* for the compilation of a new catalogue.

Life-saving Appliances.—A very interesting exhibition is announced to take place next year at Brussels, under the auspices of the Royal Humane Society of Belgium, the object being to call into action the ingenuity of all who are willing to enlist in the good cause for the purpose of devising the best possible means of reducing the risks to which life and limb are now exposed. According to the *Rock*, questions of public health and sanitary arrangements are ranged under the fifth class, which also comprises such improvements in connexion with medicine generally as may be considered of sufficient interest to be shown. Industrial operations are, in many instances, carried on under deplorably unfavourable conditions, notwithstanding all that has been done for the workman in this direction, and so the Belgian Society proposes to show what more may be accomplished in the way of getting rid of these evils.

The Sanitary Condition of Hull.—At the last monthly meeting of the Hull Board of Health, held on the 26th ult., Mr. Blackburn called attention to the increasing death-rate of the town, which, he said, was a terrible indictment against the Board. He referred to the report of the medical officer, and condemned the existing sanitary state of things. He blamed the Board for being accessory to the increasing mortality, and declared that without any stretch of the imagination he could hear the wail of the widow and the orphan, caused by the supineness of the Board. They had spent hundreds of thousands in constructing a deep drainage, and he gave notice that at the next meeting he should move that the sanitary committee report upon the propriety of appointing a medical officer in such a manner as would enable him to devote the whole of his time to the duties of the office.

Withdrawal of a Tender.—At the usual fortnightly meeting of the Marylebone Board of Guardians, on Friday last, a letter was read from Mr. H. Saxon Snell, the architect, informing the Board that Mr. Timewell, of 35, Essex-road, Islington, wished to withdraw his tender (1,660*l.*) for building basement story and foundations of the new infirmary wards for men, in Northumberland-street, in consequence of his (Mr. Timewell) having made a mistake in the calculation upon which his tender was based. The Chairman stated that legally Mr. Timewell could not withdraw his tender, but the Board were not desirous of being hard in the case, and he would suggest that the application should be granted and the 5*l.* deposit money returned. A resolution was adopted embracing the views of the Chairman. The Board then accepted the tender of Mr. Crockett, of St. Pancras, for the sum of 1,849*l.*

Leeds Royal Exchange.—On the 31st ult. the Royal Exchange, Leeds, was opened to the public with a short ceremony, in which Mr. Nussey, chairman of the company who have erected it, took the leading part. The foundation-stone was laid by the Duke of Connaught in September, 1872, on the occasion of his visit to Leeds for the purpose of opening Roundhay park to the people. The Exchange has been built by a company of merchants and representatives of the iron, flax, leather, machinery, and other trades. The style of architecture is Perpendicular Gothic, the architect being Mr. Waterhouse, whose designs have been carried out by Mr. Healey and Mr. Whiteley. The merchants and manufacturers representing the various industries of the town and neighbourhood attend in considerable numbers.

New Barracks for Richmond, Yorkshire.—A correspondent of the *Leeds Mercury* writes that there is now no doubt about Richmond becoming a military centre. The War-office authorities have made arrangements for the erection of new barracks. The contractors for the works are Messrs. Parnell & Son, of Rugby, and it is calculated that a sum of about 100,000*l.* will have to be expended before the works are completed. The site is almost on a level with the racecourse, and is therefore elevated, healthy, and conveniently situated. The ground staked out is nearly fifteen acres in extent.

Carpenters in the Royal Navy.—Mr. Filluck, acting first-class draughtsman at Portsmouth Dockyard for the instruction of carpenters of the Royal Navy, has been appointed established first-class draughtsman for the instruction of carpenters of the Royal Navy at Chatham dockyard, *vice* Mr. F. Jago, who has been appointed a surveyor to the Board of Trade.

Another Tombstone Case.—It is not improbable that the public may, before long, hear of another legal case arising out of a dispute in reference to the erection of a tombstone in a parish churchyard. In this instance, however, the stone is objected to on æsthetic rather than on ecclesiastical grounds. It appears that in a reason's yard in the parish of Horsemonden near Staplehurst, there is a stone ready for erection in the parish churchyard, the stone, it is said, being of the form which has been common in English churchyards for centuries. The rector has refused resolutely to have so "hideous" a stone erected in his churchyard, remarking that all stones there have, and must have, upon them the form of a cross. The matter will probably result in an appeal to the Archbishop of Canterbury.

Gas Dividends.—The Brighton Gas Company has declared a dividend for the past half-year at the rate of 9 per cent. per annum as against 10 per cent. per annum in the previous half-year.——The Sudlow Gas Company, at its annual meeting, held last week, resolved that a dividend of 5 per cent. be paid to the preference shareholders for 1874, and that a dividend of 3 per cent. be paid to the original shareholders.——The directors of the Gloucester Gaslight Company recommend that the maximum dividend be declared for the past half-year, viz., 10*l.* per cent. per annum upon the "A" shares, and 7*l.* 10*s.* per cent. per annum upon the "B" shares.——The Barnet District Gas and Water Company have declared a dividend for the past half-year at the rate of 3*l.* per cent. per annum on the "A" stock and shares, and 2*l.* per cent. per annum on the "B" stock.

Slaughterhouses in St. Pancras.—At a meeting of the St. Pancras Sanitary Committee on the 25th ult., Dr. Stevenson, medical officer of health, reported that he had visited one slaughterhouse, where the state of things was fully horrible. The paved approach was thickly coated with soft fœcal matter, and strewed with sheep's heads from which the blood was still oozing. This mixed heap of dung and offal was offensive, and had not been removed for several days. Inside the slaughterhouse the impervious portion of the walls had not been cleansed after slaughtering as required by the bye-laws, but had been allowed to dry on them. For some years this slaughterhouse had been the subject of complaint from the neighbours. He recommended a prosecution for infringement of the bye-laws. A motion to institute a prosecution was negatived by nine to seven.

The St. Gothard Tunnel.—An exhaustive and interesting communication upon this great engineering work was read before the recent Topographical Congress at Paris. Up to August 1, 1875, the length of tunnel driven was 4,413 mètres, leaving 10,507 mètres to drive, and the whole must be completed by October 1, 1880. Allowing ten months for the finishing of the tunnel after the ends are joined, the communication should be made in December, 1879, and as the work was commenced in September, 1872, it will have occupied seven years and two months. The rate of progress hitherto has averaged 126 mètres per month; they are now making 230 mètres per month, and this will, no doubt, be increased, whilst 202 mètres per month will complete the work within the time stipulated.

The West Front of Lichfield Cathedral.—In a sermon preached on Sunday, the 22nd ult., in Lichfield Cathedral, Dean Bickersteth declared that he contemplated the complete restoration of the west front of his cathedral, under the direction of Sir Gilbert Scott, who restored the interior. As the preacher aptly put it, he desired to do something towards making that which is without worthy of that which is within, and, at all events, to restore the west front according to the ancient features by replacing the Roman cement with good honest stone. The cost of the contemplated work is matter for conjecture, but as the subject being mooted some years ago, it was stated that it would require some 20,000*l.*, the estimate which now-a-days would probably have to be considerably increased.

New Mechanics' Institute for Northallam.—A new Mechanics' Institute at Northallam, which has been erected at a cost of 2,000*l.*, was opened on the 25th ult., by Mr. A. B. Potter, of Northowram Hall. The building contains a large concert-hall, four commodious class-rooms, and committee and billiard rooms. The architect is Mr. Hellewell, of Brighouse.

The Prizes of the Coachmakers' Company.—In the late competition for prizes of the Worshipful Company of Coachmakers and Coach Harness-makers of London, open to the coachmakers of the United Kingdom, and carried out by the examiner of the Society of Arts, the first prize for the technology of carriage building, consisting of the Society's silver medal and 3*l.*, was awarded to Mr. Matthew Mullins, of 42, Maylor-street, Cork (coach body-maker). Mr. Mullins and his brothers, Thomas and Jeremiah, have been diligent students of the Cork School of Art, and their names have been frequently mentioned in connexion with these competitions as having carried off some of the highest prizes offered by the Worshipful Company to the artisans in this speciality of the United Kingdom.

A Cab Show.—An exhibition of metropolitan cabs and cab-horses will be held on the 1st of October at the Alexandra Palace, under the patronage of the Earl of Shaftesbury, the Lord Mayor, the Royal Society for Prevention of Cruelty to Animals, &c. The object is to produce improved cabs, and the movement is, according to the *Daily News*, being supported by the cab proprietors. About fifty prizes, running up to 10*l.*, will be given, and among them two prizes of 10*l.* and 5*l.* are offered to the exhibitor of the best design for a cabman's shelter, to be erected on the cab ranks, at a cost not exceeding 75*l.* Previous efforts in the direction of obtaining improved cabs and cab-horses have not met with much success.

Discovery of Urns at St. Alban's.—In making the excavations for the foundation of some new buildings in the Verulam-road, St. Alban's, the workmen engaged have just dug up a number of ancient urns. They were found to be very rotten, but two have, with care, been tolerably well preserved. The best specimen is an urn made of common clay, 7¾ in. in height, and 8 in diameter. There is no ornamentation except at the mouth, which has an everted lip with two shallow grooves. The almost entire absence of ornamentation renders it somewhat difficult to say whether these funeral urns are British or Saxon, although the balance of evidence is said to be in favour of their being British.

Civil and Mechanical Engineers' Society: Visit to East London Railway Works.—On Saturday last Mr. G. W. Willcocks, president, Mr. R. M. Bancroft, vice-president, Mr. E. H. Browster, and several members and friends, visited the above works, by the kind permission of Sir J. Hawkshaw, and were shown over by the resident engineer, Mr. Hunt. Great progress has been made since the account of the works was given in the *Builder* some months back. This society is making good use of the summer recess by visits to works on alternate Saturday afternoons, and has already been to the Pumping Station, Grosvenor-road; Royal Aquarium, Westminster; and widening of Chalk Farm Tunnel.

Birmingham.—The ceremony of unveiling the window which has been placed in St. Asaph's Church, Great Colmore-street, as a testimonial to the labours of the Rev. R. Page, M.A., the first vicar of the parish, took place on Saturday last in the presence of that gentleman. The window, which comprises four cartoons, representing four incidents in the life of our Lord, viz., the Baptism, the Call of Peter and Andrew, the Transfiguration, and the Anointing at Bethany, is inclosed in richly-coloured ornamentation, the whole surmounted by tracery representing the emblem of the Lord's Supper. The window is one of four executed by Mr. C. Heritage, of Marshall-street, Birmingham.

The Corporation of Rochester, at a special meeting held on the 24th ult., resolved to instruct the town clerk to institute Chancery proceedings against the Secretary of State for War, and Messrs. Jackson & Shaw (the well-known contractors), for infringing the rights of the Corporation of Rochester as owners and conservators of the Medway. The Government has employed Messrs. Jackson & Shaw to commence the construction of a bridge at West Hoo Creek, without having first received the permission of the Corporation.

Board Schools and their Cost.—The whole amount of expenditure for school buildings, sanctioned up to April 30th, 1875, was 4,021,418*l.* The sums actually taken up as loans amounted on the 25th of March last to 3,151,000*l.*, or rather more than three-fourths of the sanctioned expenditure.

A New Tramway-Car.—The Scott-Moncrieff tramway car has been tried at Glasgow with success. The car, which is impelled by compressed air, is rather larger and heavier than an ordinary tramway-car, and can, it is stated, be driven at ten miles an hour, but its usual speed in towns is to be only six. At this rate the car can be taken up and down the steepest gradients overcome by the usual tramway-cars, makes no noise, and is said to cost for motive-power only 1½d. a mile, against 7d. per mile when drawn by horses. The invention, if really as cheap as is alleged, is likely to be useful for cross-country railways.

A New Circus for Paris.—The large building on the Boulevard du Temple, known as "Les Magazins Réunis," has just been leased for twenty years to Mr. W. J. Myers, an American circus proprietor. The interior courtyard is 240 mètres in length, and 135 mètres wide. The entire roof is covered with glass, supported by iron girders, after the style of the Floral Hall, Covent-garden. Messrs. Defries, of London, have contracted to light and decorate the building, which is being remodelled by a French firm. When complete, it will seat about 7,500 persons.

Cost of our Fortifications.—From a return just issued by the Government we learn that, up to the present time, we have spent close upon seven millions (6,987,910*l.*) upon our national fortifications. By far the largest sum expended at any one place was at Portsmouth, where close upon three millions have been spent. Plymouth stands next with 304,680*l.* and 1,181,816*l.*, making a total of 1,486,496*l.* Portland is third on the list, but with less than 400,000*l.* A sum of 377,686*l.* was spent in providing and fixing iron shields.

St. George's Church, Worthing.—This church, which was partially erected some few years back, has just had a large entrance corridor added towards the sea front, also a good semi-circular ended vestry, &c., towards the west, with a boundary wall to inclose the land and a few other improvements also. The transepts, with tower and spire, have still to be built to make the church complete. Mr. George Truefitt is the architect to the building, and Mr. Smith, of Worthing, was the builder for the late additions.

Supposed "Rattening" by Brickmakers.—A serious case of "rattening" has occurred at the new Military Depôt, at Warwick. The contractors, Messrs. Davis & Banbury, had, at great expense, erected a machine capable of making 28,000 bricks a day, and some miscreant has placed a pick-staff between the rollers, and otherwise damaged it so that the machine cannot be worked. A serious loss will result to the contractors. A reward has been offered for the apprehension of the offenders.

New Market for Rotherham.—On the 23rd ult. Messrs. Hill & Swann submitted to the Market Committee of the Rotherham Town Council two block plans, marked A and B, of the proposed new market. The Committee recommend that the block plan marked B be approved, with the addition of arches extending 40 ft. from the lower end, and providing the work can be done for 5,000*l.*; and that the architects be instructed to prepare the necessary drawings, elevations, and estimates for the work.

The Bessemer Steamboat Company is stated to be in liquidation, and the *Bessemer* is for sale. The failure of the enterprise is said to be "in consequence of the want of the requisite accommodation in the French harbours." Was not the extent of this accommodation known before the Bessemer was built?

Tadcaster Church.—Notwithstanding the protests of antiquarians and others, the whole of this interesting edifice, with the exception of the tower, will, it is stated, be entirely taken down in the course of six weeks. The work is progressing rapidly, the interior being now gutted and the building unroofed.

TENDERS

For the Enfield Industrial School. Mr. T. J. Hill, architect. Quantities supplied by Messrs. Osborne & Russell:—

Field	£2,090 0 0
Bayes & Ramage	1,890 0 0
Bentley	1,850 0 0
Patman (accepted)	1,787 0 0
Fairhead	1,769 0 0
Sabey & Son	1,763 0 0

For constructing a portion of the main drainage works in the Coombe Pafford Valley, St. Marychurch, Devon. Messrs. Tarring, Son, & Wilkinson, surveyors:—

J. & G. Bell	£2,448 10 2
Wilcocks	1,897 0 0
Shaddock	1,379 0 0

For rebuilding first portion of Stoke House, near Bletchley Station, for Mr. B. T. Fountaine. Mr. J. T. Lawrence, architect. Quantities by Mr. H. Cooper:—

T. & S. Orchard	£4,500 0 0
Edwards	4,312 14 0
Twelvetrees	3,993 0 0
Staines & Son	3,974 0 0
Stephenson	3,948 0 0
Wigmore	3,799 10 0
Foster	3,750 0 0
Ireson	3,750 0 0
Adams	3,699 0 0
Dover & Co.	3,379 0 0

For a villa for Mr. Handley, Highbury. Mr. T. J. Hill, architect:—

Keen	£746 0 0
Webber	714 0 0
Davies	395 0 0

For building new premises, East India-road, for Mr. Gundlach. Messrs. Hammack & Lambert, architects:—

Judd & Hawkings	£509 0 0
Chaffen & Jarrow	497 0 0
Mitchell	477 0 0
Abrahams	465 0 0
Riddle	455 0 0

For building two houses, coach-house, and stable, in the Herbert-road, Woolwich, for the Imperial Property Investment Company, Limited. Mr. George Lethbridge, architect:—

Judd & Hawkings (accepted)	£1,278 0 0

For erecting a play-shed and making certain alterations in the boys' school buildings, for the Newport (Isle of Wight) Board of Guardians:—

Ball	£431 9 9
Dyer	397 15 0
Cooper	395 5 0
Saunders (accepted)	391 9 0

For the enlargement of the Board-room of the Union Workhouse, for the Gloucester Board of Guardians:—

Peters	£614 0 0
Jones	580 0 0
Meredith	478 0 0
Cullis	440 0 0
Sims (accepted)	439 0 0

For the erection of buildings for the Long Eaton Working Men's Co-operative Stores. Messrs. Robert Clarke & Son, architects:—

Hodson & Facon	£5,197 0 0
Slight	4,890 0 0
Jelley	4,813 0 0
Messom	4,749 0 0
Vickers	4,690 0 0
Slin	4,390 0 0
Duke	3,370 0 0
Poxen (accepted)	4,300 0 0

In the matter of 44 and 45, King's-road, Brighton:—

		Deduct if bay windows above first floor are not executed.
Barnes	£6,550 0 0	£225 0 0
Newman & Mann	6,276 0 0	385 0 0
Merritt & Ashby	6,150 0 0	253 0 0
Cheesman & Co.	5,890 0 0	240 0 0
Chappell	5,872 0 0	189 0 0

*** This list has appeared before; but the gentleman who sent it had *added* to the general amount what should have been deducted.

For the erection of Board schools and residence, Potton, Bedfordshire. Mr. J. G. Raynes, architect. Quantities by Mr. Charles Kirkby:—

Woodman	£4,333 0 0
Osborne	4,146 0 0
Twelvetrees	4,135 0 0
Burnage (too late)	3,705 0 0
Redhouse	3,607 0 0
Langmead & Way (accepted)	3,535 0 0
Rainsford, Son, & Bartle*	3,196 5 0

* Withdrawn.

For Langdon Hills Rectory, Essex. Mr. Wm. White, F.S.A., architect. No quantities:—

Woodbridge	£1,775 0 0
Hammond	1,775 0 0
Gregory (accepted)	1,769 0 0

For new roofs and other works at Corringham Church, Essex. Mr. Wm. White, F.S.A., architect:—Gregory (accepted).

For alterations at the Old Hall, Asfordby. Mr. R. W. Johnson, architect:—

Herberts	£1,098 0 0
Halliday & Cave	975 0 0
Neale & Son	964 10 0

For factory at Kettering, Northants. Mr. R. W. Johnson, architect:—

Margetts & Manley	£2,661 0 0
Bellamy	2,638 0 0
Henson	2,422 0 0
Sharman	2,389 0 0
Barlow	2,320 0 0

For new schools and residence, for Great Dalley School Board. Mr. R. W. Johnson, architect:—

Hayes	£1,210 0 0
Neale	1,075 0 0
Weaver	1,073 0 0
Barnes	950 0 0

For new schools for Garthorpe and Costa School Board. Mr. R. W. Johnson, architect:—

Weaver	£591 0 0
Barnes	624 10 0
Chester	483 0 0

For formation of new streets at Kettering. Mr. R. W. Johnson, surveyor:—

Henson	£2,160 0 0
Nowell & Robson	2,067 0 0
Paget	1,964 0 0
Lynch	1,934 0 0
Jones & Fitzmaurice	1,922 0 0
Pound	1,855 0 0
Sharman	1,770 0 0
Barlow	1,710 0 0
Mangells	1,685 0 0

For new Wesleyan chapel, school, and minister's house, Chichester. Mr. A. Lauder, architect. Quantities supplied by Mr. R. Carpenter:—

Fielder	£4,207 0 0
Smith & Co.	4,001 0 0
Burton	3,935 0 0
Marshall	3,857 0 0
Smart	3,917 0 0
Quick	3,864 0 0
Coles	3,757 10 0
Sibley	3,648 0 0
White	3,317 0 0
Burbridge	3,224 0 0
Lose (accepted)	3,016 0 0

For new entrance-lodge, Booth's Hall, Knutsford, Cheshire. Mr. Arthur Vernon, architect:—

Molyneux & Son	£625 0 0
Leicester	560 0 0
Stelfix, Carter, & Rylance	534 0 0
Tickell & Son (accepted)	475 0 0

For new Board schools, with master's residence, at Tyler's Green, Bucks, for the High Wycombe School Board. Mr. Arthur Vernon, architect:—

Woodbridge (accepted)	£1,870 0 0

For house and stabling at Stamford, for Mr. Orlando Edmonds. Mr. Wm. Eve, architect:—

Corby (accepted)	£2,674 0 0

For fittings to new bank, at Peterborough, for Stamford, Spalding, & Boston Banking Company. Mr. Wm. Eve, architect:—

Hall (accepted)	£538 11 0

For alterations and additions to 124, 126, and 128, Goswell-road, for Messrs. Carter, Paterson, & Co. Mr. Wm. Eve, architect:—

Salt	£1,375 0 0
Woodward	1,340 0 0
Crabb (accepted)	1,255 0 0

For alteration of shop at 75, High-street, St. John's Wood. Messrs. Ebbetts & Cobb, architects:—

Perkings	£199 0 0
Aitchinson & Walker	179 0 0
Steel, Brothers (accepted)	136 0 0

For re-building 205, High-street, Shoreditch. Mr. W. Bradbear, architect:—

Goodman	£897 0 0
Garrad	693 0 0
Riddle & Son	645 0 0
Steel, Brothers (accepted)	615 0 0

For alterations and repairs at 38, Great Queen-street, Lincoln's-inn-fields. Mr. W. Bradbear, architect:—

Riddle & Son	£372 0 0
Steel, Brothers (accepted)	270 0 0

For alterations and new shop-front, No. 385, Brixton-road, for Mr. C. Newsom:—

Haydon	£115 0 0
Howse	112 0 0
Pearce	89 15 0

For Primitive Methodist chapel, Romford. Mr. E. C. Allam, A.I.C.E., architect:—

Gordon	£1,518 0 0
Davey	1,242 10 6
White	1,159 10 0
Hinds	1,100 0 0
Barwell (accepted)	925 0 0

For a dwelling-house for Mr. B. McLeod, Chislehurst. Messrs. Stenning & Tyerman, architects:—

Crossley (accepted)	£3,000 0 0

For the erection of saw-mills, chimney-shaft, and sheds, at Deptford, for the General Steam Navigation Company. Messrs. Stenning & Tyerman, architects:—

Murris	£910 0 0
Pattison	854 0 0

For alterations and additions to St. Katherine and Irongate Wharfs, East Smithfield, for the General Steam Navigation Company. Messrs. Stenning & Tyerman, architects. Quantities by Mr. H. F. Gretten:—

Ashby & Horner	9,790 0 0
Holland & Hannen	9,033 0 0
Webster	8,900 0 0
Macey	6,389 0 0
Sabey & Sons (accepted)	6,265 0 0

For the erection of a river wall, engine-houses, and chimney-shafts, for the Thames Steam Ferry Company, Wapping and Rotherhithe. Messrs. Stenning & Tyerman, architects:—

Gibson	£12,955 0 0
Perry	8,240 0 0
Lee & Son (accepted)	7,195 0 0

The tender of Messrs. Gunnan & Son, for the whole of the blinds to the Rotherhithe Infirmary, Mr. Saxon Snell, architect, has been accepted.

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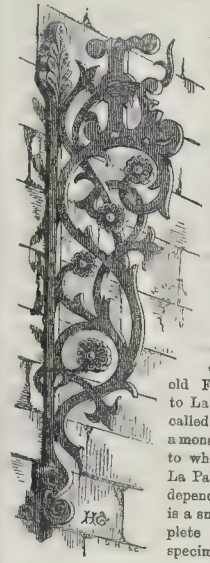
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Angoulême Excursion of the Architectural Association.



LAST week we were enabled to give a general statement of the proposed objects of this excursion, and to mention the first day's work. The second day (Tuesday, August 31) was still more interesting than the first. The party proceeded as on the Monday, from Angoulême in two conveyances,—a cross between the omnibus and the old French diligence,—to La Palud (otherwise called La Couronne, from a monastery now in ruins, to which the hamlet of La Palud was a kind of dependency). The church is a small but very complete and unrestored specimen of a central dome, surmounted by a very elegant octagonal lantern and spire. These spires, which are very common, are invariably circular on plan, and each of the stones (which are small) is cut into a sort of scale, the point being uppermost.

The next point was Roulet, which is undergoing restoration. The original lantern and spire, whatever it was, is replaced by a new one; but there is still a great deal of the church remaining in an authentic condition. It is of great beauty, especially the nave, which is covered with three domes, one to each bay. These, on plan, are circular; but at the crossing is a dome elliptical on plan, the shortest axis being east and west. The transepts and choir are covered by wagon vaults. The church of St. Estephe did not delay the party many minutes; but the chief interest of the day was in the final point, Mouthiers.

Mouthiers is very fine, both inside and out, and acted as a complete restorative to the party after the hot and very jolting drive, over by-roads, from St. Estephe. The church is perfectly undisturbed, and generally in a sound state, although ill-drained and very dirty. The plan is very well ordered and simple. It has a nave, transepts, and apsidal-ended choir, generally apteral; but the transepts have each a small apse opening out of the eastern walls, all covered with slightly-pointed wagon-vaults. The nave has ribs; the choir and transepts are plain; the crossing is covered by a dome very slightly elliptical on plan,—so slight that it may be neglected in describing it. Pendentives are formed, in the first place springing from the arches of the crossing; that is, they form approximately portions of a spherical shell springing from the level of the abacus of the pier arches. When this has been carried up about two courses higher than the top of the arches of the crossing, the spherical surface is stopped by a horizontal band carried all round. A little within this band springs a regular hemispherical dome slightly stilted. Immediately above this band, and at the cardinal points, are four small square-headed openings pierced through the dome. They seem to have been designed for a temporary purpose, that of placing the timbers which supported the centres used in building the dome. The spherical surface below the dome, which is formed by the pendentives, has been called *approximately* true from this circumstance, namely, that the arches of the crossing which carry them are slightly pointed, instead of being semi-circular, which would give true pendentives. The way in which this difficulty is got over is very simple in construction, but it would be perhaps tedious in description, and can be better reserved for explanation by drawings. This account of the dome of Mouthiers may be taken as a representative description of all the central domes of the district. There are, however, varieties,—cases, for instance, of eight-sided (not octagonal) plans, with the domes themselves gradually working into the circle; but in one instance,—Passirac,—retaining the eight-sided figure all the way up, and *squinches* are used to get the octagonal form, instead of the pendentives. Mouthiers has a very fine east end, both externally and internally, and the capitals are amongst the best instances of intertwined imaginary animals and foliage. One feature must not be omitted. At the south-east pier of the crossing, a narrow and lofty arched passage is pierced both out of the transept and out of the choir, giving, as it were, the rudiment of an aisle, detaching the pier, and making an agreeable variety. There is, however, ample allowance still made for the solidity required for the superstructure. Its use, as giving the clergy and their attendants access to the choir, independent of the central approach, will be at once apparent.

Mouthiers was again visited by the party on Wednesday, leaving Angoulême by rail at six a.m., and was entirely measured for plan and section, and nearly all the quaint capitals were drawn. General perspective views, both of the interior and exterior, were also taken.

Plassac was next visited, and a great treat it was. The church is well situated on high ground, quite detached, and not pressed upon, as so many are, by domestic buildings. It is small, but of great merit, both in composition and detail, and perfectly untouched, except by some natural decay. It has an extremely good west front of three arcaded stories. It has the invariable arrangement of three arches below; and above them in this case [for the upper arcades vary in number in different examples] are two stories of four arcades each, above is a plain gable. The centre is crowned by an elegant octagonal lantern, with a spire of the same kind as already described. The characteristic and most admirable feature is the apse of the choir, both within and without. There is a barrel vault, as usual, slightly pointed. The wall exhibits eleven arcades; five of these have been pierced for windows originally. The internal cornice above this arcade is the most remarkable feature. A moulding of great projection is carried by bold corbels, between which are square panels, or metopes, carved with wreathed knots of foliage. The capitals of the columns in this district are (as already mentioned at Mouthiers) generally ornamented with gryphons, or other imaginary creatures, struggling and quarrelling, and intertwined in a most fantastic manner, and combined with foliage derived from the acanthus type. Those of Plassac were peculiarly graceful, and seemed to show that the artists who carved them had not failed to study classical forms. At this church the travellers were left quite to themselves, without any interference from the curiosity of the neighbourhood,—an agreeable variety in their general experience. The more educated people, however, have invariably shown themselves kind and attentive. This refers particularly to the clergy and the maires of the different small towns which have been visited. In several places, however, the gendarmes thought it necessary to question the right of the students thus to scour the country, and Mr. Sharpe has had several amusing discussions with them. Had it not been that he is armed with a letter from the Bishop of Angoulême, which he produces when ordinary arguments have failed, they would very probably have given considerable trouble.

From Plassac, Mainfonds, a Greek cross church, was visited; then Champagne, chiefly remarkable for its beautiful choir, of a strictly Romanesque type, of a very masculine and solemn style of architecture. Blanzac is a very remarkable specimen. Very little remains of the twelfth-century church except the central tower, but this was considered so beautiful, when the church was rebuilt in the fourteenth or fifteenth century on a much wider plan than before, that the tower was left standing in the centre with its external buttresses and internal arches standing completely within the walls of the wider church, which touches it only where the newer vault abuts against it. The old tower again re-appears above the roof, and still forms the best feature of the whole, although it was considerably heightened at the time of the newer construction.

Thursday's expedition was to Puyperoux, a church of an extremely solemn and grave character, massive and comparatively low, standing by itself on a fine situation. In this church all the four piers of the crossing have passages formed around them; but they are not of the architectural character that was exhibited in the instance described at Mouthiers. Passing by Mont-Moreau, where there is a restored church and a fine château, the day was ended by a well-combined attack upon the west front of Chalais, the only portion re-

maining of what must have been a magnificent church, and itself a fragment, for only the lower story, with the usual three arches, remains. But such arches! There is also a large château which was visited, but which scarcely repaid the time occupied. The excursion took up its head-quarters at a small railway hotel at Chalais for two nights, but was exceedingly well taken care of, and good lodgings were obtained for the members in various parts of the town.

Friday morning's start was to St. Quentin, which, owing to the badness of the roads, required a walk of about two miles from Chalais to the church, and nearly the same distance afterwards to join the conveyances,—a walk much pleasanter at seven o'clock, when it began, than at eleven, when it ended. The church, however, fully repaid the journey. The plan here was interesting: most of the original work was left, but aisles had been built in the fourteenth or fifteenth century on each side of the original apteral nave, and the piers in their plan showed in the north and south dimensions the entire thickness of the original massive wall, but were very narrow by comparison when measured in a direction east and west. The choir was of the original construction, and a very fine specimen. The next place visited was Aubeterre, and in the journey some exceedingly beautiful country was passed over. The whole surface is clothed with vines and walnut-trees,—the latter chiefly grown for the production of oil. At Aubeterre, a town having a magnificent situation, are the ruins of a noble mediæval castle, and beneath it a very remarkable rock-cut church dedicated to St. Jean. It consists of several chambers. The largest has an apse and an aisle towards the deepest part of the rock, which is supported or strengthened by two huge octagonal pillars, which have been left in excavating the aisle. The general work is of the time of the Renaissance, but part is said to be earlier. Aubeterre has also the remains of a west front (the rest of the church having perished), which seems to have been almost a repetition of the west front of Chalais, except that there are always variations of detail in the repetitions of the twelfth century; and as it still retains its arcade of thirteen arches above the three great arches of the lower story, and in the story above this there are still the remains of the horse which marks the tomb of the founder, it serves to explain, to a certain extent, how that at Chalais, which, as far as it goes, is the finer specimen of the two, was finished. The inhabitants here, without being at all troublesome, seemed to take much interest in the proceedings; and, indeed, it was not without interest to any spectator to see the quickness and activity of the different students to whom the various duties of climbing about the old front or measuring and plotting down the different parts had been assigned. At this place, and also at Chalais, the attack was made more complete by the addition of a photographer, M. Fellot, who has been acting under Mr. Sharpe's direction. From Aubeterre, the party returned to Chalais.

Saturday's excursion lay amongst places rather picturesque than highly eminent for architectural character. The examination of Passirac was delegated to one party, amongst whom was M. Varin, architect, of Angoulême, who accompanied Mr. Sharpe on this day's excursion. The rest proceeded to Chillac. Here, a west front of some interest was measured, and a very picturesque château, and which contained a very remarkable and splendid chimney-piece, was sketched by several hands. Berneuil, with a good west front and east end, and a fine situation; and Coudeon, with a good but decayed west door; and Barbezieux, with a good inn, where the party dined after a hard day's work; and a return by train to Angoulême in the cool of the evening, brought the first week's work to a finish.

The weather has been most propitious, and there has not been a single *contretemps* worth mentioning. Judging from casual opportunities of examining the various sketch-books and portfolios, a great deal of valuable work has been secured, and M. Fellot thinks that his negatives have been well taken.

The Church Congress.—Among the subjects to be discussed at the forthcoming Church Congress, which will open at Stoke-upon-Trent on the 5th prox., will be that of "Ecclesiastical Dilapidations."

THE ÆSTHETICS OF HOUSE BUILDING.

A HOUSE presents itself under a very different aspect to different people who are concerned in it. To the proprietor for whom it is built, its interests are more varied than to any one else, probably—the idea of it as an investment, an addition to the family property, perhaps usually predominating; and the experience of its comfort and convenience being the next consideration. To a lady, a house is a place in which cupboards can be contrived. To the contractor it is a specimen of work done and material employed, in accordance with various instructions in the drawings and specification, and representing a percentage in his pocket. The architect has his share in the percentage source of interest too; we will hope he seldom confines his view of the matter within these limits. But in many, perhaps the majority, of cases, the contrivance of a new house is an altogether matter-of-fact and business-like affair. The author of a large and useful work on house-planning has, in fact, expressed it as the result of his experience, that the average English gentleman dislikes the importation of anything into the design or arrangement of his house which can be called artistic or picturesque, or which can in any way point it out as the result of an individual taste, distinct from that of his neighbours. There is a half suspicion that vulgarity is implied in such a distinction. And not infrequently the architect is occupied almost exclusively in the practical consideration of planning and specification, and the effort to provide for everything being honestly and thoroughly done, and does not take much trouble about the question of appearances, by which the sentiment that will pervade the building will be erected. The house is "unpretending," and has no architectural style; or it gets cast into the mould of domestic architecture which he is in the habit of using, and is a close repetition of others built before on different sites, and of those which shall be built after it. Hence it comes that so many mansions look as if, in regard to their outside, they had been copied from a pattern-book, or were slices from a block of Tudor, or Italian, or Queen Anne architecture, as the case may be, cut off and scattered about the country.

If it be true that a majority of those for whom houses are built prefer this apparently wholesale manufacture, at least it is not the architect who should encourage the idea that superior good taste and refinement are manifested by such a preference. In building a house which is to be a permanent landmark on the country, and a permanent residence and gathering-place for the family and descendants of its owner, there may be something more thought of than the mere specification excellences of sound wood and good brickwork, or the mere convenience of satisfactory plan and patent kitchen ranges. It would seem superfluous to say this, indeed, did we not find many architects practically, and some avowedly, ignoring it; and the majority of architects' clients placing the height of their wishes in having a "comfortable" house. Nor do we, of course, undervalue this practical side of the question. It is, in fact, the basis of domestic architecture; comfort and health are the things first to be considered, and appearance afterwards; and whenever this order of things is inverted, there is an element of sham introduced. But so much has been said and written on this side of the question, that there may be some excuse for looking at the other side a little, and considering a house for the moment exclusively from the æsthetic point of view.

Even those who profess to be entirely practical in their view of the matter, are more influenced by the æsthetic consideration than they are themselves aware of. Otherwise, how is it that the same man who, if he builds for himself, will order the comfortable house, and nothing else, will express himself so much pleased with some rambling country residence, not particularly comfortable, possibly not particularly sanitary, but presenting a picturesque interest and variety in its lines of thoroughfare and capricious alterations of level? The interest here is partly that of association, of a dwelling with a history and reminiscences, no doubt. But it is not wholly that; it is partly also that there is distinct character, even suggestiveness, in the old country-house. But in these practical days there is a notion that anything of that kind—anything characteristic, out of the usual routine—is unpractical, and that some practical advantage is necessarily sacrificed for it. And, in obedience to this notion, this popular superstition, we build dull or uninteresting houses; and while people are all agreed as to what to admire in old houses, and are willing to make small pilgrimages to visit them and sketch them, they go back and build their own dwellings in a manner directly and purposely shorn of all such attractions, and as if one object were to distinguish a modern dwelling from an old one by studiously banishing from the former all that we admire in the latter.

A good deal of this comparative dulness and want of interest in a modern house arises from its being originated too exclusively under office and drawing-board influence. It is made on paper, and then set up in the midst of the landscape in which it is to form a feature, with no reference thereto either in composition or material. For the first part of the æsthetics of house-building is in regard to that which concerns the outside spectator, perhaps more than the inhabitant and owner,—the figure which it makes in the scene. The distinction between old houses and new in this respect,—the superior picturesqueness of the former,—is not merely the result of the long process of weather-staining which brings them into harmony with the prevailing tone of the landscape. It is partly, perhaps, that they have arisen in a more unsophisticated fashion, been built and added to piecemeal and on no formal design; partly the accidental circumstance, as in one sense it may be termed, that local material has been more used in their construction than is often the case in modern buildings in the country. The increased facility of traffic in modern days not only tends to obliterate local distinctions of manners and character, but similar distinctions of building and workmanship also. Before the railway period different districts had their own materials at hand and their own method of building, which (except in the case of unusually large palatial mansions for which workmen were summoned from afar) thus became a portion of the local character of the district. Now, the same materials go over a great part, sometimes over the whole of the land, and the same contractor may have work to carry on at places far asunder geographically, and transport the same workmen from one to the other. This is, of course, the natural result of an altered state of things, except so far as the use of material is concerned. There is really no reason for the transportation of a particular material which has become fashionable into every district it can be got to; for taking patent compressed brick into the midst of a district possessing building stone of its own. There are, in fact, very few neighbourhoods which do not furnish materials with which walls may be constructed durably and efficiently, if the right process of manipulating them be employed.

The value of this consideration as to local material will, of course, be differently judged in proportion to the more or less artificial view taken of domestic architecture. If a dwelling is regarded as, under any circumstances, a purely artificial object, to be designed after some set pattern, or in a fixed style with precedents and conventional details to be observed, perhaps, in that case, the more artificial the material in contrast to the surrounding scene the better. The dwelling then appears as something to be judged of apart and as a whole, quite independent of its surroundings. And this is, no doubt, the right aspect for a town-house. Everything in a town is artificial, and there is neither reason nor good taste in trying to give it any other aspect. But in the country it is only in the case of a mansion of the largest scale and the highest pretensions that the purely artificial architectural treatment can be suitable. It can be so here, because a great mansion almost claims to be considered, in the midst of the country, as a small town in itself; and its surroundings are sufficiently extensive to give opportunity for a gradual connexion of the house with the landscape by the intervention of terraces, formal plantations, and accessory buildings. And the natural character for a mansion of the largest class, which is always more or less a state or show residence, is that of stateliness and palatial dignity, which is better achieved by a formal and symmetrical architectural style than by a quasi-picturesque dress. The latter aim is always connected, too, with the expression of domestic comfort, which is not the paramount expression of the mansion *par excellence*. Some fine instances of the picturesque or "romantic" treatment of a great house will occur to most readers, buildings which show much for interest and admiration; but the tendency of this style of treatment, which pre-

sents the mansion rather as an agglomeration of parts, a group of structures, than as one structure, is to lose the idea of size, from any one point of view, and to convey the impression too much of a greatly magnified villa. We are not arguing for the employment of "classical" symmetry in a great house, for the old "Blenheim" regularity or duplication of parts, where the kitchen balances the chapel. That must be nearly always false, to begin with, as the opposite extremities of a house are never of equal importance, or for similar uses; and it is dull and formal besides. What we would see in the mansion is not absolute formality, but a certain regularity and stateliness, as of an establishment which is self-dependent, and has its own life apart from that of the "country side," which is really the state of the case. The mean between too little and too much formality of design is often happily attained by the grouping of a symmetrically designed centre (the state portion of the house) with unsymmetrically grouped dependencies, by means of which a disagreeable formality can be avoided. But a certain amount of symmetry and grandeur of design, of horizontal line and contrived repetition, goes better with the extended approaches and terraces which such a mansion should never be without, than does an endless variation and tossing about of outline and plan, by which the effect of mass and repose is weakened and broken up.

Such an effect, however, should be aimed at in some other way than by the application of the pure Italian palatial style, which is the chief precedent we have to go upon so far. Fine as are some of the English examples in this style, in the abstract, the style has in many respects been found wanting, for this country; and regarded in relation to the peculiarities of English landscape and atmosphere, it is too colourless and too deficient in incisiveness of detail, not to look cold and flat in all but a few days in the year in this latitude. But there is room really for the suggestion of something new in mansions of this class, in the combination of the horizontal lines and repeated features of Italian architecture, with a use and treatment of material affording more surface texture, and more of colour effect. The weakness of the pure Italian style under any but a bright sky, is in its artificial and "smoothed-out" appearance, which looks poor and bare in dull weather, and absolutely miserable in wet weather. To attain a more powerful and less washed-out effect, it is necessary to get rid of what may be called "the ashlar superstition," in dealing with forms based on Italian architecture; to use materials that will show more joint and more decided surface variation, or to work the materials so as to obtain this result. What is called the Queen Anne style, as practised at present, shows something of a compromise between Italian regularity and a too free picturesqueness; but we cannot regard this as sufficiently dignified, sufficient of a style, in fact, to be worthy the situation in the case of houses of the highest class. Moreover, the patent brick treatment, which is almost universal with the Queen Anne practitioners, is again too weak in surface and hard in line to give the counteracting effect we suggest; and one can hardly regard a homogeneous bright red (the prevalent tint) as a satisfactory *ensemble* for a large building. There seems to be room for new combinations of material in what may still be called (for want of a better name) an Italian style; combinations, for instance, of stone and brick, not in the hackneyed form of brick with stone dressings, but of stone substructure and brick superstructure; or different qualities and tints of stone employed in a similar manner, and so worked and disposed as to afford both surface for light and shadow, and something of chromatic contrast or relief. In short, the experiment of bringing to bear upon a symmetrical or quasi-classic style the same variety and piquancy in the choice and workmanship of material which is, in a great many cases, considered a *sine quâ non* in anything that comes under the title of "Gothic" house architecture, has yet to be fully tried, and may be equally well applied to designs based upon symmetrical, or, if we like to call them so, Italian models. On some such principle of treatment there is room, too, for getting rid of the very artificial appearance which the pediment and window-dressing style has when viewed in connexion with English landscape, with the spirit and character of which it has really no affinity whatever.

It is rather surprising that towers, in the true sense of the word, are not a little more used as an addition to the architectural effect of houses of the first class, in designing which economy is a secondary consideration. An elevation of one corner, or perhaps two opposite corners, of the building, to a height perhaps a little above the ridge of the roof, is common enough; but a thoroughgoing *tower* to a large mansion is a rarity. Yet there is no finer way of gaining architectural effect, of making the building a feature in the country, and of varying and contrasting the composition of a building more or less symmetrical in its main disposition. The few instances in which this has been tried in modern mansions have drawn so much attention and commendation that it is surprising this source of effect is not more applied to the highest branch of domestic architecture in England. The contribution to the features of the country would be far more important and picturesque than is ever attained by the usual square-proportioned comparatively low mansion, which seldom asserts its presence at all except in its immediate vicinity.

It is in the far more numerous class of houses of medium size that the relation of the architecture to the nature of the site becomes closer and more intimate. And here, in regard to the country-house, the formal and artificial development of architecture of the pilaster and pediment type seems irreconcileable in any way with the situation, and, in fact, is seldom proposed now by the architect; though it can hardly be said that it has given place, in general, to anything really satisfactory and interesting. We have made a great improvement, no doubt, of late, upon the old notion of a country-house,—a cube of brickwork, with symmetrically-disposed openings for windows,—a slice of the town street put down into the country; but one may certainly tire of the eternal gabled house which has taken its place. Looking through any book on country-house and "villa" architecture, it would seem that the receipt for it now consists mainly in dividing out the plan into two or three cubes, by small breaks in the line of the outer walls, and gabling these different ways. It is a good way of getting varied skyline over a rectangular plan; but there are surely other ways of getting effect in rural dwellings. These are to be looked for mainly in the character and disposition of the materials employed, and the grouping of window openings and other features; but more especially in the former source of effect, which has been quite under-rated and neglected by English architects in their adherence to certain habits of employing material, especially in the "brick and stone-dressings" fashion, which have become a kind of "vulgar tongue" of domestic architecture. The kind of picturesqueness of effect which we are thinking of has been successfully illustrated by one or two English architects; but more decisively so, perhaps, in such work as that of Herr Guldenpfennig, of whose admirable designs we have several times given illustrations, which show a feeling for the picturesque of material quite beyond what is generally seen and practised in this country.

Irregularity of plan and outline is generally in place in rural building, and is one of the marked distinctions between this and town architecture. As we approach toward the town, in fact, where site necessarily becomes more and more restricted in its extent and formal in its boundary lines, we progress naturally towards greater formality and symmetry in our building. The country-house, alone among its fields and trees, may indulge a licence and irregularity which seems natural and in accordance with its surroundings, but would appear an impertinent ostentation of picturesqueness in the midst of the more formal line of houses and gardens, with nearly equal frontages, which form the suburbs of nearly every town. Here we look for a certain recognition of the conditions of the site,—a certain concession to general effect, a uniformity in variety. It is not uncommon to see, however, in the midst of a line of unpretending and what would be called "respectable-looking" semi-detached houses, an insertion, by some proprietor or architect bent on asserting his individuality, of a building in utter contrast to all around it, and looking with its peaked gables and odd chimney-tops and profusion of gilt and spikey Gothic metal work, as if it were the result of a determination to arrest every one's attention, and to give a practical condemnation to everything else in the neighbourhood. The excuse for this is, of course, the excessively dull and uninteresting nature of average suburban architecture, to which no man of taste can submit to be tied; but there is an element of vulgarity in this, out of keeping with the best social and architectural taste. The process should rather be to take the prevalent form and proportion of the house architecture of the road, or "park" (for everything is a park now), as a basis, and then to consult the demands of a purer and more refined taste in a better working out in detail and in ornamental accessory. There is always plenty of room for refining and illustrating house architecture by such means, without deliberately adopting a manner by which a dwelling seems to condemn and fly in the face of all its neighbours.

As we come completely into town, and reach the point where street architecture in its restricted form begins, and where a house is, architecturally, only a "front and a back," formality and concession to the nature of the adjoining dwellings become more and more a matter of necessity, as well as of good taste. And here we may fitly employ what may be termed "school architecture," the artificial form of architectural design derived from the Renaissance. In towns, as we have observed, everything is artificial; or, if the aspect of some old towns contradicts the assertion, it is at least true of the modern formally-planned city, under sanitary regulations and building acts. Efforts to introduce the extremes of "picturesque" architecture into our streets must be made with the greatest care. Buildings are produced sometimes that are quaint and interesting in their way, but they look out of place among their surroundings, and one cannot but reflect that if the same taste were universally carried out, a most serious interference with the economics of town architecture, as well as its convenience, and even, perhaps, its sanitary character, would be a probable result. Where a number of buildings have to be formally packed into a line, and as many as possible got into a certain area, simplicity and a certain uniformity in character and external plan are almost indispensable. But we have always decorative treatment at hand to give individuality and artistic expression to each slice of habitation, without violently interfering with the prevalent lines of the others. Such expedients as the introduction of coloured marbles, of mosaics, of tile-painting (though the manner in which the latter source of ornament has been used has not been generally of the happiest), are in complete keeping with the conditions of town life and town domestic architecture. The artistic treatment of a street front, as such, has hardly received the attention it deserves from architects, and we need not say, looking round us, has not been made what it might be.

There is one other section of domestic architecture which almost demands consideration on separate grounds, and certainly seldom receives it; we mean what may be termed marine architecture,—building on the sea-coast. This is quite a different thing from country-house building, but is generally treated on the same footing. The qualities which please us as suitable to the feeling of an inland landscape are quite out of keeping with the character and associations of the sea-coast. The former should be quietly picturesque, the latter requires apparent strength, mass, and solidity. Marine architecture generally is the very reverse of this. One of the prettiest and most elegant of "villas" we remember to have seen was on a bleak sea-coast, and curiously out of place and starved it looked. Something of the "castle" character may reasonably be given to a sea-coast house, which should appear as if prepared to stand steady and uninjured against any gale it may have to face; it is perhaps the one situation in which castellated architecture—meaning thereby the employment of broad surfaces of walling, low and massive proportions, small windows, a general appearance of strength and immobility as the primary object—may be employed in modern house-building suitably and logically. In the realisation of such an effect, without absolutely imitating the mediæval castle form, there is room for something really almost new in house architecture, if any one would try it.

In a future number we may go further into the consideration of our subject in relation to plan and internal arrangement, considered with regard to effect.

Messrs. Cassell's New Buildings. — The contractors for this work, recently illustrated in our pages, were Messrs. Browne & Robinson. Mr. B. Finch acted as consulting engineer. The steam-lift was supplied by Mr. J. Stannah, of Southwark-bridge-road.

THE LOSS OF STAMINA IN OUR INDUSTRIAL POPULATION.

IT has for some time been suspected by scientific men that the human race, or at least certain portions of mankind, were subject to a law similar to that which appears to have regulated the long succession of species of which we obtain information from the geological record. In other words, it is suggested that man, or at least certain tribes or families of man, are fading from the earth; whether to be replaced by a more noble and vigorous race or no is, of course, matter of pure speculation.

But the facts on which such a theory must be based are not merely speculative; on the contrary, they are of a practical nature, and come home to us all. Thus while, as a philosophic hypothesis, the general question is one of the first importance to the statesman, the historian and the economist, those portions of the preliminary inquiry which relate to our own urban population have a special value for the sanitary reformer. They come home to every urban resident, to every parent of young children, and to every one who takes interest in the education and the welfare of youth.

What we may call the more general suspicion is based on very different observations. In one instance we find a man who has spent eight or ten years abroad, struck with the visible diminution, during that term, of the stature and apparent vigour of the London mob, as collected on any such annual occasion as that of the Lord Mayor's show. In another, an old employer of labour is struck by the craving for shorter hours, and by the manifest deficiency in the quantity, and even in the quality, of the work performed, in a given time by a given number of men. In another instance, a man, in the hale and hearty autumn of life, looks with a mixture of pity and scorn on the shrinking of younger men from physical exertion, or at the upgrowth of the numerous stunted figures in round hats and petticoat-like garments which, in so many a town and village, take the place of the stalwart and dignified form of the old English parson. In another instance, a drive, or a walk, through the outskirts of some great manufacturing town, or the accidental encounter of the population of a factory pouring forth at a break in their toil, tells the same tale. To broaden the basis of observation we may look abroad. In the western continent we see one well-known example of race becoming extinct. The Red Indian is rapidly removing his wigwams to the world of spirits. There can be little reasonable doubt that the race will soon be extinct. The Samaritans, who once held their own against the Jews, are now reduced, as a nation, to the number of 135 souls; 80 men and 55 women. Of the massive and full-limbed Assyrian race we have no living examples left. The same may be said of the Egyptian race, as it is depicted on monuments. It may be hardly apposite to point to the effects of such a thoroughly artificial source of national destruction as the slave trade, but it is indubitable that the teeming negro population of Africa is rapidly diminishing under the influence of this terrible scourge. Nor does transplantation always agree with the human stock. In New Zealand, under a climate like our own, the English race seems to acquire a new vigour. But in many parts of New Holland the extreme delicacy of the girls, beautiful as it is to the eye, gives small promise of vigorous descendants. In India, and generally in the latitudes where the black races thrive, it is simply out of the question for English people to attempt to rear their children. And throughout the United States the drawn and melancholy traits of the Indian physiognomy have become visible on the countenances of the descendants of Anglo-Saxon progenitors, without any intermixture of blood.

Exact knowledge, in this matter, it is difficult to attain. Statistics, indeed, would answer the question; but statistics are very difficult to obtain. In these parts of the world, where education has so far advanced as to render a census possible, the range of time over which such census extends is as yet too limited to give us what we seek. And anything like a census is in most places unattempted; while everywhere are to be found ignorant and prejudiced people who fight tooth and nail against any attempt to better the condition of mankind by the procedures indicated by science.

Thus our sources of positive, or rather of precise, information are limited pretty closely to our statistical publications, and to the inferences to be drawn from such calculations as those made for the guidance of the Life Assurance Offices. These, indeed, are minute; and have often been prepared by men of the highest capacity for mathematical investigation. But the access afforded to the public writer is to the result alone. No assurance company gives to the world the actual calculations which it has been at such cost to acquire. Again, the class of life assured is a picked class. It by no means follows that the average which may be safe for an assurance company represents national averages. Nor are we yet in a position to see clearly how much of the result of recent statistical inquiry is due to any change in general viability, whether an improvement or the reverse, and how much is due merely to greater care and accuracy in making and recording observations.

Another source to which attention may be turned in order to obtain information as to the viability of races is the number of births, not only as rated per head of the population, or per marriage, but as proportioned between the sexes. The genealogist is aware of the fact that, as a general rule, in those families which may be traced back from father to son for six or eight hundred years the decay of the stock has been manifested by the absence of sons. Daughters are born, in many cases that we could point out, in whose descendants the blood of the line may run when the name is lost. Even here we must not be too positive, as at times the sword has been the effective cause of the extinction of the male lineage. Thus before the battle of Agincourt the family and the territorial names of nearly all the French nobility were the same. Since that date the family name, very frequently, differs from that of the estate. The cause of this, no doubt, was the great slaughter of nobles at Agincourt. But while we thus admit causes of artificial disturbance, we can refer to numerous instances where long lines have fallen to the spindle, rather than become extinct. The subject is worthy of attention as matter of investigation by census returns; although our experience of the latter is too limited to enable us as yet to speak positively on the subject.

Again, it must be borne in mind that neither the prolific fruitfulness of a people nor the average length of life attained by its members, can be taken as a measure of the vigour of the race, apart from other considerations. With regard to the former test, indeed, it may almost be said that the number of births is in an inverse ratio to the physical welfare of the race. We do not assert that such is the case, but the position is by no means untenable. There is no doubt that, whatever be the cause, the proportion of births to population differs extraordinarily in different countries of Europe, to say nothing of the rest of the world. Thus, while the annual increase of population in Saxony a few years ago was 15,500 per million, that in France was, at the same time, only 4,200 per million. The latter, indeed, is said now to have become a negative quantity. Thus, it is difficult to obtain much light on the subject of our research from existing statistic returns.

We are indebted to Dr. Fergusson, the certifying surgeon under the Factory Acts, at Bolton, for some evidence bearing on this subject, which is of great value. Whoever is an agent in the removal of any important physical or physiological question from the shadowy province of opinion to the measured region of science, is, to the extent of his work, a benefactor to mankind. Dr. Fergusson has brought before the Royal Commissioners appointed to inquire into the working of the Factory and Workshops Acts, in their sitting on the 3rd of July last, statements of which it is not easy to overrate the importance. While they can only be regarded as limited, both in the field of collection and in the degree of information which they supply, they may almost be described as laying the foundation for a new branch of biological science. When other people have given opinions or comparisons, of more or less authority, Dr. Fergusson has brought his patients to the scale beam. He has given us the definite result, in weight, of different treatments of the growing youth. Thus he has found that while a child between thirteen and fifteen years of age, fed on a milk diet, increased in weight some 15 lb. in a year, its growth when fed on tea or coffee, instead of milk, did not exceed 4 lb. in a year. It is evident that a series of observations as to weight and stature of growing children would give us a new element of sanitary science, of which it is not easy to foretell the importance.

Dr. Fergusson, during his official experience of fourteen years, has taken a deep interest in everything relating to the educational and physical well-being of the population. The results of his observations is the conviction that a steady degeneration is in progress among the factory population. He has been for many years inclined to this belief, very probably from reasons such as those which we have previously indicated, and he has taken the opportunity afforded him by his official duties to bring his opinion to the test of direct observation. He was struck, during the first few years after his appointment, with the large number of children who were proved to be thirteen years of age, but who were physically unfit for factory labour. The inspector of the district, on his application, informed him that he had power to reject all such cases. He was thus led to keep an accurate register of the physical condition of all children who came under his notice, and found that the number of children presented who were physically unfit for work went on increasing from year to year. He has, however, been given to understand that, in the existing state of the law, the certifying physician is not authorised to inquire into the physical condition of any children but those whose age is matter of doubt. Since last year, therefore, having been instructed to pass children who were physically feeble, on the production of a baptismal certificate or other direct proof of their legal age, he has noted not only the general physical development of each such child, but its actual weight. At the end of three, or of six, months, he has taken occasion to weigh those children again. In many instances he has found that there has been no increase in their weight; not so much as by a single ounce. In some cases there has been actual loss of weight. It is thus clear that when the physical powers of a child are overtaxed, its growth is stunted, and its health is impaired. That the length of its life will be shortened is also to be expected. But whether this be the case or not, it is clear that a national evil of much more importance than the shortening of the term of life attends on this overtaxing of the youth of the people. The progeny of the feeble and stunted parent will reproduce, and probably reproduce with exaggerated misery, the defects of their parents. Now, as nearly one-fourth of our population, or to speak with exactitude, 227 per *mille*, are engaged in what is described in the last census as industry, that is to say, in mechanical pursuits, exclusive of agricultural or commercial occupations, while not more than one-fourteenth, or 73 per *mille*, represent the country agricultural *proletaires*, it is certain that the menace thus held out as to the degenerated condition of the masses of Englishmen in the next and the succeeding generations is of the most grave and positive nature.

During the five years, 1869-1873, fully one-half of the children brought before Dr. Fergusson to certify that they were thirteen years old were physically unfit to work full time. Can the importance of such a fact be overlooked? Year by year the proportion increases. It is the opinion of Dr. Fergusson that the factory labour in itself is not the main cause of this steady decline. Whether as overtaxing the actual strength of the children, or as accompanied by the influence of bad atmosphere or food, absence of recreation, and want of sufficient rest, it seems, however, clear that the occupation is hurtful. Of course, it would be matter of great difficulty to apportion to each of these concurrent causes its due share of influence. But the fact revealed is of the most urgent importance.

Dr. Fergusson finds that the mills are now more carefully ventilated than was formerly the case. The actual work is not laborious; but the penning up of a growing child from the free exercise of limb and lungs, for at least a fair portion of the day, is something far more serious than the exertion of physical force expected of his hands. The first cause to which Dr. Fergusson traces the rapid decadence of the youthful population is the intemperate habits of their parents. By free indulgence in stimulants (no doubt chiefly gin), and by the use of tobacco, not only constantly, but from childhood, debilitated constitutions are produced, and are transmitted. Again, the use of milk as a food has been gradually superseded during the last thirty years by that of tea and coffee. Here, as we before mentioned, is a change of diet, the result of which may be absolutely tested by the scale beam. Third, is the increasing use of tobacco, smoked, chewed, or both, by boys of from twelve to twenty years of age. This practice acts as a direct check to the appetite, to the power of assimilation, and to the growth.

The immediate lesson of these disclosures is the urgent need of such an examination of the children who are destined to factory employment as may prevent the injury done to the entire population by such occupation of weakly children as may stunt their growth, and complete the destruction of their constitutions. On this it is not easy to insist too much. We are convinced that many of our readers will only require such a hint as we have given, in order to direct their serious attention to the subject, which for the present we commend to their consideration.

But we are very desirous that the observations to which we are referring should be not only continued but applied systematically over so large an area as shall give us a new source of statistical knowledge. Although the subject is one which has received a considerable degree of attention, it must be admitted that there is a great want of precise information with regard to the normal heights and weights of children at different ages. The differences, no doubt, are extreme, but the rule of healthy development, for an average child, ought to be ascertained. Very little reflection will show the importance of such knowledge. It is probable that when the necessity of its systematic treatment is brought forward, many physicians through the country may be able to contribute valuable detail.

The fullest treatment of the subject of the growth of children with which we are acquainted is to be found in a small quarto pamphlet, by Dr. F. P. Liharzik, which was printed at Vienna in 1862. If to this we add a series of papers, by Mr. Conder, C.E., in *Art* for 1872, and an article on the Canon of Beauty in the *Edinburgh Review* for July, 1874, we shall have cited the best authorities with which we are acquainted as to human proportion. The question of weight, which is not raised in these works, is treated in the "Inventory of the Food Collection," published by the Science and Art Department. From observations made on 2,650 healthy men, Dr. Hutchinson has arrived at the conclusion that a man 61 in. high ought to weigh 120 lb. avoirdupois; and that 5 lb. should be added to this weight for every inch in height. One seventeenth part, however, is to be deducted for clothes. Dr. Liharzik states that he has measured all parts of the body of 300 individuals, in every period of life; and made more than 6,000 special measurements with regard to the retarded development of the thorax, which he considers to be the first "cause of rachitic, scrofulous, and tuberculous affections." The average height of the full-grown man, according to Dr. Liharzik's average, is 1·75 mètres, or 68·91 in. This would give a weight, according to Dr. Hutchinson, of 160 lb. avoirdupois.

We will assume, for the sake of inquiry, the normal height of a model man at 72 in., giving a weight of 175 lb. avoirdupois. If we consider this stature to have been attained in the course of twenty-one years from birth, and that the weight of the infant at birth was 10 lb., we find an average increase of weight of 8 lb. per year. But growth continues, according to Dr. Liharzik, for twenty-four years, or indeed for 300 months. On the other hand, the full height is frequently attained by the eighteenth year. The development, therefore, from the eighteenth to the twenty-fourth year may be safely taken (for a first approximation) at the half of the earlier rate.

The relation between the height and the weight, if the development were perfectly regular, would be approximately that between a series of numbers and the series of their cubes. Late in the growth, as we have shown, the curve thus indicated would be inflected so as to give more value to weight, or girth, than to height. From the character of the proportions of childhood, it is probable that the same would be the case in the first seven years, leaving the most rapid growth in height, as compared with weight, between the seventh and the seventeenth year. As to this, however, observations are most desirable.

That an annual increase in weight of 8 lb., being equal to a daily increase of 153 grains, is not very far from the normal growth proper to a healthy child, we infer from the fact that two entirely different lines of investigation lead to closely corresponding results. At seven years old, according to this rate of growth, a child should weigh 66 lb. At seven years old, according to Dr. Liharzik, a child should measure 30 centimètres, or 51·19 in. If the cubes of the height be compared with the weights, it will be found that they tally within 3 per cent. At fourteen years of age the height attained, according to Dr. Liharzik, will be 93 per cent. of the full height; while on the theory of equal increments of weight it will be ·86 per cent. of that height. Such a coincidence seems to show that neither of the methods adopted, viz., mean of actual measurements, or allowing equal annual increments of weight, can be very far from the truth.

Now, we find Dr. Fergusson, while he notes as low a rate of increase as 4 lb. a year, between the ages of thirteen and fifteen, in the absence of proper diet, finds as much as 15 lb. gained in the year on milk diet. The higher gain is as abnormal as the lower gain. It can only be accounted for, either by the fact that the child was considerably below the normal stature at the beginning of the observations; or that it would greatly fall off in rate of growth after the period noted; or that the growth, as being too rapid, would cease too soon; or, finally and with the least degree of probability, that a colossal bulk would be ultimately attained. We should expect that the first and third of these suppositions would be found to concur; and that undersized children, when better fed, would grow too fast, and cease growing too soon.

We think it is the case that, even in the most healthy children, a perfectly regular growth is exceptional. So far as personal observation extends there are periods of more and less rapid growth, as far, at least, as height is concerned. But the more complicated the subject is, the more important it is to collect good observations, and to lay down, for the guidance of those who have charge of the young, the normal curve of the development of the English child, of each sex, both in height and in weight.

It may be very readily ascertained, by those public benefactors who will follow the course above indicated, how far the height and weight attributed by Dr. Liharzik and by our own rough rule to the child of seven, or of fourteen years old, corresponds to the actual average. We should fear that, among those children of whom we are speaking, very few stand 4 ft. 3 in. high, and weigh 66 lb., at the age of seven. We should fear that very few will be found to stand 5 ft. 4 in. high, and to weigh 120 lb. at the age of fourteen. Of the immense national value of comparisons like these there can be no doubt; what weight and statue avail, when they are not in disproportionate excess, was pretty clearly shown in the last Continental war. That the Germans are a taller race than a portion of the Gauls, and get taller than the Italians, is a fact known as long ago as the time of Julius Cæsar. But that, with the corn and the mutton, the beef and the beer of England, our rising population should be so inferior to that of Austria as to lead us at the first glance to receive with hesitation the admeasurements of Dr. Liharzik, is not a grateful reflection. We cannot but hope that the indication which we have ventured to give of a normal standard of height and weight, proper to each age, rough as it is, and susceptible of correction by careful and extended observations, may prove of material use. The importance of a standard, in such cases, is crucial. We have not space, at the present moment, to follow out that interesting part of the subject, the proportion between height and girth. From the army requirements, and from the list of measurements of recruits, it is but too certain that our average chest measurements fall fully 10 per cent. below the canon of Greek symmetry, for young men and women. The relation between proportionate chest girth and longevity has received the attention of physicians for more than a quarter of a century. Little has been heard of it of late. We earnestly hope that the skill and untiring industry of the medical and surgical professions will be directed to the important aim of gauging the proportions of those who will be the men of the next generation and the fathers of those who are to follow. What avails to us the "progress" of the nineteenth century, if it be accompanied by the physical degeneration of the race, and the Loss of the Stamina of Old England?

Price of Land near Liverpool.—Last week a jury called to assess the amount to be paid by the Cheshire Lines Committee to Mr. T. A. P. Littledale, for a portion of the Highfield Estate, Knotty Ash, containing thirteen acres, which was required for the purpose of a branch line from Garston to the north end of Liverpool, gave a verdict for 10,880*l*. The average valuation on behalf of the claimant was 16,383*l*.

COMPETITIONS.

Gloucester Public Baths.—At a meeting of the Gloucester town council, on the 30th ult., the town clerk read the following report of the baths committee:—"The committee appointed on the subject of public baths have to report that since the last meeting of the council they have opened the eleven plans for baths sent in for competition, and have very carefully considered them. They recommend that the first premium be awarded to the plan marked '1875,' and the second premium to the one under motto 'Pro Bono Publico.' '1875' is a well-arranged plan for ready access to every part, and the means of ingress are good. This appears the best plan for the location, which your committee strongly advise as the one to be selected, viz., the Public Park, immediately behind the Spa Pump-room. 'Pro Bono Publico' is a very clever plan, and although some of the details are not such as the committee would approve, they think the care and ability manifested fairly entitle its author to the second premium. It is proposed that the plans should be publicly exhibited for a few days, as may be arranged with your surveyor. The next step which the committee seek authority to take is to ascertain upon what terms one of the successful competitors would be willing to prepare a specification, with quantities, so that tenders may be obtained for carrying out the work. The rough estimates of '1875' and of 'Pro Bono Publico' are 5,000*l*. and 4,525*l*. respectively. But it is believed that a modified design may be carried out in a manner creditable to the city for about 4,000*l*."

St. John's Church, Blackpool.—Thirteen sets of designs were submitted in competition for the erection of this church; and the committee having called in the services of Mr. Paley, of Lancaster, to advise them, selected those under the motto of "Circe," by Messrs. Ladds & Powell, of London, who have been commissioned to carry out the work. The church is to take the place of one comparatively old, and much smaller, which now stands on the site, and is to be pulled down. The new church is to accommodate 1,300 people, a considerable proportion of whom have to be provided for in galleries, owing to the somewhat restricted nature of the site. The design placed next in order of merit was marked "Red Cross on White Shield," by Mr. A. Bell, of Manchester.

Bassingbourne and Kneesworth Board Schools.—Thirteen sets of designs were sent in for these schools, and the Board selected those by Messrs. Ladds & Powell, of London. The schools will accommodate 350 children.

Walsall Hospital.—The competition was between Messrs. H. Naden, Mr. Corson, and Mr. Nicholls; but, ultimately, the design of Mr. Naden, was, on the motion of Mr. Stanley, seconded by Mr. Cozens, adopted.

NEW DRAINAGE AND WATER SCHEMES.

Sheerness-on-Sea.—At a meeting of the Sheerness Local Board of Health on the 24th ult., it was announced that the Local Government Board had sanctioned the borrowing of 15,000*l*. for the purpose of improving the drainage and water-supply of the town. It was decided to put the contract out in three sections, to be arranged by the surveyor.

Maidstone.—One-third of the town of Maidstone, and that the newest part of it, is wholly destitute of public sewers. Consequently, all drainage is into cesspools, and in these parts of the town typhoid fever is prevalent. A complete system of drainage for the whole town, designed by Mr. Lewis Angell, C.E., is about to be submitted to the Local Government Board for approval. The *Maidstone Journal* refers to the article on the sanitary condition of the town which appeared in the *Builder* at the beginning of the year, and "which fully laid bare the many unhealthy localities of the town, but nothing whatever has been attempted towards lessening the shocking evils then clearly pointed out."

Weymouth.—Sir John Coode has submitted plans and specifications for the subsoil drainage of the park. The plans provide for stoneware pipes and tanks for the subsoil water, which is to be let off at certain times. No estimate accompanied the plans.

Leicester.—The Corporation of Leicester have given notice of their intention to promote a Bill in the ensuing Session to obtain powers to purchase the waterworks. Leicester is somewhat favoured, for, while the town is supplied by a

private company, the shareholders only get 5½ per cent., a percentage on the capital being paid to the corporation.

Grangemouth.—At the meeting of the Grangemouth Burgh Commission, on the 23rd ult., Mr. Richard Niven, on the part of Messrs. Bell & Miller, civil engineers, Glasgow, exhibited and explained the working plans and sections of the reservoir, clear-water tank, filters, &c., to be formed in Millhall Glen for the collection of the burgh water supply. The reservoir is to have an average breadth of 100 ft. by 300 ft. in length, with a depth of 6 ft., the water to be drawn off at a depth of 1 ft. 6 in., so as to afford room for the precipitation of the ochrey matter.

Colchester.—Mr. Bailey Denton has submitted to the Corporation of Colchester a scheme for intercepting and treating the sewage of the town, which now falls into the Colne. The cost of the works is estimated at 30,000*l.*, and the annual cost of treating the sewage at 2,000*l.*

Stoke-upon-Trent.—At the quarterly meeting of the Stoke Town Council, held on the 26th ult., the Mayor read a voluminous report of a committee which had been appointed to consider the best way of disposing of the sewage. The committee, having visited Leeds, Birmingham, Hertford, and Merthyr Tydvil, to inspect the different systems under operation, reported (1) that there is no prospect of making the sewage works a source of profit; (2) that precipitation is inefficient and expensive; (3) that irrigation is impracticable owing to the impossibility of obtaining land; (4) that it would be possible to combine the plan of intermittent downward filtration with ordinary irrigation to a certain extent, and that steps be taken with the view of securing land for that purpose.

Alcester.—At a meeting of the Alcester Rural Sanitary Authority, on the 24th ult., the sub-committees appointed to consider reports by Mr. Pritchard, C.E., of Warwick, on the best means of providing an efficient system of drainage and water-supply for Alcester, and drainage for Astwood Bank, presented their reports. The Alcester sub-committee reported, "That having examined Mr. Pritchard's plans, and heard his explanation of them, and also having fully considered the subject, they beg to recommend to the Sanitary Authority the adoption of the principle of the plans, and that Mr. Pritchard be instructed to perfect them in detail for the approval of the Local Government Board." The committee for Astwood Bank made a similar report. The Authority adopted these reports, and passed a resolution empowering Mr. Pritchard to make complete plans.

Lennoxtown.—At the last meeting of the Campsie Parochial Board, as Local Authority, it was removed to take immediate steps for introducing a supply of water to Lennoxtown and district. The works will be executed from plans by Messrs. Storry & Smith, C.E., who propose to construct a reservoir to contain 750,000 gallons, which would allow of a consumption in dry dry weather of ten gallons per head per day for twenty-five or thirty days. The estimated cost, including filter-beds, &c., 1,750*l.*

Chorlton.—Captain Liernur has, at the request of the Chorlton Sanitary Authority, reported on the practicability of applying his pneumatic system of sewerage to that district. He estimates the total cost, including all machinery, &c., at 65,000*l.* No system of sewerage exists at present. Another plan was originally contemplated, one feature of which was the construction of a conduit five miles in length, estimated to cost 70,000*l.*

Ripley.—The Ripley Local Board having applied to the Local Government Board for sanction to borrow 3,000*l.* for works of water-supply, and for the site of public offices, Major Hector Tulloch has, on behalf of the Local Government Board, held an inquiry, and examined the plans for the proposed waterworks and public offices. He expressed the opinion that the plans might be considerably modified and improved.

Inverness.—At a meeting of the Standing Committee of the Police Commissioners on the 1st inst., tenders for the new waterworks were opened. There were ten offers for making the reservoirs and laying the pipe tracks, and the successful competitor was Mr. John Scott, whose total amounted to 8,350*l.* 14*s.* The contract for supplying the pipes was secured by a Glasgow firm.

Basingstoke.—At the meeting of the Basingstoke Town Council, on the 2nd inst., the borough surveyor (Mr. J. H. Moore, C.E.) presented a report, accompanied by plans, estimates, &c., of the proposed new drainage-works for the borough. The scheme is based on the "separate" system, *i.e.*, the present sewers, which now discharge their contents into the streams, will in future be used for rain-water only, and the new sewers will be for sewage only. It is intended to utilise the sewage by intermittent downward filtration. The cost will be upwards of 7,000*l.*

Oxford.—The Oxford main drainage works, which were seriously impeded by the floods, are now again being vigorously pushed forward, notwithstanding that the contractor, Mr. Dickinson, is short of hands. A dam has been put across the eastern branch of the Cherwell, the water to be pumped out, and the excavation beneath the river made ready for the reception of the large iron tubes, surrounded by concrete, which here take the place of brickwork. The weight of one of these tubes is 26 tons. Contract No. 5, which has just been commenced by Mr. Acock, of Norwich, who had the first large contract, will comprise the whole of the remaining works of sewerage and surface drainage within the city. The scheme was designed by Mr. W. H. White, engineer to the Local Board, under whose superintendence it is being executed.

Warrington.—Mr. R. Vawser, borough engineer, has submitted plans to the Warrington Rural Sanitary Authority for the drainage of Winwick-road and Sankey. He estimates the cost at 3,081*l.*

Tunbridge Wells.—At a meeting of the Tunbridge Wells Town Commissioners, on the 1st inst., the Paving and Drainage Committee reported that they had received two tenders for the construction of the new sewers in the Northern Valley district, the lowest being that of Mr. Henry Potter, of Stepney, London, which amounted to 1,484*l.* 14*s.* 10*d.* Mr. Potter's tender was accepted by the Board.

THE LAND ON THE GREAT ORME'S HEAD, NORTH WALES.

ALLEGED ILLEGAL INCLOSURE.

Much dissatisfaction and excitement is just now felt amongst the residents and visitors to Llandudno, in North Wales, in consequence of a landowner, claiming to have the right to do so, having inclosed between 500 and 600 acres on the top of the Great Orme's Head, and built a stone wall 7 ft. high, round the inclosure, thereby stopping an ancient roadway across that part of the Orme, from the foot of the old Telegraph Hill, westward, in the direction of Puffin Island. A mile of right of road has been taken from the public. This road has been used by them for more than seventy years, and is said to be one of the most attractive in North Wales. Its having been closed prevents walking across the western portion of the Head. Believing that the party who has thus inclosed the land and built the wall has acted illegally, a number of gentlemen interested in the matter sought the opinion of an eminent counsel, and he has just given an opinion to the effect that there is strong evidence that the road in question is a public footpath, and he is also of opinion that no counter-evidence can be brought to overbalance the evidence which has been laid before him. The learned counsel also gives advice as to the best mode of taking legal proceedings to enforce the re-opening of the road, and this advice is about to be acted upon. The gentleman who has inclosed the land and built the wall having been appealed to to re-open the road, states that he shall resist any attempt that may be made to effect its re-opening.

FIREPROOF SAFES.

The *Deutsche Industrie-Zeitung* mentions a new mode of protecting safes lately brought under the notice of the Association of Engineers of Hanover by Dr. Heeren. In the building where this way of preserving safes has been practically applied, a brick shaft, closed at its upper end by a vault, is constructed from the cellar to the story where the safe is to be placed. The safe is suspended in the vault to several hooks secured by means of an easily fusible metal (Rose's metal). If the temperature in the shaft rise only to 100 degrees, the alloy melts, and the safe is precipitated into the cellar. If, besides, a box filled with ashes, and provided with a trap-door opening the moment the safe falls, is fixed over the latter, its contents would form a protecting layer comparatively impervious to heat, and thus preventing injury to the safe for some time. Somewhat roundabout, it seems to us.

A RUN THROUGH OXFORD.

If we look at Oxford in the abstract sense, it would seem to be the very home of the antiquary and the archæologist. According to the generally received accounts its history belongs to the far-off time of Alfred, and beyond even that there is a mythical story which would seem to connect the university with the schools of Greece and Rome; but under the rigid examination of the strict archæologist these myths disappear, for though Oxford undoubtedly had an existence in Saxon, and, probably, in British times, the archæological interest dates only from the Conquest. The early remains are few and somewhat scant, but as the stern grim Norman gave way to the lighter styles which succeeded it, examples multiply.

The ancient city was appropriately chosen on the 30th ult. as the mustering-place of the Berkshire Archæological Society, who joined on this occasion the archæological section of the Midland Institute at Birmingham. The party was a large one,—too large for the work to be done,—and, under the guidance of Mr. James Parker, visited the principal objects of interest in the city, selecting those colleges and churches which were typical rather than attempting them all.

The party met at the Randolph Hotel, within sight of the Martyrs' Memorial, renowned as the work which commenced Sir Gilbert Scott's career twenty-four years ago. Mr. Parker described the work to be done, and how he proposed to do it. They were, he said, just outside the north gate of the old city. The church near them was that of St. Mary Magdalen outside the walls. The roadway passed through the north gate, and intersected at Carfax the High-street, which ran east and west. The castle occupied the western side of the city, and there was yet visible, in all its gloomy grandeur, the sturdy tower of Robert D'Oyly, a favourite follower of the Conqueror, who was entrusted with the governorship of the city. The Anglo-Saxon Chronicle contains a few entries relative to Oxford; but is silent respecting the great siege of the city by the Conqueror. Indeed, it would seem that the statement respecting the siege was an error. Exon being translated Oxford instead of Exeter. At the Domesday survey, there were many houses "wasted," and some of this devastation may have been caused by the troops of the Conqueror on their march to quell the great northern rebellion. The annals of Oseney and Abingdon supply many facts. On the mound by the side of the river Isis, D'Oyly erected his castle in 1071. Three years later he founded the church of St. George within the castle precincts, and gave to it the Church of St. Mary Magdalen, on the north side of the city *in suburbis*. There were no traces of D'Oyly's work at St. Mary Magdalen remaining, and there was no evidence that the city wall was more than an earthen rampart, surrounded by a deep ditch, and the waters which even now frequently make Oxford appear as an island in an inland sea. There did, however, exist the tower of St. Michael's Church, near the site of the north gate,—a tower which Rickman thought to be Saxon. It was obviously one of the defensive works of the city, and if any doubt remain on the minds of any one, recent discoveries conclusively proved it. Within a few months it was resolved to lighten, as far as possible, the weight of the tower, and on removing the masonry that blocked up the lights of the tower they found the mid-wall shafts of the time of D'Oyly remaining as fresh as the day they left the chisel. These baluster pillars were the archæological feature of the tower. There were three of them, and on the other side a small door told the tale that the tower was mainly used for fortification. In 1080 D'Oyly is spoken of as the great restorer of churches, though no other traces of his work remained than those at St. Michael's and the castle. What portion of the city wall remained was of later date. In accordance with the printed programme, the party passed along High-street, having their attention directed to the various churches and colleges, until they reached

Magdalen College,

situate among leafy groves, parks, and deer, full of memories of Addison, of Hampden, of Wolsey and Pole, Prince Rupert, Lord Selborne, and a host of names familiar on the bench and in the senate. Its stately tower rises gracefully over the Cherwell and the neighbouring trees, the proper home for that May-morn song which is one of the spring sights of Oxford. Four hundred years have elapsed since Bishop Waynflete

gathered together his band of students in the High-street of Oxford until he could obtain possession of the old hospital of St. John the Baptist, where once the pilgrims to the shrine of St. Frideswide were lodged. The memory of this ancient usage is preserved in the quadrangle of St. John the Baptist, remarkable for its corner pulpit of stone, whence, on Midsummer Day, the feast of the Saint of the Wilderness, a sermon was preached, and the quadrangle was strewed with rushes and grass, as a humble imitation of the wilderness itself. The great hall, which has been restored under Sir Gilbert Scott, is remarkable for the carved panels representing the life of St. Mary Magdalen inscribed on the wainscoting which lines the wall, and whose linen-pattern panels speak of the time of the eighth Henry. From the walls the portraits of some of the most celebrated alumni of Magdalen gazed on the impertinent archæologists in silent wonder. In this hall James I. was entertained in 1605. The plan of this hall is, perhaps, a model for the ancient halls. It has yet its pantry and buttery-hatch on either side of the kitchen entrance. These are hidden from view by the carved minstrels' gallery. At the other end there are two oriels on the dais, and here the old customs of mediæval times are kept up by president, fellows, and scholars dining together,—the lord and his retainers, in fact. In some of the colleges, notably Queen's, some old customs are kept up with considerable pomp on New Year's Day.

The chapel of Magdalen is an example of the changes which have taken place in Oxford architecture. On May 5th, 1474, Bishop Waynflete laid the first stone of the chapel. In 1649, Cromwell dined with Dr. Wilkinson, the then principal, played at bowls, it is said, in the quadrangle, whilst his followers defaced the chapel, and mutilated the figures which adorned it. Restoration has followed restoration until it has assumed its present appearance. The remains of old work are but scanty, and as we look at moulding and panelling we cannot help being struck by the great difference in the technical work of the fifteenth century and that of the nineteenth; the latter appears to be but the laboured effort of an unskilled hand, whilst the other has all the free grace of an accomplished master. Since Magdalen Chapel was restored, and it is but a few years, both master and man, architect and mason, have caught more of the older, and indeed truer æsthetic spirit which breathes in so much of the work the mediæval masons have left us. The effigy of the pious founder's father lies behind a screen of stone on the north of the altar. It was removed hither from Waynflete, in 1833. The glass in the eight windows of the choir was placed there in 1740, and the grisaille glass in the ante chapel, representing the last judgment, dates from 1796. The party ascended the tower and admired its handsome proportions. After a saunter through the groves and walks, they passed through Pugin's gateway into the high road again, and proceeded to

Merton College,

the earliest foundation in Oxford. It is somewhat singular that Oxford colleges should owe so much to the Lord High Chancellors of England at a time when the holder of the high office was also the Prime Minister. In the troublous times of Henry III., Walter de Merton, Bishop of Rochester, was several times Lord Chancellor. He was the mediator between the king and his turbulent barons. Yet in the midst of these troubles he found time to plan an endowed corporation for scholars free from vows. He saw how excellent the discipline was in monastic establishments, and though at Oxford there were then many boarding-houses and halls for the reception of scholars, there was a want of supervision and discipline. He had founded a college at Malden, in Surrey, for the education of his nephews and other relations, but this he removed to Oxford, and gave in 1264 the first statutes to the college which now bears his name, and constituted the wardens, chaplains, and scholars, who have for six centuries carried out the intention of the founder within the walls. The hall of Merton is chiefly remarkable for the new oak roof, barely a year old, by Scott. It can hardly be like any work of the time of the founder. The screen portraits alone gave an interest to this hall, which though dating from 1270, present but few features of interest to the architect or the antiquary. The great interest centred in the chapel, which, being the first, became subsequently the model of the college chapels. In the midst of the halls which Walter de Merton purchased to form his college stood the parish church of St. John the Baptist. To this church the founder added the Collegiate Chapel, and as it is recorded that the altar was dedicated shortly after the foundation of the college, the chapel has been considered by Rickman and others as the earliest example of the Decorated style existing. Mr. Parker, however, pointed out that this arose in error. The altar appears to have been only removed, possibly that the works of the new choir might be commenced, at a cost of 14s. 9d., a small sum for such a work. The chapel was probably commenced circa 1277, and as it took several years to build, its window tracery and details were brought close to the time when the Decorated style is known to have been common in England. The vestry dates from 1310, and the transepts, which now form the parish church of St. John the Baptist, are twenty years later. The nave once contemplated for the church, was never built. The transepts form an ante chapel, and the form of the letter T became the plan of the collegiate chapels of Oxford. When we come to compare the work in the great east window of the chapel with the modern sedilia of Butterfield, we find how superior it is in taste and form. There are some structural features at Merton which show a provision and care that might be advantageously imitated. The Treasury is a notable instance of this. It has no wood or other inflammable material used in its construction. It is plain but not unornamental, and its high-pitched roof is like the building itself formed of stone. The associations of Merton connect us with Roger Bacon and Wycliffe, with Robert Devereux Earl of Essex, and Sir Richard Steele, amongst a crowd of renowned men who have been students at Merton. The gardens are remarkable for having a portion of the old town wall remaining in them, but here the mural fortifications are not so perfect as at New College.

Christ Church and the Cathedral

were the next objects on the programme, and on the way thither Corpus Christi College and St. Mary's Hall and Oriel College were passed, some of the party glancing at the leading features as they went by. As Oxford Cathedral was one of the illustrations of Sir Gilbert Scott's lecture on "The Transition from the Norman to the Pointed Arch," at Canterbury, some interest was manifested, particularly as the aisles on the northern side showed examples of early Geometrical and Decorated work, but prior to visiting the cathedral, the great "quad" of Christ Church had to be entered, and here masons and architects were busy re-edifying the cloisters. Picking our way through buttresses and carved work, we entered the cathedral, built on the earliest ecclesiastical foundation of Oxford. The original church was dedicated to St. Frideswide, the virgin daughter of Dedan and Saxfrida, who died here in 740. The legend of St. Frideswide is given in the east window of the north aisle, showing her flight from the addresses of King Algar, her refuge in an ivy-covered pig-stye, her foundation at Bisney, and her defence by the men of Oxford against the Mercians. There is an early mention of the church of St. Frideswide by William of Malmesbury, but the present structure is not older than the time of Henry I., in whose reign the secular canons who held the priory were expelled by the regular canons. The re-edification of the church dates from this period, and does not appear to have been completed till the time of Henry II. The ornamentation of the capitals, and the foliated corbels which support the sub-arches, show indications of the influence of the graceful foliage of the Corinthian capital, of which the choir at Canterbury affords so familiar an example. The great alterations which have been made in the church are connected with the relics of St. Frideswide. They were translated in 1289 (*temp.* Edward I.) to the lady chapel on the north. In 1353 the chantry erected by Lady Montacute was finished, but the great shrine, as it is called, dates from 1480. The watching chamber, as the carved wooden oratory is named, was the object of much speculation, but whether it was a part of the shrine itself, or was really a station for an overseeing and watchful monk to guard the relics of Frideswide, could not be determined.

Perhaps there is nothing in Christ Church so noteworthy as the great staircase which leads to Wolsey's superb hall. Erected in 1640, it seems as if the spirit of the old Gothic architects had survived till the era of the Civil Wars, if the groining and centre shaft are really of that date. The portraits in the great hall are a treasury of the limner's art, for here are depicted one hundred and twenty-one of the great men who have been connected with Christ Church. The first stone of Wolsey's College was laid in 1525; but Henry VIII. took up the idea and endowed the college with ample funds, and associated the newly-founded see of Oxford with it. The leading features of the structure were pointed out by Mr. Parker, and many went to see "Great Tom," which hangs over the gateway in the tower of Sir Christopher Wren.

The New College,

founded by William of Wykeham, who undertook to keep the town walls in repair adjoining his foundation, was visited in the course of the afternoon. In this college every part is complete as designed by its architectural founder, though some of the wings have been modernised by being faced with stone, and square windows inserted. The beautiful painted glass of the chapel, the exquisitely-worked pastoral staff of the founder, the richness of the decorations of the chapel, were all pointed out. The perfect cloisters and arrangements of kitchen, brewhouse, and other domestic offices were the theme of much praise. The section of the town wall, with its narrow embrasure, wide battlements, and still perfect alcove, which remains in the grounds, kept the party till late in the afternoon, when a flying visit was paid to

All Souls,

where the magnificent reredos of the chapel formed the centre of attraction. This, in its richness of decoration, exquisite carving, and general effect, is perhaps one of the finest in the kingdom. The archæologists visited, curiously enough, Keble College, now in course of construction, and in the evening divided into small parties to visit St. Peter's, and the older remains of ecclesiastical architecture which are scattered through the city of palaces and colleges.

PERSHORE ABBEY.

AT the recent Congress of the British Archæological Association, Mr. E. Roberts, after a preliminary sketch of Pershore Abbey, its well-known and uneventful history, its ample revenues enabling the community to rebuild the several parts destroyed by its only enemy, fire, said:—"Whatever its original size, no remnants remain beyond the central tower, south transept, and part of a north transept, a choir with a modern chancel to its east, choir-aisles with chantries at the east end, that on the north side having a transept. The most interesting portion is unquestionably the grand old tower, which is part of the earlier Norman, surmounted by fourteenth-century work, and the still more charming south transept. This latter, with its arcading at the south end, partly returning on the east wall; the triple arches in the east wall, that is, a central arch, now walled up, but formerly the arch of an apsidal chapel; on either side the arch to the aisle and a window, all surmounted by a bold string-course. On this is a gallery with characteristic arcading and a similar second gallery." He drew especial attention to the skill with which the groined vaulting had been added, not an inch more of the Norman work being cut away than was necessary. Had any one in the present day committed such a "restoration," he would be laughed to scorn, and little as we may admire the combination, we may respect the self-denial which prevented further destruction than was necessary to complete the vaulting. This was said to be erected by Abbott Newton, in 1435, but Mr. Roberts put it half a century earlier; and although one corbel bears the rebus of Newton, it was in connexion with a separate feature, and he thought it was an attempt to finish what had been previously begun, for all the other corbels are still in the rough block. Urgently as he had been pressed to endeavour to find some Saxon work, he had failed to do so, notwithstanding the undoubted early origin of the monastery as a Saxon secular college. The choir and aisles are of exquisite thirteenth-century,—almost Transitional,—work. Large clustered shafts with elegantly-carved capitals, of four arcades, with three others unequal and apsidal, uniting in its continued shafts the clearstory lights and triforium. In the north transept the slight remains have been filled up next the aisle (except a small square opening) to help sustain the tower. This transept was destroyed at the same time as the nave, after

the Dissolution. Mr. Roberts mentioned Mr. Mackenzie Walcott's statement (read at this congress) that the parishioners purchased the choir instead of the nave, as was usual, because they could not raise more than 400*l*. No authority was given. Mr. Walcott also said that the nave had been less in height than the choir, but an examination of the remains would show that to be an error. There are some few choir-stalls, not very ancient, carefully refitted. Two very picturesque and ancient stone bridges are passed in the approach to the town, and the site of the abbey mills is seen, on which a modern mill has been erected.

Mr. Roberts said he had been asked specially to say a word about the restoration, and although it was his invariable habit to refrain from any expressions of opinion, he could not without discourtesy refuse to give one now. He proceeded,—"Much as I shudder at the word, and am horrified at the handing over an old building to a band of reckless mechanics, yet I know repairs must be done. Sir G. Scott is perhaps better acquainted with Gothic works than any one else, but the vast amount of work undertaken by him renders it impossible for him to give attention to any but the largest works. The result is that other works are left to mechanics, and I have heard Sir Gilbert lament that his directions for care and preservation have been disregarded and forgotten by the workmen. He has, however, been fortunate enough to raise round himself a class of skilled foreman, or clerks of works, and his "restorations" have vastly improved in consequence. And as regards Pershore Abbey, with the exception of the coloured exhibition (at the west end), on which I purposely turn my back, I think I may say the work is faultless. The new works, both inside and out, show distinctly and intentionally that they are such, and do not intrude as restored works."

DEERHURST CHURCH.

WE add to what we have already printed as to Deerhust, some of the remarks concerning it made by Mr. Roberts. From very early Saxon times—writers say from the seventh century—this site has been devoted to educational and religious purposes. At first a college of secular canons, it at various times passed through the occupation of Benedictines, nuns, again secular canons, and again Benedictines. There were extensive buildings, and probably of the same form as the modern monastery, to which these remains show many resemblances. The church walls, however, are those which bear strong evidences of their early date, and although he could not place them so early as the seventh, he thought they belonged to the tenth century. The walls of the nave and aisles are full of Saxon work, and pierced, as the former are, by Gothic arcades, are mainly the original work, and of the great height they now remain. By what means lighted it was difficult to say. He exhibited a plan of an equally early church at Brixworth, which showed that probably there were *cubicula*, and not continuous aisles, as in the second stage of that church. There was some ground for that view given by the small doors in the nave walls here.

The east end of the nave is now used as a communion, the chancel having been destroyed. The chancel-arch has a fine bold label, terminating in well-cut bulls' heads, and the pier capitals are curiously carved with an angular fillet, running up to a point in the angles. The nave walls, where not altered, are full of quaint openings, square-headed, triangular-headed, and circular-headed, while some apertures lower in the nave are perfectly triangular, and were probably, in the original, external openings fitted with frames and netting to admit air and keep out the birds, as in a specimen from Framlingham, Norfolk.

The tower is unique; longer from east to west than from north to south, it is divided all the way up into two almost equilateral apartments on its four several stages, and is vaulted at the summit. There is an arched communication on each story, and, as at Brixworth, the staircase to them is a more recent addition, this one being several centuries later. On the stages are doors on the west face, and two projecting horns (rhinoceros-shaped and huge) over two. On two of the stages are windows opening into the nave.

Mr. Roberts's account of the uses of these several appliances was the warlike one. The churches in troubled times, or Danish influxes, were the places of resort and protection for the people. There being no staircase, a ladder was mounted to the first floor, and thence on the horn to the second, and so on, while the "horns" would serve as a reeve for raising provisions by ropes. The doors have square labels and attempts at terminations in themselves, justifying his remark at Wyre Church earlier in the day that the chancel arch there is also Saxon. The windows have, some of them, single stones for the heads, and one is arch-shaped out of one piece. Of the double window figured in Parker's Glossary it has not been observed that, in one panel, the cablings in the flutings are reversed.

CAPITAL AND LABOUR.

AT the meeting of the British Association at Bristol, on the 31st ult., Professor Leone Levi presented the report of the Committee on Combinations of Capital and Labour. That committee consisted of Lord Houghton; Mr. Jacob Behrens; Mr. Brassey, M.P.; Mr. F. P. Fellows; Mr. A. Hamilton; Professor Levi; Mr. Mundella, M.P.; Mr. Newmarch; Lord O'Hagan; Mr. Palgrave; and Professor Thorold Rogers. The points into which they inquired were:—1st. What determines the minimum rate of wages? 2nd. Can that minimum rate be uniform in any trade, and can that uniformity be enforced? 3rd. Is combination capable of affecting the rate of wages, whether in favour of employers or employed? 4th. Can an artificial restriction of labour or of capital be economically right or beneficial under any circumstances? The following is a summary of the more salient points in the report:—

The chief functions of combinations, whether of capital or labour, being to operate on wages, your committee were anxious to ascertain by what criterion the parties interested ordinarily judge of the sufficiency or insufficiency of existing wages. The first test of the sufficiency of wages is the relation they bear to the cost of the necessaries of life. "The minimum of wages," said Professor Rogers, "is the barest possible amount upon which a workman can be maintained; that which, under most unfavourable circumstances, a man is able to obtain." But the minimum thus estimated can only be, and is, submitted to under circumstances of extreme necessity. "I believe the minimum rate of wages," said one of the representatives of labour, "is that which, under the worst circumstances, the worst workman gets from the worst master." We cannot, therefore, take the minimum rate so considered as a proper basis for the sufficiency of wages. How far insufficient wages in relation to the cost of living in the United Kingdom is a cause of the large emigration which is taking place from year to year it is not possible to establish; but, doubtless, the prospect held out in the distant colonies and in the United States of America of considerable improvement has been for some time past and still is a strong inducement to those in receipt of insufficient wages in this country to emigrate to other lands. Your committee are desirous to point out in connexion with this question that not only has the cost of some of the principal necessaries of life greatly risen within the last twenty years, but that in consequence of the general increase of comfort and luxury, many articles of food, drink, and dress must now be counted as necessaries which some years ago were far beyond the reach of the labouring classes; while house rent, especially adapted for the labouring classes, is considerably dearer. A better test of the sufficiency of wages is the relation they bear to the state of the labour market; and tested by that standard, the minimum rate of wages which workmen are at any time prepared to accept is the least which they think they are entitled to have under existing circumstances, the trade unions guiding them as to the state of trade and the value of labour at the time. Unfortunately, however, what workmen think themselves entitled to have does not always correspond with what employers find themselves able to grant. Disagreements between employers and employed are often produced on the subject of wages by the fact that all the elements of the case are not within the cognisance of both parties, experience showing that in making a demand for an advance of wages, or for resisting a fall, workmen are of necessity groping in the dark as to the real circumstances of the case. One of the chief advantages supposed to result from the organisation of trade unions is the competency of their leaders to give solid and practical advice to those interested as to the condition of the labour market; and we have no doubt that this duty is in the main honestly performed, but it is very much to expect that such leaders should universally possess large and liberal views enough to vindicate the exercise of their enormous power, and such constant and accurate knowledge of the multiple facts of the case as would enable them to exercise an almost infallible authority. On the other hand, were it possible for employers, who are not in the dark in such matters, to make known to their own workmen the grounds of the action they propose taking before the resolve is carried into execution, your committee are convinced that many disputes would be avoided, and much of the jealousy which now exists between the parties would be removed. The recent lock-out in South Wales illustrated the need of such a course. Your committee were anxious to ascertain how far it is in the mind of the employed that the employers obtain for themselves too large a share of profits at their expense. Your committee were assured that no such doubts are entertained, though cases were produced supporting such suspicions by reference to the time of the great rise in the price of coals in 1873, when workmen's wages did not, in the opinion of the representatives of labour, rise to anything like the proportion of the masters' profits. Immediately allied to the question of the determination of a mimimum of wages is that of their uniformity. In the opinion of many trade unions, all workmen of an average ability in any trade should earn the same wages, the average ability of each man being understood to have been determined in advance by the fact of his being admitted as a member of the union. But a man is subject to no examination, and is generally admitted upon the testimony of those who have worked with him, whose evidence must frequently be fallacious and insufficient. Nor does it appear that the rejection is absolutely certain even if the applicant should not be deemed a man of average ability, the acceptance or rejection of the party being always optional with the lodge to which he is introduced. Your committee are therefore not satisfied that any guarantees exist that every member of a union is able to earn a fair day's wages for a fair day's work; and they cannot, therefore, agree in the proposition that all workmen should be entitled to uniform wages on the ground of uniform ability. A still more important question in connexion with the subject is how far combination of any kind can affect permanently or temporarily the rate of wages. Upon this, as might be expected, the most divergent opinions are held by the representatives of capital and labour. The employers of labour, standing on the sound principles of political economy, deny that combinations can under any circumstances affect the rates of wages, at least in any permanent manner. The argument adduced being that, if workmen are entitled to higher wages, they are sure to get them, since, under the law of supply and demand, whenever it is found that profits trench unduly upon wages, fresh capital is sure to be introduced which provides for the raising of wages. The employed, on the other hand, confidently appeal to past experience, and point to the fact that almost every increase of wages has been due to the action of trade unions. Your committee are not prepared to deny that combinations can render useful service in matters of wages; but they think that it is impossible for them to frustrate or alter the operations of the law of supply and demand, and thereby to affect permanently the rates of wages. Limited as is the power of combinations to affect the rates of wages, still more limited is their power to affect materially the progress of productive industry. Whether the fact can be established or not, it is undeniable that British trade has enormously increased within the last twenty years, and that the exports of manufactured goods are on a larger scale now than they were at any former period. A frequent source of contention between employers and employed is the mode of paying wages, viz., by time,—such as by the day or hour,—or by piecework. There appears to be no uniform practice on the subject. The economic effects of strikes and lock-outs are well known, and it matters but little which party in the contest in the end may prove successful. In the opinion of your committee a well-devised system of conciliation is the only proper and legitimate method of solving labour disputes. And your committee cannot too strongly express their sense of the grave responsibility which rests on either employers or employed when, regardless of consequences, they resort to a step so vexatious and destructive as a strike or lock-

out. In the opinion of your committee, a proper sense of the necessity and utility of continuous labour; an earnest desire for the achievement of excellence in workmanship in every branch of industry; and a keen and lively interest on the part of one and all to promote national prosperity, are the best safeguards against the continuance of those disturbances between capital and labour which have of late become of such hindrance to successful production. In the great contest which Britain has to wage with other industrial nations, it is the interest of both masters and men to be very careful, lest by raising the prices of British produce and manufacture too high, they should no longer be able to carry the palm in the arena of international competition.

Sir John Hawkshaw, in the discussion which followed, said:—There is one point which presents to me a most serious aspect of the movement which is now taking place amongst the labouring classes. One of the objects and aims of these combinations has been to bring down the workman to one line of mediocrity, and this I take, in the interests of both masters and men, to be a very grave aspect of the question. The effect of it will become more and more disastrous. Those who employ workmen are well aware that they differ greatly in skill and quickness. Yet these employers know that though they have men in their works to whom they would wish to pay the higher wages their skill deserves, they are absolutely hindered from doing so. This attempt to keep all wages to the same level is, I repeat, most disastrous in its effects. Imagine a similar rule being applied to other walks of life; it would have a singular effect, indeed. Yet there is no reason, if it is right, why it should not be applied to physicians, lawyers, and other professional men. I warn you that if this tendency is not arrested the consequences to this country will be most fatal. I have no objection whatever to raising the standard of wages if you can induce the earners to save their money. To reduce all wages to the same level is to do away with all emulation, perseverance, and industry.

THE TRANSFER OF LAND.

MR. JAMES HEYWOOD, M.A., F.R.S., F.G.S., in the course of his inaugural address as president of the section devoted to Economics and Statistics, at the Bristol meeting of the British Association, last week, referred to the question of the transfer of land, and he attributed the increase of prosperity in Ireland of late years to the more ready transfer of landed property in that country. The Irish Commissioners under the Encumbered Estates Act commenced their sittings in 1849, and in 1868 an Act was passed extending the powers of the Encumbered Estates Court for the sale of encumbered properties to properties that are unencumbered. A perpetual jurisdiction was granted to the new tribunal, under the name of the "Landed Estates Court." In 1873, the amount of purchase-money for land under this Court was 1,737,222*l.*; the net rental of the land sold was 86,685*l.*, and there were 208 sales. All Irish estates, whether encumbered or not, can be sold or contracted for, or disposed of through the medium of the Court, which is also judicially empowered to declare a title to property, and by later Acts to sell or lease settled estates. Small purchasers of land would be benefited by a greater simplification of procedure and a reduction of expense in the professional charges, which are fixed on a high scale; for instance, parties interested in the purchase of a farm worth 500*l.* may be required, as a minimum expense, to pay nearly 100*l.* in effecting the purchase. Having visited the Landed Estates Register Office in Boston, Massachusetts, Mr. Heywood said he could report favourably of the excellent plan of recording transfers of landed property in the New England States of North America. A book is kept, in which the description of each estate is preserved, and the mortgages and other claims on the land are entered. If a sale is intended, the person proposing to purchase may at once see the encumbrances on the property, as well as many particulars of importance respecting the value of the estate. The transfer of property after the sale is duly registered, and the new proprietor thus obtains his title to the land.

Extinction of Fire in Ships.—The Fothergill Gold Medal is offered by the Society of Arts for an effective means of preventing or of extinguishing fire on board ship.

SOME OLD HOUSES AND THEIR STORIES.

REMEMBERING how generations of men and women come and go, and how swiftly the lingering memories of their lives follow them, one cannot help looking with some degree of interest upon the old houses in which they were born, lived, and died. We fancy that the walls which echoed their first wailing cry, and caught, in the hushed, awful silence, the sound of their last breath, deaf, dumb, and blind though they are, must cherish remembrances of such daily doings; of loving, hating, rejoicing and grieving, hoping and fearing; of hard struggles and terrible failures, or glorious victories. We know how often a secret romance of actual life has been wrought out to a close within those walls, many of which may have been more wild and stirring, more pathetic, more fruitful of deep feeling and lofty thoughts, than the wildest and most powerful imaginings of the novelist. New buildings can never be regarded with the feelings these awaken, or suggest the thoughts with which they fill our minds, and the most matter-of-fact observer cannot help regarding them with interest.

If this is true of ordinary old houses in which we know not who may have resided, how much more so is it of ancient dwelling-places associated with the great men and women of the past whom thousands upon thousands in all parts of the globe still love or admire; whose thoughts and feelings live in stone and marble, on canvas, or in the printed pages of their books, and will so live for ages after we have been utterly and completely forgotten. In all parts of the country such houses can be found, although many have ceased to exist, especially in towns, within the last half century; and of some scarcely a record survives to preserve their identity or even point out their exact locality. Speaking of such scenes, and the associations which have hallowed them in popular estimation, Johnson said,—"We are in the presence of their fame and feel its influence"; and a modern writer, quoting that remark, adds,—"How often have I fancied, if the walls by which thousands now daily pass without a glance of recognition or regard could speak and name some of their former inmates, how great would be the regret of many at having overlooked houses which they would perhaps have made a pilgrimage of miles to behold as associated with the memory of persons whose names history, literature, or art has embalmed for posterity, or as the scene of circumstances treasured up in recollection."

In the following papers it is our intention to follow in the wake of those who have dealt with such subjects as a gleaner follows in the wake of a reaper, collecting here and there stray or overlooked ears, and finally binding them into a sheaf which shall increase the harvest by preserving much that might otherwise have been lost. In other words, it is our purpose to associate with sketches from the actual houses in existence, or from old prints and drawings in our possession, some of the stories belonging to them, and to those who "have left their celebrity to the spot,"—and to commence with we select

THE OLD ELEPHANT TAVERN IN FENCHURCH-STREET.

In the year 1666, amongst the smouldering ashes of the Great Fire of London, there stood in Fan or Fenchurch-street, smoke-begrimed and flame-blackened, an old City tavern, then, and for many years after, known as the Elephant. It stood just where the flames had raged most fiercely amongst the old sun-dried timber lath-and-plaster buildings, and where, through the close passages, narrow lanes, and alleys, they spread fastest, so that its preservation must have been regarded as almost miraculous, although the neighbouring church of St. Gabriel was less fortunate. John Evelyn saw the flames sweeping everything before them all along "Fenchurch-streete, Gracious-streete, and so along to Barnard's Castle," and noted how the terror-stricken burghers were so paralysed by the frightful scene before them that the fire had its way almost uncontrolled, and "they hardly stirred to quench it." Some days after a friend of Evelyn and fellow-member of the Royal Society,—then in its childhood,—that famous Secretary to the Admiralty, Mr. Samuel Pepys, described "all the town burned, and a miserable sight of St. Paul's Church, with all the roofs fallen, and the body of the quire fallen into St. Fayth's,"—the church beneath it,—while "Fanchurch-street, Gracious-street, and Lumbard-street" were "all in dust," and of the neighbouring Exchange nothing remained standing of all the statues and pillars "but Sir Thomas Gresham's picture in the corner." The fire was ultimately beaten down and its progress stayed at various spots, and, amongst others, at the church in Fenchurch-street. When the Great Fire had burnt itself out, and its ashes had grown cold, there arose a demand for shelter which must have crowded the old tavern from cellar to roof. The few churches unburnt were opened as refuges for the poor, and many thousands were living in temporary huts erected in the neighbouring fields. Busy days were those for the Elephant Tavern, in the midst of 400 streets of fire-demolished houses, 13,200 in number, covering 436 acres of ground, of which it was almost the centre. From that time until the year 1826 when, being in an unsafe condition, it was taken down and rebuilt, the tavern, which had then become known as the Elephant and Castle, was a popular one amongst the old citizens, as with such a history well it might be. The parochial authorities had their annual entertainment there. The Hudson's Bay Company's porters made it their house of call, and many celebrities of the City met there regularly to smoke and drink and discuss the events of the day. It was then occupied by a family named Eaton, with whom it had remained for more than a hundred years.

In 1721, there died in Ship-court, Old Bailey, a clever but disappointed, unfortunate author, who had contrived for some years previously to earn a poor existence as the keeper of a small school, leaving two daughters, named Ann and Mary, with one son, named William, the schoolmaster's name being Hogart. William Hogart, who afterwards changed his name to Hogarth, was born in 1697, and it must have been soon after the death of his father, some few years after the expiration of his term of apprenticeship, that he became a lodger at the old Elephant and Castle in Fenchurch-street, and must then have been between twenty and thirty years of age,—poor, unknown, running up long scores, and paying them off with his brush or his pencil, engraving on copper, and hawking the plates from shop to shop. Speaking of this period of his life, he says:—

"Owing to my desire to qualify myself for engraving upon copper, &c., I could do little more than maintain myself till I was near thirty, but even then I was a punctual paymaster. . . . . I remember the time when I have gone moping into the City with scarce a shilling, but, as soon as I have obtained ten guineas for a plate, I have returned home, put on my sword, and sallied forth again with all the confidence of a man with thousands in his pockets." And yet the ten guineas must have been often wanting, and the sword unworn, while the plates accumulated, so that he was glad to sell them by weight, at half a crown the pound, to Mr. W. Bowles, of the Black Horse, in Cornhill. We read how the elder Bowles bargained with Hogarth over a bottle for a plate he had just completed, and gave him half a crown a pound avoirdupois for it; and as it was the same generous art-patron who offered to give Major, the famous engraver, two pieces of plain copper for two of his best works, of which one was called "Evening," we see no reason for doubting the story.

In 1727, while Hogarth was, probably, still lodging at this ancient tavern, he was glad to undertake a design for tapestry for one Morris, an upholder or upholsterer. It was work to which he was unaccustomed, and Morris being told that the man who had undertaken this task was not a painter but an engraver, had to be reassured by the artist's promise that in the event of his design proving unsatisfactory he would not ask payment for it. The foreign tapestry workers in whose hands it was placed pronounced the design a bad and useless one. Morris refused to pay. Hogarth sued for the price—twenty pounds for workmanship and ten for material—and when the case came on for trial before the Lord Chief Justice, the verdict of the jury, and consequently the judgment, went against him. Now, although the fame of the engraver was then growing, having been created some two or three years before by his first production of merit, called "The Taste of the Town," better known to us as "Burlington Gate,"—in which Pope the poet figures as a deformed dwarf "plasterer," awkwardly "whitewashing and bespattering" any one who came in his way,—and although the booksellers were beginning to employ him to design and engrave for books, so heavy a loss in both time and money plunged him into serious difficulties, and a careful com-



THE OLD "ELEPHANT" TAVERN, FENCHURCH STREET.

parison of dates induces us to think that it was at this time that Hogarth's score having become unduly long, his landlord, the host of the Elephant and Castle, agreed to wipe it off, if he—Hogarth—would paint a certain picture on the wall of his tap-room;—and thereby hangs a tale.

Mine host of the Elephant had a grievance. During past time regularly once a year there had been feasting in high state in his house, but of a sudden the parochial authorities struck dismay into his heart by celebrating their entertainment at a rival house immediately opposite, a tavern christened Harry the Eighth's Head, but known as the King's Head. Now, in connexion with this same event, Hogarth, the engraver, also had a grievance; for, returning home one evening to share in the festivities to which he had previously been invited, he found not only that the feast would take place over the way, but that no invitation had been sent for him. Thinking that the omission might be due to some accidental cause, he went over the way, and soon found that the slight was an intentional one, whereupon a quarrel ensued, and the artist left, bitterly threatening those present with the vengeance of a satirical pencil. "A fellow-feeling makes us wondrous kind," and hence the bargain to which we have alluded. Hogarth was to caricature the parochial dignitaries on the wall of the tap-room, and the landlord was to wipe off the unusually long score. In due time all London was laughing over the painter's revenge, in the shape of a painting, to which the engraving now so well known as the "Modern Midnight Conversation," was originally due, and the landlord was in great glee, and highly delighted with a bargain the completion of which drew half London to his house. The painting, however, differed from the print, some of the incidents being omitted from the latter, on the score of their being too coarsely humorous and offensive. Some little time after, when another score existed, the landlord, mindful of how the loss of a dinner-party was so amply compensated for, proposed to Hogarth another subject for the tap-room wall,—that of the Hudson's Bay Company's porters going to dinner. So the painter once more painted out his score, and picture No. 2 appeared, representing Fenchurch-street as it then was, with the old Magpie and Punch-bowl Tavern, taken down about fifty years since, in the distance. Two other wall-paintings were afterwards executed by Hogarth, one of two laughing figures, Harlequin and Pierrot, and the other of Harlow Bush Fair.

The above particulars have been derived from an old print of the ancient tavern from which our sketch of it has been made, the said particulars, moreover, informing us that they were procured from "Mrs. Hibbert, who has kept the house between thirty and forty years, and received her information relative to Hogarth from persons at that time well acquainted with him."

When, in 1826, the Elephant and Castle was taken down, Mr. Lyon, of 5, Apollo-buildings, East-street, Walworth; and Mr. H. E. Hall, a Leicestershire gentleman, resolved to save the famous taproom paintings from destruction. They were painted in oil, and considerable ingenuity, care, and patience, were expended, as well as a large sum of money, in effecting their removal. Sir John Soane, the architect, upon hearing of the pictures being successfully transferred to canvas, publicly expressed, in highly complimentary terms, the gratification he felt, and said that, in his early life, when at Rome, he witnessed many failures in similar attempts. The paintings were soon afterwards exhibited for sale in the Pall-mall gallery belonging to Mr. Penny.

Another of Hogarth's satirical prints belonging to the period of his career we deal with, was that in which Kent, the architect, ornamental gardener, sculptor and painter, designer of furniture and household decorations, ladies' costumes, &c., suffered so severely. Kent had painted, as is generally known, an altarpiece for St. Clement's Church. It was, we are told, absurd enough in itself; but Hogarth converted the contemptuous smile with which artists regarded it into a roar of general merriment, so that its presence in the church was found to be so suggestive of fun, that Gibson, Bishop of London, ordered it to be removed,—a triumph over which we can imagine the great caricaturist laughing heartily amongst his cronies in the taproom of the Elephant. It is said, by-the-by, of Kent,—of whom Alexander Pope was a great friend,—that when two ladies of distinction prevailed on him to make designs for their birthday gowns, he dressed one in a petticoat decorated with columns of the five orders, and the other like a bronze, in a copper-coloured satin, with ornaments of gold: metal upon metal.

It so happened that Sir James Thornhill, the king's "serjeant and history painter," whose academy in St. Martin's-lane Hogarth frequented, strongly disliked, and was bitterly jealous of Kent's great success, and so no one enjoyed more heartily the caricature of the dethroned altar-piece. To this fact may be due the friendship which about this time sprang up between the courtly painter and the tavern caricaturist, the visits which culminated in Hogarth's falling in love with Jane, Sir James's only daughter, and his marriage with that not over-young lady, in the year 1729, against her father's wish, and without his consent, after which Hogarth became a fashionable portrait-painter in the more aristocratic neighbourhood of Leicester-fields, and the old Elephant and Castle, in Fenchurch-street, knew him as a lodger never again.

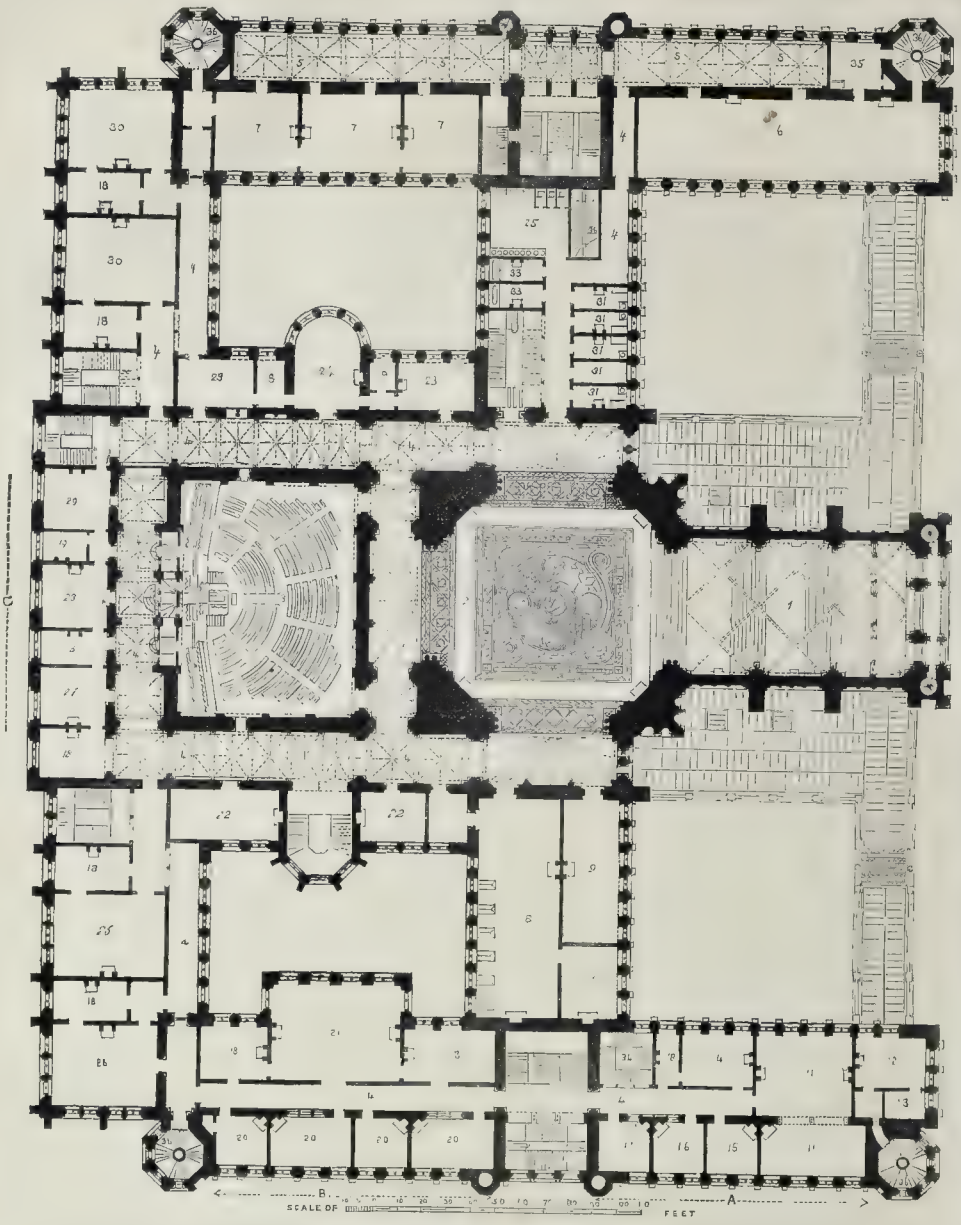
But before quitting our subject we may briefly dwell upon the picture most prominently belonging to it, "The Modern Midnight Conversation." In the plate, as in the painting, one of the most prominent figures is that of John, better known as Orator Henley, a famous but eccentric parson of that day, who is chairman of the drunken, noisy crew. He was the subject of Pope's satire:—

"O orator of brazen face and lungs,"

in the "Dunciad," and was idolised by a section of the population, then and for very many years before one of the most turbulent in the metropolis, namely, the butchers. The rest of the figures, about a dozen in number, are seen talking, swearing, singing, and shouting in a state of uproarious mirth, or sleeping and smoking, stupidly intoxicated, and each is said to have been a faithful likeness. Empty flasks abound, and the state of mind in which the group are, is adroitly indicated by the timepiece in which the minute and hour hands not agreeing are very suggestive of bemuddlement and confusion. It was Henley, the profligate clergyman, as it may be remembered, who, hearing a friend of his make some blunder in his geography, and thank God that he knew very little about such things, said, if he thanked God for his ignorance, he had, indeed, much to thankful for.



THE NEW LONDON CENTRAL POULTRY MARKET, SMITHFIELD.—MR. HORACE JONES, ARCHITECT.



SIR G. G. SCOTT'S DESIGN FOR THE GERMAN PARLIAMENT HOUSE.—*Plan of principal Floor.*

REFERENCES.

1. Entrance-hall.
2. Vestibule.
3. Hall of the Reichstag (Federal Diet).
4. Corridors.
5. Galleries.
6. The large banqueting-hall.
7. Reception-rooms.
8. Shorthand-writers' room.
9. Reading-room.
10. Room for correcting reports.
11. Registrar's office.
12. Bed-room.
13. Cloak-room.
14. Guides' and messengers' room.
15 & 16. Clerks' offices.
17. Head messenger's room.
18. Waiting-rooms.
19. Private rooms.
20. Offices and meeting-rooms.
21. Hall of the Bundesrath (Federal Council).
22. Meeting-rooms or Members of the Reichstag.
23. Audience-room of the President.
24. Conference-room of the President.
25. Clerks' office.
26. Committee-rooms.
27. Chancellor's office.
28. Conference-room of the Federal Chancellor.
29. Audience-room.
30. Meeting-rooms of (political) parties.
31. Cloak-rooms.
32. Lavatory.
33. Bath-rooms.
34. To the basement.
35. Refreshment-room.
36. Stairs.

A. Offices of the superintendent.
B. For the Bundesrath.
C. For the Reichskanzler.

DESIGN FOR THE GERMAN PARLIAMENT HOUSE.

IN a recent number we published a general view of the design made by Sir G. G. Scott, in conjunction with his son, for the new Parliament House, proposed to be built in Berlin,—a design to which a premium was very properly awarded.* We now add the plan of the principal floor, with the English equivalents for the titles given to the various apartments.

* See pp. 774 776, 777, *ante*.

THE NEW LONDON CENTRAL POULTRY MARKET, SMITHFIELD.

THE new building in design and treatment is similar in its general features to the existing market, of which we have already published illustrations. This similarity was rendered necessary, not only by its being used for a cognate purpose, but also by its close proximity to the present structure, with which it was necessary that it should harmonise in appearance as well as purpose. The Doric, as in the existing building, is the governing order, but instead of the series of arcaded recesses, the bays or compartments between the large pilasters are divided into two stories by a sub-order of more delicate design, over which in each case is an oval window, affording light and ventilation to the rooms above the shops.

The chief points of architectural effect in the external design are the four pedimented pavilions at the corners of the building, the centre or clock towers on the north and south fronts, and the east and west entrance gateways. The four pavilions which mark the extent of the building, and effectively terminate the several façades, uniting the design into one harmonious whole, are entirely of Portland stone, with pilasters similar to those of the general front, but having above them, on either face, a pedimented cornice, above which rises a square tower, the domed roof of which is covered with copper, pierced with handsome lunette windows, and crowned with a cupola and richly-wrought weather-vane and terminal. The extreme corners of the pavilions are quadrant-shaped, rusticated, and terminated with some appropriate carving.

The clock-towers, which mark the centre of the northern and southern façades, are carried up above the general line of cornice, with pilasters and a pedimented cornice on each elevation; that next Charterhouse-street being occupied between the pilasters by a clock surrounded by a carved stone setting of an ornate character, representing the supporters of the Butchers' and Poulterers' Arms.

The entrance-gateways at the east and west ends of the building form the central features of these fronts, and the double-pilastered portals filled in with rich ornamental cast-iron work, and pedimental cornices, mark them as the chief entrances to the market.

The architecture of the interior of the building is in every way subservient to utility and the wants of the trade; but a light and airy effect is gained by means of the semicircular ribs to the avenue-roofs, affording as they do a similar, though much more pleasing, vista than that obtained by the lines of the central avenue of the present market.

Abundant light will be diffused throughout the building from the roofs, constructed on the glazed louvre principle, which has been found effective both for purposes of lighting and ventilating, instances having occurred in which the temperature of buildings roofed in this manner has been, on a hot day, 13 degrees less than in the shade outside. Means will be adopted in this building to improve, if possible, the effect thus attained, and at the same time to prevent the ingress of snow and cold in severe winter weather.

The avenues, 21 ft. 6 in. wide from centre to centre of columns, are eight in number, four running north and south, and four running east and west. This arrangement will divide the interior into blocks, each containing four shops. The total number of shops, exclusive of the corner pavilions, will be seventy-two, and the area of each shop will range from 380 ft. to 700 ft. A great advantage this market will possess over the Central Meat Market will be the commodious cellarage under, and devoted to each shop, and besides this a long series of vaulted and groined brick cellars, averaging 12 ft. in height, which can be entered from any of the corner pavilions, occupy the basement of the avenues.

The cost of the entire building, exclusive of land, and the construction of the adjoining roads, but including fittings, will be about 120,000*l*.

The building is being erected from the designs of Mr. Horace Jones, the City architect. Messrs. Holland & Hannen are the contractors.

The Proposed Exhibition of Municipal Insignia.—The Royal Archæological Institute proposes to hold in London an exhibition of chains of office and other municipal insignia, and has invited the various municipal authorities to become exhibitors.

LONDON ARCHITECTURE.

SIR,—It is matter of regret that architects are not more intimately associated with London City architecture than they appear to be, judging at least from such an important thoroughfare as Queen Victoria-street. With few exceptions, there is an overstrain of effect, both in form and colour, inconsistent with true art, and which can only be the result of a determination to attract attention, and consequently business, to any particular quarter so treated. Referring to colour, has London architecture not a little lost its balance in this direction? Lowther Lodge, for instance, is somewhat above concert-pitch. The Economic Insurance Office, in Bridge-street, Blackfriars, neat in detail, is lacking in dignity in consequence of positive colour. St. Stephen's Church, Hampstead, on the other hand, charming in effect, is much more interesting in reality than might have been anticipated from the illustration in your journal. The Children's Hospital, in Great Ormond-street, is an excellent piece of design and study in colour.

Various kinds of granite appear to meet with increasing favour in the city as sources of effect in colour. A very good instance occurs in an insurance office of recent date in Clement's-lane, where special adaptation to a limited point of view has been well considered by means of flat detail and verticality of line. Both this, however, and Mr. Nash's premises in Cornhill, ably and effectively designed, are studies which one would prefer to see once in a way.

The New Zealand Chambers, in Leadenhall-street, are an experiment which very few architects but their author could have ventured upon without injury to reputation: we must accept the building as an instance of the versatility of undoubted talent.

The porch of St. Michael's Church, Cornhill, and Messrs. Alexanders' Bank, Lombard street, are worth going out of the way to see. In another style the Provident Institution, in Gracechurch-street, is a scholarly work, and one that will outlast the vagaries of the Queen Anne style,—pardon the comparison. To the provincial architect, the revival of this style is a source of wonder, and only to be accounted for from the theory that its promoters are determined to live in the past at any cost,—an unhealthy sentiment, and quite opposed to the spirit of the age.

Recurring to the vexed question of colour, the softening touch of time will do much for such a building as the Albert Hall, at South Kensington, somewhat discordant meanwhile in its combination of red brick and terra-cotta.

The Albert Memorial, too, with the Oriental bedizenment of its canopy, must be confessedly a debtor in the future to London smoke.

Unhappily, the interior of the National Cathedral can be subjected to no such influence, and we may implore the Dean and Chapter with all propriety to hasten the process by artificial means. As regards internally decorating St. Paul's, the right course is probably to begin with the stained glass as the key to the whole, then decorate the vaults and ceilings in moderate strength of colour, and lastly, tint the stone with considerable delicacy to relieve it from dull whiteness, without, at the same time, impairing its dignity.

G. S. A.

PROTECTION FROM LIGHTNING.

SIR,—I am sure that Mr. Frank Russell had the very best intentions in writing you on the subject of the protection of household property from the disastrous effects of lightning, but I cannot allow his observations to pass uncontradicted, as they may be the means of lulling some of your readers into fancied security, and many may be tempted to fit conductors on the system advocated by him, which will most assuredly be a fatal snare and delusion, if their houses are ever struck by lightning.

Mr. Russell's remarks are evidently the result of his knowledge of electric telegraphy, but I submit that practical experience, and a life's study of the various accidents which have happened, and a careful trace of their causes, alone fit any one to give an opinion on the subject.

I can give a long list of casualties as an answer to his assertion that in no single case where mischief happened was there any conductor, and innumerable instances of these may be read in the public journals, and in a pamphlet which I have edited on the effects of lightning.

Copper and iron wire ropes, iron rods, and other insufficient conductors have all failed, and been the means of, instead of a protection from, danger. I agree with Mr. Russell that the conductors should be continuous, and that the connexions with the earth should have especial attention; but I decidedly differ from him with respect to the connexion with the gas-main, as in many instances this has been the means of setting fire to the building so protected; otherwise in this respect Mr. Russell has followed out the principle adopted by me in my patent.

Mr. Russell's theory that the area protected by a conductor is a radius equal to the height of the conductor above-ground, is fallacious, as, if we proceed to carry out this idea, we may claim that a village would be protected by one conductor of sufficient height, whereas in hundreds of cases it has been proved that a conductor has been insufficient to protect an edifice on which it has been placed, as in the recent case of the parish church of Libberton, struck on the pinnacle of the tower only a few feet from the conductor, and I have frequently found buildings struck within a few feet of the conductor. Above all, I take exception to Mr. Russell's proposed form of conductor. The conducting power of iron is too low, and is also liable to decay, as proved at St. Paul's Cathedral, where solid iron 3 in. by 1 in. was decayed and severed by rust. In the case of wire rope, this would take place much sooner; and even where copper is used, wire rope is especially to be deprecated more than any form of conductor, the strands being especially liable to disruption from a stroke of lightning, thus frequently being the cause of a new source of danger.

As showing the absolute inutility of iron as a conductor, I may mention the case of the *Tweedside*, where an iron chain capable of sustaining 2 tons was snapped asunder, and strewn on the deck in pieces the size of peas. In conclusion, I venture to assert that copper, of sufficient capacity and efficiency, fitted, will alone stand the decay of time, and prove a safe protection to any building.

THOMAS W. GRAY,
Electrical Engineer and Contractor to H.M.S.

IMPROVEMENTS AT CAMBRIDGE.

NOTWITHSTANDING the great progress which has been made during the last decade in the renovation and extension of college and university buildings in Cambridge, there is still a fair amount of such work in hand, and the prospect of not a little in the immediate future. The governing bodies of the educational commonwealth continue to extend their borders to keep pace with the requirements of the age. One result of this is, that the town proper is being rapidly pushed out into suburbs which but a few years ago were fields of pasture and arable land.——At Trinity College the decorators are still busily engaged in the ante-chapel. A few days ago the baldacchino was enriched by two new oil paintings, in the place of West's old representation of St. Michael chaining Satan, which has been placed in the library staircase. A clearance is to be made on the western side of Bridge-street for the new Divinity Lecture Hall, &c.——At King's College it is contemplated to erect in one of the courts a monumental fountain, surmounted by a statue of the founder (Henry VI.). The work is in the hands of Mr. Armstead, but it will be some time before it is completed. Steps are being taken to restore the stone carving of the western doorway of the chapel.——At St. Catherine's College a new lodge for the master is approaching completion. It adjoins Silver-street and Queen's-lane, is built of red brick, with white stone dressings, and will cost something like seven or eight thousand pounds. Mr. W. M. Fawcett is the architect.——At Queen's the main front is undergoing thorough renovation.——At Pembroke the builders are just getting in the foundations for the new hall, library, and other works, of which Mr. Waterhouse is the architect.——At Downing College, the workmen are getting on the roof of the new wing at the north-east corner of the quadrangle, besides adding to the original building on the opposite side.——The roof of the hall at Christ's College has been stripped and temporarily covered, awaiting a more substantial structure.——At Jesus College some extensive alterations are being effected in the neighbourhood of the hall and buttery. The hall is to be lengthened.——For many months workmen have been engaged in effecting a great improvement in connexion with Magdalene College. The houses next the

great bridge have been demolished, and an area in the rear has been laid out with grass and planted with trees, the southern aspect of the college being thus exposed to view. All the old grey coating of the fabric next the street has been removed, and a new red brick front, with stone window frames and dressings, is rapidly taking its place.——Looming in the immediate future is the new Geographical Museum, in memory of the late Professor Sedgwick; and, according to a syndicate's report published last term, increased accommodation is required to be provided for almost every department of study, involving an outlay of many thousands of pounds.——Among the latest improvements in the town may be mentioned the new church for the parishes of St. Giles and St. Peter; a re-arrangement of the churchyard of the Holy Sepulchre; the removal of the premises in Union-street for the widening of the approach to the market-place; and the building of the new Corn Exchange in Wheeler-street, which, it is expected, will be opened before the close of the year 1875.

COVERED YARDS FOR FARMSTEADS.

Mr. J. J. Mechi writes:—A builder of farmeries, with extensive practice, came to-day, with a neighbour, who wished to have a covered yard like mine. He remarked that an agriculturist who had one was obliged to use the water-cart, to wet the straw in it, because it got so dry. I could not help smiling, it seemed so ludicrous; so I asked, "Was there no paved floor?"—"No." "Was the subsoil porous?"—"Yes." Of course, the explanation was obvious, the urine sunk through the straw into the open and unpaved subsoil. There is always (on a paved and cemented floor, with bricked and cemented sides) plenty of moisture, provided we do not litter too abundantly, but just enough to keep the cattle clean. Another point is, to let the floor be sunk at least 2 ft. below the surface. For want of this I have seen the liquor oozing on to the nicely-cemented walk or passage-way. Ventilation always above the heads of the cattle is important, and the roof should not be too high. Side-walls about 9 ft. from the bottom of the pit. The doors should be amply wide to admit the dung-carts, and there should be an inclined way from the doors to the level of the floor. The feeding-troughs should be movable, to rise and fall as the manure varies in depth. Thirty years of practical experience have convinced me that cattle in covered and enclosed yards, properly ventilated, are decidedly much more free from disease than when exposed in the fields or open yards, and certainly more profitably developed. A covered and enclosed yard, substantially built, should not exceed a cost of 10*l.* per bullock. Mine, erected when things were cheaper, only cost 7*l.* per head. They have also the money advantage of rendering dung-heaps unnecessary, the shed manure being in a condition to go at once to the land. If the animals are fattened by rich cake and corn, in addition to the roots and green crops, the shed-manure will excel all the artificials in effect and economy of cost. It is desirable to have (as mine has) within the shed a space for roots and other purposes, more than wide enough to admit a cart. My shed, to hold twenty bullocks, cost about 130*l.* Now the cost would probably be nearly 200*l.*

THE COAL QUESTION.

Professor W. Stanley Jevons, of Owens College, Manchester, read a paper on this subject, before the section devoted to Economic Science and Statistics in connexion with the British Association for the Advancement of Science, on the 26th ult. He said his purpose was to compare statistical facts concerning the recent progress of the output of coal with various predictions and theories which had been published on the subject in the previous fifteen years. The quantity of coal raised in the year 1873 amounted to 127 million tons. Professor Hull had questioned the power of the coal-fields to admit of a much greater drain in any one year than 100 millions of tons, at which rate he believed the supply would be efficient for eight centuries. Facts now entirely negatived the hypothesis of any such fixed limit. Sir W. Armstrong, in his presidential address in 1863, put forward his celebrated calculation that the produce of coal was advancing by a uniform arithmetical annual addition of 2¼ millions of tons, at which rate the coal in the country, as then estimated, would last only 212 years. According to this law of increase, the produce in 1873 ought to be 119 millions of tons, which was eight millions less than the truth, the increase in the interval having been at least 41 millions instead of 33. The annual average addition to the output was now nearly 3½ millions, and the true law of increase was far more alarming than that assumed by Sir Wm. Armstrong. In 1873, notwithstanding the unprecedented price of coal, the consumption amounted to upwards of four tons per head. The recent coal famine might be taken as the first fringe of the scarcity which must come. That famine, he believed, arose chiefly from increased demand. No doubt the colliers took advantage of high prices to lessen the hours of labour, and the Mines Regulation Act of 1872, coming inopportunely into force, also tended in that direction. There could be no doubt that coal would never again be so cheap as it was from 1864 to 1871. He advocated greater economy in the use of coal, and he predicted that before many years elapsed another run of scarcity and exceptionally high prices would come round.

In the discussion which followed, Mr. Fellowes pointed out that that the high prices of 1872–3 had already led to the more economical consumption of coal.

IRISH LABOURERS' HOMES.

In the Registrar-General's General Abstract of the Agricultural Statistics of Ireland for the past year, Mr. Donnelly makes the following observations on the subject of labourers' dwellings:—"It is impossible, both on social and sanitary grounds, to exaggerate the importance of improving the dwellings of the labouring classes in Ireland; the Legislature has enabled the Treasury to grant loans for this most desirable object through the medium of the Board of Public Works, Dublin. According to the census of 1871, the number of fourth-class houses in Ireland, most of which had only one room for the entire family of every age and sex, was ascertained to be very considerable, and in these were living nearly half a million of persons." And he quotes from a recent speech of the Duke of Abercorn, a passage in which the following words occur:—"I am strongly of opinion that the unsuitable dwellings of the agricultural labourer in this country is a stronger reason for his desiring to seek his fortune in a foreign country than any deficiency of wages; and I trust that simultaneously with the increase of wages a more suitable style of dwelling,—one more in accordance with the rising wealth of the country,—may be in store for the agricultural labourer of the future." In the concluding sentence of his Report the Registrar-General again directs attention to the vast mischief due to the growth of weeds, calculated at 2,000,000*l.* sterling, and quotes a speech of Lord Lurgan, in which, referring to the matter, his Lordship said:—"They did a deal of mischief, and he thought they should carry out the sentence which the old Scotch law pronounced, declaring any one to be a traitor who poisoned the Queen's land with weeds." What about those arrangements which go to fill the world with human weeds?

MINERS' SAFETY LAMPS.

An interesting paper on this subject was recently read before the North Staffordshire Mining Institute, at Stoke-upon-Trent, by Messrs. Landau, of London, the patentees of a new safety-lamp. The paper traced the history of mining lights and lamps, and dwelt upon the great development of mining enterprise which followed the introduction of safety lamps by Davy and Stephenson. From the circumstance of these lamps being covered with a network of fine wire, one of them having 784 squares of it to the square inch, the light is very small indeed; whilst it is asserted that the so-called safety-lamps are not to be altogether depended on, for fire-damp will force itself, under certain conditions, through the wire-gauze covering, and so lead to an explosion. This view, no doubt, is correct to some extent, and Dr. Turner, in his "Elements of Chemistry," says that he does not consider the Davy lamp safe in strong currents, and Mr. Galloway, in his Essay, gives it as his opinion that a safety-lamp should be self-extinguishing as soon as there was sufficient gas in the air to make it explosive, because a violent wave or current of air would, under certain circumstances, pass the flame of the fire-damp through the gauze of the lamp, a fact admitted by scientific men. This, no doubt, has been the case not unfrequently, for we find that in mines where the very best safety-lamps have been in use the most serious explosions have taken place. In the paper of the Messrs. Landau special allusion is made to their own recently-patented lamp, which is self-extinguishing, and gives a brilliant light. They state that it cannot be exploded under any circumstances, as the whole of the air for feeding the flame has to pass through an air-chamber in a limited space at the bottom of the lamp, and as soon as the impure air, such as hydrogen, &c. fills up the limited space, then the passage of the oxygen which is requisite to support combustion is stopped, and the light consequently gets suffocated.

A recent invention, by Mr. A. B. Boullenot, of Paris, consists in replacing the Davy or safety-lamps ordinarily used in mines containing fire-damp by improved lamps supplied with air from outside the mine. For this purpose a fixed pipe or pipes is conducted down the mine, and branches from it are led into all the workings. Compressed air is forced down the pipe by means of air-pumps worked at the surface, and the improved lamps are screwed to the air-pipes, where necessary, by means of couplings and straight or elbow-pipes provided with stop-cocks.

COTTAGE HOSPITAL, HIGH WYCOMBE, BUCKS.

A cottage hospital just erected in this thriving town has been opened by Lord Carington, the largest local landowner and the donor of the site.

It is a widespreading building with two wings faced with white bricks and covered with dun Broomhall tiles. It provides for eight or ten beds. The situation on the hill side is excellent. The accommodation is on a liberal scale. All the hospital wards, medical officers' rooms, &c., are on one floor, the kitchen, scullery, and offices being in a half basement. The contract was 1,320*l.*, taken by Mr. Reuben Spicer, of High Wycombe. About 900*l.* were subscribed locally, and at the opening Sir Philip Rose, Bart., whose seat at Rayner is within a short distance, undertook to provide for one-third the balance. Mr. Alfred Gilbey, of Woodburn Park, and Lord Carington, at once guaranteeing the remaining thirds. A bazaar for the fittings realised about 550*l.*, and thus the useful institution is started under most favourable auspices.

The building has been erected from the designs of Mr. Arthur Vernon, who has acted as honorary architect.

THE NOMENCLATURE OF IRISH TOWNS.

The Town Commissioners of Newtonlimavady lately presented a memorial to the Lord-Lieutenant, asking his Excellency to sanction a change in the name of their town to Limavady. His Excellency has replied intimating his pleasure in complying with the request. Thackeray, in his "Irish Sketch Book," seems to have anticipated the change now made, for he speaks of the road that "leads to Limavady." There are various localities throughout our own county (says the *Tyrone Constitution*) the names of which might be decapitated with benefit, although they are not, perhaps, of so much importance as "Limavady." The geniuses who presided over the nomenclature of the following districts were not imbued with the idea of brevity being the soul of wit:—In the precincts of Gortin we have Carrowcaghtragh, Oughtnamwella, Oaghminacroy, Glencoppogagh; in the neighbourhood of Stewartstown we have Magheramulkenny; near Dungannon, Mullaghfurtherland, Aghakinsallagh; near Pomeroy, Evishacrancussy, Sessiagbdonaghy, and many other names of an equal, if not greater number of syllables.

The Bridewell Police Station.—A new City Police Station, in Bride-lane, Fleet-street, has just been completed from the designs of the City Architect. The building will be ready for occupation in the course of a few days, when the present inconvenient station in Fleet-street will be closed. The new station, which will be called the Bridewell Police Station, contains a number of well-ventilated cells, with dormitories for the accommodation of constables. The building stands upon one of the most historic sites in the City of London.

COMPENSATION CASES.

THE following cases came before Mr. Aston, Q.C., assessor, and a special jury, at Liverpool a few days ago:—

Stockall v. the Cheshire Lines Committee.—This was a writ of inquiry to assess the damages due to the claimant in respect of property taken by the Cheshire Lines Committee for the purposes of their railway. For the claimant, evidence was given to show that the value of the houses and land was about 2,880*l.*; while the witnesses for the defendants stated that the value was about 1,300*l.* The jury awarded 2,133*l.*

Anderton v. the Cheshire Lines Committee.—This was a case with reference to the value of a public-house and bowling-green. Messrs. Lewis Horsblower, Wylie, and Duckworth stated that in their opinion the claimant's interest in the premises was worth from 5,600*l.* to 5,700*l.* Witnesses were called on behalf of the company, who stated that in their opinion about 3,000*l.* was the amount of compensation to which the claimant was entitled. The jury awarded 4,000*l.*

Houghton v. the Cheshire Lines Committee.—This was a claim made in respect of premises at Walton-on-the-Hill. After the case had been opened, a consultation took place between counsel, and it was agreed to give the claimants 6,200*l.*

Tattersall v. the Cheshire Lines Committee.—The property which was the subject of this claim consists of twenty-two houses, having a rental of about 7*l.* 3*d.* per week, and about 280 yards of vacant land. Four professional witnesses were called on behalf of the owners, and their average valuation of the whole property was 6,576*l.* On behalf of the Railway Committee three witnesses were called, whose average valuation was 4,573*l.* The jury assessed the value at 5,400*l.*

ARBITRATION CASE.

PIERPOINT AND OTHERS *v.* ARTINGSTALL.

THIS case came before the arbitrator, Mr. Leofric Temple, Q.C., at Liverpool, the other day. Mr. Pope, Q.C., appeared for the plaintiffs, and from his opening statement (which occupies two columns of small type in the *Warrington Guardian*) we gather that there are four actions involved in the issue, viz., Pierpoint *v.* Artingstall, Artingstall *v.* Pierpoint, Collin *v.* Artingstall, and Artingstall *v.* Collin. Mr. Pierpoint is an architect, and Mr. Collin a builder. The agreement which was embodied in the order of reference signed by all the parties referred the whole four actions to the arbitrator, who would have to decide whether the work which was done by Collin at the time the certificates were granted by Pierpoint was worth the money paid for it. Mr. Pierpoint was a member of a firm of architects who had carried on their profession in Warrington for some time. It appeared that on the 6th of February, 1874, Mr. Artingstall applied to Mr. Pierpoint to prepare plans and specifications for the enlargement of his house. Mr. Pierpoint accordingly prepared plans and estimates, got out quantities, and did the usual routine work of an architect. Tenders were made, and ultimately the work was let to Messrs. Collin & Son for 1,210*l.*, the contract containing the usual provision that the certificate of the architect should be conclusive and binding on both parties; but, Mr. Pope said, inasmuch as it was intended that the whole thing should be tried upon its merits, his clients did not propose to say that Mr. Collin was to be held entirely to receive the amount of money he had received merely because Mr. Pierpoint had certified for it. The work proceeded, and from the beginning to the end, Mr. Artingstall, whose business premises were close to the house, was constantly on the spot. He was very anxious to press the work forward, and some of it which was not entirely satisfactory was done to Mr. Artingstall's great hurry to get it finished. He gave orders from day to day to the workmen, and continually interfered in the direction of the work. Although Mr. Pierpoint had no desire to escape from the responsibility of an architect, there could be no doubt that Mr. Artingstall practically acted as clerk of the works. Matters went on for some time until the building arrived at its present condition. Then for some reason or other—probably because he had seen a house elsewhere which he liked better—he began to make complaints about the work, and at last his views became so strong upon the subject that he stopped the work altogether, and refused to let either Mr. Pierpoint or the builder have anything further to do with it. The real question at issue was, "What was the value of the work done at the time it was stopped?" Mr. Pope entered at length into the various allegations made by the defendant as to the bad or inferior quality of the materials and workmanship, and showed that in several instances the architect's specification was departed from at the express wish of the defendant. He said that Mr. Collin and Mr. Pierpoint were prepared to say that, taking the most favourable view, and making every allowance which need be made, the certificates of 760*l.* given by Mr. Pierpoint and honoured by Mr. Artingstall on account of the 1,210*l.*, did not represent anything like the value of the work done. Mr. E. Corbett having been appointed as professional shewer on behalf of Mr. Pierpoint, and Mr. Boult on behalf of Mr. Artingstall, it was arranged that the hearing of witnesses should be proceeded with on Thursday, the 28th October, and continue on Friday, Saturday, and Monday following, when the case will be finished.

Improvements at Eton College.—During the vacation a number of alterations and improvements are to be carried out at Eton College. The parapets of the walls of the ancient college chapel are in course of restoration. The carved work of the pinnacles was in a very bad condition, having become weather-worn and decayed by centuries of exposure to the elements. New lead is being laid over the roof of the Long Chamber, and other operations are in progress, including new buildings for mathematical schools and various minor erections. Mr. H. Woodyer is the architect of the works, which are being carried out by Messrs. Wheeler Brothers, of Reading.

GENERAL FOREMEN AND CLERKS OF WORKS.

SIR,—I am glad to see, by the correspondence printed in the *Builder*, that the subject of the fittest man for the office of clerk of works is receiving some amount of attention. It appears to me that both parties hitherto have made a great mistake in using the terms "general foreman," "leading man," and "clerk of works" as synonymous. The trades and professions should be quite distinct from one another, and the true status of a clerk of works will never be recognised until it is generally admitted that he represents, and should have a special training to represent, the architect. That a joiner may be, as a rule (with many exceptions) the best leading man on a job may be admitted; but, as such, his duty should be to look after the interest of his employer (the contractor), to be well up in the cost of work, and in the most economical manner of doing it. The clerk of works, on the contrary, should be a past art-workman, or, better still, a practical draughtsman and surveyor, with the knowledge of *all* trades of building in addition. How can a joiner superintend or criticise an artist's carving, or decorative work, such as is employed in any building of ordinary magnitude in the present day? Is a bricklayer qualified to judge as to the strength of iron girders, or questions of ventilation and heating? A clerk of works should be a deputy-architect, trained as such; and a builder's foreman should be a practical tradesman; and, until the distinction is admitted and insisted upon, architects will never get their work satisfactorily carried out.

Will not some of them kindly give us their opinion on the subject? C. W.

BRICKLAYERS AS CLERKS OF WORKS AND GENERAL FOREMEN.

SIR,—I read with much interest the two communications on the above subject, and consider the bricklayers have had a vast amount of prejudice to fight against in obtaining the above situations; but no one can deny that the bricklayers of the present day are a very different class of men to what they were even ten years ago. In years gone by the plea of their general ignorance and uncouth manners debarred them from rising above the position of a foreman of bricklayers; but education has been so rapid that now I think bricklayers can compare favourably with carpenters. This is my experience of the two classes of workmen, which I have had the opportunity of noticing.

Now, let me ask E. L. if he is acquainted with many men who have a "thorough knowledge of construction," and are there not a few "competent tradesmen" who never have to construct (mentally), but merely follow the mental construction of the architect, who furnishes details of every description, thus reducing this class of work to manual labour? Ask three out of four fair tradesmen why a tenon should be a certain thickness in proportion to the thickness of the framing, and can they give a satisfactory answer, simple as it is, or the relative position of braces in partitions or roofs, and for what reasons they are placed in that position, and the same result will follow.

I quite agree with E. L. that it is no "ordinary mind" that can do as he states, nor do ordinary minds have to do so, for the reason stated above. Then it simply reduces itself, as far as the clerks of works and general foremen are concerned, to the proper following of the architect's details. I do not want to be misunderstood; of course there is a certain amount of training required to do this, but with the assistance of the various works published, and with engravings so clearly defined, showing all the practical methods of construction, I see no reason why a bricklayer could not become as efficient as a carpenter, to, if I may so express myself, translate the ideas of the architect to the workmen.

Carpenter foremen, in most cases, have an under foreman of each trade. This reduces his want of knowledge considerably, and instead of one mind, there are many employed, before the erection and completion of the building, and we have only to look at the many buildings which are erected to learn that the clerks of works and general foremen have not possessed the requisite knowledge that E. L. would lead us to suppose the carpenter possesses when not so assisted.

If brickwork is so mechanical, this to a thinking and observant bricklayer (and there are many such) is an advantage which the carpenter does not possess, for while at work, he can most assuredly notice that which is going on around him, and profit immensely, and be more competent (generally) to take a leading position, because he is acquiring knowledge, while the carpenter's thoughts are engrossed with the work in hand, and does not allow him time to acquire that other knowledge, until he becomes a general foreman, at least so I understand part of E. L.'s letter. I deny that the bricklayer has most difficulties to contend with, for most good bricklayers are also plasterers and slaters, and in some cases, fair masons, therefore as against the one trade, he is fairly versed in four.

E. L. only "applies his letter to ordinary houses." Does it take an "extraordinary mind" to grasp the roofing of such, which are most simple? He must be a poor man indeed who is not capable of superintending such work.

I think if E. L. would visit districts where stone mostly is used for building he would perhaps alter his mind in reference to the leading position of carpenters; and I find with the mason, as with others, that as soon as he is capable of taking entire charge, he does so, as witness the advertisements in your valuable journal; but the carpenters have until within a few years monopolised the berth, under "carpenter builders," who were bigoted enough to think *they* only could do so, but the extensive introduction of iron in all, or many large buildings, entirely alters the case.

Then the bricklayer has no inducement to study, knowing that not one in twenty would engage him, though quite capable; but this is being altered now, and bricklayers have as good a chance of going in against any trade for the leading position.

E. L.'s remarks in reference to the mason are novel, not putting forth his claim as against the "more scientific labours" of the carpenter. Does E. L. read the *Builder* from year's end to year's end, and then state such an absurdity, that the construction of masonry is not equal to carpentry?

In conclusion, I do not see any difficulty in a man of any trade in the building, becoming a leading man, with the necessary amount of study and perseverance. He can, after he has done his ordinary day's work, with the facilities now afforded him by the many Institutes and Schools of Art, so make up the want of early education that one twelvemonth's hard study will enable him to go in for the place of a "best man and win." C. R.

THE NEW STREET, MARYLEBONE.

SIR,—It was somewhat gratifying to see, a few years ago, an improvement commenced in Marylebone by the continuation of the High-street into Oxford-street, so as to be in nature what it is in name. Instead, however, of calling Thayer-street, the new street, and James-street all "High-street," and abolishing subsidiary names, they intend calling the new portion of the street "Mandeyll" place. I do not exactly know where the first syllable ends and the second begins, but, as they are so fond of the subdivisional system, might they not carry it out more perfectly by applying the first portion of the name to one side, and the remainder to the other side of the street?

W. SCARGILL.

SCHOOL BOARD SCHOOLS.

High Wycombe, Bucks.—New schools, with residence, have just been commenced at Tyler's Green, for the parish School Board. The amount of contract is 1,870*l.* Mr. Woodbridge, of Maidenhead, is the contractor, and the architect is Mr. Arthur Vernon.

Grange (Banffshire). — The Grange School Board met on the 30th ult., when tenders for the new schools to be erected were received. The mason's work for the Newseat School was let to Mr. Francis Currie, Keith; the carpenter's work to Mr. James Dey, Botriphnie; the slater's work to Wright & Co., Keith; the plaster's work to Mr. John Wilson, Keith; and the iron work to Auchinachie & Simpson, Keith. The same parties also got the contracts of the public school of Cross-roads, except the slater's work, which fell to Mr. John Barclay, Keith.

Dundee.—On Monday, the 30th ult., three of the six public schools were formally opened by the School Board. The schools opened are,—Ancrum-road School, Lochee; Dudhope School, and Hill-street School.

Canisbay.—The School Board of Canisbay, at their meeting of the 21st ult., accepted the offers of the following parties for the Mey school-building, viz.:—Messrs. Wm. Munro, Thurso, masons' work; George Shearer, Mey, carpenters' and painters' work; and Benjamin Dunbar, Wick, plumbers' work. The total cost, including dykes and drainage, will not be less than 760*l.*

Bromsgrove.—At a meeting of the Bromsgrove School Board on the 26th ult., the plans were discussed for the erection of schools at Lickey-end and Dodford, and Mr. John Cotton was appointed architect for the Lickey-end schools, and Mr. Yates for the Dodford schools.

Grimsby.—At a special meeting of the Grimsby School Board, held on the 26th ult., Mr. Bell, the architect, was instructed to get out bills of quantities for the new schools, the remuneration to be paid him being 2 per cent. on his estimate. It was further agreed to give him twenty-five guineas to attend once a month and superintend the execution of the works.

Dunvegan (Ross-shire).—On the 27th ult., the School Board of Duirinish met for the consideration of offers by contractors for the erection of four new school-houses. The Board agreed to accept of the offer of Mr. John Macphee, builder, Rosg, for the mason work, slater work, plastering, and plumber work, and of Mr. Rod. Seele for the joiner work, painting, and glazier work, of the two schools, the one to be erected at Dunvegan, and the other at Vattin, the cost of mason work, &c., and the joiner work, &c., for the former being respectively 559*l.* and 356*l.*; and for the latter 650*l.* and 461*l.* The tender of Mr. M. Macfarlane, builder, Glendale, amounting to 1,200*l.*, for the completion of the school-house to be erected at Borradale, was accepted.

Cowpar-Angus.—At a meeting of the Cowpar-Angus School Board, on the 30th ult., it was agreed to adopt the plans submitted by Messrs. Ireland & M'Laren, who were instructed to prepare specifications, &c.

Blofield.—Mr. John B. Pearce, of Norwich, has been appointed architect to the Blofield School Board.

Great Burstead.—At a meeting of the Great Burstead School Board, on the 31st ult., Mr. F.

Whitmore, the architect, submitted plans and specifications, altered in accordance with the directions received from the Education Department. The plans were accepted, and the architect was instructed to prepare bills of quantities and advertise for tenders.

SCHOOL-BUILDING NEWS.

Steeple Aston.—A new infants' school for the School District of Steeple Aston and Middle Aston has been built by Messrs. Hopcraft & Bennett, builders, of Deddington. Mr. William Wing, of Henley-on-Thames, is the architect. It stands on land formerly glebe, at the north-eastern extremity of Steeple Aston, is capable of accommodating seventy pupils, and is to be opened for use on the 4th of October.

Waterfall.—A new schoolhouse was formally opened at Bottom House, Waterfall, Staffordshire, on the 26th ult., by the Earl of Shrewsbury. The school, which is a plain and substantial brick building, faced with Ipstones Edge stone, with Stanton stone dressings, cost, together with the land, 327*l.*, and was built by Mr. Thomas Richardson, of Waterhouses.

Broughton Ferry.—The new Eastern Public School, which has just been erected from plans by Messrs. Maclaren & Aitken, is a building in the Italian style. It has an extensive frontage to St. Vincent-street. Internally it is divided into a large hall, open to the pillar beam of the roof. To the north of the hall the boys' division, and the master's room; to the south of the hall is the girls' department, including mistress's room. Separate entrances and playgrounds are provided with covered sheds for use in rainy weather. The cost of the school is, 4,500*l.*, and it will accommodate about 300 pupils. 1,500*l.* has been expended in acquiring properties for the Beech Mission Schools. The Western Public School has been very much enlarged at a cost of about 750*l.*

Burford.—Plans for proposed new schools have been received from Mr. Wilkinson, architect, of Oxford, and have been forwarded to the Education Department for approval. The site is in Priory-lane, adjoining the old rectory-house.

CHURCH BUILDING NEWS.

Coatbridge (Scotland).—Lord Ardmillan has laid the memorial-stone of the new Free Church at Coatbridge. For some time there has been a desire to extend the boundaries of this denomination in the district, and the scheme has been successfully carried out. A commodious church is being built, while the one in which the congregation now assemble is to be devoted to evangelical purposes, a mission-station connected with the church being already stationed there. The building will add to the ecclesiastical architecture of Coatbridge. The principal entrance faces the east with a frontage of about 60 ft., and the length of the building is nearly 80 ft., with a large hall and session-house besides. The style is Gothic. The building, which is to accommodate 800 or 900 worshippers, will be lighted by six large windows, with arched tops, on each side. The edifice is being built by Messrs. J. & W. Purdie, builders, from plans prepared by Messrs. Clark & Bell, architects, Glasgow.

Chartham.—This old parish church, which has been undergoing restoration during the last few months, has been re-opened for divine worship. The church has been entirely cleaned throughout, and the walls and windows strengthened and restored. The galleries have been taken down, and the interior of the church greatly improved; the organ has been remodelled, and a new east window erected. The chancel has been entirely restored, new seats having been provided for the choir, and the large stone tower at the west end of the interior has been opened to the church, from which it is divided by an oak screen. This is now used as a vestry. The warming arrangements, by hot-water coils, heated from a boiler fixed in the rectory garden, about 100 ft. distant, have been carried out by Mr. William Tice, of Canterbury. The restoration of the church has been carried out from plans prepared by Mr. Street, architect, Mr. Denne, of Walmer, being the builder. The cost is 1,500*l.*

West Witton (Leyburn).—On the 18th ult. the parish church at West Witton was re-opened by the Bishop of Ripon, and an additional piece of ground consecrated for the purpose of burial. The work of restoration has been going on for a considerable time, and now a suitable edifice supplies the place of the former dilapidated building. The cost of rebuilding the chancel has been defrayed by Lord Bolton, and has been completed from designs by Messrs. Atkinson, of York, architects. The builders have been Messrs. Mawer & Pearson. In taking down the old walls some relics were brought to light, indicating that a church had existed at West Witton in Saxon times. A Saxon cross of good workmanship was also discovered in a niche in the chancel wall. A singular stone was found containing a rude sculpture of a figure bearing a cross, and various other traces of ancient workmanship were revealed. The cost of the restoration is about 1,100*l.* The church is calculated to seat 250 persons.

Little Newcastle.—The Bishop of St. David's opened the new church of the above Pembrokeshire parish on the 21st ult. A twelfth-century font, the only feature of interest in the former building, has been carefully preserved and placed in the new one. The present building consists of a lofty and well-proportioned nave, with chancel, vestry, and north porch. The architect was Mr. E. H. Lingen-Barker, of Hereford; and the principal contractor Mr. W. Morgan, of Haverfordwest.

Brampton.—The scheme for a new church for the parish of Brampton, after being dormant for a short time, has been awakened into vigorous life, and now holds out a favourable promise of a new edifice being erected. The subscriptions amount to 5,129*l.* The estimated cost of the new church, without the tower, is 6,070*l.*; with the tower and hanging of bells, 775*l.* additional; or 6,845*l.* in all. The committee, seeing that their funds are deficient, have resolved to dispense with the tower at present and make a united effort to raise 1,000*l.*, the sum required. The site of the new building is to be where the present church stands, as being the best and most convenient that can be obtained in or near the town. A committee meeting was held on the 24th ult., when the plans of the new church, prepared by Mr. Webb, a London architect, were again thoroughly examined, and by a resolution finally approved of.

Burwarton.—Rapid progress has been made with the building of the new church at Burwarton, and in a few weeks' time the internal decorations will be completed. It is the gift of Lord Boyne, and is built of a warm-coloured stone, quarried from Burf Hill, close by, belonging to his lordship. The style is Gothic, with a square tower 70 ft. high. The west end of the church, from the tower to the chancel, is 88 ft., and from north and south aisle 56 ft. The stone carving is executed by Mr. Dayman, of London. The chancel and organ chamber arches are supported by Purbeck marble shafts supplied by Lord Edon. The reredos over the communion-table will be in mosaic. There are also carved sedilia supported by three marble columns. Mr. Salvin, of London, is the architect, and Messrs. George Smith & Co., also of London, are the builders.

Ballater.—A small Episcopalian chapel was opened at Ballater on the 22nd ult. The chapel has been built at the cost of Mr. J. T. Mackenzie, of Kintail, and is situated within the policies of his Glenmuick residence, in a very picturesque spot in a turn on the approach, and is a Gothic structure of the twelfth-century style, from a design by Mr. Matthews, architect, Aberdeen.

Cleobury Mortimer.—Cleobury Mortimer parish church was re-opened on the 26th ult., after restoration. The church was found, by the Rev. E. J. Childe, the vicar, in a very dilapidated condition, and at his instigation the work of restoration was commenced a little more than twelve months ago, under the direction of Sir Gibert Scott. The old gallery, which hung heavily at the west end of the church, in front of the old belfry, has been taken down, thereby giving light and airiness to the interior of the edifice. The oak linings of the roof of the nave, which were concealed from view by a ceiling supposed to have been put there because the place was too cold for the worshippers, have been exposed to view. The beautiful interlaced oak-work of the chancel was also left in obscurity in the same way, but now the whole of the roof is laid open to public view. A stone pulpit has been presented, and now stands in the nave of the church; it is ornamented with marble shafts. The huge and unsightly pews of former days have been removed, and replaced by neat, low seats of pitch pine. The tower into the church has been opened, and by this means additional space is afforded, and the noble length and proportion of the church are shown to advantage. A stained window has been put in at the east end of the church, at the expense of Mrs. Childe, the wife of the vicar. At the foot of this window are the words, "To the memory of William Langham, poet, born about 1332, died about 1400, who sang of Jesus Christ in 'The Vision of Piers the Ploughman.'" It appears that William Langham was a native of Cleobury Mortimer.

Glazeley.—The new church at Glazeley was consecrated on the 24th ult. by the Lord Bishop of Hereford. This church, designed by Mr. A. W. Blomfield, stands on nearly the same site as the old one, and is built to accommodate 120 of the inhabitants of the united parishes of Glazeley and Deuxhill, and a part of the adjoining parish of Chetton. The furniture of the chancel was presented by Mr. T. W. Wylde Browne and his daughters. The lectern is the gift of Mrs. Baker, in memory of the late Rev. G. B. Baker, formerly curate of the two parishes.

Peebles.—Operations in connexion with the erection of the Leckie Memorial Church were commenced on the 25th ult., and the foundation-stone will be laid early in the present month. The site of the building is to the west of the Episcopal chapel, and measures 104 ft. by 57 ft. The church, which is to be in the Gothic style of architecture, will stretch from north to south, the entire length being 74 ft. The front or south gable will face Tweed-green, and measures 39½ ft.; while to the west will stand the spire, the base of which covers a square of 17 ft. To the north gable will be attached a hall, vestry-rooms, &c., occupying a space of 38 ft. by 30 ft. Internally, this gable forms a circular recess, in which the pulpit will be placed, and facing this, at the south end, will be a gallery above the main entrance.

DISSENTING CHURCH-BUILDING NEWS.

Ipswich.—Difficulties in the way of enlarging the Burlington-road Chapel have resulted in its being found necessary to give up the project and to build a new chapel. The present chapel is being remodelled and adapted for use as a school and lecture-room, and a piece of ground at the back, with a frontage to the London-road, has been purchased as a site for the new building. Plans for the new chapel have been prepared by Mr. Brightwen Binyon, architect, and the erection of the building will be forthwith commenced. It will be of red brick, relieved with a few stone dressings, and will front the London-road. The style will be Romanesque, and the main entrance will be surmounted by a large three-light window, and a gable. On each side of the main entrance, standing a little farther back, will be the gallery entrances, so built that at any future time small towers may be added. Internally the dimensions of the chapel will be 75 ft. by 50 ft., and with galleries, it will give accommodation to about 970 persons. The chapel will be benched, and there will be a pulpit with a spacious platform. At the back will be two vestries, and the space above the vestries will form an apse, within which the choir and organ will be accommodated. The roof will be ceiled about half-way up, with open hammer-beam framing, supported on iron columns. Messrs. E. & E. C. Gibbons have been entrusted with the work.

Leighton Buzzard.—The Wesleyan Chapel here has been thoroughly repaired, the walls newly decorated, the entire woodwork repainted, and several important alterations made, at a large cost, by Messrs. H. Inns & H. Samuel, painters and decorators, and Mr. Charles Gibbons, builder.

Long Buckby.—The Baptist Chapel at Long Buckby was re-opened on the 22nd ult., after alterations. The old pulpit, which proved to be much decayed, has been taken down, and a commodious platform erected in its place, adding, in a great degree, to the appearance of the interior of the chapel. The work was creditably executed by Messrs. Adams & Co., of West Haddon. The platform is composed of oak-stained deal, with bronzed standards.

Boston Spa.—The foundation stone of a new Congregational Church was laid at Boston Spa on the 25th ult. by Mr. Councillor Hill, of Bradford. The site of the new building is in the Tadcaster-road. The chapel is intended to seat 260 persons, and there will be school accommodation for about 200, together with class-rooms, &c. The building is to be completed by next June. Mr. F. B. Payton, of Bradford, is the architect; Mr. Brelsford, of Wetherby, the

mason; Mr. T. Bake, of Wetherby, the joiner; Mr. Rawlins, of Leeds, the slater; Mr. Knowles, of Leeds, the plasterer; Mr. Walker, of Idle, the painter; and Mr. Storey, of Leeds, the plumber engaged on the building. The estimated cost (including the land) is 2,700*l.*

High Wycombe (*Bucks*).—A new Primitive Methodist chapel has just been opened in this town. It provides a large schoolroom, with class-rooms, offices, &c., on ground floor, and a spacious and lofty chapel over. To reach this level, some 12 ft. above the street, three flights of steps are arranged, so that the ascent is disguised, and the natural objection reduced. One-third of these steps is outside the building. More than 1,000 persons were accommodated at the opening services. The materials are brick and stone, with slated roof. The ridge rises to a height of nearly 70 ft. The cost has been nearly 3,000*l.*, exclusive of the ground. The contractor was Mr. Reuben Spicer, and the architect Mr. Arthur Vernon, both of High Wycombe.

Somerton.—The foundation-stone of a new Friends' Meeting-house was laid at Somerton on the 19th ult. The architect of the building is Mr. Edwin Down, of Bridgwater; the contractor, Mr. James Watts, of Somerton; builder, Mr. Mark Wagland.

Dundee.—Victoria-street United Presbyterian Church, which was opened on Sunday, the 5th inst., is situate at the corner of Brown Constable-street. It is built in the Italian Renaissance style, and has a square tower at the south-west angle, which will be the main external feature. In plan the church is a rectangle, measuring 82 ft. long by 58 ft. wide over the walls. It has a gallery, and contains about 850 sittings. The main entrance is beneath the tower from Victoria-street. In connexion with the church, on the east side, is a class-room or hall, capable of accommodating about 300 sitters, also a manager's room, a session-house, and a vestry. Messrs. Edwards & Robertson are the architects. The following are the contractors for the works:—Mr. Alex. Cunningham, mason; Bailie Foggie, joiner; Messrs. Gauld & Laburn, slaters; Messrs. D. M'Beth & Son, plasterers; Mr. David Brown, plumber and gasfitter; Mr. David Keay, blacksmith; Messrs. G. H. & G Nicholl, heating; Mr. A. W. Fairweather, painter; Messrs. Westwood & Third, upholsterers. Mr. James Ross acted as clerk of works.

Haydock.—The corner-stones of the new Wesleyan Chapel at Haydock were laid on the 28th ult. The chapel, which is estimated to cost 1,800*l.*, will be erected from a plan by Mr. R. Curwen, architect, of Liverpool. The builder is Mr. J. Pennington, of Ashton-in-Makerfield.

Wrexham.—The foundation-stone of a new Baptist chapel, on the site of the old building, was laid on the 31st ult. The style of architecture is Geometrical Gothic. Mr. Morrison, of Wrexham, is the architect, and Mr. Benjamin Owen is the contractor.

Bangor.—The new chapel for the English Wesleyans in Bangor was opened on the 2nd inst. The chapel is built in the Early English style, and is capable of seating about 120. It has no gallery. The architect is Mr. Richard Davies, Bangor, and the contractor, Mr. David Williams, builder, Carnarvon. The cost will be about 1,400*l.*

Wellington (*Salop*).—A new Wesleyan Chapel was opened at Wellington on the 1st inst. The building, which has been erected by Messrs. W. Bullock & Son, of Admaston, at a cost of about 900*l.*, will seat about 160 people.

Wandsworth.—Extensive alterations and additions are now being made to the Wandsworth Congregational Church. This building, which is situate on the East-hill, will, as enlarged, form an entirely new structure, with nave (84 ft. 6 in. long and 25 ft. wide), and two aisles with arcades in four bays. The building externally is to be executed in stock bricks with stone dressings. An entrance porch will form a base to the eastern gable. The church, when completed (with the north and south gallery), will seat 1,000 people, and is to constitute a memorial building to commemorate the tercentenary of the establishment of the Nonconformists in Wandsworth. The architect is Mr. Edward C. Robins, under whose superintendence the works are being carried out by Messrs. Adamson & Sons, the contractors.

Stourport.—A new Wesleyan chapel and schools are in course of erection at Stourport, at the cost of Mr. T. J. Baldwin. The contract has been let to Mr. Thomas Rowley, builder, of New-street, Stourport, and the estimated cost is about 1,000*l.*

Endon.—On the 30th ult., the foundation-stone of a new Wesleyan chapel was laid at Endon, near Leek. The new chapel is Gothic in style, from designs by Mr. W. Sugden, architect, of Leek. It will be built of white bricks, relieved by red string-courses, and will be 50 ft. long by 30 ft. wide, with a schoolroom and vestry in the rear. The cost of the buildings will be 1,275*l.*, the contractor being Mr. J. Bowden, of Endon.

Malpas (*Cheshire*).—A new Wesleyan chapel was opened on the 1st inst. at Malpas. It is built of Ruabon pressed bricks, with dressings of Grinshill stone, and consists of a nave of four bays, with side aisles. The cost of the building, which has been erected by Messrs. Powell & Co., of Prees, from the designs of Mr. John Rogers, amounts to 1,460*l.*

Brough (*Yorks*).—The Congregationalists of Brough propose to erect a new chapel, at a cost of 1,000*l.* The character of the building, which will seat 250 persons, is to be Gothic. Mr. Musgrave, of Hull, will be the architect.

Finsbury Park.—A new Wesleyan chapel in the Seven Sisters'-road, opposite Finsbury Park, was opened on the 3rd inst. The new chapel measures, internally, 95 ft. in length by 46 ft. in width, and will accommodate upwards of 1,000 people. The building, which is in the Italian style, freely treated, comprises, besides the chapel, schools to accommodate 300 children, together with a separate infants' school, three class-rooms, several vestries, a chapel-keeper's residence, and the necessary offices. The architect was Mr. Frederick Boreham, the work being carried out by Mr. Pavitr, builder, Forest-lane, Stratford.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Waterloo (*near Liverpool*).—The foundation-stone of a new Roman Catholic Church, intended to supersede the small building hitherto used for purposes of Divine worship by the Roman Catholics of Waterloo, was laid on the 24th ult., by Cardinal Manning. The new church, which is to be dedicated to St. Thomas of Canterbury, will be situate in St. George's-road, facing Church-road, and will consist of nave and aisles, chancel and side chapels, transept, and large entrance porch. The extreme length of the edifice from the altar end to the porch will be 126 ft., and the width 56 ft., the latter including the breadth of the nave and aisles. The exterior walls are to be faced with Yorkshire parpoints, and the dressings will be from the Stourton quarries. The style adopted by the architect, Mr. Edmund Kirby, of Liverpool, is Early English; and in the design the architect has mainly sought to attain simplicity and strength, combined with good proportions. The church will accommodate about 700 people, and its cost is estimated at about 4,000*l.*

Havant.—A new Roman Catholic Church was opened on the 17th ult. at Havant, by Cardinal Manning. The new church, of which Mr. J. Crawley, of London, is the architect, and Mr. Stallard, of Havant, the builder, is built of common flint stones, with stone and white brick dressings. There is a substantial oak roof, and the building is well seated. The main feature is a carved altar in Caen stone and various coloured marbles, the gift of Mr. Bulbeck, executed by Messrs. Farmer & Brindley, of London. It is of Gothic design, and represents episodes in the life of St. Joseph, the patron saint. The chancel window is stained with representations of the saints. The total cost has been about 3,000*l.*

PROPOSED NEW CEMETERY AT WANDSWORTH.

DR. HOLLAND, the Government Inspector, having, as the result of a recent visit to the cemetery in Garrett-lane, Wandsworth, given it as his opinion that the cemetery must be closed, and that no interments, in all probability, would be allowed there after twelve months from the present time, steps are being taken for the formation of a new cemetery; and last week, at the desire of the vestry, a meeting was held to elicit the wishes of the ratepayers as to the desirability of procuring a site and proceeding with the construction of a new cemetery. At the meeting it was stated by the chairman that the land proposed to be purchased for the cemetery would cost 10,000*l.*, and that the buildings, including the chapel and boundary walls, together with the laying out of the cemetery, would involve the outlay of an additional 10,000*l.*, bringing up the cost of the cemetery to 20,000*l.* Some of the speakers at the meeting said that this was too low an estimate, and that the cemetery would cost a much larger sum. Considerable opposition to the project was manifested by several of those present at the meeting, on the ground that it would involve a rate for several years to come of 3d. or 4d. in the pound. A resolution was, however, carried to the effect that it be recommended to the vestry to purchase a suitable site for the formation of a new cemetery.

MR. RUSKIN ON MUSEUMS.

AT the opening of a new public hall and museum at Sheffield on the 6th inst., Mr. W. Bragge, F.R.G.S., said that having read in a recent number of "Fors Clavigera" that Mr. Ruskin intended to open a museum in Sheffield in connexion with the St. George's Company, he (Mr. Bragge) wrote to him telling him a museum was already being formed and nearly completed, and that he shou'd be glad to place it at his disposal. He received in reply the following letter:—"Brentwood, Coniston, Lancashire. Dear Sir,—I am obliged by your note, but the work of the St. George's Company is necessarily distinct from all others. My museum may be perhaps nothing but a two-windowed garret, but it will have in it nothing but what deserves respect in art or admiration in nature. A great museum in the present state of the public mind is simply an exhibition of the possible mode of doing wrong, and an accumulation of uselessly multiplied ugliness in misunderstood nature. Our own museum at Oxford is full of distorted skulls, and your Sheffield ironwork department will necessarily contain the most barbarous abortions that human rudeness has ever produced with human fingers. The capitals of the iron shafts in any railway station, for instance, are things to make man wish for shame of his species that he had been born a dog or a bee. Postscript. I have no doubt your geological department will be well done, and my poor little cabinet will enable your men to use it to better advantage, but would be entirely lost if united with it."

THE RAILWAY JUBILEE.

ACTIVE preparations are being made at Darlington for the celebration of the North-Eastern Railway Jubilee on the 27th inst., which will be the fiftieth anniversary of the opening of the Stockton and Darlington Railway. The programme will include the unveiling of the statue of Mr. Joseph Pease, the first treasurer of the Stockton and Darlington Railway, and the first Quaker member of Parliament; the presentation of a portrait (painted by Mr. Macbeth) of Mr. Joseph Pease to the Council Chamber; a grand banquet in the cricket-ground, Feethams, to which it is said upwards of 1,000 guests are bidden; an exhibition of locomotive engines and other objects of railway interest, including some once famous locomotives which did good service in the early days of the railway movement, but which have long been superseded by others of a vastly improved kind; and excursions to places of industrial interest in the neighbourhood.

The Pease statue is the work of Mr. Lawson, and the site selected for it is one of the most conspicuous in the town, being at the junction of Bondgate, Northgate, and the Market-place. The statue will be placed on a granite pedestal, the foundations of which are now in progress.

STATUES.

IT is proposed to erect a statue to Mr. Plimsoll, M.P., in the neighbourhood of the London Docks. The managing committee consists principally of workmen employed by large shipping and manufacturing firms at the East-end.

Immediately after the death of the late Mr. John Candlish, M.P. for Sunderland, it was determined to perpetuate his memory by the erection of some suitable memorial. The memorial took the form of a colossal statue in bronze; the work was given to Mr. Bacon, of Sloane-street, who completed the full-sized model in the spring of this year, and it was on the 30th ult. cast in bronze at the foundry of Messrs. Young & Co., Pimlico. The statue will be erected in Sunderland Park next month.

Chateaubriand is to have a statue erected to him in his native town of St. Malo. Visitors to the quaint Breton stronghold will remember that there is already a monument to him on one of

the cliffs. Millet has just completed a bronze statue, which weighs 1,000 kilogrammes. It represents Chateaubriand seated on a rock, his hand supporting his head, his eyes turned towards the horizon. The costume is that of 1802,—the date of his "Génie du Christianisme.

The bust of the Belgian painter, Baron Wappers, which has been placed at the entrance of the museum at Antwerp, was formally unveiled on the 24th ult.

After considerable delay, there is now every prospect of Mr. Akroyd's statue being erected at the west end of North Bridge, Halifax. Preparations for the substructure of the pedestal will be commenced forthwith. The statue itself is now ready for being placed in the founder's hands. The granite for the pedestal has been ordered from the works of Messrs. Freeman & Son, of Penrhyn, Cornwall.

It is announced that the Greek Government, mindful of the services of Lord Byron to Greece, has offered to supply whatever quantity of Pentelic marble the committee may require for his monument, free of all cost, and that the expenses of its transit will be paid out of the Greek Exchequer.

THE RIGHT TO SEWERS.

AT a meeting of the St. Pancras Highways, Sewers, and Works Committee, on the 6th inst. it appeared from a statement made by Mr. Worrell, chief clerk to the Works Department, that for some time past a contest has been carried on between the Vestry and the Conservative Land Society as to the right of the sewers constructed on the estate of the society at York-rise, the society contending that as they constructed the sewers they have the right to require a contribution towards the cost from any person making a connexion with them, while on the other hand, the Vestry contend that all such sewers are vested in them, and when Mr. J. C. Lawford constructed a sewer on the Dartmouth Park Estate, which was required to be 3 ft. 9 in. the Vestry arranged with him to make it 4ft. 6 in., they paying the difference, which sewer, as well as others, the society threaten to cut off. The vestry having passed a resolution authorising their officers to defend their rights in the event of the society proceeding to carry into effect their threats to cut off the connexions with the sewers, a letter was now read from Mr. H. Smith, solicitor to the Conservative Land Society, referring to the Act 11 & 12 Vict., cap. 63, and stating:—"The position which your Board assumes is different from that pursued by any board of works having connexion with the society's estates. You say the sewers are vested in the Vestry; will you inform me if there be any other authority than the Act above mentioned?" Mr. Worrell stated that he had informed the solicitor that the Act referred to had been repealed.

THE RESTORATION OF THE TUILERIES.

THE *Journal Officiel* publishes the report of the Parliamentary Committee on the proposition of Baron de Vinois for the restoration of the Tuileries. This report, drawn up by M. Monnet, urges that no more time should be lost in repairing the outer walls, as every day's delay will render the work more costly. After sketching the history of the palace and dwelling on its interesting associations, M. Monnet refers to its attempted destruction by the Communists, who were anxious to exceed their predecessors in their hatred for all that was the grandeur of France. He mentions the clock which still points to the hour the building was set on fire, the stability of the outer walls, the rescue of the Louvre, and the generous but always deceitful words, "Liberty and Fraternity" inscribed as if in bitter mockery on the front of the Tuileries. After consulting skilful architects, he finds that a restoration is possible without too great an expense, and expresses regret that four years should have passed by without anything being done. The walls restored and the building covered in, its internal arrangement and destination can be reserved for future consideration. Some suggest that it should be connected with the Louvre by two corridors, and be a simple addition to the Museum; others that it should receive the works of living painters now crowded together at the Luxembourg. M. Glais-Bizoin proposes that it should be the vestibule of an immense glass building exceeding the Crystal Palace in splendour and utility, a refuge for Parisians and foreigners against summer storms and wintry gloom. Some contend, exercising a right given them by the very character of the new constitution, that the Palace should be reserved for a Royal residence, while others reject that contingency. Some, again, would begin by razing it to the ground. Without offering an opinion on any but the last of these proposals, the report, both on architectural and sentimental grounds, urges a faithful restoration of Delorme's work, at least in its external features, and recommends that it be immediately commenced. The matter will probably be discussed on the return of the Assembly, unless, indeed, an early dissolution should stand in the way of its consideration.

The *Times*, remarking upon the report, says that its recommendation will be echoed by the whole of educated Europe, and with reference to M. Glais-Bizoin's proposal, observes that an Englishman of the same mental calibre may some day suggest that the Tower shall be made the vestibule of a music-hall. Fanatics of the opposite school are anxious that the Tuileries should be restored as a Royal palace, to await the coming of the king, for which they are allowed to hope by the revision clauses of the new Constitution. Others would raze the building to the ground, as a mark of the punishment they would inflict on the crimes of which it has been the scene. Thus the debate on the plan of restoration will really turn on the history of France, and let loose the passions of infuriated partisans. It is to be hoped that the good sense and the patriotism of the Assembly will override the rival fanaticisms, in order to perpetuate the greatest political monument of France.

THE DECREASE OF WATER IN RIVERS, STREAMS, AND SPRINGS.

THIS subject has been taken up for consideration by the Imperial Academy of Sciences at Vienna. A circular, accompanied by an instructive report, has been addressed to scientific societies in other countries, in the hope that they may be persuaded to undertake observations which, in course of time, may furnish data for practical use. The Academy calls attention to the fact that for some years past a diminution of the waters of the Danube and other great rivers has been noticed, especially since the modern practice of cutting down forests without regard to consequences has prevailed. The Austrian Engineers and Architects' Union have also taken the question in hand, and appointed a "Hydrotechnic Committee" to collect facts and prepare a report. The Danube, the Elbe, and the Rhine, were each assigned to two members, while others were to examine into the meteorology of the subject, and into the influence which glaciers and Alpine torrents may have on the general result. The Committee regard the question as urgent; they recommend the immediate adoption of remedial measures, and they are unanimous in declaring that the prime cause of the injurious decrease of water is the devastation of forests. It is maintained that the system of injudicious drainage of agricultural districts has seriously interfered with the natural condition of all the rivers of the United Kingdom.

INN ACCOMMODATION FOR STUDENTS.

SIR,—Among the younger members of the architectural profession, at this time of the year, not a few would like a tour on foot in order to see the architectural scenery in England, but I am afraid that owing to the difficulty in obtaining shelter at the inns of a night, many do not persevere after one trip. Within the last quarter of a century it has gradually become the fashion for public-houses, particularly in manufacturing districts, to totally ignore supplying travellers with refreshments or beds, the latter more particularly. This state of things may primarily be laid to the neglect of our magistrates north, south, east, and west of England; they, in their capacity as magistrates, are every day painfully confirmed in their minds against public-houses by the number of drunkards brought before them, and believe that they are doing a public good in trying to do away with public-houses. What I want to see is the law carried out by which public-houses, in our coaching times, were allowed to be kept, viz., that they supply travellers with refreshment and beds according to the capacity of their premises.

As an architectural tourist, I have visited every county in England, and find that in the agricultural districts they are more reasonable and accommodating than in our manufacturing counties. I am now living in a district notorious for the illiberal spirit in which the magistrates choose to exercise the powers entrusted to them, by their refusal to discourage as much as possible every attempt to obtain a licence to a house, no matter how thickly populated the newly-sprung district may be, in the iron districts; the consequence is that shebeens have become the order of the day, and drink is sold after public-houses are closed.

When I first came to Darlington I applied at no less than twenty-two inns before I obtained a bed, some saying they were full, others that they had lodgers, but most of them exhibiting an indifference to my wants, except for drink.

In many towns we find public-houses much extended, and fitted-up as drinking-bars; and now in the North the teetotallers are agitating against their licences being granted, on the plea that they are not selling on the premises for which the licence was granted. This is a very silly interference on their part, and they would be doing a much more useful and generous thing to the public were they to agitate for the purity of the liquors sold by the publicans, instead of knocking their heads against a stone wall.

Another absurd and unjust state of things in this district is this: If a man is brought up on a light charge, say of drunkenness, without any other bad behaviour, he is fined 2s. 6d., and costs which amount to four times the amount of the fine. Upon inquiring as to what actual cost has been incurred by the county for a night's incarceration, it will be found to be a bit of dry bread and tea in the evening, and the same in the morning, the prime cost being 1d. each meal. It seems the costs are really fees to the police officials, from the magistrate's clerk downwards, and considering the county pays them, this is anything but justice in a country pretending to have just laws, and actually causes the police to "run-in" people upon the slightest pretext for the sake of the fees.

Upon the system on which I now find our public-houses carried on, I would beg to suggest that gin-palaces and drinking-bars be compelled to pay a licence treble in amount to those that accommodate travellers with refreshments and beds; for I find it is becoming more and more the case each year with travellers, to find themselves ignored by publicans, through the supineness of our magistrates in not enforcing the law, as they should, equally for the public benefit.

J. B. WATTS.

HANDRAILING.

SIR,—Your correspondent, in commenting on Mr. Jones' work on the above subject, appears to be rather in a fog concerning the matter he has written about; for you doubtless know yourself that there are several works in existence, notably Riddell's, that explain the square cut. I know myself, and many others know also, that the square cut is the system practised in London, and has been for many years, by all efficient staircase hands. My only object in writing is to explain that we in the metropolis, at least, are not in the rear of Mr. Jones or his Liverpool pupils in the matter of handrailing. A. B.

Books Received.

Homes of the London Poor. By OCTAVIA HILL. London: Macmillan & Co. 1875.

UNDER this heading Miss Octavia Hill has wisely brought together half a dozen papers originally published in *Macmillan* and other magazines. They bear the titles, "Cottage Property in London," "Four Years' Management of a London Court," "Landlords and Tenants in London," "The Work of Volunteers," "Why the Artisans' Dwellings Bill was Wanted," and so on. Miss Hill is a clear-headed, sensible woman, not going for too much, and has managed, while improving a certain number of court-dwellings in London, and the tenants thereof, to give a fair pecuniary return, as we understand her, to those who, trusting in her, and impressed with the magnitude of existing evils, provided money for the purchase of demoralised and demoralising house-property, and enabled her to carry out the plans she had formed. Her style of going to court is different from that of ordinary ladies of her acquaintance, and instead of "kissing hands," her hands are kissed by grateful men, women, and children, who find they are being led out of the slough of despond and dreariness

by her sensible ministration. We can remember this lady's expression, some years ago, of astonishment that such places in London as we had the opportunity of describing to her could exist, and should rejoice greatly if this had any share in leading her attention to that field in which she has since laboured so well and so usefully. We offer her our hearty commendation, and we trust that her little book will have a wide sale. It is not less interesting than instructive.

Miscellanea.

Cupboards. — In the construction of old houses, and, in too many instances, of new ones also, a great defect (says the *Sanitary Record*) is to be found in the absence of any mode of ventilation for the cupboards. The omission is a serious one in all cases, but especially in those which are devoted to the reception of food or of dirty linen. In such cases these closets, with their contents, become laboratories for the manufacture of polluted air, which from time to time escapes into the living rooms and makes itself unpleasantly apparent. The remedy for this is not difficult; a few perforations in the doors will be found serviceable, but if practicable the wall of the cupboard should also be perforated so that a thorough draught could be obtained. For damp closets and cupboards which generate mildew, a trayful of quicklime will be found to absorb the moisture and render the air pure, but, of course, it is necessary to renew the lime from time to time as it becomes fully slaked. We have before now commented on the evil in question, and fully believe we were the first to do so.

The Staunton Collection.—A valuable collection of old books, manuscripts, coins, medals, engravings, and other antiquities relating to Warwickshire, lately in the possession of the Staunton family, of Longbridge, near Warwick, was on the 1st inst. formally presented to the town of Birmingham, on the part of a number of gentlemen who had subscribed for its purchase. The collection, which was formed early in the present century, by the late William Staunton, embraces practically the results of more than two centuries of patient work, from the days of Sir William Dugdale down almost to our own time. The books alone number about 2,000 volumes, many of them unique. There are more than 1,500 engravings of interesting county features. The portraits of Warwickshire worthies number 800, of which 267, all from different plates, are devoted to Shakspeare.

Works in Jamaica, West Indies.— One of the most important works being carried out in Jamaica is the construction of new waterworks for the improvement of the water-supply of the city of Kingston. In the carrying out of these works, a dam across the Hope river has been constructed for the purpose of increasing the quantity of water flowing into the culvert. Two reservoirs, at the termination of the culvert near the city, are in course of construction. They will contain 5,000,000 gallons of water. Two filter-beds have also been constructed. From the reservoirs the water will flow into the city and its suburbs by a system of iron pipes. The main pipe is 21 in. in diameter.

German Asphalt.—It is stated that an important discovery has been made of solid bitumen, or asphalt, in the province of Hanover, Prussia, near Gildehaus Railway Station. In 1873 certain concessions were granted by the Prussian Government for coal and other mineral; and in sinking the trial shafts solid bitumen was found at only 3 fms. and 4 fms. from the surface. In one of these shafts, at the depth of only 5 fms., the bitumen is more than 2 ft. thick, and nearly vertical.

Manchester Theatre Royal.—The Manchester Theatre Royal was re-opened on the 4th inst., after being re-decorated and partially remodelled, from plans by Mr. E. Salomons, architect, Manchester. The decorations were carried out by Mr. Thomas; the gas-fittings are by Messrs. Strode & Co., of London, and Mr. Heyworth, of Manchester; and Messrs. Davies & Mawdsley were the general contractors.

New Billiard-room at Windsor.—A large billard-room has just been erected in connexion with the Star inn, Peascod-street, Windsor. It measures 65 ft. by 35 ft., is proportionately lofty, and has a domed roof. The walls are relieved with pilasters. The architect is Mr. P. Byrne, of Park-street, and the tables are to be supplied by Messrs. Burroughs & Watts, of Soho-square.

Discovery at Barking. — Mr. King, the Master of the Barking National Schools, was the other day digging in his garden, which occupies a part of the site of the ancient abbey grounds, when he came across what, on further careful investigation, has proved to be the lower portion of two sides of the interior of a chamber. At each corner is part of a large stone pillar, apparently of the Early Norman period of architecture, and between the pillars to the height of nearly a foot is a smooth wall of cement still bearing plain traces of decorative design, the colouring even now being quite brilliant. Two portions of a tesselated floor were found at the same time, the tiles composing which are in beautiful preservation. It is conjectured that what has now been brought to light is part of what formed either a vestry or side chapel of the old abbey church. It awaits a visit from one who knows.

Wages in the Lock Trade.—A mass meeting of the operative rim and mortice lock and key smiths of Willenhall was held on the 1st inst., to determine whether they should abide by the notices for a 10 per cent. advance which they had served upon the employers, and which expired on Saturday last. Letters were read from Messrs. G. Kelly, G. & J. Starkey, and Thomas Hall, agreeing to concede the rise. Messrs. Green wrote to the effect that they would give the increase after the 13th inst.; but it was decided that the advance must date from the 4th inst., or their men would strike. The meeting resolved to abide by the notices, and to require written agreements from individual employers who were willing to give the advance. The masters also held a meeting, and agreed not to make the concession until the 2nd of October, on account of orders under execution.

Natural Gas.—A letter from Portsmouth, Ohio, July 10th, says:—Some parties at Scioto-ville, a village six miles from this city, struck a vein of gas at a depth of 135 ft. The gas has been burning all day at a height of 15 ft., and it is thought that enough can be obtained from the well to supply the city of Portsmouth. It is rather a novelty to read of the sale of a gas well. One was sold near Millerstown, Pa., recently, for 5,000 dols., and we do not doubt will prove a good investment for its purchasers. According to the *American Gaslight Journal*, gas wells are being obtained at various points on the Ohio river, and it is probable that a large proportion of the manufacturing establishments between Wheeling and the mouth of the river will get their supply of fuel from this source ere long.

New Roman Catholic Presbytery at Bootle.—On the 4th inst. Monsignor Capel laid the primary stone of a presbytery for the priests attached to the mission of St. Alexander's Roman Catholic Church, Bootle. The new presbytery, which will be erected on the south side of the church, is intended to face St. John's-road. It is intended to harmonise with the church, which is Gothic in style. The designs were prepared by the late Mr. E. Welby Pugin, and will be carried out by Messrs. Pugin, Ashlin, & Pugin. The cost is estimated at 2,500*l*. The general contractor is Mr. Edward Hughes, of Miller's Bridge; and Messrs. Roberts & Robinson, of Liverpool, have been entrusted with the brick and stone work.

Proposed New Orphanage at Bolton.—In April of last year, Mr. James Eden, of Astley Bridge, near Bolton, bequeathed the whole of his personal property for the purpose of founding an orphan asylum at Astley Bridge, for children whose parents at the time of death happen to dwell within the area of the Bolton Poor-Law Union. The executors have handed over to the orphanage trustees the sum of 40,000*l*. Of this sum 10,000*l*. is to be expended in the erection and founding of the building. Mr. J. J. Bradshaw, architect, Bolton, has been instructed to report upon the best site for the buildings, and also to prepare the requisite plans.

A New Agricultural Labourers' Movement.—The executive committee of the Kent and Sussex Labourers' Union have unanimously accepted a scheme proposed by Mr. Simmons, the honorary secretary to the union, to secure land and cottages for the members. Mr. Simmons's proposal is to establish a fund by means of 2d. weekly subscriptions, and to hold half-yearly ballotings for sums between 100*l*. and 300*l*., each share to entitle the member to 100*l*., and to be repaid in twelve annual instalments, without interest.

The Reading Borough Surveyorship.—At the meeting of the Reading Town Council, on the 1st inst., it was proposed, on the recommendation of a committee, to increase the salary of Mr. Parry, the borough surveyor, from 300*l*. to 400*l*. per annum. It appeared Mr. Parry was originally appointed as surveyor to the Local Board of Health, and that, since the resignation of Mr. Woodman, he had in addition discharged the duties of borough surveyor without increased remuneration. The decision of the question was postponed pending the appearance of a report by a committee appointed to consider what changes are necessary in the staff of corporation officials

Battersea Rise.—A memorial tablet has just been erected to the memory of the late Rev. Israel M. Soule, who for many years was minister of Battersea Chapel. The memorial was the result of public subscriptions. The order for this memorial was intrusted to Mr. S. Horner, sculptor. The design was by Mr. Lloyd Williams, and the work has been executed for Mr. S. Horner during his long illness in North Wales, by Messrs. Walker, Emley, & Beall, sculptors, of Gateshead-on-Tyne. The style of the design is Early English. The size is 6 ft. by 4 ft. in statuary marble.

Electric Railway Signals.—Mr. C. F. Spagnoletti, of Slough, has lately completed for the Australian Government some railway signals on a new principle. He substitutes the action of electro-magnets, which form part of the distance signals, for that of the cranks, levers, wires, and rods by which such signals are at present moved. The mechanical arrangements, on account of the stretching of their parts and of the friction of their working, limit the distance which can intervene between the signal and the operator; but the magnetic arrangement removes these difficulties, and may be as easily worked at 100 miles as 100 yards.

The New Public Health Act.—The local authority at Saffron Walden are, perhaps, the first to put in force the provisions of the new Public Health Act. On the 31st ult. Mr. Horace Browne, of the Norfolk circuit, applied to the magistrates in their behalf to make an order upon Mr. R. Perry, an owner of some dilapidated tenements there, to put the cottages in an habitable state of repair, and to close them until this had been done. Evidence having been given, the magistrates made the order.

Winter Gardens for Blackpool. — The prospectus has been issued of the Blackpool Winter Gardens and Pavilion Company, with a capital of 50,000*l*., for providing gardens and pleasure-grounds, with a pavilion and other accessories for Blackpool. A purchase has been arranged, for 23,000*l*. of the freehold estate of Bank Hey, comprising large dwelling-house (capable of being converted to the use of the company), conservatories, aviaries, forcing-houses, stables, and about 18,000 yards of land.

Autumn Exhibition of Modern Pictures in Liverpool.—The private view of the Autumn Exhibition of Modern Pictures, in Liverpool, under the auspices of the Fine Arts Committee of the Corporation, took place on the 4th inst. Several of the principal contributors to the Royal Academy collection exhibit, including Messrs. Poynter, Alma Tadema, Calderon, Prinsep, Herkomer, Tenniel, Holman Hunt, Sant, Orchardson, and other artists of note.

The Birmingham Gasworks.—The purchase by the Birmingham Corporation of the works and plant of the Birmingham Gaslight and Coke Company was completed last week, and the possession of the property transferred to the Gas Committee in exchange for the purchase-money of 450,000*l*. It is expected that the legal formalities in connexion with the acquisition by the town of the undertaking of the Birmingham and Staffordshire Company will be completed by the end of the present month.

Kent Archæological Society.—The Council of this society met at Maidstone, on the 31st ult., Earl Amherst in the chair. A resolution was passed, expressing the regret of the Council at the death of Mr. W. J. Lightfoot, who had for ten years taken charge of their rooms and collections at Maidstone. It was resolved that Mr. Edward Bartlett be appointed clerk and curator to the Kent Archæological Society at Maidstone.

The New Opera House.—The first brick of Mr. Mapleson's new opera house, on the Embankment, was laid on Tuesday last by Mdlle. Tietjens.

The Iron and Steel Institute commenced its annual congress at Owen's College, Manchester, on the 7th inst., Mr. William Menelaus, president, in the chair. Mr. D. Adamson, F.G.S., read a paper descriptive of quadruple action steam-engines, and a discussion followed on a paper which was read at the last meeting of the Institute in London, on the multitubular boiler. The afternoon was spent in visiting various works in Manchester and Salford.

Strike of Plumbers at Bradford.—On the 6th inst., 200 journeymen plumbers of Bradford turned out on strike, in consequence of the refusal of the masters to accede to a demand for an increase of wages from 30s. to 33s., a reduction of hours from 52 to 49½, and a payment of 9s. a week lodging-money for country jobs. The masters agreed to the reduction of hours, but refused increase of wages, and would only give 4s. a week lodging-money.

Purcell's Grave in Westminster Abbey. With the sanction of the Dean, it is proposed to reinstate, in a durable and somewhat costly form, the long quaint Latin inscription which once marked Purcell's grave in Westminster Abbey. When this object has been effected any remaining balance will be handed over to the Royal Academy of Music, with a view to founding a prize or scholarship which shall bear the name of Purcell.

The Church of St. Mary Woolnoth.—The Church of St. Mary Woolnoth, Lombard-street, is undergoing extensive alterations. The galleries and loft will be removed, and the four walls of the church thrown open. All the old box pews and free seats will be removed from the body of the church, and in their stead open pews will be constructed. The communion-table, which is now on a level with the floor, will be raised on two steps.

The Penzance Borough Surveyorship.—At the meeting of the Penzance Town Council, on the 25th ult., the borough surveyor, having completed his first year in that office, reminded the council that the terms of his appointment were that if he gave satisfaction for the first twelve months, his salary of 150*l.* was to be made 200*l.* The surveyor having given every satisfaction, the augmented stipend was unanimously agreed to.

Ironworkers and the Iron Trade.—A report issued by the officers of the Amalgamated Association of Ironworkers of Great Britain, makes known that the number of paying members in the past six months was a few over 10,000. It regrets the great falling off of the members in Staffordshire, where, in the last month of the six months' return, the number of paying members had fallen to 1,350.

New Skating Rink at Kensington.—The new skating rink facing the Kensington (Addison-road) Railway Station was opened on the 4th inst. The floor of the rink measures 202 ft. by 55 ft., and is of the same material as that at Prince's Club. The works have been carried out by Messrs. Green & King, of New Bond-street.

New Town-hall at Holyhead.—The opening of the new town-hall at Holyhead took place on the 31st ult. The building was designed by Mr. John Thomas, architect and county surveyor, Carnarvon, the contractor being Mr. Richard Williams, of Holyhead. The structure comprises a number of committee and club rooms, and an assembly-room capable of seating 900 persons.

Pictures at Brighton.—The second annual exhibition of modern pictures, in oil and water-colour, has been opened (September 9th), in the Royal Pavilion Gallery. It comprises 567 pictures and drawings, and three pieces of sculpture.

The British Land Company.—It is stated that the British Land Company (Limited) has purchased the West Kensington Park Estate, near the Addison-road Railway Station, and the Carlisle House Estate, Hampstead, the purchase-money for the two being 54,500*l.*

TENDERS

For new school buildings, with residence for teachers, for the Walterstone School Board. Messrs. Haddon Brothers, architects:—

Jones	£1,148 0 0
Ford	990 0 0
Foster Brothers	973 0 0
Lewis	753 0 0
Merrick	744 0 0
Giles	685 0 0

For new schools for the Stoke Prior School Board. Messrs. Haddon Brothers, architects:—

Page & Son	£1,165 0 0
Smith (accepted)	1,030 0 0

For new road and sewer on the Albert Park Estate, Malvern. Contract No. 1. Messrs. Haddon Brothers, surveyors:—

Osborn (accepted)	£409 10 0

For additions and alterations to Pennoxstone-court, Herefordshire, for Sir Edward C. Cockburn, Bart. Messrs. Haddon Brothers, architects:—

Bowers	£1,725 0 0
Newell	1,530 0 0
Prossen (accepted)	1,400 0 0

For new school buildings for the School Board of Llangattock-nigh-Usk, Monmouthshire. Messrs. Haddon Brothers, architects:—

Jones & Co.	£970 0 0
Sketch	966 0 0
Bowers	927 0 0
Foster Brothers	875 0 0
White	836 0 0
Powell	700 0 0
Giles & Palmer	561 0 0

For proposed alterations to the St. George's minor hall and house in Mortimer-street. Mr. Beazley, architect. Quantities not supplied:—

Perkins	£1,036 0 0
Staines & Son	996 0 0

For Vicarage House, Ashford, for the Rev. — Dickinson. Mr. Law, architect:—

Bartlett	£1,765 0 0
Messom (accepted)	1,747 0 0

For stabling at farm-building, Ashford, for Mr. Hart. Mr. Collings, architect:—

Bartlett (accepted).

For erecting first portion of proposed buildings at Cambridge, for the County College Association. Contract A. Messrs. John Giles & Gough, architects. Quantities by Mr. C. H. Goode:—

Bell & Sons	£7,247 0 0
Thoday	6,940 0 0
Bayes & Ramage	6,940 0 0
Hill, Higgs, & Hill	6,438 0 0

For house at Upperton, Eastbourne, Sussex, for Miss Horswell. Mr. R. K. Blessley, architect:—

Skinner	£1,167 0 0
Longley	1,080 0 0
Vidler	1,027 0 0
Hounson & Son	1,013 0 0
Stevens	1,010 0 0
Chapson	950 0 0

For alterations to the Broad Face Hotel, Reading, for Messrs. Wethered. Wm. & J. T. Brown & F. W. Albury, architects:—

Carter	£790 0 0
Gladden & Son	782 0 0
Bourton	730 0 0

For stabling at Guildown, Guildford. Messrs. E. W. Lower & Son, architects. Quantities supplied by Mr. Henry Moore:—

Nye	£685 0 0
Mitchell	679 0 0
Mason	676 0 0
Horn	650 0 6
Colls & Sons*	633 0 0

* Accepted for reduced plan.

For alterations and repairs at The Lamb Tavern, Cattle Market, Copenhagen fields, for Mr. W. H. Ashley. Mr. Thomas Arnold, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Buffett	£1,280 0 0
Phillips	1,232 0 0
Carter	1,030 0 0
Newman & Mann	1,020 0 0
Williams & Son	983 0 0

For alterations to a warehouse in Earl-street, Blackfriars, for Mr. S. Smith. Mr. Thomas Chatfeild Clarke, architect. Quantities supplied by Mr. Mark King:—

Wheeler	£578 0 0
King & Son	540 0 0
Williams & Son	538 0 0
Newman & Mann (accepted)	528 0 0

For pulling down and re-building the Goldsmith's Arms, corner of Lant-street and Southwark Bridge-road, for the City of London Brewery Company, Limited. Mr. Finch Hill, architect. Quantities by Mr. A. J. Gate:—

Thompson	£3,445 0 0
Payne	3,313 0 0
Langmead & Way	3,176 0 0
Newman & Mann	3,161 0 0
Toms	3,103 0 0

For pulling down and re-building The Bald Faced Stag, Worship-square, Finsbury, for Messrs. Combe & Co. Mr. H. K. Cotton, architect. Quantities by Mr. A. J. Gate:—

	House.	Fittings.
McLachlan	£2,879 0 0	£468 0 0
Williams	2,826 0 0	450 0 0
Browne & Robinson	2,816 0 0	428 0 0
Foxley	2,770 0 0	459 0 0
Newman & Mann	2,715 0 0	434 0 0
Ennor	2,492 0 0	463 0 0
Toms	2,463 0 0	400 0 0
Patrick	2,347 0 0	420 0 0

For the erection of a house at Upper Norwood, Surrey, for Mrs. Welch. Mr. R. M. Shaw, architect. Quantities supplied by Mr. C. Stanger:—

Newman & Mann	£2,956 0 0
Cooke & Greea	2,906 0 0
Stewart	2,643 0 0
Earl	2,593 0 0
Nye	2,521 0 0
Bowyer	2,463 0 0
Tongue	2,390 0 0
Jarrett	2,327 0 0

For the erection of a new English Presbyterian church, at the corner of the Harrow and Nicholl-roads, Willesden. Mr. Thomas Arnold, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Newman & Mann	£3,915 0 0
Williams & Sons	2,842 0 0
Brown & Robinson	2,666 0 0
Burford	2,547 0 0

For proposed granary building and chimney-shaft, Farrington-road, for Mr. G. S. Mumford. Mr. Edward H. Badger, architect. Quantities supplied by Mr. Chas. F. Selby:—

Patrick & Son	£4,438 0 0
Newman & Mann	4,325 0 0
Webster	4,230 0 0
Colls	4,229 0 0
Lucas Brothers	4,170 0 0
Jerrard	4,090 0 0
Macey	4,082 0 0
Ryder & Son	4,064 0 0
Manley & Rogers	3,950 0 0
Brass	3,873 0 0

For the erection of three detached and one semi-detached house, at Wood-green, for Mr. Thomas Clark, Messrs. E. Habershon & Brock, architects:—

Vincent	£3,490 0 0	£955 0 0
Sharp & Maxwell	3,456 0 0	840 0 0
Stamp & Bowtle	2,987 0 0	898 0 0
Ward & Co	2,880 0 0	885 0 0
Foard	2,850 0 0	754 0 0
Bowman	2,767 0 0	747 0 0
A. Vincent	2,732 0 0	824 0 0
Timewell	2,785 0 0	725 0 0
Brown	2,759 0 0	739 0 0
Bysh	2,543 0 0	900 0 0
Aitchison & Walker	2,531 0 0	675 0 0
Paice	2,512 0 0	636 0 0
Prout	2,000 0 0	590 0 0

For the erection of two shops and premises in the Uxbridge-road, Ealing, for Mr. George Gosney. Mr. E. H. Horne, architect. Quantities supplied:—

Gibson	£3,575 0 0
Stops	3,540 0 0
Adamson	3,388 0 0
Rowe	3,265 0 0
Brunsden	3,189 0 0
Lewis	3,163 0 0
Nye	3,103 0 0

For pair of semi-detached villas, Lewisham-road, Lewisham, for Mr. G. S. Bayley and Mr. J. Watson. Messrs. Ingram & Hollands, architects. Quantities supplied:—

Brand (accepted)	£2,030 0 0

TO CORRESPONDENTS.

C. D. (a charge for the work actually done, and an allowance for the loss sustained by the work not being proceeded with, could probably be maintained; but this would depend, to a certain extent, on circumstances concerning which we are ignorant).—T. S (pity a little more variety was not introduced).—Scrip (if we gave his name, we should feel compelled to say the work was badly done).—P. G. (according to circumstances. The pricker chiefly).—Ventilator (we see no reason why we should allow one "inventor" to puff his own arrangements under guise of showing the weaknesses of another).—F. H (why not write signature, so that it may be read?) Masons.—A. C.—Mrs. P.—G. B.—Brick.—M. T.—J. C. M.—Constant Reader—H. C.—H. & B.—Trellis.—W. H. P.—L. B. & W.—H. Brothers.—H. W. S.—H. S.—K. G. H. W.—C. C. H.—W. E.—C. J. S.—D. C.—X. L.—J. W.—P. & A.—M. P.—R. L.—C. S.—L. & F.—T. J.—A. D. H.—E. C. (Liverpool-road).—J. H. (next week).—T. P. (next week).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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The Builder.

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The Fourth Centenary of the Birth of Michelangelo.

THE beautiful city of Florence put on her most brilliant attire, and aided by perfect weather and its lovely sky, invited her citizens and the strangers who had come from far and near for the occasion to do honour to the memory of her most celebrated artist. These fêtes should have been held on the 6th of March, the birthday of Michelangelo, but circumstances obliged the postponement till the 12th and two following days of this month.

On the 12th was given a concert in the hall of the Cinque Cento, in the Palazzo Vecchio, at which the most appropriate production was that of one of the madrigals of Michelangelo, set to music by one Rampazato in 1565, and well sung by female choristers. At three o'clock a procession left the Piazza della Signoria, consisting of representatives of all the trade associations in Florence, carrying their respective banners; of the literary societies, representatives of the art societies and literary men from foreign countries; of the press, the Prince di Carignano, relative of the king; a crowd of military officers; the Prefect Ubaldino Peruzzi; the Syndic of Florence; and a regiment of infantry. Accompanied by twelve bands, the procession passed to the Via Ghibellina. Over the entrance-door of the house of the artist had been placed his bust in bronze, the work of the lamented Papi, and the gift of the owner of the bronze foundry, Sig. Galli. This was uncovered at the approach of General Dezza, representing the king, and by whose side walked the last male representative of the Buonarotti family,—a young military volunteer. Each flag was lowered as the procession passed the bust to do honour to the great artist. From the portal, Allardi, the poet, delivered an address, received with enthusiasm by those who heard it. The part of Via Ghibellina where stands the old palace of the Buonarotti being narrow, the number of hearers was small.

The procession next started to gain the church of Santa Croce, where is the tomb of Michelangelo. At the foot of the tomb was a beautiful wreath of laurel, encircling a Latin inscription sent by the artists of Stutgard. Before the tomb stood a low column of black marble 2 ft. in diameter, round which hung a magnificent wreath of silver oak-leaves and shining berries, the hanging branches tied at intervals with a silver riband, on which was engraved the name of the town and society contributing to the wreath. Under each leaf was graven the name of the artist donor. The garland, of perhaps 300 leaves or more, is fastened by a gold clasp, on which is graven that the wreath is the gift of the artists of Germany. Grouped round the tomb, the representatives, the literary visitors, the officers, &c., the Count Pelli Fabbroni, the "Conservatore" of Santa Croce, addressed a few words to those assembled,—"Your eyes can rest," he said, "your hearts beat, on the sepulchre of the divine artist and zealous citizen, honoured alike here with Dante, Galileo, and with Machiavelli. At twenty-nine years of age, Michelangelo was a great artist, had sculptured the 'David,' and drawn the Pisan cartoon. To the age of eighty-nine he maintained his active life, though saddened by the greatest of sorrows, that of seeing his city enslaved, the city which he had so zealously defended, both with his patient, judicious counsel and with the force of his arm. This has been his sepulchre only since 1584, when his body was removed from the Church of the Apostoli in Rome. A few years ago I had to visit the tomb: within no form was found,—a few light ashes alone remained of the body. Of the great man alone remain his sublime works, and the records of his great virtues."

Doctor Professor Flarke, of the Academy of the Fine Arts at Saxe-Weimar, presenting the beautiful silver wreath, said:—"This silver crown, which we are charged to present to the City of Florence, is a gift from the German nation. Germans, from the Baltic to the Alps, are uniting with the Italian nation to do honour to the illustrious artist."

Professor Lutzow then presented the letter of congratulation to Peruzzi, and during a rather lengthened discourse, acknowledged with grateful words the artistic light and learning derived from Italy for Germany's benefit:—"From the cloudy north, beyond the snowy Alps, broke forth a horde of Germans desirous of light, and envious of Italy's blue sky. Bringing with them ruin and waste, they ruined themselves without being able to take back to their country the good they needed. But devastated Italy, generously returning good for evil, sent to their dark country the light of faith, of erudition, of the arts,—and the more she gave the richer she became, and when burst forth a new springtime and Michelangelo produced works whose equal had not been since the time of Phidias, the seeds of the beautiful not only yielded its fruits in Italy, but throughout the world. Your Buonarotti was sent not only for Italy, but for Germany. In grateful remembrance we have resolved to place this day his bust in the paternal house of Goethe—the house held sacred by all Germans. May the people, united in peace and devotion, enjoy without envy the treasures of intellect which increase by participation. May we unite in respecting our great masters and models. While beyond the Alps we salute you with "Long live the memory of Michelangelo! Prosperity to the city of Florence! Prosperity to the Italian people!"

From Vienna was read a congratulatory address, from its Society of Artists, saying that they were honouring the day by uncovering a statue of the great artist placed before the house of the society.

From the church of Santa Croce the procession moved to the beautiful Piazzale of Michelangelo, where has been placed a bronze copy of the "David," and the inscriptions on the base of the pedestal were uncovered.

The sun was setting on the distant landscape, and on the hundreds of thousands of well-ordered persons assembled on one of the loveliest spots to be found in Europe.

On Monday, 13th, was inaugurated the remarkably interesting new Museum of Michelangelo in the building of the "Belle Arti." The "David" has had a temple erected for it; and now stands in an apse of the building, where it can be seen to greater advantage than ever. In a room adjoining have been placed casts, full-sized, of most of the great sculptor's works. His "Moses," "Pieta," the marvellous "Prigione" originally intended for the tomb of Julius II., the wonderful bust of Paul III., the so-called "Cupid" of the statues on the Medici tombs, and of the St. John Baptist discovered lately at Pisa, and in the possession of Count Rosselmini Gualandi; the crouching Caryatides, &c. A copy in oil (diminished) of the "Last Judgment" and a fresco are seen; and in a room set apart are perfect photographs of the different parts of the roof of the Sistine Chapel,—copies of sketches in the possession of the Pope,—sent by Pio Nono; copies of sketches in the Vienna Galleries, of those in the collection of the Queen of England at Windsor, in the University of Oxford, of those in the Louvre, and elsewhere.

Addresses were sent by the Royal Academy of Vienna, bound in a magnificent cover; also from the Viennese Society of Artists, from Copenhagen, Stockholm, Saxe-Weimar. It was painful to find no addresses from England; that all efforts to impel our art societies to send copies of the works we possess had failed. From our national and private collections a valuable addition might have been sent to the museum. It is never too late to mend, and space is left for many more works, and it is to be hoped we shall hasten to remedy the apparent lack of interest in the great artist, by forwarding copies of the works we possess. The museum is the most interesting part of the fêtes. The character of the man is seen in his great works. He determined, with his great force of will, to show the power and truth to be exhibited in marble; it is the reality and veracity of the human form that strikes the mind on looking on his works. There is not beauty, but pure truthfulness. The female figures of Michelangelo do not exhibit beauty. As said Allardi, "the Graces knocked at his door, but were not admitted." "His neighbour and follower, Raffaelle, however, gladly gave them entrance."

His ideas of beauty were of the highest degree, but his greatest aim was to show forth that beauty in exquisite degrees of perfect form. His life was one of hard struggles, severe disappointments, a suffering from injustices,—his heart bleeding for his country's misfortune. His patriotism created fresh bursts of genius in him, so that his countrymen could rely on his powers when his city's fortifications had to be raised, or on his deep religious zeal when the finest of temples was to be erected to God's honour. His patron, the warrior pope, could rely on his powers and untiring energy when adorning his chapel with the most glorious emanations from the human conception and hand of artist. Michelangelo's love for woman took more the character of adoration, as may be seen by his sonnets. His nature—his genius—resembled those of Dante. They might have been of one family, sprung from the same race, living in the same age. Of both, their country are equally proud; and the honour done to the sculptor, painter, architect, engineer, and poet in one is as heartily felt by his compatriots as that rendered to their other poet some few years ago.

The Congress of Architects and Engineers was inaugurated later, and will continue during the week.

THE ÆSTHETICS OF HOUSE BUILDING.*

THE most noteworthy example of the consideration of house-planning in regard to effect only is Bacon's well-known essay "On Building," the title of which, by the way, must be regarded as conveying only the restricted sense in which the verb "to build" is still sometimes used in conversation, as referring merely to the speaker's intention to provide a house of his own, instead of renting one. In connexion with house-planning on a great scale, Bacon's remarks are interesting as indicating the view of the subject by a mind of the first order, greatly given to magnificence both in regard to mental and material tastes, and regarding the house as the most splendid and sumptuous outward adornment of life. His purely æsthetic view of the matter is sufficiently proved by the short and almost contemptuous sentence with which he dismisses the question of "offices," after giving a lengthened description of the show portion of his ideal house:—"As for offices, let them stand at a distance, with some low galleries to pass from them to the palace itself"; and this is all the notice he vouchsafes to that portion of the edifice, considered so all-important at present. It may fairly be questioned whether the reaction from the purely palatial idea of a large residence has not been carried too far in the present day, and the practical exalted to an undue prominence over the artistic. No doubt, the school of Vanbrugh, and of Soane, and the Adams, and others, carried the purely architectural theory of the mansion to an extremity, and left too good reason for the criticism of the nobleman, who remarked on seeing the plans of his new house, that it would be "very well for a heathen god." But the contempt for interior architectural effect, in the old sense of the words, seems exaggerated, and implies the decay of a sense of grandeur and princeliness in the style of a great dwelling, which was not without its value. This feeling crops up in the literature of the day a good deal. Mr. Trollope is very fond of giving a poke at architectural splendour, as when he satirises the Duke of Omnium's residence, where the architect, in contriving a magnificent entrance-hall "for his own honour and glory," had, he says, forgotten to furnish the Duke with any rooms in which he could live. Bulwer, a writer who inherited in a peculiar degree the taste for splendour and richness of surroundings which was characteristic of a former period of English society, evidently noted this modern change of taste, and gives a sort of typical hint of it in the remark of the Americanised *parvenu* in "My Novel," who shows his new house to his relative with the remark, "Handsome elevation—Classical, I take it, eh? But you should see the offices." This is just an epitome of the modern English notion in regard to a first-class house. Those architects who are engaged most in such work find that the demand for every possible expedient which can multiply and improve "creature-comforts" (to use an old-fashioned expression) in a house, especially in regard to the commissariat department, has reached an extreme point at the present time. To sacrifice real comfort for show is, of course, absurd. But there can be no question whatever that the preference for a fine effect in a house, even at the expense of some curtailment of its smaller comforts, implies a higher kind of taste than that which is content to inhabit an ugly and uninteresting building provided the kitchen department is adequate to the daily production of a first-class *menu*, and that every arrangement which can contribute to bodily comfort is proportionately elaborated. The former taste, though it may be carried too far, belongs at least to a mental, the other only to a material civilisation, which is what we are tending a great deal too much towards in the present generation.

We may take a hint or two further from Bacon's ideal palace. His notion of the approaches to it is conceived in a truly sumptuous spirit, though only added as an afterthought. "You must have before you come to the front three courts,—a green court, plain, with a wall about it; a second court, of the same, but more garnished with little turrets, or rather embellishments, on the wall; and a third court to make a square with the front, but not be built, nor yet enclosed with a naked wall, but enclosed with terraces leaded aloft, and fairly garnished on the three sides, and cloistered on the inside with pillars, and not with arches below." This last injunction against arches is curious as indicating the classical feeling already rising into prominence and endeavouring to displace the peculiarly Gothic feature—the arch. The system of courts, as indicated here, shows that Bacon appreciated the effectiveness of a gradual transition from a natural to an architectural character in the approaches, as well as the culminating effect of increased elaboration in each stage of the approach. Whether, on the other hand, a series of courts is the most effective way of approaching the main entrance may, perhaps, be questioned. It is picturesque, and the comparative seclusion it affords to the mansion itself gives some of that home-like character which a "palace" generally has a tendency to miss; but an avenue or broad drive, bordered perhaps with statuary or architectural adjuncts of some kind, is more stately. This might, of course, be added to Bacon's three courts, but the outer one would in that case need a grand central gate to furnish the culminating point of the approach, and thus form the real front entrance. In regard to the internal arrangement, the principle first insisted on in the essay "On Building" is that you cannot have a perfect palace, "except you have two several sides, the one for feasts and triumphs, the other for dwelling; to be uniform without, though severally partitioned within, and to be on both sides of a great and stately tower in the midst of the front, that, as it were, joineth them together on either hand." The philosopher, it will be observed, is with us in our advocacy of the tower as an adjunct of a great house; whether the central position is so good for it is another question: we should say that would give a little too much the aspect of a public building rather than a residence. But what are we to say of the direct architectural heresy of the two sides of the house for different objects, "severally partitioned within," but "uniform without"? Modern architectural criticism almost universally condemns this; yet the arrangement not only approved itself to such a mind as Bacon's, but has been practically the favourite one with the builders of nearly all the great houses of England since the Gothic period. The "stately homes" which are among the best show-places of the country, and which every one visits with pleasure, are nearly all on this formal architectural type, in which the outer ranges of windows and pilasters give no indication of the sometimes very irregular and involved internal plan, at certain nooks of which the visitor looks curiously out of the window to find out where, in the stately formal front which he had seen from without, the window of this little out-of-the-way "ante-chamber" or "closet" occurs. The probability is that he finds it is lighted by *half* one window of the range, the other half doing duty for some other nook or passage. There is really an interest of its own in this kind of odd discrepancy between the exterior and the interior, regarded as characteristic of the period and taste in which the building was contrived. In a new building such want of thought as to the relation between plan and design seems merely carelessness, and rather annoys one than otherwise.

At the same time Bacon's suggestion touches upon what really is one of the most important problems in regard to house-planning on a palatial scale,—the relative arrangement of show or reception rooms and of family dwelling-rooms. If the symmetrical design with a central feature is adopted as the leading idea of the building, there is no alternative as to the family rooms, except to falsify the external architectural design by getting them in irrespective of it, or to provide for them in a separate block. The latter system is far preferable as regards the combination of effect with truthfulness of design, though the difficulty of making it convenient in regard to internal thoroughfare and communication may be considerable. For where symmetry of external effect in the main block of buildings is an object, the family block, so to speak, unless forming part of a quadrangle in the rear, can only be added so as to join the main building cornerwise and leave the symmetry of its most important front unimpaired. To add it as a recessed wing at one end of the main centre is inconsistent with symmetry, as it is impossible to get anything to form a proper balance at the opposite extremity. The cornerwise arrangement is illustrated in Osborne, which may be taken as a sort of typical instance. The difficulty, of course, is the small space which is thus left for connexion and thoroughfare between the two blocks, and the lengthy routes which are formed in consequence; but as it is to be supposed that intercommunication between the show buildings and the dwellings is not very constant or continuous in such a case, this is of less importance than in mansions on not so palatial a scale. The attempt to combine this corner-wise grouping with absolute symmetry of the whole edifice is seen in the well-known and remarkable plan of Holkham, with its four symmetrically disposed angle-blocks; but, however stately and imposing on paper, the utterly unpractical character of such a plan in regard to intercommunication is too obvious to need remark; it represents an absolute sacrifice of convenience to effect, which is really bad æsthetic as well as bad plan. It is worth noting that the identical arrangement of Holkham occurs in the Château of La Muette, of which the plans are given in the old work by Androvet,—"*Les plus excellent Bâtiments de la France*"; but the pavilions are brought somewhat closer to the centre, and a circular staircase formed in what may be termed the "isthmus" which connects them with the main building.

We may assume, however, that regular blocks, irregularly or obliquely connected, afford the best solution of the problem of making the dwelling-rooms part of the design in a palatial mansion, without either interfering unduly with symmetry or making the design a contradiction to the plan. And such an arrangement affords also that very effect which we spoke of in our former article as suitable for the highest class of mansions,—"a symmetrically designed centre with unsymmetrically grouped dependencies."

The principle of internal grouping and arrangement to be adopted, in regard to effect, admits of much less question in the case of the show portion of a mansion of the highest rank than in any other. Here, where stateliness is above all a desideratum, there can be no hesitation in judging a symmetrical disposition of the rooms on each side of a centre to be preferable to every other; while the hall and grand staircase should openly and prominently bespeak the importance of the rooms to which they give access, in their spacious proportions and central position. No system of plan gives such opportunity for this description of effect as the Italian *cortile*. No ingenious or picturesque arrangement by which the staircase is put on one side or cornered, can equal, on the whole, the impressiveness and stately effect of the large central hall and symmetrically-disposed staircase. The employment of corridors, which in houses of lesser grade are not only a necessary means of intercommunication, but an important source of effect, is to a great extent superseded in the case of rooms intended mainly for ceremony, and in which the effect of direct communication *en suite* is much finer, of course, than a lobby and corridor connexion. There is always, however, the question whether the staircase, as the most open and public part of the house, should be made the main centre of effect, or whether the climax should rather be found in the principal saloon. We incline to regard the latter as the truer principle, in any houses beyond the ordinary dwelling-house size. It is true that in the palatial mansion, on a large scale, and where space need not be economised, the hall and staircase, carried up the full height of the building, do appear to afford the best opportunity for

* See p. 810, *ante*.

architectural grandeur of effect; still, we hold it at least a matter of doubt whether the access to the rooms should so eclipse the latter in effect as to produce an anti-climax. In that numerous class of mansions which are just a grade below the palatial class, and where a certain stateliness is aimed at without the ostensible setting apart of a set of rooms for ceremony only, there can be little doubt that the staircase ought to hold a secondary position, as an attempt to make it the principal centre of effect can only be carried out with a loss of space that might be better used, and by giving it a size and importance disproportioned to the rest of the house.

It is in this latter class of large, but not palatial houses, that the greatest variety of effects in planning is to be looked for, and may be indulged in; though these varieties may in fact be reduced to only two or three principles. We might call these the Classic or "formal" principle, the "informal" principle (which includes the Elizabethan and late Mediæval form), and the hap-hazard or "hide-and-seek" principle, which last is a great favourite among those who are "their own architects." The formal plan implies a central entrance and central hall, though not necessarily a centralised arrangement of the rooms. This was, however, the favourite arrangement during the Palladian period in England; a common form of plan being an octagonal or circular entrance-hall, leading through a vestibule and to a circular reception-room opposite, from which access was obtained to the other principal sitting-rooms disposed on either side of it. This is no doubt a remarkably dignified and effective plan for a house on a moderate scale, but it sacrifices domesticity of effect for dignity, by bringing the principal rooms too prominently and immediately opposite the entrance. Very frequently the staircase was interposed as part of the suite between the entrance and the reception saloon; in another kind of scheme not infrequent the stairs were more or less cornered, and the vestibule formed a colonnade from the hall to the saloon door. But in all these cases the source of the peculiarly dignified though un-homelike effect is in the direct central route from the entry to the drawing-room, by which the feeling of privacy and retirement is altogether sacrificed. In a comparatively small house, there must, in fact, be a choice between two objects,—homeliness or stateliness; there is not room to combine them. For those who prefer the latter quality in their dwelling it is a satisfaction to know that it can always be more or less attained, even in what might be called small houses, by a rigid adherence to symmetry and a centralisation. An extreme specimen of this is to be seen in a plan given in Gramm's *Der Architekt* (a very absurd book, by the way), in which a large entrance-vestibule leads to a square central hall, on the opposite side of which is the staircase, behind an arcade and occupying the width of the whole side of the hall, and to right and left the dining-room and drawing-room open from the centre of the opposite sides of the hall; two rooms of the same size and each ending in a circular apse. This is an extreme case of the entire subordination of comfort and privacy to the expression of spaciousness and dignity. The mistake (for it certainly is one) of making the dining and drawing rooms identical in size and shape, is, however, hardly to be found among even the most formal works of the best English architects of the Classic plan period, who, in fact, showed much taste in their variations upon the square, octagon, and circle for rooms for different objects. "Doddington," in Cheshire, by Wyatt, though not an example of the extreme of formal plan (for the hall is at one corner of the block, but entered centrally and with a centre door to the saloon opposite), is a good specimen of this variation in type of room,—the hall giving access to a circular saloon, to the left of which and entered from it, is a rectangular drawing-room; while the dining-room to left of these again, and running from front to back of the house, takes the form of a large straight-sided room with the ends forming segments of a circle,—a shape very effective, and admirably suggestive in regard to decorative treatment. A prettily-planned domestic corner of a house is shown in Denton Hall, by Carr, where the principal bed-room suite fits into one angle of the house, approached by a circular staircase, the bed-room forming an angle room, the gentleman's dressing-room a small rectangular apartment opening from one side of it, and the lady's toilet chamber a large-sized octagon room opening from the other side,—a plan also susceptible of very pretty decorative contrast. But our further remarks on the æsthetics of plan must be deferred to another number.

LABOUR AND SCIENCE AT BRISTOL.

NOT content with the field offered in their own special Parliament, the Social Science Association, the investigators and advocates of the claims of labour, have obtained a share of the attention of the members of the British Association. Before referring to such points, brought before the latter body, as possess more special interest for our own readers, we must take occasion to express a regret which, we have little doubt, will be shared by the scientific, and indeed by the general, press. One prime method of engaging public interest in the discussions of the Association has been allowed to fall into inexplicable neglect. Both the Association and the public suffer from the want of any plain and authoritative programme, or general index, to the proceedings of the Association. Originally, as in similar cases is almost invariably the custom, the opening speech of the President called attention to the subjects about to be discussed. The occupation of the chair by some men of great eminence in science furnished occasion for giving a general review, not of the projected work of the opening session alone, but of the general state of scientific knowledge in Europe. To make such an essay at once lucid and complete tasked the energies of the most encyclopædic students. It was a task that very few men were competent satisfactorily to perform; and not only so, it was a proceeding unnecessary to take more frequently than at decennial, or at least quinquennial, intervals. Still the lustre which attended the comprehensive review of some of the ablest presidents has had the unfortunate effect of diverting the attention of their successors from the primary duty of their post. Thus a man who might be very eminent in his special branch of science, but who, from the absorbing nature of the studies to which his own fame was due, had missed the opportunity of keeping up to the progress of other departments of knowledge, was led to give, by way of opening speech, a history of his own study. Essays of this kind, no doubt, have great value, and, when they are all that they ought to be, lay hold on the attention with great authority. But, in themselves, they are rather fitted for the presidents of sections, than for the president of the Association. The accident of the profession or study followed by the president for a given year ought not, as matter either of good taste or of scientific arrangement, to tinge the whole proceedings of the year. Still more unfortunate has been the effort, witnessed for three successive years, to introduce controversial topics into the calm regions of pure science. We congratulate the president for the actual year on having broken through this pernicious habit. Nor can we omit to express admiration of the good taste with which Sir John Hawkshaw forbore to introduce into his speech any mention of the projected Channel tunnel. In a glance at the history of engineering, a subject which excites so much curiosity would certainly have found a place, had not the engineer himself been the speaker. The respect for his audience thus shown by Sir John Hawkshaw not only entitles him to very warm commendation, but furnishes an example which we hope may be followed on future occasions. None the less do we feel that the discussion of the history of any one branch of science is not the proper theme for the president of the British Association.

Every writer of a paper which is accepted for reading, at the meeting of any section of the Association, ought, we venture to suggest, to furnish a short *précis* of the contents. These abstracts, handed by the presidents or secretaries of the several sections to the general secretary, should be laid before the president as the materials for this address. The public would thus learn from the opening speech the general course of the subjects to be discussed in the various sections. Every member of the Association, and every reader of the daily reports, would know where to direct his attention. No subject would be omitted or overlaid by mischance; none would be forced into unnatural prominence. Some, we venture to hint, which have found a conflicting auditory at the present meeting, would have been excluded by a president who resolved not to allow the introduction of topics that had not yet attained the dignity of science, even if they had any *prima facie* claim to serious discussion anywhere. It would still be competent to the president to throw the light of his special knowledge on any of those points about to be discussed on which he felt especially at home. If this were taken as the normal idea of the opening speech, a very great advantage would follow. In after years the series of speeches would form a connected set of materials for the history of science, which is now far from being the case. The attention of the public, and indeed of the members of the Association, would receive just that degree of guidance which is most urgently demanded. The programme of every year would denote the work and the progress of that year. The special qualifications of each president would find a congenial field for activity, without, on the one hand, over-burdening that officer with the mass of general scientific study, or, on the other hand, giving to a special branch of science an accidental and disproportionate predominance. Opportunities for individual display might not be so conspicuous, but science and education would gain. We feel sure that there are few men fit to hold the office of president who would not be thankful if it were at once understood that such was expected to be the form of their opening address. And we believe that, even as matter of permanent individual reputation, each president would be actually the gainer.

Among those subjects brought before the Association, which can hardly as yet be ranked among the conquests of science, must be classed that of the relation of Labour to Capital. We are the last to deny that scientific investigation may shed a light on this subject. We should be among the last to assert that scientific inquiry, in any department of thought, must remain unproductive. We have always contended against the dangerous tendency, which nowhere becomes more rampant than in questions of social science, to confuse the logical results of given economical principles, with the actual results of the very mingled motives that spur and control human conduct. But to disentangle this web,—to show where science stops, and where human caprice begins to be supreme,—is, unquestionably one of the greatest services that science can render to society.

The lengthy report of the Committee on Combinations in Capital and Labour, which was read in the section of Economic Science on the 31st of August, and of which we have printed the pith, does not contain very much that will be novel to our readers. The working classes were adequately represented not merely by members of the committee, but by a deputation of three members of the Bristol Trades Council added to their number.

A brief and pithy definition, which one of the "representatives of labour" gave of the term minimum wages, seems to indicate that the committee have been ill-advised in making that subject the first point in their inquiry. What is actually pressing just now is rather the question of maximum, than of minimum, wages. "The minimum wages," according to the opinion cited, "is that which, under the worst circumstances, the worst workman gets from the worst master." We freely accept this very pointed definition. But the result is that the condition is one so exceptional, so transitory, and so certain to come to an end on the slightest improvement in either of the three elements specified, as to be matter of curiosity alone. Not only so; but it is one of special curiosity in each case. It is not necessary to have recourse to the inquiries of a committee to be aware that human beings are often driven to labour for the lowest pittance that can keep body and soul together. If the reporters thought that, in order to ascertain what laws regulate that rate of wages which is most advantageous to the community, which is the real question at issue, it was necessary to go into this question of minimum, why did they not call before them certain witnesses whose feeble voices are enough to raise a thrill of indignation in every bosom that can hold a heart? Why did they not call for the evidence of some of those poor sempstresses who, in the pestilent courts of London, are employed by grinding speculators to make shirts at 1d., and even at ¾d. each, depositing, by way of caution, the sum of 2s. before receiving the materials, and finally having to summon their employers before the magistrates for the payment of their wretched pittance? We do not draw on the imagination. It is not very long since two such cases came before a metropolitan police magistrate. In the

absence of any reference to such patent cases of minimum wages, the lucubrations of the committee on the subject are hardly entitled to the consideration they might otherwise have commanded.

In face of such flagrant facts as these, there is more than a question as to the truth and wisdom of the assertion, 'Primarily the wages of labour are determined by the amount of capital available for the purpose of wages in relation to the number of labourers competing for the same." This statement can only be made out to be true by using the word "available" in such a restricted sense as to convert the maxim into a platitude. It is not because there is not ample "capital available" for shirt-makers that these poor women are ground down to skin and bone. It is not because they are so numerous as to "compete" for the iniquitous pittance of the employer. It is because the employers have neither hearts nor bowels,—because they take advantage, as many an employer who goes to church in a very glossy coat is apt to do, of the feebleness of their dependents,—of their need, of their ignorance,—that these things are. There is ample capital for making shirts. But when one retail dealer offers them at the minimum price to the public, and another, to filch his custom, offers them at a yet lower minimum, not only will the worst and cheapest materials be selected, but, as we see, a tyrannical abuse of the position of the employer is superadded, which it is a mere mockery to speak of as a function of "capital," or want of capital.

In passing from theoretic deductions from those assumed "laws" which are the object of so much superstitious veneration, to more practical questions, the report brings important truths into full prominence. That the arbitrary determination of a fixed remuneration for labour, irrespective of skill, would be a misfortune to the workman as well as to the consumer, is a point as to which no man of ordinary education, honesty, and information, can have any doubt. That the worst enemy of the industrious workman is the man who would make both the wages, and the production, of the idle or unskilled workman the general limit and measure of industry, hardly needs argument to prove.

The general truth, that attempts to raise the price of the remuneration of labour by artificial means must be in the long run not only futile, but absolutely mischievous to the workman, is held by the committee. It is well that steps should be taken, as proposed at the meeting of the section, to spread the knowledge of this truth among the working classes. It would be well were this done with the pregnant wit and pithy language of a writer like Bunyan or De Foe. The question of uniformity of wages may at once be dismissed as one of artificial restriction, as well as of intolerable tyranny. No law of the time of Elizabeth to make the sturdy knave work is so gross an interference with personal liberty as this attempt on the part of some of the self-constituted advisers of the workman.

The question of piecework was also discussed, and the general idea that its natural tendency is to increase quantity of production at the expense of quality was well brought out. In fact, it is a mode of contract which, though demanding more than ordinary care in supervision, is decidedly to the advantage not only of the employer but of the workman. To the former it saves in contingent expenses, such as rent, light, engine-power, and accommodation of all kinds for workmen. To the latter it affords a remuneration proportionate to his industry. Like the foregoing questions, when properly regarded, it is not a question between master and man, but one between the idle, and the industrious, workman. With the interests of the latter are intimately bound up those of the employer, and those of the nation. It is, therefore, for them, and in opposition to those of the idle workman, that our sympathy is awakened.

An admirable illustration of this view was offered to the Section by Mr. Robinson, a Bristol manufacturer. He allowed three of his men to exchange day-work for piece-work. Under the former system, the men had respectively earned 25s., 30s., and 35s. a week; under the latter, their respective earnings were 35s., 42s., and 25s. per week. It will not do to generalise rapidly on few *data*, as it is possible that the assessment of the piecework prices was inequitable. Thus a man whose known skill could command 35s. per week, might have less to show for his time, while it was actually quite as usefully employed, than the man who was rated at 10s. less. The other cause of difference of result would, of course, be difference of industry. Leaving the question open, whether the third workman was an idle fellow, overpaid by day-work, or a skilled workman underpaid by mis-rating his piecework, we find that while the first earned 10s. a week more for himself under the latter than under the former system, he only earned for his master (on the assumption that the master's profit is one-third of the wage) 3s. 4d. more. The second workman, again, earned 17s. more for himself, and only 5s. 8d. more for his master by piecework. Whatever, then, be the advantage gained by employers by this system, it is but small in proportion to that gained by the men themselves.

The committee made the wise recommendation that workmen should be admitted to the meetings of Section F at a reduced rate. They refer to an effort for the teaching of political economy to the working classes, which we can only hope will be attempted on those broad and comprehensive principles which theorists on that subject are too apt to neglect. They conclude by the warning that, in the great contest which Britain has to wage with other industrial nations, it is in the interest both of masters and men to be very careful lest, by raising the prices of British produce and manufacture too high, they should no longer be able to carry the palm in the arena of international competition!

It was agreed to send the report to every trade-union and to every masters' combination in the country.

The paper on the employment of gentlewomen as domestic servants was one which we are unable to understand as in any way fit for discussion by the Association. The remarks made on it in the Section by Mrs. Grey were so true and so just, that it is extraordinary that the same considerations did not occur to those who had the responsibility of selecting papers to be read. This is a case in which the recurrence to such a description of inaugural speech as we have suggested would have been of use. The subject of women's work is one deserving of the most serious attention. It is one as to which a vast body of valuable information is to be derived from what is now going on in Austria. But the proposal brought before the Association is one that would seem to involve almost every possible disadvantage to all classes.

Professor Jevons again returned to the subject of the exhaustion of the coal fields, and very fully supported the views that we have repeatedly urged on that important topic. He showed that the annual rate of increase of consumption, so far from having been overrated in his previous calculations, was now actually in excess of those calculations; and that the actual increase of consumption is at the rate of three and a half per cent. per annum, not in arithmetical, but in geometrical, progression. The total produce of 1873 is estimated at 128,680,130 tons, according to the report of the inspectors of mines. The quantity consumed for domestic purposes was estimated at one ton per head per annum of the whole population, or between thirty and forty millions of tons. The total exports of coal are only from twelve to fourteen millions of tons per annum. Thus some eighty millions of tons represent the motive and manufacturing power of the country. The waste in consumption, whether for manufacturing or for domestic purposes, is, no doubt, enormous. It was lamented by the president in his address, and admitted by all the speakers. The most economical compound engines only obtain one-eleventh part of the theoretic value of coal, measured in foot-pounds. At the same time, when we consider what is the result of the combustion, in round numbers, of a quarter of a million tons of coal per working-day throughout the year in the production of mechanical power, we can form some faint idea of the service rendered by the steam engine to the country.

Another point of much interest is connected with the science of naval structure; namely, the theory of stream lines, which was brought forward by Mr. W. Froude, C.E., in an elaborate and carefully-written paper. We have not space at present to enter into the views of this paper. It must suffice to say that the main result was to resolve all the resistance offered to the onward movement of a ship into surface friction, wave resistance, and eddy. The third element, which in a canal is very considerable, is almost inappreciable on the ocean. Mr. Froude's main object seems to be to destroy the ordinary notion that there is a head resistance to the movement of a vessel. No doubt our knowledge of the best form for a vessel will be enlarged by accurate analysis of all the elements that affect her course. But, after all, the wave resistance of Mr. Froude is tantamount to head resistance. We fail to see that this visible cause of resistance is represented in the course of a current of water through a pipe. And we are far from being yet convinced that there is not a direct impact of the prow on the inert mass of the sea. The mode in which a jet of water is thrown up by the bow of a vessel in rapid motion is something more than a wave. It is a leap of the water, the results of a blow or series of blows. And the extraordinary rate at which resistance increases, in proportion to speed, is not according to the laws of friction, nor, it seems to us, according to those of hydrostatic pressure, if such be the theory of the wave. It seems again to point rather to impact than to pressure. We should hesitate to throw out these suggestions but for the fact that we do not find the remarkable disproportion between increase of power and increase of speed discussed in Mr. Froude's paper.

Mr. W. Topley's report on the sub-Wealden exploration states that a depth of 1,792 ft. has been reached by the diamond boring apparatus in the short space of six months. The expectation of reaching available coal is disappointed, but the geological information obtained is of some value. Professor E. Hébert read an interesting paper on the undulation of the chalk formation in France, from which he formed an unfavourable judgment as to the possibility of the Channel tunnel,—a view that was controverted by Sir John Hawkshaw.

We regret to observe the want of adequate support which is endangering the permanence of one of the most useful and honourable of the scientific works of the day, the notation of rainfall organised by Mr. G. J. Symonds. It would be nothing short of a national disgrace to allow this important service to collapse for want of funds. Mr. Bramwell's discourse on railway safety appliances attracted a numerous auditory. It will be seen that questions connected either with the development of industry, or with the scientific principles which regulate the application of industry, have occupied no inconsiderable share of the attention of the Association in its meeting of 1875.

THE ARCHITECTURAL ASSOCIATION.

THE ANGOULÊME EXCURSION.

EXCEPT for the results which must follow from the excursion, it is now an affair of the past, having been fully completed without any departure from the programme of the slightest consequence,—a performance due to the admirable arrangements organised by Mr. Sharpe, and carried out under the assiduous supervision of the two secretaries of the Association, Mr. Flint Clarkson and Mr. Hayes, whose labours were no sinecure, much alleviated, it is only right to add, by the energy and invariable good feeling of every member of the expedition.

The account we gave last week brought the proceedings down to the return to Angoulême on Saturday, the 4th inst. Monday, September 6, was a comparatively easy day as respects the time of starting and the work performed, but the heat was intense. The first panse was made at Chateauneuf, where the church is a large and very fine one, and which alone of the twelfth-century churches as yet visited has aisles. The nave, which has six bays, alone remains of the original structure. The work of chief merit is the west front. This consists of two stories and a gable. The lower story has the almost invariable arrangement of three arches, of which the central arch is the most important, and contains the doorway. The capitals are very fine. A bold cornice, carried on quaintly-sculptured corbels, which show a remarkable power of expression and of execution, separates the lower from the story above. This is not, as is very usual, arcaded with small arches, but has a window over the door, with a fine figure of an apostle on each side, that of St. Peter occupying the *dexter* place. But the great feature of this story, and, indeed, of the entire façade, is the left-hand arch, and the equestrian figure which it contains. There are several instances of these equestrian figures: they have been referred to at Chalais and at Aubeterre. It seems to have been established by the Abbé Michon, and accepted by Mr. Sharpe, that it marks the tomb of the founder of the church. This figure, in its

style, reminds us of the early Greek sculptures, and, indeed, would have done no discredit to the grandfather of Phidias, supposing him to have been a sculptor. Careful pencil drawings and a good photograph have been taken of this figure, which, if published, will form one of the gems of the collection. The examination of this church occupied the time assigned to St. Simon, which was, therefore, left uninvestigated.

Bassac, surrounded by the cloisters and various buildings of its ancient monastery, has a very fine west front, of the thirteenth century, showing in its composition much reference to the designs of the older churches of the district, especially in its west door, with floriated capitals instead of the intertwined basilisks and other monsters. On the north side of the church, however, is a fine relic of twelfth-century work, viz., a tower, springing from very narrow arches below, and supporting a dome, and having two external stories above the roof, of which the upper is remarkably simple and fine. The old tower has again been surmounted by two stories, of early thirteenth-century work, of four arcades in each, and terminating in a circular spire of the usual pineapple character already described at La Palud. The vertical lines, however, of the newer construction have been carried up in a rather haphazard manner; but the proportions are well studied, and the general effect is good, and, with the exception of the spireless tower of Angoulême Cathedral, is by far the most important in the district. Mention should be made of the fortified turrets or "*quoins d'avantage*," which occupy the north and south angles at the summit of the west front (built in the fifteenth century, to render the church a defensible stronghold during the wars with England), which have their own supports and proper-shaped buttresses carried up from the very base, and which materially improve the composition of the west front, by strengthening the angles. A very large proportion of the churches visited have some fortified features about them, chiefly added during the wars of religion in the sixteenth century; but in these, as it may be supposed, no consideration was paid to the architectural character of the building. From Bassac the expedition returned to Angoulême. On Tuesday morning the members of the Association went to the Évêche, to pay their respects to the Bishop of Angoulême, and also to see some curious gems and croziers, which belonged to the early bishops of the diocese. The bishop, a very dignified ecclesiastic, received the party very courteously. The opportunity was not lost of endeavouring to enlist his sympathies in favour of the conservative restoration of churches. The first church then visited was Bourg Charente, one of the most beautiful of the district. The chief feature was the east end,—a fine apse, having three arcaded stories externally, grouping well with the two subordinate apses which projected from the walls of the transepts. The west front is also good, with the usual three-arch arrangement, the doorway, especially, having very good capitals. The nave has three domes, and there is another at the crossing.

Gensac has been much restored, with a new tower and spire, but much of the original west front remains. At this place a marriage ceremony, under circumstances which seemed to create much local interest, formed a counteraction to that of staring at the English architects, but it impeded the examination of the interior. This is the most interesting part of the church. The nave has four domes, and has also a continuous cornice of considerable projection, returned across the west end, and having narrow passages behind the wall-piers, which form a sort of triforium.

Cognac was the resting-place for the night, and the church of St. Leger the architectural object of attraction. This was originally one of the finest churches of the Charente district, but has been much altered. Three fine bays,—two of the nave, and one forming the crossing,—are mainly of twelfth-century work, and much resembling Angoulême Cathedral; but the supports intended for the domes are now surmounted by quadripartite vaults. The west front has the usual three arches, of very fine architecture, and considerable remains of the upper arcading. The day had been even hotter than the preceding, but the evening was agreeably passed in the gardens and drawing-room of M. Robin, a gentleman of English extraction, and one of the principal merchants of the town, the staple of which is well known; and on Wednesday morning a visit to one of the large establishments of the place shared with St. Leger the time devoted to Cognac; and thence the excursionists proceeded to Chastres, once a fine Cistercian abbey, of which the church, now desecrated and rapidly falling into ruin, alone remains. The abbey was placed at the bottom of a hill, the usual situation of Cistercian abbeys; and on the hill above it is the château of Guard l'Épée, which has some interesting remains, especially a fine gateway of Renaissance architecture.

The church of Chastres is a very fine, but rather late example of the twelfth century, almost verging on the thirteenth, but is still pre-Transitional. The interior has four domed bays, one occupying the crossing, and beyond is a bay of late thirteenth-century work, with quadripartite vaulting. The west front has a fine doorway, but the two arches on each side, as seems generally to be the case in the latest examples of the architecture peculiar to the district, have become mere appendages. There is a handsome range of small arcades above. From Chastres the party proceeded to Angoulême. In the evening, M. Abbadie, the architect to Angoulême Cathedral, and the restorer (!) of St. Front Perigueux, came to see Mr. Sharpe and the Association, and, as was to be expected, lively but very courteous discussion arose on the limits to which the demolition of old decayed work should be carried. No one thought that M. Abbadie had the best of the argument.

On Thursday morning the four o'clock breakfast hour had been looked upon as the test of the earnestness of the expedition, and a roll-call was instituted by the Secretaries; no defaulters, however, were found. As respects the day's work, Plaizac, Rouillac, and Gourville, were of comparatively small interest. The first the best, with a very good but simple doorway. The best point, however, was a very good corbelled cornice on the south side. Rouillac is picturesque; but, excepting the choir and two other easterly apses, unimportant in an architectural aspect. Gourville, one instance among several, showed that the extraordinary weight of the early vaulting, whether domed or wagon-headed, had overpowered the supports, which now stand leaning outwards and covered by a flat timber roof and ceiling. In some places a fear of a similar catastrophe had led to the comparatively recent addition of external buttresses,—huge beyond the analogy of any other district. The rapid survey of these three churches gave more time for the noble church of Lanville, formerly an abbey of the order of St. Geneviève, but destroyed in the sixteenth century. The west front is of the twelfth century. The three-arch arrangement of the bottom story, however, is here absent. The east end is remarkably fine, and also of the same date, and this, with the transepts, has wagon-vaulting. The dome at the crossing is very noble. The vault of the nave, originally domed, is now more recent, and quadripartite in three bays.

The next day, notwithstanding an early start, so much ground had to be gone over that it was only by merely looking at Ventouse, the first object, and by denying themselves a visit to the fine Renaissance château of Larochefoucauld, that the members of the excursion had time to do justice to Celle Frouin (*Cellam Sancti Frontini*), one of the noblest churches which have been visited. This, however, is not of the Perigueux type, but of an older Romanesque. The crossing has a domical vault, but very far from being spherical, as it springs from slightly cut-off corners supported by squinches. The rest of the vaults are wagon-vaults. The nave has aisles remarkably narrow and lofty. The semi-circular wagon-vaults have their springing several feet above that of the nave. The enormous size of the capitals (the bases are covered from the floor having been raised), and the massiveness of the piers are the most striking features. The finest architecture is that of the choir, nearly of the same date, *i.e.*, about 1040—1050. The cornice is supported directly by tall shafts and corbels, without the intervention of an arcade. This applies also to the small apses of the transept. At Larouchefoucauld, a small desecrated church was visited, St. Florin's, of which the foundation date is known,—1060,—so that this gives a valuable limiting date to the architecture, and this is distinctly Romanesque, of a lighter character, however, than Celle Frouin.

In the evening was the final dinner of the excursion, which had been originally proposed for Saturday, but was altered to secure a better attendance of members, many of whom wished to return to Paris by a mid-day train, after visiting St. Amand de Boixe.

Mr. Quilter, the president of the Architectural Association, proposed Mr. Sharpe's health, who, in reply, signified his extreme satisfaction with the self-sacrificing co-operation of the different members, and the results obtained. The prosperity of the Association, and of the excursions in future, was proposed by Mr. Penrose. The health of the president of the Association, and well-merited thanks to the secretaries, were also proposed, and it need scarcely be added cordially received.

The members rejoined one another at half-past five o'clock on Saturday, and proceeded to St. Amand de Boixe, which, indeed, may be truly called the gem of the whole district visited. Much repair is, unfortunately, needed, but not the restoration which is in contemplation for it as soon as the funds can be accorded for the purpose by the Government. There are considerable remains of the old abbey buildings (Benedictine), but the chief interest concentrates in the church. The transepts are ruinous, and the choir has been rebuilt late in the thirteenth century. The nave and central dome are of noble proportions. A very frequent circumstance in the churches of this district, and which occurs here, is for the west entrance to be raised considerably above the floor of the nave, so that there is a descent into the nave by a flight of steps. This is always broad, sometimes the whole width of the nave. At St. Amand, the nave has aisles, and consists of five bays and a half, and has wagon vaulting. The aisles are very narrow, and also have wagon vaults. The half bay referred to, and which is next the crossing, is almost solid, and is pierced only by one narrow arch, of which the sill is very high above the floor, and could have served for no purpose of communication. Mr. Sharpe explained the peculiarity thus (and there are other examples):—The church was commenced from the east end, and the first effort included the crossing and transepts, leaving out the nave. But the arches when built would require abutment from the west; accordingly this massive pier formed part of the constructive design, and when the nave was added it was not in this case thought necessary, or perhaps not desirable, to meddle with it. Over the crossing there is a vertical story or drum arcaded and pierced for windows. The original dome has been rebuilt, and it now is Gothic, with six ribs. The church is said to have been consecrated in A.D. 1170, and the beautiful early architecture which remains, and which is inferior to none in beauty of form and grace of detail, belongs probably to the middle of the twelfth century. With St. Amand de Boixe ended the excursion of 1875. Mr. Sharpe hopes to be able to collect the results as he did those of last year's excursion, but it will probably be the month of May next before this can be done.

LIGHTNING CONDUCTORS.

THE subjoined "Instructions" have been framed by a committee appointed by the Prefect of the Seine to consider the best method of protecting the municipal buildings in Paris against damage by lightning.

I. *Points of Lightning Conductors.*—A rod, serving as a lightning-conductor, rises in the air to a certain height above the building it is designed to protect. Whatever may be the protective power of the point, the latter should have volume and conductibility sufficient to enable it to withstand a disruptive discharge. It should be formed of some good conducting metal.

The committee consider that platinum points are useless, and recommend that every lightning-rod should be tipped with an arrow-head of pure red copper, about fifty centimètres (20 in.) in length, the edges forming angles of 15 deg. with the vertical, so that the point terminates in an angle of 30 deg. The arrow-head should be screwed on, bolted with screws, and soldered to the end of the iron lightning-rod.

II. *Rods for Lightning Conductors.*—The rod should be of wrought-iron, in a single length, and polygonal or slightly conical. If possible, it should be galvanised with zinc, but on no account whatever should it be painted. The connexion between the rod and the conductor should be formed by a piece of metal, carefully fitted and bolted to the ends, and the joints overlaid with a thick covering of tin solder.

III. *Definition of Protective Zone of each Rod.*—The committee admit that, under ordinary circumstances, a rod will effectually protect a cone of revolution, of which the apex is the point of the rod, and the radius of the base a distance

equal to the height of the said rod above the ridge, multiplied by 1·75. Thus, a rod rising 8 mètres above the ridge of a building would effectually protect a cone-shaped space, the base of which, at the level of the ridge, has a radius of 8 × 1·75 = 14 mètres. In practice, wider limits may be allowed if a "ridge-circuit" (*circuit des faîtes*) be used as recommended by the Academy of Sciences.

A "ridge-circuit" is a metallic connexion running uninterruptedly along the ridges of all the buildings to be protected and connected metalically with all the lightning-rods thereupon and with the conductors, and, consequently, with the subterranean sheet of water forming the common reservoir.

A ridge-circuit is formed of lengths of square iron rod, of about 2 centimètres (·8 in.) side, fastened together by overlaying the ends, bolting them together with a couple of bolts, and covering well with tin solder. A new branch is formed with a T-shaped connexion, the cross-piece of the T overlaying the original ridge-piece, and the stem making the first length of the new branch. In some cases the ridge-circuit rests directly on the ridge; but as it is of paramount importance that the joints and soldering should not be injured during repairs to the roof or in other ways, it will generally be found best to raise it to a certain height above the ridge, on supports at suitable distances.

The shape and arrangement of the supports will depend on the description of roof. Sometimes uprights are used, which should be fork-shaped, to allow of dilatation, without leaving room for undue lateral displacement; sometimes simple cast-iron bearings, weighing 10 lb. or 12 lb. each, are laid on the ridge, their upper surfaces being grooved to receive the bars.

IV. *Masses of Metal connected with the Conductor.*—All pieces of metal of any size employed in the construction of a building should have a metallic connexion with the lightning-conductors.

In the municipal buildings under consideration, the system of leaden gutterings is so complete and perfect that it may be regarded as a continuous whole; in this case it is merely requisite to establish some good connexions between the guttering and the ridge-circuit. These connexions may be made with pieces of strong plate-iron, or with strips of iron, of not less than 1 square centimètre in section, provided that the portions actually in contact with the ridge-circuit are not less than 20 to 25 square centimètres in extent. When the roof includes other metal surfaces, these should be combined into one by soldering strips of iron from piece to piece, and connecting them directly, or indirectly, through the guttering, with the ridge-circuit.

V. *Conductors.*—If the conductor is formed of solid iron bars, these should be galvanised, the lengths well fitted and bolted together at the ends, and the joints well covered with solder. If they cannot be galvanised, the rods may be given a good coat of paint.

VI. *Dilatation Compensators.*—The committee recommend the use on ridges of dilatation compensators, on the principle recommended by the Academy of Sciences. The rate of dilatation of iron is about 1 millimètre per mètre for a difference of temperature of 80 degrees centigrade. Now, in Paris, the temperature sometimes rises in summer to 60 degrees above the zero centigrade, and in winter sometimes falls 20 degree below it. We have thus a difference of 80 degrees, involving a variation of length equal to 1 decimètre (3 ft. 9 in.) in every 100 mètres of rods. In cases where the amount of expansion and contraction is likely to affect injuriously any portion of the structure, of which the architect will be the best judge, the "compensator" can be used.

It consists of a rod of red copper, 2 centimètres (·8 in.) wide, 5 millimètres (one-tenth of an inch) thick, and 70 centimètres (2 ft. 3 in.) long, bent in the form of a ⊂, and soldered to flat iron ends, by which it is attached to the bars it connects. When these lengthen, the branches of the U are pressed nearer together; when they contract, the branches are drawn wider apart; and so the dilatation or contraction, as the case may be, is compensated.

When galvanised iron wire-rope is substituted for the rods, the wires should be without breaks, annealed, and well galvanised, not less than 2·5 to 3 millimètres (one-twelfth to one-tench of an inch) in diameter, and in number sufficient to give a section of rope equal to that of a square rod of 20 millimètres side, plus one-fifth.

VII. *Supports for Conductors.*—Supports for conductors should be as few in number as possible; forked for rods and ringed for wire-rope, and not isolated.

VIII. *Earth Connexion.*—The extremity of the conductor enters the ground after passing through a collar of wood or metal. To its extremity should be soldered a plate or hollow cylinder of metal, of the largest dimensions practicable, which should have at least 3 ft. of ground-water over it, even in the driest seasons. When the wells already existing cannot be utilised for this purpose, the ground-water may be reached at a suitable depth by boring and inserting metal tubing. When the ground-water cannot be conveniently reached, but a water-main is at hand, the conductor may be connected with the latter, taking care to make a secure joint, well overlaid with solder, with the metal of the main.

Where no connexion can be established either with the ground-water of the wells or by boring, or with a water-main, the idea of setting up a conductor should be abandoned, as the latter, in place of being of any service, will rather be a source of danger.

IX. *General Arrangements.*—In the case of a monument of any importance, two or more separate conductors should be established, communicating with the ground-water, the common recipient. Man-holes should be established, so that the subterranean portions of the conductors may be inspected from time to time. The latter should be arranged so as to be easily removable for examination, or repair and removal of rust.

X. *Inspection of Lightning Conductors.*—The committee recommend that a careful inspection of all lightning-conductors should be made once every year, at the end of autumn, and that some uniform method of testing their electric powers should be adopted.

Whenever a conductor is erected or repaired, its power should be tested and duly entered in a register kept for the purpose, in which should also be recorded the results of all subsequent annual inspections.

XI. *Employment of Special Workmen, &c.*—The committee recommend that the erection and maintenance of lightning-conductors should be entrusted to particular makers and special workmen, and not left to the contractors who ordinarily undertake the keeping in repair of public buildings.

XII. *Permanence of Committee.*—The committee further consider that it would be useful to keep up a permanent commission, which should meet annually, after the inspection, to report results, and to make arrangements for obviating any defects or difficulties that may have come to notice.

THE NEW INDIAN TARIFF.

THE Indian Government have passed the Indian Tariff Act, 1875, and by it several important changes have already come into operation in the Customs Tariff, with which it is as well that home contractors should be acquainted. Export duties are abolished on all articles except indigo, paddy, and rice, and in the case of imports a uniform reduction has been made from 7½ to 5 per cent. Among the alterations on metals the following may be of interest to the trade:—Angle and T iron, beams, pillars, and other descriptions of iron imported exclusively for building purposes are now charged an *ad valorem* duty of 1 per cent., as are also iron pipes and tubes. Nails, rose, clasp, and flat-headed rivets and washers pay 12 rupees 8 annas per cwt.; other descriptions, including galvanised, 1 per cent. *ad valorem*. Hoop, plate, and sheet-iron is taxed 135 rupees, and flat, square, and bolt iron, including Scotch, 100 rupees per ton. Galvanised iron, either in sheets or ridging, pays 11 rupees per cwt., while Swedish iron is charged 160 rupees per ton. Tin nails are subject to 14 rupees per cwt.; tin plate and other shapes, soft, 15 rupees per cwt.; sheet and zinc sheathing, 17 rupees per cwt.; and all other sorts 5 per cent. *ad valorem*. Tinned pipes pay also 5 per cent. *ad valorem*, while patent and yellow metals, sheathing sheets, and bolts are charged 42 rupees per cwt. Brass sheets, rolls, very thin, are taxed 90 rupees per cwt.; brass wire, 8 annas per lb.; and all other sorts of trade brass-work 5 per cent. *ad valorem*. Bolt copper is charged 50 rupees per cwt.; brasiers', 52 rupees; copper nails and composition nails, 48 rupees; copper sheet, sheathing, and plate, 52 rupees per cwt.; and copper wire, 10 annas per lb. European gold-leaf pays 3 rupees per 100 leaves, and mock gold-leaf 5 rupees per 20 books.

FIVE LITTLE GIRLS BUILDING A CHAPEL.

FIVE little girls, Mary Holdsworth, Sarah Ann Hudson, Fanny Lister, Elizabeth Watmough, and Eliza Fox, are the promoters of a novelty in the mode of procuring funds to build a chapel.

At Great Horton, a place of worship being much needed, some of the inhabitants commenced erecting a chapel on credit, and the five named little girls, considering that the builder should be paid, went quietly to work in making dolls' dresses and sundry little articles. Last week the young ladies opened a bazaar in the public street, which, from its novelty, attracted great attention, and before evening set in the stock was disposed of, and realised 4*l.*, which they handed over to the builder, in part liquidation of his account.

It is stated that the ages of the little ladies average from six to nine years, and that the idea is entirely their own; unless they happened to get it from a pretty story by Mrs. Mackarness, which tells how one little girl did the same thing, and to which we referred when it first appeared.

CHEAP FIRE-PROOF DWELLINGS: AMERICA.

MR. SYDNEY MYERS nearly a year ago offered a prize of 1,000 dollars for the best plans for an approximately fire-proof dwelling. On the 1st of February last the award was made, after careful examination by the committee appointed for the purpose, to Mr. A. J. Smith, of Chicago. After the award, Mr. Myers proceeded to erect certain dwellings according to the plans, and under the direction of the fortunate architect, Mr. Smith. The building selected for the test contained "representative" furniture, "made of pine, equivalent to that in the furnished house, besides which the floors were thickly strewn with shavings, and the further to facilitate a rapid and intense heat, the windows were left open, furnishing a perfect draught of air through the building. We quote from the report:—

> The fire was started at five o'clock, and, after it had nearly burned itself out, water was introduced by Fire Marshal Benner, and thrown against the walls and ceilings from an engine, to ascertain the effect of water thrown on the material when heated. The result of this test was most gratifying to your committee, satisfying them that the building was, indeed, all that had been claimed for it, and entitling Mr. Smith to the full benefit of the award. Both these sections were subjected to an intense heat for three-fourths of an hour, when water was applied, and they were found to be in apparently as good condition as before the test. In conclusion, we repeat that the test was in every manner satisfactory to us, as fully conforming to the requirements contained in your circular. We cannot close this report without expressing our appreciation of the great work you have accomplished in demonstrating, not only to Chicago, but to the whole country, that good, pleasant, and indestructible houses can be constructed at a moderate cost, and we hope soon to see them replace the unsightly, unhealthy, and unsafe buildings so much in use at this time.

The houses to which the test was applied are situated on Sacramento-avenue; include two stories and basement; have stone front steps and stone steps to basement; hollow brick walls; all partitions are of brick or concrete, and all timbers perfectly protected with the same materials; window-sills of stone, and window-caps of terra-cotta. They are complete in all their details, containing gas and water pipes, sinks, bath-tub, &c., and the cost is only about 2,000 dollars. They are for sale, with land, at 3,000 dollars each.

Sawdust for Garden Walks. — A correspondent of the *Gardeners' Chronicle* says that in the extensive wild garden adjoining the well-kept pleasure-grounds at Cadland, near Southampton, the gardener, Mr. Harnett, has used sawdust as a dressing for the pathways out out among the heath and trees in the woodland. The walks are firm and yet soft to the tread; the sawdust soon becomes of a neutral tint, closely allied to the crushed dried leafage of the beech, which so much abounds in the neighbourhood. Weeds seldom grow, and these are easily kept in check with the hoe, and a light sweeping with a broom keeps all clean and neat. No doubt the turpentine, found so abundantly in the wood of the pine-tribe, proves a great deterrent to weed growth.

THE THERMÆ OF IMPERIAL ROME AND THE BATHS OF LONDON.

THERE is a wide difference, it is certain, between antique Rome in the days of the Cæsars, and our modern London of to-day; but there are as well a good many things common to them both, more perhaps than many might like to allow. In not a few things we are many centuries indeed in advance of the antique Roman, but in some, quite obvious things too, we are immeasurably behind him. "Civilisation" is a common enough word, but it remains yet to accurately define it, and to say with precision in what it truly consists. Cities, be it observed, are not built up for mere effect, but to house and provide for a vast multitude, and the question may very fairly be put,—as to which of the two cities, modern London or ancient Rome, did this most effectually. We might go into not a little detail, and take things one after another, but will now confine our thoughts to those famous baths, or "thermæ," for which the old Romans were so famous. We say baths, but in connexion with them there were many other things, and many other wants supplied, which might startle a modern Londoner even to name,—wants both bodily and mental. Did we seek for a contrast we might well ponder over the long list of things provided for in the antique "baths," and the bodily and mental wants attended to, and the art to be seen in them, with our small doings in the way of baths and swimming gear. Whatever may have been or is done for the physical frame, no one can complain of the expenditure for mental wants and luxuries, or for fine-art display. And we have seen every bath in this huge metropolis.

Of the magnificent antique baths or "thermæ" of the Romans what can be said? All things are improving, as we are told, on all hands, but baths or thermæ are not. In the imperfect remains of the great thermæ of the Romans, we get some insight into the vast extent, and artistic and architectural character of things. During the Empire the daily bath became a necessary of life, and it became thence a necessity to make it sufficiently luxurious and attractive. It may be noted that unlike our expensive baths a *quadrans* only, about half a farthing, was the price of admission. We are specially thinking now of the more magnificent of the Roman baths, such as those of Caracalla and Diocletian, and which form, in remembrance at least, such a contrast to our efforts at thermæ building. These contained within their vast extent gardens, colonnades, halls, a library, and courts or spaces for a variety of *athletic* sports. These piles of buildings were not baths only, and the point especially to be noted, and we call especial attention to it, is the fact of the artistic element being always in all these establishments considered a prime necessity, and that not *externally* only, but *internally* as well. The old Roman would as soon have left out the *water* itself as his statues and his architectural accessories. And the great question then comes—with not a few others by the way that occur to us—how far and to what extent is fine art in such a place as a swimming-bath a necessity? To the old Roman it most certainly was a necessity, for he never neglected it. Are we better or wiser than the antique Roman in the leaving all this out of our "thermæ"?

But the old Roman, it must be observed, was not satisfied with the merely providing a large tank filled with tepid water to swim in, with, in addition, all the necessary requirements, so many in number, that the curious in such matters have not been as yet able to catalogue all of them; but he went much further, and manifested a comprehensive knowledge of the physical frame of man, which might well shame even our own advanced and more scientific knowledge of it. What did he then do? After providing a suitable and really architectural and artistic tank of water,—a fine-art bath,—why he added to it, in a closely adjoining chamber, a gymnasium, with all needful apparatus, doubtless, for gymnastic and healthful bodily exercises. It would be difficult indeed to see now how anything could be better or more appropriate. The bath had provided for cleanliness; he next considered that nothing conduced so much to health as exercise, so that these great bathing and swimming establishments were always supplemented by an added gymnasium. No such thing has since been thought of, and one question for the future of such matters will doubtless be this addition to the swimming-bath. Gymnasia there are, as it is, as all probably know, every here and there attached to public and other schools. There is one at Westminster, but full to overflowing with all kinds of complicated apparatus. A public, or rather semi-public, one there is, and the only one we believe, to which the public can be said to have access in London city. But all these, wherever they are, bear no possible resemblance to the magnificent Roman architectural buildings.

But the old Roman did not stop even here. He added a garden to his bath apparatus, wherein doubtless might be seen rare and costly flowers, and things which a garden can alone show. It was certainly a happy idea of his, and well enough might it be imitated now-a-days; or rather might there not be a bath worthy of the name in each of our so costly public parks? Let us here note a fact connected with the swimmer's art not always borne in mind even by those who are adepts, viz., that no *covered-in* bath is like an open-air one, and it would seem a pity, indeed, that there are none such. We speak of regularly constructed baths of suitable materials, and accessible at all hours during the summer months, and, indeed, for that matter, all the year round, for nothing stops the confirmed and enthusiastic swimmer! We may learn much from the old Romans yet.

Thus have we swimming and other baths of divers kinds, gymnasia, and a garden, all together; but there was yet more than these included in those imperial establishments. There was also provision made always for spectators and keen critics of the sports; and prizes were instituted for the encouragement of them,—everything, indeed, we are told, which could minister to the comfort or amusement of visitors of all ranks and tastes. A library, also, was attached, filled, doubtless, with books on science, philosophy, and poetry. Halls, too, and colonnades were provided, in and under which these books were read, especially the immortal poets of the then present and past time.

It is instructive to observe, too, that the antique Greek, so glorious in historic and artistic renown, did not look on such arts as those of swimming and gymnastics as mere ways of passing time, or as simple amusements, to be done or not done as the caprice of the moment or the taste of the individual dictated, as we now do, but he came to the firm conviction, or his medical advisers did for him, that such exercises were absolutely necessary for health. And, more than this, that no sound and healthy mental action could be expected but from a sound and healthy physical frame. And that the gymnasium and the bath were necessary to this. Again, and ever again, are we met by this dictum through the writings so happily preserved of the Greek and Latin authors. These men wrote simply of what they saw around them, and in them, and from the remains of the ancient thermæ may be gathered with some considerable clearness all that existed or was thought necessary in the ancient baths. So completely do they seem to have considered the problem before them, and so well they did their work, that better models generally to go by there can hardly be. Swimming became in their estimation a fine art, and all that helped to it was alike artistic. And not only was this for the actors themselves, but it was thought necessary to provide for those who were mere lookers on, as on a racecourse, and this was thought to be, as it certainly was, "educational." The great artists and sculptors of the time could not have done their superlative work without some such help.

Our main object is here to show as far as possible how much there is to be done towards a due encouragement of the swimmer's art. Nothing certainly can be urged against swimming—everything is in its favour; it conduces alike to health, cleanliness, strength, grace of movement, and suppleness of body, and all these in a way that can hardly be duly appreciated by any but those who have, even as things are, already "taken to it." The Romans understood all this right well. We have yet to learn it, and before, perhaps, much can be attempted in imitation of the Roman, or the Greek, a feeling or a "prejudice," if you will, must arise to demand action in such direction. We would here earnestly plead for it, on all and every ground. If the Aquarium, now so popular, can be built up almost regardless of cost, with every furtherance, and with no small additions of architectural costliness, then may we plead for some such liberality for swimming apparatus and thermæ architecture. Let us, however, by all means, begin with the fish, and look at and admire their movements in the water, and nothing can be better by the way; but let it not stop there: let the human being be thought of, too. He, too, is of the water as well as the land. We venture to name this as showing how very much the same is man all the world over and in every age, the movements and forms of animal life never failing to interest. The "shows" of the antique world, barbarous as they were, were not wholly evil.

Looked at æsthetically, it would be difficult indeed to over-estimate the beauty of the swimmer's art. The more easy and graceful the action, the finer the muscular action, the nobler becomes the art of it. All the great "idealities" of art—to use that somewhat vague, but still not a little expressive term—are elicited. There is nothing else for it. Quickness and ease of movement through the powerfully-resisting water compel and necessitate grace of movement. Had we more swimming-baths in this huge London, and baths worthy to compete in goodness and costliness of material and in architectural display with those of old Imperial Rome, then, doubtless, all this, and a great deal more, would have been noticed by artists, and sculptors especially; and we should then have had every now and then, as opportunity offered, sculptured, if not painted, representations of it. It is worth noting here, for some confusion of thought has come of it, that such common adjectives as "graceful" always imply an object, and that, consequently, the aim of the executive artist, in whatever material he may work, is to catch that momentary grace which will manifest and make itself visible in those forms and movements which he sees around him, and which, after all, are the sources of his inspiration. The artist sees this intuitively, and with greater vividness than others. It would be, indeed, very difficult to find this grace of movement more strikingly displayed than in the movements of a fine swimmer. It is a many-sided problem, but certainly an artistic one.

UNDER LONDON DOCKS.

THE difficulties that the East London Railway Company have had to encounter, and which they have now happily surmounted all but completely, have been of a more than ordinarily embarrassing and imposing character, and of more than one class, embracing, if we mistake not, obstructions legal and diplomatic, physical and financial. They are now getting to the light at the end of the vista, the heaviest of the works on the north bank of the Thames, including a passage under one of the basins of the London Docks, being now practically completed.

One of the heaviest works on the line—Brunel's famous Thames Tunnel, of 1,300 ft. long,—was really opened, although not for railway purposes, on the 25th of March, 1843. In 1863 a select committee of the House of Lords on Metropolitan Railway communication reported in favour of the construction of the East London line, as part of an outer circle of railway communication within the Metropolitan District. In the year 1865 the company obtained their Act of Corporation for the construction of a line of about eight miles in all, to form a junction with the Great Eastern Railway at or near Shoreditch to pass thence, principally in tunnel, under the docks at Wapping, and through the Thames Tunnel to Rotherhithe, thence to junctions with the London and Brighton and the South-Eastern railways at their respective stations at Newcross. In December, 1869, the line was opened from the north end of the Thames Tunnel at Wapping to a junction with the Brighton line at Newcross. Other junctions with the lines on the south side are almost complete, and, as already stated, the heavy works between the Wapping shaft and the junction with the Great Eastern are in a very advanced state.

The curves and gradients are favourable, the quickest of the one being on a radius of fifteen chains, and the sharpest of the other a short length of one in sixty. The road is level under the docks, and then rises for a short length to Shadwell Station. The rails are to be double-headed, and of steel, weighing 75 lb. to the yard.

As may be readily supposed, the heavy works on the north side commenced from the Wapping shaft. These are completed, including the covered way under the dock basin, excepting only a short connexion that remains to be excavated to connect the portions of finished way; which are of pretty much the same character as the works of the Thames Tunnel, separate "up" and "down" lines, with a 4 ft. 6 in. wall between. The arches are of the ordinary horseshoe

shape, built with seven rings of brick, and are surrounded with 3 ft. of puddled clay. They have also inverts of brick or concrete. The height of the arches from the rail level to the crown of the arch is 20 ft., and the greatest width 25 ft. In the deep excavations at Wapping 20 ft. of made ground had to be taken up, then 18 ft. of gravel, before the London clay was reached. This contained numerous quicksand pot-holes that caused the engineer much trouble.

The property required for the railway between the river and the dock basin was of an inferior character, and a good deal of it was swept away to the improvement of the locality. The most important work here was the underpinning of the workhouse of St. George's-in-the-East. The other important works in underpinning are of one of the London Dock warehouses, and of the piers under it, of the groined arches forming the rum vaults, which were carried down to the level of the railway foundations. Further on the foundations of the Blackwall Railway viaduct were carried down to the London clay to 50 ft. below the original depth. The preliminary underpinning operations delayed the execution of the other works; but all that remains unfinished now is in active progress. Proceeding northwards from Shadwell station, of which two-thirds of the station works are done, the covered way is nearly all completed to about 50 ft. north of Commercial-road. Between this point and Whitechapel-road the contractors are working at six different points in a short distance of 700 yards.

The retaining walls for the Whitechapel station are nearly completed, and scarcely anything remains to be done but the station. There will be a goods station here on the north side of the main thoroughfare, where the rail level is as near the surface as it can be without altering thr levels of important thoroughfares. There will be a goods station at Shadwell also. Between Whitechapel station and the junction with the Great Eastern Railway at Brick-lane, the navvies are at work at five different points. The works here are comparatively light, and there will be no difficulty in completing them within the same time as the works between Wapping and Whitechapel will occupy.

The most interesting engineering exploit on the section is the covered way under the London Dock eastern basin. Operations were carried on, in the first instance, from the surface, and consisted in dredging trenches in the bottom of the dock until the London clay was reached. The next process was the driving of the piles, clean-squared, and driven as closely jointed as possible. These are of about 14 in. on the side, and about a minimum of 40 ft. long. Fourteen steam pile-drivers were employed in sending them home. There are two rows of coupled piles outwards towards the dock, and one row on the inside towards the railway works. These, placed at 4 ft. 6 in. apart inside, and the clay-puddle hard-rammed between the two wooden walls, are the coffer-dams for the protection of the workmen in constructing the covered way under the dock basin.

In addition to the pine forest laid under contribution to provide the piles, another and larger must have been felled and cleared to provide the enormous quantity of timber used in the internal timbering and staging fixed longitudinally, laterally, and with upright supports at the intersections, the spaces between at very short distances. Some idea of the resistant powers that had to be provided in the construction of the works, as well as for their enduring power, may be formed from the statement that the ordinary depth of water in the dock is 21 ft.; under this is a bed of 3 ft. of clay puddle, followed by 4 ft. 6 in. of brick-work, being the crown of the arch, under which is the covered way, of about 15 ft. clear headway under the dock. In one part of the basin the water communication between one side and the other, and over the railway, has been restored, and one day recently the curious sight presented itself of several large merchantships,—the *Raby Castle* and the *Victoria*, of London, among others,—lying berthed immediately over the railway, and the large first-class clipper *Lady Macdonald*, outward bound, crossing over it at right angles.

In the construction of these exceptionally heavy works at such low levels, of 50 ft. to 60 ft. below Trinity datum line, powerful mechanical appliances have been necessary, that have included twelve pumping-engines, working night and day; three of these, of 56-horse power nominal, employed at the London Docks, are equal to lifting 50 ft., 8,000 gallons per minute. The whole of the water pumped is from the Thames, or from springs, not a drop percolating from the docks through the finished works. A large number of powerful steam cranes have also been employed for lifting the excavated earth from the workings. Recently a million of bricks have been used, and 600 tons of Portland cement per week, besides a large quantity of blue lias lime. The large quantity of puddle-clay required for the works has been brought to the ground in barges, much of it from the neighbourhood of Rochester. The London clay is totally unsuited for puddling.

The engineering works of the East London line have been designed by Sir John Hawkshaw, as engineer-in-chief, Mr. W. Hunt superintending the execution of the works as resident engineer. The most serious mishap that has occurred since the works were commenced was in connexion with the first dock coffer-dam. Delay in finishing the line, and the loss of human life and of money, would have been prevented, it is believed, if the plans for these works of Sir John Hawkshaw had not been unwisely interfered with. Mr. Thomas is the contractor.

The completion of the East London Railway will supply the missing link in the connexion between railways separated by the Thames, and must greatly facilitate intercourse between Middlesex and Essex, and Kent, Surrey, and Sussex; it will give a stimulus to building operations; it will afford the shortest and the only unbroken route for minerals and merchandise between the northern and southern counties and the southern shipping ports, saving, in addition to the advantage of continuity, five miles in distance. It will have no opposition to encounter either from rival lines, steamboats, tramways, or omnibuses, to which other metropolitan lines have to submit. It will also command a larger proportion of through goods and passenger traffic than the lines referred to. It seems likely to secure a considerable traffic from the Foreign Cattle Market at Deptford, and of timber trade from the Commercial Docks, by a short branch running into these docks. It will also have a siding and station at the London Docks, from which merchandise may be carried to and from all parts of the United Kingdom without transhipment. It will furnish the shortest route to the densely-populous districts in the east of London for the Crystal Palace, Hastings, Eastbourne, Brighton, and good routes to Ramsgate, Margate, and Dover.

Costly although the East London line has been,—500,000*l.* per mile,—its cost is much lower than that of other metropolitan lines, some of which have cost from 850,000*l.* to more than 1,000,000*l.* per mile. The average distance travelled by the passengers on these lines, such as the Metropolitan, the Metropolitan District, and the Charing-cross, is not more, probably, than a mile and a half, whereas on the East London line the average distance travelled is unlikely to be less than four miles. The East London will be worked by the Brighton Company under agreement.

SILK CULTURE AND WORK FOR WOMEN.

EARNEST and successful efforts are being made in Australia to cultivate mulberry-trees and silk-worms, and a company, in which a *man* cannot be a director, has been established in the diocese of Goulburn for these purposes, with very remarkable results. Aid is needed to give the institution national proportions, and Mrs. Bladen Neill, to whom much of the success attained is due, is now in England to make their wants known.

Mrs. Neill writes,—"For the production of good grain (eggs), many parts of England would be suitable; but as to silk, the millions of acres of land in our colonies will certainly, some day, yield the finest in the world. In California we hear also of large tracts of country having been planted with mulberries, and that the Californians have commenced manufacturing as well as reeling their own silk. M. Bonhomme, the manager of the Sonoma Sericicultural Association, California, confirms all I had heard in Italy. The Californian grain is in great request in many parts of Italy, and the price varies from 25 to 40 francs per ounce,—not in dozens, but in hundreds of ounces. If, as he says, and I believe it is perfectly true, Italy requires 3,000,000 ounces annually of grain, what may not be the work provided for our women and girls, seeing that Japan and China, now the only two grain-producing countries in the world, might at any moment fail to supply the market, disease having shown itself in both countries, if large plantations of mulberries are made in Australia, other British colonies, and California? M. Bonhomme has been a grainer over sixteen years, has visited all parts of Asia and Europe in search of healthy grain. The result of his experience is that it is to the new countries and their virgin soils the old world must look for assistance in its old age, and thus make happy all the children who can and are willing to help their parents. May our colonial women show as much energy in the cultivation of silk as the men did in wool, and we shall soon see a trade the limits of which it is impossible to foretell."

Sir James Fergusson, the Governor of South Australia, took considerable interest in the cultivation of the silkworm, and sent them some very good specimens of the Japanese race; but it was to Mr. Charles Brady, of Sydney, the brother of Sir Antonio Brady, that they were indebted for the preservation of some of those wonderful old races of silkworms now all but extinct in Europe. For years he has been educating some of the finest races procured from France by his sister, before the disease became universal. Some years previously M. Roland had done the same in Switzerland. It is a curious fact that both regenerated their race of worms,—the one by the snows of the Alps, the other by the heat of an Australian sun. Mr. Brady, the most energetic pioneer of sericiculture in Australia, had previously ransacked the world for all the best-known species of silkworms, with a view to testing the relative value of the different kinds from a commercial point of view, the one idea of his life being to successfully initiate the cultivation of the best varieties of this, the most valuable and profitable to man of all the insect tribe, and which with care will become second only to wool.

Mrs. Neill says:—"From Mr. Brady I obtained a small sample of grain (eggs),—the cocoons from which, when shown to experts in Lyons, elicited a demand for all we could produce of that quality at the highest market-price. This was great encouragement, and I determined to visit the silk-growing countries of Europe and to judge for myself as to the supposed superiority of the Japanese races, then all but universally imported into France and Italy. From Naples, Ancona, Venice, thence through the Italian Lake districts to Milan, Florence, Cuneo, Novi, Genoa, and on through Nice to Marseilles, Montpellier, Cavaillon, Cevennes, and the Ardeche; everywhere I met disease,—the same sad story, small cocoons, and little profit to the poor peasants. At one railway station the country people refused to believe the cocoons I had could have been produced the previous year, as they said they had seen none such for twenty years. A mere accident brought to my notice a grain that had been most carefully educated for years in the little old-fashioned Roman town of Orbe, Switzerland. It was there that a pupil of Chavennes had pursued his master's system; he went still further, for he hatched out the grain *on* the tree, allowed the worms to feed naturally in the open air under muslin or canvas covers to preserve them from enemies, to cocoon, and, finally, the moths to lay their eggs. Of course, none but the strongest lived to propagate their species. The grain remained on the tree exposed to the frosts and snows of an Alpine winter, thus regenerating, as he calls it, the race, and, after three years, rendering it as strong as the stock from which they were originally obtained,—namely, that from the north of China."

A letter from the Bishop of Goulburn to Mrs. Neill, in which his lordship says,—"I very gladly bear my hearty testimony in behalf of your most important mission. Having visited, and been delighted with your establishment for sericiculture at Corowa, in the diocese of Goulburn, and being aware of the self-denial, ability, and devotedness with which you are conducting and striving to extend this interesting enterprise for the benefit of the British colonies, I shall rejoice in your complete success,"—a number of other testimonials, and our personal observations, enable us to commend Mrs. Neill and her mission to all who feel interested in the twofold object in view. The address of the lady is 27, Princes-gardens, South Kensington. Aid at this moment will give another industry to our colonies which will afford suitable and profitable work for thousands of women.

By the way, are there any white-fruited mulberry-trees in England? If so, we should be glad to hear of them.

"PETTICOAT LANE."

YEARS ago Middlesex-street,—or, as it is more commonly called, Petticoat-lane,—was described in this journal, and its evil state from both a sanitary and social point of view commented on. Time has done little to improve it, and such of our readers as have had an opportunity to inspect lately this very "interesting" neighbourhood will agree with us when we say that it is a den of filth. Those who have not been there we strongly advise to still keep at a respectful distance, and in doing so congratulate themselves that it is not their duty to visit and report upon any of "our London slums."

Middlesex-street, Whitechapel-road, London, is, and has been for many years, the haunt of Jews; not that it should be any the worse for that, but it is a notable fact that Jews of a particular class strongly object to cleansing or in any way altering the appearance of their dwellings, consequently both the interior and exterior of the houses in Middlesex-street have a most dejected appearance. The doors of some of the houses appear to have suffered from an invasion of "lifters,"—in other words, they have neither hinges, bolts, nor bars. In the daytime they are placed "far from the madding crowd" to a very dignified position in the back yard, so as to give the occupants of the houses more room to exhibit their numerous miscellaneous articles. The windows of nearly every house are in a most deplorable condition; the frames are hacked and chopped about in a terrible manner, and when glass "is no more," rags, brown paper, and other sundries take its place. Upon our visiting one of the houses in Petticoat-lane, we went into a room upon the second floor, and were startled. The walls, save for an occasional clipping from some illustrated journal, were completely bare. They were exceedingly damp, and smelt strongly of naphtha or parafine. The ceiling was in a much worse condition. In each corner spiders had evidently been disporting themselves, for they had "spun yarns" large enough to satisfy the ideas of any wine-buyer. Upon our inquiry as to the rent, we were informed by one of the occupants, a handsome young Jewess, that it was "three-and-six, and long enough price, too!" to which an assenting and most emphatic grunt was given by the girl's father.

Upon either side of this lane are narrow courts, so narrow indeed that much difficulty would not be experienced in the inhabitants giving each other a "hearty greeting" from opposite houses, so close are they. The houses in these courts are, if anything, worse than in the lane, and smell horribly. The inhabitants might, if they thought proper, get rid of much of this, but they will not take the trouble. They allow heaps of rubbish, such as the refuse of green stuff, fish, and so on, to rest in little heaps all over the place. These are the cause of half the offensive effluvia; but, to add to this, the inhabitants are principally dealers in fried-fish, bacon, and onions, or old clothes. "The market," as the vendors of articles therein dare to call it, is a perfect masterpiece of disorder, the houses, shops, and stalls being all mixed up in a delightful state of confusion. In this place almost every description of old wearing-apparel is bought and sold, and the reader will be able to judge what the stench from this must be on a warm day. Such a place as Petticoat-lane is a disgrace to London, and the sooner the authorities decide upon pulling the whole down the better it will be for the health of its present inhabitants and those in the surrounding neighbourhood.

THE USE OF THE ELECTRIC LIGHT IN MANUFACTORIES, &c.

THERE is reason to believe that the problem of the application of the electric light for everyday purposes, in place of gas or other material for lighting, has been satisfactorily solved, though no doubt further experiments will be required to make the new light thoroughly useful. We see from a communication to the *Revue Industrielle* that the lighting by means of Gramme's electric light machines has been introduced in the factory of Messrs. Heilmann, Ducommun, & Steinlen, of Mülhausen; and it is reported that their use has been attended with perfect success. In a separate room four magneto-electric machines have been set up, which supply four suitably-distributed lamps by Serrin. The space illuminated has a length of not quite 200 ft., and a breadth of about 100 ft. Each lamp has an illuminating power of about 100 Carcel's lamps, and is surrounded by frosted glass bells for tempering the glaring light. The charcoal points must be changed every three hours. The cost of the four lamps, exclusive of expenses for primary power, amounts to about one franc per hour. In the two months during which the new mode of lighting has been in operation, no defects have been noticed, and a beautiful and steady light has been supplied, the intensity of which has been attained by no other means of lighting. The magneto-electric machines cost 1,500 francs each; the total expenses for setting them up and for fittings amounting to only 8,000 francs (320*l.*).

According to Laboulaye's *Dictionnaire des Arts et Manufactures*, the light of 700 stearine candles costs per hour with—

Electric light, by a magneto-electric apparatus	0·10 to 0·20 fr.
Electric light, by means of a galvanic pile.....	3 to 5 fr.
Coal-gas.....	3·20 fr.
Petroleum.....	3·85 fr.
Rape-oil.....	6·10 fr.

In order to effect a uniform distribution of the electric light to different points, experiments have been made in which the same current was passed through several apparatus by means of "current turners," which, however, interrupt its passage through a lamp for such a short time only as to make the light produced appear continuous. This observation is based on the duration of the impression on the eye by light, which lasts at least one-tenth of a second. It has been proved by experiment with the lighting apparatus for alternate currents by Siemens and Halske (perfected of late by von Hefner-Alteneck) that the arc of light between the points of charcoal is restored again directly if the interruption of the current lasts only a short time. M. Leroux found in his experiments that an intercepted arc of light between the points of charcoal is restored at once if the interruption of the current does not last longer than one-twentieth of a second. He also divided the electric light by conducting the current of a Bunsen battery alternately to two apparatus, by means of a quickly revolving distributing cylinder, in such a manner that both lamps during the same time received the same number of electric currents. The two sources of light thus produced were perfectly equal. It appears, however, that this mode of dividing is neither practical nor economical, and it has consequently been tried to effect a division of the electric light by dispensing with the arc of light. Experiments made lately with this view, in which the light was divided into ten parts, also produced no favourable results, the expense being about the same as that with gas or petroleum. These failures caused M. Gramme to construct smaller lamps at first, of a power of fifty Carcel's lamps. They act very well; but the light they give is not perfectly steady. The machines now in use, however, have proved successful. They give a light of at least one hundred Carcel's lamps, and their cost, as already stated, is only 1,500f. each. Although with these machines the problem of the division of the electric light is by no means thoroughly solved, the latest improvements introduced, and the great saving effected, will perhaps further the employment of the electric light for lighting extensive manufactories, railway stations, and other large buildings.

MOVEMENT IN INDIA.

AMONG the other alterations which are being effected at Government House, Calcutta, in prospect of the visit of the Prince of Wales, the old throne is being replaced by an elegant structure, the drapery of which will be of the finest crimson velvet, trimmed with gold and emblazoned with the Royal Arms. Chandeliers, of the days of Cornwallis and Hastings, which have been in use till now have been forwarded to England by Messrs. Osler & Co. to be repaired and renovated. All the picture-frames are undergoing regilding, and the Department of Public Works, in addition to paving the whole of the lower portion of the southern flooring with fine marble, has received orders to furbish up the exterior of the building so that it may look its best. . . . Sir Madhava Rao has taken upon himself the task of organising a Public Works Department in the Baroda State. Mr. Hill, C.E., has been appointed chief engineer, and efforts are to be made to procure an efficient staff of subordinates. The Nazur Baugh palace, of which we lately gave a description, is to be furnished, and a sum of money is to be expended in purifying and draining the city, and in maintaining proper sanitary arrangements. It is also reported that the water of the Nurbudda is to be conveyed into the city for drinking purposes at a very large outlay. . . It appears from the resolution of the Government of Bengal, on the Administration Report of the Calcutta Municipality for 1874, that the future expenditure of the Municipality on both the new drainage system and the waterworks is likely to be much heavier than was anticipated. The outlay on the former during the year was 53,763*l.*, and the length of sewerage constructed 44,283 ft., or rather more than 83 miles. This, although fair progress for one year, leaves a great part of the native half of the town still undrained. Many streets in busy districts are flooded by every heavy shower, in consequence of the inefficiency of the drains to carry off the rainfall. To remedy this inconvenience, and enable traffic to be carried on at all times without interruption, supplementary works are to be constructed. These additions to the original scheme will cost a considerable sum above the estimate of Mr. Clark, the engineer. . . . . The Government project for supplying ten gallons of water per head to the population of Bangalore at an estimated cost of 57,000*l.* has met with the active approval of the Commander-in-Chief; but as the scheme will require time to mature and complete, it is likely that at his instigation a considerable outlay will be incurred in the construction of temporary works to supply the troops stationed there with pure water in the meantime. . . . . A well-known Mohammedan citizen of Bombay, Mr. Cammoo Sullimoo, has conceived the idea of raising a sufficient sum of money to provide a garden for the sole use of native ladies, and hopes to raise 2,500*l.* from native gentlemen for its decoration, while he obtains from the Government a suitable site. Moreover, he is so sanguine that he hopes, with the assistance of the municipality, to carry out the work with such despatch as to secure its completion before the arrival of the Prince of Wales in Bombay. The local press supports the project, asserting that such a garden would be fully appreciated by native ladies, many of whom would be glad to go out for an airing in the evening, and are deterred only by the fear of exposing themselves to the public gaze.

BURMESE BUILDINGS.

THE Indian mail brings some interesting details about Mandalay and some of the other places which were visited by the members of Sir Douglas Forsyth's mission. Prominent among them is Akouktoung, on the Irrawaddy, which doubtless will attract the curious and provoke investigation, now that it is known, and the Burman king is at least disposed to be civil to Englishmen. Approaching the place from the south-east it appears to be on a high promontory running out into the river. The bluff is covered with images of Guadama and other deities cut out of the solid rock. No village is visible, and passers by are left to conjecture the purpose for which this sanctuary was established. The name of the spot signifies "a place for the collection of customs," and with this indifferent explanation the inquisitive must at present be content. The city of Mandalay, in the centre of which stands the royal palace, is enclosed by a brick wall from 20 ft. to 30 ft. high, backed by a mud embankment. Attempts have apparently been made at forming bastions; but the results look more like half turrets. The whole enclosure is about a mile and a quarter square, and is surrounded by a moat about 40 yds. wide and 12 ft. deep, fed from a natural lake not far from the city. The best part of the town is within the walls, and the streets there are much better kept than those outside. Everything about the royal palace except the basement and floor is covered with gold-leaf; roof, columns and ceiling alike glittering in the bright sunshine. The throne is a wonderful contrivance, surrounded by peacocks' tails, with kneeling figures carved at the foot.

New Gasworks at Lincoln.—The tender of Messrs. Howard, of West Bromwich, amounting to 1,395*l.*, for the erection of an iron roof, &c., for the new retort-house now in course of erection at Bracebridge by the Lincoln Gas Light and Coke Company, has been accepted.

THE WATER-SUPPLY OF OLD LONDON.

THE GREAT CONDUIT IN CHEAPSIDE.

FITZSTEPHEN, in his description of London, which he wrote in the reign of Henry II., speaks of the springs, wells, and streams of the City, as being in his time "sweet, clear, and salubrious, 'mid glittering pebbles gliding playfully." Until the thirteenth century the inhabitants of London obtained their supply of water for domestic uses partly from these sources, and partly from the Thames. But early in this century, owing to the diminished yield of the springs and wells, and their tainted condition from surface and cesspool percolations, and to the impure state of the watercourses, from the erection of buildings upon their banks, and the discharge of slops and waste water into them, the mayor and citizens were compelled, as Stow writes, "to seek abroad for sweet water for the poor to drink, and the rich to dress their meat." This they found in the slopes upon which Hanover, Cavendish, Grosvenor, and Portman Squares, and the adjacent streets, now stand. Here the subsoil, which consists of thick beds of gravel, interspersed with layers of sand, resting upon the blue clay, was full of water. This was derived and maintained from the rainfall upon the district sinking through the surface into the gravel beds beneath. Out of these nine springs oozed at various places, and ran down the grassy slopes into the Tyebourne, which then flowed through the district from north to south, while Oxford-street passed through it from east to west.

In 1236 the owner of the land, Gilbert Sandford, at the request of the king, Henry III., granted the springs in perpetuity to the mayor and citizens of London. These the Corporation collected by lead pipes into a reservoir, which they constructed in the ground where Stratford-place, Oxford-street, now stands, and from the reservoir they laid a 6-in. lead pipe to the great conduit in Cheapside. The pipe was laid in a south-east direction, across the fields between Regent-street and Bond-street, to a point in Piccadilly, about midway between the Circus and the Geological Museum. From this point it was carried across the Haymarket and Leicester-fields to the King's Mews, which abutted on Hemming's-row, near Charing-cross. From thence it was continued along the Strand and Fleet-street, over Fleet Bridge, which then spanned the river Fleet, up Ludgate-hill, and along Cheapside, to the conduit, which was placed at the point between the Poultry and Bucklersbury.

The length of the pipe was 4,752 yards. As before stated, it was of lead, and 6 in. in diameter. The head or pressure from the surface of the water in the reservoir to the conduit-mouth was 20 ft. Assuming that the supply from the springs maintained this head in the reservoir, the delivery at the conduit was 97 gallons per minute. Assuming, also, that the pipe was ⅜-in. thick, its weight was 234½ tons. So well was the contour of the section of the line of the pipe chosen, that nowhere did it rise above the general or hydraulic line of inclination. Hence no pressure was lost, no vacuum places were formed, and the discharge was the same as if the inclination had been uniform throughout. It was provided with a kind of stop-cock at its head for storing water in the reservoir at night, and also with stop-cocks along its course, for shutting off the water for examinations and repairs. There was notably one stop-cock on each side of Fleet Bridge, where the pipe came out of the ground and passed over the bridge. Here it sometimes burst, probably from exposure to the frost. There is reason to believe that here, too, it was provided with an air-vessel and cock at the summit of the vertical bend, for discharging the air which, most likely, accumulated at this point. This work was the first of its kind executed in England that we have any knowledge of. Hitherto it has not been alluded to in any history of water-supply in England; but as it evinces eminent engineering skill, both in design and construction, it deserves high commendation. It would be interesting to discover whether it was the work of English or Dutch engineers.

Certain merchants of Holland provided the pipe, in consideration of being permitted to have establishments in the City for the sale of their goods, and to import them free from river-dues for a number of years. For the king's service in obtaining the grant for the springs, a hole of the size of a goosequill was allowed to be made in the pipe opposite the mews before-mentioned, for supplying it with water. Subsequently, a half-inch pipe was connected with the main in Fleet-street, near Shoe-lane, for supplying a conduit which the mayor and citizens set up there. As the inhabitants of the City depended upon this main-pipe for their supply of water, the Corporation never permitted any private person to meddle with it, or to take water from it. In 1478, however, one William Campion, who resided in Fleet-street, surreptitiously tapped the pipe, and conveyed the water into a well in his house, "thereby occasioning a lack of water to the inhabitants." For this offence he was imprisoned for a time, and then set upon a horse with a vessel of water like a conduit, having small pipes leading out of it, placed on his head. In this way he was taken round all the City conduits (the water running over him all the while), where the Mayor's proclamation of his misdemeanour was read. He was then marched back to prison to abide the further will of the Corporation.

For several generations sufficient water ran at the conduit for the wants of the people. Thence it was brought to their houses in "tankards," holding about three gallons, by a class of men called "water-carriers," who resided chiefly in Cob's-court, Broadway, Blackfriars. In his play of "Every Man in his Humour," Ben Jonson has a water-carrier named *Cob*, who says, "Give me my tankard. . . . . It's six o'clock: I should have carried two turns by this." But in course of time, as London grew in size and population, and the springs yielded less water than formerly, owing to the reduced rainfall from cutting down the great forest north, east, and west of the City, the water running at the conduit was insufficient for the requirements of the inhabitants. This caused the Corporation to bring other springs into the conduit-pipe from the manor of Paddington. In 1439 the Abbot of Westminster, to whom this manor then belonged, granted all the springs rising in it to the mayor and citizens of London, who then collected those on a suitable level into a reservoir at Paddington, whence a 3-in. lead-pipe, 2,805 yards in length, was laid into another reservoir which they found on the line of the 6-in. pipe at the spot in Piccadilly before mentioned, 3,509 yards from the conduit. The head of water in the last-named reservoir was 12 ft. above the conduit-mouth, 8 ft. below the head in the reservoir at Stratford-place, and 12 ft. below that at Paddington. In 1442 the Little Conduit by Paul's-gate, Cheapside, was built, and water laid on to it from the 6-in. pipe.

The subterranean chambers recently discovered at Stratford-place, Oxford-street, are the remains of the reservoir whence the great conduit in Cheapside was supplied with water. The spring in the underground building said to have been subsequently discovered in Oxford-street, a few yards east of North Audley-street, is no doubt one of the nine springs which formerly supplied the reservoir. The building here referred to is approached from the surface by sixteen steps, and has a cistern in the bottom, the water rising in which flows away through a pipe on each side. No doubt it was built over the spring for supplying some mansion in the locality with water long before the existing houses were erected. A precisely similar building to this, made in the reign of Henry VIII., still exists beneath the gardens of Kensington Palace. A description and representation of it may be seen in Faulkner's "History of Kensington." JOHN PHILLIPS.

FATAL FALL OF HOUSES AT WOLVERHAMPTON.

ON the 14th inst., an adjourned inquest respecting the death of a boy named Edwin Brown, who met with his death by the fall of several houses in Wolverhampton, was held before Mr. W. H. Phillips, coroner, at the Old Bush Inn, Piper's-row.

Some weeks ago several houses, which were in a dilapidated state, situate in Walsall-street, suddenly came down into the street, and the deceased, who happened to be passing along at the time, was killed on the spot.

Various witnesses having been heard, the jury, after an hour's deliberation, returned the following verdict:—

"That the deceased died from mortal injuries caused by the falling of two houses in Walsall-street on the 11th of August, which houses had been in a dangerous condition to the public from the 22nd of July last." They also added the following to their verdict:—"The jury regret that the borough surveyor is very much to blame that he did not inspect personally the property when it was reported to him that it was dangerous; and further, that Mr. Ash, as owner, and Mr. Whele, as persons who have acted as beneficial owners, should have taken no steps to have prevented the houses from falling on to the public, after receiving notice that the tenants had to leave in consequence of the great dilapidation of the premises, and notice given to each of them by their respective bricklayers that the houses were either past repairs or must come down, and the jury recommend that the borough surveyor have summary power to erect a board and to put up notices to protect the public in the event of any spot being dangerous to the public."

THE VALUATION OF GLASGOW WATERWORKS.

AT a meeting of the Glasgow Water Committee last week, the clerk stated that Mr. Dodds, the assessor of railways, canals, and other public works, had valued the local waterworks undertaking, the supply being mainly derived from Loch Katrine, at 106,655*l.* 13s. 5d., being an increase on last year of about 25,000*l.* This increase, it was explained, arose in consequence of the assessor not allowing anything for what were called tenants' profits, Mr. Dodds having acted on the precedent established by a case decided in England in reference to the Mersey Docks. He applied the same principle to the gasworks last year, and on the case being brought before the Lord Ordinary in the Court of Session, he affirmed the valuation, and it was doubtful whether in the event of a second appeal the former decision would *not* be adhered to. It was ultimately agreed, however, to appeal against the assessment.

PROPOSED HOTEL, LEGHORN.

THE illustration shows the sea-front of a hotel about to be built at Leghorn, principally to meet the wants of English and American visitors and residents, from the designs of Mr. Walter Emden, architect. The site (on a portion of which the barracks formerly stood) is immediately outside the city walls, and is washed by the sea on three sides, the fourth facing the Corso. The views which the hotel will command are scarcely to be surpassed, and the front has an almost southerly aspect. Between the gardens indicated in the view and the sea-wall will be constructed an esplanade with jetties for yachts and boat-landings.

The extreme length of the building is 460 ft., and the widths on lines taken at right angles to the general line of front are as follow, viz.:—through projection at centre, 140 ft.; through wings at ends, 206 ft.; and through intermediate portions, 60 ft. The general height from ground to top of parapet is 90 ft., and the total height in centre 132 ft.

The ground-floor arrangement may be generalised as follows:—An arcade having a clear width of 12 ft. extends along the entire front, and returns around the wings, forming a spacious balcony at first-floor level. The central block contains, in that part projecting beyond the general line of front, outer and inner halls; ladies' and gentlemen's waiting and retiring rooms; in that part intersecting the main building a grand hall; and in the projection to rear the grand staircase with baths, and lifts from top to bottom of building.

Between the central block and the wings there are, on the left, a bar with stairs leading to music-loft, opening into *table d'hôte*, and a ladies' drawing-room; on the right general offices for clerks and inquiries; a coffee-room, and a reading-room.

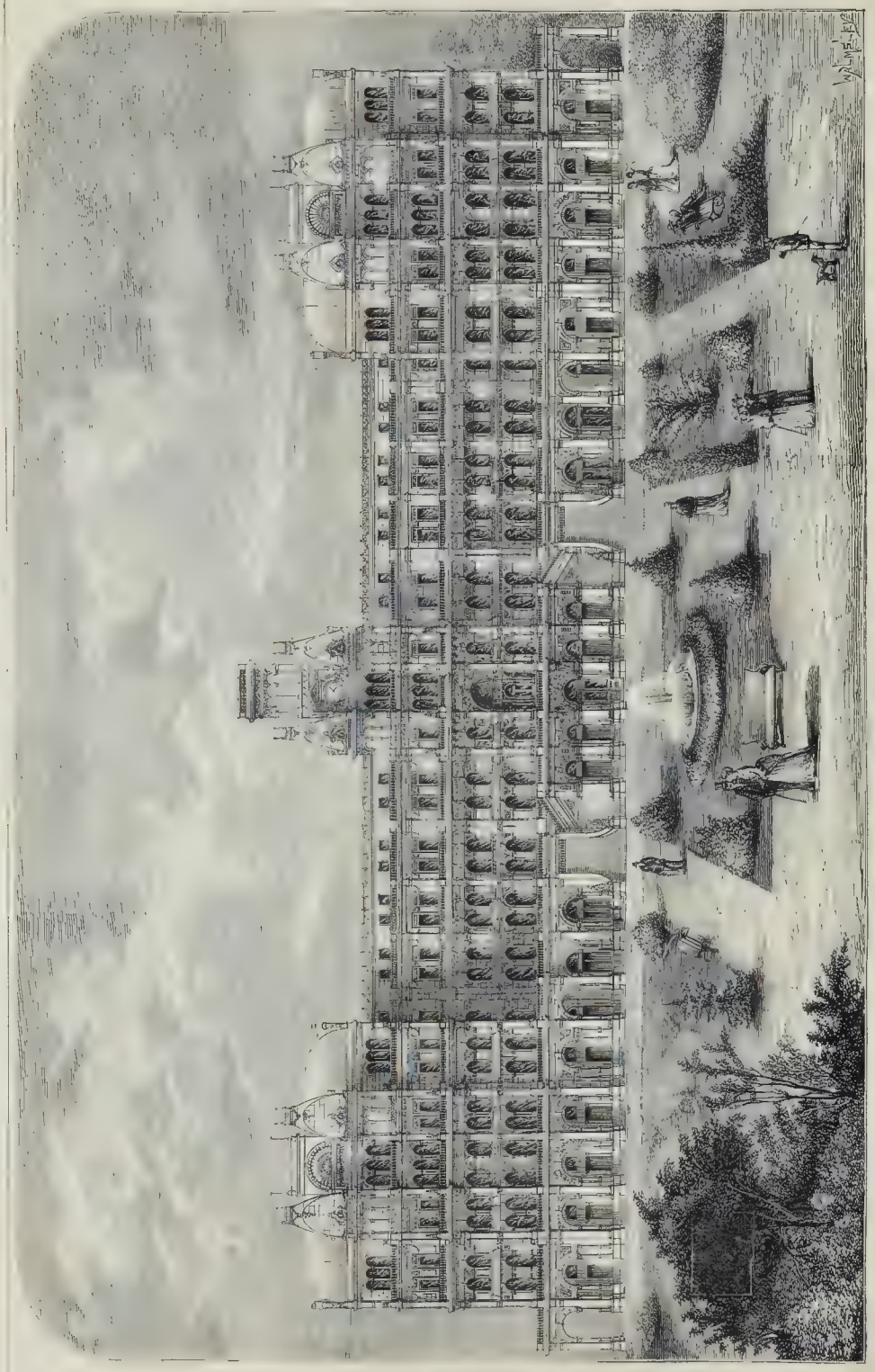
In continuation of the main building a ladies' coffee-room extends across the left, and a billiard-room across the right wing.

Forward from the line of frontage, each wing is laid out in flats, having separate staircases for approach from the outside, and so arranged that any number of the flats can be thrown into communication with or cut off from the hotel at pleasure, thus affording the choice between the hotel cuisine and attendance or complete privacy. Each flat contains all the reception and bed-rooms with kitchen and offices usually found in a moderate-sized English villa. It is proposed to construct a winter garden on the roof, as indicated by the drawing.

We will publish the plan of the principal floor in a following number.

THE LATE MR. ALEXANDER THOMSON, ARCHITECT.

AT a meeting of the friends of the late Mr. Alexander Thomson, architect, held in Glasgow last week, Mr. Charles Malloch in the chair, a committee was appointed to consider and report on the subject of a proposed memorial, and also to make arrangements for collecting subscriptions.



PROPOSED ENGLISH HOTEL, LEGHORN.—Designed by Mr. Walter Emden.



CAMBRIDGE HALL, SOUTHPORT.—MESSRS. MAXWELL & TUKE, ARCHITECTS.

CAMBRIDGE HALL, SOUTHPORT.

SOUTHPORT, the chief watering-place on the west coast of Lancashire, and the great sanatorium of the toiling millions of that and the sister counties of Yorkshire and Cheshire, is a wonderful instance of rapid mural growth, which has a parallel only in those large centres of iron industry, Middlesbrough and Barrow-in-Furness. This place, which forty years ago was a barren range of sand-banks, has been, by the force of circumstances and the courageous foresight of its master-minds, developed into one of the handsomest watering-places in England, possessing advantages which few towns of its class can boast. Its winter gardens and aquarium are unsurpassed. The pier, nearly a mile long, is provided with steam carriages, which convey visitors swiftly from end to end. The principal streets are provided with well-appointed tramway cars. The salt-water baths are handsome. Extensive botanic gardens have lately been opened. The new Hesketh Park stands as a monument of enterprise to those who six years ago knew it as a range of arid sand-hills, but which now is a beautifully laid-out and well-watered demesne. One of the pleasantest parts of the town is Lord-street, a fine broad thoroughfare, nearly two miles long, well planted and flanked with handsome buildings. It is in this street that the Cambridge Hall, the subject of our illustration, is placed. It adjoins the old Town Hall, and has been designed chiefly to supply the want of a larger public room than the old building afforded. It contains an assembly-room on the first floor, 120 ft. by 50 ft., with galleries supported from the walls by cast-iron brackets. The principal stairs are at the back, and open upon a promenade corridor, which runs the whole length of the building. The chief entrance is under a stone carriage-porch in the centre of the building. The entrance-hall, on the ground-floor, is 55 ft. by 25 ft. The roof of this is supported with columns. The floor is tiled, and on one side is a Caen stone and marble chimney-piece, with dog-grate. The space on the right of the entrance is devoted to the reception-room and the various retiring-rooms. The reception-room is temporarily used as the offices of a new local bank,—the Southport and West Lancashire Banking Company. The space to the left of the entrance is rented by the postal authorities for the postal and telegraph offices.

The building is faced with stone from the Longridge quarries.

The clock, erected by Joyce, of Whitchurch, at a cost of nearly 1,000*l.*, was the gift of Mr. W. Atkinson, of Southport.

The ground in front of the Town Hall and Cambridge Hall, amounting altogether to nearly two acres, is laid out with flower-beds and fountains as a miniature home-park, and is freely open to the public.

These works, which are only part of a larger scheme of public improvements, have been executed under the superintendence of Messrs. Maxwell & Tuke, of Bury.

NEW POST-OFFICE FOR GLASGOW.

THE inadequacy of the present building in George-square for the transaction of the increasing postal and telegraphic business of this large city has been frequently commented upon, and all concerned will be glad to learn that arrangements are now far advanced for providing the necessary accommodation. It is not proposed to interfere with the existing building until the new portion is finally completed and occupied, so as not to disturb the current business of the department. The actual new building, in the first instance, will extend from the gable of the present edifice to Frederick-street, extending to and including also the tenement recently acquired there. The business having been transferred temporarily to the new portion, the existing building will be taken down, and the improved elevation extended so as to form one uniform design. The total frontage towards George-square is 190 ft., returning downwards towards Hanover-street and Frederick-street, each 120 ft. deep, the whole covering an area of about 2,500 superficial yards. The area of the original building is only 950 square yards. With a view to secure harmony with the chief buildings surrounding the square, the Italian style has been adopted. The principal elevation is 75 ft. high, consisting of four floors above the street-level, having centre and end compartments, in each of which are the principal entrances. The one in the centre contains three arched openings, having on each intermediate pier moulded imposts and archivolt, &c., and faced with coupled relieved columns of the composite order, resting on moulded pedestals, and supporting the entablature above. The entrances on either side are of similar character, but having pilasters instead of columns. The windows in the intermediate compartments are arch-headed, and the masonry rusticated. The cornice of the entablature is carried along the entire front, ending and supporting a balustrade divided with panelled pedestals. The windows of the first floor have richly-moulded architraves and trusses supporting pediments alternately arched and pointed. The windows of the second floor are finished in a similar manner, but with moulded cornices only. The plans were prepared by Mr. Matheson, architect for her Majesty's Board of Works for Scotland.

PROPOSED NEW CEMETERIES FOR THE LIVERPOOL OUT-TOWNSHIPS.

THE necessity for providing one or more new cemeteries for several of the parishes and townships lying immediately adjacent to the parishes of Liverpool and Toxteth Park proper is now under the consideration of the local authorities of the first-named townships affected. This step has been rendered necessary in consequence of the Liverpool and Toxteth Park Burial Boards having both intimated their intention of closing their cemeteries against all who are not parishioners or residents of the two townships. The question as to whether there should be one large central cemetery for the use of the different townships in common, or a plurality of cemeteries, was freely discussed, and it was suggested that the two townships of Everton and West Derby combined, with their population of 170,000, should provide a cemetery for themselves, and that the three other townships of Kirkdale, Bootle, and Walton should provide another for their joint use. One gentleman present, Mr. Cariss, observed that cemeteries might at no distant day turn out to be unnecessary. He said he did not think it would be wise to do much in the way of providing cemetery accommodation for the future, inasmuch as there were several questions coming forward with reference to the disposal of the dead, such as cremation, and the carrying of the dead to the sea. It appeared, however, to be the general feeling of the meeting that one or more new cemeteries should be at once constructed, and that sites should be immediately procured, and a resolution was unanimously carried to the effect that it was desirable to provide burial accommodation for the several townships.

PURCHASE OF THE PLANTIN MANSION AT ANTWERP.

IT is now officially announced that the quaint old mansion in the Marché du Vendredi, that was once the printing-office and the home of the celebrated Christopher Plantin, with all its literary and typographic antiquities, has been purchased by the authorities of the city, and will for ever be maintained as a public museum. Antwerp has acquired the house and the collection for 1,200,000 francs, to which the Government has contributed 200,000 francs.

Among the antiquities of Antwerp, few are more interesting, and certainly none are less known, than this. Even the best of the guide-books pass it over without notice. In past years, when it was thrown open to the general public, some of the books, papers, and curiosities were feloniously abstracted: hence the house was shut up, and few persons were admitted to inspect it.

The house presents a remarkable appearance. Its ancient character has been thoroughly preserved. Over the door is a piece of sculpture representing the printer's arms. Behind this house, which was purchased by Plantin about 1580, and was refronted in stone by Moretus (F. J.), is a much larger edifice surrounding a spacious court-yard, in which are the museums. There are fourteen pictures by Rubens, one by Vandyck, four by Probus, two by M. de Voss. The printing-office contains about 2,000 MSS. of great value. There are also numerous manuscripts with miniatures. The library consists of 10,000 volumes, all in their original bindings, yet it is exactly a century since any addition was made to the library. The collection of engravings is inestimably valuable. There are about 10,000 on wood, and 200 on copper.

ARCHITECTS IN AMERICA.

SOME of our friends in the States are very anxious we should know what manner of man the Architect is in some parts of their country, and they send us the advertisements issued by one Mr. Appletart, let us call him. Here is part of one of the advertisements:—

"G. S. H. Appletart, Rear-end, R. M. Miller & Son's Building, 4th-street, Charlotte, N. C., architect, and agent for all kinds of iron fronts of building, galvanized cornices, iron fences, crestings, and all kinds of galvanized work, which he will sell cheaper than any person.

G. S. H. A., wishes to inform the public at large, that he is prepared to furnish plans of all kinds of buildings, with working drawings in full, which will be found much plainer than those of any other man in the State, he being a practical builder, having an experience of fifteen years in three of the largest cities of the United States. He can answer any question or give any information in regard to the construction of any part of the building, as he is fully qualified to go and do the work himself. With fifteen years as a builder and fourteen as an architect, he knows just what is necessary for a mechanic to get along with, and with this experience you will at once see that he has a pretty good knowledge of the business.

He can show as many fine buildings as any other man of his age, and will take pleasure in doing so. Any person visiting Charlotte is invited to call and examine his drawings, which he has at least 5'0. He guarantees to have 50 to 1 of any other person in the State. All are invited to examine them whether they are going to build or not. The ladies are specially invited."

In another paper our energetic *confrère* bursts into verse, as thus:—

"G. S. H. Appletart, Architect, Charlotte, N. C.
Come one! Come all!!
Both great and small!
To my office in rear of R. M. Miller's Hall.
It makes me feel as though I should say,
Call on me about the Centennial day,
And hear what I have to say
About buildings, on the Centennial day;
If you don't, when your building is done
You'll feel as if you wish'd you'd ne'er begun.
As for style and beauty you have none;
Call on me, as I please every one.
In style I please the eye and purse,
And guarantee to have no fuss,
And, if dissatisfied, will pay for time and trouble
Taken to investigate the truth.
Should you employ me, and I fail to please,
You can go away at your ease."

One of our correspondents from Atlanta, who encloses copies of these same advertisements, says,—"No doubt you have wondered at the manner in which architects have been appreciated in this country, but when you read the enclosed you will understand why it is that humbuggery has led the van."

Now, certainly, reading these has not conveyed to us that knowledge: those who can find any reason in these rhymes for employing the advertiser must, we think, be a very peculiar, if not very limited, class. Such vagaries in a country like America, where the profession is as yet but young, need not be looked at very seriously.

THE NEW LAW ON EMPLOYERS AND WORKMEN.

THE new Act to enlarge the powers of County Courts, in respect of disputes between employers and workmen, and to give to other courts a limited civil jurisdiction in respect of such disputes, came into operation on the 1st inst., and has application to the United Kingdom. To County Courts is now given power as to the ordering of the payment of money set off and the rescinding of contracts, and also as to the taking of security, whether the claims are liquidated or unliquidated, and are for wages, damages, or otherwise. In courts of summary jurisdiction, before magistrates, power is only given up to 10*l.*, and such proceedings are not to be deemed criminal. Such courts of summary jurisdiction have cognisance as to masters and apprentices, and an indenture is to be considered a contract between the parties. The Act is divided into five parts, and deals with the subject of security to be given to carry out any undertaking within its enactments, and empowers the Lord Chancellor to make rules. The summary jurisdiction given is expressly declared not to be deemed criminal, nor is imprisonment to be enforced, except in cases of apprentices who do not appear; nor are goods to be distrained upon which might not be taken in execution by a County Court. There is a definition of terms given and various sections as to Scotland and Ireland. The new law does not apply to domestic servants, but to labourers and others, and employers as well as workmen can be dealt with under its provisions.

The Stockton Painters have given notice that they want an advance of sixpence per day in their wages.

GENERAL FOREMEN AND CLERKS OF WORKS.

CLAIMS OF THE TRADES.

THE discussion of this subject appears to have excited an immense amount of interest amongst those concerned, if we may judge from the heap of correspondence which has reached us. It is exceedingly satisfactory that it has done so, showing, as it seems to us, a healthy desire for advancement and improvement, as opposed to the dead-level lethargy likely to be induced by some trade-union teaching. We can, moreover, with great justice, speak with praise of the good, clear style of the communications which have reached us, all of them the production of working men. We give a further selection from the letters received:—

SIR,—Having read the correspondence in reference to the "foreman" question, I was induced to look up the list of those who had passed in the honours stage of Building Construction in Science and Art Examinations, 1873 4, and I find that in 1873 fourteen individuals passed, and three of that number were either carpenters or joiners. In 1874, nineteen persons passed, five of whom were either carpenters or joiners, or more than a fourth of the whole number, and, with the exception of one builder in 1874, there is not a trade connected with building mentioned: they are either architects, draughtsmen, clerks, or teachers. I think that any further comment on this matter would be superfluous, as it clearly shows which of the building tradesmen are best qualified to lead or act in the above capacity. G. BANKS.

BRICKLAYER *v.* CARPENTER.—A CLAIM FOR THE MASON.

SIR,—Having noticed the dispute going on between the above, I have been induced to come into the field. I quite agree with "E. L." in noting the effect of the trade of the two classes upon the mind of the workman, but I think the trade which has to perform the most responsible part in the erection of our first-class buildings will be allowed by every man of unprejudiced feelings to be that of the stonemason.

I shall just notice first the qualifications required by a first-class mason (I mean the man who should be preferred as clerk of works). In commencing his trade he has to obtain a mastery over the tools in the hewing department (which is no easy task in our granite work). This gives him a most excellent opportunity for estimating the quality of stone, the material from which by far the most responsible and most expensive parts of our first-class building are constructed; and a clerk of works who is deficient in this kind of knowledge is not master of the principal part of his work, and I defy any one who has not wrought stone in some way or other to be in reality a competent judge as to its quality.

Again, the variety of shapes stones have to be cut into for the construction of the different parts of a building leads our young mason to study the art of drawing out and making the templates which he can use with practical result, and gives him an advantage which the carpenter and joiner can never attain.

Now, sir, I shall go on to the walls with my young mason, and what does he learn there? He learns to construct the part on which all the following tradesmen fix or hang their parts. He builds his hewn stones into oblique arches, arches of double curvature, groins, discharging arches, &c., and an innumerable variety of ashlar and rubble work, along with the inside dividing walls, which are not uncommonly built of bricks. Then the fireproof construction, which gives him a knowledge of iron girders, and of how to place them, and how to fill up the spaces between them with brick or concrete, as the case may be.

Now I shall go on to the duties of the foreman mason, and inquire what qualifications for clerk of works they are likely to result in. The foreman mason has to thoroughly understand the intention and construction of the entire building; he is commonly the first tradesman on the ground, and the last off when the job is finished; he requires to be most particular in his arrangements for preparing his work to receive that of all the other branches in their different places and relations, and must have a knowledge of their different constructions.

His whole and entire duties consist of brain-work,—theory and practice in combined action. After getting his working plans, &c., he has to arrange all the bond and construction of the building (the difficulty of which can be only known by a practical man), consolidate foundations if required, place his plant in proper working order, the chief part of which consists of timber, affording him an excellent opportunity of judging the quality and strength of different timbers, and the best way of placing them to resist strains, or support weight. He has also to superintend the locomotion of heavy masses of stone and iron, which, however well premeditated, requires a great amount of ready and substantial planning, owing sometimes to inaccuracy of working.

Mortars (as my friend "Bricklayer" notices) are very foreign to the carpenter, and no one will dispute that they should occupy the second place among building materials. I would say that a clerk of works ought to be well up in detecting bad mortars, and none but a practical man can thoroughly know them after they are mixed.

Your correspondent "E. L." speaks of bricklayers coming to a standstill were it not for the carpenter, and how he (the carpenter) could get on without him, and build a timber house by himself. The latter statement I do not dispute, but the former one is incorrect. No mason or bricklayer would stick for want of a centre. I do not deny they may employ a carpenter to make centreing, but it is simply because he is a worker in timber, and can make it more quickly and cheaper, not because it is difficult to plan or understand: centreing is simply tools to any of them; and who knows the tools better than the man who works them? And more, we all know that a mason, bricklayer, or carpenter can build houses independently of each other; but neither of the three houses would be anything like a perfect one.

I would take in hand to get six novices who would build timber houses, before I could get one who could build a stone or brick one.

Now, I think, I have fully proved that there is no tendency to monotony in the occupation of a mason, but that his is a trade of earnest and enlightening study from the very commencement; and I think if there be any prejudice among us, our fellow writer, "E. L.," has a fair share of it in saying that the carpenter "retains the leading position,"—a most unreasonable assertion, in the very face of the proof standing all round him. Just let him go out into the streets of our best housed towns, and examine the houses, piers, docks, bridges, and sanitary works; then let him examine our forts, lighthouses, and all buildings of durability, strength, and safety; and, last of all, let him inquire into the ruins of the once great towns and temples of the East which have withstood the destruction of armies, and the slow but eating action of time for thousands of years, and I think he will allow the mason to be the qualified man and "the" builder, and that the rest of the tradesmen (including the carpenter) are only instruments in his hands for the more complete finishing of his work.

ABERDEENSHIRE GRANITE.

SIR,—With all due deference to the remarks of your correspondent, "E. L.," in his reply to my letter upon the above subject, I beg to suggest he has failed to weaken or alter in the slightest degree the position I assumed.

He proposes to view the question from a broader basis than I had assumed for it; but he confines his views to the most narrow limits, looking at it with side glances only, devoting the greatest part of a long letter to the attempt to show that the very nature of the occupation of a carpenter and joiner exercises such a powerful educating influence upon the mind that he must in consequence become a being superior to the bricklayer, whose occupation,—albeit, the most lively and interesting when understood and properly appreciated,—he wishes you to believe exercises influences upon his mind the very opposite, reducing him to a stupid ignoramus, content to remain a mere mechanical drudge,—somewhat analogous, I suppose, to the ploughman, who simply has to follow his plough across the field that he may follow it back again.

I quite agree with "E. L." that it requires a considerable power of mind to grapple with the conception of an elaborate roof; but he cannot be ignorant of the fact that such a work is conceived and developed in the study of the architect or engineer, and it more frequently happens that the ironworker, not the carpenter, is called upon to put it into practice. Moreover, the detail is so carefully worked out that the foreman or clerk of works has no alternative but to follow the instructions, and, whatever his trade, no difficulty in detecting any departure therefrom; but I deny that the science of construction culminates in the roof. Would the most carefully constructed roof redeem the mistake of a faulty carcase, or of the foundation that should support the whole? The roof is to the carcass as the hat to the head,—it is not put on until the wearer is satisfied of the thorough completeness of the more important parts of his dress, from his boots upwards.

The remarks upon the training of the young joiner confirm my original statement, viz., that while he is passing, as he must necessarily do, all his early life in the shop, the young bricklayer from the commencement of his career is on the building, in the possession of opportunities the other must wait years to obtain.

The statement that the bricklayer's operations are limited to the aid received from the carpenter is scarcely worth comment; but, just by way of illustration, I will state that when foreman in my own branch I carried up a well-known extensive block of buildings,—one of a number of the same class,—the superstructure being constructed purely of brick and iron, even to the supports of the floors and roof, which was 80 ft. from the concrete, absorbing the labour of thirty-five bricklayers for several months, *one* carpenter sufficing to attend upon the whole, and his place could easily, under my directions, have been filled by an intelligent labourer.

"E. L." says he had some experience in both branches, and he is of opinion that the art of bricklaying is the most easily acquired. I am of a contrary opinion, founded upon the experience of forty years' continuous toil through all the grades, from an apprentice upwards; and I beg to suggest, without being offensive, that "E. L." commenced his experience with the bricklaying, and found it more difficult to attain proficiency than he is now willing to confess, and so threw it aside, choosing the more easily acquired branch,—the *carpenter*; and now, like a disappointed lover, seeks revenge by slandering the object of his former affections.

That the carpenter has greater facilities than the bricklayer for acquiring knowledge of the attendant trades, I have already disproved, by showing that the bricklayer gets a start of some years, and if he neglects his opportunities it is the fault of the man. That a carpenter can, if he choose, build a house without assistance, I quite agree; but that a bricklayer would fail, I deny: on the contrary, the bricklayer's house would possess qualities which the carpenter, in his house, would fail to produce, i.e., a sure foundation, efficiently drained, free from smoky chimneys, an even temperature, and impervious to wind and rain.

Your correspondent says his letter is intended to apply to ordinary house-building. Now, ordinary houses are almost without exception built with brick; and, as a rule, they are built to *sell*,—the majority of those that build them being carpenters and joiners, who personally superintend the work; and it does not tell much in favour of them as the fittest men for the leading position, that you are frequently called upon to publish in your columns the bitter complaints of those who, in an evil hour, have been tempted to purchase one of their productions.

Touching the mason, I beg to say he has no status in this discussion, for it is very rare that stone, on account of its expense, is used other than as a veneer, commencing at the ground-line upwards. The work is like the joiner's, prepared in the shop, which is frequently at a distance from the building. The manual labour attending it is considerably more severe than the bricklayer's; the more artistic portion falls into the hands of a distinct class, the carver, who least of all has any claim to the leading position. In regard to the load of prejudice impeding the advance of the bricklayer, I used the words in my former letter advisedly, and I repeat them, for it is evident that it does exist, your correspondent contributing more than a fair share. But what is meant by the statement, that the bricklayer does not receive the education that a carpenter and joiner does? Does he wish you to believe that as boys at school their education is shaped according to the trade they are predestined to follow? How many parents of the artisan class can, when their boys are at school, determine how they shall shape their course when old enough to work; and when it is eventually decided? More by the predilections of the boy himself, or by the force of circumstances, do they not all, in respect to adult education, start equal.

Are not the adult schools open to the bricklayer the same as the carpenter? and are not the same means of self-tuition open to one as to the other? If the bricklayer does not avail himself of his advantages it is his fault. The responsibility of educating the man is vested in the man, limited only by his opportunities, his brain capacities, and, above all, his will,—not by the nature of his occupation.

That the carpenter has long held the leading position by custom, I agree, but there are precedents that are dangerous, and customs change with the times; and, I say again, "E. L." has failed to show it is his by right. I also repeat that brickwork holds the most important place in modern construction, an assertion fully borne out by the extent to which it is applied. I need not repeat that the superintendence should be intrusted to those who understand it. Admit that, and it must follow the bricklayer is the most fit, presuming he, with his superior opportunities, has made himself acquainted with the necessary practical knowledge of the other branches more immediately attendant, and in connexion with it. Therefore, I once more earnestly appeal to bricklayers to arouse themselves to a sense of their position in this respect; and whatever has happened in the past, for the future they will so far educate themselves that, by their conduct and ability, they are undeserving the too-oft-repeated slur, that a bricklayer cannot superintend his own work, much less hold the leading position. That they will do this, or, at least, make an effort, is the wish that has influenced me in the initiation of this correspondence.

A BRICKLAYER CLERK OF WORKS.

WHO LOOKS AFTER THE STRAND AND ITS TRIBUTARIES?

SIR,—A fortnight ago you were good enough to print a letter from me, inquiring whether there be any surveyor or overseer intrusted with the interests and rights of the ratepayers of St. Paul's, Covent-garden, in particular, and those of the public in general frequenting that neighbourhood. Therein I alluded to a plot of waste land at the corner of Bedford and Chandos streets, upon which a notice-board had long enjoined intending speculators to seek the aid of "a certain Mr. Howard." The result of my letter is that the notice-board in question has been removed, but the hoarding of rotten doors, worm-eaten planks, and other carpenters' refuse, still remains an eyesore and inconvenience from which even bill-stickers, unwarned, shrink with cautious dismay!

Perhaps in this dead and silly season it is inconsiderate to expect an answer to my question,—builders, architects, and other millionaires having obviously retired to their country-seats,—but unless some explanation is quickly afforded of an unusual and useless trespass upon a portion of the public footway, I shall take leave to communicate personally with the noble owner of the soil. In the present state of metropolitan government, this course is just as likely to be successful as any other. I shall inform the Duke of Bedford that certain of his Grace's agents or lessees, for at least the space of this current year, have deprived the public of a portion of the pavement in Bedford and Chandos streets, without any apparent right, and for no visible utility. At the same time an opportunity may perhaps occur to describe the character of some of the buildings which have lately sprung up upon this portion of the Duke's estate,—buildings which, under the present tenure of land in England, are contrived with such skill and cunning by both architects and builders as to afford profit to none—not even the heirs of the ground-landlord — except the architects and builders aforesaid.

Sir, I live in a new house, built to last a few years, the joint work of both an architect and a builder, to say nothing of two surveyors, who were necessarily called in to assist them. The landlord for whom the house was built knows even less about bricks and mortar than the ordinary Londoner, and he modestly admits that he cannot complain of his own house, because those of his friends are built much in the same way. Neither do I complain. Ye gods! do I not revel in my house? My windows rattle with a breath of wind, which in the winter whistles through them; in summer, the sunlight penetrates under my doors, and through their shrunk panels; my floor-boards, each inclined at a different angle, are wonderful to behold; but take them up, as I am constantly obliged to do, and you shall see something still more wonderful beneath, where the gas-pipes thread their way and leak,—oh! they leak, and always in impossible places. The chimneys, it is true, only smoke when the wind is in the east or the south-west; yet the brick walls yawn, the plaster ceilings crack, the wooden skirtings come undone; nevertheless, these are trifles compared with my staircase. O "tread"! why breakest thou? O "riser"! why so elastic? O "soffit"! why powder me with bad sulphate of lime? The devil, mayhap, has prompted an answer. The Socratic system of leaving the world, which has been much practised of late, may find in my staircase an impetus to its modern development. I believe that I am in a position to guarantee a verdict of "accidental death" to any person or persons desirous of committing suicide. By watching the right moment (and that at no distant time), any man can be successfully brained with merely one flight of my stairs. Due notice can be privately given to the mercantile and other communities of its impending fall for the benefit of the temporarily insane; and the result I am confident would accrue to the entire satisfaction of the coroner, the undertaker, and mankind.

Men of fashion being now all out of town it is too much to expect surveyors to return to London merely to inspect Bedford-street or venture along the Strand. They would avoid the latter place at any time, but most certainly at the present moment. The Strand as you know, sir, has been "up"; parts of it are still "up"; that it will be "up" again very soon is certain from the manner in which it has been put "down." I complain of nothing, much less of the state of the chronic effervescence which afflicts other thoroughfares besides the Strand. But I wish to ask a question concerning local government discipline. I am about to lay down a speaking tube between the house in which I live and the public-house opposite, for an obviously practical purpose. Can I pull up all the roadway between the two houses, dig a deep trench, and, for a week, snap my fingers at all carts, cabs, carriages, and the like? If there be any one in authority to consult concerning these things, does he ever question the necessity for digging up London as it has lately been dug up in the Strand? And if these be necessary, does he see that the stones are properly laid down again? Last Sunday morning, although no rain had fallen for days, the Strand from Wellington-street to Bedford-street was thickly coated with black congealed mud (in Continental and therefore less Christian cities the streets require to be kept quite as clean on Sundays as on weekdays); rucks of paving-stones protruded above the surface of the road, and one or two were loose and eminently dangerous; pools of black and green water lay stagnant and towards noon got lighted up by a bright sun. All this doing, redoing, and undoing, besides costing a good deal of money, leaves the streets in a state of hideous patchwork which facilitates the accumulation of refuse of all kinds—refuse, which in the Strand, more often than will be believed, depends for its removal solely upon the wheels of rolling vehicles and the extremities, naked and clothed, of passing animals both brute and human. W.

TEACHERS AND WORKERS.

(*For the Use of the School Board Schools.*)

GIVE the workman water pure,
Give the workman light and air;
If his life is insecure,
Health and mind cannot endure,
And his home becomes a snare.

Build the workman's dwelling sound,
Not an earth-house or a cave;
Scan and drain well underground,
Heed and pave well all around,
Or you'll make his living grave.

Educate the workman's child,
In your lessons aye impress
That the fountain undefiled,
Lies in truth so oft exiled,—
Mind and body cleanliness.

Teachers of the present age,
Teachers of the coming time,
If you 'd live in history's page,
Let these truths your mind engage,
They will lead to work sublime.

C. C. H.

IF ST. PAUL'S IS TO BE DECORATED.

SIR,—It is indeed lamentable to consider that after all the painstaking of the Royal Commissioners on the Fine Arts, and the careful investigations of its secretary, Sir Charles Eastlake, to determine the right method of conducting the decoration of a great public or monumental building, we should still find any one to propose, as your correspondent, "G. S. A.," that the windows should be the first consideration,—the key to the decoration of St. Paul's.

In the various reports of that Royal Commission, it was, amongst other things, distinctly pointed out that if coloured glass be introduced at all into the windows of an edifice which is destined to receive mural pictures, it should be but sparingly, in very small quantities. The first step should, therefore, be not, as your correspondent suggests, to have all the windows filled with "painted windows, richly dight," but to have those already introduced removed as quickly as possible. The next thing should be to appoint an historical painter, thoroughly conversant with the theory and practice of mural painting, to the command of the decoration of the cathedral. The introduction of those windows, from the designs of Schnorr into such a building, considering the main object in view, could have occurred nowhere but in England, and perhaps nowhere else in England but in London.

The reason for excluding painted windows under the circumstances is obvious, for pigments reflecting colours from their surfaces, no matter how skilfully treated, can never compete with the brilliancy of colours radiated from either stained or painted glass. Where windows are filled with painted glass, the glass must "lord it" over everything else in the way of pictorial art, hence its applicability to Gothic architecture, which does not admit, to any great extent, of pictorial embellishment.

The key to the decorations should be that which was the key to the architecture,—the theme of the Redemption. Here is the base on which all ecclesiastical superstructure should be raised, the theme which taxes the invention of painter, sculptor, and architect to the highest. The architect has given us the fair proportioned body, the painter and sculptor should now breathe into it the breath of life, as Michelangelo did into the Sistine, and Raffaelle into the Vatican.

W. C. T.

CONCRETE PONDS.

SIR,—In the *Builder* for August 21 a correspondent asks for a remedy for the leaking of a concrete pond. As no clue is given to the nature of the subsoil, or what the concrete was made from, and how it was made and applied, it is impossible to suggest a cure; but allow me to state that I have constructed a considerable number of concrete ponds, tanks, and reservoirs, some of the former of very large dimensions, and that only in one instance has there been the slightest failure, and this I found was caused by the concrete being laid on the clay which had formed a pond that the new one was to replace. The clay contracted, through being kept dry,—a subsidence ensued, and the concrete inevitably cracked.

My method of forming the ponds is this:—After excavating the ground to the proper form, the concrete is made in the manner usual for walls of concrete buildings, with one part of Portland cement to seven parts of clean, sharp, gravel, crushed flints, or other suitable aggregate: this is laid on evenly, about 4 in. to 5 in. thick, commencing at the bottom and working towards the top. The concrete should be tolerably well beaten at the time it is deposited in place, with an ordinary turf-beater faced with sheet-iron or zinc. It is essential that a much smaller quantity of water should be employed for mixing purposes than is usual for wall building, because otherwise the cement exuding the water unnecessary for setting, the latter rises to the surface, and it is then impossible to beat the concrete as otherwise should be. In two days after completion, the surface of the concrete should have applied to it a mixture of half cement and half clean, coarse, sharp sand, a small portion only being "ganged" at a time, and this should be commenced at the lowest part as before, and well worked in with a plasterer's hand-float, so that all the interstices are completely filled; but,—and this is important,—there should be no thickness of cement or coat, but the hand-float used until it grinds against the surface of

the concrete. For cattle-ponds, the slope of the sides should be much less steep than is usual with clay ponds, because there is obviously not so good a foothold.

Allow me to say that the advantage of concrete for open ponds seems, as a rule, to have been overlooked, as with a solid substratum it will bear almost any amount of rough treatment without injury, and no protection fence is therefore necessary; neither is it liable, as clay ponds are, to sustain injury in dry seasons (when depending upon surface drainage or rainfall), and it is economical in first cost, which ranges from 1s. 6d. to 2s. 3d. per superficial yard, exclusive of the excavation. THOS. POTTER.

BACK STREETS QUESTION.

THE MIDDLESBROUGH STREETS COMMITTEE.

THE fortnightly meeting of the Middlesbrough Streets, Markets, and Building Committee was held in the Corporation Buildings on the 7th inst., Alderman Todd in the chair. The clerk having written to the Local Government Board pointing out that some members of the Town Council held that one thing was meant by the words "back passage," and some arguing that it meant another,—a back street, not a back passage,—read the following letter from the Board:—

"SIR,—I am directed by the Local Government Board to acknowledge the receipt of your letter on the 12th ult. respecting the bye-laws proposed by the Town Council of the borough of Middlesbrough, and to forward for the information of the Town Council the inclosed copy of a report which the Board have received from their architect on the subject. Having regard to the advice of their architect, the Board would not be prepared to confirm a bye-law authorising the construction of a back street of the reduced width proposed by the memorialists. But if there be any real doubt as to the meaning of the bye-law, this should be cleared up by a judicial decision, or by an amendment of the existing bye-law."

FRAS. FLETCHER, Assistant Secretary."

Copy of Enclosure.

"Middlesbrough.—Width of Back Streets.

Narrow streets seriously interfere with the free circulation of air, and the districts in which they have been formed are invariably close and unwholesome. This is mainly due to the impossibility of securing that movement in the atmosphere necessary to change the air, but also the difficulty of keeping such streets clean. Narrow streets, too, owing in some measure to the additional expense and difficulty of watching, lighting, and scavenging them, become places of deposit for every kind of filth and refuse, which, apart from considerations of the demoralisation, are very prejudicial to the health of the inhabitants. For the above reasons, and having regard to inconvenience of public traffic, I usually recommend the same minimum width for streets not intended for carriage traffic (including back streets) as is prescribed in the Towns Improvement Act, sec. 63,—viz., 20 ft.; and am of opinion that the Town Council ought never to have allowed any diminution from the minimum width of 18 ft. specified in their existing series of bye-laws, and I do not see that they have any authority whatever for doing so."

A discussion then took place as to who were responsible for persons having laid out buildings and erected houses with 3 ft. back passages, while the bye-law in existence stated that the back passages should be 18 ft. Some of the members of the committee were of opinion that the builders themselves were responsible; others thought that the Council were liable for altering them. The clerk held that the builders were responsible, because, whatever the Council did, whatever plans they passed, did not make legal an infringement of the bye-laws sanctioned by the Local Government Board. The chairman was of opinion that the committee had no right to pass block plans with less than 18 ft. back passage. At the close of the meeting a number of plans were submitted with 9 ft. back passages; but they were all refused, the only persons voting in favour of the passing of the plans being Messrs. Bargate, Archibald, and Blackburn.

THE NEW STREET, MARYLEBONE.

SIR,—It is to be hoped they will be careful about the spelling of the name of the new street from Wigmore-street to Hinde-street,—Man-devil has such a queer look. Surely Mandeville is meant? BAYSWATER.

THE WORM IN THE WOOD.

SIR,—I am much troubled by the woodwork in my cart-horse stable being worm-eaten, and should be glad to discover a preventive. The whole of the timber work, including oak stall-posts, and division boards, also flooring boards of hay-loft over, is being completely eaten away, and if touched crumbles into dust.

I am aware that eventually new timbers will be required, but in the meantime I am desirous of applying some remedy which would stop its further progress, and eradicate the pest. Possibly some of your readers might suggest the best course to be adopted. AGRICOLA.

BLAST-FURNACE CONSTRUCTION.

WITH a view to reduce the cost of a furnace stack without interfering with the permanency or the economic operation of the structure, Messrs. Weimer & Birkinbine, of Lebanon, U.S., have introduced a mode of constructing blast-furnaces which is described and illustrated in the *Bulletin* of the American Iron and Steel Association. The heavy masonry which surrounded the stacks of the furnaces of former years has given way to the lighter masonry piers, or metal columns sustaining a mantle; and now Messrs. Weimer & Birkinbine come forward with another method of construction, which consists in substituting large cast-iron housings nearly double the height of the ordinary columns or piers. The housings support a cast-iron mantle constructed in the form of a hollow girder through which air can circulate. Below this mantle the fire-brick masonry of the bosh walls (2 ft. 6 in. in thickness) is exposed, each course being confined by bands of 1 in. square iron, which are secured to the housings by T-heads resting in slots left to receive them. A casing of boiler iron surrounds the walls of the crucible as high as the tuyere openings, and between it and the walls are placed 6 in. of washed gravel, through which water is allowed to percolate. The housings also form supports for the circle-blast and water-pipes, and for a spray-pipe under the mantle. The outside of the stack above the mantle is of red brick, secured by strong iron bands provided with double clevices,—a casing of boiler iron surrounding the upper portion having flue connexions. The tunnel head is provided with Weimer's patent charger, which prevents the escape of gas when the bell is dropped and maintains a regular flow of hot-blast and boilers. The fence is adjustable so as to be used either open or closed. The entire construction is intended to consume the minimum amount of material, and the hollow mantle, spray-pipe, exposed bosh walls, light bands, and crucible casing give abundant opportunity to avoid danger from excessive temperature.

UNANNEALED GLASS.

IN a second paper on this subject addressed to the French Academy of Sciences, MM. V. de Luynes and Ch. Feil treat of blocks and plates of unannealed glass. They state that in general it is impossible to saw, file, or drill a hole in such glass without its flying off into fragments like Rupert's drops. Shape, however, exercises some influence in the matter: thus, a disk may be perforated in its centre without breaking, but if it is attempted to perforate it in any other place it will crumble to pieces. Under polarised light a square plate of St. Gobain glass displays a black cross, the branches of which are parallel to the sides. It is always possible to saw it through along those directions, but anywhere else the saw is sure to break the plate. If the two portions of the latter, when quite sawn through, be seen through polarised light, there will be perceived black stripes and coloured fringes, the arrangement of which shows that the molecular state of the fragments is no longer the same as before the operation. If the two pieces be placed directly one upon the other, the fringes and stripes disappear; but if put together inversely, the latter will assume the appearance they would have with a plate of double the thickness. This proves that all has proceeded symmetrically on both sides of the saw.

AMERICAN EDGE-TOOLS IN ENGLAND.

ENGLISH edge-tool makers in particular are (says the *Mining Journal*) aware of the success which certain of their business rivals in America have hustled them in many of our home and foreign markets. So large, however, is the demand at present for good edge-tools of almost every description that there are few edge-tool firms in the United Kingdom who have not plenty of orders upon their books. The English article is not, therefore, out of use, but there is a perceptible increase in the favour in which handy and thoroughly excellent tools are held, both at home and abroad. And this is being encouraged by the growing facilities for manufacturing steel, both shear and cast. Sensible of this, certain American firms are pushing their opportunity. Hence it comes about that American forks, shovels, and axes are to be had wherever edge-tools are offered in this country. But it would seem that the Americans believe that they can compete with us much more successfully by having branch establishments to manufacture their specialities in this country rather than by shipping their product from the other side. A firm of cast-steel shovel-makers at Pittsburgh are now, through a representative who has recently come over from Pittsburgh to England, making inquiries which will regulate their action, and determine them whether they will themselves begin to make in this country, or whether they will offer their process to English firms, or to an English company.

ARBITRATION CASES.

JACKSON *v* BUIST.

IN October last a house in course of erection at Crockbertown, Cardiff, was taken possession of by Dr. Buist by force, the builders—Messrs. Jackson & Shaw—alleging that an amount of over 500*l.* was due to them at the time; and when the case was brought before the public, they (the builders) assigned as a reason for refusing to give up possession, the refusal by Dr. Buist and his architect (Mr. Blessley) to recognise their claims. The matter was subsequently brought before the Court of Queen's Bench, and by order of Mr. Justice Brett the whole case was referred to Mr. C. E. Bernard, of Cardiff. It was further ordered that the costs of the cause were to abide the event, the costs of reference only being in the discretion of the arbitrator. The defendant, Dr. Buist, had tendered 160*l.* to the Messrs. Jackson as payment in full, which, being refused, the defendant paid 334*l.* 1s. into court, pleading a set-off of 174*l.* 1s. as liquidated damages and money paid in completing the building. The arbitrator awards that over and above the sum of 334*l.* 1s. paid into court by the defendant, the defendant is indebted to the plaintiff in the sum of 69*l.* 17s. 8d., and he directs the defendant to pay to the plaintiffs the said sum and the costs prior to the reference, and he orders that the plaintiffs and defendant do each bear their and his own costs of reference, and do each pay one-half of the costs of the award.

THE DUNDEE ESPLANADE.

THE dispute which has existed for so long a time between the magistrates and council and Mr. Hugh Kinghorn, the original contractor for the construction of the esplanade, has now been disposed of by Mr. Leslie, C.E., the arbiter.

Mr. Kinghorn left the works in an unfinished state in January, 1871, stating that he had expended all the material he was called upon by the schedule to do. In consequence of the sinking of the foundations of the wall, he stopped operations until he should receive orders from the engineer in reference to the work which still remained to be done, as the extent of the schedule measurement had been reached before he came to the pitching of the wall. The magistrate and council applied to Mr. Leslie in order that Mr. Kinghorn should be made to finish his contract, allowing him at the same time the right to reserve any claims for extras. After several hearings a considerable time ago, Mr. Leslie found that Mr. Kinghorn was bound to finish his contract, but reserved to him the right of making a claim for any extras. Mr. Kinghorn, however, declined to go on, and the magistrates resolved to finish the esplanade themselves. The works were then put into the hands of Mr. Robert Laing, contractor, Dundee, at an enhanced cost, arising from the increased price of labour and material as compared with their price when Mr. Kinghorn's contract was entered into in 1869. On the completion of the works a short time ago, the magistrates and council craved the arbiter to dispose of the contending claims. Mr. Kinghorn claimed 9,718*l.* 18s. 6d., besides damages for alleged breach of contract. The magistrates and council, on the other hand, declined to recognise his claim, and made a claim against Mr. Kinghorn for 9,591*l.* 0s. 2d., being the cost of the works which Mr. Kinghorn had left to be completed, and including the cost of repairing damages to the sea-wall while the works were left exposed by Mr. Kinghorn, and also the cost of entering into new contracts, watching, inspection, and engineer's fees upon the extra works. A long proof was taken in Edinburgh about two months ago, and parties were fully heard subsequently upon the import of the proof and the contending claims. Mr. Leslie has now decided against Mr. Kinghorn. After allowing him upwards of 1,800*l.* for extra work, he is found liable to pay to the town the sum of 6,950*l.* 19s. 6d.

Threatening a Foreman.—At the Guildhall Police Court, on the 1st inst., John Hardy, and John Ball, labourers, in the employ of Messrs. W. Lawrence & Sons, contractors, were charged with being drunk and threatening Michael Pipe, foreman at a job being carried out at the new City Club. The prisoners had been at work under him for about a fortnight, and on the following Monday they came to work drunk, which was repeated again on Tuesday, and he refused to give them their ticket. The defendants persisted in annoying him, and threatened to do for him. They were fined 5s., or seven days' imprisonment each.

COMPETITIONS.

THE School Board of Leyton and Leytonstone have selected the design, submitted in limited competition, by Mr. T. Roger Smith, for their Church-road schools. The Board obtained professional assistance in considering the plans submitted, and the report which was made to them by their adviser was very favourable to the design selected. The schools are to accommodate 525 children, in the three departments of boys, girls, and infants. The site being ample, the school-buildings will all be of one story only. A master's house will form part of the group of buildings.

GIVE THEM A RUB.

SIR,—In August, 1873, you kindly inserted my letter under the above title. Allow me now to say that it has not been unheeded in the City. The bronze statues on the Holborn Viaduct have been cleaned, and, as it appears to me, rebronzed. It seems to be rather early for such a process. It is to be hoped that arrangements are made that these statues, and all others, may be periodically rubbed or brushed, which will keep them in good order, and the example would soon be followed throughout the metropolis. Y.

DIFFERENCES.

SIR,—I have been looking in the *Builder* for the last two weeks expecting to see a statement of tenders that were sent in for building two pairs of villas in the Mall-road, Hammersmith. Not seeing them, I consider in justice to the trade they ought to be published, and having been requested by one of the competing firms, have sent you a copy of them, and shall be greatly obliged if you will print them in your next. The three middle tenders are from firms living on the spot, the lowest from a Brixton tradesman. I have no doubt all are respectable firms, but the question is, why the differences, as each firm had quantities supplied them by the surveyor, Mr. H. Lovegrove:—

Hobson	£3,439	0	0
Stimson	3,150	0	0
Chamberlain Brothers	3,047	0	0
Adamson & Sons	3,025	0	0
Wilson	2,995	0	0
Everett	2,180	0	0
Brealey	2,125	0	0

A FIFTEEN YEARS' SUBSCRIBER.

"VARNISH."

SIR,—Can any of your correspondents recommend an oak varnish that will stand out of doors? I have tried several on oak doors and window-frames, but none will stand, and therefore I suppose they are useless in preserving the wood. QUERCUS.

STOPPAGE OF A PUBLIC THOROUGHFARE.

IT is now nearly a year since the Regent's Park explosion wrecked Macclesfield-bridge, and debarred all carriage access to the fine internal road from the north and west sides of the Park for nearly a mile and a half; the *décombres* of the bridge and of the handsome gate-lodge are still prostrate in the same confusion and ruin as they were left on the 8th of October, 1874; and the inhabitants of Portland-town, Primrose-hill, the Avenue-road, and its important vicinage, are seriously incommoded and injured (in property) by this utter heedlessness. Who is blameable for this recklessness of public rights?

Allusion to the subject was made in the *Builder* some months back, but no direct movement has yet been made to compel the canal company to redress a public wrong. The sufferers have been too busy in exacting compensation for damages suffered, and the company in modifying and paying them, to repair a great and serious public grievance. Surely so great an obstruction of rights pertinent to the whole population of London can be allowed to sleep no longer. The greatest solace to the pent-up inhabitants of our great and growing metropolis is to be found in the forest glades, the opens, and the beauteous flower-walks of our parks; and although the office of ædile has been defunct for nearly 2,000 years, and that of the censor is wholly extinct, still a note from the *Builder* may attract attention to this subject, and lead to the reparation of wrongs affecting the million.

QUONDAM.

Sculpture.—An equestrian statue of Bernadotte was inaugurated at Christiana on the 7th inst. About 50,000 persons were collected in the square where it is erected. The statue, which is placed on the centre of the eminence on which the palace is built, facing the principal street, is the work of a native sculptor, Herr Bergslien, and was cast in Copenhagen.

SCHOOL BOARD SCHOOLS.

Landward (Wick).—At a meeting of the Landward School Board on the 3rd inst., the following tenders for the erection of the Thrumster school buildings were accepted, viz.:—For mason and slater work—Alexander Sutherland, Whalligoe, 764*l.* Joiner, plaster, and plumber work—Thomas Dunbar, Wick, 607*l.* 10*s.* Painter work—George Cameron, Wick, 26*l.* Total 1,427*l.*

Skenfrith.—At a meeting of the Skenfrith School Board, held on the 2nd inst. at the Townhall, Grosmont, Mr. E. H. Lingen-Barker, of Hereford, was appointed architect to the Board. There were sixty-four applicants for the appointment.

SCHOOL-BUILDING NEWS.

Chester.—The foundation-stone of the new King's School, Chester, which will be devoted to the purposes of middle-class education, was laid on the 9th inst. by Mr. Gladstone. Mr. Blomfield is the architect, and Mr. Farrimond the contractor.

Brynmawr.—St. Mary's (National) Schools were opened on the 8th inst. The building, which is cruciform on plan, is Gothic in style, and has cost about 1,000*l.* What may be called the nave will be occupied by the boys, the girls occupying the transepts, the apse being used as a class-room for girls. The total number of children accommodated is 300. The architect is Mr. Neville, of Abergavenny; and the builder, Mr. Thomas, of Brynmawr.

Moseley.—At the usual monthly meeting of the Wednesfield School Board, on the 6th inst., Mr. Griffin, the architect to the Board, attended with plans of the new schools about to be erected at Moseley Village, which were approved, and ordered to be submitted to the Education Department.

Lochgelly.—A new school for the parish of Lochgelly is now in course of erection. The contractors are Messrs. M'Ghee & Son, and the entire cost, including the houses of the teachers, will be about 2,500*l.* The new building will accommodate 250 scholars.

CHURCH BUILDING NEWS.

Aberdeen.—At a special meeting of the Aberdeen town council on the 2nd inst., the plans prepared for the new steeple to St. Nicholas's Church, which have been exhibited for the last four months, were again discussed, but no selection was agreed on, it being resolved to remit back two of the sketches to be remodelled by the city architect.

Lincoln.—The erection of a tower to St. Mark's Church has been commenced; but the spire will not be built until the necessary funds come to hand. The work has been entrusted to Messrs. Huddlestone & Son.

Stirling.—The plans for the new church to be built in Albert-place, for the congregation of Holy Trinity Church, have been approved of, and the estimates for the work given in and opened. The contractors for the mason work are Messrs. Dougal & Ronald; for the joiner work, Mr. Robert Anderson; plaster work, Messrs. Forster & Walls; slater work, Mr. D. M'Gregor; plumber work, Messrs. Hardie. The total cost is estimated at 4,000*l.*

Hampstead.—It was announced some months ago that the trustees of the parish church of St. John, Hampstead, had consulted the parishioners as to three alternative proposals,—the enlargement and repair of the existing structure; or the demolition of it and the erection of a new church on its site; or, thirdly, the erection of a new parish church elsewhere. At a recent meeting of the trustees it was agreed that the fabric should be restored and enlarged, and that the work should be carried out under the direction and from the designs of Mr. F. P. Cockerell. A faculty to enable the alterations to be made has been obtained from the Ecclesiastical authorities, and the plans have been submitted to and approved by the Bishop of London. The present roof will be retained, so that the church will not be raised in height; but it will be lengthened to the eastward some 30 ft. or 40 ft., by the bringing forward of an apse or apsidal chancel towards the gates opening into Church-row. The west part will be left pretty much in its present condition, and small side-aisles will be added to the north and the south of the present nave, making its breadth throughout equal to the widest portion at present. The chancel will be prolonged westward into the nave, and on either side of the holy table will be a vestry—the one for the clergy, and the other for the choir. A porch will be added on the northern side facing Holly-hill. Several pinnacles with crockets will be added, and a tower and spire substituted for the present tower. The new tower and spire will rise to the height of about 150 ft., and the gilt vane and copper sheathing of the present spire will be utilised in the new structure. The total cost is roughly estimated at 10,000*l.*

Norbury.—On the 29th ult. the parish church at Norbury was reopened, after partial restoration. A sum of about 350*l.* has been expended, including a window presented by the Misses Burne, the cost of which was 150*l.* The alterations to the chancel consist of the removal of the plaster ceiling which concealed the oak roof timbers, and the opening out of these timbers, which are massive in character, moulded and carved. A five-light traceried window has been inserted at the east end, in substitution for a miserable lead light encased in brickwork, which had supplanted the original window. The plaster and whitewash, on the internal face of the ashlar walling, has been partially removed. The new window is fitted with slightly-tinted cathedral glass, by Heaton, Butler, & Bayne, of London. In the nave the plaster ceiling has also been removed, and the original massive oak timbers have been opened up, and the walls to some extent cleared of whitewash. An ancient south door, which had been built up, has also been restored. The original church consisted of nave and chancel only, but a modern brick tower at the west end has been added. The original building is of the Decorated period, and probably was erected in the time of Edward III. The alterations have been carried out under the direction of Mr. Charles Lynam, architect, of Stoke-upon-Trent, by Mr. Whittingham, of Newport, contractor.

Coventry.—The tender of Messrs. Collins & Cullis, of Tewkesbury, has been accepted for the first three sections of the work involved in the restoration of St. John's Church, Coventry. The contract, which embraces the whole of the stone work and the flooring of the church, amounts to 4,000*l.* Two other sections remain to make the restoration complete. These include the internal fittings and a new vestry. The total cost of the work, as originally designed by Sir Gilbert Scott, will be over 7,000*l.*

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Westminster.—It is stated that a site in the rear of Victoria-street, and adjoining the Tothill Fields Prison, has been secured for the future cathedral of the Roman Catholic Arch-diocese of Westminster. The building will, it is said, be one-third larger than Westminster Abbey, and will be erected from the designs of Mr. Henry Clutton.

Birkenhead.—The new Roman Catholic Church of St. Lawrence, Park-street, Birkenhead, was consecrated on the 5th inst. by the Bishop of Shrewsbury. The new church has sittings for upwards of 1,000 worshippers. It was designed by Mr. O'Beyrne, architect, Liverpool; but the plans have not yet been carried out to their full extent. A chancel, 45 ft. in length, will be added at some future time, and this will make the dimensions of the building 145 ft. by 60 ft. The internal decorations are incomplete.

Harborne.—The foundation-stone of the new Roman Catholic Church of St. Mary, Harborne, was laid on the 8th inst. by Dr. Ullathorne, the Roman Catholic bishop of Birmingham. The church will be erected from designs by Messrs. Dunn & Hanson, of Newcastle-on-Tyne, the style adopted being Decorated. Sittings will be provided for 300 worshippers, and a provision will be made for a gallery at the west end should it be needed. The open-timbered roof will be formed of framed and braced rafters, the height from floor to ridge being 39 ft. Three traceried windows will light the nave, and six small lancet windows will light the aisle. Externally the building will be of red brick, with dressings of Bath stone, while the interior will be of white bricks, with bands of terra-cotta. The cost will be 5,000*l.*

Northwich.—An outlay of upwards of 300*l.* has just been incurred in decorating the Roman Catholic Church of St. Wilfrid, Northwich, and in erecting an altar and reredos. The altar, composed of white marble, was designed and executed by Messrs. Herbert & Co., of Liverpool.

The centre panel represents our Lord blessing the people, and the groups on either side contain angels in adoration. The groups on either side of the tabernacle are composed of saints. All the groups and angels which have been introduced into the canopies were designed by M. Charles Geerts, of Louvaine. The decoration of the church has been carried out by Mr. Chadwick, of Northwich.

Books Received.

Proceedings of the Association of Municipal and Sanitary Engineers and Surveyors. 1873–4. Edited by LEWIS ANGELL, C.E. London: E. & F. N. Spon. 1875.

THE first year's work of the Association of Municipal and Sanitary Engineers and Surveyors was a good one. A tolerably fair idea of it may be obtained from our pages, but the Association have done quite right in publishing their own report of the proceedings. The volume contains a large amount of valuable matter, and should be in the hands of all connected with the works of which it treats. The Association was firmly established from the very first, and perhaps owes something for that to the unhesitating assistance we gave at starting in rendering its doings widely known. More than 160 towns and districts are now represented by its members. The real secret of its success, however, is to be found in the energy, ability, and discretion exhibited by its founder, Mr. Lewis Angell, who was very properly made the first president of the Association.

Miscellanea.

Wages and the Cost of Living in Melbourne.—Mr. Anthony Trollope, in one of his letters from the Antipodes, just published, says:—Artisans in Melbourne, such as masons, bricklayers, and carpenters, now earn from 8s. to 10s. a day. Twenty years ago they were earning from 20s. to 30s. But twenty years ago everything in Melbourne was so dear that the man's condition was hardly better than it is now. The value of money wages is, however, only relative, and depends on the cost of provisions. In Melbourne, butchers' meat ranges from 3d. to 7d. per lb. In country towns it is cheaper,—say from 2d. to 5d. Bread is nearly the same as in England, the difference, if there be a difference, being in favour of the colony. Clothes, upon which protective duties are levied, are somewhat dearer in Victoria than at home. Fuel, if purchased, is dearer in the towns, coal running in Melbourne from 30s. to 35s. a ton; but the climate requires but little fire, and in the country wood is cheap. Rent in the towns is dearer than in England, but the labourer's facility of building for himself or living without rent is greater.

The Extension of the Peel Park Museum, Salford.—At a special meeting of the Salford Town Council, held on the 1st inst., Alderman M'Kerrow, in moving that Mr. Lord, the architect, be permitted to take out the quantities for the extension of the museum building, subject to his including the amount to be charged for the same in the 6,000*l.*, said that the park committee had repeatedly expressed their determination not to spend more than 6,000*l.* out of the 10,000*l.* which had been left for the purposes of the extension, and yet they had selected plans which would cost 1,000*l.* more than the amount contemplated. Mr. Lord, the architect, would receive the usual commission, but it was now proposed, in addition, that he should be allowed 2½ per cent.,—which represented from 150*l.* to 200*l.*,—for taking out the quantities. An amendment to the effect that the resolution of the museum and library committee of the 27th of July be approved, except that part which required Mr. Lord to include the amount for taking out quantities in the 6,000*l.*, be rescinded, was carried by 29 to 8.

A Portable Field Hospital.—It is stated that among the interesting sights of the Great Exhibition in Philadelphia next year, will be a field hospital, such as those used in the army of the United States. It will be built entirely of wood, and will consist of a central building and two wings; twelve field beds will be made up in the wings, which will be carefully ventilated, and furnished with all the newest sanitary appliances.

Etching on Glass.—Messrs. Malloch & Co., of Edinburgh, have produced some views, by means of a method of etching on glass which they claim the credit of inventing. The object of the invention is to provide the draughtsman with a surface which shall at once admit of the utmost freedom of hand, and receive and retain the slightest and sharpest touches of the etching point. A sheet of perfectly smooth plate-glass is covered with a preparation which, when dried, has all the appearance of a coat of yellowish oil paint, only that it possesses considerable translucency. Working on this surface much as he would do on the wax coating of the copper plate, but with the additional advantage that he can readily judge of the effect of his touches by ever and anon placing the glass against a dark background, the etcher makes his drawing. This having been completed, photo-lithography is resorted to for the purpose of reproducing it on paper. The prints which are produced by this simple process resemble impressions of etching on copper, reproducing as they do with the utmost clearness of definition every line and dot of the original drawing.

Asphaltic Fabric for Roofing. — An asphaltic fabric for roofing, invented by M. Charles Gaudefroy, fils, of Beaucamps-le-Vieux, France, is composed of a web of animal hair or flock, steeped in a bath of gas-tar, pressed between two cylinders to expel the excess of tar, then spread upon the ground and sprinkled with peat-ashes, care being taken to make them enter the web, which is allowed to dry a little, and is again steeped in a bath similar to the first, then again pressed, spread out to thoroughly dry in the air, and finally, before being rolled up it is sprinkled with fine river sand. In applying the fabric to roofing the boards usually placed upon the rafters are dispensed with, the rafters are placed about 1 ft. apart, and the fabric is at once nailed thereon. The edges of the fabric are brought close together, and the joint is covered by laths, which are afterwards coated with tar. Vegetable tar, asphalte, and analogous matters may be substituted in lieu of the gas-tar, and peat-ashes be replaced by vegetable or other ashes, earth, or an equivalent.

The Royal Infirmary for Women and Children, Waterloo-road. — Considerable additions are about to be made to this building, from plans by Mr. E. M. Barry, R.A. The works will comprise the erection of an additional story, thus increasing the accommodation by twenty-two beds. The windows will have circular heads, and the principal architectural features will be constructed so as to correspond with the old portion of the building. The new story is to be 22 ft. high, thus bringing the elevation of the entire building up to a height of 52 ft. above the street level. The materials used will be malm brick, with gauged arches, the cornice being in Portland cement, and the strings and copings in Portland stone. In addition to the new story, the basement of the building will be reconstructed in order to give increased accommodation for the out-patient department. Mr. W. Brass is the contractor, and Mr. House is acting as clerk of works. The estimated cost is 4,000*l.*

Loans in Aid of Public Works.—In the last financial year the Public Works Loan Commissioners advanced sums amounting to 2,318,759*l.* by way of loan in Great Britain. Among these loans are 1,676,154*l.* to school boards; 460,979*l.* to sanitary authorities; 83,140*l.* for harbours, docks, and piers; 46,292*l.* to local Boards and Boards of Health; 26,700*l.* under the Labouring Classes' Dwelling-houses Act of 1867; 12,794*l.* for workhouses; and 7,000*l.* to the Portpatrick Railway Company. In Ireland the Commissioners of Public Works advanced in the year sums amounting to 286,845*l.* The principal outstanding at the end of the year, the balance of advances made in Great Britain and Ireland under various Acts, after allowing for repayments made, and for sums remitted (chiefly on public works loans in Ireland), is stated in the finance accounts as amounting to 14,635,775*l.*

St. Bride's Church, Moss Side, Manchester.—The designs of Messrs. Pennington & Bridgen, of Manchester, have been selected (in a limited competition of local architects) for the new church of St. Bride, which is intended to accommodate the inhabitants of the suburbs now rapidly springing up between Chorlton and Stretford roads, and is to be erected in Talbot-street, the site having been presented by Sir Humphrey De Trafford.

Extensive New Stabling at Brighton.—An extensive range of stabling, capable of accommodating 200 horses, has just been completed in connexion with the Norfolk Hotel, Brighton. The new block is oblong in shape, with buildings on three sides. The space in the centre, which measures some 200 ft. in length by 40 ft. in width, is arched over with a roof of glass, wood, and iron, and thus forms a convenient covered enclosure, access to which is afforded by entrances from King's-road, Norfolk-street, and Silwood-street. The buildings include two floors, the upper one, on which the manager's office is also located, being utilised as dwelling-rooms for coachmen, grooms, &c. The construction of the new, together with the thorough renovation of the old, premises, was entrusted to Messrs. Spreadborough & Feldwicke, builders, of Sussex-street; the architect being Mr. W. E. Hudson.

New Town Clock at Newnham, Gloucester.—The works in connexion with the erection of a new town clock at Newnham were commenced on the 2nd inst., when Mrs. Crawshay laid the memorial stone. The clock tower will be constructed of Bath stone, and will consist of a shaft 4 ft. 6 in. square, rising to the height of 40 ft., at which level the clock, with four faces, will be fixed. Above this will be an open bell turret, with spirelet surmounted by a vane. The total height from ground to top of vane will be 60 ft. The base, which is to be 6 ft. square, built on a plinth, and capped with weather coping, will be treated in rustic courses of stone, the shaft being of ashlar work, with bands of Forest stone. The clock will be illuminated, and will strike the hours on a bell weighing 1¼ cwt. Mr. Medland is the architect, and Mr. William Fream, jun., of Gloucester, the contractor. The cost will be about 400*l.*

New Banking Premises at Dumfries.—New premises for the Union Bank of Scotland are in progress at Dumfries, from a design by Mr. Railton, architect, Kilmarnock. The façade of the building will be in the Italian style, the material used being the Locharbriggs red sandstone. The contractors are:—James Halliday, for mason work; Robert Thomson, for joiner work; Peter Drummond, for plumber work; John M'Lelland, for slater work; and John Dickson, for plaster work. Sheriff Hope on the 3rd inst. granted the prayer of the petition for interim interdict presented by the Police Commissioners of Dumfries, who seek, in the exercise of the power conferred upon them by Act of Parliament, to have the new building of the Union Bank set back to a line with the adjoining houses.

Rebuilding of the Theatre Royal, Edinburgh.—Certain obstacles which have hindered the rebuilding of the Edinburgh Theatre Royal (which was burnt to the ground in February last) have at length been overcome, and the reconstruction of the building will be commenced at once. Mr. C. J. Phipps will be the architect of the new building, and having made a survey of the ruins of the former building, he reports that the whole of the frontage, with the portico and a considerable portion of the side walls, is in good condition, and not damaged by the fire. He proposes reconstructing the theatre after the style and plan of the Gaiety in London. Accommodation will be provided for 2,300 persons. A contract for the mason work of the new building has been entered into with Messrs. M'Gregor, and it is expected that the theatre will be completed and opened in January next.

A Memorial of the Franco-German War. The monument to be raised to the memory of the French soldiers killed at Mars-la-Tour, Gravelotte, and Saint Privat is making rapid progress in the Champs Elysées, Paris. The group represents La France in an erect position, placing a crown of *immortelles* on the head of a wounded soldier, whom she is supporting in her arms. At her feet two children, seated on an anchor, are receiving in their hands the rifle which is escaping from the soldier's hands. The monument is the work of the sculptor Bogino. Its final destination is Mars-la-Tour, where it will be erected over a crypt containing the remains of French soldiers. The pedestal has been executed from a design by the architect, M. Moyanx.

New Cemetery at Nantwich.—The ground of the new cemetery at Nantwich is now being laid out, and Messrs. Madeley & Heywood, the contractors for the chapel and lodge, have commenced the erection of those buildings.

New Corporation Gas Works at Swansea. The corporation of Swansea have determined to take into their own hands the supply of gas to the inhabitants, and have now under their consideration a scheme by which they propose erecting new gas-works, at a cost of 48,000*l.*, under the superintendence of Mr. Flintoff, gas engineer. From a calculation which has been made on behalf of the corporation, it is stated that gas can be produced by them, and charged at the rate of 3s. per 1,000, at which sum there will be a fair profit. The price at present charged by the gas company is 3s. 9d. per 1,000. Swansea appears to be extending at a rapid rate in area and population. It is stated that, at the present time, there are no less than between 700 and 800 new houses in course of erection in the town.

New Theatre at Coatbridge.—On the 6th inst. the new Theatre-Royal and Music Hall, which has been in course of erection for nearly two years, was opened at Coatbridge. The building is seated for 2,000 people. Inside, the building is 100 ft. in length by 52 ft. in breadth, and the height from the pit floor to the ceiling is about 40 ft. The stage is 34 ft. in depth from the foot-lights to the back wall, while the proscenium opening is 26 ft. in width by 29 ft. in height. The auditorium is divided into pit, circle, and gallery,—the two latter assuming the horse-shoe shape. The seats in the circle are upholstered in crimson Utrecht velvet, and the boxes and stalls are cushioned in cloth by Messrs. Wylie & Lochead.

Mr. Joseph Moreland's Will.—The will of Mr. Joseph Moreland, formerly of Old-street, St. Luke's, but late of No. 4, Vanbrugh Park, Blackheath, who died on the 11th of July last, was proved on the 21st ult. by Mr. John Brogden Moreland, one of the sons of the deceased, the acting executor, the personal estate being sworn under 14,000*l.* According to the *City Press*, the testator bequeaths to his daughters Frances and Caroline 500*l.* each, free of duty; to his executor, 50*l.* also free; to his wife, Mrs. Frances Ann Moreland, all his household goods and furniture, and the income of the rest of his property for life; on her death the residue is to be divided between his five children.

Drainage of the Thames Valley.—At a meeting of the Richmond Select Vestry, on the the 7th inst., a letter was read from Mr. Francis Fletcher, Assistant Secretary to the Local Government Board, in which it was stated that the Board, having received an application to form a united district, with a view to the adoption of a general system of sewerage available by the sanitary authorities within the area referred to, had decided upon instituting a preliminary inquiry by one of their inspectors into the subject, and that they hoped to arrange that the inquiry, of which due notice will be given, shall be held early in October.

The Forthcoming Trade-Unions Congress.—The eighth annual Trade-Unions Congress will commence on October 11 at Glasgow. The following are some of the subjects which will be discussed:—Criminal Law Amendment Act; Master and Servant Act; Laws of Conspiracy; Trade-Unions Act; Compensation to Workmen; The Small Penalties Act; Workshops Regulation Bill, and Women working in Brickfields; Truck Act; Representation of Labour in Parliament; Appointment of Inspectors under the Factories and Workshops Act, and the Mines Regulation Acts; Arbitration in Trade Disputes; the Patent Laws; and the "Sweating System."

Defacing the Monuments in Westminster Abbey.—The other day it was discovered that a portion of the chief mast of the *Erebus*, in the recently-erected Franklin monument, had been broken off by some mischievous person. A correspondent of the *Scotsman* says:—"This is not the first monument which has been injured in the Abbey. The head of Major André, who fell during the American War of Independence, has been removed no less than three times from the marble slab erected in his honour, and no clue has ever been found to the guilty party." Every thinking man is interested in detecting scoundrels who thus act.

Winchester County Hall.—The decoration of the Winchester County Hall is progressing, under the direction of Mr. T. H. Wyatt, the architect for the restoration of the building. The paintings are by Messrs. Hardman, of Birmingham.

Archæological Discovery at Kertch.—In excavating for the foundations of a building for the Military Club at Kertch, a tomb of brick was found containing the following interesting objects:—A head ornament of gold, elaborately and artistically chased; two gold cups; a ring, in which is a gem; a gold crown, broken; several gold clasps; a gold coin, bearing the head of Alexander the Great; and a splendid gold vase, unfortunately broken, ornamented with drawings of a dark colour on a red ground, and with inscriptions in Greek. The whole bear evidence of the action of fire.

Extending Trellis-Work. — The trellis-work manufactured by Messrs. S. & C. Causley, of Kingsland-road, is the best we have seen. The very small compass it occupies when closed makes it very easy of transit, a consideration with country timber merchants dealing in these goods. Each lath is planed on both sides, thereby saving labour in painting, and also presenting a better appearance. The workmanship of the specimens submitted to us was excellent, and the extent to which a panel of it pulls out, according to the height desired, is remarkable.

A Village Convalescent Home.—The foundation-stone of a convalescent home was laid at Rownhams, Hants, on the 8th inst. The new building, which will be Gothic in character, is the gift of Lady Helena French, and will supersede some unsuitable premises which have been used for the purposes of the home during the past seven years. Mr. W. H. Coussmaker, of Shanklin, is the architect, and Messrs. Crook & Sons, Southampton, are the builders. Accommodation will be provided for six patients, a matron, and sub-matron.

Exhibition of Paintings at Manchester.—The private view of the fifty-fifth exhibition of paintings in connexion with the Manchester Royal Institution took place on the 13th inst. The works hung number nearly a thousand, chiefly consisting of oil-paintings. Messrs. Britton Rivière, J. C. Hook, G. F. Watts, M. J. Aumonier, Alma Tadema, W. H. Paton, J. D. Watson, and others, including a number of local artists, are amongst the exhibitors. The exhibition opened to the public on the 15th inst., and will remain open several weeks.

Presentation by Workmen.—On the 4th inst. the staff and *employés* of the firm of Messrs. Powis, James, Western, & Co., of the Victoria Works, Lambeth, assembled at the White Hart, College-street, Belvedere-road, for the purpose of presenting their late sub-manager, Mr. Manfred Powis Bale, with a cup and testimonial on the occasion of his leaving the firm. Mr. R. J. Dawson presided, and in presenting the cup, which was appropriately inscribed, he paid a high tribute to the character and attainments of Mr. Bale.

United Operative Bricklayers' Trade Protection Society.—The third anniversary of the Ipswich branch of this society was celebrated at the Sickle Inn on the 4th inst., when about forty members sat down to dinner. The report read by the secretary showed that the contributions during the year amounted to 80*l.*, and there had been paid for deaths 40*l.*, accidents 10*l.*, leaving a balance in hand of 30*l.* The number of members belonging to the Ipswich lodge is eighty, and that of the whole district, 7,500.

The Substructures in Oxford-street.—Some questions have been asked us as to the discovery of a second chamber, deep down in the roadway of Oxford-street, reported in the *Times* a few days ago, and said to be near North Audley-street. We are unable to obtain any information as to the find, and indeed have good authority for saying that there must be some misapprehension in the matter, the parish officials knowing nothing of any discovery beyond what we have already made known.

Scarcity of Masons in Scotland.—The *Banffshire Journal* says that in some parts of Scotland during the past summer masons have been very difficult to get on any terms. School Boards, with their heavy contracts, are monopolising all the building power in the country, and are likely to do so for the next few years.

New Drinking-Fountain for Manchester. The Baroness Burdett Coutts on the 10th inst. inaugurated a drinking-fountain which she has presented to the Corporation of Manchester. The fountain covers a space of 18 ft. by 12 ft., and is of polished Aberdeen granite.

New Limestone Quarries at Alston.—A new industry has just been added to the town of Alston by the opening out of extensive limestone quarries by the Alston Lime Company, which has been promoted and formed by Messrs. Pattinson, builders, of Newcastle. The works are situated about half a mile from the town of Alston, and are connected with the Alston branch of the North-Eastern Railway. Limekilns have been erected capable of burning sixty tons of lime per day.

Price of Land in the City.—We understand that a plot of land at the corner of Threadneedle-street and Bishopsgate-street, an area of about 3,600 ft., has been recently let at a ground rent of 2,600*l.* per annum, to receive a pile of buildings suitable for bankers, public companies, and merchants. This rent is at the rate of more than 31,000*l.* per annum per acre. Capitalised at twenty-five years' purchase, we get 775,000*l.* per acre as the value of the land.

The Bagdad Railway.—A numerous staff of engineers and surveyors, under the superintendence of Mr. W. Loftie Stoney, C.E., have left for Ismidt in order to make a preliminary *reconnaissance* of the country which the first section of the Bagdad railway, about to be constructed at the private cost of the Sultan, will traverse. The anxieties of the last few weeks have not diverted his Majesty's attention from the work which he has undertaken.

Delay as to Builders' Plans.—The great demand for new buildings in the north of England has been much retarded by the bye-laws of the rural sanitary authorities, that do not make the "authorities" determine upon the plans sent in, within a reasonable time; and the consequence of this serious delay is the setting at defiance the bye-laws by builders proceeding without first obtaining permission to build.

Dorchester Town-hall.—At the meeting of the Dorchester Town Council, on the 8th inst., a plan was submitted by the mayor, which had been gratuitously prepared by Mr. Ferrey, architect, for making an entrance to the Corporation buildings from High East-street. The design is a porch supported by two pillars on the curb of the footway, with the sides open so as not to impede passage along the footpath.

Portswood (near Southampton). — The Urban Sanitary Authority having applied to the Local Government Board for powers to borrow 17,200*l.* for sewerage works at Portswood, Mr. R. Morgan, C.E., held an inquiry on the 31st ult., at Southampton, the result of which he will report to head quarters; and upon which leave will be given, or withheld, to borrow the sum required.

Patent Office.—The offices for the registration of designs and of trade marks having been amalgamated with the Patent Office, Mr. B. Woodcroft, F.R.S., clerk to the Commissioners of Patents, has been appointed, according to the *Society of Arts' Journal*, Registrar of Designs. No formal appointment in connexion with the registration of trade marks has yet been made.

Proposed Docks for Warrington.—It is proposed to make Warrington a port, and to carry into execution some plans prepared last year by Mr. Vawser, the Borough Engineer, for extensive docks and wharfs at Bank Quay; also a scheme for a central station to supersede the two existing stations of the London and North-Western Company.

Drinking Fountain for Ripon.—On the 7th inst. a new drinking-fountain, situated on the North-road, was opened by the Mayor of Ripon. The fountain is built of stone, and has a trough for cattle. It is the gift of Mr. John Severs, of Ripon. The contractor was Mr. H. Bradford; the architect, Mr. E. H. T. Kessen; and the sculptor, Mr. T. Lambert.

TENDERS

For building residence, coach-house, and stables, on the New Farm Estate, Bromley, Kent, for Mr. W. T. Howard. Mr. W. Mundy, architect. Quantities supplied:—

	Residence.	Coach-house, &c.
J. Brown	£2,500 0 0	£236 0 0
W. Bangs & Co.	2,348 0 0	649 0 0
F. & F. J. Woods	2,251 0 0	636 0 0
Chessum	2,165 0 0	665 0 0
Payne & Balding	2,210 0 0	615 0 0
Judd & Hawkings	2,159 0 0	590 0 0
Edwards & Hames	2,197 0 0	551 0 0
W. & F. Croaker	2,160 0 0	578 0 0
Arnaud	2,088 0 0	536 0 0
Hearle & Sons	2,125 0 0	498 0 0
Stamp & Bowtle	1,989 0 0	544 0

For the erection of villa residences in Leigham-court-road, Streatham. Messrs. Edward Power & Wheeler, architects. Quantities supplied by Mr. W. Barnett.

Residence No. 1:—			
Waterson	£4,570	0	0
Rowe & Berran	4,490	0	0
Oliver	4,299	0	0
W. Downs	4,219	0	0
Brass	4,200	0	0
Ball	4,148	16	10
Shurmur	3,996	0	0
Riley & Son	3,929	0	0
Purkiss	3,900	0	0
Newman & Mann	3,885	0	0
Unwin	3,879	0	0
Dover, Son, & Co.	3,861	0	0
Hook & Oldrey	3,800	0	0
Boyce	3,754	0	0
W. Downs & Co.	3,750	0	0
Wagner	3,660	0	0
Aitchison & Walker	3,625	0	0
Residence No. 2:—			
Waterson	£4,570	0	0
Rowe & Berran	4,490	0	0
Oliver	4,299	0	0
W. Downs	4,219	0	0
Ball	4,148	16	10
Shurmur	3,996	0	0
Riley & Son	3,929	0	0
Purkiss	3,900	0	0
Newman & Mann	3,885	0	0
Unwin	3,879	0	0
Dover, Son, & Co.	3,861	0	0
Hook & Oldrey	3,800	0	0
Boyce	3,754	0	0
W. Downs & Co.	3,750	0	0
Wagner	3,660	0	0
Aitchison & Walker	3,625	0	0
Residence No. 3:—			
Waterson	£4,794	0	0
Rowe & Berran	4,743	0	0
Newman & Mann	4,560	0	0
Ball	4,525	18	10
Oliver	4,427	0	0
Downs & Co.	4,420	0	0
Shurmur	4,374	0	0
William Downs	4,347	0	0
Boyce	3,999	0	0
Hook & Oldrey	3,950	0	0
Aitchison & Walker	3,926	0	0
Unwin	3,879	0	0
Purkiss	3,840	0	0
Riley & Son	3,799	0	0
Wagner	3,770	0	0
Dover, Son, & Co.	3,759	0	0
Residence No. 4:—			
Waterson	£4,784	0	0
Rowe & Berran	4,722	0	0
Newman & Mann	4,540	0	0
Ball	4,525	18	10
Oliver	4,410	0	0
W. Downs & Co.	4,405	0	0
Shurmur	4,353	0	0
W. Downs	4,332	0	0
Boyce	3,988	0	0
Hook & Oldrey	3,950	0	0
Aitchison & Walker	3,905	0	0
Unwin	3,869	0	0
Riley	3,809	0	0
Purkiss	3,800	0	0
Wagner	3,758	0	0
Dover, Son, & Co.	3,741	0	0

For the erection of a villa residence at Knight's-hill, Norwood, for Messrs. T. B. Willoughby & Son. Messrs. Edward Power & Wheeler, architects. Quantities supplied by Mr. W. Barnett:—

Newman & Mann	£4,400	0	0
Downs & Co.	4,185	0	0
Riley	4,023	0	0
Purkiss	4,000	0	0
Dover, Son, & Co.	3,913	0	0
Unwin	3,800	0	0
Rowe & Berran	2,690	0	0
Waterson	2,485	0	0
Oliver	2,323	0	0
W. Downs	2,299	0	0
Ball	2,293	3	5
Boyce	2,214	0	0
Shurmur	2,097	0	0
Aitchison & Walker	1,995	0	0
Wagner	1,879	0	0
Hook & Oldrey	1,680	0	0

For repairs, 43, Marlborough-hill, St. John's-wood, for Mr. Theo. Uzielli. Messrs. Edward Power & Wheeler, architects:—

Butcher	£231	17	9
Chidgey	201	0	0
Lear	181	9	6
Brown	176	0	0
Hurdle	152	0	0
Soden	152	0	0
Purkiss	144	19	0
Jackson & Todd	142	0	0
Aitchison & Walker (accepted)	135	0	0

For making up, repairing, and curbing roads, Lower Norwood, for Mr. Charles Blake. Messrs. Edward Power & Wheeler, architects:—

Aitchison & Walker	£675	0	0
Killingback	663	0	0
Carter	657	0	0
Byshe	530	0	0

For widening and making up roads, Lower Norwood, for Mr. Charles Blake. Messrs. Edward Power & Wheeler, surveyors:—

Tender No. 1.			
Killingback	£239	0	0
Riley	135	11	0
Carter	133	15	0
Wallis	113	15	0
Tender No. 2.			
Killingback	363	3	8
Carter	297	17	0
Riley	255	12	6
Wallis	195	2	6

For repairs, &c., at the Duke of Hamilton public-house, Hampstead, for Messrs. Watney & Co. Mr. H. J. Newton, architect:—

Godden	£160	0	0
Tayler	152	0	0
Boden	148	0	0
Lamble (accepted)	145	0	0

For erecting new bay windows glazed with plate, stripping off old zinc gutters, and forming new lead ditto; repainting and decorating, twenty-eight houses at Battersea, for Mr. White:—

Timewell (accepted)	£1,465	0	0

For the erection of a house on the Holloway Estate, Dorking, for Mr. Frederick Taylor. Mr. F. J. Dibble, architect:—

Lyon & Dudley	£2,224	0	0
Goddard & Son	2,213	0	0
Hamblin Brothers (accepted)	2,170	0	0

For making, draining, levelling, and channelling the King's-road, Guildford, for the Urban Sanitary Authority:—

Pollard & Son	£310	0	0
Mason	307	0	0
Swayne, jun.	295	10	0
Garnett (accepted)	289	10	0

For repairs to houses in South-street, Guildford, for the Urban Sanitary Authority:—

Garnett	£133	0	0
Pierce & Clark	133	0	0
Mason	132	0	0
Pollard & Son (accepted)	109	11	0

For repairs, painting, &c., at No. 16, George-street, Mansion-house, for Mr. J. J. Stone. Mr. C. Reilly, architect. Quantities not supplied:—

Greenwood	£165	0	0
Harrison, Son, & Wood	117	6	0
Staines & Son (accepted)	98	10	0

For new sewer and road at Hampstead. Messrs. Farebrother & Clark, surveyors:—

Anderson	£2,955	0	0
Hiscock	2,795	0	0
Nowell & Robson	2,789	0	0
Killingback	2,748	0	0
Culverhouse	2,721	0	0
Watts	2,577	0	0

For the erection of East-End Juvenile Mission and Bible Schools. Mr. E. Gregg, architect. Quantities by Mr. Jas. Schofield:—

	General work.			Ventilation.		
Longmire & Burge	£15,500	0	0	£1,393	0	0
Gammon & Son	15,100	0	0	1,507	0	0
Roberts Brothers	14,689	0	0	1,413	0	0
Waldram & Co.	14,640	0	0	1,245	0	0
Ennor	14,315	0	0	1,278	0	0
Perry & Co.	14,230	0	0	1,419	0	0
J. & F. Coleman	14,113	0	0	1,397	0	0
Kilby	13,923	0	0	1,383	0	0
Jacobs	13,700	0	0	1,200	0	0
Hill, Higgs, & Hill	13,680	0	0	1,300	0	0

For St. Mary's Priory, Stamford-hill. Mr. C. G. Wray, architect. Quantities by Messrs. Linsdell & Gillard:—

	Main Building.			Washhouse.		
Crabb	£2,784	0	0	£830	0	0
Robins	2,580	0	0	930	0	0
Carter	2,440	0	0	880	0	0
Bangs	2,320	0	0	790	0	0
Perry	2,247	0	0	774	0	0
Haigh	2,272	0	0	743	0	0
Newman & Mann	2,210	0	0	780	0	0
Stamp & Bowtle	2,145	0	0	817	0	0
Ashley	2,130	0	0	780	0	0
Breese	2,108	0	0	746	0	0
Waldram & Co.	2,195	0	0	749	0	0

For mortuary for the parish of St. Leonard, Shoreditch. Mr. R. Walker, architect. Quantities by Mr. W. E. Stoner:—

	Mortuary.			Fittings.			Gates.		
J. & R. Walesby	£595	10	0	£61	10	0	£42	10	0
Sawyer	579	10	0	62	0	0	44	9	0
Allen & Sons	527	0	0	62	0	0	53	0	0
Waldram & Co.	549	0	0	50	0	0	38	0	0
Brown	479	0	0	62	0	0	42	0	0

For new warehouse, Great Wild-street, W.C. Messrs. Spalding & Knight, architects. Quantities by Mr. Fleetwood:—

Burford	£2,462	0	0
Gammon & Sons	2,300	0	0
Dove Brothers	2,200	0	0
Downs & Co.	2,160	0	0
Shepherd (accepted)	1,995	0	0

For the erection of a room for religious meetings in Stockleigh-road, St. Leonard's-on-Sea. Seating not included. Messrs. Fowler & Hill, architects:—

Watts (accepted)	£394	0	0

For sewerage works, Great Amwell, Herts, for the Ware Union Sanitary Authority. Mr. T. W. Grindle, engineer. Quantities supplied:—

Barnes	£130	0	0
Dover, Son, & Co.	121	0	6
Hare	113	10	0
Allen	112	0	0
Potter	110	0	0
Hitch	109	10	0
Foard	103	9	9
Williams	100	17	11
Fisher	98	0	0
Green (accepted)	94	15	9

TO CORRESPONDENTS.

R G (the house under ordinary circumstances would certainly have been sold with its two *half*-party walls only. Whether the owner by the terms of the sale to R G has deprived himself of the power to recover for the half wall would depend on circumstances, of which we have not knowledge). T. W G (please send address) T. J., Building Act (we quite agree with the decision of the magistrate. Parts of the face of flues cannot possibly be rendered unless done during the progress of the work).—An Old Dip Trap (for "constant" service fresh arrangements are of course necessary. Whether the Water Company should insist on the use of one maker's apparatus to the prejudice of another is of course a fair question).—"The Mountebank" (next week).—C. L., Paris (compliments).—A. Z. (we are forced to decline pricing out architects' bills. The Institute scale is accessible to all).—Tradesman (if the architect or owner who gives us particulars of a building does not think it worth while to mention the tradesmen employed, we must refer to them those who complain of the omission of their names).—J. P.—A. T.—J. L.—H. S. C. T.—L.—P. & B.—P. & W.—B. & A.—B. & Son.—J. S. B.—J. D.—H R G.—S. ...—W. M.—C. M. B.—R. P.—H. K.—T. & Co.—P. P.—E. W.—A. P.

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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List of Prices at the Quarries and Depôts; also cost of transit to any part of the Kingdom, on application to
Bath Stone Office, Corsham, Wilts. [ADVT.]

Patent Selenitic Cement, with double the usual sand, is much stronger than ordinary mortar. Plastering finished in much less time at less cost. Excellent substitute for Portland cement for Concrete at less than half its price.—21½, Millbank-street, S.W. [ADVT.]

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VOL. XXXIII. No. 1703. SATURDAY, SEPTEMBER 25, 1875.

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The Railway Jubilee.

DARLINGTON Railway Festival will mark that difference between an epoch and an era which historians and philosophers have distinguished. It celebrates, indeed—reverting to a phrase which, however hackneyed, can never be superseded in the breadth and depth of its meaning—the greatest triumph of mind over matter ever achieved by man. The immensity of the progress made, within fifty years since the humble Darlington and Stockton line was opened, almost shuts from view, indeed, all that went before it. We may be content to leave that in its own darkness, therefore,—the stage-coaches, the slow journeys, the bad roads, the pack-horse, and even the battles of the original promoters of steam. The ridicule which at the outset covered the idea of the locomotive and the rail is part of a familiar history, and needs not to be dwelt upon again. So with the thousand-and-one questions which vexed the souls of Parliamentary Committees five-and-forty years ago, when an eminent gentleman was unable to understand whether the wheels of locomotives would turn with their axles or upon them! It is far more pleasant, and the pleasure is mixed with a surprise, to contemplate the gigantic progress that, within so comparatively brief a space, has been witnessed. The entire earth, it may almost be said, excepting China and the regions of the Northern and Southern Poles, has been visited by the railway engineer; and China itself will not long be exempt. In the Old World this means of intercommunication superseded others which had existed before; in the New, often, it began with the life of the community. Thus, with respect to the railway between Vicksburg, on the eastern bank of the Mississippi, and the town of Jackson, in the centre of the State, which, throughout its length, traverses the primæval forests, the engineers who constructed it were, probably, the first of the human race who had ever set their feet in those solitudes. But, apart from public facilities and the marvellous social advantages following in their train, the Darlington commemoration reminds us of an advance so rapid in mechanical invention that it would justify the exclamation of Edmund Burke, with reference to the North American colonies,—"Where the reality begins, the exaggeration ends." It is no mere computation of mileage, of expenditure, of passengers carried, or swift travel, that can bring before us an idea of the change which has been wrought since the little Darlington Railway, then called as now, "The Quakers' Line,"—from the numerous members of the Society of Friends who supported the project,—was opened on September 27th, 1825. Thousands were there to see; some, as Mr. Smiles records, to rejoice over the burst bubble; others to watch the slow procession of coal and flour wagons, fitted up with temporary seats; many to wonder; a few to believe; but none to predict the amazing consequences. Then arose the great class of contractors; then, also, in its modern and extended sense, the great class of navvies, which has had its representatives in the proudest ranks of engineering science; then, too, an order of physical difficulties which, hitherto, it had been deemed almost impossible to overcome. Among the earliest of them was the road over Chat Moss, and it is inevitable that this modest monument, of which its author never spoke himself, except once in an ephemeral almanack, shall be talked of at Darlington on Monday. That alone was a victory; but it was also a prediction; it prophesied the conquests of the railway. It inspired men with confidence to attempt the Bingley embankment, the Ambergate cutting, the Whinstone dyke, the blasting of the Round Down cliff, the crossing of the Kentish estuary, and tunnels surpassing all previous imagination. But these are well-known annals, though the facts they record have changed the life, and almost the configuration, of the world. It was no extravagance to say of our railways, as was suggested by a man of not an altogether mechanical genius, years before the Darlington festival was thought of, the stupendous magnitude of these works is even less remarkable than the rapidity of their execution, the amount of capital they have absorbed, and the still greater amount of capital they have created. Indeed, taken as a whole, they bear stamped upon them an impress of power unequalled by the structures of any other era or nation; and future generations will point to them as eminently characterising the iron age of England. This will be the glory of the Darlington jubilee, September 27th, 1875; an express engine, rushing at the speed of a mile in sixty seconds, throbbing at the rate of 1,200 pulsations to the minute, consuming coal with a, perhaps, reckless wastefulness, and casting a vital heat to the four winds at every beat of the valve.

Nothing invented by man comes so near to the creation of an animal as this; and yet, perhaps, the locomotive itself, once constructed, is less amazing than the works which it has necessitated; the Menai, Montrose, Britannia, and Niagara bridges; the bridges at Saltash, Chepstow, and Mayence; the lattice bridge at Cologne; the Mont Cenis, St. Gothard, and Hoosac tunnels; the iron ways over the Semmering Pass, in the Noric Alps; the Bhor Ghât incline, in Bombay; the mighty Pacific line, which is a conquest of Alexandrian magnitude in itself, and, as some are inclined to vaunt, above all the rest, a cost for Great Britain alone exceeding the total of the National Debt. Ten years ago almost every capital in Europe was united, directly or indirectly, with every other, and then the barbarous sanctity of Constantinople was in danger of being profaned. The decade has made an enormous difference, and what was a marvel then is insignificant in the sight of the living generation. It ought not to be so, however; nor is it so regarded by those who feel best, and understand best, upon the subject, as witness the grateful gathering at Darlington. Since that date, however, the Mississippi has been connected with the Pacific; the Baltic and Black Seas, practically, with the Caspian; the Indian lines virtually with those of Europe; and what may come, not the ruling spirits of the railway sphere assembled at Darlington can themselves predict. When the little Durham town was visited by the locomotive the town was lighted with oil; it had a thoroughfare full of shambles; it was celebrated only for the grinding of optical glasses; and its principal reputation had formerly arisen from certain marl pits, long disused. From that small centre almost infinite have been the radiations. They have reached to the Salt Lake and to Chicago; they have traversed prairies immeasurable to the imagination, though not to the engineer; they have climbed mountains, with which the Alps, though not exactly the "rising grounds" described by the American Cockney, are only, in a secondary sense, formidable; and, taken for all-in-all, the world may, up to its Railway Commemoration-day, be well contented with its progress in this respect. Some similar gratification will be felt when attention is called to the continental net-work of rails, close and concentrated as a spider's web, and entangling every kind of traffic, whether of commerce or of pleasure, in its toils.

Perhaps, however, among the most remarkable, is the railway development of the Russian Empire, as illustrated in the latest reports to the Imperial Government. It is perceptible, at a glance, that the leading object aimed at is a military one. The whole railway plan of the Russian Empire is strategic. And this is a primary necessity with so vast, and, as it may strictly be termed, so dissolute a dominion. Distances are the grand obstacles to the movements of Muscovite policy; but the geographical conformation of Russia, as it happens, is peculiarly favourable to the construction and use of railways. The traveller, entering it from the west, finds himself landed upon an apparently endless succession of plateaux, slightly undulating, or else upon plains totally destitute of mountainous intersections. From the Carpathians to the Ural, from the Black Sea to the Arctic Ocean, there extends an almost unbroken expanse of swamp and plain. This, then, the marshes notwithstanding, was a region attractive to the railway engineer. To the road-maker, however, it had proved anything but a paradise. To the contractors—so they themselves said, it became as a Land of Promise. But—may it not be mentioned at Darlington!—the first Russian line undertaken was that between St. Petersburg and the Imperial Residence at Tsarskoe-Selo, a distance of about twenty miles, which it took rather more than twenty years to finish. There is, however, in Russia, a distinction between real

and official distances, real and official dates. This twenty-mile line, built in twenty years, began by carrying passengers at the rate of a mile an hour, express; the ordinary train would not guarantee a mile in less than an hour and a half. Not that the speed was so utterly poor; but that long stoppages were made,—for breakfast, for dinner, for supper, for morning and evening tea. Compare this with the Saturday Brighton Express, which carries a man from his City luncheon to the seaside, and leaves him two hours to spare before dinner. We are noticing, however, the infancy, and, so to speak, the planting out of the system before saloons, sleeping and smoking carriages, and the other violences of modern or American invention, were thought of. It was in Russia that the roots of this science were most early struck, after the suggestion had originated in England. But its fecundity was out of all proportion to the earliest experiments, and, at present, the reticulation spreads itself in all directions over the more civilised provinces of the empire. In the latest report upon this subject to the Imperial Government, it is set before the Emperor that railways are essential to his dominion, in order to support its policy, to cultivate the various riches of its soil, to place it upon a level with that of neighbouring powers, and to neutralise the enormous spaces at present separating the capital from the provinces, and the innumerable seats of trade and industry, one from another. In view of all this, and of the glorifications about to take place at the little Durham town, it is not unnatural that a French enthusiast of a few years ago should have repeated his question, What of railways a century hence? M. Audiganne is the inquirer. They will become, he thinks, social machines, not less indispensable to the common life of society than looms are to weaving. Already, in his opinion, they have created causes of astonishment by following, rather than abandoning, the natural and historical channels of human intercourse. For nearly every great river there is a railway, or there are sections of one,—the Vistula, the Oder, the Elbe, the Weser, the Rhine, the Seine, the Loire, the Garonne, and the Rhone. Instead of diminishing the commerce of these streams, they enhance it, and fill the ports with plenty. M. Audiganne professes himself astonished by the advances made in England. Wherever, he writes, there is social life in England, there also is the locomotive. In the United States, he says, you have more to strike the imagination: you have lines that run from winter to summer in a day; but in the "Britannic Isles" a train may pick up passengers at every milestone. If not too late, we would commend to the orators in Durham the speculations of this ingenious dreamer. He is another John Law in his enthusiasm upon the subject. He, in one word, builds an ideal junction in the heart of the Sahara, and leaves it for posterity to judge whether the nineteenth century has done right or wrong in encouraging George Stephenson, or Darlington, or Stockton, at all. The ancients were satisfied with their highways and canals, and why not we? There is a little inconsistency in the question, which, however, M. Audiganne is careful not to answer. We have noticed him only incidentally; but in reverting to the general topic, it is interesting to observe that the fiftieth anniversary of railway construction in England is also the fiftieth anniversary of railway construction in America. The event celebrated at Darlington took place in 1825. The Quincy line, in Massachusetts, was commenced in the same year, although the dates of their opening were different. Since then, it is not too much to say that the history of the civilised world has assumed a new complexion, for both peace and war. As to the former, paradox though it be, we cannot at this date imagine England or the Continent without railways; while, with respect to the latter, those who saw the trains laden with men and guns, and decorated with green boughs, that thundered through Germany towards the French frontier, found it difficult to conceive such a march as the Moscow retreat. No conqueror could in our day boast that he, upon a strategical plan, had defeated an enemy by "marching him off his feet." Though, then, we have been somewhat overdone with anniversaries of late, this, at all events, is a celebration upon every ground to be justified. The men who saw the "Rocket" pant and puff along its little journey looked forward, no doubt, to vast results; yet their highest anticipations have been surpassed, and 5,000,000 tons of iron, wrought in rails, constitute the new highways of the kingdom. The "iron-witted fools," of whom Shakspeare's *King Richard* speaks so contemptuously, have been foolish to some purpose in our generation,—for fifty years cannot be computed as much more. No change so mighty was ever accomplished within an equal space of time. What the next cycle of half a century may bring forth it is impossible to conjecture; but, in all likelihood, as steam tempted the Chinese out of their seclusion, and as it has already penetrated their rivers, it will not be long before the visions of M. Audiganne are fulfilled, and mandarins travel first-class. We shall soon hear of the contractor in the valley of the Yang-tse-Kiang.

HOMAGE TO MICHELANGELO.

AMONG the most interesting tributes rendered to the memory of Michelangelo was that last week at the assembling of the Academy of "La Crusca" and the Academy of the Fine Arts, when were delivered discourses by three of their best orators. The matter contained in these speeches deserves to be recorded as capable of benefiting artists of all rank and nations. First spoke Emilio de Fabris, President of the Florentine Academy of Fine Arts, on "The Merits of Michelangelo with respect to Art."

The name of Michelangelo, said he, a prodigy of art, is for the veneration of every civilised people. Whether we view him as the soul of the great citizen, the genius of the perfect artist, and think over the virtues which in times of great tribulations marked him out among many, he who would undertake to speak thereon worthily must tremble, however great may be his force of will, however great his intellect. If on this so remarkable occasion, when universal honour and homage are offered to the memory of his great name, you have the right to raise your expectations, you also have the right not to be disappointed. After me words will be spoken, which for wisdom and result of deep study and eloquence, will serve to edify you and respond in every sense to the solemnity of this day. . . . . .

There is no doubt that Michelangelo, following the inspiration of the one idea that flashed across his mind—the idea of the sublime—often made it appear that he disregarded those laws of art which would have put a curb on the free flight of his fancy. His works, however, admit of being judged largely according to all æsthetic principles of a superior order, and in relationship with the closest and most universally accepted rules of art.

It is necessary, however, in pronouncing judgment on them, to investigate closely how far the plastic manifestation agrees with the intuition of the idea, or, in other words, how far the harmony of form agrees with the conception. Also it is necessary to study them, in relation to history, examining how far he drew upon the especial conditions of anterior art; how far he agreed with, or took advantage of, contemporary art; and how far, in fact, in the development of the arts, was produced on his successors that influence for which he is reproached by so many; which subjects, I propose rapidly to make the heads of my discourse. Art, as no one can deny, is the imitation of Nature; but, as an intuition of the true, it is also a pure manifestation of the human mind. Now, one of the principal and fundamental gifts of art, to him who will put aside the false judgments of schools and of education, and will examine her by the history of progress, will be found to be that she has been always the spontaneous effect of inspiration. Hence arises the close and secret harmony of form with conception, without which it is not possible that either truth or efficacy of expression should be produced, and by means of which art infuses thought, sentiment, life, into forms imitated from nature, and renders them capable of moving the soul, and of kindling that celestial flame to which we give the name of enthusiasm. And it is thus that art, under the image of the beautiful, reveals to us the intellect of the true, which it animates, gives form to, and, according to the times and the people, constitutes the ideal the eternal desire of our minds,—that ideal which, as humanity goes on, we see transformed into the history of the world.

However, in the conception of certain subjects the idea prevails in a manner that the form, in spite of its nude reality, appears sacrificed; and this occurs whenever the artist carries out a conception in the high regions of mythology. The intrinsic merit, in such cases, consists more in the full signification of the idea than in the exact representation of the real; or, in other words, exists more in the true ideal than in the true real, and then is it that the work of the artificer, although not faithful to the rigorous imitation of nature, becomes through the true revelation of a superhuman idea, a sublime image.

These were the æsthetic designs which inspired Michelangelo most frequently in his works.

The sentiment of the beautiful, mystic in its nature, and hence, *par excellence*, ideal, was never more universal or more exquisite than in that glorious period anterior to modern renaissance. It sprang from a free and spontaneous inspiration that strengthened itself into a sincere and deep faith. From Cimabue to Fra Angelico art had no other inspiration than this.

It is true, however, that while the vital principle remained constant to itself,—form, like all human institutions, with the passing on of years went on towards perfection.

From the style of Niccolo Pisano, of Arnolfo, and of Giotto, to that of Donatello, of Brunellesco, and of Masaccio, who, however, were contemporaries of Fra Angelico, the last representative of Mediæval mysticism, art had greatly progressed, but with notable difference in its triple manifestation.

In painting and sculpture, which followed more tenaciously, on one side, the traditions of the schools, and on the other (through their native dispositions) the imitation of nature, progress, especially as regarded form, had been evident and undisputed, and the arts had arrived at a perfection,—one might say stupendous,—by a close and spontaneous proceeding. In architecture, on the contrary, progress, or however it may be qualified, really kept comparatively in the background. In fact, among the various styles of Mediæval architecture, the most characteristic, that in which the greater spontaneity of inspiration and freedom of invention were shown, was undoubtedly that called Ogive, for in that sublimity of conception and profundity of sentiment join together in admirable proportions. But scarcely had the working sixteenth century dawned, when the Ogive architecture fell almost suddenly; for the mind, turning back to the study of the Classical Antique *form*, began to triumph over the ideal and sentimental: hence the worship of primæval Greek and Roman marvels, already reviving at the latter end of the preceding century, increased rapidly in this; and the books of Vitruvius, brought up again, established rules for the imitation of Pagan architecture, which soon made themselves predominate, or rather tyrannise, over the public mind. This innovation, however, in architecture, has not, as in painting and sculpture, the effect of an intrinsic and necessary progress, but of a cold and methodical imitation. In any way, by this double renovation, Mediæval art lost what was unique and characteristic in her, which to agree with the nature of the people needed only to produce the pure images of religious sentiment and civil life. When the art of drawing was at this point, was born Michelangelo. The earnest yearning after originality, the beautiful, the sublime, which Nature had impressed in his mind and heart, had a gradual development. Even in the first works of his boyhood, the contrast of the ability shown in them, and the examples of the schools and the teaching, are clearly seen. He adhered to the traditions of contemporary art, as far as the study of the true, and of nature in the most perfect agreement of parts, and in the judicious choice of *form*; but at one time that extreme hardness of outline, which was a characteristic quality of the preceding age, under his hand began by degrees to soften, and the figure, on the whole, to be made grander and more majestic. The works which he then executed with that exact imitation of the true were almost exclusively of sculpture, and are among the most distinguished that came from his chisel. The "David," *chef d'œuvre* of form of which our city should be proud, worthily closes that artistic period of his life.

In the first years of the sixteenth century, Michelangelo, who was making gigantic progress in sculpture, inspired with grand ideas, panting after the sublime, searched studiously for its hidden treasures, seized them, and revealed them in the creation of extraordinary works. Before the "Moses," before that inspired nature of him whoon Sinai talked with God, who does not remain struck with a sense of wonder, almost of sacred terror! And in the statue of the Duca d'Urbino, seated on his sepulchre in the Medician Chapel, who does not read the secret thoughts of Michelangelo

in the misfortunes of his country. In the meantime a triad of eminent painters, Leonardo da Vinci, Raffaelle, Andrea del Sarto, sought to advance art, and he, scarcely known as a painter, competed with them, and surpassed them in boldness and depth of conception. In the painting of the ceiling of the Sistine Chapel all the powers of his genius broke forth; it is there that, with the majesty of forms never before attempted, he discovers a new world of ideas, and almost surpassing himself subdues human nature, and puts his works in competition with the terrible figures of the Creation.

But such prodigies are not effected, as I have said, but by the most free and spontaneous inspiration. Now, when an intelligence like that of Michelangelo is found obliged to submit itself to laws not in conformity with his own free nature, and with whom originality was the acme of art, it must not be wondered at if in architecture he attempted new ways and perilous innovations. Certainly, the beauty of form did not always here equal the height of his thoughts, but the real cause of such unharmonious inequality is to be found in that especial condition which the imitators of the Greco-Romano had imposed on the architecture of his time. To him suffering, indignant of restraint, used to tread only in his own footsteps, he could but ill dedicate himself to the exercise of a profession that had such fixed laws, so tenaciously established, taking away all life and inspiration; hence, when disputing with the resolute Paul, he persisted in saying that "architecture was not his art." Obliged, however, to enter within the circle of Vitruvian institutions, following them all with blind veneration, he sought to curb his inexhaustible fancy, giving vent only to some novelty in the ornamentation. But while following the precepts of the fourth century, and the examples of the architects his contemporaries, he adhered always to his principles of the true and pure, and of that exist proofs in the Laurentian Library and Chapel of the Sepulchres of the Medici.

Michelangelo is one of the greatest men in the history of art. In carrying out the suggestions of his fiery imagination, it is true, he was led at times to extremes; but he knew at all times how to confine himself within those boundaries that do not exceed the absolute laws of the beautiful. To so prodigious a mind as his it might be possible to constrain himself thus far, but not farther; beyond would have been an abyss. And the following age saw not this abyss, and, with insane pride, precipitated themselves into it. Imitation — that miserable heritage — that servile fanaticism of ordinary minds, always exaggerates the defects of the great masters. Why wonder that this has been the case with the copiers of Michelangelo?

His defects could be outbalanced by his incomparable intellect; but those who esteemed themselves bold enough to follow him in his flights of fancy found their attempt fatal. It was perilous to mount by his paths; and the pinnacle to which he attained, and where he paused, solitary—alone—shedding thence his light like a great star, can be reached only by a genius equally privileged by Heaven—by another divine Michelangelo.

EN ROUTE THROUGH PRESTON.

"PROUD PRESTON" is best known to travellers of the present day as the principal junction station on the great north railway route to Scotland, and the place where time for a hasty dinner is afforded to passengers by the fast trains between London and Edinburgh. The traditional epithet quoted above would seem to have been suggested rather by an ear for alliteration than a sense of the fitness of things. At least, it is not very easy to see what excuse the Preston of the present day can have for special pride, in regard to anything that can be outwardly discerned. The site of the town is not without suggestions for the picturesque, certainly; the main part occupying an undulating ridge of which the main thoroughfare, under the names of Fishergate and Church-street, occupies the ridge, with a pretty steep descent on one side to the Ribble, here a tolerably broad and clear stream which skirts the town, and beyond which other ridges and valleys are seen in parallel succession. The declivity on the other side of the main street is much more gradual, so that the town is on a sort of plateau, and has no little natural advantage of site as seen from the valley of the Ribble. Unfortunately, the architectural interest of the place is so very infinitesimal that one can only hope some good excuse may be found for a good deal of rebuilding in some of the principal streets before long. It would certainly be difficult to find any town possessing something of a history with such an utter absence of archæological interest in its buildings, and, for the most part, of architectural merit. Sir G. Scott's Town-hall, built some few years since, is the exception: this is a very dignified and solid-looking structure in the Geometrical Gothic style, with a recessed arcade on the ground story of the principal front, very effectively treated. A great deal of attention has been given to the detail, which is in admirable keeping throughout, and has mostly been well executed. The termination of the tower strikes us as rather weak. The building, however, is well suited to form a precedent upon which to model other architectural improvements in its vicinity. The only indication of such a move at present is a new building which is in an advanced state lower down, in Fishergate, Gothic in intention, but in which the detail, the carved ornament especially, is in unfortunate contrast with the refined type of work presented by the Town-hall, which might have set an example of something better than this. The front of the Theatre Royal, not a very new building, in Classic style, brick, with stone dressings, has been designed by some one with an eye for architectural composition.

Preston boasts at present of an "Exhibition of Art and Industry," held in the Corn Exchange; and a somewhat curious medley it is. One large room is devoted to pictures, and the remainder of the building is filled with a miscellaneous collection in which mechanical models and machines in operation are jumbled up with moving puppet scenes, stereoscopic views, autographs of celebrated men, Oriental curiosities, drawings from the Kensington School of Art, stuffed birds, and a "piping bullfinch." This is only a small proportion of the varieties of objects exhibited, by which the mind of the Lancashire operative is to be captivated and enlightened. It is necessary, of course, that an undertaking of this kind should pay, but the educational value of such an inconsistent medley may be doubted. Of course, one is glad to see that an exhibition which represents art at all has been got up; and perhaps some of the puerilities may be dispensed with on a future occasion, and a more restricted and select collection of articles aimed at than the present one, which seems designed as much for cheap amusement for the less educated class (no small thing, by the way) as for instruction in matters artistic. The central points of the Picture Gallery are Long's "Babylonish Marriage" picture, and Ward's finest work, "The Last Sleep of Argyle," the latter placed, unfortunately, in an exceedingly bad light. There are a few other good pictures, and one or two stands of objects of art-workmanship from the Kensington Museum, on loan; a large proportion of the pictures, unfortunately, are not such as to be of much value in forming the taste of local visitors for what is really good in style and feeling. However, the move for an exhibition of the kind is a good indication, and perhaps the Preston Exhibition will be higher in its type and aims on a future occasion.

The redeeming point of Preston, besides its Town-hall, is its park, situated in a sort of amphitheatre on the steeper side of the ridge before mentioned, partly on the steep slope, and partly spreading over the more level ground, down to the river-bank. The site is a very effective one, and has been thoroughly well turned to account in the laying out of the park, terrace over terrace, with broad, well-kept lawns sloping down from them. There are no tricks of effect in the shape of artificial cascades or lakes, but the aspect of the whole is very attractive under a bright sunshine, and the nature and contour of the site give something of an unusual and special character to the scene. From the park are seen the two bridges, one of the London and North-Western, and the other that of the Lancashire and Yorkshire Railway, diverging fan-wise from the town. These add to the picturesqueness of the scene (as railway bridges not unfrequently do, in spite of all the abuse they get), but suggest also the recollection of what is certainly the disgrace of Preston, as the park is its credit, viz., the railway station. The condition of this structure, and the general aspect of the whole station, are, we fancy, to be attributed in great measure to the fact that the railway companies, which own the two bridges aforesaid, work jointly the traffic between Preston and Liverpool and make joint use of the station, and thus the inducement of competition is not present to lead to any improvement except under pressure from without. One can only wonder that two railway companies, one of them the wealthiest and most powerful in the kingdom, should not feel ashamed to allow the continuance of such a state of things as Preston Station presents. Here is one of the most important junction stations in the north of England, where crowds of passengers are daily landed, the general aspect of which, with its dirty, half-whitewashed walls, its crazy-looking timber supports and dilapidated roofs, is such that the visitor who is unexpectedly drawn up in it receives the impression that there has been a recent fire, and that there has been no time yet to do more than patch things up and clear away some of the *débris*. Considering its important position on a great line of railway, a more shabby, dirty, disreputable-looking place than Preston Station one could hardly wish to see. Its continuance in its present condition is simply disgraceful; and, if a sense of their duty to themselves and to the public does not induce the railway companies to build an adequate and commodious station, some pressure ought to be put upon them by the inhabitants of the town to compel them to do so. The companies have been "tinkering" at the station in an aimless sort of way for some time past, making little patchings and extensions; but nothing less than a clean sweep of the whole, and a complete rebuilding, will make anything of it.

PROPOSED WIDENING OF LONDON BRIDGE.

THE report to the Court of Common Council from the Bridge-house Estates Committee, which, although presented on the 22nd of July last, has only just now been made public, has produced a remarkable outburst of objection. The Committee having referred the matter to the City Architect, with such professional assistance as he might deem requisite, to consider the best means to be adopted for affording additional accommodation for the traffic across London Bridge, and report his opinion thereon, together with an estimate of the probable cost of carrying into effect such works as he might consider to be advisable, Mr. Horace Jones took into consultation Mr. Charles Hutton Gregory, civil engineer, and jointly they made a report.

Before proceeding to describe their own design, they allude very briefly to the various plans which have already been proposed for the widening of London Bridge. The most popular plan, and which has been suggested at different times by different people, has been the widening out by cantilevers, to carry the footway on both sides, and to leave an increased width available for carriages. They felt that the effect of this work, if carried out to such a width as to give material and sufficient relief, would be damaging to the appearance of the bridge, and that the Corporation of London would feel justified in undertaking a larger work, if by doing so they could give increased accommodation, and leave London Bridge a monument worthy of this great city.

Other proposals have assumed the widening of the bridge by a structure of masonry corresponding with the existing building. The most obvious objections to such a course are the cost and the time which would be necessary; but besides this they thought that such a measure would necessarily involve great risk to the existing structure, especially in the foundations, and it could not be carried out without an interference with the navigation of the river, which it was desired to avoid if reasonably practicable to do so. On the whole they felt that they could not recommend for adoption any modification of the projects within their knowledge for widening London Bridge, and it became necessary to seek for some other type. Having no reason to believe that the foundations as a whole are loaded within a near limit of their ultimate capacity, they are of opinion that while it is undesirable to increase the area of the existing foundations, some weight might be added without fear to the starlings projecting beyond the ends of the piers, and the design of the City Architect contemplates extending the piers over a portion of the starlings.

"Cast-iron skewbacks (the reporters say) would be built into these piers as altered, and from these skewbacks would spring

wrought-iron arched beams, considerably flatter than the existing arches, their soffit at the crown being level with the top of the present vonssoirs. Above these would be wrought-iron open frames, properly tied together, with occasional ties into the existing bridge. These open frames might be filled in with an ornamental lattice or light diaper work, and would carry a light wrought-iron fascia of frames filled in with plates, so as to bring up the spandrels to the level of the crown of the arched beams. The spandrels thus formed would carry cross girders, the inner ends of which would be bedded and tied to the old masonry, while the outer ends, supported on ornamental brackets, would run out to carry an open iron balustrade, with a handrail and plinth. On the lower flanges of the cross girders would be a floor of curved wrought-iron plates. Granite landings would be bedded on the upper flanges of the cross girders. An open balustrade is substituted for a close parapet, to obviate the great nuisance of the dust, so constantly complained of by foot passengers."

The entire width of the present bridge, within parapets, is 54 ft. 2 in., viz., 36 ft. 2 in. of roadway, with two footways, each 9 ft. wide. The entire width between parapets of the best considered of the cantilever designs was 70 ft. 6 in. The entire width within balustrades of the bridge, as now proposed, would be 76 ft. 2 in., or 8 in. wider than Blackfriars Bridge, being an addition of 22 ft. to the present width, and giving 54 ft. of roadway, with two footways each 11 ft. 1 in. wide. The result of this would be to provide 2 ft. 1 in. more width to each footway, and width in the roadway for two additional lines of carriages.

The whole cost of the work described, including the re-paving of the roadway, and taking iron at its present price, is estimated at 55,000*l.*

They consider that the work proposed would not be attended with risk to the existing structure. After making a due allowance for the weight of the mouldings, parapets, masonry, of recesses, and other work to be removed, they estimate the additional weight to come on each pier end, at the level of the top of the starlings, at about 80 tons.

The Bridge House Estates Committee said:—

"We have given this subject our most serious and anxious consideration, and after very mature deliberation we have arrived at the conclusion, that the best means of affording additional accommodation for the traffic across London Bridge will be to increase the width thereof, which object, we consider, can be best effected by widening the bridge in accordance with the report and plan submitted to us by Mr. Architect and Mr. Charles Hutton Gregory, the expense whereof is estimated at 55,000*l.*"

The Court of Common Council, after discussion, agreed with the committee in their report by sixty-four to fourteen.

There are certain obvious objections to the construction in iron of required additions to a stone structure, and we should have welcomed a proposition to widen the existing bridge *on one side only*, retaining its present lines and appearance, and using the same materials. So far, however, from joining in what seems the rather overloud outcry against the proposal made by Mr. Horace Jones and Mr. Gregory, we are very much disposed, seeing they had nothing but objections to choose from, to compliment those gentlemen on their ingenious proposition.

Mr. James Fergusson suggests that the design should be carried out in granite instead of iron, making the addition on each side half what is now proposed, so as to lessen the additional weight to be thrown on the foundations; and this deserves consideration.

But before this comes the supreme question, Is it desirable to widen it at all? Mr. William Haywood well entitled to speak on the subject, says distinctly "that the widening of the bridge will, for the purpose of easing the carriage traffic, be all but useless; indeed, if the bridge were as wide as Portland-place it would not materially diminish the inconvenience which now ensues from the traffic of the four crowded thoroughfares on the north being condensed into King William-street between the statue and the bridge and there meeting with the cross traffic from Arthur-streets east and west, and on the south by the traffic which comes from the Borough, Tooley-street, and the Railway Station, clashing and crossing as it enters and leaves the bridge.

The stoppages which arise on the bridge itself are trifling, and would be thought so by all if the police returns were not misleading in their headings; the real source of inconvenience arises almost entirely at the spots named by me.

The width of the carriage-way of London Bridge between the footways is 35 ft., that of King William-street 45 ft.; but the excess in King William-street is largely occupied by the vehicles stopping at the various premises, and practically the channel for the through traffic is about the same width as it is on the bridge; and, although this channel is undoubtedly throughout its entire length too narrow for the convenience of the traffic, it cannot be relieved by widening the bridge unless at the same time the whole of the approaches from St. George's Church, in the Borough, through the length of Gracechurch-street and Bishopsgate-street-within, as far as to Wormwood-street, are widened at the same time, and considerably."

We fully believe that what is wanted is a new bridge, with proper approaches, lower down the river.

THE LONDESBOROUGH COLLECTION OF ARMS AND ARMOUR.

IN a corner room of the Alexandra Palace, often missed by visitors, has been placed, since the opening of the new building, Lord Londesborough's remarkable collection of arms, by far the best thing in the building. In contrast to the portion of the Meyrick collection long known to the public during its temporary but lengthy sojourn at South Kensington, and which consisted mainly of defensive armour, the Londesborough collection is chiefly of offensive rather than defensive apparatus, and thus serves admirably as a supplement to the other. Here we find ranged specimens of every kind of instrument which men have invented for killing one another, from the genteel-looking rapier, with its long, thin, pointed blade, to the villainous zig-zagged swords and heavy knives of tribes whose warfare was less refined and courteous; and who aimed not only at killing their foe, but of doing it as disagreeably to his feelings as possible. The distinction between the two styles of weapon curiously illustrates the *morale* of civilised warfare, which permits you to use every possible mechanical improvement for more satisfactorily and quickly killing your foe, but forbids you to torture him unnecessarily. Then we have here nearly all species of firearms, except the latest improved rifles, which are not yet curiosities enough to be included in such a collection; guns of Oriental and European taste, and numerous specimens of the many curious and picturesque forms which the pistol has assumed at different dates during the earlier periods of firearms. Bows, pikes, and other miscellaneous weapons are represented in fair proportion; and the skull and "sword" of a remarkably formidably-furnished swordfish finds a place in the collection; forming, with a sort of grim humour, a kind of moral justification of all the weapons of human invention scattered about, by presenting this example of a formidable offensive weapon designed by Nature herself.

We are not considering such a collection with a view to the moral reflections it suggests (though there is something to be said on that head, no doubt), so much as in regard to the taste and ingenuity displayed in the make and the decoration of these various weapons. To take first the oldest and most heroic of arms, the sword, which is so universal that its name has been proverbially adopted as a synonym for war generally, we find the weapon in its civilised rapier form almost a work of art by reason of its mere elegance of proportion and fitness for its office. What ornament there is in these is in the hilt, but even this preserves, for the most part, a business-like simplicity, and in a good many of the examples the guard is formed merely of thin metal, scarcely thicker than wire, twisted into a device in spirals and curves, so as to effectually protect the hand. Among more elaborately ornamented examples is a fine Toledo of the time of Charles I., with a cup-shaped guard formed of very rich close pierced work; but this looks less business-like, and seems to give less play to the hand than the plainer twisted guards. A still finer specimen is that numbered 1,014, with a cup guard of what is called in the catalogue a "lace pattern," and which is delicate enough to suggest the term; and the rapier, No. 684, offers a rare specimen of a richly-ornamented hilt, with inlaid silver trophies: it is curious to notice in this and many other instances what a pacific and drawing-room character the decorations of these weapons assume. We might think this characteristic of a state of society when the sword was a portion of personal ornament as well as a means of defence; but a big Highland claymore, No. 954, exhibits a richly-worked silver hilt as distinctly ornamental as any of the rapiers, though in a bolder style. Among the curiosities of the sword collection is a Hindostanee sword with a *brassière* or arm-hilt, part of the guard being extended as a covering to the arm up to the elbow, something in the shape of the defensive leather armpiece used in archery. How the sword could be freely wielded with such a handle it is not easy to see. Two or three specimens of the *épée courtoise* used at tournaments are included in the collection; a sort of sham weapon rather resembling a spatula of exaggerated length, with a broad rounded end. If we go from these more or less courteous weapons to the quarter where the less civilised specimens of the sword type are arranged, the contrast is striking. The forms of the blades are shorter and more varied and eccentric, all contrived rather for stabbing and desperate hand-to-hand tussles than for the elaborate fencing practised with the European sword. The "creese" of Malay and Dyak warfare, a short blade with a serpentine curve or wriggle, is one of the most characteristic forms; and another very noticeable weapon is the "kukaree," an Indian dagger, or rather knife, presenting a most peculiar curve in the blade itself and in its junction with the handle, and which has an expression of sinister cruelty altogether Oriental. A more straightforward style of weapon is the "Pais-cush," a short trowel-shaped blade affixed to a handle formed by a couple of bars fitting at each side of the arm, and with a cross-bar connecting them for the grasp of the hand; the weapon being intended for a straight striking-out blow, as in boxing. The hilt of the Oriental sword has its own character; there is no elaborate attempt to guard the hand, as in the European rapier; it is generally simply a jewelled or otherwise ornamental handle, with a cross hilt, and in some instances gives evidence of the small and delicate proportion of the hands that were to use it, evidently quite different from the European sword-hand. The daggers are endless in fancy, and far richer in ornament than any of their larger cousins the swords, especially in regard to the scabbard decoration. One or two specimens of silver scabbards and hilts, of Saracenic design, are quite redolent of the "Arabian Nights." Sword-blades of Eastern and Southern make have their literature too. "Do not draw me without cause, do not sheathe me without honour," is a favourite Spanish legend; and a Catalan knife of vicious-looking outline bears, among other bravado, the comfortable assurance,—"If this viper stings you, there is no remedy at the apothecary's." This is somewhat, in a way, after the Mediæval fashion of placing legends on bells, by which they proclaimed their powers. It is noticeable that this kind of engraved braggadocio on the sword-blade does not seem to have been thought worth adopting by the combatants of northern Europe.

The guns present much that is interesting. In regard to a practical point, there seems to have been great diversity of opinion since this arm was invented as to the best form of stock for putting to the shoulder. The German preference seems to have been for a broad stock, with a considerable convex curve at the butt, fitting the shoulder, or rather the chest. But a large proportion of the old guns here have a long kind of stump stock, nearly square in section, and increasing in size but slightly from the lock to the butt-end, so that any recoil must have been pleasantly intensified, one would suppose, on one spot. Viewed in comparison with the modern weapon, these guns must have been singularly uncomfortable to the owner. The ingenuity and fancy in the decoration of the stocks is considerable in many instances. A "wheel-lock" gun (39), which belonged to Charles IX. of France, has the stock entirely inlaid with figures and arabesques in ivory, the figures including Hercules and Omphale (apparently), and immediately adjoining these the figure of a lady in the complete dress of the modern period, with an odd jumble of associations. No. 861 shows similar, more elaborate inlay, with a figure which may be meant for Flora, in a foliage design. An Albanian gun (34) has a stock much like the usual English model in shape, entirely inlaid with coral, in a network of silver, like a large-size *cloisonnée* enamel. The effect is very good. As a single instance of the extent of ornamental work applied to the earlier specimens of gun-making,

we quote the catalogue description of a wheel-lock gun (860), which appears to have been the property of a bishop of sporting tastes:—"The butt inlaid with ivory, engraved with a man on horseback, bear, and dogs, men, birds, Cupid on a hippogriff, &c. The butt is shaped to fit the fingers, the lock damascened with gold and silver, the lower part of the barrel ornamented with strap-work, masks, and flowers in high relief, the upper part damascened with heads of the Cæsars, Mars with trophies, and Hercules and Cerberus. On the end of the butt is inserted a silver medal, inscribed "Sanctus Rudbertus Epis Salisb.: 1623.'"

Like the daggers, the pistols, as small and dainty instruments, seem to have been peculiarly objects, in past days, of fanciful ornamentation. None in the collection are more interesting than the small short pistols called "dags," of a remarkably solid and purpose-like form; the stock forming on the upper side a considerable angle with the barrel, while the line of the stock on the under-side forms a convex curve from the butt nearly to the muzzle, leaving the greatest amount of material where strength is most wanted, at the junction of stock and barrel; the butt is usually formed by a large circular knob. There is something quite Mediæval in character in the massive style of these small implements. A precursor of the "revolver" is seen in a triple-barrelled "dag," (49), the stock forming an equilateral triangle in section, with a wheel-lock on each face. Two long pistols of Henry VIII. date (692), with stocks of ebony inlaid with ivory, are admirable in general form and ornament; and a pair near these in which the butts are of ivory, carved into female heads at the extremities, are worth note as good and curious work. But perhaps the most remarkable pair in the collection are those by Domenico Bonomino (No. 433, in one of the glass cases), mounted in chiselled steel. To quote the catalogue again, "the ornamentation, in high relief, represents the labours of Hercules; the triggers are monkeys, and at the end of the ramrods Atlas bearing the globe." It is curious to contrast these rich and fanciful pieces of workmanship with the pair of admirably executed but perfectly plain and matter-of-fact-looking weapons (223-4) presented by Napoleon I. to Marshal Marmont. In place of the ornament and fancy of the old weapons, this pair of pistols from the Imperial manufactory of France, though a presentation set, show nothing but the ordinary wooden stock with roughened metal inlaid for affording a better grasp; all the work and the cost goes to the practical excellence of manufacture; so that even in fire-arms the distinction between the modern rational and the old artistic period is emphatically illustrated. It is no less illustrated, too, in the comparison with modern weapons that are intended to be ornamental, of which specimens are to be seen in the pair of pistols, with ebony stocks mounted in gold (470), made by order of the French Government, by Devisme, for presentation to the Queen of Madagascar. These are of valuable material and excellent workmanship, and represent a good deal of money; but they are not worth looking at for a moment in comparison with the older decorative pistols: there is no *fancy* in them, they are simply "handsome" articles. In all probability, so far, at least, as the stocks are concerned, which are the ornamental part, some of the Queen of Madagascar's subjects could have made something much better worth looking at. "Tell me where is fancy bred," is a question suggested by modern ornament continually, when we find that the best modern manufacturers can turn out nothing half so picturesque and suggestive as "our barbarian ancestors," and even our barbarous contemporaries in other countries, seem able to produce at will. Among the curiosities of the firearm department may be mentioned a brass swivel (485), taken by Sir H. Keppel from a Borneo pirate; a richly-ornamented barrel of something the size and proportion of a garden squirt, with a small figure of a dog cast on the muzzle, and as if looking after the bullet that had sped; and a curious combination of shield, or target, and pistol (857), the pistol projecting through the centre of the target, with a small grated opening left beside it for the eye to peer through; a combination of offence and defence in one weapon which must have proved rather embarrassing than useful if ever put to proof.

Among the specimens of defensive armour exhibited are some beautiful examples of ornamental metal-work; in particular the "muzzle for a war-horse" (994), which, indeed, is only nominally to be called defensive, as it consists of the most delicate, almost lace-like open-work of a conventional foliage pattern; and a breast-plate (835) said to have been worn by Philip IV. of Spain, and certainly a worthy specimen of royal military apparel. It is of steel *repoussé* work, richly damascened with gold, "gilt background, and inlaid with silver. In the centre, at the top, is a Gorgon's head, beneath which are two captives seated on an arch, supported by Theseus, and a statue of Mars, resting on the heads of two fauns. On either side are festoons and masks, medallions of Jupiter, Mercury, Saturn, and Apollo; trophies, satyrs, &c." The little figures are very finely modelled, and the whole effect is rich in the extreme. It is noticeable, by the way, both in this and others of the breast-plates exhibited, how narrow in the chest the persons for whom they were made would seem to have been; that at least is the impression conveyed to the eye; but most armour of the Mediæval and Cinque-cento periods gives a direct negative to the supposition, still entertained by many, of the superior size and scale of the fighting heroes of those periods.

In addition to the large number of articles coming strictly under the head of "arms," the Londesborough collection includes a good many very interesting and some unique relics of early and later Mediæval art. The most remarkable of all these, perhaps, is the ivory hunting-horn (1,253), with the legend of St. Hubert engraved round the larger end; and another much older horn of the same material (1,260), called "*temp.* Edward I.," as regards the figures at least, but carved in part with interlaced strap ornament of a decidedly Celtic type. Two sets of dice, in metal and in ivory, formed by grotesque human figures, with the limbs so disposed as to make a cube, and spotted in a leprous kind of manner, with the appropriate dots, are among smaller curiosities; the ivory ones are of a decidedly Japanese type of work; their origin is not stated. Some of the carved combs exhibited are also of great interest and beauty, in their way; one ivory comb (fifteenth century) would have seemed to have been a wedding-gift, and is carved with a marriage procession, &c., in low relief; and an Elizabethan boxwood comb adjoining this is singularly artistic, both in design and execution. There is a small but interesting collection of table utensils of artistic type, which may come under the head of "arms," in the spirit suggested by the title of Hunt's picture of "The Attack"; and, to complete the collection in another direction, is a considerable assortment of flint implements.

Those who care to go and see will find matter for a long and interesting study in the room where the Londesborough collection is for the present housed, and which is farther "illustrated" by stained-glass windows by Messrs. Cox, which give an effect in keeping with the nature of the collection no doubt, but also unfortunately interfere sadly with the light on any but the brightest days. Another more serious complaint is the unnecessary difficulty put in the way of the proper study of the objects by the want of all arrangement or classification in the system of numbering in the catalogue. The numbers on the labels are so small that scarcely any that are much above the level of the eye can be read; many of those under the glass cases are turned so that they cannot be seen; a good many do not agree with the catalogue, and there is an utter absence of the slightest attempt at consecutive arrangement in the numbering; one article may be 27, and the next 1,009, and so on. Consequently, it is nearly useless to look for anything named in the catalogue, that one may wish to see, as there is not the remotest clue to its whereabouts, and the chance is its number is not even visible. Why those who undertake to edit catalogues should evince such an utter want of ordinary common sense as to defeat the very object of their labour we cannot profess to understand: the fault is unfortunately a common one.

Waterworks Companies' Dividends.—The Birmingham Waterworks' Company has declared a dividend of 8 per cent. upon the original shares, and 7 per cent upon other shares. The Ruabon Waterworks Company's dividend on the past year's working is 4 per cent. The Shrewsbury Waterworks Company, on the 31st ult., declared a dividend of 5 per cent. The South Staffordshire Company has agreed to a dividend of 6 per cent.

THE MANUFACTURE OF CEMENT WARES.

WE propose describing in the present article the manufacture of cement wares, as carried on at the works of E. Dyckerhoff, in Biebrich, on the Rhine.

It is of paramount importance, in the manufacture of these cement wares, to use a slow binding Portland cement, composed of the proper chemical ingredients, previously well burnt and stored. For such works as are exposed to the action of the atmosphere, cement in its pure state should never be employed, but it should always be mixed with clean, sharp sand, and worked up with gravel or small hard pebbles. The proportion in which these ingredients should be mixed depends on the nature of the work required; as a general rule, at the fore-mentioned works, one part of cement is mixed with three or four parts of gravel, and these compositions have not only shown great durability, but have also proved to be very strong.

The preparation of the mortar, or mass, is effected in the following manner at the Dyckerhoffian works. The ingredients, the cement and the sand, having previously been measured in the right quantities, are first mixed well together in a dry state, although the sand need not be perfectly dry; if the latter is entirely free of all earthy matters, which it is assumed to be, the mass will not ball itself. Clean water is now gradually added under constant stirring up of the mass, but only in such quantity as to make the mass of a similar consistency with newly-dug earth: in this degree of density it will be almost impossible to "ball" the mass with the hands. Thus prepared, the mass is ready to be placed in the various moulds or forms, where it is pressed and worked in, till the mass is of one uniform density, when the water will be perceived to slightly ooze out from the surface.

In the preparation of architectural decorations, or such other articles demanding a fine even surface, the moulds receive first a coating, which is sparingly applied to their inner surfaces before the fore-mentioned mass is introduced and worked in. This coating consists of one part of cement to one or two parts of fine sharp sand, which are mixed together with water to form a wash. The inner surface of the moulds having been lined with this wash, the first-mentioned mass is worked in, when the superabundant water of the wash becomes soaked in by the drier mass, and so reduces the two compositions to one uniform consistency.

The application of this method demands absolutely a slow binding Portland cement, and the various articles prepared in this style must remain from twenty-four to twenty-eight hours in the mould, if they are to be taken out without injury.

On taking out these wares from their moulds, they should be stored for a period of from six to eight weeks, care being taken to damp them every day, and also to exclude them from the sun's rays or the currents of the wind. The most dangerous enemy to cement wares is a dry, sharp wind; it is, therefore, advisable to protect them as long as possible from such winds. Frost, on the other hand, has no injurious effect on well-prepared cement wares that have stood a week or a fortnight's storage; on the contrary, the cement wares prepared in the winter-time become hard much sooner, and are much stronger than those prepared in summer-time. This may be accounted for by the fact that the requisite quantity of water for the hardening of the wares is not so readily absorbed by the atmosphere in the winter months, and, as a consequence, the process of hardening is then permitted to take its course more freely. The cement wares manufactured during the summer must, therefore, be kept sufficiently long in the store-rooms under constant damping, since it is only by these means that the hardening process can be effectually completed.

It is maintained that of all the tried processes in the manufacture of cement wares, the fore-mentioned method is the only one which has succeeded in preparing such wares inflexible to the action of the weather, of great durability, and of considerable hardness and strength.

As a contrast to the foregone observations, it may be observed that other methods are frequently adopted in the preparation of cement wares, which lead just to the opposite results to those desired. So, for instance, the opinion has gained ground in almost the whole of Germany that for the preparation of architectural decorations, and the like, a *quick* binding cement is in most cases required and demanded. This cement,

which, it is perhaps needless to remark, is almost useless itself for the application for which it is intended, is sometimes not even mixed with sand, but perfectly flooded with water, in which state it is cast fluid in moulds similar to gyps. It very often happens that the cement articles thus prepared are already taken out of their moulds after a few days, and immediately exposed to meteorological influences. By such *modi operandi* as these last-mentioned cases show, the four chief conditions enunciated below, and absolutely requisite for the satisfactory manufacture of cement wares, are not only disregarded, but, in fact, counteracted :

1. The use of slow-binding cement.
2. The working in of clean sand, gravel, or pebbles.
3. The proper admixture of water.
4. Affording proper protection to the newly-prepared wares from meteorological influences.

It is also the belief of many sculptors that architectural decorations, &c., can only be made from quick-binding cement, and that clean and exact work cannot be accomplished if sand be added to the Portland cement. These assumptions are, however, refuted by the forementioned process carried on at the works of E. Dyckerhoff, in which 550,000 cwt. of Portland cement are annually treated *only* with sand and gravel for the object now under discussion.

In addition to the application of cement wares for architectural purposes, it has also been *badly* prepared for pipes, troughs, sewers, &c., and hence the general mistrust existing in the minds of many concerning the industrial application of cement wares.

THE LADY CHAPEL OF WALTHAM ABBEY.

AT the sole cost of Sir Thomas Fowell Buxton bart., the Lady Chapel of Waltham Abbey, which was until lately in a ruinous condition, has been restored, under the direction of Mr. W. Burges. Mr. E. A. Freeman, in a description of the chapel, says :—"The building itself may be described as containing two bays, each of which is again subdivided into two smaller ones, in a manner analogous to the primary and secondary piers in the interior of the nave. The primary buttresses, with which ranges a diagonal one at the south-west angle, are of considerable projection, with pedimented set-offs and slopes; in their general effect they rather resemble some of the Early English ones at Lichfield and Stratford, but the difference is characteristic, the pediments here being formed by the heads of ogee niches, which occupy the lower stages of each of the buttresses, great and small. The secondary ones project very little, and, in fact, rise no higher than the string beneath the windows, the upper part being rather to be considered as the elongated shaft of the pinnacle running through the elaborate cornice of the chapel. Each of the four bays contained a window, the jambs of which remain inside with light shafts, and mouldings of later character than the Decorated of the west front. . . . . The chapel is connected with the south aisle by a single broad arch, of poor and ordinary architecture, a sad contrast to the glorious Romanesque work of the nave." A new reredos and marble pulpit are about to be presented to the Abbey Church by Mrs. Edenborough, in memory of her late husband, Lieut.-Col. S. D. Edenborough.

THE THROAT AND EAR INSTITUTE IN GRAY'S-INN-ROAD.

THE new Throat and Ear Institute in Gray's-inn-road, adjoining St. Jude's Church, the foundation stone of which was laid by Madame Adelina Patti on Thursday in last week, although externally it will be a plain building, will nevertheless have some pretensions to architectural effect, and contain features which will render it a special object amongst the buildings adjoining it. The building, which will have a frontage to Gray's-inn-road of 52 ft., and will be 46 ft. in height, will be two stories in height above the ground-floor. It will also have a deep basement. The materials of the elevation will consist of a light yellow brick, with Portland cement dressings, the arched headings of the windows being in red brick, with Mansfield stone keys. The ground-floor portion of the elevation will have pilasters and architraves. There will be a central arched entrance 5 ft. in width. The face of the elevation on each side of the ground-floor windows will be filled in with light-green ornamental glazed tiles, and the space over the spandrels on each side of the arched entrance will be similarly decorated. Immediately above the ground-floor windows, white glazed tiles will be carried across the face of the elevation, on which the name of the institution will be inscribed in black letters. Between the ground-floor and the windows of the first-floor an ornamental iron railing will be carried across the face of the elevation. Above the second-story windows the name of the institution is inscribed on white glazed tiles, in characters uniform with those above the ground-floor, and the elevation is surmounted by a cornice and balustrade.

The ground-floor of the building is intended to be devoted entirely to the out-patients' department, and contains a dispensary, waiting, consulting, operating, and inhaling rooms, together with the secretary's office. The first floor contains wards for male patients, twenty-five in number, and the second floor twenty-two wards for women and children. Each floor is provided with bath-rooms, lavatories, and nursing-rooms. The ventilation will be on the vertical system, known as that which has been successful in the ophthalmic ward in St. George's Hospital. Under this system the ventilation is assisted by ceiling lights on the principle of the sunburner. An equal temperature will be maintained throughout the entire building by hot-water pipes.

Messrs. Frend & Turner, of Bedford-row, are the architects; and Mr. Campion, of Acton-street, Gray's-inn-road, is the contractor.

NEW REREDOS FOR PATCHAM CHURCH.

THE reredos which has been presented by Miss More, of Patcham-place, was finished on Saturday last, and will form a very conspicuous object in the sight of the congregation. The architect of the framework was Mr. Somers Clarke, jun.; the builder, Mr. S. Pepper, of Brighton; and to Mr. P. R. Morris was entrusted the task of executing the pictorial representations. These are in three panels, and are 3 ft. in height. The centre group consists of the Virgin and Child, the former in pale blue and pale red, and the Three Kings, or Magi: the King of the North in blue and silver, with casket; the King of the South in crimson, with St. Joseph in the background; and the King of the East, an Arab, in white. In the side panel to the left (facing the reredos) is a figure of St. Matthew, with symbol, in russet and yellow, and to the right a figure of St. John, with the eagle. The style of art in which these figures are painted is less Byzantine than most of those painted by Mr. Morris.

GLASGOW CITY IMPROVEMENTS.

AT a recent meeting of the Glasgow Town Council, Bailie Morrison, in moving the adoption of the minutes of the Improvement Trust, made a statement in reference to the cost and extent of the City Improvements. Various communities, he said, were anxiously watching the efforts of the authorities of Glasgow to ameliorate the condition of the working classes. The total sum expended on the purchase of property up to the 31st of May was 1,315,008*l.* 3s. 10d., which, with sewering, causewaying, laying out of squares, Parliamentary and law charges, and other expenses, made a total of 1,537,750*l.* 15s. 7d. The total expenditure estimated to the completion of the scheme was 1,818,564*l.* 15s. 7d. The number of persons displaced from their dwellings by the action of the Trust, estimating five persons to the house, was 20,745. During the period from the 1st of January, 1866, to the present date, new house accommodation of a superior character, within the municipal boundaries alone, had been sanctioned and erected for 162,675 persons; so that the new accommodation provided was nearly eight times the quantity of that demolished, not including the numerous buildings immediately outside the municipal boundaries. After further remarks, the Bailie pointed out that the Act had been nine years in existence, but operations had been carried on for only four years, and he pointed out the many improvements which had been carried out in that short period. After referring to the manner in which the first members of the Trust had carried on their operations, he said the magnitude of this work, involving the opening of thirty-nine new streets, and the extension, alteration, and improvement of thirty-three others, or seventy-two in all, were now beginning to be realised by the public. After a short discussion, the minutes were adopted. As the result of a subsequent motion brought forward by Mr. Fulton, it was agreed to stipulate in the deeds or contracts executed by the Trust that the buildings to be erected on ground sold by them lining new streets should not be used as public-houses for the sale of intoxicating drinks.

A MASONIC HALL IN INDIA.

OUR brethren in the Craft on this side of the water will be pleased to hear that the District Grand Lodge of Bengal has appointed a Committee, under the resolution passed on June 24th, 1875, which has for its object the building and maintaining a Masonic Hall worthy of the Freemasons of Bengal, and of the capital of India. The site for the new temple has been fully determined upon, and nothing remains but the completion of the list of shareholders, which already numbers 150. There are still some 500 shares at the disposal of the Committee, and it is hoped some of the Craft on this side of the water may feel disposed to assist our Indian brethren in their scheme. It is anticipated that everything will be in readiness for the commencement of the building during the visit of H.R.H. the Prince of Wales to India, and no doubt a very forcible appeal will be made to him to inaugurate the event by laying the foundation-stone himself. The prospectus and plans can be seen at Messrs. Grindlay & Co.'s, Parliament-street, London.

NEW POST-OFFICE BUILDINGS.

Hull.—Rapid progress is being made in the construction of the new Post-office for Hull. The building will have a frontage of 50 ft. to the Market-place, and an elevation of 70 ft. There is also a considerable frontage to Scale-lane. The style of the building, which has been designed by Mr. J. Williams, of her Majesty's Office of Works, London, is Italian. The materials used for the principal or market-place frontage will be Spinkwell stone of an agreeable tint, the Scale-lane frontage being of red stock bricks with stone dressings and string-courses. The building will accommodate the telegraphic as well as the postal business, the instrument-room being 80 ft. long by 36 ft. wide. Messrs. W. & J. Hall, of Hull, are the builders; Mr. J. C. Evans, clerk of the works; Mr. M'Cracken, general foreman; and Messrs. Holmes, of English-street, are the contractors for the iron-work.

Leith.—It is expected that operations will ere long be commenced for the erection of the new Post-office at Leith upon the site at the corner of Constitution and Mitchell streets. The design for the new building has been prepared by Mr. Matheson, of her Majesty's Office of Works, Edinburgh, and contracts for the work have already been entered into by the Government. The new building is to be in the Italian style, and will consist of basement and first and second floors, and high mansard roof.

NEW BUILDINGS FOR POOR LAW ADMINISTRATION.

Todmorden.—At the meeting of the Todmorden Board of Guardians on the 15th inst., Mr. Bradshaw, architect, Bolton, submitted plans for the union workhouse, which the guardians propose to erect at Beggarington. ["What's in a name?"] The building, which will stand on high ground, is to accommodate 106 inmates,—51 males and 55 females; and there will be a detached infirmary in the rear, containing eighteen beds. The cost, including master's and matron's offices and residence, is estimated at 6,000*l.*

North Bierley (Yorkshire).—At the meeting of the guardians of the North Bierley Union, on the 15th inst., two sets of plans, prepared by Mr. John Drake, for the erection of a new infirmary in connexion with the workhouse, were submitted and discussed. Mr. Drake was requested to furnish an estimate of the cost.

Greenwich Hospital.—Messrs. Cox & Sons, of Southampton-street, Strand, have completed the decorations of officers' mess-room, reception-room, and lobbies at Greenwich Hospital. The rooms being partialy underground, great difficulty had to be contended with as to light, necessitating careful treatment as to colour and ornament.

ADDITIONS TO ST. JAMES'S HALL, PICCADILLY.

THE St. James's Hall Company are erecting a considerable addition to their premises in Piccadilly and Regent-street; it occupies the site of Nos. 24, 25, and 26, Piccadilly, and is to serve as a restaurant. The addition is so planned as to have thorough communication with the old restaurant and adjoining halls of entertainment. The frontage is 44 ft. 6 in.; the depth, back to meet the old building, 65 ft.; and the height from the footway to the top of the parapet, 70 ft.

The ground-floor contains an entrance-hall and staircase, a grill-room, 62 ft. by 16 ft., and a buffet, 49 ft. by 19 ft., with a passage between, extending from the entrance-hall back to the principal staircase of the old building.

Beer, wine, and spirit cellars occupy the whole of the basement, excepting those portions taken up by the stairs and by a lift which is placed under the centre of the entrance-hall. Lavatories, &c., for the accommodation of the ground-floor, are provided beneath the street pavement.

One large dining-room, 32 ft. long by 27 ft. 6 in., with serving-room, lift, and staircase, occupies the whole of the main building at the first-floor level; the arrangement of the second floor is similar; and the top story contains a kitchen, scullery, four rooms to serve as offices or sleeping apartments for barmaids, and a loggia extending along the whole of the front.

Each floor is provided with lavatories, &c., in a projection from the rear of the main building. At the first-floor level a covered way is carried back to meet the principal entrance of the old hall before referred to; and off this staircase, above the inner end of the grill-room, retiring-rooms for ladies have been constructed. The first and second floor dining-rooms are served from the kitchen in the top story, and the inner ends of the buffet and grill-room are close beside the old kitchen, for such additional service from which hatches have been provided.

The architectural treatment of the front is such as is suggested by that of many of the Italian-Gothic palaces to be found in Venice. It has been attempted to secure breadth of effect by keeping the general wall-face in almost one plain face, and by avoiding the use of materials of strongly-contrasting colours; and to obtain richness and tone principally by means of surface ornament, and by a combination of materials differing rather in tint and tone than in colour, the monotony which would arise from such treatment being relieved by the introduction of small quantities of positive and contrasting colours in the shape of Venetian mosaics and stained glass.

At the ground floor the main entrance and the four windows at the sides have detached jamb shafts, moulded bases, and carved capitals, in continuation of which a carved band is carried across the piers the entire width of the front; the openings are spanned by obtusely-pointed arches, moulded and enriched, the heads of windows being filled in with subjects in mosaic, illustrating Peace, Plenty, Pleasure, and Industry.

Between the heads of the four windows already named and those at the first-floor level, four small three-light openings are introduced for additional light and ventilation near the ceiling level; above these windows are panels filled with diaper patterns; and between these and the moulded sills of the first-floor windows are panels with trefoil sinkings, a balustrade of the depth of the last panels being formed over main entrance. The balustrade is carried upon carved corbels, set upon attached columns. The spandrels between the balcony landing and arch over the entrance are filled in with a subject illustrative of a festive scene, executed in mosaic.

The window openings at the first and second floor levels are treated similarly to those already described, excepting that the heads have cinquefoil cuspings, and are filled in with heraldic devices in coloured glass.

Immediately beneath the string forming the sill of the second-floor windows is an illustration of a banquet, in three panels, extending across the entire width of the building to meet the piers on either side; this subject, executed also in Venetian mosaic, was suggested by a drawing by Mr. Marks, A.R.A., recently published, and was adopted as seeming specially suitable for a restaurant; the panels are separated by multifoil sinkings, containing heraldic devices, a carved string running beneath the whole. The general surface between the springing of the window-heads and the strings above is worked with a diaper pattern, medallion heads of HANDEL, Purcell, Milton, and Shakspeare being introduced in the spandrels. The top story has an open arcade, with traceried arches, and a screen, 5 ft. behind these, covered with sgraffito decorations. The building has a machicolated cornice, and a parapet with moulded quatrefoil piercings.

Dumfries red stone and red bricks, and terra cotta from the Ditchling Pottery, are the materials principally used in the front. The arches throughout, including the tracery of the arcade in the top story, as also the diaper pattern, are in terra cotta; the carved caps and bands, the strings and cornice, and the front generally, up to the level of the first-floor window-sills, are of Dumfries stone. The shafts of all columns are of Ecossais marble; the figure subjects in front are all executed in Venetian mosaic.

The walls of the grill-room and buffet are lined and decorated with mirrors, "marezzo" marble, and painted tiles. The walls of the buffet are divided into bays by slightly projecting pilasters, from which enriched columns are corbelled out, and these carry canopies formed by groining into the cove of the ceiling. A marble dado rises to the height of the counter top, and for a height of 3 ft. 6 in. above this level. The spaces between the marble pilasters are filled with mirrors; between the heads of these and the springing of the cove a series of painted tile panels, illustrating English sports and pastimes, are carried all round the room; painted tile medallions are introduced into the canopy heads, with incised floriated ornaments in the spandrels; the ceiling is panelled throughout with oak, the panels being filled with paintings on linoleum, and with embossed glass where they form the ceiling lights.

A counter, nearly 50 ft. in length, extends along one side of the buffet, enclosing the bar, and lounges with marble tables are placed along the opposite side. The wood-work is of walnut, gilt and ebonised in parts; and the counter panels are filled in with fruit and flower subjects, on a gold ground, painted on linoleum. The marbles principally introduced are Egyptian and Irish greens, Sienna, dove, and lapis lazuli.

The general scheme of decoration of the grill-room is very similar to that of the buffet, but the marbles selected are different; the mirrors enclosed in marble framing alternate with mythological subjects, nearly full-size, executed in painted tiles; and the cove of the ceiling is continuous, and formed of fibrous plaster picked out in gold. The floors of the buffet and grill-room are of parquetry, that of the entrance-hall is of mosaic, in geometrical patterns; the walls are lined with ornamental tiles.

The principal staircase is of oak, gilt and ebonised in parts; the remainder of the joinery generally is of oak.

A dado is carried round each of the dining-rooms; the ceilings are coved with a diaper pattern in fibrous plaster, the flat portions being divided into panels by moulded ribs, and the heads of the windows are filled in with heraldic devices in stained glass.

The general contractors are, for the constructive works, Messrs. Lucas, Brothers, of Lambeth; and for the decoration and upholstery, Messrs. Jackson & Graham, of Oxford-street.

The following are the sub-contractors:—Mr. William Plows for the masonry and stone carving; the Patent Marezzo Marble Company, Regent-street, for marble work; Mr. Alexander Gibbs, Bedford-square, for Venetian mosaics; Messrs. Burke & Co., Regent-street, for mosaic floor to entrance-hall; Messrs. Gibbs & Moore, Southampton-row, for painted tiles and ceiling decoration of buffet; Messrs. Simpson & Sons, Strand, for external tiling; Mr. William Callis, Duke-street, Lincoln's-inn-fields, for the ornamental wrought-iron entrance-gate; Messrs. Waygood, Falmouth-road, Great Dover-street, for the lift; Mr. George Allison, Great Vine-street, Regent-street (of whom the late Charles Dickens has written "George, the gasman, is the steadiest and most reliable man I ever had"), for the gas engineering; Messrs. Benham & Sons, Wigmore-street, Cavendish-square, for the cooking and heating apparatus.

The contrivances for ventilation (to which much attention has been given) have been executed by Potts's Patent Ventilating Company, Limited.

The clerk of the works is Mr. John M. Howard.

The works have been executed from the designs and under the superintendence of Mr. Walter Emden, architect, of Adam-street Strand.

The building is to be leased from the company by Mr. John Grieve, proprietor of the present St. James's Restaurant.

We shall give a view of the new front in a following number.

DWELLINGS OF THE INDUSTRIAL CLASSES OF BUFFALO, UNITED STATES.

OF the population of 120,000 in the city of Buffalo, it is estimated that about 76,000 persons are supported by industry and trade. The condition of the industrial classes is, on the whole, very prosperous, as a glance at the generally neat and comfortable cottages they inhabit clearly shows. The cottages, or as they are called "frame cottages," are as a rule built of wood, painted white, with a porch before the door, and green Venetian blinds to the windows. They are almost invariably detached, standing gable end towards the street, in little gardens (averaging sixteen to the acre) well planted with vegetables. The smallest sized cottage ordinarily contains three rooms,—one for living in and two bed-rooms,—with a wood shed, to which in the hot season the movable cooking-stove is transferred. In the next size the sitting-room and kitchen are distinct; and the skilled artisan, with higher wages and an average family to support, has probably a third bedroom and a "guest room," which is sometimes let out to a boarder.

The cost of building a substantial four-roomed cottage averages from 350 to 400 dollars, or, taking the dollar at 4s., 70*l.* to 80*l.*; and the rent of such a cottage is from 6 to 7 dollars a month. The smaller sizes rent as low as 4 dollars a month, and the larger, with gardens of perhaps eight to the acre, go up to 10 and 12 dollars. Of course when the working man builds his own cottage,—by no means a rare case,—the cost varies with the greater or less solidity of the structure. An industrious and thrifty plasterer, for example, owns a neat five-roomed cottage, which he values at 1,200 dollars, and has insured for 1,000 dollars. And in another instance an Irish "shovellar" purchases his cottage for 500 dollars. Upon his cottage, valued at 1,200 dollars, and "lot" (25 ft. by 130 ft., at 2*l.* 12s. per foot) on which it stands, he pays taxes to the amount of nearly 40 dollars a year.

Cottages are usually taken by the year, but the rent is paid monthly. The proprietors of the great iron works in the neighbourhood build cottages for their own men, which they let out on the understanding that the tenancy is to terminate with the engagement. Close to a large rolling-mill, employing between 600 and 700 men, a whole village has been thus erected, all the inhabitants of which hold their houses on this sort of contingent tenure. In other cases iron companies have erected cottages for their workmen whose occupants, being allowed to repay the cost of building by easy instalments, have, with few exceptions, become either proprietors or nearly so by dint of diligence and thrift. The freehold of a cottage renting at 4 dollars a month sells at 400 to 500 dollars, and that of a cottage renting at 10 dollars will fetch 1,000 to 1,200 dollars.

Single men find board either with an artisan's family, who have a spare room, or in one of the numerous second-class boarding-houses and hotels scattered over the town. The average charge for board with a separate bed-room is 5 dollars (1*l.*) a week. These boarding-houses vary, to a certain extent, in neatness and comfort, according to the nationality of their frequenters. The food they supply is plentiful, but, generally speaking, of inferior quality and very badly cooked. The general poorness of the butcher's meat is probably due to the fact that the animals slaughtered are brought from a great distance, and are usually mere prairie cattle, not fattened expressly for the market. American cookery ignoring the substantial joint, universally affects "made dishes," and as the maker in the houses referred to is inevitably destitute of the requisite skill, a miserable caricature of a French dinner is the result.

Except in the immediate neighbourhood of the large iron works, and some of the streets near the harbour, no part of the town is specially inhabited by working men. Their little white cottages are seen everywhere, side by side with, perhaps, some stately villa, in this irregularly built city. The working man is thus enabled to locate himself, generally speaking,

within easy reach of his work. With regard to the healthiness of the lodgings at the working man's command, it may be stated generally that the well-paid artisan has nothing to complain of in this respect. It is different, however, with the common labourer, who lodges in some of the low saloons near the docks, or takes lodgings in one of the tenement houses which are found here and there even in respectable streets. These houses are of large structure, of from three to six stories in height, and containing on an average from seven to twelve families. Each family occupies from one to four rooms. The general rule is found to give two rooms to each family. They are almost all built upon the same plan,—a gloomy staircase in the centre of the building, upon which all the rooms open, and a small paved court, a few feet square, in the rear. Every tenement house must be provided with a fixed external fire-escape, which consists either of ladders parallel with the side, and extending the whole height of the building, or of ladders attached which can, in case of necessity, be let down from external balconies. These fire-escapes are invariably made wholly of iron. The houses themselves are generally in a wretched state of dirt and malaria, owing chiefly to the fact that the regulations applying to them remain little more than a dead letter, as is inevitable where sanitary inspectors are elected for brief periods, and solely on party considerations. But even the common labourers, if sober and industrious, can find healthier lodgings than in these houses, which are either resorted to by Irish families, whom unhappy experience at home has rendered indifferent to dirt and discomfort, or by men who, through dissipation or feeble health, have lost their places in the struggle for employment.

With regard to the purchase-power of money, one-third should be deducted from the nominal value of American wages before comparing them fairly with the wages paid at home. Taking the various necessaries of life in their turn, and London prices as the term of comparison, the English emigrant will find butchers' meat about 20 per cent. cheaper than at home; bread, milk, and vegetables pretty much the same; butter and eggs about 40 per cent. dearer. Beer 25 per cent., and tea and sugar 50 per cent. dearer. Coals 60 per cent. dearer, with at least double the quantity required. Gas 200 per cent., and the lodging from 100 to 250 per cent. more. He will also have to pay double for his tools of equal quality. The additional cost of clothing is more difficult to calculate, as the very inferior durability complicates the question, but it may probably be put at 150 per cent. more. A labouring man, with a family of eight children, in narrating his experience, says that his children's shoes cost from 8s. to 10s. a pair, and seldom last longer than six weeks. He, however, considers himself greatly benefited by the move from his native country (Germany). In substance, he says this:—"I am ever so much better off now. My earnings in Germany (as a plasterer) would be barely 3s. a day, while here they are 11s. to 12s. My eldest boy, who is just sixteen, makes his 4s. a day already, and pays me something for his board. Even my youngest, of thirteen, earns 8s. a week, while he learns his trade. In Germany, neither of the two would bring home 6d. In short, if I were there I should, with my large family, be little better than a pauper, while here, I have saved enough already to purchase a comfortable cottage, and I have something in the savings-bank still."

The openings, however, for the introduction of labour from without are not great. The opinion general among employers is that the present annual average of applicants is pretty well equal to the demand even for skilled labour, while as far as unskilled labour is concerned the place has, thanks to the constant influx of Irish and Germans, reached the point of saturation. The new arrivals, it is said, do better and more careful work than the natives or old settlers, but this superiority, it appears, cannot be counted upon as durable. The restless craving for change born of the storied marvels of the West, and its short cuts to fortune, which has become endemic in America, seizes upon the new-comer also. Even if personally inaccessible to the sentiment, its effects upon all his fellow-workers re-act in the long run upon his own *morale*, and he becomes, as the phrase is, "Americanised"; he loses all artistic interest in his work, and is satisfied with fulfilling his task to the mere letter. The Germans are, however, in good repute as workmen, both in regard to steadiness and intelligence; and as they keep apart from the rest of the population, inhabiting a distinct quarter of the town, and encouraging the practice of their own language by means of German theatres, concert-halls, libraries, and beer gardens, it may be safely concluded that the process of Americanising goes on much more slowly with them than with the English and Irish. In contradistinction to the American, who prides himself on keeping his women-kind at home, the German makes all the available members of his family workers, girls and boys; and it is worth while noting that a very much higher per-centage of savings-bank proprietors and of cottage freeholders is supplied by the German element than by any other.

ASSERTED RELICS OF PETER THE GREAT.

AN esteemed correspondent wishes to know why we have not given particulars of certain carved furniture now in England which has been spoken of in various journals as having unquestionably belonged to Peter the Great. In the first place, it was in our pages that the existence of these so-called relics was first mentioned,* and, in the next place, our faith in their authenticity is of the smallest. We have personally compared them with the description of the three articles given in the *London Gazette* of February 6th, 1698, and are bound to say that the examination did not convince us of the connexion. The description of what is called "the bookcase," in particular, by no means agrees with the "relic" shown. We should not be much surprised to find that a great stir has been made to give an adventitious value to some very common articles.

CONCRETE IN DOCK WORK.

AN addition to the information that has been accumulated as to the relative capabilities and cost of concrete, has been made by Mr. James Brunlees, C.E., engineer of the Avonmouth Docks, now, after about eight years' work, practically completed.

The works are on a large scale, the dock being designed for the accommodation of large ocean-going steamers, for which no docks hitherto in existence at Bristol have been available. The centre line of the lock is in line with the mouth of the Avon. The entrance-channel to the lock is 400 ft. long by 100 ft. wide, and constructed in connexion with it is a tidal basin of about two acres area. The lock is 600 ft. long by 70 ft. wide from cope. It will have 41 ft. of water over the cills at equinoctial spring tides. It will have three pairs of gates,—the inner pair dividing the lock into two chambers. The gates are of oak and pitch-pine, and designed to bear a pressure of one-fifth of a ton per square inch. One leaf of the lower gates weighs about 90 tons. The dock is 1,400 ft. long and 500 ft. wide, and has an area of 16 acres. By certain lock arrangements a 45-ft. head of water may be maintained in the dock. The walls are 20 ft. thick at the base, beyond which the concrete footing extends on each side, reduced to 7 ft. at the top. They have a curved batter of 157 ft. radius. The materials employed in the works are chiefly, lowest of all, resting upon sand nearly free from "pot-holes," blue lias concrete, above it Portland cement concrete, and above that the masonry. The stone used has been brought from Tintern, Forest of Dean, and several other quarries; a good deal of Cornish granite has also been employed in the work. The eastern dock wall was built in a timber trench constructed with piles, walings, and struts. The earth for the foundation was, with the help of portable engines, excavated at the rate of 100 cubic yards per day. When the trench had been prepared, it was filled up with lias concrete to within 2 ft. of the floor of the dock. A great many trial blocks, with various proportions of materials, were made and tested before any particular mixture was adopted. The proportions in the lias concrete used are: one of lime, two of sand, two of ashes, and two of broken stone. The mixture adopted for the Portland concrete was one of cement, three of sand and gravel, and five of stone broken small in a Blake's crusher. Two gangs of men were employed in making the concrete,—one in mixing the materials with shovels, the other in working it in Messent's patent concrete-mixers. It was found that laying the foundations in concrete, in preference to rubble, had several advantages. Except the facing, it was done entirely by labourers with wages at 4s. per day; whereas masons' wages would have been 6s. 8d. per day, and their work not so rapid. Besides, it has been found that the concrete sets much quicker than rubble, and with ground so easily affected by wet weather, and so liable to settlement, this was a matter of great importance. The concrete, it was found, set hard in twenty-four hours, and in a week was as difficult to break up as a rock. The mortar used for the masonry is worth a remark. The lime has been obtained from Aberthaw pebbles that were burned in kilns on the works. It was ground in a mortar-mill with sand and ashes, the proportion being one of lime and two of mixed sand and ashes. Rubble-mortar was ground for twenty minutes, and brick mortar for forty minutes. It sets hard in water, and is as strong as the material it unites. No building materials, excepting a small quantity of sand from the Avon, were found near the works.

* See p. 603, *ante*.

THE GLASGOW BURNS STATUE.

MR. EWING, sculptor, of Glasgow, has at length completed the model for the Burns statue to be placed in that city, and the cost of which is being defrayed by public subscription. It is somewhat difficult to form an adequate notion of the difficulties with which the artist has had to contend in producing a work which shall be regarded on all hands as a fitting memorial to the great national bard. The few available portraits of Burns vary considerably, and each has its distinct class of admirers according as it coincides with the idea they have formed of the man. Again, supposing the sculptor to have overcome all difficulties relating to the facial expression, a matter which must have cost him considerable anxiety was the posing of the figure. While seeking to embody a striking and popular idea of the poet in the circumstances of his daily life, it was essential to avoid too lofty a conception on the one hand, and that which is meretricious or commonplace on the other, and when one considers how much serious labour and thought is involved in these points, the delay which has taken place in the completion of the model is easily accounted for. The posing of the figure represents the bard as a superior Scottish peasant with his broad Kilmarnock bonnet half crushed in to the hollow of his right elbow, and holding the "wee modest crimson-tipped flower" in his hand, in an easy and graceful attitude of poetic contemplation.

THE BUILDING TRADE AT ALDERSHOTT.

AT the present time the business of Aldershott builders seems pretty brisk. The leading firm,—Martin, Wells, & Co.,—have on hand in the town the Trinity Church, the Government work in the camp, and a depôt centre at Kingston, besides two residences on the Farnham-road. Mr. Kemp has just completed the Wesleyan Soldiers' Home, and is now erecting a large church for that community; he is also building a residence for Mr. W. Clinton in Church-lane. Mr. John Hughes is building the Orphan Home at Farnborough, and has a contract with the local Board. Some of the smaller builders are building cottages and villa residences in various parts of the town. The Roman Catholics and Primitive Methodists are also contemplating building places of worship. Residences of a similar class to those being erected for Mr. W. E. Foster and Mr. Clinton are much required in this town, and would readily command tenants. This being the centre of the English army, and a most healthy spot, with a good service of trains to London, it is becoming a favourite station of the officers, and by its orderly state a most desirable residence for civilians as well as the military. We understand the Government are immediately about building a large and handsome military hospital on Gun Hill.

Portland Castle. — This castle and the grounds have now been handed over by the Government authorities to the Royal Engineer Depôt, and it is intended to convert the place into a large torpedo store. The outer boundary wall is to be raised, and a new store is to be built in the outer grounds large enough to hold from 50 to 60 tons of gun-cotton. A jetty is also to be erected from the Castle to deep water, for the convenience of discharging and shipping cargoes, and the whole of the castle rooms are to be converted into stores.

SHARPNESS DOCKS.

AT the meeting of the British Association for the Advancement of Science, held at Bristol, Mr. W. B. Clegrave, C.E., read a paper on "Sharpness Docks," in which he commenced by glancing at the history of Gloucester as a port. Its first Custom-house, and the consequent recognition of Gloucester as a port, was in the reign of Queen Elizabeth. The city of Bristol at that time appeared to have been jealous of its insignificant rival, and petitioned for the repeal of the latter's patent. It was needless to say that the prayer of the petition was not granted, and equally needless to say that the old port of Bristol did not go to ruin, as the petitioners apprehended. Prior to the formation of the Gloucester and Berkeley Canal the foreign trade to Gloucester was almost nothing. It was completed and opened for traffic on April 26th, 1827, the total cost being about 500,000*l*. The width of the entrance was 86 ft. 6 in. and its depth 18 ft. The ship-lock was 163 ft. long by 38 ft. wide, and the depth upon its inner cill 18 ft. Such were the canal and works by which the whole trade of the port had been accommodated until the opening of the new docks at Sharpness, now exactly nine months ago. In consequence of the increase of the trade of the port vessels had to remain in Kingwood sometimes from fifteen to twenty days, waiting their turn to be admitted to the tidal basin at Sharpness; accordingly the Sharpness new Docks were constructed. The joint engineers were Mr. T. E. Harrison and the author of the paper. The works consist of two open timber jetties or piers extending from the shore to low water—some 480 ft. to 500 ft. in length—to guide the vessels through the entrance to the tidal basin. They form a trumpet-mouthed entrance, having a width at their outer end of 350 ft., narrowing to 62 ft. The length of the tidal basin is 540 ft., and 300 ft. in width. At the inner end of the basin the lock is situated. It is 320 ft. in length and 62 ft. in width, with three pairs of gates. The floating-dock is upwards of 2,000 ft. in length, 430 ft. wide at one end, and 200 ft. at the other, with a depth of water of from 24 ft. to 30 ft. at its further or inner end. From this point the new works are joined to the old canal by a canal 700 ft. long and 150 ft. broad at the water-line, and 50 ft. at the bottom, with a depth of 19 ft. of water. A graving-dock has also been made at one end of the floating-dock, 350 ft. in length and 50 ft. wide, with a depth of water over the cill of 15 ft. The works were let by contract to Mr. George Wether, in January, 1871. They were commenced in the March following, and opened for traffic on the 25th of November, 1874. The total cost of the works, including the restoration of a fallen wall and other works, amounted to about 200,000*l*. The company had laid down upon their property about five miles of railways and sidings. The Midland railway was connected with the docks railway by a branch from the Berkeley-road Station, over which the Great Western Railway had running powers, and both companies were making such arrangements as would enable them to carry on a large traffic. The two systems of railway open up to the port very large manufacturing and agricultural districts, and the Severn Bridge Railway, now in course of construction, would open to Gloucester a district of country from which at present the port was very much excluded,—the coal and mineral districts of the Forest of Dean, and, what was of more consequence to Gloucester, the coalfields of South Wales. Gloucester hitherto had been a port of import almost exclusively; but it was believed that the Severn Bridge would remedy that, and enable ships to be supplied with Welsh coal. Besides the important railway communications, Gloucester now possesses (with the exception of the River Severn, between Gloucester and Worcester, which was a public river, and in the hands of the commissioners) the control of the water-way from the docks to Birmingham. With these advantages, combined with its geographical position (the port being many miles nearer to Birmingham than any other in the kingdom), it was believed that a large trade would in a few days be centred at that place.

Masons' Wages at Crieff.—At a general meeting of the operative masons of Crieff and neighbourhood, on the 13th inst., it was agreed to request the masters to advance the rate of wages from 7d. to 7½d. an hour, the rise to take effect from the 1st of November next.

NEW BUILDINGS AND ALTERATIONS AT THE TEMPLE.

BUILDING works and extensions of considerable magnitude are now in progress at the Temple. They include alterations and improvements of an important character at the Inner Temple, which will materially open out the approaches to the Temple Church, and add to the architectural appearance of the blocks of buildings and chambers immediately opposite to the entrance to the church. In addition, the Harcourt and Plowden Buildings extension scheme has been commenced, whilst the external features of the Middle Temple Library are also undergoing a considerable change. As regards the first-named portion of the works, the benchers of the Inner Temple are engaged in alterations and re-construction of a very costly character, which when completed will provide a large increase in the accommodating power of the buildings, and impart a much more commanding appearance than at present exists to the Temple Church itself. It has for some time past been felt by the benchers that Dr. Johnson's buildings, which stand opposite to the entrance to the Temple Church, and which, it appears, were rebuilt in the year 1687, have presented a somewhat unsightly contrast, and shown to great disadvantage when compared with the adjoining buildings, and as they extend considerably beyond the general line of frontage they greatly interfere with ingress and egress to and from the church. In order to remedy this, and to produce one uniform line of frontage, the block of buildings extending from Johnson's-buildings, with a return round Hare-court into Pump-court, are in course of demolition. A considerable width will thus be added to the small area immediately in front of the entrance to the church, whilst in the rebuilding of the new line of frontage several small chambers will be re-constructed, and a light rusticated style of architecture, uniform with Goldsmith's-buildings, will be observed, the face of the elevation being in stone. Mr. Arthur Cates is the architect, and Mr. C. N. Foster, of Whitefriars-street, the contractor. The works in connexion with the extension of Harcourt and Plowden buildings in the direction of the Embankment, and which will be carried out by the authorities of the Inner and Middle Temples respectively, are actively proceeding. The excavations for the foundations are in progress, and already a considerable depth has been attained. The works at the Middle Temple Library consist of the erection of four ornamental chimney-shafts, two on each side, upwards of 30 ft. in height, and which are carried to an altitude uniform with the ridge of the high-pitched roof. Those on the east side of the building have already been completed, together with one to the west, and the other is far advanced towards completion.

SOME OLD HOUSES AND THEIR STORIES.*

THE HOUSE OF JAMES BARRY IN CASTLE-STREET, OXFORD MARKET.

A RESPECTABLE house with a reputable decent exterior was No. 36, Castle-street, Oxford Market, situated, as you may know, at the West End, and on the south side, of Oxford-street, when the carpenter who had converted its largest room into his workshop, was laboriously chiselling, sawing, and planing his way into oblivion. Most disreputable, and with a dirty dilapidated exterior, anything but respectable, was the same house when the Royal Academy's Professor of Painting, James Barry, R.A., had made that carpenter's shop his parlour, kitchen, painting-room, and picture-gallery, while he was laboriously working his way to lasting fame in the great room of the Society of Arts.

Between that great room and that carpenter's workshop, night after night, and morning after morning, for years, plodded James Barry. In the golden glow of the summer sunsets, and in the thick darkness of winter nights, when the glow-worm oil-lamps, faintly glimmering here and there, scarcely served to show his way. Through hail and rain, heat and cold, mud and snow, the little shabby, pock-marked man went wearily homewards from his daily work. Now brooding over colossal figures of heathen divinities, over grace, vigour, classic beauty, drawing, colour, light, and shade; now surlily growling curses upon the contemptible meanness which deprived him of both models and materials. At one time angry and peevishly fierce, having been insulted by the acting secretary of the society; at another hungry and perplexed, calculating the sum he dare venture to expend upon a supper.

Picture him to yourself in an old dirty baize coat, which was once green, and is now incrusted with paint and dirt, with a scarecrow wig, from beneath which creeps a fringe of his own grey hair. Follow him down the Strand, past the once famous Exeter Change or "Royal Menagerie"; past the Lyceum Theatre, newly erected by James Payne, the architect of Salisbury House; past Maiden-lane, where little Joseph Mallord William Turner, the hairdresser's child, is perhaps being taken upstairs to bed; on to Charing Cross, where the Golden Cross Inn still displays its old signpost and water-trough, and so by the King's Mews onward towards Oxford Market, by roads which are dangerous after dark. Protected by his appearance of extreme poverty from the footpads abounding in every thoroughfare, his dreary walk at last ends at the desolate house in Castle-street. The door being opened with some difficulty, for the lock is not in order, he gropes his way along the dark passage into his painting-room. The lamp outside, penetrating the thick dirt on the windows, enables him to find the tinder-box, flint, steel, and matches. Patiently he proceeds to strike a shower of sparks over the tinder until it ignites, when carefully puffing to keep it burning, he applies the pointed or brimstone end of the flat match to it, and presently contrives to light his old tin lamp. Then we see the painting-room, dimly but with sufficient clearness to note the two old chairs, the deal table, the tapestry-like cobwebs, a huge painting on the clumsy easel, old straining frames, dirt-concealed sketches in chalk and oil, a copper-plate printing-press, and, on the walls, the six sketches for his great paintings in the Adelphi. The artist has finished his day's work, and he now prepares for that of the night.

The Royal Academy once somewhat reluctantly conceived the idea that it had a mission of some national importance. The result of this conception had been a proposal to decorate gratuitously St. Paul's Cathedral with paintings of historic moment, of which Barry was anxious to do his full share,—and the refusal of the Bishop of London to entertain it; whereupon the Society of Arts,—thinking the Academy really desired to elevate the public taste, and develop art of a monumental character,—offered its great room for decoration. This offer being declined, it soon after became known that Barry had, single-handed, undertaken the great task, and with a capital of just 16s. in his pocket. Hence the painter's mean garb and shabby home, his poverty, and the necessity for night work to keep him from starving. Hence, too, his daily travellings a-foot in all weathers to and from the Adelphi.

Barry lived quite alone in his house, which was never either cleaned or repaired, etching, drawing, designing, or printing from the plates he had engraved, night after night, in the room aforesaid, which, as the poet Southey said, had known no change since the carpenter left it. There he sat on his return from the Adelphi, hour after hour, and far into the night, hearing the quavering cry of the drowsy old watchman who chronicled the hour and the weather for those who chanced to be awake, and seeing the sickly gleam of his passing lantern flickering across the ceiling as he crawled slowly by. There, too, he sat on one terrible evening when the "horn-boys" selling the newspapers, instead of crying the usual glorious news of a great victory or battle, announced, with the cry of "Dreadful Murder," a very extraordinary crime which had plunged society into a state of great consternation and excitement. The murder was that of Miss Rae, whom a young clergyman named Hackman had shot in Covent-garden as she was stepping into the carriage of a disreputable old nobleman, Lord Sandwich, for whom she had abandoned her lover the clergyman. She was an extremely accomplished and very beautiful girl, and this was her lover's revenge,—he shot her dead, and with the same weapon immediately attempted to commit suicide, but failed.

Henry Angelo, son of the famous fencing master, tells us in his Reminiscences that the only woman whom Barry loved eloped with a worthless peer. Hence it may have been that between Hackman and the painter existed a remarkable degree and kind of sympathy, bearing which in mind it is not difficult to imagine with what feelings the jilted painter sat alone in the silence

* See p. 817, *ante*.

and solitude of his dirty den on that occasion. Nor how when in the black darkness he went to that dingy bed, which Southey described as having no furniture beyond a blanket nailed on one side, his fancies and dreams were haunted by sickly-shadowed forms and faces, and nightmare horrors, until morning found him feverish and unrefreshed. Angelo says Barry never spoke of Hackman's unfortunate fate without emotion, "and never failed to let loose the most violent epithets against 'the titled baist,' as he designated the gay old peer, her protector, the renowned 'Jemmy Twicher.'"

Who knows to what extent that secret love-story, of which he never spoke, may have influenced Barry's character and life? Allan Cunningham tells us "he was a man of severe deportment who seldom smiled," and yet we have on record many of his humorous stories and witty comments and kindly doings; quite enough to show that underlying the acquired severity and acerbity of his temper there was a latent fund of joyousness and kindliness and love of social pleasures, only suspected by his more intimate and familiar friends. And the home which, in his all-absorbing love for art, in his utter want of spare time and spare money, he so completely neglected, was hardly the home of his choice. The change in his habits of living took place gradually, and when the Castle-street home was at its worst, and he was taken ill, having with much persuasion been induced to sleep at a friend's, he readily enough admitted that, although he had not slept in sheets for many years, he believed them to be "very comfortable." There is the shadowing forth, too, of a very different feeling for home in that yearning heart-cry which has been preserved in one of his letters to a friend: "Oh!" says he, "I could be happy on my going home to find some corner where I could sit down in the middle of my studio with books and casts after the antique; to paint this work and others, where I might have models of nature where necessary, bread and soup, and a coat to cover me! I should not care what became of my work when it was done. But I reflect with horror upon such a fellow as I am, with such a kind of art, in London, with house-rent to pay, duns to follow me, and employers to look for."

As to the recklessness with which he regarded his personal appearance and dress, that also seems to have been acquired, not natural; for, in his younger days, and especially when in Rome, he was rather the dandy than the sloven. Cosway and Hone remembered seeing him "dressed in scarlet, a gold-laced waistcoat, and cocked hat, with paste button and loop, seated between two dashing damsels of King's-place in a post-chaise and four, on their way to Egham races."

On the whole, therefore, we are inclined to think that Barry's succession to the honours of Dirty Dick, the celebrated hardware man of Leadenhall-street, may be attributed rather to the force of untoward circumstances than to his natural inclination. One who knew him says,—"Though impatient of contradiction, and no respecter of persons, Barry was occasionally a very pleasant companion; particularly with certain among his own grade for whom he professed a regard"; and adds,—"He was a man of observation, and had studied character with more shrewd perception than the world generally supposed. Polite to the fair sex, even after he had almost ceased to be endured by his own, from the capricious rudeness he indulged in, to the verge of lunacy, his visits were courted by certain families where there were young ladies, to whom his conversation and manners were so pleasing and courteous, that his knock at the door, which was loud, and not unlike the postman's, lighted up each face with cheerfulness."

At the Earl of Radnor's breakfast-table he displayed nothing very pleasing or courteous when he told his kindly host and generous patron that all the lords he had ever known were like a young nobleman present, whom he termed a noble chicken, "school-boys all through life"; nor did the courteous or the pleasing dominate when, being reproved by Sir Joshua Reynolds for delaying the course of lectures which, in 1783 or '84, he delivered to the Royal Academy students, he said, "with his fist clenched, in a posture of menace," and in their hearing, "If I had no more to do in the course of my lectures than to produce such poor mistaken stuff as your 'Discourses,' I should soon have them ready for reading." Again, one can hardly regard as amiable or gentlemanly the conduct of the fierce old fearless Irishman in so often resolutely insisting upon paying for the dinner he ate as the guest of his private friends. One day, at the dinner-table of Sir William Beechy, for instance, he had delighted those present with his entertaining and humorous stories, and rising to leave at nine o'clock—a late hour for his walk home to Castle-street—he deposited his usual two shillings upon the table. The worthy knight hurried after him with the money, and as he left the dining-room door open, his guests heard the following dialogue*:—

"What is this for?" (exhibiting the silver)—"How can you put so preposterous a question? For my dinner, sure, man!"

"But two shillings is not a sufficient compensation. If you will pay, surely the dinner is worth a crown!"

"Baw-baw! man, you know I never pay more."

"But you have not paid for your wine!"

"Shu, shu. If you can't afford it, why do you give it? Painters have no business with wine!"

In Castle-street a biscuit and an apple often served Barry for dinner. The year 1783 brought to a conclusion the cynical artist's great task in the Adelphi. He gave himself three years for its completion; it occupied more than six, and, in consequence, he at last found the greatest difficulty in devoting the requisite time and study to his "six pictures," and also earning sufficient by night-work to supply even his humble wants. He applied to the Society for help in the shape of an advance to be raised by subscription amongst the members, and repaid out of the proceeds of an exhibition of his works on their completion. It was refused. One can imagine in what frame of mind on that night he went home to the desolate house of our sketch, and with what bitter thoughts he there brooded over his neglected and abandoned position. The great work was done, and all its troubles, cares, difficulties, and perplexities were over in the year 1783. Then the young Prince of Wales and the Duchess of Devonshire ruled in the wicked world of fashion, and Carlton House,—already at war with St. James's Palace,—was being enlarged, gorgeously refurnished and decorated under the superintendence of Nuovosielschi: then the preliminary articles of peace with France and Spain had just been signed;' a short time before the independence of the United States of America had been proclaimed; and the world of politics was then in a troublous and stormy condition under its great admirals,—Fox, Burke, Pitt (the younger), and Lord North. A gay and wildly wicked merry time, a disturbed, feverish, restless time, in which the peaceful claims of art upon public attention did not seem likely to be very promptly acknowledged. Yet the opening of the great room as an exhibition for the benefit of the painter who had gratuitously decorated it, did attract considerable attention, and realised for him a clear profit of 500*l*.



Barry's House in Castle-street, Oxford Market.—From a Woodcut published in 1827.

We see him, in our mind's eye, busy in his dingy study reproducing the Adelphi pictures as etchings, to increase his profits and spread his fame. They realised 200*l*. Lord Romney commissioned him to paint a portrait for one hundred guineas. "Lord Radnor presented him with 50*l*., made payable in a cheque to the bearer, out of respect to the sensitive feelings of the artist."* Timothy Hollis willed 100*l*. to "the painter of the work upon 'Human Culture' in the Adelphi." The giddy young pleasure-loving and extravagant heir to the crown gave him several sittings, and the Royal Academy made him its Professor of Painting at the salary of 30*l*. per annum.

When he commenced his far-famed "Six Pictures," he was advised by a friend to wear better clothes, hire a servant to keep his house clean, and to furnish it neatly and comfortably. Seeing what was before him, he answered,—"The pride of honesty protests against such rashness." But now, when the horizon had brightened, and the dreary night of neglect and poverty seemed past, we might have fancied that at least the walls of his dwelling would have been made sufficiently weather-tight to keep out the wind, the rotting wood-work repainted, the

* Henry Angelo's Reminiscences.

* Allan Cunningham.

windows mended, and the roof repaired to exclude the winter rains and snow. But no, the ambition of the artist was stirred up to win new and brighter laurels, and with that noble passion no thought of self could be allowed for an instant to conflict. To enable him to pursue a course on which he had embarked when he had a capital of but sixteen shillings for his support, and with more intense and single-hearted application, he invested every penny he could scrape together in the Funds, and thus secured an income of 60*l.* a year. And now the great easel is once more put up in Castle-street, and the huge canvas gleefully prepared for the great painter's next great work. All aglow with lofty feelings and desires, he prepares his sketch, makes his outlines, sets his palette. What are the mere outer surroundings of the person to one who lives amongst such grand and glorious creations of the mind and imagination! The chivalrous enthusiast is in the seventh heaven of his delight, and has no thought for petty merely personal comforts, and the outer decencies of commonplace existences. These things were all well enough and proper enough in the carpenter's time, but now—"baw-baw!" and "shu-shu," the mere idea was laughable,—absurd! The first of a new series of pictures was soon in progress—the famous "Pandora." While it was still on the easel, No. 36, Castle-street, received a memorable visitor.

It may be remembered that when Barry was seventeen years old his first ambitious effort in painting—"St. Patrick converting the King of Cashel"—was exhibited in Dublin by the Society of Arts. Edmund Burke, the great statesman, was present, and when, in response to a call for the artist, little Barry came forward, there was that in the appearance of the run-away sailor which provoked a general outburst of laughter, followed by the expression of such strong doubts as to the honesty of the lad's claim, that his face grew crimson with indignation, and bursting into tears he ran away. Burke was touched, and, following the poor boy, commended, encouraged, directed, and promised to serve him. He afterwards sent him to Rome and maintained him there. There are many anecdotes extant concerning Burke and Barry,—things which move our feelings of admiration for the former to their depths, but they have, we are really sorry to say it, nothing to do with Barry's house in Oxford-market, to which we must, of course, return.

Burke had expressed a wish to visit Barry, who having no right to invite visitors, and but little desire to receive them, yet responded cheerfully enough to his earliest, truest, most kind and noble-hearted, as well as wisest, friend and patron, saying:—"Sir: you know I live alone; but if you will come and help me to eat a steak I shall have it tender and hot, and from the most classic market in London,—that of Oxford."

Burke, then, was the memorable visitor we have mentioned. The time and the hour arrived, and with it the great man, punctual to his appointment. But Barry had been so absorbed in finishing the great picture, that the great visitor had altogether escaped his recollection. However, no vulgar fuss was made or excuses proffered: the painter ushered the statesman into his deplorable painting-room, placed one of the old wooden chairs for him near the fire burning in a grate which was not too large for the carpenter's glue-pot, and being reminded of the promised steak went at once for it, and brought it back in a cabbage-leaf.

A clean towel was spread on the small three-legged deal table, the meat put over the fire on the tongs to broil, and then the painter gravely requested his "dear friend" to look to the steaks while he went and fetched the beer. Burke was laughingly obedient, and presently back came Barry, complaining,—"What a misfortune! the wind carried away the foaming top as I crossed Tichfield-street." But we need not re-paint the famous picture, for it is well enough known how thoroughly and heartily the meal was enjoyed, and how the eminent author of "The Sublime and Beautiful" often declared that never in all his life did he pass a happier evening.

And, ah! what other memorable visitors that old house received, and what stories of them it might tell! There was Sir Joshua Reynolds, with his snuff-box and ear-trumpet; Robert Southey, when the horizon of his life was dark and cloudy; Gainsborough, heartily endorsing Barry's contempt for the aristocracy; the miserly Nollekins, with whom Barry had studied in Italy, he who injured the royal nose of the king with his sharp callipers; and many another dead and gone celebrity of the eighteenth century. They commented upon as they passed under its ruinous porch, sat under its broken ceilings, through which sky-light fell from the shattered roof, and laughed and chatted, or argued and quarrelled, with its melancholy, jovial, mean, liberal, harmless, spiteful, malicious, forgiving, cynical, amiable, misanthropical, sociable, coarse, refined, irritable, surly, exceedingly strange old tenant. Never was one whose character had greater inconsistencies, or one whom it has so puzzled common-place biographers to truthfully depict.

The dirty walls of that wretched, neglected studio saw a touching sight when Barry reverently placed within them Sir Joshua Reynolds's painting-chair, presented to him so gracefully by the niece of Sir Joshua, the Marchioness of Thomond, after her uncle's death. Contemplating it with tears in his eyes, presently he clears the old deal table, and sitting down to it, agitated, and with his heart full, writes*:—

"Mr. Barry presents his respectful compliments to Lord and Lady Inchiquin, with every acknowledgment and thanks for their inestimable favour conferred on him this morning in the gift of Sir Joshua's chair.

Alas! this chair, that has had such a glorious career of fortune, instrumental as it has been in giving the most advantageous stability to the otherwise fleeting, perishable graces of a Lady Sarah Bunbury, or a Waldegrave, or in perpetuating the negligent, honest exterior of the authors of the *Rambler*, the *Traveller*, and of almost every one whom the public admiration gave a currency for abilities, beauty, rank, or fashion; the very chair that is immortalised in Mrs. Siddons's Tragic Muse, where it will have as much celebrity as the chair of Pindar, which for so many ages was shown in the Porch of Olympia.

This chair, then, of Sir Joshua Reynolds may rest very well satisfied with the reputation it has gained, and although its possessor may not be enabled to grace it with any new ornament, yet it can surely count upon finding a most affectionate, reverential conservator, whilst God shall permit it to remain under his care.

Jan. 30, 1794.
No. 36, Castle-street, Oxford Market."

After Barry's death the chair passed into the hands of Dr. Fryer, and was at the sale of his effects on the eve of being knocked down to a chance bidder of half a guinea, when Sir Thomas Lawrence reached the sale-room, and rescued it from who can say what ignoble ending?

But we must hurry on. What savage dreadful oaths the old walls heard when the chair, being still in the studio of its original owner, and when without previous warning the postman brought him that extraordinary formal letter from the Academy informing him that unheard he had been degraded from his professorhip and expelled by virtue of secret proceedings, for which the sanction of the king had been previously obtained. Never before was the meanest or greatest criminal so tried, condemned, and executed. Then, how people talked about "the eccentric miser in Castle-street, Oxford Market,"—we are quoting a magazine of the period,—when it became known that thieves had "broken" into Barry's house, and carried off four hundred pounds. People talked still more about this event when a placard appeared upon the posts and hoardings, in which the painter formally exonerated all common thieves from blame, and attributed his loss to the thirty-nine R. A——s. The nephews of the John Hollis we have named sent him on this occasion a gift of fifty pounds.

Time steals by; we are in the nineteenth century. The great series of pictures illustrating the history of theology are making slow but laborious progress in Barry's studio. He neglects all minor tasks for this, and his poverty grows, his discomforts accumulate. His friends began to bestir themselves once more in favour of the recluse whose house was tumbling about his ears, and a thousand pounds were raised by subscription, with which Sir Robert Peel purchased an annuity; but all too late, too late! On the 6th of February, in the year 1806, unwarned by previous illness, as, on a cold dark night, he was entering the house whereat he usually dined, his personal habits having then become somewhat more social and "respectable," he was seized with the cold fit of a pleuritic fever, which medical men usually attribute to injudicious exposure and extreme cold. It was so severe that all his faculties appeared to be suddenly suspended, and he could neither speak nor move. Cordials were given to him, and when he became conscious a hackney carriage conveyed him home. But the key-hole of his door had been so plugged with stones and dirt by mischievous boys that admission could not be procured. The poor old white-faced shivering painter was consequently conveyed to the house of a friendly neighbour, Mr. Bonomi, who gave him a room into which he tottered, and, desiring to be left quite alone, bolted the door. For forty hours he remained without medical aid; he always had expressed a contempt for doctors and their drugs, and then such aid arrived, but too late. A hot fit succeeded the cold one; he breathed with difficulty, and complained of a burning pain in his side. The wretched old house, avenging his neglect, was killing him at last.

Two days after, Dr. Fryer was startled by the apparition of the ghastly dying man in his consulting-room. He complained of a pain in his side, a quick feeble pulse, and an incessant cough. He said his friend Bonomi had made arrangements for his abandoning the old house in Castle-street, and for the future living with him; and he spoke with deep emotion of Mrs. Bonomi's great kindness to him, mentioning the happiness he would have in being for the future thus comfortably provided for. Dr. Fryer hurried him away, saying he ought not on any account to have left his bed, and that he would attend him at his friend's house.

From that time forth the house in Castle-street never again saw its curious old tenant. On the 22nd of February he died, tranquilly and with content, in the sixty-fifth year of his age. The sum which was to have comforted his declining age was expended in giving him a noble funeral. It was proposed that the poor deserted decaying body should lay in state somewhere. The deserted ruinous residence of the painter was not, of course, to be thought of. The resentment of the Royal Academicians, as a body, outlasting life, the use of their great room was denied; and so the senseless body was carried to the most appropriate great room of all,—that in the Adelphi, where the works of that thin, bony, wax-like hand, which had so utterly lost its cunning, was looked down upon by its still living creations, endowed with all the seeming of life, yet silent, as if with solemn awe and reverence of that mysterious presence, through the shadow of which we must all pass onward to eternity.

Our task is ended; although we have not told half the stories belonging to James Barry's house, for our space here is limited, and the reader who is not familiar with the painter's life, and whose interest we may have had the honour of awakening, must look elsewhere for further records and widely-scattered anecdotes. Therein he may learn how hands which had never touched a pencil bore him to his grave in St. Paul's Cathedral, which it was once his dearest wish to decorate. The dean and chapter thereof refused to permit a simple monument to his memory to be erected for a smaller payment than 1,000*l.* He died a Roman Catholic, and was a fervid upholder of his faith.

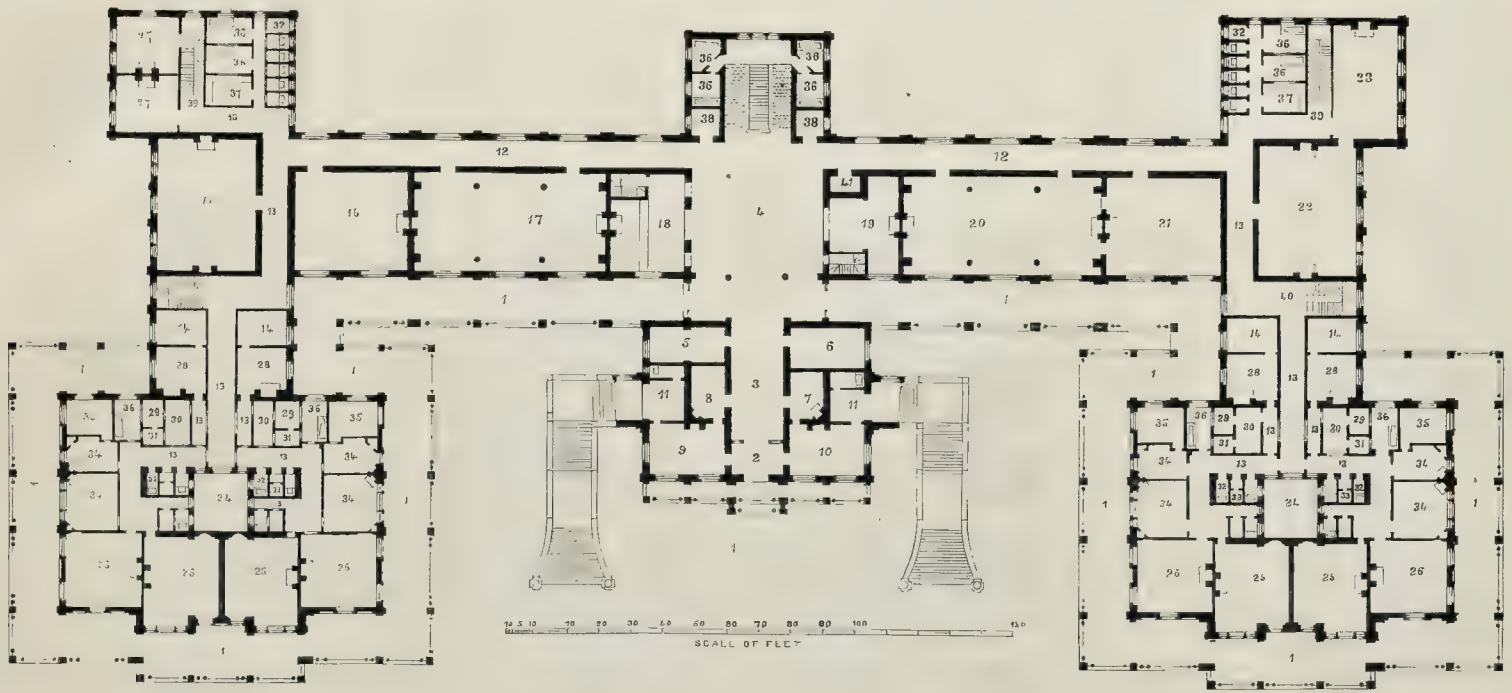
We wonder if at any time,—and if at any time, how often,—when Barry heard the icy wind moan through the cold and darkness, as he crouched shivering under his only blanket, he recalled one of the sights of his childhood and the thought it brought. Once when he was in Ireland, playing hide and seek with his mates, he ran into a ruinous house in an obscure lane, which had neither doors nor windows, and ascending the rotting stairs, saw in one of the upper rooms two old and withered figures sitting, in rags and wretchedness, beside a handful of expiring embers, tearing each other's faces, and accompanying every tug with grimaces which demons might have envied. The scene made a deep impression upon the boy, so that in after years he referred to it, saying "that age and want add to their inherent miseries evils all their own." This is the sight and that is the thought to which we refer.

* We here give the first rough draught, which was presented to the wife of the Keeper of Prints and Drawings in the British Museum, and inserted by her in a copy of Boswell's Life of Johnson.

ENGLISH HOTEL FOR LEGHORN.

IN our last* we published a view of the hotel proposed to be erected in Leghorn, chiefly to provide accommodation for English and American visitors. We now give a plan of the principal floor, with explanatory references.

* Pp. 840, 842.



REFERENCES.

1. Verandah.
2. Outer hall.
3. Inner hall.
4. Grand hall.
6. Luggage.
6. Cloaks, &c.
7. Porter.
8. Clerk.
9. Ladies' waiting-room.
10. Gentlemen's waiting-room.
11. Retiring-room.
12. Corridor.
13. Passage.
14. Servants' bed-room.
15. Ladies' coffee-room.
16. Ladies' drawing-room.
17. Table d'hôte.
18. Bar. Stairs to music-loft over.
19. General office.
20. Coffee-room.
21. Reading-room.
22. Billiard-room.
23. Smoking-room.
24. Open court.
25. Drawing-room.
26. Dining-room.
27. Sitting-room.
28. Kitchen.
29. Kitchen-store.
30. Pantry.
31. Fuel.
32. Housemaid.
33. Dust.
34. Bed-room.
35. Bed or dressing room.
36. Bath.
37. Lavatory.
38. Lift.
39. Servants' stairs.
40. Stairs leading to flat.
41. Plate-safe.

PROPOSED ENGLISH HOTEL FOR LEGHORN.—*Plan of principal Floor.*



THE LUDGATE HILL BRANCH OF THE CITY BANK.—MESSRS. JOHN TARRING & SON, ARCHITECTS.

THE LUDGATE-HILL BRANCH OF THE CITY BANK.

THIS building, 61 and 62, Ludgate-hill, was opened for public business in the spring, the former premises in Ludgate-hill not being sufficient for the increasing business of the bank.

The ground and basement floors are devoted to the banking requirements. On the former is the banking-room, averaging 28 ft. by 28 ft., having at the back a manager's room about 12 ft. by 9 ft. 6 in., and a waiting-room and lobby about 9 ft. 6 in. by 6 ft. 6 in., lighted from Dolphin-court, and a stone staircase to the basement, in which are the strong-rooms, fitted up by Messrs. Chubb with their patent fire and thief-proof doors and safes; the clerks' lavatories, and a kitchen and living-room for the bank porter. There is also a hydraulic lift provided by Messrs. Appleby Brothers, from the basement to the lobby off the banking-room.

The first, second, and third floors are arranged in suites, with strong-rooms to the first and second floors, and water-closets and lavatories to all the floors. The top story is arranged in apartments, with kitchen, scullery, &c., for a resident clerk and housekeeper, and has electric communication with the strong-rooms and the bank.

The entrance to the bank proper is in Ludgate-hill, and that to the offices and residence is in the opening leading to the Dolphin-court.

The front has grey Aberdeen plinth, with door and window jambs, architraves and plinth mould in polished red Aberdeen granite; the whole supplied by Mr. Hunter, of Aberdeen. Above the first floor the wall is faced with Portland stone.

The carving was done by Mr. Sansom.

The archway on the lower side of the front entrance gives public access to Dolphin passage and court.

The general contract works were carried out by Mr. Shurmur, of Lower Clapton, and the gasfittings by Messrs. Benham, of Wigmore-street.

Messrs. John Tarring & Son were the architects. Mr. Weeks was clerk of works.

The total cost, including bank and gasfittings, &c., was about 8,300*l.*

LONGFELLOW'S ADDRESS TO STUDENTS.

WE often find occasion to report prose, if not prosy, addresses to the students of our schools of art, and we will for once *take* occasion to reprint one in verse, which was delivered by Mr. Longfellow, on the occurrence of the fiftieth anniversary of the Bowdoin College Class of 1825. We find it in *Harper's Magazine*, and it is so good and so charming that we think our readers will thank us for making it known to them:—

MORITURI SALUTAMUS.

"O Cæsar, we who are about to die
Salute you!" was the gladiators' cry
In the arena, standing face to face
With death and with the Roman populace.

O ye familiar scenes—ye groves of pine,
That once were mine and are no longer mine!—
Thou river, widening through the meadows green
To the vast sea, so near, and yet unseen!—
Ye halls, in whose seclusion and repose
Phantoms of fame, like exhalations, rose
And vanish'd!—we who are about to die
Salute you; earth and air and sea and sky,
And the Imperial sun that scatters down
His sovereign splendours upon grove and town.

Ye do not answer us! ye do not hear!
We are forgotten; and in your austere
And calm indifference, ye little care
Whether we come or go, or whence or where.
What passing generations fill these halls,
What passing voices echo from these walls,
Ye heed not; we are only as the blast,
A moment heard, and then for ever past.

Not so the teachers who in earlier days
Led our bewilder'd feet through learning's maze:
They answer us—alas! what have I said?
What greetings come there from the voiceless dead?
What salutation, welcome, or reply?
What pressure from the hands that lifeless lie?
They are no longer here: they all are gone
Into the land of shadows—all save one.
Honour and reverence, and the good repute
That follows faithful service as its fruit,
Be unto him, whom living we salute.

The great Italian poet, when he made
His dreadful journey to the realms of shade,
Met there the old instructor of his youth,
And cried in tones of pity and of ruth:
"Oh, never from the memory of my heart
Your dear paternal image shall depart,
Who while on earth, ere yet by death surprised,
Taught me how mortals are immortalised."

To-day we make the poet's words our own,
And utter them in plaintive undertone;
Nor to the living only be they said,
But to the other living, called the dead,
Whose dear, paternal images appear,
Not wrapp'd in gloom, but robed in sunshine here;
Whose simple lives, complete and without flaw,
Were part and parcel of great nature's law;

Who said not to their Lord, as if afraid,
"Here is thy talent in a napkin laid,"
But labour'd in their sphere, as those who live
In the delight that work alone can give.
Peace be to them; eternal peace and rest,
And the fulfilment of the great behest:
"Ye have been faithful over a few things,
Over ten cities shall ye reign as kings."

And ye who fill the places we once fill'd,
And follow in the furrows that we till'd,
Young men, whose generous hearts are beating high,
We who are old, and are about to die,
Salute you; hail you; take your hands in ours,
And crown you with our welcome as with flowers!

How beautiful is youth! how bright it gleams
With its illusions, aspirations, dreams!
Book of Beginnings, Story without End,
Each maid a heroine, and each man a friend!
Aladdin's Lamp, and Fortunatus' Purse
That holds the treasure of the universe!
All possibilities are in its hands,
No danger daunts it, and no foe withstands;
In its sublime audacity of faith,
"Be thou removed!" it to the mountain saith,
And with ambitious feet, secure and proud,
Ascends the ladder leaning on the cloud!

As ancient Priam at the Scæan gate,
Sat on the walls of Troy in regal state
With the old men, too old and weak to fight,
Chirping like grasshoppers in their delight
To see the embattled hosts with spear and shield,
Of Trojans and Achaians in the field:
So from the snowy summits of our years
We see you in the plain, as each appears,
And question of you; asking, "Who is he
That towers above the others? Which may be
Atreides, Menelaus, Odysseus,
Ajax, the great, or bold Idomeneus?"

Let him not boast who puts his armour on
As he who puts it off, the battle done.
Study yourselves; and most of all note well
Wherein kind Nature meant you to excel.

Write on your doors the saying wise and old,
"Be bold! be bold; and everywhere be bold;
Be not too bold!" Yet better the excess
Than the defect; better the more than less;
Better like Hector in the field to die,
Than like the perfumed Paris turn and fly.

And now, my classmates; ye remaining few
That number not the half of those we knew;
Ye, against whose familiar names not yet
The fatal asterisk of death is set,
Ye I salute! The horologe of Time
Strikes the half century with a solemn chime,
And summons us together once again,
The joy of meeting not unmix'd with pain.

Where are the others? Voices from the deep
Caverns of darkness answer me: "They sleep!"
I name no names; instinctively I feel
Each at some well-remember'd grave will kneel,
And from the inscription wipe the weeds and moss,
For every heart best knoweth its own loss.
I see the scatter'd grave-stones gleaming white
Through the pale dusk of the impending night;
O'er all alike the impartial sunset throws
Its golden lilies mingled with the rose;
We give to all a tender thought, and pass
Out of the grave-yards with their tangled grass,
Unto these scenes frequented by our feet
When we were young, and life was fresh and sweet.

What shall I say to you? What can I say
Better than silence is? When I survey
This throng of faces turn'd to meet my own,
Friendly and fair, and yet to me unknown,
Transform'd the very landscape seems to be:
It is the same, yet not the same to me.
So many memories crowd upon my brain,
So many ghosts are in the wooded plain,
I fain would steal away with noiseless tread,
As from a house where some one lieth dead.

I cannot go;—I pause;—I hesitate;
My feet reluctant linger at the gate;
As one who struggles in a troubled dream
To speak and cannot, to myself I seem.

Vanish the dream! Vanish the idle fears!
Vanish the rolling mists of fifty years!
Whatever time of space may intervene,
I will not be a stranger in this scene.
Here every doubt, all indecision ends;
Hail, my companions, comrades, classmates, friends.

Ah me! the fifty years since last we met
Seem to me fifty folios bound and set
By Time, the great transcriber, on his shelves,
Wherein are written the histories of ourselves.
What tragedies, what comedies are there;
What joy and grief, what rapture and despair?
What chronicles of triumph and defeat,
Of struggle, and temptation, and retreat!
What records of regrets, and doubts, and fears!
What pages blotted, blister'd by our tears!
What lovely landscapes on the margin shine,
What sweet, angelic faces, what divine

And holy images of love and trust,
Undimm'd by age, unsoil'd by damp or dust!
Whose hand shall dare to open and explore
These volumes, closed and clasp'd for evermore?
Not mine. With reverential feet I pass,
I hear a voice that cries, "Alas! alas!
Whatever hath been written shall remain,
Nor be erased nor written o'er again;
The unwritten only still belongs to thee,
Take heed, and ponder well what that shall be."

* * * * * *

But why, you ask me, should this tale be told
To men grown old, or who are growing old?
It is too late! Ah, nothing is too late
Till the tired heart shall cease to palpitate.
Cato learned Greek at eighty. Sophocles
Wrote his grand "Œdipus," and Simonides
Bore off the prize of verse from his competers,
When each had number'd more than fourscore years;
And Theophrastus, at fourscore and ten,
Had but begun his characters of men.
Chaucer, at Woodstock, with the nightingales,
At sixty wrote the Canterbury Tales;
Goethe, at Weimar, toiling to the last,
Completed Faust when eighty years were past.
These are, indeed, exceptions; but they show
How far the gulf stream of our youth may flow
Into the Arctic regions of our lives,
Where little else than life itself survives.

As the barometer foretels the storm
While still the stars are clear, the weather warm,
So something in us, as old age draws near,
Betrays the pressure of the atmosphere.
The nimble mercury, ere we are aware,
Descends the elastic ladder of the air;
The telltale blood in artery and vein
Sinks from its higher levels in the brain;
Whatever poet, orator, or sage
May say of it, old age is still old age.
It is the waning, not the crescent moon,
The dusk of evening, not the blaze of noon;
It is not strength, but weakness; not desire,
But its surcease; not the fierce heat of fire,
The burning and consuming element,
But that of ashes and of embers spent,
In which some living sparks we still discern,
Enough to warm, but not enough to burn.

What then? Shall we sit idly down and say
The night hath come? it is no longer day?
The night hath not yet come; we are not quite
Cut off from labour by the failing light;
Something remains for us to do or dare;
Even the oldest tree some fruit may bear;
Not Œdipus Coloneus, or Greek Ode,
Or tales of pilgrims that one morning rode
Out of the gateway of the Tabard Inn,
But other something, would we but begin;
For age is opportunity no less
Than youth itself, though in another dress,
And as the evening twilight fades away
The sky is filled with stars, invisible by day.

A Salutary Stipulation.—At a meeting of the Halifax Town Council, on the 1st inst., it was resolved that a clause be inserted in the new Bill to be submitted to Parliament, requiring the provision of two sleeping-rooms in every new house to be afterwards erected.

THE MOUNTEBANK IN LITERATURE AND ART.

IT is perhaps now almost useless to attempt to illustrate any theme from an analogy derived from the statute fair. The present generation can scarcely remember that institution. But there are fathers and grandfathers, under whose banners we serve, who can, and to this class we address ourselves,—a class which will vouch for the accuracy of what we are about to say, viz., that whether business or pleasure might bring visitors to the fair, the mountebank, above all others, was the ultimate, grand, and all absorbing attraction. For if people went to the fair on business, business was transacted on common sense principles, according to legitimate routine, although in some cases it might pass over into very sharp practice. So also if the pleasure-seeker went a fairing, there were Richardson's and Wombwell's; but even these, although a little makeshift in their arrangements, were to a very great extent formulated entertainments, and, therefore, flat, stale, and unprofitable, save when the keeper of the famous menagerie put his head into the lion's mouth, with a request to be told when the beast wagged his tail; or when, in that well-remembered peripatetic temple of the legimitate drama, the apathetic public was aroused by that noble broad sword encounter of one, two, three, and under, till it beat time with its feet, and then seeing the trick of it, and that it was metrically arranged, its attention flagged, it became weary, and departed. And whither, and to what part of the fair did it then bend its steps? Why, to that popular outskirt where above wheels mounted on his platform the mountebank exhibited himself, and held all degrees in a roar with his jokes, kept them in breathless suspense by the contortions of his body and limbs and the entire defiance of all nature's intentions in respect to the relative functions and positions of arms, legs, trunk, and head; or now playing the conjuror, suggesting his near relationship to the evil one. Everything here was irregular and unexpected, the mountebank humanity comported itself as no sane individual would ever think of doing in farm or more refined homestead, and that was the charm of the ancient mountebank of your true Briton.

We are, however, by no means to conclude that when the fairs were put down mountebanks became extinct and were never seen or heard of more. By no means, the mountebank was too much an adumbration of the national mind to be thus summarily got rid of. The mountebank was too truthful a reflex of the country's mental and moral idiosyncrasies to be finally and for ever dismissed, and though the statute fair is abolished, the mountebank survives in the pulpit, in literature, in science, and in art, and delights yet larger and larger audiences; in one case by the contortions of paradox, the eccentricity of language, the moral somersaults, or the hocus-pocussing of everything that is established and thoroughly understood. On another platform — science, — the mountebank professor, by his wonderful manipulation of the physical forces, and by setting aside all respect and reserve in the presence of Dame Nature, compels her to go through all kinds of extraordinary gambols before the uninitiated in the midst of blue and red fire, and not unfrequently manages to raise a laugh to her discredit, while, at the same time, the lively and harlequin expositor pours forth such an abracadabra by way of explanation, that they who have seriously studied the subject find it difficult to stifle what might perhaps be considered by the admiring crowd an unseemly fit of laughter. In art, too, the mountebank professional is for ever re-appearing to obtain the suffrages of the groundlings with the well-known greeting of "Here we are again," and presenting such a comic impersonation of the real painter, such a palette and brushes and maulstick, and with such seriousness, that the assembled crowd is for a time serious, and waits to see what a genius with such unpromising materials can do. The exalted genius now proceeds to trowel a dab of pigment on to his canvas for the forehead, another for the nose, a third for the cheek, and a fourth for the chin, and behold the features of some popular hero embodied in paint, and amidst tumultuous applause. Manchester men crowd, crush, and battle for the prize, and the fortunate winner carries off this work of a genius at a fabulous sum. Once a mountebank always a mountebank, and so that speciality in art is continued. The performer may, however, change the dodge of boldness and facility for that of extreme care and simulated earnestness. He will now exhaust all his skill upon the button or the dress of some piece of ill-drawn and lifeless humanity, after which there is a general buzz amongst the crowd of "Wondrous!" "Marvellous!" The mountebank painter seeks to astonish his public by the oddity of his subject, by some unusual phase of nature, by the rendering of crass ugliness, or, in short, by turning Nature upside down. There are generally drummers and trumpeters in the company of mountebanks, whose chief business is to attract, like their masters, by loudness rather than harmony. Considerable aid and support, or rather let us say countenance, has been given to mountebank art by those great masters of Classic art, the Chinese and the Japanese, who may be said in respect to art to be skilful in standing upon their heads, and in contorting themselves in colour, in that way which delighteth "ye Inglish," who, since they have received the *higher* education, no longer admire, as they were once taught to do, those old-fashioned sophisticated harmonies of Titian and Tintoretto, but are never tired of expatiating on the merits of the willow-pattern,—those hideous vases and dragons from the Celestial Empire, and the whole brood of barbarian ugliness.

There is mountebank architecture, too, to raise the intelligent portion of the public to a smile, from a smile to a broad grin, and eventually to a broad laugh; we mean especially those red-brick constructions,—pigs with one ear,—which include vagaries in windows, gables, and chimney-pots, in aspiring roofs and humble porches, in comical little lights perfectly adapted to the chambers they are intended to illuminate, and in fact in the general unexpected placement of things,—mountebank architecture, which astonishes by its inconvenient rooms and low ceilings, and by that touching earnest faith and simplicity which reverts to knots in glass and the bottoms of bottles for superior illumination,—all these traits, of course, indicating mental conditions highly imbued with the notion of progress, and, moreover, charmingly demonstrating that there are yet people, calling themselves educated, for whom Greece and Italy have existed in vain.

We might show, had we space, how mountebankism carries the day in the entire circle of English life, from politics to Punch and Judy, and that common sense and sound and devoted work in any department in this country have an uphill fight of it against those more popular performers,—Folly, Eccentricity, and Affectation. But hearing the crowd shouting at the top of its voice after one of its famous mountebanks, we must gather up our writing materials and make off, lest we should be discovered penning these sentiments and be maltreated.

COMPRESSED AIR LOCOMOTIVES.

NOTWITHSTANDING the expense involved in producing compressed air, many proprietors of mines have found it expedient to introduce powerful air-compressing engines for driving boring-machines, as well as drawing and hoisting machinery and shaft-pumps, very often situated some distance from the adit end or pit mouth. To work the latter direct by steam, or by rope or chain gear, was found both difficult and complicated. Compressed air was next used in mines and other underground works, for driving engines for the transport of material in a horizontal direction, where hitherto human or animal power had been employed. The former was often not obtainable even at very high wages, and the latter was found to be a great nuisance, the presence of horses in pits deteriorating very much the already bad air of mines. The difficult problem seems to be in a very fair way of being solved. In one instance, the works at the St. Gothard Tunnel, the introduction of compressed air as a motor has been practically tested, and the engines employed there for the removal of the *débris* seem to give satisfaction. Narrow-gauge locomotives for compressed air are also now being constructed in the engineering works of Herr Humbold, at Kalk, near Deutz, on the Rhine.

The greatest difficulty seems to be to provide the engines with a sufficient store of compressed air, so as to be able to run certain required distances. They are therefore supplied with an air-reservoir, or air-boiler, if that expression be permissible, resting on a carriage-frame. The same frame also carries the twin-engines moved by the compressed air. The tension of the stored-up air naturally decreases gradually, until the pressure becomes so small that it cannot overcome the resistance any longer, and the engine consequently stops. But the supply of air may be so regulated as to perform the work required; moreover, air is not, like steam, dependent on the temperature, and is not affected by stoppages, &c.

To make compressed air last a certain time and distance, it is only necessary to condense it to a corresponding high pressure. But there is a limit even to its condensation, for leaving the possible danger of explosion at too high a pressure out of consideration, there is a difficulty in so constructing condensers as to make them practically workable, even at a very high tension. On the one hand, too great compression raises the temperature too much, while on the other, on the re-expansion of the escaping air the temperature is lowered to such a degree that ice would form. Practically, therefore, air has hitherto been condensed only to a pressure of four or five atmospheres; and calculations have shown that a pressure of this power in a closed reservoir of the dimensions of a boiler as generally employed in mines is sufficient to move not only the dead weight of the locomotive, but also a useful load on the horizontal way a tolerably long distance with the same ease and quickness as is now the case if men or horses are used for traction. If the stored-up air of one reservoir should not be found sufficient for a certain distance, two or more of them may be carried, connected with each other by indiarubber pipes. If pipes, furnished at intervals with cocks, are laid along the levels of mines wherever the engines are to run, the latter may take in a fresh supply of compressed air whenever required. As in mines, so on the surface, pipes may be laid in the ground along a certain route. It will be seen that compressed-air engines will in time no doubt be found especially useful for road locomotives.—*Berg. und hüttenm. Zeitung.*

WHO SHALL BE FOREMAN?

SIR,—It appears to me that in the discussion now going forward as to the status of the various trades connected with building operations, there is too much biassed opinion, and too little positive fact brought forward to support that opinion.

In my former letter I stated that carpenters and joiners, as a rule, were better qualified by education to obtain and retain the leading position than bricklayers. This assertion is borne out by your correspondent, "G. Banks," who in your last issue gave us the returns of the examinations of the Science and Art Schools. I quite agree with Mr. Banks in saying that "further comment on this matter would be superfluous."

In the matter of preparation of working drawings, it is not an uncommon practice for details of carpenter's and joiner's work to be left to the person in charge of the works; but in all cases where brickwork is concerned the most full and complete detail drawings are furnished from the architect's office. It has been virtually admitted by "Bricklayer" that the carpenter's trade is the most difficult to acquire, as he says it takes seven years' close application in the shop to learn only a part.

How long is a bricklayer learning his trade? Not more than two or three years if he is an intelligent man! How, then, is it possible for "Bricklayer" to say that his is the most difficult trade to acquire? Again, what does a bricklayer know of the art and mystery of joinery? It is not possible for him to acquire any useful knowledge except by practice, and if it takes seven years for a joiner to master his trade, how long would a bricklayer be learning?

After all, it does not rest with the representatives of the respective trades to say which shall be the leading one; it rests with a superior power, viz., the architects. What is their verdict? I say most emphatically it is for the carpenter and joiner. This is another fact.

E. L.

SIR,—With reference to the question raised in your paper as to who is to be considered the most "fitless and desartless person" to be clerk of works or foreman of large public works, little has been said on behalf of the stonemasons. Fearing it may be thought that our silence is the silence that gives consent, I would like to say, with your permission, a few words, not in contravention of the claims of Mr. Carpenter, for that would indeed be presumption, but to

show that masons are not the unimportant personages he would have us to believe. The carpenter reminds me of the cobbler in the old story, who maintained that, no matter for what it was required, there was nothing like leather, not for any intrinsic value the leather possessed, but because it was the material in which he worked. Now, masons, as a rule, have not the reputation of being frightened at shadows; and though much obliged to Mr. Carpenter for the position he assigns us of the good little boy who knows his place, I cannot, for my part, see "aught so godlike in the form, so all-commanding in the name, of" carpenter, "that he alone should revel in the charms of" clerk of workships, "or monopolise" all the large public jobs. I will state very briefly a few reasons why I imagine masons possess superior claims to either bricklayers or carpenters. In the first place, the material in which the mason works is so much grander in itself, the results obtainable are so superior, that the whole education of a mason must be conducted in a much more liberal spirit; the mind that can grasp in its entirety the splendid stone structures at present being raised in London and round about, can conceive and carry such structures to a successful termination, must be possessed of penetrative powers that well may vie with any opposition bricklayers or carpenters may present. To whom is the splendid appearance of our metropolis due if not to the mason?

The carpenter says this is an art; here he is not quite correct. An art it unquestionably is, but any one who has had to deal with masonry in any quantity is aware that constructive problems of great ingenuity are continually being presented,—problems, I am inclined to think, it would puzzle many bricklayers and carpenters to solve. Mr. Carpenter is by no means correct when he says masons accept the position he assigns them. This is not so; and I think if the clerks of works were polled he would be surprised to find how many were representatives of the class he so coolly ignores. I note that in his letter he plumes himself on being able to build himself a house, a task he imagines to be beyond the constructive capabilities of a mason or a bricklayer; if this be so, let us then resign to carpenters the all-important work of house-building, and let masons be humbly content to confine their attention to such unimportant work as cathedrals, churches, town-halls, and so on.

Apologising for the length of this letter, but trusting you will allow the depth of my feeling to form the breadth of my excuse, I am, &c.,

A STONEMASON.

SIR,—I have read with great interest the correspondence which has been going on in your columns for several weeks past respecting the best man for foreman or clerk of works on buildings, and I cannot help thinking that all have lost sight of the fact that any one of the three branches, *i. e.*, mason, bricklayer, and carpenter may fairly hold that position, provided he be employed on a building most suited to his qualifications. For instance, take a church either in building or restoration, and in which the chief material used is stone (and there are many such), the proper man in that case would be the mason, provided he has acquired a proper knowledge of the attendant trades, which is within the range of any artisan, if he will only take advantage of the opportunities which surround him; and the same may be said for the other trades, *vice versâ*.

I cannot help thinking there is plenty of scope for all, provided the proper man be put in the proper place.

I myself have been engaged on a church job, where the clerk of works knew comparatively little or nothing of the proper bed or quality of the stone being used; and, on the other hand, I have been engaged on work where comparatively little was known by that individual of the woodwork, and so on.

And herein I take it lies a great deal of the cause of the faulty work which is frequently met with.

I therefore in conclusion beg to appeal to all,—the mason, the bricklayer, and the carpenter alike,—to educate themselves, first in their own branch, and then in the attendant trades, and so become proficient to take the place of general foreman or clerk of works on a building most suited to his qualifications, trusting to the good sense of the architect to put the right man in the right place, which I think at present is not always the case.

COUNTRY MASON.

PICTURES *VERSUS* GLASS IN ST. PAUL'S.

SIR,—Your correspondent, "W. C. T.," takes it as settled that the proper method of decorating St. Paul's is by mural pictures, but as this is open to an alternative, the question can only be decided by what is practicable. The building was erected in the first instance as a place of worship, and as it stands in the centre of a busy city, it appears only reasonable that it should, as much as possible, be isolated from its surroundings by the resources of painted glass.

Again, St. Paul's, I suggest, is not a fitting subject for high-class mural decoration, inasmuch as we do not display works of high art in the gloom of a cathedral, but in fitting places specially constructed for them. Where is the field for their display? Not within the range of ordinary vision, but on the vault surfaces, which, if undertaken by any artist, would simply show him as a very lofty instance of self-abnegation.

Admitting mural decoration to hold a higher position in art than pictured glass, are we not bound to consider the circumstances in which it is to be applied? in other words, if the result is worth the effort? We must take St. Paul's as its great architect left it, and consider adornment in the light of practicability as well as precedent.

I apprehend that the Vatican and Sistine chapel are more fitting subjects for wall and roof decoration, as presenting broader surfaces than are desirable in our Northern latitudes, and that we must adapt from and not imitate them.

Further, it may fairly be questioned if architecture and mural painting can be successfully combined in the same building. Broad surfaces and simple architectural detail, such as we find in Byzantine churches, seem most fitting for its application. But in these instances architecture is subordinated, and consequently suffers.

A building which has incorporated with it all the resources of architectural detail and the grace of well-proportioned outline, leaves scant opportunity for the work of the painter.

The resulting surfaces available for him are usually the accidents of the building, and not such as he would stipulate for. On the other hand, the window-forms are parts of the essence of a design affording a fitting framework for any art which the painter in glass may devise.

G. S. A.

OLD LONDON.

THE *European Magazine* contains some interesting engravings of old relics of London—which are now destroyed—generally. Vol. 19 has a frontispiece view of "Old Houses in Leadenhall-street," as seen in 1790. Vol. 20, p. 329, has a view of "Prince Rupert's Palace in Beech-street." Here Charles I. visited Prince Rupert. Vol. 30 has a view of "Old Houses behind the Charter House and in Duke-street, Smithfield, A.D. 1599," being "curious vestiges of antiquity." Vol. 32 has a fine view of an old house in Well-street, Hackney, "formerly the residence of the prior of St. John of Jerusalem," as visible in 1797. The frontispiece of vol. 42 is a view of old houses then (1802)—lately pulled down—in the street called Butcher-row, — Beaumont House, &c. The frontispiece of vol. 43 is an engraving of Green Arbour-court, Old Bailey, recently destroyed, showing the house occupied by Dr. O. Goldsmith, in 1758. In vol. 45, p. 329, Holland House is engraved, having been erected A.D. 1607,—a "very good specimen of the architecture of that period,"—now extant. The frontispiece of vol. 39 (1801) shows "A remarkable Old House in Leadenhall-street." At p. 441, the house—recently destroyed (1870)—formerly the residence of William Hogarth, in Leicester-square, is engraved. Vol. 47 contains a curious engraving, A.D. 1805, of The Templars, at Hackney,—an old house. Vol. 51 contains a view of St. John's Gate, Clerkenwell. The engraving of a public-house—west side, at the lower end of Drury-lane—is the frontispiece of vol. 52. The Queen's Head, Islington, A.D. 1808, is contained in vol. 53. Vol. 57 has an engraving of the Bolt-court residence of Dr. S. Johnson, destroyed by fire, A.D. 1819, and described in *Notes and Queries*, s. 1, vol. 5. Vol. 59, p. 413, shows "Barber's Barn," at Hackney, an old mansion then (A.D. 1812) recently destroyed. Vol. 60 contains as its frontispiece a view of Bricklayers' Hall, and p. 280 a view of Sir Isaac Newton's House in St. Martin's-street, now extant, *minus* the Observatory, and more recently occupied by Dr. Burney, as appears from the Diary of Madame D'Arblay. The frontispiece of vol. 63 shows a curious house in the Old Bailey, opposite Justice Hall, A.D. 1813, stated to have been occupied by the notorious Jonathan Wild.

These are interesting specimens of ancient London architecture. As similar relics, such as Brixton Manor House, Steele's Cottage, Belsize and Fleetwood mansions, all damaged recently, are yet extant, photographs should be taken before final destruction. Amongst these may be named sundry edifices near Smithfield, in Fetter-lane, and Wych-street; a double house opposite Messrs. Hoare's bank, in Fleet-street, similar, probably, to the Mitre Tavern, taken down A.D. 1828 to make room for this establishment, and mentioned in "Boswell's Johnson"; the house No. 165, Bishopsgate-street Without, known as "Sir Paul Pindar's"; and the north side of Staple Inn, Holborn,—all merit the notice of future architects.

CHR. COOKE.

THE WATER SUPPLY OF OLD LONDON.

SIR,—With reference to the conduit mentioned by your correspondent, Mr. Phillips, in your last issue, it may be interesting to state that a considerable length of old lead pipe, corresponding exactly to the description given, was discovered some time since within the enclosure on the north side of St. Paul's Cathedral. It had been cut off at each end on the line of the enclosure. The pipe is about ⅛ in. thick, and weighs say 1 cwt. per yard. It is 6 in. over all, and its shape that of a flattened horse-collar.

GEO. MCDONELL.

STONE GUTTERS.

SIR,—Can any of your practical authorities say if they have ever found expansion and contraction to take place in longish lengths of limestone? I have been called in to advise in the case of a public building where the gutters (behind a parapet) are formed in lengths of limestone, the trough for the passage of the water being nearly semicircular, 11½ in. wide at the top and 7½ in. deep. The joints in the gutters have been stopped most carefully with mastic, and with Portland cement when that failed. The whole face of the gutter has been painted with Carson's lithic paint, and yet after rain, wet penetrates through these gutters on to the plates, &c.

The joints apparently are close and complete, and it is very difficult to say where moisture gets through.

It is suggested that some slight action of expansion and contraction is going on with extreme alternations of heat and cold, and any expression of practical experience under similar circumstances would be much appreciated.

T. H. W.

BALSHAM CHURCH, CAMBRIDGESHIRE.

MR. W. BUTTERFIELD has reported upon the condition of the parish church of Balsham. He remarks that a great deal of well-meant attention has been bestowed upon the fabric in past times, at different dates, but in most cases with unsatisfactory results. This is particularly exemplified in the thirteenth-century tower, to repair the defects of which in a sound manner no attempt has ever been made, the only idea having been to prop it up by any means. Mr. Butterfield advises that the tower should be almost entirely rebuilt, but in parts, and not by taking it down at once or altogether; he suggests a means of doing this, believing that its adoption will secure a more real restoration of the old work than any other. He recommends in regard to the nave that the modern roof and clearstory, though poor, should be retained. He also proposes to lower the level of the nave by about 6 in. He advises that the western gallery be removed, and that the north aisle doorway had better be disused and bricked up. As to the chancel, which is chiefly good work of the fourteenth century, it is recommended that the upper part of the side walls with their windows should be taken down to the level of the original roof plates; that a roof of high pitch, as indicated by the remains upon the east gable, should be erected at that level, in place of the existing one; and that the eastern gable should be restored.

"Under London Docks."—The contractor for the works on the East London Railway, described in our last, is Mr. Thomas Walker, not Mr. Thomas, as stated.

SCHOOL BOARD SCHOOLS.

Foxford (near Foleshill, Coventry).—At the last meeting of the Foleshill School Board, the tender of Mr. W. F. Hancox for erecting new schools on the Foxford site, according to plans prepared by Messrs. George and Isaac Steane, architects, Coventry, was accepted for 1,380*l.* The schools contain infants' room, with babies' room in connexion; boys' and girls' school-rooms, each with class-room attached; porches, lavatories, &c., complete. They stand on about half an acre of land, and the whole area will be paved with Hartshill Grouse, and surrounded with boundary-walls. The schools are designed to accommodate 350 children, viz.: infants, 140; girls, 105; boys, 105. The builder's estimate shows the cost of the building, including school fittings, paving of playground, boundary-walls, &c., to be about 3*l.* 18*s.* 1*d.* per head.

Langley (Bucks).—A mixed school for 180 children, with master's house, was opened last week at Middle-green, Langley, near Slough. The contractors were Messrs. Henry & Wallace, of Barnsbury, by whom the work has been admirably carried out. The total cost is about 1,300*l.* Another school and residence for the same Board is in course of erection at Horsemore-green, the builders being Messrs. Garratt & Wilkinson, of Uxbridge, who are making rapid and satisfactory progress, and will probably complete their work by the end of this month. Mr. Gough, of Queen Anne's-gate, is the architect to the Board.

Southowram.—At a meeting of the Southowram School Board on the 9th inst. a letter was read from the Education Department, finally approving the plans and specifications of Withen Fields school, and directions were given that the architects (Messrs. Holtom & Connon, of Dewsbury), should complete the contracts with the parties tendering for the different works, namely, Messrs. Marshall & Crossley, of Southowram, masons' work, 2,760*l.*; Joseph Milnes, Halifax, joiners' work, 690*l.*; George Hargreaves, Dewsbury, slaters' work, 292*l.*; Richmond Gledhill, Halifax, plasterers' work, 155*l.*; Jabez Wood, Brighouse, plumbers' work, 119*l.*; and Murgatroyd Bros., painters' work, 30*l.*

Dronfield.—On the 13th inst. one of two blocks of school buildings lately erected by the Dronfield School Board was opened for the reception of scholars. The site, which is in Cross-lane, is about an acre in extent, and the buildings comprise separate schools for boys, girls, and infants. The frontage to Cross-lane is 187 ft., and stands back about 20 ft. from the road. Each of the schools is fitted with desks on the German plan, on a principle patented by Mr. Moss, clerk to the Sheffield School Board. The total cost, including furniture, &c., is estimated at 7,000*l.*

Ovenden (Yorkshire).—New schools for the Bradshaw School Board have just been commenced at Ovenden, from plans by Mr. F. W. Petty, architect, Halifax. Accommodation will be provided for 250 children in three divisions, with separate entrance and two classrooms for each department of boys, girls, and infants. The building will be one story in height, with open roofs. At each side of the school are covered playgrounds. The style is Gothic, freely treated.

Mixenden (Yorkshire).—New Board Schools are about to be erected at Mixenden, from plans by Messrs. Horsfall, Wardle, & Patchett, architects, Halifax. In style the school will be Gothic, and accommodation will be afforded for 380 children, in three departments,—boys, girls, and infants,—each having class-rooms and lavatories.

South Wingfield (Derbyshire).—The foundation-stone of new Board Schools at South Wingfield was laid by Mrs. Christian on the 14th inst. The building is being erected from a design by Messrs. Wilson & Masters, architects, Sheffield. The contract has been let to Mr. W. Statham, of Matlock, for 2,982*l.*

Wennington (Essex).—Plans for a new Board School at Wennington have been prepared by Messrs. Habershon & Pite, and sent up to the Education Department for approval.

The Iron Railings on the Thames Embankment.—The cast-iron railings surrounding the gardens on the Thames Embankment are continually being mutilated. Almost daily some portions of the small cast ornaments of the railings are wilfully knocked off and the pieces stolen. Last week several hundred pieces of the railing were found to have been broken off and stolen.

CHURCH-BUILDING NEWS.

Windsor.—The erection of the new church in Bier-lane, Windsor, has been commenced, and the memorial stone will shortly be laid by Princess Christian. The church is only intended to accommodate 153 persons, being required for a very limited district. It will consist of a nave, chancel, and side-aisle on the north side. The style of the building is Early English Gothic, and there will be a circular tower, surmounted by a cross. The architect is Mr. Stephen Wyborn, of Windsor; and the builder is Mr. Henry Gray, of Windsor.——Trinity Church is undergoing extensive repairs, and a new Caen stone pulpit is being fixed. The panels are carved with figures representing the Crucifixion. The walls of the chancel are being decorated. At the base there will be a flowered diaper; above that blocking courses are formed upon a red ground, filled in with a dark ornament; and there will be an arcade upon the blocking courses, four panels of which are to contain figures of the Evangelists, the gift of the Rev. A. Robins. The reredos will be presented by Mr. Robins. The work is being superintended by Mr. S. Wyborn, architect, Windsor.

Maidstone.—Holy Trinity Church, Maidstone, will be re-opened on the 28th inst. by the Archbishop of Canterbury, after alteration, enlargement, and decoration. The church has been reseated throughout with low open seats of yellow deal, slightly stained and varnished, sittings being provided for 1,400 persons. A chancel has been formed at the east end, by the introduction of screens on the north and south sides under the galleries, and the chancel will be paved with tiles. The screens, which are in carved woodwork of pitch-pine, cut off from the church, on the south side, sufficient space for a vestry, on the north side enough room for an organ-chamber, and in the centre of the church seats for about thirty-six choristers. The church has been painted throughout by Mr. Cruttenden, in three or four tints. The decorations have been carried out by Messrs. Harland & Fisher, of London. The new iron and brass gas standards have been manufactured by Messrs. Richardson & Slade, of Holborn. It is intended to warm the building by means of Mr. John Grundy's heating apparatus. The holy table—the design and manufacture of which has been entrusted to J. Martin & Son, of Maidstone—has for its top a solid slab of fragrant cedar. The woods used in the inlays are from the East and West Indies, the Brazils, Africa, &c. The altar-cloth is a good specimen of needlework, of original design, and is the gift of the Misses Stacey. The communicants' kneeling-mat and pede-mats, in rich velvet pile, designed by Mr. Street, and manufactured by Messrs. Jones & Willis, of Birmingham, are the gift of Miss Barringer. The solid brass lectern, manufactured by Messrs. Richardson & Co., is the gift of the Rev. Thomas Harvey. The pulpit, which is the gift of the ladies of the congregation and their friends, is of Caen stone, Devonshire marble, and pitch-pine. The contractor for the works is Mr. Richard Avard, Tanbridge-road, Mr. E. W. Stephens being the architect.

Therfield (Herts).—The parish church of Therfield, Herts, has lately been taken down, owing to its unsafe and dilapidated condition. Early in 1873, Mr. G. E. Pritchett, architect, reported on the condition of the fabric, and recommended that it should be taken down and rebuilt. The condition of the walls, in which the mortar had lost all tenacity, and of the foundations, which were composed of flints laid in wet clay (without any mortar at all), is stated to have been such as to fully justify the report and recommendations of the architect as to the necessity of rebuilding. The new church will be commenced as soon as funds permit.

Yeovil.—St. John's Church, Yeovil, is to be fitted with heating-apparatus, and the tender of Messrs. Petter & Edgar, of Yeovil, amounting to 375*l.*, has been accepted by the committee.

Farleigh West (Kent).—The church of All Saints, West Farleigh, was re-opened on the 7th inst., after restoration under the superintendence of Mr. Ewan Christian, the builders being Messrs. Bridge & Cox Bros., of Maidstone. The chief additions to the building are a new vestry and an organ-chamber, and a porch at the principal entrance to the church. The old-fashioned seats have been replaced by others of more modern design. A new pulpit and reading-desk have also been added, while the old oak roof has been exposed.

Spridlington (Lincolnshire).—The consecration of the new church of St. Hilary, in the village of Spridlington, took place on the 16th inst. The church has been built in place of a dilapidated structure of the fifteenth century, in memory of the late Rev. H. F. Hutton, for thirty-two years rector of the parish. The building has been erected from a design by Mr. James Fowler, of Louth, the style being Geometric Gothic. Externally, it consists of a single rectangle, without structural chancel, and with a saddle-back roofed tower at the north-west, beneath which is the porch. Above the principal doorway is a niche containing a figure in Bath stone of our Lord as the Good Shepherd, carved by Ruddock. The tower is provided with a clock, by Bailey & Co, of Salford. The external walling is of the native stone of the parish, a blue oolite, with Ancaster stone dressings. The porch is paved with Minton's tiles, and the hot-air apparatus is by Haden, of Trowbridge. The roof of the chancel has been decorated in polychromatic diaper, under the direction of Mr. Daniel Bell. The altar, carved in oak, with panels of birch, has been decorated by Messrs. Heaton, Butler, & Bayne. The altar-desk and communicants' kneeling carpet were supplied by Messrs. Jones & Willis. The seats are of pitch pine, and accommodate 140 adults and about 20 children. The general contract has been carried out by Messrs. Walter & Hensman, of Horncastle, the total cost being 3,800*l.*

Sutton Coldfield.—The parish church of Sutton Coldfield, near Birmingham, has lately been restored, under the direction of Mr. Yeoville Thomason, architect, Birmingham, the contractor for the work being Mr. C. Jones. In the course of the work it was deemed advisable to restore the ancient monument of Bishop Vesey, and ultimately it was resolved that this should be done. The monument had been placed in a niche near the door at the north-west corner of the chancel, and it was at first intended simply to restore it without removing it from its position. Some time ago, Mr. A. Hartshorne came down at the request of the Corporation to inspect the monument, to prepare plans, and to advise as to the best means of restoring it. It was thought, however, that the wall was not in a safe state, and it was therefore resolved to build up the niche, removing the monument to what was believed to have been its original position. This being agreed to, it was considered that the occasion would be a fitting one for deciding as far as possible the question which has been sometimes raised by antiquaries as to whether or not the bishop's remains had really been interred underneath the stone, for this would, of course, enable those carrying out the work to decide if they could remove the monument to a more convenient position. The tomb was accordingly opened on the 25th ult., when the prelate's remains were found, and carefully collected and placed in an earthen vase.

Gloucester.—The ancient church of St. Margaret, Gloucester, is being renovated, under the superintendence of Messrs. Waller & Son, architects, by direction of the Charity Trustees. The work will be completed in two or three weeks. Portions of the walls and the roof have been repaired, a vestry has been erected on the north side, and the chancel is being decorated.

Dumfries.—The woodwork of St. Michael's Church, Dumfries, having been found to be affected with dry-rot, the Committee of Works of the Dumfries Town Council have instructed Mr. Barbour, architect, to examine and report as to the state of the fabric.

Barton Seagrave.—The restoration of Barton Seagrave Church, near Kettering, has been commenced, at the cost of the Duke of Buccleuch. The architect to whom the work has been entrusted is Mr. Carpenter, of London, and the contract has been let to Mr. Thompson, builder, Peterborough. The entire cost is estimated at about 2,000*l.*

Stanford-le-Hope (Essex).—It is proposed to restore the parish church of St. Margaret, Stanford-le-Hope, which dates from about the middle of the thirteenth century. The tower, it is said, will need to be partially taken down and rebuilt. It will likewise be necessary to remove the soil which has accumulated from 2 ft. to 3 ft. high around the foundations of the church. The sum requisite for the proposed restoration is 3,000*l.*

Edinburgh.—All Saints' Episcopal Church, Edinburgh, built nine or ten years ago, but without tower and spire, which formed part of the design of the building, is now being completed by the erection of those features. The style is Early Gothic, and the contract has been let to Messrs. Kiddie & Angus.

Longhirst.—On the 14th inst., a new church was opened at Longhirst, about three miles from Morpeth. The style is Early English. There is a porch at the north side, and a tower and spire rising to a height of 100 ft. The plan of the building comprises a nave, side-aisle, transepts, and chancel. The cost is about 5,000*l.*

Ellon.—The Church of St. Mary-on-the-Rock, Ellon, designed by Mr. Street, R.A., was consecrated on the 7th inst., although it was opened for service some four years ago.

Handsworth.—The committee for the restoration of Handsworth parish church announce that they have agreed to enter into a contract with Messrs. Wilson & Sons, builders, of Handsworth, to execute the work at a cost of 5,150*l.*, the designs being supplied by Mr. J. A. Chatwin. This contract is exclusive of the cost of new warming apparatus, new clock, two additional bells, and other miscellaneous expenses, which together are estimated at 800*l.*

Cawthorne near Barnsley).—On the second inst. the memorial-stone of an extension of Cawthorne parish church was laid by Mr. Montagu Spencer Stanhope. The architect is Mr. G. F. Bodley, of London. The work comprises both an extension and a restoration. As regards the first, the chancel will be extended about 18 ft., and the south aisle will be prolonged to about the same length. Two new porches are to be erected, one on each side of the tower. The work of restoration will embrace an entire renovation and re-arrangement of the interior. There will be a new chancel arch, together with arches at the entrance to the north and south chancel aisles, the three being uniform both in style and workmanship. The entire church is to be new roofed, the interior being open timbered. The sittings will be open. The north chancel aisle or chapel will be left as much as possible in its present condition. The estimated cost of the enlargement and restoration is over 3,000*l.* The contractor for the stone work is Mr. Geo. Swift, of Cawthorne; Mr. Fitzwilliam, of London, acting as clerk of the works.

Great Marlow.—On the 9th inst. the foundation-stone of a new chancel to the parish church of Great Marlow was laid. The style adopted by the architect, Mr. John O. Scott, is Early English. Mr. Thomas Corby, of Great Marlow, has taken the contract for 2,000*l.*, and the work is progressing.

SCHOOL-BUILDING NEWS.

Balsall Heath.—New Sunday schools in connexion with the Balsall Heath-road Baptist Chapel were opened on the 13th inst. The buildings are plain in character, affording accommodation for 300 children at a cost of 550*l.* Mr. Parton, of Mary-street, Birmingham, was the builder.

Fakenham.—On the 9th inst., a new schoolhouse and mistress's residence was opened at Fakenham. The Duke of Grafton has defrayed the cost of the buildings, which have been designed and erected by Mr. C. Matthews, of Ixworth.

Sowerby (*Yorks*).—Operations for the erection of the Providence schools, Sowerby, were commenced a few days since, under the direction of the architects, Messrs. Horsfall, Wardle, & Patchett, of Halifax. The ground-floor plan will include a room 20 ft. by 30 ft., and four classrooms 12 ft. by 9 ft. 4 in.

Foleshill (*near Coventry*).—On Tuesday, September 21st, the foundation-stone of a new Wesleyan Chapel and Schools, at Lockhurst-lane, Foleshill, near Coventry, were laid. Owing to the limited area of the site, the schools have to be placed partly underground. The rooms will, however, be well lighted, as all the windows are above ground; and the subsoil will be drained. The schools will accommodate about 235 children, and have a class-room attached. The chapel contains accommodation for 220 adults on the ground-floor, and the galleries, when erected, will hold 150 more, making a total of 370. The building is being erected by Mr. Charles Haywood, junior, builder, of Coventry, from plans prepared by Messrs. George & Isaac Steane, architects, of Coventry. The cost is 1,125*l.*, and taking the number of children at 235, and adults at 220, the total being 455, the average cost of the building per head is about 2*l.* 10*s.*

Winchester.—It is stated that a sum of 6,000*l.* must be expended in repairing the roof of the cathedral during the ensuing two years.

STAINED GLASS.

Barton-le-Street.—Two stained windows have just been placed in the church of St. Michael, Barton-le-Street, Malton,—the one in memory of the late Mr. Francis Carr, of Barton, and his wife, and the other in memory of Mrs. Elizabeth Borton, wife of Mr. John Borton, of the Manor House. Both are placed in the body of the church, and are of large dimensions. The subject of the first-named is Christ, the true Guide. The subject of the second window is taken from 1st Corinthians xiii. 13, and the text inscribed is, "And now abideth Faith, Hope." There are the usual symbolical emblems,—the figure of Faith holding the cross and Hope the anchor. Beneath these is an inscription. The windows have been executed at the sole expense of Mr. Borton by Mr. W. Smiddy, of Malton.

Maidenhead.—A few days ago a painted window, by Clayton & Bell, was placed in St. Luke's Church, Maidenhead, to the memory of the late Charles Clifford, the well-known inventor of the boat-lowering apparatus which conduces to the saving of so many lives at sea. The window represents our Lord stretching out his hand to save St. Peter in the Sea of Galilee.

Lightcliffe.—Workmen from the firm of Messrs. Hardman, of Birmingham, have lately been engaged filling in the glass to the great east and west windows of Lightcliffe Church. The former is of five lights, and the subject is the Crucifixion of our Lord. The latter is a six-light window, and contains two subjects,—the Vision of Ezekiel, and the Vision of St. John. The whole of the clearstory lights are to be filled in with the subject of the Stem of Jesse. The baptistery windows are also to be of stained glass.

Colne St. Aldwyns.—A stained-glass window has just been placed in the chancel of the parish church, over the sedilia. It represents the Coming of the Bridegroom, and the Ten Virgins, and is to the memory of Mrs. Arthur Mitchell, sister of the Right Hon. Sir M. E. Hicks-Beach, bart. The artist is Westlake, of the firm of Lavers, Barraud, & Westlake.

Turriff (*Banffshire*).—A stained-glass window has just been placed in the parish church of Turriff, to the memory of the late Mr. Gordon William Duff, of Hatton. The central portion of the design is illustrative of Luke vii. 44 to 50 inclusive. The words, "Thy faith hath saved thee; go in peace," are inscribed above; and underneath is the text, "We were comforted over you in all our distress by your faith." In the arching of the window is a floriated cross in mosaic, and in the base are the letters I.H.S. The bordering and ornamental portion are elaborately wrought in colours. Messrs. Ballantyne, of Edinburgh, are the artists.

Lincoln.—Two stained-glass windows have just been placed in the chapter-house of Lincoln Cathedral to the memory of the late Chancellor Massingberd, and a third window has also been set up in memory of the late Prebendary Gilbert. These windows commence a history of the cathedral in glass, which, it is stated, will be continued until the whole chapter-house is filled. The glass is by Messrs. Clayton & Bell.

Wistow.—A stained-glass window has been placed in the chancel of the parish church of Wistow, near Selby, by Mr. Knowles, of York, at the cost of Mr. Edward Appleyard, of Wistow Lordship, in remembrance of one of his family. The subject represents our Saviour's meeting with Thomas the Apostle after his resurrection.

Stoke D'Abernon (*Surrey*).—Two stained-glass windows, by Messrs. Ward & Hughes, are about to be inserted in Stoke D'Abernon Church, as memorials of Bishops Sumner and Wilberforce. The subjects of the windows are, Christ's Charge to St. Peter, and Paul preaching at Athens.

Gloucester.—A two-light window, in the ancient church of St. Margaret, has just been filled with painted glass, by Messrs. Clayton & Bell, the subjects being SS. Matthew and Mark. Messrs. Clayton & Bell have also been commissioned by Mr. T. Marling to fill another window with glass, in which SS. Luke and John will be represented; and in a window on the north side is to be placed glass with figures of St. Margaret and St. Mary Magdalen, the patron of the sister and now united almshouse. This window is intended as a memorial of the late Mr. J. A. Whitcombe.

Darlington.—Two stained-glass windows have just been placed in Trinity Church, Darlington. They are both double-lancet lights. One is to the memory of the late Mr. Thomas Potts, an alderman of the borough, and contains representations of David and Solomon. The other is erected in memory of a young girl, and contains ideal representations of Prayer and Praise.

Margate.—A stained-glass window has just been presented to St. John's Church, Margate, by Mr. J. T. Friend. It is the east window of the south aisle, and represents scenes in the life of the Virgin Mary. The window has been executed by Messrs. Lavers, Barraud, & Westlake.

NEW BANKING PREMISES.

Carlisle.—A new building has just been erected at the south-west corner of Bank-street, Carlisle, for the Carlisle and Cumberland Banking Company. The style adopted by the architect, Mr. Crosby Hetherington, is Venetian Gothic, freely treated, the upper floors being intended as a residence for the manager. The principal entrance, in English-street, is triple arched on three clustered columns, hooded, and enriched with carving. The windows are single arches, hooded and carved. The contracts for the shop block amounted to 2,000*l.*, and those for the bank building to 6,000*l.* Adjoining the bank are some new shops erected from plans by the same architect.

Rochester.—New premises, lately erected on the site of the old City Coffee-house, Rochester, for the London and County Banking Company, were opened on the 20th inst. The buildings have been erected and fitted up by Mr. J. G. Naylar, builder, who has also just completed the erection of a new bank at Hertford.

LONDON BRIDGE AND THE TRAFFIC OF THE EAST END.

SIR,—I trust you will raise your powerful voice to prevent the disfigurement of London Bridge, as proposed by the Corporation, as it will not relieve the traffic of the central portions of the City.

A new bridge is required over the Thames east of the Tower, with roadway from Tooley-street, leading up the Minories to Aldgate.

Advantage should be taken of the railway which is about to be made from Aldgate to Liverpool-street, by making a street over the same with wide roadway. By this route the central portions of the City would be much relieved.

Another serious stoppage to the traffic of Whitechapel and Aldgate is the hay-market, which occurs three days a week. This could be removed to the broad roadway of Mile-end, and the same tolls levied as at present.

W. S. HORNER.

IMPROPERLY-LAID HOUSE-DRAINS. WHO IS RESPONSIBLE?

SIR,—I live in a house which has only been built three years, and until within the last fortnight have suffered none of the inconveniences generally regarded as the fitting reward of one who has the temerity to become the first tenant of a newly-built house. The house is, and was when I first entered it, remarkably free from damp, a circumstance attributable to the fact that the carcasses of the block in which it stands were built early in the summer, and allowed to stand unfinished for a couple of months or so, and when the plastering was done they stood for two months longer. But within the last fortnight we have been made disagreeably familiar with the condition of things implied by the exclamation, "Something wrong with the drains"! Insufferably-bad odours pervaded the house, particularly the basement, and rats suddenly appeared on the scene. The builder (who is also the owner) was communicated with, and he sent a couple of men to "see into it." The first thing they did was, of course, to take up the flooring of the basement, a feat which they accomplished with some difficulty, not being carpenters; indeed, they have so "hacked" the floor that it is completely spoilt. After great delay, caused by seeking to ascertain the whereabouts of the drain by "prodding" the ground with an iron crowbar, the drain was found, about 3 ft. below the level of basement floor. On removing the superincumbent earth it was found that the laying of the drain had been most shockingly "scamped"; hardly any of the joints had been cemented or made watertight. There had apparently been some bungle made in laying the pipe from each end without observing the same line; consequently the pipes did not meet. Instead of putting in a short elbow-pipe, or, better still, relaying the pipes, the workman who laid the drain had been "inspired" with the brilliant idea of uniting the two lengths of pipe with a short piece of straight pipe; but inasmuch as the two sections of pipe already laid were some 8 in. out of line with each other, the connecting-piece necessarily gaped at the joints, to the extent of 2 or 3 in. While the pipe remained covered-in no ill effects were observable. But the rats came up the pipe from the sewer, passed through one of the gaps I have described, and burrowed a sort of shaft therefrom in an upward direction till the space between the joists was reached, thus virtually ventilating the drain beneath the boards of the kitchen.

Now, sir, I should like to ask the following questions:—1. Is no one responsible for seeing that house-drains are properly laid and jointed? 2. Ought it not to be insisted upon by Act of Parliament that all drains running beneath domestic habitations shall be bedded in concrete,

and the whole of the space below the basement-floors laid with concrete, as often suggested in the *Builder*? 3. Supposing I or any member of my household were to seriously suffer from typhoid fever, or in any other way, owing to the state of things I have described, would an action for damages lie against the builder? D.

TAUNTON.

THE Taunton Local Board of Health, as Urban Sanitary Authority, have instructed Mr. James H. Smith, surveyor to the Urban Sanitary Authority, to prepare designs for a Rural and Urban Fever Hospital. The site chosen is a piece of land in Cheddon-road, of about four acres, and about 1¼ mile from the town. It is proposed that there should be four separate wards, arranged for six beds in each; two convalescent wards, four bedrooms; dispensary, nurses' rooms, and store-rooms; and the whole of the expense to be defrayed by the Rural and Urban Authorities conjointly. The population of the borough is about 16,000; rural district, 36,000; total, 52,000.

The above site is in a very healthy locality, on the gravel, and about 100 ft. above the river Tone at Olridge Bay.

APARTMENT HOUSES.

THE *New York Tribune* of the 31st July devotes a long article to the description of the "apartment houses" or "French flats," which are now building in large numbers in that city. The *Tribune* says:—"Along Broadway, above Forty-second-street, in Fourth-ave., in Sixth-ave., and in many of the side streets, these apartment houses are being erected this year with rapid growth. The Albany, the Saratoga, the Kensington, and the Heidelberg will be known before the end of this building season as the names of the most pretentious edifices for private residences to be found within the metropolis, where eight years ago the Stuyvesant was the only apartment house designated by a proper name." Messrs. Jardine, architects, have during the past few years made a special business of building this class of houses, one of which is described as follows:—It contains ten suites of rooms, occupied by lawyers, clergymen, two stock brokers, and by a banker. The occupants pay an average rent of $100 per month, which includes steam heat and janitor's services. There are no dark rooms whatever in this building. Each suite contains parlour, alcove, dressing-closet, three bedrooms, dining-room, store-closet, bath-room, kitchen, pantry, refrigerators, clothes-dryer, washtubs, servants'-room, elevator, dresser, closets, private hall, main hall, private stairs. These same accommodations can be had very soon in other localities at lower rents. The architects are of opinion that these apartment buildings will always pay. Whole houses are too expensive luxuries for the greater part of the population, and a large number of those who can afford to live in a house entirely by themselves prefer these suites, especially as in summer time they need not retain their servants when they move to the country. They can stay away as long as they please, and no burglar can rob them of their household goods, as the janitor looks after everything, and has charge of the premises during the family's absence.

A Workman Fined for Breach of Contract.—William Board, of Burnham, appeared at the Borough Police Court, Glastonbury, on the 14th inst. in answer to a summons taken out by Mr. J. R. Norman, brick and tile manufacturer, for breach of contract. Mr. Norman stated that he engaged with the defendant in March last to work for him for twelve months, as was the custom of the trade, and agreed to find him constant work at brickmaking during the season, and after that to employ him at making tiles until the frost set in, and to pay him 2s. 6d. per day during the winter. He left without any reason on the 3rd of August. Complainant claimed 8*l.* damages, as the defendant could have made 60,000 bricks since he left, and he lost a contract through his neglect. He also advanced him 30s., to pay off a debt. The magistrate assessed the damages at 9*l.* 10s., and ordered the defendant to find sureties for that amount, or be imprisoned until such sureties were provided, the term of imprisonment not to exceed three months. Mr. Norman afterwards let the defendant off on paying 30s., amount of loan, and 7s. 6d. costs.

EXHIBITIONERS, SCIENCE AND ART DEPARTMENT.

THE following is a list of candidates who have been successful in obtaining Royal Exhibitions of 50*l.* per annum each for three years, and free admission to the course of instruction at the following institutions:—

1. *The Royal School of Mines, Jermyn-street, London.*

Name.	Age.	Occupation	Address.
Gray, John	21	Engineer...	Strichen, N.B.
Mills, Frederick G....	14	Student ..	London
Holgate, Thomas E.	20	Farmer ...	Blackburn

2. *The Royal College of Science, Dublin.*

Hutchinson, C. C. ..	21	Engineer...	Leeds
Hatfield, Henry ..	20	Student ...	Stockport
Whittaker, Thomas .	18	Clerk	Accrington

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Brompton.—On the 19th inst. the new church of the Servite Fathers, in Fulham-road, Brompton, was opened by Cardinal Manning. The church comprises a nave and aisles of six bays, the total length being 128 ft., the nave being 26 ft. in width, and the aisles 12 ft. 6 in., in addition to recesses for confessionals and small altars. At the conventional east end of the church there are two side-chapels, one dedicated to the Virgin, and the other to St. Philip Benizi. The church is built of brick, with stone dressings, Corsham Down stone—with the exception of the pillars of the nave, which are of granite—being used for the interior work, and Ham-hill stone for the exterior. The style is Early English, with the exception of the windows of the chancel, which are Decorated. The interior fittings are of pitch pine, and in parts of the church Minton's tessellated pavement is laid. The church has been built by Messrs. Grimwood & Sons, under the supervision of the architect, Mr. Hansom. The interior decorations of the church were executed by Mr. Orr; and the glazing by Mr. J. J. Boyce.

Stourbridge.—A new reredos, from a design by the late Mr. E. W. Pugin, has just been completed at the Roman Catholic Church, Stourbridge. Underneath the reredos is a stone altar, resting on four marble shafts, and figures of the Virgin and of the angel Gabriel are introduced. The rose-window of the chancel has been filled with stained glass. The outer cinquefoils, twelve in number, contain in each compartment the figures of three saints; the twelve spandrels have twelve angels, with censers; and in the centre is the Virgin and Holy Child. The total cost of the works has been about 1,200*l.*

Books Received.

Elementary Geometry. By WILLIAM A. WILLOCK, D.D. London: Longmans, Green, & Co. 1875.

A THIN octavo book, price 5s. The author follows the plan of Euclid, in stating every distinct theorem and problem in a formal proposition, but arranges the whole in a simple and natural order of demonstration which Euclid did not follow in his Elements of Geometry, making the problems precede the theorems, and thereby impeding demonstration and forcing the theorems out of a natural order of sequence. There is reason to believe, the author thinks, that Euclid acted under some compulsion from the sophists of his day, who would not allow him that (for instance) there *is* a bisector of a given angle or a parallel through a point to a given line, until, by the necessary constructions, he had actually found them. The first step of the author has been to separate the problems from the theorems, and they are given at the ends of the several chapters. The first chapter treats of straight lines, the second of the circle, the third of the relations of the sides and angles of a triangle to each other, and to the several cases of equal triangles; also to the relations of the sides and angles of parallelograms, which are but cases of two equal triangles on opposite sides of a diagonal. Area is for the first time introduced in the fourth chapter. Euclid's second book is held back for the fifth chapter, and ratio and proportion constitute the sixth chapter. The author treats his subject throughout upon a basis of geometric reasoning, without the aid of arithmetic or algebra.

In some remarks on geometric education, the author says,—"Education in geometry naturally divides itself into two stages,—the first, where the reasonings are simple, and sense plays an important part; the second, when geometric facts have accumulated, imagination has displaced sense, and the reasoning has become more varied, abstract, and complex. The latter is true geometry; the former, the scaffolding which may be cast away when once the edifice is erected; but all elementary treatises on geometry are, more or less, scaffolding."

Applied Science: Part I., Geometry on Paper. Part II., Solidity, Weight, and Pressure. By EDWARD SANG, F.R.S.E. London and New York: E. & F. N. Spon.

UNDER the title Geometry, this author includes measurements of all kinds, and examines the physical properties of matter which influence measurements. He treats the subject mechanically, beginning in the first lesson by showing how to draw straight lines on paper; to divide lines with the compasses; and to measure distances on paper with scales; proceeding to the description of triangles, or trigons, as he prefers to call them; of tetragons, polygons, and the circle; the measurement of surfaces; the nature of ratios and proportions; of the squares and square roots of numbers, &c. The author illustrates his subject by the aid of arithmetic and algebraic methods and symbols.

In Part II. the author proceeds to consider the measurement of solids, and says,—"It is not possible for us to mark the things of which we are treating on paper," and, therefore, that the student must endeavour to make up models, and will thus need tools and some material, such as chalk, stucco, soft wood, or modelling clay. Having treated of the measurement of bulks of solids, the author treats of the measurement of their weights, the standard weight being a brass pound, kept in London, which is divided into 7,000 grains, and also into 16 ounces. For the purpose of comparison of the weights of different substances, the weight of a cubic inch of pure water has been declared by Act of Parliament to be 252·458 grains, whence is derived the weight of a cubic foot = 62·321 pounds. An explanation of the cubes and cube roots of numbers, the principles of the lever, and of pressure, and the computation of strains, follow. The derivations of many of the names of figures in geometry are given; some from the Greek and some from Arabic words.

Mechanics' Geometry. By ROBERT RIDDELL. A. J. Bicknell & Co., New York; George Rivers, London. 1874.

A QUARTO book of fifty-two plates, each of which is illustrated by a page of letter-press description. Many of the plates of solid figures are on cardboard, the figures cut out so that they may be detached from the plate and folded into forms which constitute the sides of the solid figures, thus demonstrating, for all practical purposes, the same geometrical forms as those for which solid models are required by the author last named. The graphic method alone is followed throughout, "plainly teaching," as the title-page declares, "the carpenter, joiner, mason, metal worker,—in fact, the artisan,—the constructive principles of his calling"; such as how to draw an arch of any span and any size without using a centre; to draw the development of a cone and of a pyramid, &c. Of this last the author says,—"This and similar illustrations by means of cardboard are of more practical value to workmen than a hundred drawings on a flat surface, which may not be understood by more than one out of ten." Indeed, the author is somewhat enthusiastic throughout. Other cardboard plates show how to find the covering of a roof, the plan of which is an irregular figure, and the length of each hip and each rafter, the lengths and cuts of the rafters for a hexagonal roof, the ribs and covering of a groin, the intersections of straight and circular mouldings, bevels and splayed work, &c. Some "Lessons on Handrail Construction" follow, and complete the book, which is handsomely bound in green cloth, price five dollars. The loose figures cut from the plates may perhaps be somewhat inconvenient and liable to injury or loss; otherwise, they are of much interest.

In these three treatises on Geometry we have three distinct methods of teaching the science. In the first named, the reasoning process, discarding both arithmetic and algebra; in the second, a mixed method of reasoning and of calculation by arithmetic and algebra; and in the third, a method wholly graphic.

Miscellanea.

A Masters' Union.—The most important event abroad during the month of August, according to the *Labour News*, is the formation of a Masters' Union by the Belgian employers of labour. The committee elected at the meetings held at Brussels is composed chiefly of members and judges of the Tribunal of Commerce, gentlemen who have held prominent positions among the manufacturing and commercial classes of the country. According to the programme issued by this body, the object of this Society is to "assist in the realisation of moral and material progress in commerce and industry; to survey and defend their interests; to express a collective opinion on questions that may arise affecting trade; to take the initiative in the enacting of public measures that may benefit commerce, and in resisting those which are likely to prove injurious." The Association accepts all persons engaged in any branch whatsoever of trade or manufacture. A central committee is to govern the whole Society, but, far from impeding, will assist in the formation of as many special trade-unions as the number of members, and the various character of their occupations, will admit. The functions of these various and local trade-unions will be:—1st. To assist members in all matters of litigation or arbitration; 2nd. To judge all matters of dispute so as to prevent appeals to the public law courts,—that is to say, if the parties concerned can be persuaded to accept the verdicts thus given. Thus, at first sight, the chief object of the Society seems that of affording the means by which lawsuits may be avoided, at least to a certain extent; but the rules also speak of arbitration, and evidently the Union, when once consolidated, will exercise its influence on the labour market.

Overcoming Gradients on Railways.—At the Exhibition of the Royal Cornwall Polytechnic Society, held at Falmouth last week, Mr. Handyside explained his mode of overcoming steep gradients on railways. Mr. Handyside's arrangement is in actual operation at the Avonmouth Docks, where it came under the notice of the British Association. The principle is this,—to overcome steep gradients by doing away with stationary engines, and making the locomotive do double duty. This is effected by the use of self-acting gripping struts; when the engine comes to a gradient too steep for its load,—say 1 in 10,—it runs up by itself, paying out from a hauling-drum a wire rope to which the carriages are attached. When the required distance is reached the struts are released, and they grip the rails so tightly that the load can then be hauled up to the engine. It in turn is held by the struts, and the process is repeated until the bank is overcome.

Bridges in Dublin.—The Corporation of Dublin met in committee of the whole house on the 10th inst. to consider the means to be adopted for the improvement of the Carlisle Bridge. At a previous meeting the Corporation was memorialised to assist in providing a new bridge across the Liffey east of Carlisle Bridge, and it was stated by the Town Clerk that a second memorial had been sent in strongly advocating a bridge that would connect the Westland-row Terminus with the Northern Railway Terminus in Amiens-street in as nearly a direct line as possible. A bridge thus situated would greatly accommodate the heavy traffic from the quays and docks, besides affording much convenience to passengers. The committee were unanimously of opinion that in addition to the improvement and widening of Carlisle Bridge the increased traffic of the port required another bridge to the eastward of Carlisle Bridge.

Tip-carts.—Mr. A. Whitelaw, of Edinburgh, lime agent, has patented an improved lock for tip-carts. The feature constituting the invention consists in providing the headstock of the cart body with a plate having brackets or lugs, in which are supported and free to slide transversely bolts having tongues of special shape locking in corresponding brackets or recesses attached to a plate fixed on the headstock of the cart shafts, and actuated by a hand lever at the side of the cart through a system of levers working from the sloat or cross beam of the cart body, whereby a tight-fitting lock is formed which, it is stated, does not loosen by wear and is comparatively free from friction, and entirely prevents the jolting and vibration which obtains with the locks at present in use.

Monumental.—The granite and marble tomb of the late Lady Carnarvon, designed by Mr. T. H. Wyatt, architect, has just been completed. It is situated at the west end of the mortuary chapel in the cemetery in Highclere Park, near Newbury. The monument is in axed Peterhead granite, with a polished gray granite curb. Within this is an open space for flowers, and in the centre is a slab of red Aberdeen granite, surmounted by a cross of white Sicilian marble. The red slab is splayed, and has the following inscription cut in raised letters on a rusticated ground:—"Evelyn Georgina Katherine, wife of Henry, fourth Earl of Carnarvon. Born 3rd November, 1834. Died 25th January, 1875." On the plinth of the red granite slab is the following inscription:—"We asked life of Thee, and Thou gavest her a long life, even for ever and ever."

The Artisans' Dwellings Act.—Dr. Rygate, the medical officer of health of the parish of St. George-in-the-East, has announced to the Vestry his intention to submit an "official representation" to the Metropolitan Board of Works concerning 291 houses in the parish over which he has sanitary surveillance, which, "by reason of want of light, air, ventilation, sanitary conveniences, and other causes, are unfit for human habitation, and require re-arrangement and reconstruction according to the terms of the Act." The houses referred to are distributed throughout the parish. Some are in courts in the vicinity of the haunt of the opium-smoker described in "Edwin Drood," which was recently demolished in the course of the clearance for the East London Railway works.

Wilson Estate, Hampstead.—Tenders for a new road to be called Redington-road, at Frognal, upon the estate of Sir John Maryon Wilson, bart., and Mr. Spencer Maryon Wilson, were opened on Tuesday last, at the offices of Mr. F. J. Clark (Farebrother, Clark, & Co.), 5, Lancaster-place, Strand, the agent to the Estate. The result was as follows:—

A. & N. Anderson	£2,955	0	0
Hiscox	3,795	0	0
Nowell & Robson	2,780	0	0
Killingback	2,748	0	0
J. & A. Culverhouse	2,720	0	0
Watts	2,577	0	

Mr. Watts's tender was accepted, and the work will be commenced forthwith.

Droitwich: Sewerage and Water Supply. At a meeting of the Town Council, held on Monday, last week, the question of sewerage and water supply for the town was again brought forward and discussed. After the very able and exhaustive report presented some time since by their Medical Officer of Health (Dr. Swete, of Leamington), the necessity of sanitary works was only too apparent. It was, therefore, decided to call in some practical sanitary engineer to report upon the best means to be adopted. Mr. Edward Pritchard, C.E., of Warwick, has been selected to make an inspection of the borough, and to prepare a preliminary report as to the sewerage and water supply, together with an approximate estimate of cost.

Messrs. Cassell's Building.—We were asked to mention that the steam-lift was supplied by Mr. Stannah, and did so; now our "sense of justice" is appealed to, and we are requested to say that the "*continuous* steam-lift" shown on the plan is the manufacture of Messrs. Turner & Co., of East-street, and that this sort of lift is made only by themselves. We have already said that "Mr. B. Finch acted as consulting engineer"; but Mr. Finch claims to have it stated that he, and not the architect, designed and superintended all the mechanical, sanitary, and hydraulic arrangements. We may presently find ourselves compelled, in self-defence, to discontinue giving the names of any of the persons engaged on buildings illustrated in our pages.

Wages in the Glass Trade at Birmingham. A meeting of the Spon-lane Branch of the Sheet Glass Makers' Union of Great Britain was held on the 15th inst. at Spon-lane, near Birmingham, to consider the strike at Sunderland, and whether the men in the employ of Messrs. Chance, Spon-lane, should continue to work at the 10 per cent. reduction. A deputation which had waited upon Messrs. Chance asking them to grant the 10 per cent., or to arrange the matter by conciliation or arbitration, reported that the firm had refused to give the advance, or to meet the men on a board of conciliation, and that the associated employers were of the same opinion. It was stated that there was a reserve fund of 2,000*l.* available for strike purposes.

Valuation of Ruins.—On the 11th inst., the Jedburgh magistrates held a court for disposing of appeals against the valuations of the assessor. There were three appeals, the only one of interest being that of the Marquis of Lothian against the Abbey of Jedburgh being entered in the roll at 20*l.* Mr. W. E. Otto, his lordship's factor, said he was not aware that such buildings were entered in the valuation roll of any other county. Mr. Kinmont, the assessor, said that the abbey, though ruinous, was a very valuable property, as might be seen from the very high price recently paid for it. The abbeys of Melrose, Dryburgh, and Kelso had also been entered in the roll this year. The magistrate continued the appeal till the 21st instant.

The Fire in Bunhill-Row.—Two safes of Messrs. Chubb & Son's were in the midst of the great fire at Bunhill-row, Finsbury, last week, and the good condition in which their contents were found after the fire was subdued gives proof of their fire-resisting properties. The safe which was first got out of the fire contained a large number of books and papers, none of which were injured. The other safe stood the most severe test, being in a position where it was exposed to a very fierce fire for about six hours. Afterwards it fell into the basement amidst a quantity of burning material, where it remained for several days, and was only opened on Monday last.

The Defence of the Metropolis.—The new forts on the Thames are being supplied with the proper armaments, these being in some cases 38-ton guns, and in others 9-in. or 12-ton guns. It is expected that in a few months the whole of the fortifications intended to assist the garrisons of Sheerness, Isle of Grain, Tilbury, and Gravesend in defending the river approach to Woolwich and the metropolis will be completed and in working order. In some parts of the Thames,—chiefly above Gravesend and Tilbury,—forts are constructed on either bank nearly opposite each other.

The Bury St. Edmund's Surveyorship.—At a meeting of the Bury Town Council, on the 7th inst., it was stated that Mr. Croft, the surveyor, was in such a condition of ill-health that he could not carry out the increased duties devolving upon him through the new Public Health Act unless he was allowed an assistant. It was referred to a committee of the whole Council to consider whether a new surveyor shall be appointed, or whether Mr. Croft shall be allowed an assistant. The latter course seemed to find most favour at the Council meeting, the highest encomiums being bestowed on Mr. Croft.

Assessment Tenders.—The new building erected for Messrs. Waterlow & Sons, on the space formerly occupied by Finsbury-market, being now completed, the Vestry of Shoreditch, within which parish it is situated, have determined to employ professional assistance for the purpose of fixing the amount at which it shall be assessed, and they have instructed their clerk to write to Mr. Castle, Messrs. Harston, Messrs. Fuller & Horsey, and Messrs. Fox & Bousfield, asking each of them to name a lump sum for which they would be prepared to undertake the task.

Presentation to an Art-Master.—On the 13th inst. the students of the Worcester School of Art presented their master, Mr. Dewar Campbell, on the occasion of his leaving the city to enter upon his duties as professional art-examiner at Kensington, with a richly-decorated china vase, of the famous Worcester blue, with a picturesque view of the city painted upon it, and a pair of statuettes in parian, selected from the Royal Porcelain Works. Miss Charlotte Corbett, one of the instructors of the school, made the presentation in a very graceful manner.

New Industrial School for York.—On the 14th inst., the Lord Mayor of York laid the corner-stone of new buildings for the York Certified Industrial School. The building will occupy the site in Marygate on which the old premises (which were formerly used for housing city paupers) stood. The buildings comprise, besides the school proper, workshops, master's residence, &c. Messrs. Atkinson, of Micklegate, are the architects, and Mr. Denison is the contractor. The total outlay upon the buildings will be 2,600*l.*

The Ely Local Board of Health Surveyorship.—Mr. G. Mather was, on the 8th inst., elected to succeed his father as Surveyor to the Ely Local Board of Health, at a salary of 120*l.*

Working Men's College, Great Ormond-street.—The winter session of this College will begin on October 2nd. The general meeting, to which intending students and the public are invited, will be held on Monday, October 4th, at 8.30 p.m. The principal, Mr. Thomas Hughes, Q.C., will preside. The new general prospectus issued by the Council shows a serious effort to frame a course of study within the reach of men of little and irregular leisure. The art division is under the direction of Mr. H. Stacey Marks, A.R.A.

Brazilian Waterworks and Drainage.—Mr. Neate, C.E., is on his way home from Campos, Brazil, where he has been to report upon the proposed works about to be undertaken by the city of Campos Waterworks and Drainage Corporation. Mr. Neate will, we hear, be associated in the engineering portion of the enterprise with Messrs. Gotto & Beasley, engineers to the Rio de Janeiro City Improvements Company, whose plans for drainage have, we understand, been adopted in most of the concessions granted in that empire.

Redwood Trees in California.—A new grove of colossal redwood trees is stated to have been discovered in California, one of which surpasses all that have been discovered on the Pacific coast. Its circumference as high as a man can reach, standing and passing a tape-line around, is stated as being only a few inches less than 150 ft., which is beyond the measurement of any tree in the Calaveras grove. The height is estimated at 160 ft., and a part of the top lying on the ground is over 100 ft. in length.

Campden Church, Gloucestershire.—Efforts are being made to restore the noble Church of Chipping Campden, Gloucestershire. The resources of the town are now insufficient even for the necessary repairs of the church, which owes its magnificence to the rich merchants of former days, and outside aid is asked for. The cost, as estimated by Messrs. Habershon & Pite, architects, is over 4,000*l.* The Rev. R. Braithwaite, the vicar, will, of course, gladly receive contributions.

Guildhall Museum.—A great improvement has been effected in the Museum under the New Guildhall Library by the introduction by Mr. Chappuis of a number of his reflectors. Want of light is the drawback there, but by the introduction of these reflectors many things which heretofore could not be seen except by artificial light can now be seen without that assistance. In the library considerable additions are about to be made to the collection of Hebrew books already there.

Value of Saw-dust.—Saw-dust, that has hitherto been in the way in carpenters' shops and saw-mills, is discovered to be of commercial value as a root-producing power, and plants that have been experimented on have produced, in a few weeks, roots that in the usual soil would have taken months. On the Continent, some nurserymen propagate largely in saw-dust, and strike extra-sized cuttings far quicker than by any other means.

Tenders for Broken Granite.—For the supply of 500 tons of broken granite, and 300 tons of granite siftings, for the Town Council of Southampton. Mr. James Lemon, surveyor:—

	Broken Granite. Per Ton.	Granite Siftings. Per Ton.
Farquharson	13s. 0d.	8s. 8d.
Hamley (accepted)	11s. 9d.	7s. 3d.
Beauchamp	9s. 10½.	9s. 6d.

A Compliment to Carlyle.—The Chelsea municipal authorities, duly conscious of the honour conferred on their borough by its being the chosen dwelling-place of the distinguished author, Thomas Carlyle, have re-named one of their squares after him. Formerly "Oakley," it will henceforth be "Carlyle"-square. We mentioned the intention a long time ago.

Barrow-in-Furness Borough Surveyorship.—Mr. Henry Alty, surveyor to the Corporation of Keighley, has been appointed successor to Mr. Arthur Jacob, C.E., who retires from the surveyorship to enter upon private practice. Mr. Jacob will continue to act as engineer to the Corporation for the sewerage works.

Proposed Town Hall, Sherborne.—An effort is being made to obtain a new Town-hall and Market-house for the town of Sherborne. We have wondered that this industrious and thriving place has not had a new Town-hall before this.

Excavations in Brittany.—At Carnac, says the *Globe*, some interesting excavations are now being carried on under the direction of Mr. Milne, of the Scottish Antiquarian Society. At Boreno, near Mount St. Michel, Carnac, a series of Roman constructions have been discovered, in a state of good preservation, and these relics it is intended to explore with care.

Epping Forest.—Twenty-two schemes for the management of the forests of Waltham and Epping have been deposited with the Epping Forest Commissioners, who will consider them at a public sitting in October. A Landowners' Protection Society has been formed to oppose some of the schemes.

Enlargement of Charing-cross Hospital. The governors of the Charing-cross Hospital are, at a cost of upwards of 13,000*l.*, carrying out a series of additions and alterations which will, when completed, almost double the accommodation possessed at present.

The Bells of the parish church of Canford, which have been for some time in a very bad state, have been re-hung by Messrs. Hooper & Stokes, of Woodbury, Devon. The whole of the cost, 98*l.*, has been defrayed by Sir Ivor Guest, bart.

Birkbeck Literary and Scientific Institution, Southampton Buildings, Chancery-lane.—The fifty-third session of this institution will be opened, on Wednesday next, with an inaugural address by Professor Gladstone, F.R.S.

TENDERS

For the erection and completion of vagrant wards, attendants' rooms, stone-breaking sheds in yard, enclosure walls and gates, fences, &c., at Nazareth House, Gordon-road, Peckham, for the Guardians of the Parish of Camberwell. Messrs. Berriman & Son, architects. Quantities supplied by Mr. W. F. Meakin:—

Ward	£8,424	0	0
Marsland	7,462	0	0
Woodman	7,365	0	0
Tarrant & Son	7,350	0	0
Shapley	7,303	0	0
G. & S. Fisher	7,271	0	0
Dover & Co.	7,247	0	0
Cullum	7,186	0	0
Staines	7,152	0	0
Braid Jopling, & Co.	7,150	0	0
Hart	7,100	0	0
Faulkner	6,995	0	0
Oliver	6,900	0	0
Downs	6,890	0	0
W. & F. Croaker	6,623	0	0
Garland & Perkins (withdrawn)	5,947	0	0

For rebuilding No. 2?, Green-street, Leicester-square. Messrs. Andrew Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

McIntosh	£3,495	0	0
Manning & Dowdney	2,950	0	0
Crockett	2,700	0	0
Palmer	2,399	0	0
Bangs	2,381	0	0
Greenwood	2,369	0	0
Sewell	2,360	0	0
Coleman	2,295	0	0
Rider	2,280	0	0

For additions to house, Prince's-road, Buckhurst-hill, for Mr. A. Field. Mr. J. G. Needham, architect:—

Tender No 1.

Egan	£509	0	0
Judd & Hawkings	463	0	0

Tender No. 2.

F. & F. J. Woods	£497	0	0
Nash	485	0	0
Smith	450	0	0
Cains	396	0	0
Kearley & Co. (accepted)	385	0	0

For erecting block of three houses at Winchmore-hill, Middlesex, for Mr. Lloyd. Mr. F. W. Searle, architect:—

Ward	£1,740	0	0
Patman Bros.	1,576	0	0
Fairhead	1,418	0	0
Rish & Brown	1,200	0	0

For repairs at the Licensed Victuallers' Asylum, Asylum-road, Old Kent-road. Mr. W. F. Potter, architect:—

Blott	£165	0	0
Stace	161	0	0
Hayworth	149	0	0
Hersee (accepted)	126	1	4

For alterations and repairs at 31, Store-street. Mr. W. F. Potter, architect:—

Parks	£436	0	0
Osborne	275	0	0
Brown (accepted)	202	0	0

For the erection of No. 7, Bonner's-road, Victoria Park, for Mr. Charles Eaton. Mr. W. H. Gathercole, architect:—

Scaddan	£581	6	0

For the erection of No. 6, Church-terrace, Victoria Park, for the Rev. T. B. Stephenson, B.A. Mr. W. H. Gathercole, architect:—

Scaddan	£921	10	0

Gas and Hot-water Apparatus.

Dyer	£192	2	8

For first portion of proposed City Liberal Club House, at Nos. 5 & 6, Walbrook. Mr. G. E. Grayson, architect:—

Cubitt & Son	£40,275	0	0
Rider & Son	38,8 8	0	0
Colls & Son	38,2 7	0	0
Patrick & Son	37,963	0	0
Patman & Fotheringham	37,907	0	0
Ashby & Son	37,717	0	0
Brass	37,618	0	0
Jackson & Shaw	36,920	0	0
Browne & Robinson	36,529	0	0
Peto Bros.	36,204	0	0
Ashby & Horner	36,118	0	0
Lucas Bros.	36,000	0	0
Holland & Hannen	35,763	0	0
Hill, Higgs, & Hill	35,320	0	0
Trollope & Sons	34,296	0	0

For new warehouse, Garter-court, Barbican, for Mr. J. J. Yeo. Mr. H. T. Gordon, architect:—

Williams & Son	£793	0	0
Thomas	779	0	0
Shapley	765	0	0
Bowman	750	0	0
Hammon	724	0	0
Balls	698	0	0
Scowen	677	0	0
Dye	642	0	0

For pulling down fourteen tenements, and building two shops and four houses, situate Hunt-street, Mile-end New Town, Whitechapel District, for Mr. A. R. Greene. Messrs. Wm. Gosling & Son, architects:—

Cropper Bros.	£2,162	0	0
Hunt	2,135	0	0
Vickery	1,975	0	0
Batchelder	1,837	0	0
Lewis	1,720	0	0

For alterations, pulling down, and rebuilding shop and bakehouse, including oven, for Mr. Dhonau, at 203, Jamaica-road, Bermondsey. Mr. A. J. Simmons, architect. Quantities not supplied:—

Stone & Humphries	£513	0	0
Sambell	446	10	0
Baily	440	0	0
Selt & Hagger	415	0	0
Stringfellow & Balding (accepted)	350	0	0

For new schools, Manor-road, Southwark, for the School Board for London. Mr. E. R. Robson, architect. Quantities prepared by Messrs. Northcroft, Son, & Neighbour.

Crooker	£10,570	0	0
Downs	9,788	0	0
Coleman	9,606	0	0
Oliver	9,569	0	0
Jerrard	9,468	0	0
Newman & Mann	9,300	0	0
Kirk & Randall	9,246	0	0
Grover	9,244	0	0
Wall Bros.	9,217	0	0
Tyerman	9,213	0	0
Ennor	8,983	0	0
Nightingale	8,932	0	0
Shepherd	8,915	0	0
Cooper	8,785	0	0
Hill, Higgs, & Hill	8,646	0	0

For new school buildings in the South Lambeth-road, Lambeth Division, for the School Board for London. Mr. E. R. Robson, architect. Quantities prepared by Mr. T. M. Rickman:—

Crooker	£7,474	0	0
Coleman	7,079	0	0
Gammon & Sons	6,934	0	0
Grover	6,819	0	0
Ennor	6,794	0	0
Oliver	6,749	0	0
Wall Bros	6,640	0	0
Newman & Mann	6,616	0	0
Cooper	6,589	0	0
Downs	6,559	0	0
Kirk & Randall	6,526	0	0
Shepherd	6,521	0	0
Jerrard	6,493	0	0
Nightingale	6,380	0	0
Tyerman	6,290	0	0
Hill, Higgs, & Hill	6,274	0	0

For additions and offices in Cursitor-street, Chancery-lane, for the Public Chambers Company. Mr. John Blythe, architect. Quantities prepared by Mr. Joseph Lavender and Mr. S. B. Wilson:—

Fish	£7,890	0	0
Patman & Fotheringham	7,697	0	0
Brass	7,649	0	0
Pritchard	7,635	0	0
Hill, Higgs, & Hill	7,600	0	0
Newman & Mann	7,436	0	0
Patrick & Son	7,248	0	0
Morter	7,143	0	0

For rebuilding No. 304, High Holborn, for Mr. G. A. Godwin. Mr. Charles J. Shoppee, architect. Quantities prepared by Mr. Sydney Young and Mr. C. H. Shoppee:—

Longmire & Burge	£3,612	0	0
Colls & Son	3,546	0	0
Conder	3,415	0	0
Jackson & Shaw	3,310	0	0
Macey	3,292	0	0
Brass	3,287	0	0
Sewell & Sons	3,077	0	0
Newman & Mann	3,056	0	0

For the erection of a block of almshouses at Hanwell, Middlesex, for Mr. Buchan. Mr. G. Cuthbert, architect. Quantities prepared by Mr. William Wimble:—

Lawrence	£1,070	0	0
Adamson	1,053	0	0
Newman & Mann (too late)	1,010	0	0
Faulkner	985	0	0

For additional skylight and alterations at St. Bartholomew's Hospital, Smithfield. Mr. E. I'Anson, architect:—

Newman & Mann	£182	0	0

For Wesleyan Chapel, Whitehaven. Mr. T. Lewis Banks, architect.

Toms (accepted)	£5,235	0	0

For forming cattle sales ground, erecting refreshment-rooms, offices, cattle-pens, &c. for Coventry Public Cattle Sales Company, Limited. Messrs. George & Isaac Steane, architects :—

Dutton	£4,510 0 0
Frith	4,025 0 0
Marriott	3,820 0 0
Brown	3,616 0 0
Worwood	3,387 0 0
Haywood (accepted)	3,286 0 0

For roads in connexion with same :—

Boon (accepted)	£726 15 0

For railway siding in connexion with same :—

Lucas (accepted)	£368 17 6

For alterations, &c. to the "Delaware Arms," 220, Oxford-street, for Messrs. Combe & Co. Mr. H. R. Cotton, architect :

Toms (accepted)	£1,500 0 0
Bar-fittings.	
Toms (accepted)	£398 0 0

For alterations, &c. to the "Three Crowns," Wells-street, St. James's, for Messrs. Combe & Co. Mr. H. R. Cotton, architect :

Toms (accepted)	£333 0 0
Bar-fittings.	
Toms (accepted)	£282 0 0

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The Builder.

VOL. XXXIII. No. 1704. SATURDAY, OCTOBER 2, 1875.

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Athens To-day.

THEW men visiting ancient Athens would be prepared for the brand-new, or, rather, unfinished appearance which it now presents; for the bright glory of antique art has cast a shade of oblivion upon her modern works; and, excepting, of course, the Classic monuments, no city, equally deserving of attention, has been so universally passed over by the antiquary and the art-critic. The Mediæval and Renaissance remains found in this place will, however, repay the closest examination, and the buildings which have risen here during the last half-century equal in true merit the contemporary works of any city in Europe. But, be this as it may, the energy at present displayed by the Greeks in architectural and kindred undertakings is undeniable, and somewhat remarkable, considering the comparative poverty of the nation; though, on reflection, a parallel between their present position and that which they occupied in the days of Pericles and the patrons of art who followed him, will appear to us and remove our surprise.

In the days in which those structures rose that have made Athens eternally famous, she had recently, as is now the case, freed herself from the trammels of Eastern despotism, and was commencing anew, as she is in our days, her national existence. All who have studied the subject will readily admit that her later struggle exceeded, if possible, in heroism that one the memory of which carried her through it; and if a disparaging contrast should be made between the personal character of the ancient and of the modern Greeks, we would remind the opponent that the very men who reared the Parthenon were accused by their fellow-citizens, and apparently with sufficient reason, of having betrayed the trust confided to them.

Go where you will to-day, the music of the trowel and the saw follows you. As in Periclean times, meaner houses are being levelled one by one, that more splendid piles may occupy the spot, or may be seen to greater advantage; blocks of marble obstruct the footways, paving is going on in all directions, and drain trenches are open in every quarter of the city.

From an art point of view also the state of Athens is satisfactory. Instead of discarding the national style of architecture, as other nations have done, and becoming eclectic, the Athenians use their talents in adapting the principles and the forms employed by their ancestors to the requirements of the present day. Undoubtedly exceptions can be found, but, taking the modern buildings of Athens as a whole, they are as essentially Greek as the Theseum itself. The architects practising here do not, indeed, design their houses, nor even their public buildings, in the forms of temples,—that absurdity is left to "barbarians"; but they show most positively that the arch is not *necessary* to ordinary *architectural* construction, and that the style which, notwithstanding the chronic desertions of fickle taste, will ever be predominant, can be employed now with as much propriety as it was more than two thousand years ago.

To convey an idea of modern Greek architecture, a critical description of an average specimen of the class is necessary, and as such we select an unfinished villa at the S.W. corner of the Place de la Concorde, which is being built by Captain Jean Séhos, of the Royal Engineers of this country, for Signor Mourozis.

The walling of this house is constructed of bricks, rough in texture, and irregular in shape and size. Where not lined with marble, the walls are finished with stucco brought to such a fine face that, in its present new condition, it is scarcely to be distinguished from stone. The plan of the building is almost a square; but toward the street the line is broken by the slight projection of the two lateral portions beyond the face of the central one. With regard to the elevation, commencing from the ground, and describing the features in the order in which they occur, there is, first, a stylobate, or base-course, varying, with the slope of the ground, from 7 ft. to 5 ft. in height, formed of large blocks of bluish-grey marble, grooved at the joints, and tooled only on the face, with the exception of a margin round each block, which is rubbed. The effect of this method of working the stone is, as is generally the case, that the rubbed part is of a much deeper colour than that which is merely tooled, and presents the appearance of an inlay. The stylobate is finished below with a plain plinth, and above with a band projected upon an ogee and fillet. Above this, each of the lateral divisions has, on the ground-floor, toward the street, one central window of classic form, with white marble architrave and jambs. The floor-line of the upper floor is marked by a band and cornice, and then come the principal features of the structure, the loggias, of which there is one at each of the two corners of the front. These each consist of two columns of the Ionic order in the front elevation, a square pier at the external corner, and two pilasters placed as antæ where the wall of the house is broken in order to form the open loggia. These columns, piers, and pilasters, are raised on a continuous pedestal, and support an entablature and pediment of the Ionic order. Their shafts are of veined white marble, and their capitals and bases of pure white. The design of the columns is taken from the Erechtheum; that is to say, instead of extending as high as the eye of the volute, the shaft of the column is terminated by an astragal about two modules below the top of the capital; but the delicate honeysuckle ornament and other foliage which are seen between the astragal and the egg and dart moulding in the antique example are unfortunately omitted.

Of the two modes of forming the Ionic capital alluded to above, and examples of which appear in the Erechtheum and the temple on the Ilissus, that which occurs in the former building, and is a step toward the Corinthian, is more suited to small and less sacred buildings, while the other, which, unless formed upon a grand scale, has a "short-necked" and somewhat awkward appearance, when used upon such a scale, and, consequently seen from below, produces a more majestic effect.

The capitals of the piers and pilasters are a great blemish in Captain Séhos's loggias. Although in the Classic examples the capitals of the pilasters do not correspond with the capitals of the columns, they differ from them not in kind, but in degree, being, without exception, less elaborate, in accordance with the comparatively unimportant part which they play in the design. Thus, in the antæ of the Erechtheum, the volutes are omitted, but the foliage is retained; and in other cases the capitals of the pilasters are simply moulded. In the house which we are describing, the capitals of the pilasters, which the architect describes as "antiques of his own design," are far more ornate than any other part of the fabric, and differ essentially from the Ionic style. They are not easily to be compared with any known object, but foliage forms their chief attraction.

The central part of the street-front contains a doorway, formed by two pilasters, with rich foliated capitals, and included by us in a like condemnation with those described above, supporting a plain epistylium, with antefixæ and dentils. There is a window on each side of the doorway, corresponding with those of the lateral portions. At the floor-line of the upper story a balcony projects, the parapet of which is formed of alternate panels of solid marble and turned balusters, the latter commonplace and out of keeping with the general purity of the design. The balcony is supported on corbels of marble, not treated, as they too often are, as brackets or trusses, but formed so as to render evident the motive which produced them, namely, the projecting floor-joists, which are to be seen close by, answering the same purpose. The upper floor has three windows, with friezes and cornices which it would have been better to omit. Above these the wall of the house forms the architrave of the building, which is divided by a fillet from the frieze of blue marble, and the whole is crowned with an elegant cornice.

The side elevations and garden front do not call for a minute description; their beauties and their defects correspond with those of the front. The windows are fitted with wooden mullions in the cross form, French casements, and Persian shutters, the whole of which are imported wholesale from foreign countries.

We now come to the roof, which is covered, as is general on the Continent, with curved tiles (not pantiles), so laid that they present alternately a convex and concave surface, each convex tile covering the juncture of the two concave tiles which lie one on each side of it. The convex tiles are pointed beneath with mortar, and the eave-tiles are stopped with cement. For the angles a special tile is used, consisting of two ogees, the convex parts of which are joined at

their edges, and as these convex parts are longer than the other tiles of the roof, they tilt upwards in a manner rather Chinese. This manner of covering a roof, which is truly beautiful, and which differs from the antique method only in the employment of concave tiles in the place of shovel-shape ones, gave rise to the use of antefixæ; for though the purpose of these features has hitherto been otherwise explained, no one can doubt, when in the presence of the objects themselves, that they were contrived to hide the unsightly stopping of the convex eave-tiles, with which they correspond in shape and dimensions. Those who have gone nearest to the truth have supposed that they were employed to fix the tiles; but this was unnecessary, nor are they suited to the purpose. Vitruvius recommends the use of them upon the upper member of the cornice for gurgoyles, and adds, with equal bad taste, that they should be in the form of lions' heads in order that they may appear to "vomit." The Italians of the middle ages carved them upon dentils and elsewhere. Here they are employed almost universally, but not always in the right place, being sometimes in front of the concave tiles, and sometimes in front of every alternate convex tile; however, nothing in modern Athens equals the atrocities of the Romans and their successors.

The chimneys of this building are very unsightly, being oblong prisms, with one slightly salient course at the head of each. So opposed is the Classic style to mere perpendicularity, that the chimney will always present a difficulty. Vanbrugh "has done that best which no man has done well"; but there is still ample room for the efforts of genius.

In the interior, rooms of good proportions are obtained; two vestibules and the central-hall divide the house into two parts on the ground-floor, from which three staircases reach the floor above; the cornices, of marble in the principal apartments, are finished some 6 in. below the ceilings, and have a good effect; the roofing is so arranged that the attics look out upon a lead flat in the centre of the roof, and thus the difficulty of dormers is avoided, and more important advantages are obtained. Mr. Galton's stoves are used throughout.

In conclusion, we would say that the buildings of which we have described an example are the most satisfactory group we have seen, and promise well for the future architecture of the Greeks.

THE LATEST NEWS ABOUT RAILWAYS.

So much attention has recently been directed, in various quarters, and with various objects, to the actual condition of railways, that our readers may be glad to have a few words on that important subject. Absolute novelty, indeed, can hardly be expected to characterise our remarks. But even novelty is not absent; while information as to what is more important, steady progress, either occurs or is demanded at every turn.

So accustomed have we become to the greatest mechanical triumph of the nineteenth century, that we almost cease to note how absolute is now our dependence on this method of internal transit. In the good old times, when one, two, or even as many as four-and-twenty four-horse coaches ran, in the course of the four-and-twenty hours, past some famous roadside inn, an allowance of a horse per mile was considered adequate to the requirements of the very first style of travelling. When the coaches were full each horse would have to draw four persons; and if the same team ran twice in a day over an eight-mile stage, each horse would draw four persons for sixteen miles, or one person for sixty-four miles. We are not in possession of the actual number of horses thus engaged, but we may call to mind one fact which no longer exists, and that is the great disproportion in the amount of travelling for business purposes which was wont to distinguish the winter from the summer season, arising from difficulties during the latter that now no longer arise.

At the end of 1873, there were existing, on the 16,082 miles of railway open in the United Kingdom, 11,435 locomotive engines, which were used for the traction of 362,785 vehicles of different descriptions. Thus, the locomotives amount to ·71 per mile, and the gross total of vehicles to 22·56 per mile. But carriages used for the conveyance of passengers only are only 24,634, or a little more than 1½ per mile of railway. There is no distinction given between the passenger and the goods engines; but as the vehicles not used for conveying passengers which are attached to passenger trains amount to 9,128, we have a general plant for the passenger and light parcel circulation of 33,762 vehicles; against cattle, merchandise, and other general wagons, amounting to 329,023, making the dead traffic provision very nearly tenfold that for the live human transport. We may thus conclude that something like 1,200 will be the proportion of exclusively passenger locomotives.

Whatever may be the exact distribution of the engines, this running stock of 33,762 vehicles provides for a circulation amounting to 455,320,188 passenger journeys; besides the uncounted journeys of 314,579 season-ticket holders. The gross weight of minerals and general merchandise conveyed is returned at 190,953,457 tons. If we allow four journeys a week for every season-ticket holder, and two hundredweight for each passenger and his personal luggage, we shall find the passenger tonnage amounts to rather less than 50,000,000 tons, or about one-fourth of the merchandise weight. The total receipts from passenger trains amounted, in 1873, to the sum of 23,853,892*l.*; that from goods and minerals to 31,821,529*l.* Thus the passenger income is 43 per cent., the goods income 57 per cent., of the total. The expense of wear and tear and interest on capital sunk in construction of the vehicles destined for the two services is difficult to ascertain. But against the higher cost of the passenger vehicles may be set the greater speed at which they run, and the very much shorter period of time for which they are idle. Taking these elements into account, it is probable that there is not a very material difference between the earning power of equal sums invested in passenger and in goods vehicles. At this rough approximation something like 20 per cent. of the annual expenditure will be incurred in carrying on the passenger traffic, which earns 43 per cent. of the gross receipts; while the remaining 80 per cent. of expenditure, incurred by the goods traffic, only earns 57 per cent. of the gross receipts.

We do not, of course, state these proportions as absolutely precise. We give the figures on which they were based, which are those of Captain Tyler's report for the year 1873. They appear to us to be approximately correct. Our readers have the opportunity of checking them. They point to very important results. The gross total railway income of 1873 was 55,675,421*l.*, of which 30,060,112*l.* were expended in working and maintenance, and 25,615,309*l.* remained as profit, allowing an average dividend of 4·64 per cent. on the total capital of 588,320,308*l.*

In other words, the average earnings of every train came to 67·71d. per mile; the cost per train mile being 36·57d.; and the net earning 31·14d. per mile. The total train mileage is 197,354,749 miles. Thus 54 per cent. of the gross returns are expended in earning them. Whether from the natural difficulty of the case, or from any other motive, those statements which might enable us to ascertain the relative net earnings of the goods and passenger traffic are absent from Captain Tyler's report. It is for this reason that we have entered into the analysis of one element of that distribution of cost,—the carrying power allotted to the two great descriptions of traffic. With a special machinery of nine-tenths of the whole provision for traffic, the carriage of three-fourths of the gross weight transported over the lines has earned only 57 per cent. of the gross revenue. According to this rough approximation, the portion of the income arising from goods, viz., 31,821,529*l.*, is earned at a cost of 75 per cent. of the gross charge, or of 22,545,084*l.*; while the passenger receipts of 23,853,892*l.* have been earned at the cost of only 25 per cent. of the gross charge, or 7,515,028*l.* That is to say, that the net earnings of the goods traffic have been only 8,967,637*l.*, or about 28 per cent. of the goods expenditure, while the net earnings of the passenger traffic have amounted to 16,338,864*l.*, or about 217 per cent.,—more than double the expenditure,—for the passenger traffic.

Rough as this approximation is, it is by no means certain that the disproportion would be reduced by greater exactitude. As it stands, it is clear that, even if it cannot be said that the goods traffic of our railways is carried on at a positive loss, it is carried on at a great relative loss, as compared with the passenger traffic. It results that a line constructed for the exclusive conveyance of passengers, supposing it to have full employment (which would be the case with many of our most important lines if they were thus restricted), would earn four times as much for the shareholders as a goods line, in proportion to the running expenses. When we come to divide the net profits over the capital, it seems to be pretty clear that a goods line alone would involve an annual loss, as its net train earnings would not pay 1½ per cent. on the capital. A passenger line alone would pay upwards of 15 per cent. on the capital. Therefore our actual dividends are kept down to below 5 per cent. by the goods traffic.

This consideration is one that eminently deserves the attention of railway proprietors. Any miscalculation we shall rejoice to have pointed out. It is pretty certain that the managers of many of the lines can, if they think fit, tell the actual differences in the profit of their passenger and of their goods traffic. The practical part of the case lies here. Most of our lines are so choked with traffic that the construction of some mode of relief is only a question of time. Throughout the country exists a very elaborate system of water-carriage, which it has been the policy of the railway companies to discourage to the utmost, although in many cases the canal property is in their own hands. Are we, then, in order to leave the rails free for passenger traffic, to construct new lines for the heavy traffic alone, which will pay only 1½ per cent. on the new capital, or are we to endeavour to relieve the present glut by recourse to the cheap, though slow, method of water-carriage?

Full statistical returns generally enable an analytical observer to extract information which may not, on the face of these returns, be at first apparent. It is, however, remarkable that the report of Capt. Tyler is blank as to every particular that would enable us definitively to compare the relative profit of the goods and passenger traffic. The subject is one which must have so often engaged the attention of all competent railway managers, that the absence of such information is remarkable. It can hardly be accidental. We may be in error, but it certainly seems to us as if the returns had been purposely so constructed as to withdraw from the control of the shareholders any useful information on this subject. In our early returns as to the railway expenditure the outlay on land, works, and rolling-stock was always separately stated, as were also the legal and Parliamentary expenses. In the present return, all this has disappeared. We have elaborate statements of capital, how varied, and what are the dividends that it bears; but the very important matter of the objects to which the capital has been devoted is passed over in silence. We are thus unable to ascertain, even approximately, the cost of the different portions of this working-stock, of which the numeric items are given. This is a serious defect, and detracts much from the value of a report which ought to be exhaustive. The bearing of this silence on the point under discussion will soon become apparent.

If we consider that the locomotive stock enumerated has cost 1,500*l.* per engine, which is probably a good deal under the mark, and that the carriage, wagon, and other rolling stock has averaged 150*l.* per vehicle, we shall find that some seventy millions, out of a gross capital of 588 millions, have been laid out in working stock. We are under the impression that the figure is below the mark, but let it be taken as a guess. The plant required for the passenger traffic is, as we have seen, numerically only about a tenth of that required for the goods traffic. But as the more expensive carriages are to be found in this division of the working stock, let us assume that each passenger vehicle costs three times as much as each goods vehicle, and that the passenger plant thus stands to the goods plant, as to cost, as two to five. This would leave fifty millions as the cost of the goods plant; and we shall be very glad to have the actual amount substituted for this rough guess. We cannot estimate the annual interest and deterioration of this plant at less than ten per cent. If we considered, then, that the railways were all made at a certain cost, irrespective of the traffic which they were intended to convey, we should have an annual sum of five millions to charge against the goods traffic, after running charges had been defrayed, before absolutely net earnings would accrue. But we have already seen that the earnings of this traffic, deducting working charges from receipts, on the principle of proportioning cost to weight carried, amount to only some nine millions sterling. This sum is now reduced, we see, to four millions sterling. As to the enormous outlay on the construction of stations, cranes, warehouses, &c., for goods alone, and the annual charges, carried to the general account, which are due to goods traffic, we have no means of

forming an estimate. There can be little doubt that they would swallow the greater part of the remaining four millions. At any rate, it is extremely unsatisfactory that, whether we analyse the annual expenditure, or the distribution of capital, we find in each case that the information which would enable us to speak with certitude as to the relative advantages obtained by the railway companies from passengers and from goods traffic is, in each part of the returns, carefully kept out of sight. It is not an unnatural supposition that this has been done in order to prevent comparisons that must seriously affect the question of the true policy of our railway management. Sooner or later the economical law of working will become known. It will be better for the shareholders if it is sooner rather than later.

The policy of railway management, while it is a subject of national importance, may be said primarily to concern the directors and shareholders of railways. It is otherwise with the safety of railways. As to this every one of us is directly concerned. There have been more than usually numerous indications, of late, that the public attention is somewhat anxiously fixed on this subject. It was the only one on which the President of the British Association thought it necessary to bring forward new matter, thrown into tabular form, in his opening speech. It was discussed, with admirable temper and scientific precision, by Mr. Bramwell, in the mechanical section. It is the subject which has called forth an extraordinary proposal from Sir David Salomons, which he has brought before the world in a pamphlet, having first secured such profits as may flow from a patent. And the Board of Trade returns for the quarter ending June 30, 1875, which are just published, show that the loss of life daily incurred on our 16,000 miles of railways forms an appreciable item in the death-rate.

Sir John Hawkshaw has shown, by the sure method of statistical comparison, that the risk of injury faced by a railway traveller is, as matter of mathematical expectation, very trifling. Only one passenger has been killed, from causes beyond his own control, out of 13,165,000 passenger journeys, between 1846 and 1873. Only one passenger, under the same limitation, has been injured out of 4,045,000 journeys. And in the decade ending 1873 the deaths inflicted on passengers, in proportion to miles travelled, were reduced to two-thirds of the ratio that obtained in the preceding decade.

The daily press retorts on this statement with what some people call a common-sense view. "Don't tell us," says the public commentator *de omnibus rebus*, "about relative safety and proportionate accidents. Give us facts. You kill so many persons. Why is that? Somebody ought to be hanged, and the only question is who."

No persons are so loud and obstreperous in their demand for facts as those who are utterly unable to make any rational use of them. The real meaning of the demand generally is "I will not listen to argument. I don't care for your explanation; an accident is an accident, and you cannot talk it away." In actual truth, however, facts are generally of little or no use to the general auditor or reader, until they are collected, sorted, and collated by some one who has a due knowledge of their significance; and this is exactly what Sir John Hawkshaw has done in the present case.

There is, however, one point of view which we may consider as novel, if it were only from the fact that neither Captain Tyler, in his report for 1873; Sir John Hawkshaw, or Mr. Bramwell, in their papers at Bristol; Sir David Salomons, in his pamphlet on signalling; nor any other authority recently before the public, has supplied the information requisite for the statistical analysis which would enable us to investigate it as fully as we could wish. The railway service of this country is, in point of fact, a service of extreme danger, from mechanical causes. It is carried on at a considerable cost to human life. It is true that familiarity with danger, leading often to carelessness, may be detected, in most cases, to be the proximate cause of disaster. But however this human weakness may come into play (as it does, happily, in all circumstances of danger, or life would be far more full of apprehension than it is), it is the rapid motion of great masses of matter in the immediate vicinity of crowds of human beings that is the prime cause of danger. And this is a cause inseparable from the rapidity and ease of our travelling.

The actual number of the persons employed by the different railway companies is not given in either of the papers to which we have referred. Sir John Hawkshaw says, in round numbers, that it amounts to a quarter of a million. The total number of casualties on railways for the quarter ending June 30, 1875, was 1,431, of which 261 were deaths. Of the casualties, 933, 157 of which were deaths, occurred to servants of the companies. This gives a death-rate of 2·5 *per mille*, and an injury rate of nearly 15 *per mille per annum*. If we compare this with the colliery death-rate and injury-rate for the year 1869 (when we brought that subject before our readers), we shall find a considerable difference in favour of railway safety. 1,116 lives were lost in that year by 854 separate colliery accidents; the total number of male persons employed in collieries being 345,446, of whom 282,473 were miners. It will be observed that deaths alone are given in the one case, deaths and injuries in the other. One life was lost out of every 309 persons employed in the coal mines, being at the rate of 3·23 per *mille*; or one-third more, proportionately, than in the railway service. In the latter it seems that there are about six injuries to one fatal injury.

We may look at this comparison in another light. The 1,116 lives lost in coal mining in 1869 were destroyed in the course of operations that resulted in the winning of 108,003,482 tons of coal; being at the rate of one life lost for every 96,777 tons of coal won. We have seen that the tonnage moved by our railways in 1873 may be roughly taken at a paying load, in goods and passengers, of 240,000,000 tons. If we take the death-rate of the last quarter as characteristic of the year we shall find the proportion to be only at the rate of one life for every 400,000 tons of load moved. The safety here is more than four-fold, in proportion to the work done. The danger arising from velocity is, to this extent, better watched against than the dangers arising from the peculiar circumstances in which the miner works.

A further measure of the natural danger attendant on rapid steam travelling may be taken from the fact that during the last quarter twenty-one passengers were killed, and 132 were injured "from their own misconduct or want of caution." This part of the return, which has no analogy to any other with which we can compare it, as a special value. We see that the system is in itself so dangerous as to cause 153 accidents in three months from the inadvertence of the sufferers. In the working of this system, moreover, a certain sacrifice of the staff occurs, which, although of a magnitude not to be slighted, is far less than that which occurs in the provision of one supply of fuel. And yet we find that only two passengers have been killed, and 182 injured in the same quarter, from causes beyond their own control. The number of passengers during the quarter is not stated; but from the data given for 1873, we estimate that it must have been considerably over 120,000,000. That only 184 injuries, two only of which were fatal, should occur in a circulation of 120,000,000 passengers, certainly denotes a very high degree of safety. A man cannot ride, drive, boat, or even walk the streets of a crowded city, with so little risk of accidents, as he incurs when travelling in a railway carriage. To some extent his comfort and safety are insured by the risk of the servants of the company; but even as to this, his supply of coal has paid a heavier life-tax than his provision for travel has involved.

Small as this personal risk is, it may be stated, with little hesitation, that it is not the fault of the civil engineer that it is not altogether extinguished. Mr. Bramwell has shown how analyses of the causes of casualties have led, in almost every instance, to the provision of safeguards that would be perfectly adequate if faithfully applied. The cause of railway casualty, in the present state of science, is almost exclusively economical. It is the neglect or disuse of precaution, whether in order to avoid expense or to avoid fatigue, that is almost invariably the cause of disaster. Over-working of railway servants,—which means undue provision for the requirements of traffic,—lies at the bottom of most of the trouble; the natural imperfection of the human machine, when not over-worked, accounts for a comparatively trifling remainder. From this cause, we fear, there will always arise a certain element of danger, though an element that may be reduced to a very low value.

It seems tolerably certain that the engineering science of the day has arrived at the best distribution of precautionary measures under these three heads, viz.,—mechanical appliances, telegraphic communication, and human watchfulness. All three are needed. It is almost invariably the last element in which failure occurs. It is, therefore, by an attention to the moral and physical condition of the railway servant that the sources of danger are to be, as far as possible, eliminated. For this reason ingenious inventors, who, like Sir David Salomons, are endeavouring to throw the duty of human watchfulness on mechanical automatic contrivances, are working in the wrong direction. It is not necessary to analyse Sir David's proposal of a complicated addition to the block system. Its adoption would add nothing to the advantage of that excellent system, but would substitute a mechanical method of indication very likely to get out of order, and therefore most treacherous in its action, for a plan which only requires inflexible enforcement to insure safety. And it would make this change for the worse at such an outlay,—upwards of a million and three-quarters,—as prevents the need of further discussion. It is a remarkable instance of the love borne by inventors to the offspring of their own brain that reflections such as these should not have occurred in time to save Sir David the expense of printing his little book.

THE ÆSTHETICS OF HOUSE BUILDING.

We observed,* in speaking in our last article on this subject of the formal system of plan, that its requirements did not preclude a varied and characteristic treatment of different rooms, in regard to shape and proportion, in spite of the symmetrical arrangement of the plan as a whole. Conversely, the informal plan, by which we mean, not absolute irregularity and want of system, but a plan not demanding the maintenance of symmetry and repetition of parts on either side of a centre, does not preclude the treatment of certain portions of the house in a symmetrical and stately rather than a picturesque manner. On the contrary, effects of vista and climax are rather heightened and rendered more interesting, in one sense, by being approached somewhat unexpectedly, and by a side route. Maintaining the strictly formal plan as the only one which gives the highest effect of stateliness in a palatial mansion, the informal plan affords in mansions just below this scale an opportunity of the combination of fine internal effect with domestic character. The effect of a surprise, on coming suddenly upon a new vista at a point where it is unexpected, belongs much more to this class of house than to the classical plan, which proclaims its length and breadth, and the direction of its main thoroughfares, at once, on entering. This kind of effect has certainly not been attempted, or even, one would say, thought of by English architects generally, as it might well be. A very good example of it is furnished by a comparatively recent work of a contemporary English architect, Mr. Colling, in his sculpture and picture gallery at Hooton, in Cheshire. This is an informal addition to what was originally a specimen of the formal mansion of an ordinary type: the effect of the sudden vista of the long gallery, a fine and rather unique design in itself, come upon unexpectedly from a staircase of the original house, is a bit of internal poetry of architecture not to be readily forgotten, and which at once changes a rather uninteresting to a very interesting house, architecturally speaking. It is perhaps not very often that the opportunity for such an effect is afforded in any but a house of palatial size; it is certain that the opportunity is less sought for than it might be. German architects, or their clients, or both, seem to have more feeling for internal effect of this kind than is commonly found in England. A book which may be turned over with pleasure and profit, in the way of suggestions of this kind, is the collection of his own designs and plans for houses, &c., by Herr Hitzig (*Ausgeführte Bauwerke*), whose plans show considerable fancy and ingenuity of arrangement in regard to effect, accompanied by a due consideration for domestic convenience. His castle in Mecklenburg, for the Baron von Oetzen, is a capital specimen of informal but stately plan, and convenient connexion of the state apartments with the more private ones, without impairing either the dignity of the former or the privacy of the latter. In this case the dining-room, a large octagon room, occupies a rather central position opposite the entrance, but separated from it both by the main corridor

* See p. 833, *ante*.

and a *salle d'attente*. The surprise of the plan is in the extent and situation of the principal suite; the visitor, turning to the left before reaching the dining-room, enters the drawing-room by a side door, and finds himself in the centre apartment of a suite of three large rooms, of which that on the left, running to the front of the house, presents at the farthest angle an entry to a large octagon bay (formed in an angle tower), that to the right (also with its angle bay, of different size and shape), carries the eye through a central door at the end along a long colonnaded conservatory finally closed by another small octagon room. A better basis for picturesque and striking effect, not inconsistent with domestic character, could hardly be desired. The more marked grouping of the private apartments, in a German mansion, into those for the gentleman and lady of the house respectively, than is usual in English plan, gives a specialty to some of the German plans. Another Mecklenburgh castle, by Herr Hitzig, for Count Schwerin, presents a remarkably compact and effective arrangement of state and private apartments, on a rather smaller scale. The centre portion is rather like the English Vitruvian house, the vestibule giving access through a colonnade to a centre hall, beyond which is a saloon with centre entrance. To left of the central hall is the main staircase; to left of the saloon is the long state dining-room, with a columned recess at the farther end. To right of the saloon is the lady's room, with boudoir and sleeping-room and *toilette, en suite;* to right of the centre hall, the gentleman's room, with its further rooms *en suite*. The first room in each of these suites, entered from the saloon and the hall respectively, is a thoroughfare room, with a door at the inner angle leading to a centre family passage running between the rest of the two suites to the private staircase. The two first rooms of the private suites, occupying the whole width from the front to back of the house, thus form a kind of neutral ground between the private and the public apartments; and the whole plan, which is remarkably compact, realises exactly Bacon's notion of "one side for show and entertainment, and the other side to dwell in," with an almost equal area for each, but with a sufficient difference in the architectural treatment and the outline of the plan to comply with the demands of architectural truth of design. While praising Herr Hitzig's plans, however, both on architectural and practical grounds, truth compels us to add that the architectural style and detail externally of his castellated Gothic mansions is of a nature altogether unmentionable, and it would be much better for the author's reputation if the views were pasted up in his book, and only the pages containing the plans left open for examination. This, however, is an expedient which a majority of German architectural works unavoidably suggest.

A source of interest in plan, which also is more used by German and French than by English architects, is the contrivance of nooks and bays for retirement and prospect in connexion with the principal rooms. The bay-window, in its most ordinary form, has been used almost *ad nauseum* in English planning, but for variety and picturesqueness of invention in this kind of feature we must look more to Continental house-planning. The difference of interest which such an addition makes in a room can scarcely be overestimated: the sense of freedom and outlook, combined with retirement, which it gives, can be secured in no other way. English architects, for the most part, are sadly prosaic in their way of arranging these little additions, and of joining them to the main room. Another possible source of effect which has been little considered, and which would, in fact, be generally regarded as a defect and inconvenience, lies in variety of levels. Here again it is curious how we find people condemn in a new house what they like in an old one. Every one is rather pleased than otherwise by the odd and inconsequential kind of way in which the floor-levels of old country-houses are treated, leading up by a step into one room, down by two steps into another, and so on. Of course the association of "old-fashionedness" created by this is one reason—perhaps the principal reason—for liking it; and this sort of picturesqueness belongs to the old farmhouse or parsonage rather than to the larger class of house we are just now speaking of. But we question whether a judicious variation of floor-level, and the introduction of a step or two at points where there is no constant passing and re-passing, might not be used with very good effect in many cases, in giving variety and interest to internal effect. Of course, this is a thing not to be overdone, and to be used with restraint; but it is worth consideration. There is no Building Act that compels people to level every floor through on each story, and the "dais" is a very effective arrangement in a room of large size. The question of levels reminds one of the law of the Classic period of English house-building, by which the offices were placed under the house, and a lofty basement story afforded room for them, and played an important part in the architectural effect of the design. The theory of basement offices, except in towns, or where space is in any way limited, is now entirely condemned, and with it has gone, for the most part, the importance of the basement in the design,—a mere plinth generally doing duty for it. Fully admitting the undesirability of lodging people underground, it is certain that the basement, architecturally considered, is too important an item in securing dignified architectural effect to be entirely parted with, even in houses built on the informal principle. Treated rather differently, less formally than in the Palladian house, the raised basement may afford opportunity for effect and solidity which can hardly be obtained without it.

The "hide-and-seek" form of plan, which, as we observed, is the favourite with amateur architects, is distinguished by absolute irregularity in the shape and size of rooms, the adjustment and line of thoroughfares. It is generally wasteful of space, which is used up more than need be upon extra stairs and passages, rendered necessary by the want of contrivance in the arrangement; and it affords little or no indication of the way from one place to another, or of the disposition and direction of the thoroughfares. It is full of surprises to the visitor, who finds himself close to a room which he had imagined to be far distant, or has to traverse a circuitous route to reach one which he has reason to think is close at hand. The hide-and-seek plan is opposed altogether to dignity or stateliness of effect; it can only aim at the picturesque, and that rather by dint of multiplicity of parts, and odd angles and nooks, than by any planned and contrived effect. It is impossible to say that this is in any way the best principle of house-building; it is generally, in proportion, rather expensive to build, and it is certain to be very expensive to keep in order and in repair. Yet the hide-and-seek plan is not without merits of its own, æsthetically considered; and it is, in a certain way, "romantic" to live in a building in which you may lose yourself as in a wood, and which you may inhabit for a fortnight without having fairly made out its arrangement and the compass-bearings of the various parts. It is the sort of house for those who can live in wealth and comfort, but wish to do so in a somewhat homely and domestic fashion; to have a large house, but not a show house. It is not the sort of place for giving effect to a brilliant entertainment; but no style of dwelling, perhaps, is a pleasanter one to invite a collection of friends to in holiday-time. The uncertain and purposeless character of the dwelling actually induces an indolent and lounging habit of living, and seems made for long and luxurious'y idle afternoons. So much may be said for the hide-and-seek style of home (the "rabbit-warren" style, as it has been called), a kind of place which its owner generally ends by being tired of, and pronouncing inconvenient, but which has its merits nevertheless, and which, moreover, sometimes furnishes hints for a more varied treatment of plan in houses not so entirely given over to accident in their arrangement. Is the predominance of right angle and parallel lines, for instance, a *sine qua non*, a law of the Medes and Persians, in a carefully-planned house? Practically, it is usually considered so, almost universally, indeed; but, in fact, there is no reason why any suggestion which the site may furnish for a departure from the rectangular arrangement, should not be made the opportunity for a new interest in the plan, instead of being laboriously and carefully got over or concealed, as it is generally, by breaks and angles in the plan. In this kind of treatment, Continental architects show instances of much bolder and more piquant experiments than English architects seem to venture upon, unless we except one well-known designer of domestic architecture, who purposely aims at "the picturesque," both in plan and design, before all other qualities. This kind of variety in plan is, no doubt, most suitable to Gothic design; but it may be carried out with effect, when the site seems to lead to it, with a more classic style of architectural setting also. There should, however, be a manifest motive for it in the nature of the site; a contrived irregularity seldom pleases.

With dwelling-houses of ordinary size and class, planning necessarily becomes rather a matter of convenience and comfort than of effect, for which neither scale nor space is sufficient. There is still, however, the distinction between dignity and picturesqueness of arrangement possible by the employment of a symmetrical or unsymmetrical grouping of the plan. Where a small house is intended rather for hospitality than as a family house, it is possible to contrive a considerable amount of internal effect, on the symmetrical principle, even on a small scale. But this is only where a good deal of room can be spared for stairs and hall and for treating these in an ornamental and architectural manner; and in a building intended as a family house the space cannot be spared. Still, in a small dwelling there is the difference between a spacious and a mean and cramped appearance, and the look of spaciousness can generally be attained by a little care in planning, and a very little excess over the absolutely necessary space in the thoroughfare part of the house. In small houses, in fact, the hall and vestibule and staircase must be regarded as furnishing the opportunity for what architectural effect can be secured, and which the rooms themselves are too limited in scale and too practical in their objects to afford opportunity for. A circular or a semicircular stair is often a good treatment where space is restricted. Without really taking up much room, it gives a look of roominess, and gets rid of the sharp turnings and cramped corners which a straight staircase in a confined space always gives rise to. Where practicable, the staircase should always receive a somewhat architectural treatment, and be made a prominent object in a small house, as it is one of the few sources of effect, and the best, in fact, where there is no room for a large hall. A central staircase apartment going up the whole height of the building, and lighted from above, affords the means of securing an effect in a small house with little real loss of room, and may be made an important means for the diffusion of warmth and ventilation. Then the architect has in his power the variation in the style and outline of the rooms, often overlooked, but always possible and always more pleasing than a mere cutting up of the plan space into rectangular divisions, however neatly fitted into each other.

The ordinary-sized town house, one of a row of street houses, seems even less promising than the detached or country house, when considered in regard to effect: and perhaps the smaller scale houses of this class must be regarded in a purely utilitarian point of view. But if we take the fairly-sized street house, it is extraordinary how little is done in England to give effect to it, in regard to its entry and internal arrangement. If we turn over such works as Calliat's "Maisons de Paris" or Daly's "L'Architecture Privée," we find a constant attempt to secure effect in the arrangement of the stairs and entrance, in houses no larger than those which in London would be considered as necessarily condemned to a mere street door and flight of stairs from the lobby. A favourite arrangement, where the houses have any garden at the back, is to carry a covered passage through from front to back, connecting the street with the garden, the said passage being treated so as to constitute in itself an architectural effect, vaulted, colonnaded, or decorated with pilasters and wall arches; and from the side of this passage opens the actual entrance-door of the house, leading to the vestibule or direct to the staircase. A good many examples of this kind of treatment are engraved in Calliat's book, very varied, and all of them effective. In most of these cases the story that is level with the passage is occupied by the offices, and the staircase opening from the passage leads to the entertaining rooms above. It is easy to see what scope for effect such an arrangement gives, wherever there is any garden, however small, in the rear, to afford opportunity for a through light for the entrance-passage. Among Calliat's examples we may particularly mention the house Rue Vendôme, by M. Rolland; one in the Champs Elysées, by M. Duval, where especially the very ingenious and effective arrangement of the staircase in a very small space,—an oblong with rounded ends,—should be noticed; a house by MM. de Jony, where, from the side of entrance-passage, a small orangery, entered through an arcade of four arches, forms the porch to the entrance-door, all this being *under* the actual living part of the house (the effect is scarcely possible in

London, certainly); and the plan of a house in the Boulevard Beaumarchais, by M. Bailly, for ingenious arrangement of staircases and areas for light. Daly gives a good example in a house in Rue Louvre, by M. Castermans, in which the colonnaded entrance-passage, with the staircase-door opening from the centre of its length, forms above, in connexion with the first-floor plan, a terrace for open-air promenading. It is interesting and suggestive, also, to see how much some of our French and German brethren make of a corner house, in the way of pretty and effective planning, with angle entrances; a thing quite rare with an English architect, with whom a corner house is generally merely a house with a door in one street and windows in the other. In Herr Hitzig's "Bauwerke," before mentioned, the Paris plan of an entrance-passage is shown in a double form, in the remarkably effective and clever plan of two houses in the Belle-vue Strasse, in Berlin,—a front and two wings returned at re-entering angles, and partly enclosing an inner court or garden common to both houses. A double arch in the centre of the ground-floor front gives access to a double passage running through to the back, and divided only by an open arcade down the centre; from these open the doors of the two houses to right and left, leading each to a long passage at right angles to the entrance-passage; the staircases branch off from this passage, and form projecting bays lighted from the inner court. Though we doubt not that these two houses have been perfectly spoiled, for the residence of all people of good taste, by the decorations which Herr Hitzig, or the Berlin decorators and furnishers, will no doubt have put into them, they are really worth note as a specimen of compact yet effective planning; and they are only houses built on speculation, after all; but then, as Herr Hitzig observes, "the requirements of a tenant in Berlin are not of that stereotyped conventional character that they are in England, and mostly in France." In England they certainly have this stereotyped character, which is communicated in turn to our streets, and gives rise to the notion that anything like variety and interest of effect in street houses and street architecture is an impossibility, and even altogether out of place for practical people.

CONTINUED EXTENSIONS AND NEW WORKS BY THE RAILWAY COMPANIES.

The summer half-yearly meetings of the several railway companies have just been brought to a close, from the proceedings of which we learn that on many of the great lines large sums are to be expended in still further new works and extensions during the current half-year.

The expenditure of the Midland Company during each half-year, for some years past, in new works, has averaged about 1,600,000*l.*, and at the recent half-yearly meeting the chairman stated that they were compelled, in order to keep pace with the traffic, to spend a large amount, during the current half-year, in the construction of new works and stations, and for this purpose they should not require less, during the half-year, than 1,500,000*l.* He added that the construction of all new lines now was very much more costly than it was a few years ago. Lines which formerly could be constructed at a cost of 30,000*l.* per mile, now cost from 45,000*l.* to 50,000*l.* a mile; and he was satisfied he was within the mark when he said that they must add at least 50 per cent. to the cost of construction of all new lines of railway at the present time, as compared with what they would have cost six years ago. The chairman made the further important statement that the directors had decided to purchase all the private wagons running upon the Midland line. There were at present about 40,000 wagons, principally coal-wagons, running upon their system, and these were owned by about 300 different proprietors. The directors felt that they had not the proper control of the construction of those wagons, and as they ran in connexion with, and on the same lines as, the company's passenger-trains, and were mixed up with their general traffic, it was thought desirable that the company should control, in some way, the construction of such wagons. The directors had therefore arrived at the conclusion to purchase those 40,000 wagons, and to do so they proposed, in the next session of Parliament, to apply for powers to raise 1,000,000*l.* sterling.

The Great Northern Company intend to expend, during the half-year, on new works 355,123*l.* Of this sum 12,750*l.* are to be expended on the enlargement of the Farringdon-street Goods Station; 83,000*l.* in the construction of an additional up-line from Potter's Bar to Woodgreen, and a down line between Biggleswade and Sandy; 40,000*l.* in the conversion of the old passenger station and engine-shed at Bradford into a goods depôt; 10,300*l.* in the extension of the Laister Dyke Station; 10,260*l.* in the extension of the Retford Station; and 5,000*l.* in the extension of the Nottingham Station. This intended expenditure is in addition to the large outlay in new works which is about to be incurred near London and at King's-cross. Respecting these works the report states that the increase of the local traffic near London renders it imperative that the doubling of the Maiden Lane and Copenhagen tunnels should now be proceeded with. It adds that the contract for the new Copenhagen tunnel has been let, and the works are in progress, and that the Maiden Lane Tunnel will be commenced at once. It also states that improved accommodation for working trains in and out of the King's-cross Station is urgently required, for which the land already acquired on the west side of the station is to be utilised for the formation of sidings, so as to relieve the station of shunting operations. A heavy expenditure is to be incurred during the half-year in additions to working stock, including 164,000*l.* for seventy-two new engines; 91,946*l.* for one thousand goods wagons; and 29,194*l.* for eighty-four carriages and carriage-trucks.

The Great Western Company intend to expend about 220,000*l.* during the half-year in new works. These include 75,000*l.* for a new line at Paddington, between Bishop's-road and Westbourne-park stations; 10,000*l.* for new locomotive shops and sheds at Swindon, Cardiff, and Trowbridge; 6,000*l.* on the Bristol Port and Pier Railway; 15,000*l.* on the Bargoed Railways; 40,000*l.* on the Netherton and Halesowen Branch; 30,000*l.* on the Plymouth Great Western Docks; 20,000*l.* on increased accommodation at Milford Haven; 8,500*l.* on a new passenger station at Llanelly; 7,800*l.* on increased facilities for stone traffic at Corsham; and 7,360*l.* on a junction at Newport with the East Usk Railway. In addition, 67,000*l.* are to be expended on new engines and carriages. At the meeting of the Company the chairman remarked that the heading of the Severn tunnel had been driven to a length of more than 400 yards from the shaft, and was now about 100 yards in the Pennant sandstone, which formed a favourable ground for the purposes of the tunnel.

Amongst other works which the South-Eastern Company intend to carry out during the current half-year is the enlargement of the Bricklayers' Arms Station. They are also about to do away with the level crossing called Mercer's Crossing, to the south of Bricklayers' Arms, and erect a bridge there, at a cost of 14,000*l.* The works on the Greenwich branch have also been resumed, and the line is expected to be opened in two or three months. In alluding to the Greenwich branch, the chairman stated that there had been a stoppage of the works, owing to the opposition of the Metropolitan Board of Works. Their conduct, as it seemed to him, had been somewhat over-strict, if not oppressive. They appeared to forget that the company were large ratepayers, and paid 40,000*l.* a year in local rates and taxes within the metropolitan area, and they seemed to treat the company as if they were almost natural enemies, instead of large contributors to the improvement and working of all the institutions in the City. He added that he had never known a case where a company had had to fight inch by inch through shoals of lawyers, valuers, and other people, every one of whom wanted to get something, as had been the case in the construction of this road. He believed it would cost 100,000*l.* more than they expected, entirely through the enormous costs of litigation and demands for compensations which, in many cases, they had had to undergo.

The North-Eastern Company are about to expend a large sum in developing the mineral districts of Cleveland and Durham. This will consist in the laying down of duplicate lines in several localities exclusively for the carriage of mineral traffic. They are about to lay down four lines of rails in the neighbourhoods of Stockton and Middlesbrough, and in carrying out these works the bridge over the Tees, near to Stockton, will have to be doubled in width. The chairman stated that the company were authorised to raise 7,000,000*l.* of further capital for these and other extensions. An important statement was made by Mr. Harrison, the engineer, respecting the building of the new station at York. He said that the building of the station had not proceeded satisfactorily, and that the contractor attributed the delay to strikes, difficulties with workmen, and various other causes, and he had given up the contract. The company were now taking steps for re-letting the work.

At the meeting of the London and North-Western Company the shareholders sanctioned the expenditure of 1,984,038*l.* in further new works in addition to those already in progress.

The only new works referred to at the meeting of the London, Chatham, and Dover Company were the construction of the Chatham Dockyard line and of the Holborn Hotel, both of which, it was stated, were proceeding satisfactorily. The sum of 10,000*l.* had been expended on the hotel during the half-year. The chairman stated that the Crystal Palace and South London Junction Railway had been purchased under Parliamentary powers, and now formed part of the company's system.

At the meeting of the North London Company, the chairman stated that the London and North-Western Company had paid them 75,000*l.* for land purchased for the new dock at Stepney. An addition was now being made to the expenditure on the new dock in the shape of sheds, and the erection of a hydraulic apparatus to accommodate the traffic, and the Board anticipated that about twelve months would be required to complete these works.

The Metropolitan Company intend to proceed with the extension to High-street, Aldgate. The chairman stated at the meeting that on proceeding with the line they had to bear in mind the prudential consideration involved in the possession of property. There were a vast number of tenancies, and if they proceeded too rapidly they would have to pay large compensation to tenants and leaseholders, and they must therefore take a little time for the purpose of obtaining possession of that property, in order not to risk the payment of any severe compensation. They proposed to obtain possession of the ground to Meeting House-square by the end of October, and the remainder of the ground by January. By that time they hoped to be in a position to give the contractor they might select possession of the whole of the ground, so that the work might be completed in the earliest number of days. When that work was completed, they should consider whether some progress should not be made to the northward of the St. John's Wood line.

It was stated at the meeting of the Lancashire and Yorkshire Company, that the estimated outlay in new works for the current half-year was 300,000*l.*, exclusive of the cost of the further extension of the block system, amounting to 295,000*l.* It was stated that the total cost of placing the block system on the line would be very little short of half a million of money.

The Manchester, Sheffield, and Lincolnshire Company propose to spend 275,000*l.* during the year in new works, which includes 35,000*l.* on the Grimsby Docks, and 50,000*l.* upon sidings and station works upon lines opened.

The report of the engineers of the Severn Bridge and Railway, submitted to the half-yearly meeting of the company, stated that the Hamilton Windsor Iron Company, who are constructing the bridge, have already cast nearly 100 pier cylinders, of 6 ft. diameter, and a similar number of the large cast-iron bracings that join the cylinders together. They have also cast some of the 9 ft. and 10 ft. cylinders. The castings and the wrought-iron superstructure of the swing-bridge over the new canal are also in hand, and the wrought-iron superstructure of the 134 ft. span is nearly completed. The piles for the stages for two of the piers in the river have been driven, and about fifty cylinders delivered. Messrs. Vickers & Cook, the contractors for the railway, have also commenced the viaduct across the dock lands.

Proposed Winter Gardens and Aquarium for Rhyl.—A company is in course of formation for establishing winter gardens, aquarium, and park, on a large scale, at Rhyl. The erections will also include a concert-hall, assembly-rooms, fine-art gallery, pavilion, skating-rink, and so forth. Some 35 acres of land, with a sea frontage of 800 yards, have already been secured, a part of which will be apportioned for the erection of villas. The capital is fixed at 60,000*l.*

THE SUBTERRANEAN CHAMBER IN OXFORD STREET.

Many statements have appeared with respect to the extreme antiquity of one of the vaults asserted to have been recently discovered in Oxford-street (though really long known of), a little east of its junction with North Audley-street, and which was said to be constructed of thin bricks similar to those so frequently found in buildings of Roman date. From the circumstance of there being a broad cistern inclosed within the vault, it has been stated that it had been used as a baptistery.

It appeared not unlikely that a Roman building should be found in this position, being, as it is, beside the course of the great Roman road, giving entrance into London from Silchester and all the western districts.

These statements having been much discussed, a few of the members of the British Archæological Association considered them of sufficient public interest to be cleared up. The Vestry of Marylebone having in the most courteous way granted permission for the investigation to be made, the vault was recently visited by several antiquaries, and a careful examination was made, after it had been cleared by the Vestry for the purpose.

It proves to be a small chamber, 11 ft. 1 in. from east to west, and 9 ft. 1 in. from north to south. The roof is formed by a freestone barrel arch in the form of a depressed semicircle. The walls, which are of bricks a little smaller than usual, are 5 ft. 7 in. high from the floor, which is paved with the same material of a dull red colour. The height to the crown of the arch is 8 ft. 8 in. The wall has three small niches on the north and three on the south side, having four-centred arched heads neatly cut in the brickwork with a chamfer worked around them and to the jambs. Their sills are 5 in. from the paving line, and they are 2 ft. wide. There are two similar niches on the western wall facing the entrance, and at the extremities of the western and eastern walls there is a small niche,—four in all, precisely similar, having 9-in. openings and 1 ft. 1½ in. deep; but the plan of the recess is ⌊ shaped. These little openings have a picturesque effect, and resemble somewhat, at first appearance, the piscinæ of ancient churches. They were probably intended to receive either drinking-vessels or lamps.

The floor is to a great extent occupied by a cistern of brickwork, cemented and still containing water, which appears to keep exactly to the same level, and which finds exit by subterranean outlets. It goes quite up to the western wall, and is 7 ft. 7 in. from west to east by 5 ft. 5 in. wide. The depth was sounded by one of the party, and a bottom was felt at a depth of 7 ft. 6 in., of which fully 3 ft. were filled with water.

The entrance is on the east, not in the centre of this side, and it is reached from the foot-way of Oxford-street by thirteen steps of brick on edge, a portion of which are covered by a semicircular stone arch, and the remainder by an iron trap-door in two flaps level with the pavement. The floor level of the vault is 10 ft. below that of Oxford-street.

It will be apparent that the small size of the chamber hardly fitted it to be a reservoir for the collection of water, as was the case with the great vault discovered opposite Stratford-place. It was rather a building over a spring, most probably one of those referred to at page 840 (*ante*), and whence water was obtained in small quantities for drinking purposes. This supposition appears to be evidenced by the water standing at a uniform level, and by the building itself, which is of too ornamental an appearance to have been a reservoir merely. Was this a medicinal well?

The rough brickwork filling in the arch at the west end has probably been covered by woodwork. It is of more recent date than the lower part. It is curious to notice that the walls of the little building had been at some time plastered, and later still coloured a deeper red, and lined out with white pointing.

There is a band of plaster which forms a sort of flat cornice around the building below its arched roof, and on this, on the western side, several letters have been scribbled. There appears to be the date 1621, with the initials H. B., with others; but the building is probably more than fifty years older than this. It is needless to say that nothing of Roman date was apparent.

The party, which had been attended by Mr. Hallett, the sub-surveyor of the parish, separated after thanks had been expressed to the Vestry of Marylebone not only for the courteous way in which leave to inspect had been given, but for having the vault so well prepared for inspection.

In the stoneyard of Marylebone there exists a stone tablet supposed to have marked one of the ancient walls of the parish. It is of Portland stone, with a tooled surface, 4 ft. long and 3 ft. high, now broken across, and is divided into three characteristic panels on one side only, and bears the arms of the City of London in the centre, and above it the date, 1621. The other sides are plain, but the stone must have stood apart from any wall, since it is covered with a chamfered capping in a separate stone, projecting equally all round. There is indication in the central panel of an aperture for a water-pipe. This relic was found 11 ft. deep in Oxford-street about fifteen years ago, between the Court-house of Marylebone and Duke-street, at some distance from the vault now described.

We have been favoured with these particulars by Mr. Loftus Brock, who took note of the building for the proceedings of the British Archæological Association by the request of the party.

STONEHENGE.

In connexion with the recent meeting of the British Association at Bristol, a visit was paid to Stonehenge, when the well-known views of Mr. Fergusson were, as will be seen below, strongly opposed.

The Rev. E. Duke said that there could be no doubt, in his opinion, that Stonehenge was a heathen temple of very great antiquity. It might be impossible to fix anything like its precise date, but we must regard it as the workmanship of our Celtic forefathers, long before the introduction of Christianity into our island. He felt rather strongly on this point, as he had been lately reading Mr. Fergusson's "Rude Stone Monuments." It was the opinion of this writer that Stonehenge was erected by Aurelius Ambrosius as a monument to the memory of the British chiefs who are supposed to have been slain by Hengist near this spot in A.D. 462. Mr. Fergusson's reasons were something of this kind—that the structure being *hypæthral*, or open to the sky, would have been ill adapted for heathen worship; but to this it might be replied that such was the general character of ancient temples. Besides were not our Celtic forefathers a hardy race, and our climate a temperate one? But Mr. Fergusson laid much stress on the fact that some years ago Sir R. C. Hoare and Mr. Cunnington found on digging within the area fragments of Roman pottery as well as of coarse British pottery. But what did this prove? Surely not that the erection was post-Roman, but only that the Romans visited it during their occupation of Britain. On the other hand a very strong fact against Mr. Fergusson's theory was that Sir R. C. Hoare (a most accurate observer) records in his "Ancient Wilts" that he found in one of the barrows, only about 300 yards from Stonehenge, chippings of the siliceous sandstones of which the outer circle and trilithons are composed; and what was still more remarkable, some chippings of the igneous, or granitic, stones which form the small inner circle, and the inner ellipse. These must have been brought from a long distance. Cornwall would be the nearest locality. Bearing in mind that all the barrows on Salisbury Plain (this one included) are of ancient British age, and contained, when opened, not one article of Roman workmanship, have we not clear evidence that Stonehenge and the barrows are, to say the least, coeval, and that therefore this mysterious structure must be far more ancient than Fergusson tries to make out? But his weakest point of all remains behind. He appeals to the monkish historian, Jeffrey of Monmouth, whom he himself pronounces "a fabulist of the most exuberant imagination," in confirmation of his hypothesis. The conclusion therefore which Mr. Duke pressed upon his audience was this,—that we have no reason whatever to question the belief of our older archæologists, that Stonehenge was a temple of pre-Roman age, venerable and most imposing for its grand simplicity, as well as its remote antiquity, and formed possibly on an astronomical plan, as had been suggested by his late father.

Sir Walter Elliott said monuments of stones had been erected by some of the tribes of India, but not on so large a scale as Stonehenge, although some of the stones were, perhaps, quite as large. The plan of those monumental places, however, differed from that of Stonehenge, inasmuch as they were in the form of parallelograms or squares, to mark the places in which the dead were deposited. They were less elaborate than Stonehenge, the like of which he had not seen in India.

Mr. Edward T. Stevens pointed out that two very different varieties of stone were used in the construction of Stonehenge. One of these is of local origin, and the other is not to be found in the neighbourhood. The local stones are concretionary sandstones. They are the relics of tertiary beds that at one time overlaid the chalk. The lighter material has been washed away, and the heavier stones have remained not exactly *in situ*, but carried down (probably by ice) to a lower level. In parts of North Wilts they are popularly known as "Grey Wethers," from a fanciful notion that they resemble a flock of sheep winding along the sinuosities of the upland valleys of the downs. What might be termed the foreign stones are chiefly of syenite; they may have been brought from Pembrokeshire or Carnarvonshire, or even from the Channel Islands, but in any case they must have been brought from a considerable distance. These foreign stones are monoliths. Many of them are squared, and are of pyramidal form; these more highly worked foreign stones are arranged in the shape of a horse-shoe, the height of the stones increasing from each end of the horse-shoe. The local stones repeat these figures; the masses of stone are much larger, and all appear to have been squared. It may be that Stonehenge was erected at two distinct periods. We have the fact that the foreign stones were brought from a distance, and if so, is it improbable that they may have previously existed elsewhere as a temple, and have been transported to Salisbury Plain under the influence of a religious motive? A migrating people may thus have carried, not their household gods, but their temple with them. At a later period the wish might have arisen to erect a more imposing structure. This may have been accomplished, not by destroying the already existing temple, but by adding to it other stones of larger dimensions, and by arranging them around the old monolithic horseshoe and the old monolithic circle, and for this purpose the local stone was employed. Not only was the supposed second structure to be composed of larger blocks than those of the first temple, but other features were added to render it more imposing. In this second structure the monolithic feature of the first temple was abandoned, the stones were made to serve the purpose of posts upon which other masses of stone were laid. In the circle these capping-stones formed a continuous corona; the horseshoe was composed of five groups of stones, each group consisting of two placed upright and one resting upon them like the frame of a doorway. The space left between these gigantic doorposts is very narrow, and possibly in this there may be a peculiar significance. At a distance of about 40 yards from the outer circle, towards the north-east, is a single monolith or local stone, popularly known as the "Friar's Heel." It is, perhaps, the only unworked local stone of Stonehenge. From this circumstance, and from its monolithic character, it may have been placed as a symbol in its present position, which is in the middle of the avenue leading to the temple, this avenue being bounded on either side by low banks of earth. It may be, also, that the horseshoe form at Stonehenge is not without its meaning; indeed, the crescent and the horseshoe have been regarded as symbols, more or less, in very distant places and at varying periods. Where a horseshoe is nailed over the door, the symbolical idea has, indeed, been forgotten; but a superstitious belief in the virtue of any object of crescent form still survives.

Mr. Hyde Clarke said it seemed to him that nothing could be more monstrous than for any man to propound that those monuments were erected after the time of the Romans. They had round them in every direction monuments in those barrows which were likewise repeatedly to be found in distant regions, but they did not find that they had been attached peculiarly to Roman sites or Roman people, and there could be no doubt that those monuments belonged to a race of remote antiquity who had shown in those stones their degree of civilisation, and somewhat, perhaps, of the nature of their worship ages and ages ago, long before the Romans were thought of or known to the world. Not a little of the value of such monuments consisted in the circumstance that they led them back to the contemplation of the enormous extent of time which the culture of the world had filled up.

GROSVENOR HOUSE AND THE PICTURES.

England is most certainly not a little remarkable for the many collections it contains of noble pictures, accumulated, at vast expense and trouble, during long series of years,—nay, of generations. Noble houses vie with each other in collecting such rare trophies of art, and pride themselves in the possession of them. Many of these are sealed places and strongholds, and but few ever see the treasures in them; but now and then the clouds break, and a glimpse is got of the treasures of art,—painting and sculpture and fine rooms—which make a house famous. Of these there is surely not one more notable than that of the Duke of Westminster,—Grosvenor House,—the one we are now to jot down a few thoughts about. Cost has hardly been thought of in connexion with it. Only one hindrance has there, to all appearance, been, viz., the paucity of high-art works to be had at all in the world's market. Painters, however industrious, can paint, after all, but a limited number of pictures, and these are, as it is, all in the possession of those who do not part with them. You may go through gorgeous rooms and galleries, and fail to see what you might perchance look somewhat eagerly for,—the handywork of some of the best men of the present time. Nay, it may seem strange that there should not be almost constant Academician work going on in noble houses of this kind,—whole rooms being *painted!*

It would be difficult to name a property greater than that of the possession and presence always about you of a fine collection of pictures;—pictures by world-famous men, and full of right noble associations, the very names alone being a something. A well-nigh priceless possession of this kind is the one here named, and many have lately had special means of looking into it. The Duke of Westminster's magnificent display in the galleries or rooms of Grosvenor House is a gladdening sight indeed. All things here are not a little to be coveted,—rooms, decorative art in plenty, furniture, pictures, and a whole multitude of "curiosities" are here. The noble owner of all this display has, in the most generous manner, thrown open his house, with all its contents, to the general public gaze, even on Sundays, and many thousands of working men, it would seem, have taken advantage of his kindness, and have seen it.

We must confine our thoughts to one thing in this princely mansion, viz., the collection of pictures, and may begin by mentioning that the original collection of paintings now located here was commenced about the year 1755 by Richard, Earl Grosvenor, at Milbank House, Westminster, the then residence of the Grosvenor family. This house, now pulled down, an architectural loss may be, was built by Charles Mordaunt, Earl of Peterborough, about the year 1720. In 1806 the family removed to Grosvenor House, and in that year the first Marquis of Westminster added to what he then possessed the collection of pictures made by Mr. Agar Ellis. To these, as might be expected, very numerous additions have since been made.

This right noble collection is not, as is most usual, displayed in a distinct and quite separate picture-gallery, but the pictures have been divided out into distinct sections, and are hung in the state rooms of the mansion, the walls everywhere being almost wholly covered with them, perhaps somewhat too thickly. There are the Dining-room, the Saloon, the Small Drawing-room, the Large Drawing-room, the "Rubens Room," the ante-drawing-room, together with others, the Grand Staircase, and smaller rooms,—a wide and full enough display of artistic treasures everywhere and all about you. To name them all in detail would occupy too much space, but a few may be pointed to. Peter Paul Rubens must certainly come first, for some of his largest canvasses are here, covering whole wall-spaces, "decorating" the room in fact, to use plain language. Rubens was born in 1577, and died in 1640. In the Dining-room is his "Ixion embracing a Cloud in the form of Juno." This picture shows all his special powers, merits, and defects. It should be looked at first by way of introduction to the "Rubens Room." In this first room there is also another Rubens, a landscape, a view in Flanders, with peasants getting in the harvest. It is very minutely finished, and was painted by Rubens, it is said, when he was but eighteen or twenty years old. The "Conversion of Saint Paul," by the same painter, is also in this first room. It is a mere sketch for a larger picture, now at Leigh Court. There are in this room many Rembrandts, one of them a portrait of himself dressed as a soldier, in a steel gorget, with over it a gold chain wonderfully finished; for what could not Rembrandt do in this way? It might have been better to put all the Rembrandts in one room apart. Rembrandt was so powerfully individualised, as a painter, and all he did was so thoroughly and entirely his own, both in conception and execution, that in such a place he might well claim a room all to himself, and one, too, decorated and wall-covered, and, may we add, carpeted, and with its ceiling all designed for him. The more you look at these galleries, and ponder over things artistic, the more this presses on you. And yet a single Rembrandt well-nigh furnishes, and certainly does "decorate," a room. It is as a window through which you look into things gone by, and see them as this great master of light and shade and colour himself saw them. It is as a perpetual remembrance of things that have been, and a perpetual presence of all that is beautiful and striking in light and shade, quaint forms, costume, colour, and human life and expression!

There are here in this room pictures by Guido Reni, Salvator Rosa, Cuyp, Claude, one of them a "River" flowing through a landscape, signed and dated 1651, and another picture of his, the "Rise of the Roman Empire"; Nicholas Poussin, Wouvermans, Teniers, and two pictures by Hogarth, the "Distressed Poet" and another, a boy with a paper kite entangled in a tree. We might go on and fill a page or two with notes of the pictures in this room alone, but must needs hurry into the Saloon, the next apartment the visitor comes to.

In this saloon there is another Rembrandt, the "Salutation," Elizabeth embracing Mary on the steps of her house. This picture, formerly in the possession of the King of Sardinia, was brought to England by M. Erard in 1812, and then purchased by the first Marquis of Westminster. It is signed and dated 1640. Some pictures have had quite a history, and carry the thoughts back to past generations of men and to ways of doing things. A Paul Potter, a "Dairy Farm," near the Hague, as it looked in and about the year 1650. It was bought at a sale in London for 1,552*l.* in 1806. There is here too a portrait by himself of Don Diego Velasquez de Silva, who died in 1660. Poussin, Hobbema, Guido Reni, Del Sarto, Paul Veronese, Murillo, all are here to be seen in their works. Canaletti has a view on the Grand Canal, Venice, a glimpse of it as it *was*. Giulio Romano, Domenichino, Adrian Van der Werff, Il Parmegiano, and Rubens again, so that no one can complain of a want of variety. The Rubens here, the "Dismissal of Hagar," so forcibly struck Mrs. Siddons, that she thought the energy and expression of Sarah's look and attitude in it worthy of her study and imitation.

The next room, the Small Drawing-room, holds the famous "Blue Boy," of Gainsborough, thought by the painter to be the best portrait he ever painted. It is enough to furnish the dullest room. Gainsborough painted it to disprove the notion of Reynolds that a large amount of *blue* was incompatible with effect, and he has here proved how wrong Reynolds was. There is a Titian here, the "Tribute Money." Tiziano Vecelli da Cadore was born in 1477, and died in 1576. Reynolds's portrait of Mrs. Siddons as the Tragic Muse. Hazlitt said of this famous picture that it was neither a portrait of Mrs. Siddons, nor was it the Tragic Muse, but for all that you cannot help looking at it again and again. It was bought by the first Marquis for 1,760 guineas, of Mr. Watson Taylor, in 1822. Sir Joshua's name is written on the hem of the drapery. There is here a Van Dyck too, formerly in the church of Les Recollets at Antwerp.

The Large Drawing-room comes next in order, and is full of attractions. A Turner, the "Seventh Plague"; "A Holy Family," by Raffaelle. He was born in 1483, and died in 1520. It came from the Agar collection. Titian is in this room, too, and Paul Veronese, the "Saviour at a Feast." Veronese died in 1588. If any mortal ever had the skill of putting happily together a picturesque crowd of people, in attractive costumes, he was surely that draughtsman. Architecture, too, he knew well the use of, and what to do with it, and in it. Andrea Sacchi, G. Bellini, Guercino, and Philip de Koning complete the list.

The "Rubens Room" might well take some pages to describe. It contains pictures of the largest size,—*decorative* pictures in the true sense of the word: wall-paintings truly. This room contains three of them. In the first, the "Israelites gathering Manna in the Wilderness," we see the twisted columns, as in the celebrated cartoon of the "Beautiful Gate," by Raffaelle. The other picture is the "Meeting of Abraham and Melchisedek"; and the third, the "Four Evangelists," with their emblems,—the Angel, the Lion, the Ox, and the Eagle. It need hardly be said that no other picture, great or small, is *here* needed. If such pictures cannot furnish a room why nothing can. We must need leave to another opportunity a comment or two on the furnishing and decoration of these splendid apartments, and would but here remark in parenthesis how very much these magnificent paintings by Rubens are injured, as paintings, by the excessive weight, and breadth, and massiveness of the gilded *frames* round them. The mere quantity of bright gilding well-nigh kills the pictures. Is not this a mistake? All is gilt here in these gorgeous rooms and galleries, and all is large,—mouldings, foliage, flowers, shells, *et hoc genus omni*. It would indeed be a gain were some of this but too bright display of gold subdued a little.

The ante-drawing-room and staircase hold much: we leave them with reluctance, and leave, also, some thoughts on the old house, as it was, in the days of the first marquis. It contrasts with the new buildings here,—but both are noteworthy. A momentary, hurried glimpse through the door of the old library, and into it, awakens a new thought.

INVERARY CASTLE

AND ITS ARCHITECT.

This building, to which at the present time much interest is attached in consequence of the visit of her Majesty, has been considered by many of the journalists describing it, and the festivities therein, to be of ancient date. One, in a daily paper, states that "The castle is constructed of chlorite slate, and consists of two stories and a sunk floor, with a handsome pavilion on the top. The apartments which her Majesty occupies are those having a southern view, and are reached from the north-east, or main entrance, by a handsome gallery hung with pictures." An engraving of the castle is given in the fifth volume of Neale's "Views of the Seats of the Nobility, &c.," published in 1822, wherein it is stated that it was commenced by the Duke of Argyle in 1745, but the works were stopped on account of the troubles of that period; shortly after they were continued, and the edifice completed. It is built of *lapis ollaris*, or pot stone, of a grey sombre hue, which is soft under friction, but admits of a fine polish, and is capable of resisting the effects of the weather equal to the hardest marble. The stone was brought from the opposite shore of Loch Fyne.

Some of your readers may ask, who was the architect? This, after a long search, made a few weeks since, I have been able to ascertain, and while adding it here, would request to have any further information that may be known of the two R. Morrises, to which reference will now be made.

I found an elevation and some plans of Inverary Castle, given in four plates in the "Vitruvius Scoticus," a folio work published between 1720 and 1740 (and completed in 1810), by William Adam, the father of the celebrated brothers Adam. Most of the buildings were erected by him, and in Scotland; probably this Castle, being in that country and newly built at the time, was the cause of its insertion. The architect is therein only styled "R. Morris." A further search in the "Vitruvius Britannicus," published by Woolfe & Gaudon, in 1767, afforded the following buildings as by "R. Morris," namely, the centre portion of the Lodge in Richmond Park, built for King George II., in which he was associated with S. Wright; a mansion for Lord Melcomb and Mr. Thomas Wyndham, on the banks of the river Thames, near Hammersmith, to which a gallery was added, from the designs of the celebrated French architect, Servandoni; Coombe Bank, in Kent, for the Duke of Argyll; Wimbledon Park, in Surrey, for the Earl Spencer, which having been burnt on Easter Monday, 1785, the offices were used as a residence; and Kirby Hall, Yorkshire, for Mr. John Thompson, being associated therein with the Earl of Burlington, while "the plans" are described as being "by the owner, S. T." It was carried out, and the interior designed by Carr, of York. Lastly, the bridge at Wilton was also designed by R. Morris, in 1736, for Henry Herbert, Earl of Pembroke. The first building, the castle in question, is designed in

the Gothic of the period; the basement has an area all round it, which is crossed by a Gothic bridge. The other buildings are all in the Italian style.

I next found the titles of the following publications, all of which, I think, are by Robert Morris, but they have become scarce, and many of them have not been seen by me. The first of these is "An Essay in Defence of Ancient Architecture; or, a Parallel of the Ancient Buildings with the Modern," 16 plates, 4to., London, 1728: "Lectures on Architecture," 8vo., 1734; these were delivered monthly at a Society for the Improvement of Knowledge in Arts and Sciences, which he had proposed and established about 1730: "Rural Architecture, Designs, &c.," 50 plates, 4to., 1750: "Architectural Remembrancer," 8vo., 1751: "Architecture Improved; or, Designs for Slight and Graceful Recesses, Lodges, &c.," 50 plates, 8vo., 1755: "Select Architecture; Designs from a Town House to an Hotel, and from a Farm House to a Parish Church," 50 plates, 4to. (about 1759): and with Halfpenny and Lightoler he published "The Modern Builder's Assistant; or, a Concise Epitome of the whole System of Architecture," 85 plates, folio, 1757. In the preface to the second part of the second work (a copy of which I possess), he refers to Roger Morris, architect, as one whose productions were of merit: "Where architecture among other topics engross the conversation of the *Beau Monde*, your productions must sometimes be the theme"; and he calls him "loving kinsman," and was "obliged to him for the erudition he had received in his service." Hence I conclude that the *writer* is Robert Morris, who was of Twickenham, and the *architect* of Inverary Castle and the other buildings is Roger Morris.

At the same period (1753), James Morris was master carpenter to H.M. Office of Ordnance; Thomas Morris, a painter; and J. H. Morris, carpenter, who published "A Carpenter's Companion," 1770; but whether these were any way related to either of the above is unknown to me.

Wyatt Papworth.

PROPOSED NEW BRIDGE AT BATH.

At a meeting of the Bath Town Council, on the 21st ult., the Borough Property Committee reported that, in accordance with a resolution of the council of the 4th May last, they had given further consideration to the question as to the advisability of erecting a new bridge over the Avon in lieu of the Old Bridge, and had consulted Mr. Richardson, C.E., on the subject. The committee having accepted offers from several engineers to submit designs, a sub-committee was appointed to consider such designs. The committee also reported that they had consulted Mr. Davis, the borough surveyor, who had presented six reports on the subject, the substance of which was that the foundations of the Old Bridge were defective; that settlements had occurred in some of the arches; that to repair these defects would involve an outlay of about 2,500*l.*; that the number of piers (four) and the lowness of the arches were greatly obstructive of the waterway and traffic; and that the best thing to be done was to build a new bridge. The sub-committee reported that the designs for a new bridge submitted to them were six in number, which, for convenience and reference, had been marked alphabetically. The sub-committee say:—

A is a design for a compound stone and iron bridge of three arches, by Mr. G. L. Fuller. Width, 50 ft.; waterway, 117 ft.; span of arch, 81 ft. Estimated cost, 3,500*l.*

B is a design for a single-span iron-arch bridge, also by Mr. G. L. Fuller. Width, 50 ft.; waterway, 127 ft. Estimated cost, 5,000*l.*, subject to a possible reduction in the cost of foundation or springings.

C is a design for a three-arched bridge, by Mr. E. Perrett, the two side-arches being of stone, and the centre arch with a span of 83 ft. of iron. Width, 50 ft.; waterway, 127 ft. Estimated cost, 3,400*l.*, exclusive of the cost of a cofferdam (about 500*l.*).

D is a design for a cast-iron bridge of three arches, also by Mr. E. Perrett. Span of centre arch, 47 ft.; and of each side arch, 41 ft.; width, 50 ft.; waterway, 157 ft. Estimated cost, 3,400*l.*

E is a design for a single-arch iron bridge, by Messrs. Handyside & Co. Width, 50 ft.; waterway, 127 ft. Estimated cost, 5,000*l.*

F is a design for a two-arch iron bridge, also by Messrs. Handyside & Co., each arch having a span of 62 ft.; width, 50 ft.; waterway, 124 ft. Estimated cost, 3,500*l.*

Of these designs, the sub-committee decided to retain D and F, in addition to two other designs, G and H, submitted by Mr. Davis and Mr. Richardson respectively. Design G, a bridge of two arches, gives 127 ft. waterway, and a roadway of 50 ft. wide, at a cost of 3,750*l.*, or, reduced to 45 ft., 3,500*l.* (inclusive of cofferdam and abutments). Design H is a two-arched stone-faced bridge, 105 ft. waterway, 45 ft. wide, and estimated to cost 3,600*l.* None of the estimates include the cost of alterations to the gradients of the adjoining streets, which would be about the same (540*l.*) for all the designs; there must also in each case be added the cost of river walls, estimated at 400*l.* After consideration of the report of the sub-committee, the Borough Property Committee recommended the Town Council to pull down the present bridge, and build a new one in accordance with design G (that of the borough surveyor). After a long debate upon the motion to adopt the committee's report, an amendment to advertise for tenders for the efficient repair of the bridge, and also for tenders for building a new bridge, was carried by a majority of one only.

THE OLD TOWN-HALL, ANNAN.

For some considerable time workmen have been employed in demolishing this ancient structure, and last week they succeeded in removing the last of it from the position it has so long occupied. As the work of demolition progressed, some revelations were made regarding the construction of the building. The north and back walls appeared to have been erected at a very early date, as they were remarkably thick and massive. The latter, in the centre of it, was no less than 7½ ft. thick. The corner where these two walls joined was circular in form, and appeared to have inclosed at one time a stone spiral stair. In all likelihood this corner formed a part of one of the towers of the original castle of Annan, a likelihood which is strengthened by the facts that the walls were largely built of clay and mud, and that one of them contained a porthole or narrow opening half way from the ground. The end of the back wall nearest to Bridge-place, Annan, presented two walls built against each other. The inner wall seemed the best of the two, and was well preserved. It contained the framework of an old Gothic window, and it was supposed to be a portion of one of the walls of the old church of Annan, which occupied the site of the present residence of the town clerk. The space in front of the site is now covered with immense piles of stones which have been taken out of the old jail. Many of these appear, from their form and working, to have occupied places in a much more ancient building than the old jail, but none with any inscription or carvings to denote their history have been found. The foundation-stone of the new town-hall is expected to be laid at the commencement of next year.

THE WATER SUPPLY OF OLD LONDON.

The length of 6-in. lead pipe recently discovered within the enclosure on the north side of St. Paul's Cathedral, is no doubt part of the pipe which was laid down more than 600 years ago, from the reservoir at Tyburn to the great conduit in Cheapside. Permit me to suggest that a short length of this interesting relic be deposited in the Museum at South Kensington, and another short length in that at the Guildhall. Perhaps Mr. McDonnell could arrange for this to be done. Although the laying of the pipe was begun soon after 1236, it was not completed, and the conduit erected, until 1285. The conduit was a plain stone building. Its plan was an octagon, about 9 ft. in diameter, carried about 45 ft. high, and covered by a cupola, with the figure of a man on top blowing a horn. A balcony ran round the outside, about 27 ft. from the ground. On the faces of the octagon, high up near the balcony, there were full-length sculptured figures of those who had interested themselves in laying the pipe and erecting the conduit. A narrow stone staircase wound upwards in the thickness of the wall to the balcony, leaving a well or cistern in the centre. This terminated level with the balcony, and a few feet above the standard level of the water in the reservoir at Tyburn, and was lined with lead. Into the bottom, which was level with the ground, the 6-in. supply-pipe was soldered. The conduit mouth led out of the cistern about 4½ ft. above the ground, and 20 ft. below the standard level of the water in the cistern, and was fitted with a boss and valve. This was easily opened when water was required, and it easily closed of itself. Hence the water in the cistern, when none was being drawn from it, always stood at the same level as the water in the reservoir at Tyburn, and as fast as water was drawn out the same quantity ran in from the supply-pipe. About 150 years after this pipe was laid, another conduit was built: a 3-in. lead pipe was laid from the springs in the Manor of Paddington into the 6-in. pipe at Piccadilly, near the Circus. In 1836 I saw a long length of this pipe uncovered and removed in Hyde Park-square. It passed under where the houses are built, on the south side, towards the west end, in an easterly direction from near Spring-street, to the above-mentioned point in Piccadilly. It was ⅛ in. thick.

John Phillips.

PROPOSED NEW OFFICES FOR THE GREENWICH BOARD OF WORKS.

In response to the invitation for designs for new offices issued by the Greenwich Board of Works some time ago, it is stated that twenty-two designs have been sent in by competing architects. In a letter to the *Kentish Mercury*, "A Greenwich Ratepayer" protests against the board selecting the designs without the aid of a professional referee, and hints that another competition "job" is about to be perpetrated. The *Mercury* has some brief comments of its own on the letter, and while urging that the Board should call in the aid of an impartial and competent professional adviser, says that "nothing in the shape of a job can or will be tolerated in this matter." It ought not to be, at any rate.

THE METROPOLITAN UNDERGROUND RAILWAYS.

Sir Edward Watkin, who has arrived in England on his return from America, after inspecting the Erie railway, has made some interesting statements respecting the London underground railways. Speaking in New York, before a committee now engaged in discussing the question of supplying that city with a railway system, and referring to the London underground lines, he explained their construction, and described at considerable length the difficulties encountered in building and running them. He said that the underground companies had already about sixteen miles of road in operation, and in a few months they would have twenty miles of road completed. He added that they were negotiating for a still further extension of their routes, and would in time burrow under the whole City of London. The cost of the roads already made was $5,000,000 per mile (upwards of 1,000,000*l.*), of which about four-fifths was due to damages to real estate, caused by cutting through blocks of buildings, and tunnelling under houses. In some places the roads ran under graveyards, without disturbing the graves and vaults above. Speaking of the traffic, he said that 93 per cent. of the passengers travelled only short distances, and only 7 per cent. of them were carried to the end of the various routes. This fact, he observed, was regarded as very important, because it showed that in selecting a plan of rapid transit the convenience and facility of those who wished to ride for short distances only ought to be consulted. These roads had proved to be a greater convenience to the poorer classes than to wealthy persons. The average fare collected was five cents (2½d.), and the rate per mile was reduced by a system of commutation to 1d. Last year they carried 70,000,000 passengers. Heavy locomotives were used, and 1,000 trains per day, each having a carrying capacity for 1,000 persons, were run over them. The rate of speed was thirty miles per hour, or twenty miles, including stoppages.

"Gallium."—An Alleged New Metal.—The discovery of a new metal was announced to the French Academy of Sciences on the 20th ult., by M. Lecoq de Boisbaudran, a chemist. The new metal, which M. Lecoq calls *gallium*, was found by the spectroscope in zinc ores, with which metal it has much resemblance in common, although showing sufficient distinctive chemical characteristics.

ST. MARY THE VIRGIN, CROWN-STREET, SOHO.

This church was originally dedicated as a Greek church (the first in London), in the year 1677, as appears by the following Greek inscription, still over the west door, cut in capital letters, and in an excellent state of preservation:—

"Ετει σωτηριῳ αχοζ ανηγερθη ο ναος ουτος υπερ γενους Ελληνων—Βασιλευοντος του γαληνοτατου Καρολου του Βου: και ηγεμονευοντος του πορφυρογεννητου αρχοντος κυριου Ιακωβου· αρχιερατευοντος του αιδεσιμωτατου Κυριου Ερρικου του Κομπτωνου· δια δαπανης των ανωθεν και των λοιπων αρχιερεων και ευγενων συνδρομης δε της ημων ταπεινοτητος Σαμιου Ιωσηφ Γεωργειρ(η)νου του εκ της νησου Μηλου."

Translation.

"In the year of Salvation 1677, this Temple was erected for the Nation of the Greeks, the Most Serene Charles II. being King, and the Royal [lit. 'born in the purple'] Prince Lord James being Duke, the Right Reverend Henry Compton being Bishop, at the expense of the above and other Bishops and Nobles, and with the concurrence of our Humility of Samos, Joseph Georgeirenes from the Island of Melos."

Some translate ηγεμονευοντος, the word here, "heir to the throne," but it is translated "Duke," in accordance with the words of Georgeirenes, in the dedication of his Book on Samos, *τω ηγεμονι της μεγαλοπολεως Εβορακου* to the Duke of York.

The Rev. George Williams, at pages xx., xxi. of his book, "The Orthodox Church of the East in the Eighteenth Century and the Nonjurors," Rivingtons, 1868, says,—"Henry Compton, who occupied the see of London from 1675 to 1714, had already manifested his interest in the Greek Church, by accepting the dedication of the English edition of "An Account of the Greek Church," 1680, by Thomas Smith (Covel's immediate predecessor as Embassy Chaplain at Constantinople). His support of a scheme for a Greek College (Gloucester Hall, now Worcester College, Oxford, called the "Greek College," from 1694 to 1705), had apparently been secured before the original programme was issued; and Woodroff (principal of Gloucester Hall), in his letter (1694) to the Patriarch Callinicus (of Constantinople), expressly says that he wrote "in the name of the Most Godly Metropolitan of Great London, as well as in his own, and also in the name of very many more, very desirous of and affectioned towards your interests." The Metropolitan of Samos was that Joseph Georgirenes, who, having been driven from his see, settled in London, where a building was erected for him, in the then aristocratic quarter of Soho, for the performance of the divine services according to the Greek rite; the identical building which, after many years of desecration, was reconciled and restored to Christian worship, according to the Anglican rite, only eighteen years ago (1850), and has since become widely known under its original Greek dedication,—St. Mary's, Crown-street, Soho."

At p. xix., Dr. Williams remarks:—"A document not hitherto published, preserved among the Tanner papers (No. xxxiii., fol. 57), discovers to us the interesting fact, that the idea of this Greek College at Oxford originated with the Greeks themselves, and that the Phil-Hellenes in England were but carrying into effect the suggestion of an eminent prelate of the Orthodox Eastern Church. This is a petition (1682 or 3) of Joseph, Metropolitan of Samos, to Archbishop Sancroft, in which he touchingly sets forth the miseries and misfortunes of the Greeks, owing to the tyranny of the Turks and their own deplorable ignorance, 'by the corruption of their church, which daily groweth more and more corrupted.'" For a remedy to which he suggests "that twelve scholars out of Greece be constantly here to be instructed and grounded in the true doctrine of the Church of England; whereby (with the blessing of God) they may be able dispensers thereof, and so return to Greece aforesaid to preach the same; by which means your petitioner conceives the said people may be edified;" and he importunes him to communicate this scheme to the King and the Bishop of London 'to the intent some yearly revenue may be allotted to carry on so pious and good a work.'"

Le Quien, in his "Oriens Christianus," vol. i., col. 932, Paris, 1740, gives the following account of the Metropolitan of Samos:—

"Nostrâ ætate Joseph Georgirenes, Archiepiscopus Sami, in Angliam è patriâ a suis exagitatus venit, cui Londini ecclesia concessa est, in quâ ritu suo Græco ecclesiastica sacra precesque peragebat; vir vafræ indolis, qui interim Sami, Nicariæ et Patmi insularum hodiernum statum Græco vulgari idiomate descripsit.—Wheller, Itin. et Rosemond, Prof. au Livre de Ricault."

St. Mary's, Soho, had thus a Greek archbishop for its head, as the Royal Chapel of the Savoy (St. John the Baptist, then called St. Mary Savoy, on account of its serving as a church for the parishioners of St. Mary-le-Strand) had a Latin one,—viz., Antonio de Dominis, Archbishop of Spalatro, in Dalmatia, Master of the Savoy in the reign of James I.

Georgeirenes, in his "Description of Samos, &c., and Mount Athos," referred to by Le Quien, and published in London, 1678 (Press Mark, British Museum, 10,125*a*), says that he was consecrated the seventh Archbishop of Samos on the 7th of October, 1666. "He sat here five years, till, after the taking of Candie, the Turks grew more populous, and consequently more abusive; so that, wearied with their injuries, he retired to the Holy Grotto of the Apocalypse in the Isle of Patmos." He also mentions that there was a famous church in Samos, dedicated to the Virgin Mary, in the middle of a deep and large grotto (St. Mary the Virgin of the Grotto), to which the Samians paid great devotion. This doubtless influenced him in the dedication of his Greek church in London, as well as the fact that about the same time (30 Car. II., 1678) an Act was passed to cut off from the mother parish of St. Martin-in-the-Fields the new parish of St. Anne, Soho (church and churchyard not consecrated until the 21st of March, 1685), of which St. Mary's formed a part until it was made into a separate parish on the 22nd of October, 1856. The church had been consecrated under the title of St. Mary the Virgin by Bishop Blomfield in 1850, the same year in which the present Greek church in London-wall was built.

By the courtesy of Dr. Rimbault, who will shortly publish a complete history of Soho, I am enabled to give the following quaint pen-and-ink portrait of the Greek Archbishop:—

"Whereas, Joachim Cicciliano, of the Island of Cefalonia, a Grecian minister, of a high stature, with black bushy hair, and a long black beard, has gone up and down the country under the name of the Bishop of Samos, in Greece, and hath been assisted with Christian contributions towards building the Grecian Church, which he hath lewdly spent, to the prejudice of the said church, and the scandal of the said bishop: Now, to prevent any further abuse to the country, these are to give notice to all persons that the said Bishop of Samos is an indifferent tall man, and slender, with long black hair, having a wart on the right side of his nose, but against his eye, and black whiskers, and very little beard, which said Bishop wrote the History of Samos; and with the assistance of good Christians hath built and almost finished the Grecian Church in Sohoe Fields, by licence from his Majesty."—*London Gazette*, February 12, 1680.

Dr. Rimbault has also kindly supplied me with the following curious and interesting statement of the Archbishop of Samos, copied from a printed document in the British Museum, 816 *m* 9 $\frac{118}{}$ last fol.:—

"From the Archbishop of the Isle of Samos, in Greece. An account of his building the Grecian church in So-hoe Fields, and the disposal thereof by the Masters of the Parish of St. Martin-in-the-Fields."

"In the year 1676 I came into England with intentions to publish a book in print called 'Anthologion,' for the use of the Eastern Greek Church, but finding they had no place allotted for the exercise of our religion, but that some persons of our country, Daniel Bulgaris, a priest, and others, who had earnestly endeavoured to get one builded, and in order thereunto had obtained his Majesties gracious grant for the same two years before my arrival; but wanting means, methods, and interest to proceed to the accomplishing this their purpose, they desired me to take the business upon me, in which, though some difficulties appeared unsuitable to my function, yet, in piety to the church, and to promote the exercise of the divine service thereof, I undertook the charge, and proceeded therein as followeth, viz., I first applied myself to the Right Reverend the Lord Bishop of London, to acquaint him therewith, and his lordship did so far approve thereof that he promised to speak to the other bishops and other gentlemen to bestow their benevolent contributions towards the building of the said church. Next I applyed myself to Doctor Barbone, who was then concerned in building in So-hoe-Fields. He, as soon as he was acquainted with my design, promised to give me a piece of ground, and to build the foundation at his own charge; thereupon I went again to his said lordship, and telling him thereof, he promised to give me a piece of ground himself, and sent one Mr. Thrift with me, and I marked out the ground. Hereupon I went to his Majesty, the Duke of York, and most of the nobility and clergy, who were pleased to contribute freely to the building, there being gathered both in city and country fifteen hundred pounds. I began the foundation at my own charge, and as I received the contributions I went on, and expended therein, as may appear by the workmen's receipts, eight hundred pounds; and the remainder of the money was expended in charges, servants' wages, and horse hire in going about the country, and in my maintenance for these six years last past.

After some time the church being found inconveniently situated, being too remote from the abodes of most of the Grecians (dwelling chiefly in the farthermost parts of the city), it was upon mature consideration thought fit to be sold, another to be builded in a more convenient place; whereupon I applied myself again to his lordship the Bishop of London, who was pleased to tell me, that when the said church was sold, his lordship would give his grant and title for the building of another. Hereupon I endeavoured to sell it, and finding two persons that would buy the same, the Lord Bishop of London would not consent thereto, lest the party should make a meeting-house thereof. Hereupon I went to the doctor of St. Martin's, who proposing it to the parish, they consented before the said Lord Bishop, to let it be apprais'd by two able workmen. The church was accordingly viewed, and rated to be worth 626*l.* The parish proffered 168*l.*, alleging that the ground was theirs and not the bishop's. This agreement falling off, I found out others who proffered 62*l.* more than the parish had done, which they of the parish coming to understand, they proffered 200*l.*, which I refusing to take, the Lord Bishop required me to give them the key, which I denying to do, they told me they would take the church without it, as they did accordingly, breaking open the dore, and taking possession.

Hereupon I endeavoured to carry the person who broke open the door before a justice, that I might justify myself; but the parish not permitting him to go, I went myself, but not finding the justice I desisted from any further proceeding. This relation I have thought fit to make, that thereby all persons may see I never sold the said church, nor received any sum for the building thereof.—London, Printed for A. F., 1682."

The Archbishop must by this time have become convinced that the tyranny of the Turks was tolerable as compared with that of British Vestrymen, who might well be called masters of the parish, from the masterful way in which they acted.

If the present Vestry of St. Martin's-in-the-Fields (now the grandmother, but then the stepmother church of St. Mary's, Soho) have any "historic sense," they will surely feel bound to atone for the misdeed of their predecessors by contributing liberally to the re-building of this old Greek church, which, with its dilapidated floor and walls, makes a touching appeal to their generous sympathies. The Doctor of St. Martin's, referred to in this document, was of course Dr. Tenison, the vicar. Mr. Thrift was doubtless the person from whom Frith-street (formerly Thrift-street) was called. Dr. Barbone is supposed to have been son of the notorious Praise God Barebone, the leather-seller, of Fleet-street. The family of Barbone was settled in Soho. Dr. Nicholas Barbone, here mentioned, M.D., and M.P. for Bramber, was a great builder, to his own cost, and from him Newport Market (where are now the Refuge and Industrial Schools, under the energetic control of Mr. J. A. Shaw Stewart) was formerly called Barbone-square. He is referred to in North's "Lives," ed. 1826, vol. i., p. 427. He died in 1698.

Leaving the masters of the parish of St. Martin-in-the-Fields to reckon with the accusing angel of history for their usurpation, the next date we find in connexion with the Greek Church is 1684, in which year, 36 Car. II., on May 31st, Letters Patent were given by Charles II., on the petition of Dr. Tenison, the vicar, on the behalf of himself and the parish of St. Martin-

in-the-Fields, granting the sites and fabrics of the church, then used by the French Protestants, and of almshouses, unto the Right Hon. Thomas Lord Jermyn, baron of Bury St. Edmunds, in the county of Suffolk, and his heirs, in trust, and for the benefit of the poor of the said parish. This seems to show that the Vestry of St. Martin's had some qualms of conscience about their high-handed proceedings in the case of the Archbishop of Samos.

Mr. Burn, in his interesting and valuable "History of the Foreign Protestant Refugees in England," Longmans, 1846, p. 232, says, "Upon referring to the records of St. Martin's parish, it appears that the parishioners had certain lands, garden, and laystall on the west side of the Haymarket, for which the Earl of St. Alban's exchanged 1½ acre of land, of which he had a lease, being part of a field called Kempe's Field. In 1676 this 1½ acre was required for building the Church of St. Ann, Soho, and the parish exchanged that also for an acre of ground called Bunches Close, and by letters patent of May 31st, 1685 (1684), the king granted 'all that piece or parcel of ground lying and being in or near Kemp's Fields or Bunches Close aforesaid, whereon the said fabric of a church, late called the Greek Church, now used by the French Protestants, and almeshouses are erected; and also the same fabric of a church and almes-houses' (containing by admeasurement 97 ft. by 147 ft.), to hold the same in trust for the poor of St. Martin's-in-the-Fields for ever. (In a note:—It was all sold by the parish to Mr. Const, in 1818, by virtue of an Act of 58 Geo. III.). A small piece of ground was taken out of the land for a graveyard for the alms-people and others, which was consecrated by Bishop Compton, on March 21st, 1685 (in a note,—'It is said in the neighbourhood that this is now covered in as a school-room, adjoining the north side of the building'). [Now, 1875, the north aisle, completed, July, 1874.] The obscurity in which this Greek church is enveloped has been considered a sufficient reason for collecting in these pages the scattered information bearing on the subject. It may be of use also to add, for the guidance of those who may feel inclined to search for further elucidation, that no reference on the subject has been met with in the Bishop of London's Registry."

At p. 113, under the head, "Les Grecs, in Dudley-court,* Hog-lane (now called Crown-street, Soho)," he says:—"The chapel in Hog-lane was originally built for the Greeks. (In a note:—This chapel belonged to the parish of St. Martin's-in-the-Fields, having come into their possession in the 36 Car. II. (1685). It was sold in 1818 to a Mr. Allen.) It was afterwards, for many years, used by the French Protestant refugees, but in 1822, their lease being nearly expired, they sold the remainder of the term for 200*l.*, to a congregation of Dissenters. Hogarth has given a representation of the old chapel in Hog-lane, in his picture of 'Noon' (published 1738), and the figure coming out of the chapel is said to have been a very good likeness of the Rev. Thomas Hervé, who was the minister there from about 1727 to 1731. Some of the ministers who have officiated at this chapel, were the Rev. Jacques Severin, 1751; Jacques Durand, 1715; Darvilliers, a proselyte; Jean Hudel, 1725; Thomas Hervé, 1727. This chapel, as the representative of the Savoy, has been considered as the mother church of the congregations at the West End of London. The congregations of the Savoy, Les Grecs, and Spring-gardens were united, the two former about 1721, and the latter, subsequently." Hog-lane, originally Elde (Old) street, was built about 1680. It afterwards received the name of Crown-street, probably from the tavern, "The Rose and Crown," still existing at the corner of Rose-street and Crown-street.

There is a tradition that Nell Gwynne founded as almshouses, the cottages in Chapel-place, on the south and west of the church, and (till the building of the present large and handsome schools, opened July, 1874) also on the north side. But Dr. Rimbault thinks that this has arisen from confounding her name with that of a Madam Grames, mentioned, along with other founders of these almshouses, as having built and endowed some of these houses in 1686. The list of founders is given at page 101 of "Pietas Londinensis,"—an account of the London churches, by James Paterson, A.M., London, 1714; and as Nell Gwynne died in November, 1687, her name would not have been omitted if she had been one of the founders. Mr. Peter Cunningham, also, in his "Story of Nell Gwyn," London, 1852, makes no mention of this, though he gives her will, wherein she leaves some moneys for the poor of St. Martin's parish to Dr. Tenison, the vicar, who preached her funeral sermon. Walter Wilson, in his "History and Antiquities of the Dissenting Churches in London," London, 1814, vol. iv., p. 37, says:—"Dudley-court is situated in Hog-lane, near Denmark-street, Soho. The chapel we describe belonged originally to the French Protestant Refugees, who seem to have been formerly very numerous in this neighbourhood. From them it passed to the Methodists in Mr. Whitefield's connexion." Wilson then describes this chapel as subsequently occupied by a Scotch sect, called the Bereans, and in 1814 by the Swedenborgians, the proprietor being Mr. Rowcliffe, formerly a preacher among the General Baptists.

He here confounds the Greek Church in Chapel-place, on the west or St. Anne's side of Crown-street, with an old Baptist Chapel in Dudley-court (now Denmark-place), on the east or St. Giles's side, higher up towards Oxford-street. This Baptist Chapel, with the present entrance at the front in Denmark-street, is now an Eclectic Music Hall, Dancing Academy, Excelsior Temperance Society, &c.

In October, 1822 (as appears by deeds in my possession), the Greek Church and almshouses were sold (subject to the lease to the French Protestants, of which two years still remained) by the surviving trustees of St. Martin's parish, and by Mr. Francis Const and Mr. Emanuel Allen, to the trustees of a body of Dissenters called in the deed-declaration of trust (Dec. 1824), "Persons who believe, or profess to believe, the Scriptures as contained in the Old and New Testaments, and explained in the doctrinal articles of the Church of England, and in the shorter catechism of the Assembly of Divines convened at Westminster in the year 1643, as commonly explained by Calvinists being Pedobaptists," and to others. The church continued to be occupied by these and other Dissenters till December, 1849. It was then about to be turned into a dancing-saloon and music-hall, when the Rev. Nugent Wade, rector of the parish of St. Anne, Soho, assisted by some friends, bought it, and after being arranged for the service of the Church of England by Mr. P. C. Hardwick, it was, on St. Peter's Day, 29th June, 1850, consecrated by Bishop Blomfield, under the title of St. Mary the Virgin, as a chapel-of-ease to the mother church. The first curates in charge were Rev. Walter Blunt, Rev. Archer Gurney, late of Paris, and Rev. W. B. Atkins. In 1856 a separate district was assigned to the church, and the Rev. J. C. Chambers was appointed incumbent. During 1856 and 1857, Rev. W. W. Talfourd, son of Judge Talfourd, was curate here. Mr. Chambers died on 21st May, 1874. By his active and untiring exertions, ably seconded by the Rev. J. J. Elkington, the senior curate, large and handsome schools for 600 children have been built, together with a clergy-house, chancel (consecrated 27th May, 1873), and north aisle. The architects were Messrs. Slater & Carpenter, Regent-street.

The present vicar (formerly curate of St. Anne's) was instituted on St. Andrew's Day, 30th November, 1874. The schools are all now under Government inspection, and since January, 1875, a school of plain cookery for the children of the two parishes has been carried on in the vicarage kitchens, under the management of teachers from South Kensington. On the 19th of June last Sir Henry Cole, K.C.B., distributed the first prizes.

On the site of the old Church-house, Charity-house, and Alms-houses have been built the chancel, clergy-house, and schools. Of these the first built was the clergy-house, of which the foundation-stone was laid by Mrs. Gladstone in 1869; the corner-stone of the chancel was laid on April 17, 1872, by Canon Liddon, and the schools and north aisle of the church were begun early in 1873, and were completed in July, 1874. It is proposed to rebuild next year the nave which formed the old Greek Church, so that its completion as an English Church may take place on the 200th anniversary of its dedication as a Greek Church.

The clergy-house is a lofty building of six floors. The basement is occupied by the kitchen offices, the ground floor by the choir and clergy vestries, the first floor by the common room, and the remaining three floors by rooms for the vicar and curates. The building is faced with red brick, the heads and sills of windows and the string-courses being of stone.

The schools adjoining the clergy-house on the north, are arranged in three floors. The ground-floor is for the infants, the first floor for girls, and the second floor for boys. The schoolrooms are lofty and thoroughly ventilated, and have windows on three sides. The desks are on Moss's patent system of two children to each desk, with intermediate passages. The classroom for each school is at the western end. The boys' and girls' schoolrooms are reached by separate stone staircases. The entrance to the schools and the western doors of the church are at present in a narrow court, but eventually this court may be swept away and give place to the new street which it has been proposed to make from Charing-cross to Tottenham Court-road, thus affording a much better approach than the buildings now possess. The chancel abutting on Crown-street is of as large proportions as the site will admit, the interior width being 36 ft., the length 34 ft., the height to the crown of the vault 60 ft., and to the ridge of the roof 80 ft.

The material is red brick with stone dressings; the groining, which is "sexpartite," is constructed of red bricks with stone ribs. The chancel is lighted by two twolight windows with cusped circles over on the south side, and by a group of five lancets on the east. The height from the altar daïs to the sill of these windows is 30 ft., and this space will be occupied by a reredos. The figure of Our Lord, which will form its central feature, is temporarily fixed. It is of white marble and is the work of Miss Grant.

The ascent to the altar is by a flight of twelve steps. The pavement is of Minton's tile mosaic; the three upper steps are of polished Derbyshire marble.

The future nave will consist of four bays with sexpartite vaulting at a somewhat lower level than that of the chancel.

The west end is pierced by a large rose window, in the tracery of which the Greek cross is introduced, the exterior spandrels being filled with the symbols of the four evangelists. Below this window is the principal entrance to the church. It is a double doorway, with a sculptured tympanum, representing a "Majesty," included under an enriched and crocketed gable. Mr. Carpenter is the architect.

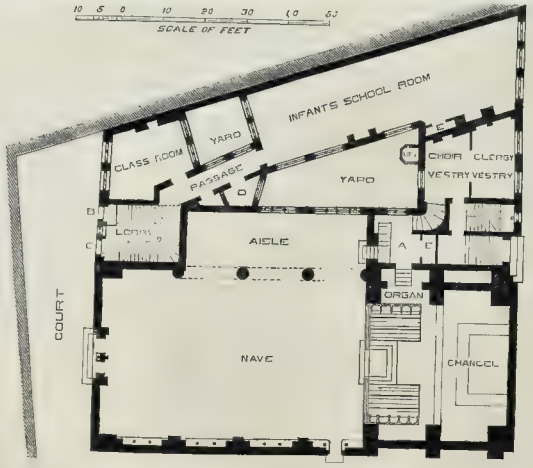
Those who feel interested in the history of the Greek church in London will find some curious details in a series of papers on this subject in the *Ecclesiologist* (1850), xi., 120; and in *Notes and Queries*, 2nd series, vol. xi., 29th June, 1861, p. 509; 3rd series, vol. iii., 28th February, 1863, p. 168 (a list of works by Dr. Constantine Rhodocanacis Chiensis, the celebrated Greek physician and chemist to his Majesty King Charles II.); 3rd series, vol. iii., 28th February, 1863, p. 171. (Mr. D. J. Rhodocanakis, of Arthur-terrace, Manchester, here says that Greek-street was called from the Greeks who built their houses here, and that the church was dedicated in honour of "Saint Mary the Virgin's death." He adds,—"The celebrated Doctor Simonides told me that there were in the interior of the church, on the walls, many curious and interesting Greek inscriptions, of which unfortunately he was able to copy six only, the others having been effaced by the workmen who were whitewashing the walls." Mr. R. promises further information about the Greek colony in England in his "Travels in Greece, &c.," which he intends to publish very soon. Have they been published?) 3rd series, vol. iii., 11th April, 1863, p. 287 (Greek Church in York Buildings, Adelphi, existing in the middle of last century); 3rd series, vol. x., 28th July, 1866, p. 68; 3rd series, vol. xi., 23rd February, 1867, p. 157 (extracts from a MS. copy (written 107 years ago) of the registry books for births, marriages, and deaths, apparently belonging to the Greek Church in Soho-fields, then (1867) in the possession of the Rev. Eugene Popoff, of the Russian Embassy Chapel in Welbeck-street); 3rd series, vol. xii., 31st August, 1867, p. 165.

In conclusion, I return my best thanks to the Rev. R. F. Littledale, LL.D., formerly curate of St. Mary's, Soho; the Rev. Archimandrite Narkissos Morphinos, late priest in charge of the Greek Church, London-wall; Mr. W. H. Overall, Guildhall Library; and Mr. E. F. Rimbault, LL.D., through whose kindness I have been enabled to compile the first complete and correct account of this old Greek-French-English Church, with its curious polyglot history.

Robt. Gwynne, Vicar.

* Not Dudley-court (now Denmark-place), which is on the east side of Crown-street in St. Giles's; but Chapel-place, on the west side, in St. Martin's, and afterwards St. Anne's.





CHURCH OF ST. MARY,
CROWN STREET, SOHO.
Mr. Carpenter, Architect.

REFERENCES.

A. Entrance to church.
B. Boys' entrance.
C. Girls' entrance.
D. Hats and bonnets.
E. Closet.



THE MAHOMEDAN CEMETERY, MALTA.—Mr. E. L. Galizia, Architect.

THE MAHOMEDAN CEMETERY, MALTA.

Our engraving illustrates the new Mahomedan Cemetery, built in Malta at the expense of the Imperial Ottoman Government, on the suggestion of the Chevalier Naoum Duhany, Ottoman Consul-General in that island, who, when the demolition of the ancient cemetery had been determined upon, entered into negotiations with the local Government for the grant of a plot of ground for the formation on it of the new cemetery. A site, accordingly, at a short distance from the wharfs of the Great Harbour extension, and not far from the Roman Catholic Cemetery lately constructed, was granted to the Ottoman Government, who entrusted Mr. E. L. Galizia, the Government architect of that island, with the task of planning, preparing, and carrying out the design of the new cemetery.

This cemetery, rectangular in plan, is double the extent of the old one lately demolished. It has four lofty ornamented minarets in the angles of the boundary wall, with pilasters, surmounted by finials starting at equal intervals along the wall. The chief carriage-entrance from the road is through a porch, surmounted by a dome, with four minarets and spires at the angles, and two windows on each side with iron grating, surmounted also by lofty finials. The Sultan's escutcheon, in white marble, has been fixed in the centre of the fan-light over the carriage-gate. In the inside (which is planted with palm-trees and laid out in walks), and at the further end of the cemetery, two large square rooms, each roofed over with a dome, and separated by a covered arcade, are allotted the one as a mosquée for burial service, and the other as a lodge for cemetery-keeper. In the centre of the arcade, fronting the principal entrance, a large marble tablet has been fixed, with a suitable inscription in French.

The cemetery, which is surrounded on the outside with trees, is enclosed on three of its sides by a passage, and by a dwarf wall regularly built in masonry, and by an iron railing and gate on the side overlooking the road.

This building is constructed entirely of sandstone from the best quarries of Malta, carved throughout, and the style of architecture, being the "Morisco," is a novelty in the island.

We understand that the Sultan has expressed himself pleased with the design of the cemetery, and that he has conferred upon the architect the order of the Mejidié of the fifth class.

THE SANITATION OF HOUSES, ESPECIALLY IN THE MATTER OF DRAINAGE.*

The evils induced by improper systems of drainage, &c., will be best observed by instancing the cases of houses which have from time to time been added to, until they have passed from the chrysalis or cottage condition to that of the winged mansion. When such cases occur, it will be found that the residences will have passed through all the applied gradations of sanitary knowledge. One will be able to trace there the first rude awakening up of the inmates, when something has been found wrong with the patrimonial cesspool in the kitchen, when perhaps it has filled up, choked the tributary drains, and even raised the paving-stones out of their places. When this happened in a village or hamlet, all that the united talent of the place could apparently suggest was merely a more or less partial emptying of the offensive receptacle, and the cleaning out of the drains leading from sink and closet. And, when this had occurred several times, or when the sides caved in, and the contents of the cesspool began to interfere with the economy of the sink or the working of the closet, the fiat would be issued for the excavation of a new dumb-well close by, and for the diversion of the drains to its mouth. The old cesspool was then duly covered with a stone, without being emptied. Very rarely, indeed, were these places cleaned out; the reason, doubtless, being that a disturbance of the deposits would render the absence of the family a matter of absolute necessity, owing to the overwhelming stench. Handy disinfectants for the use of soilmen were then unknown. It was, no doubt, also found cheaper to provide a paving-stone, and cover up the effete matter out of sight. And it is just the same in towns and cities. Only last week, I laid bare in the basement of a house in the West End of London three cesspools, which had been dug in most brotherly proximity, and abandoned in rotation as they filled up with ordure and filth. More than four cart-loads of night-soil were removed, and the bulk of it could not have been disturbed, I am sure, for half a century. Nor would this valuable kitchen-garden stuff, we will call it, have seen daylight now, and been carted to some spoil-bank, where will perhaps stand a future row of houses, had not the rats formed runs in the vicinity of the pits, and allowed horrible smells to invade the house by way of a long-forgotten brick drain.

The reason why these ancient nuisances are found inside houses in towns and cities is not necessarily because the residences were built in rows or terraces, with but little external accommodation; for the same practice held good in country-houses, where space was no object. It was rather owing to the absence of a proper flushing supply, and the improbability that the slops from the kitchen would suffice to carry away the more solid wastes outside the walls of the house. Indeed, they would be certain to be insufficient; for, at the time when these cesspools were excavated, only brick-built drains were used, generally laid with uneven bed, and through the open or perished joints of which, too, most of the fluids percolated.

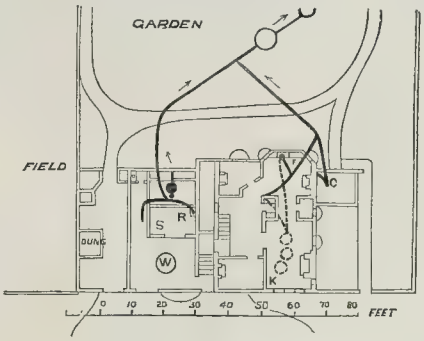


Fig. 1.

The plan (fig. 1) gives the earliest appearance of the basement of a house with which I have lately had to do, and I propose to follow its history up to the present time. At first, it must have been drained in some such manner as indicated by the dotted black lines, and I have drawn the cesspools in the kitchen, K. That cesspools are somewhere there I strongly diagnose. In a similar manner the stables and coach-house, S, were once drained into the cesspool shown by the black spot between the stalls, because I have already discovered that one. Fortunately, the soil was of an impervious nature, or the whole basement would have been sodden throughout, and the well at W poisoned.

Here we have a very fair representation of a house built fifty or sixty years ago; the sinks and, by-and-by, a closet upstairs drained into the intramural cesspools. Successive ones were dug, because there was no overflow provided; nor would an overflow have been of service, since the floating matters would never have run off, but only clogged up the pipe. The stable cesspool acted as a catch-pit for the urine, and the dung was removed to the pit beside the boundary-wall. An old-fashioned, and consequently filthy and unwholesome, privy was also in use by the family or the servants.

We will now pass to the second stage of progress, still regarding the same diagram, and this was reached when the water-closet was introduced, and glazed earthenware pipes. The black lines, which indicate this state of things, will show that the sink and upstairs closet drained down into the garden, picking up the conservatory floor-drain and the drain from the stables, and so on to the first cesspool. When this ran full, the overflow was into another, lower down; and both, which were built with brick, were, of course, sealed down in an air-tight fashion. There could have been no ventilation, except through the trapping-water of the syphons at the foot of the sink-waste, soil-pipe, or rain-water stack. The privy arrangements had been continued probably from a paucity of water.

And here I might interpolate a line or two, to say that it does not follow that the drainage of such a house into a cesspool is necessarily a dangerous proceeding. Provided only that the waste-pipe of the sink be made to deliver on the outside of the house over a suitable trap; provided, too, that the soil-pipe be carried up through the roof, and the highest point of the drain, near the stable at D, ventilated by a shaft up to the eaves, the residence might be deemed a safe one. It would, nevertheless, be wise to ventilate the (outdoor) cesspool by an upright pipe, or the insertion in the cover of a ventilating trap, the charcoal of which could not be saturated by rainfall. Similar or even open ventilators could even be inserted in the arch of the drain, and an earth or ash-closet would improve the surroundings in the stable-yard.

The plan (fig. 2) exhibits the same house under different auspices. The stable buildings at S have been converted into servants' offices and butler's pantry, and the loft over raised to the dignity of sleeping-rooms. A new wing has also been added at A; and, fresh land having been purchased on the stable side, new stables and coach-houses have been erected at B. The laying down of a parish sewer in the main road—the first enhancing agency in the price of land—without doubt led to these improvements, for improvements they certainly were. We will now see how matters were managed from a sanitary point of view.

First of all, then, owing to the introduction of an upstairs closet at D, it became necessary to lay the drain to that point, and also to a servants' closet which was added at E; the latter with a closet situated immediately above it in the hall. The builder began to lead a drain from the sink at F, round the garden front of the house to the old privy, which he raised to the dignity of a water-closet, and then continued the drain-pipes

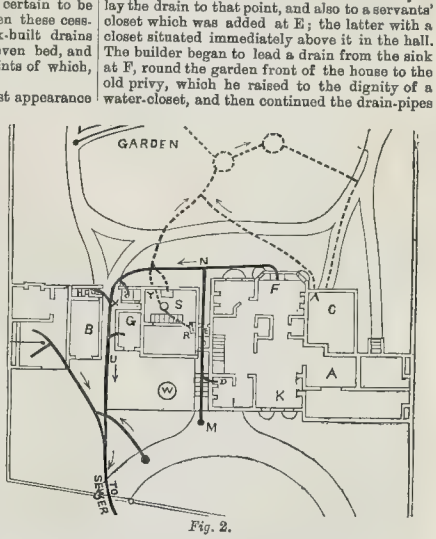


Fig. 2.

to the front of the house, between the old and new stable on to the sewer, draining, of course, the stables in passing, and taking up also some surface drains. All this was proper enough; but he fell into his first error when he led the surface-drain, M, downstairs, and laid pipes on to meet the sink-drain at N. No sewage from the three closets could possibly have passed the rectangular junction at N. Nor was this his only blunder; for, thinking to exclude any sewer-gas from entering the house from the sewer, he interposed in the line of drain a common deep syphon at U.

Another mistake of his was to continue the use of the garden cesspools, and the leading of the rain-water cistern overflow at R, the waste

*By Mr. W. Eassie, C.E. Read before the Public Medicine Section, at the annual meeting of the British Medical Association in Edinburgh.

of the butler's sink at Y, and the floor-drain of the conservatory C in the old drains down to the cesspools. I have since ascertained that he did this to please his client, who objected to the deep digging between M and the sewer in the road. The consequence, however, was, that the gases forced the conservatory floor-trap, and found their way into the drawing-room, invaded the butler's sanctum by way of the sink at Y, and regularly stormed the servants' sleeping-rooms through the cistern overflow at R. He, moreover, forgot to dig up the old stable cesspool at S, and, as a consequence of this, that portion of the domicile smelt very offensively to those whose pituitary membranes were at all sensitive. The non-placement of any ventilating-pipe in the new drains was also a great oversight.

The sins of omission and commission of sanitary law came speedily upon the inmates. First of all, the syphon at U became stopped up, owing to the sluggish flow of the fœcal matter from the closet at X, and the paltriness of the flushing water. The closets at D and E also filled up their portion of the drain. On taking up the drain below the syphon U, I found that during the whole of the time not one particle of sewage had ever reached the main sewer. Some of the drains had also been laid in with a *backward* fall; and, in fact, it became necessary to dismiss the builder and send for the engineer.

After discovering the stoppage and its cause, and after removing some cartloads of ordure out of the extra large-sized pipes, I began to rearrange the whole, as shown upon the plan (fig. 3). I dug out the drain-pipes on the dotted

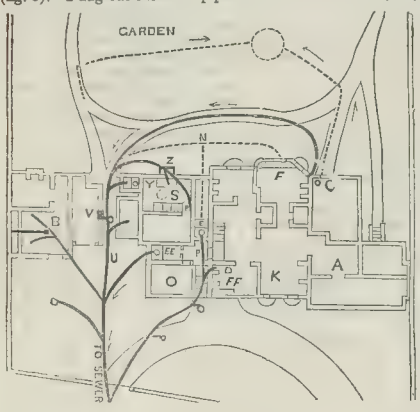


Fig. 3.

line between the points E and N, and transferred the servants' closet from the middle of the house to E E, in the corner of a new coal-cellar, which I built at O. I also carried the drain from the foot of the upstairs water-closets, through the open area P, on to the sewer in the road, and moved the scullery sink from F to the site F F, which was more convenient to the servants. I next dug up the old stable cesspool at S, and led the wastes of the cistern and butler's pantry to an open disconnecting chamber seen at Z, and on to the main drain, easing the bends as I went on. I also laid in a new drain round the garden path from the rain-water stack-pipe in the conservatory C, and so made sure of an occasional good flushing for the new drain. Ventilation for the drain I provided by erecting a shaft at V up the high gable of the new stable building, B, and upon the top of it I fixed a foul-air withdrawing cowl. Very little remains to be done, except to ventilate the soil-pipes and re-lay the basement floor, first searching for the cesspools, and concreting the surface over. An open area round the building would also prove a blessing.

An example of a large-sized mansion, which was partly drained into cesspools and partly otherwise, is given on the plan (fig. 4). The drainage was at first collected as shown by the black lines, and ran down to a lake where the drain was tapped, the sewage falling through a valved grating into the water. The outlet being thus hydraulically sealed, and there being no ventilation in the march of the drain, the gas generated in the drains (which, by the way, were all brick barrel ones) found its way into nearly every room of the house.

The collection from one side of the house commenced with an old rotten brick drain under the housekeeper's room at H, and the state in which it was found sufficiently accounted for

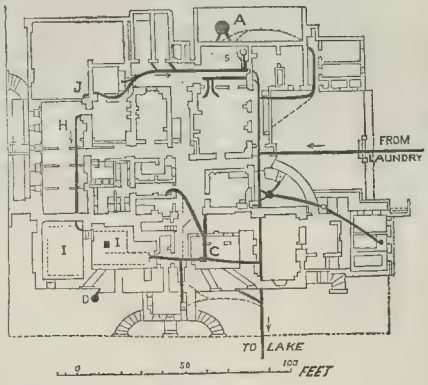


Fig. 4.

certain smells prevalent thereabouts, for dampness, and for the presence of slugs. The rain-water flowing down this drain led to the beer-cellars, I I, and then ran in an open channel (see faint dotted line) as far as the passage, when it entered the store-room, and here, at C, was put a catch-trap, which was relied upon to shut out the air of the drains from the house. It then ran on to the main drain. The smells in this part of the basement were intensified, owing to the beer droppings in the open channelling. The collection from the other side of the house led on from J through the scullery S, a separate pipe being led on from the sink. The water-closets throughout the establishment were eighteen in number, and of these ten drained direct into the drain, and so on to the lake; five into a cesspool in the quadrant-shaped yard, and only the overflow into the drain, and the other three drained into deep cesspools at A and D, excavated in the chalk. And I might here note, as a curious thing, that, upon opening a cesspool cut in the chalk, it will be found that the soil disappears there with an unaccountable rapidity. But, when once the cesspool is emptied, and the porosity of the sides interfered with, it holds water like a common brick cesspool, and becomes a receptacle where disease-germs multiply.

Whatever gas was generated in the main-drain

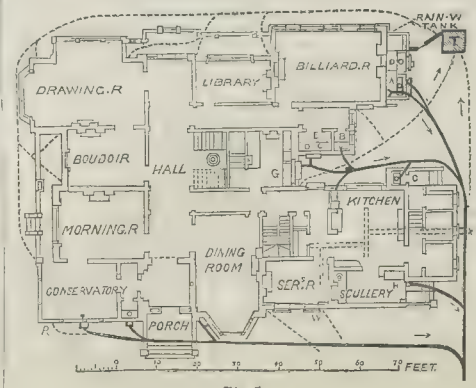


Fig. 5.

or tributaries, or in the large cesspool in the quadrant yard, had, therefore, no escape, save into the house. The cure, therefore, lay in the abolition of this cesspool, the diversion of the drain which led into the catch-pit C outside the house altogether, the ventilating to the roof of the heretofore unventilated soil-pipes, the disconnexion of the house-sinks from the drains, and the taking up of the retardative brick drains, and substitution of earthenware pipes. The large cesspool, A, was also filled up after having been emptied, and the closets which formerly discharged there were drained by way of the dotted line into the main sewer.

The plan (fig. 5) illustrates the ground-floor of a large house, of which I was both architect and engineer; and I exhibit it merely to demonstrate how easy it is to arrange so as to have the whole of the wastes delivering immediately outside the house. The water-closets, A, B, and C, and others above these, the lavatories D and E, and the sinks G and H, have only the exterior wall between them and the drain. Hence none of these drains which convey the soil and other effete matters pass under the house. When it was found advisable to drain the basement,—and here I found it so along the dotted double lines,—I disconnected it from the main drain by interposing over the junction a ventilating shaft at X. The sinks and lavatories also deliver in the open air. To assist in flushing, some rain-water pipes, for instance, R and W, might, under certain circumstances, be led into the soil-drains. But, as a rule, it will be found wise to collect the rain-water as I did, by the dotted single line of drain-pipes to the tank T, for use in the laundry and green-houses. The main walls of the house were also built hollow, and protected from rising damp by a damp-proof course.

GOVERNMENT OF THE STRAND AND ITS NEIGHBOURHOOD.

The present state of the Strand hardly warrants the assurance that a District Board of Works, composed of respectable householders and tradesmen of repute, assisted by the usual number of professional officers, are really and actually responsible for its proper maintenance; and if any one wish to know what the present state of the Strand resembles, let him walk along it in the early morning; let him look carefully at the roadway, at the holes and pitfalls, at the rucks and loose stones,—at the patchwork of paving, in fine, which from St. Mary's to St. Martin's disfigures every yard of the way. During the last two months gangs of workmen have been digging deep into the fœtid soil. The trenches they made have been filled up and the paving stones laid down—anyhow—and sanguine people imagined that the necessary work was completed; but nearly every morning since fresh holes have been dug, fresh mysteries enacted below, and the disturbed places have been patched up again. If this work in the Strand is being done by order of the District Board then no complaint is lawful, for the Board have the right "from time to time . . . . to cause the ground or soil thereof to be raised or lowered and the course of the channels running in, into, or through the same to be turned or altered in such a manner as they think proper." (Met. Local Man. Act, section 98.) But if it is being done by a company or by private individuals, then section 119 of the Metropolis Local Management Act declares that "No company or person shall break up or open the pavement, surface, or soil of any street . . . . without having previously given three days' clear notice to such Vestry or District Board, stating in such notice . . . . *the day on which the work is proposed to be commenced and the time within which it will be completed.*" And these are only two of many sections of an Act passed to prevent, or, at least, moderate, such operations as those which have resulted in the present monstrous state of the Strand.

A multitude of councillors are within call of the vestrymen who rule Covent-garden and the Strand. The Duke of Bedford has his surveyors; the District Board have their surveyor and inspector of nuisances; a host of men belonging to kindred professions have offices in the neighbourhood. Yet there are few parts of London where the Metropolis Local Management Act seems to be more leniently enforced than in the portion under the Strand jurisdiction. Take a case: the Charing-cross Hospital is being enlarged and repaired. In Agar-street a part of the footpavement is now fenced in to its whole width, and, although there is plenty of room, no "convenient platform and handrail . . . . to serve as a footway for passengers" has been constructed. On the contrary, the space which ought to be devoted to such a platform is monopolised by the builder's "plant"; and rubbish is allowed to accumulate on the roadway,—a heap of refuse having remained in the open street during the whole of Friday, Saturday, and Sunday last. In front of the hospital in Chandos-street no protecting hoarding has been thought needful; but foot-passengers pass and repass under a scaffolding projecting over the second-floor windows; and only when a brickbat or loose plank shall have provided one more patient for the hospital under repair will it be found out, possibly, that danger existed. Take another: at the corner of Bedford and Chandos streets a scandal has been perpetuated for several months. Some time ago the old buildings which originally covered this plot of ground were pulled down, and the site was cleared. The adjoining houses were shored up, part of the pavement surrounding two sides of the site was taken up, and a hoarding of old doors and worm-eaten planks was erected in such a manner as to leave an average footway of 18 in. width in Bedford-street, and 24 in. in Chandos-street. This hoarding enclosed the site of new offices for a Civil Service Co-operative store, or some company of a similar description,—at least, so said a notice-board, which was soon afterwards altered. This notice-board then informed the public (at the beginning of this year) that offices suitable to a public company would be built upon the site, and that application was to be made to Messrs. W. Howard & Co., builders, Bow-street. This notice was hastily withdrawn, three weeks ago, after a letter had appeared in the *Builder* complaining of the obstruction which such a hoarding so placed caused to the general public. Now, as only one name has been attached to this hoarding (always excepting that of Mr. Willing, the advertising agent), it is natural to suppose that Messrs. W. Howard & Co. are interested in, or lessees of, the site in question; and Mr. W. Howard is a member of the Strand District Board of Works. To keep the hoarding in its present position, to pull up the pavement, and not reinstate it, and to perpetuate a similar state of things for at least nine months, a licence must have been obtained from Mr. Fry or Mr. Jenkins, the surveyor and the clerk to the Board; that is to say, a member of the Strand District Board is to obtain from the surveyor or the clerk, the servants of that board, a licence to break the law! And the law is very plain. It is enacted in section 122 of the Act,—"It shall not be lawful for any person to erect or set up in any street any hoard or fence . . . . without a licence in writing, first had and obtained from the clerk or surveyor of the vestry or district board of the parish or district in which such street is situate, and every such licence shall state the place where and the *purpose for which* such hoard or fence is to be set up, and the size thereof, and the *time for which it is to be permitted to continue.*" Here is a case, to divers phases of which is attributable the present misgovernment of the metropolis. It is not an instance of collusion between professional men and those employed to carry out works under their control. It is just the contrary; and, in its way, worse. Here is a firm of builders engaged in building operations within the Strand district, and the head of that firm is a member of the Strand District Board,—virtually master of the surveyor, whose duty it is to see that the Metropolis Local Management Act is respected by builders employed within the bounds of his district.

Doubtless a new building will one day be erected upon the ground situate at the corner of Bedford and Chandos streets; but at present there is nothing to show—and there never has been anything to show since the hoarding was erected—that any building operations thereon are imminent. The ground is now used to store away part of a builder's "plant"; and heaps of sand, dirt, and other ingredients which go to make what is sometimes termed mortar, are scattered about it. The hoarding itself has been let to Mr. Willing, the enterprising contractor for street advertisements, and we have heard it asserted that what small profit is obtained thereby goes to Messrs. W. Howard & Co. If it were so, here then would be a member of a District Board of Works directly interested in maintaining a state of things which is opposed to the spirit, if not to the letter, of an Act of Parliament, the provisions of which he has agreed to enforce.

A remedy for abuses of a similar kind is not in the power of individuals. The press must expose them whenever and wherever they occur. Application to a surveyor or an inspector of nuisances is often disagreeable, and still more often fruitless. The enormous increase of business and traffic in and around Covent-garden complicates the work of the parish officials. At night during the opera season the streets are blocked with carriages in waiting, and in the early hours of the morning with market-carts. The business of the market now extends westward almost to Leicester-square, along the Strand, and eastward nearly to Holborn and Lincoln's-inn-Fields. Although there are plenty of scavengers, the streets around Covent-garden are frequently not cleansed of broken vegetables and other matter until after ten o'clock in the morning. On market days small heaps of dirt are carefully composed at intervals along the sides of the different roadways to await a dust-cart, which arrives sometimes at noon, sometimes as late as three hours afterwards. Upon rainy days, no part of London is more filthy than the Strand. There the footways are flooded in places, partly because the rain-water pipes attached to many of the houses actually discharge their contents upon the surface of the pavement (in contravention of the Metropolitan Building Act) beneath and upon the very feet of the passers by. In the present state of municipal government west of Temple Bar, only one course seems feasible,—a course which, though it may add a new danger to the streets, will, at least, cleanse them of the impurities festering hourly upon them. Let the Vestries and District Boards (and particularly the Strand District Board) import a pack of pariah dogs trained in the bazars of Northern India, provide them with jackets for the winter months, and a proper shelter at night-time, and there may be yet a chance of metropolitan London becoming the clean as well as the godly city which vestrymen and patriots who have never crossed the Channel believe it to be.

COTTAGE CONVALESCENT HOME AT QUINTON, BIRMINGHAM.

The Quinton Cottage Convalescent Home is solely for the benefit of the workpeople employed at the Alkali Works of Messrs. Chance Bros., Oldbury, and not for their personal benefit only, as their wives and families can claim its good offices should they stand in need. The first steps towards the carrying into effect of the project were taken at the latter end of 1872, when the *employés* of the Alkali Works were called together, in order that Mr. A. M. Chance might explain his designs to them. Having demonstrated the necessity for an institution of the kind, where persons recovering from sickness could find rest, quietude, and comfort, combined with fresh air and nourishing food,—requisites unattainable at their homes,—Mr. Chance invited consideration of his scheme for the support of an institution which would confer the advantages he had enumerated. It was simply that the workmen would subscribe the small sum of one penny each per week, which he estimated would secure a sufficient fund for the maintenance of a Cottage Home. To the credit of the workpeople, it must be said that they immediately recognised the merit of the project, and unanimously assented to it. Lord Lyttelton afforded them facilities for obtaining a suitable site for the "Home,"—a plot of freehold land, about three-quarters of an acre in extent, situate at Quinton.

The site having been secured, the services of Mr. Alex. Payne, an architect well known in Birmingham, were invoked, and he furnished a design of a pretty cottage; and soon, under the auspices of Mr. Edward Jackson, builder, of Oldbury, the Cottage Home approached completion. It is built substantially, all due precautions having been taken to secure freedom from damp.

The building stands back a short distance from the road. The visitor approaches the house by a short carriage drive, which is kept with the most scrupulous neatness. On entering the porchway of the cottage the visitor will probably be confronted by the matron, Mrs. Colbourne. To the right of the small entrance-hall is the dining-room, a small but pleasant room, with the kitchen and scullery in the rear. On the left is a comfortable apartment, with windows commanding an extensive and lovely view of the country. This is used as a sitting-room by the inmates, and very cosy and inviting it looks. To the rear of this room is a small apartment devoted to such of the inmates as may wish to indulge in what is generally known as the "fragrant weed." Another small sitting-room completes the list of apartments on the ground-floor. Above are bed-rooms, all comfortable, and airy and light, and from all of which the surrounding country lies open to view. A staircase of stained deal, with balustrades, simply but neatly designed, leads to the upper story, the stairs being polished with the greatest care. No part of the house is papered. The ceilings are white, and the walls washed of a pale grey tint. The design, in the fitting up of the Cottage Home, was to provide merely such articles as any moderately careful working-man might be able to obtain for himself; and no one can question the worthiness of the plan. Around the south-east and south-west sides of the cottage runs a verandah, which gives sheltered access to the smoking-room before referred to, and which, in addition, makes a pleasing promenade. On the south-west side of the house is a miniature lawn. The main portion of the grounds, however, lies in the rear of the house. A good part of this space is devoted to the purposes of a kitchen garden, and here are grown sufficient vegetables to supply the whole of the needs of the institution.

The Home contains accommodation for eight inmates, four males and four females. A neat code of rules shows that the inmates take meals together at certain prescribed hours, under the presidency of the matron. Accordingly, the diet of the house, whilst being liberal, is of the plainest and most wholesome and nourishing kind.

The building and furniture cost about 1,200*l.*, and half of this sum was voluntarily subscribed by the workpeople, the Messrs. Chance generously providing the remainder. As to the maintenance, it has already been stated that the workmen subscribe the small sum of one penny per week for that purpose. About 600 men are employed at the alkali works, and this small contribution, with an annual donation of twenty guineas by the firm, is found sufficient to meet all requirements. Thus, for one penny per week, the workman secures for himself and family the advantages of a beautiful rural retreat in case of sickness, with every comfort and care, until perfect health is restored. More than this, the "Home" is regarded by the workmen as a kind of country house which they may visit whenever they may think fit.

The affairs of the institution are managed by a committee of seven, Mr. A. M. Chance being chairman, and the remainder of the committee consisting of three foremen and three workmen.

The success of the Home, indeed, and the good it is accomplishing, necessarily awake reflections as to the possibility of the establishment of similar institutions for the benefit of other places.

BLAST FURNACE HEARTHS.

"Improvements in Blast Furnace Hearths" formed the subject of a paper read by Mr. Charles Wood, of the Tees Ironworks, Middlesbrough, at the recent meeting of the Iron and Steel Institute at Manchester. The present types, he said, of furnace hearths and crucibles in use in the Cleveland district were large and very thick, and the thickness of the brickwork about the well and boshes retains the heat, and is, in consequence, burnt away rapidly, causing the furnaces to work badly, through the blast not being sufficiently concentrated. Where the brickwork of the walls and well is thinner the furnaces last much longer, and work more regularly; and where this system is in operation, furnaces are kept in blast as long as twenty years, whilst the Cleveland furnaces, after six or eight years, are said to require to be re-lined, and to have new hearths. About 1860 closed hearths were first patented in England with thin walls round the hearth, and the slag was drawn off through a hole over the tapping-hole. Mr. Barrett, of Norton, near Stockton-on-Tees, in 1862, filled his fore-hearths up with fire-clay, and has ever since worked his furnaces with closed hearths, using in his large furnaces two tapping-holes and

two slagging-holes, this being the first example of working coke furnaces in the North of England with a closed front. Mr. Hill, of Mr. Thomas Vaughan's furnaces at South Bank, followed, soon after this, by building up the fore-hearth with brickwork, and recessing his tapping-hole so as to be near the inside of the furnace, certainly a great improvement; and Mr. Dobbs, Mr. Hill's successor, has again improved upon this plan by separating his slag-hole from his tapping-hole. Mr. Wood then gave a description of Lurmann's well-known closed hearth system, which consists of the hearth being built up continuously all round the well, the tapping-hole having a recessed water-plate for tapping, and a kind of tymp-plate, having a round hole in it, into which is inserted a small tuyere, about 1½ in. diameter, through which the slag is discharged continuously. This tuyere being in bronze, water cooled, lasts many months, and the expense of working it is considered very little when compared with the old open-hearth system. At some furnaces it is working very successfully; but at the same time there are many where it has been abandoned through defective working, and through the prejudice of the men. It was pointed out that to insure good working, blast-furnace hearths should be preserved in form, that the boshes should not be allowed to burn away, and that the only way to do this was to keep the hearth cool by water-blocks, and the boshes by thin walls, relying upon the air as a cooling medium.

TWO HUNDRED AND FIFTY TONS OF BRICK WALL MOVED.

Last July the Society of St. Vincent de Paul determined to build on the vacant lots in the rear of Twenty-third street building. A survey of the land being made, it was discovered that the wall of the five-story brick livery stable adjoining encroached 18 in. on their property. The owner was notified to remove the wall to the eastward, and Weeks & Brothers, builders, were authorised to tear it down and rebuild. Mr. Weeks did not like to pull down the wall, and proposed to remove it bodily. The plan was ratified by several contractors, while others declared it could not be safely or successfully carried out.

Nowhere could be found in the history of building or house-moving an instance where a brick wall had been detached from a building and moved. The wall was thirty years old, and built of second-hand brick; 70 ft. high, about the same length, 16 in. wide at the base, and about 12 in. at the top. Its weight was 250 tons. Ten yellow-pine needles, 12 in. by 12 in., planed on the upper surface, were let in horizontally under the wall, at equal distances, just above the foundation, and at right angles to its face. The upper surface of each needle was profusely greased, and a smaller needle with its planed surface down, inserted along each larger one. Spur-braces fixed at the foot in these upper timbers held the wall plumb. The jack-screws, working horizontally were set at the ends of the ten upper needles. This being done, an 18 in. slice was taken off vertically from the stable building just inside the wall. At seven o'clock in the morning a man at each jack-screw began to work it, and the wall moved an inch safely. At this time one of the ten men did not work his jack as fast as the rest. The overseers were a little nervous at this; but the wall carried the lazy needle along with the rest. By ten o'clock the 4,900 square feet of wall were pushed up tight against the open side of the stable, and the whole was perfectly plumb and unshaken. The men in the stables pursued their usual avocations during this performance.—*The New York "World."*

PICTURES *versus* GLASS IN ST. PAUL'S.

Sir,—That the proper mode of decorating St. Paul's is by mural painting has been settled time out of mind. I am but supporting the prevailing opinion, although from long practical experience in mural decoration I am myself convinced that it is the right thing to be adopted. During the controversy on this subject which raged during the last winter, I believe all the writers agreed that that was the proper thing to be done, and that Wren himself intended his work to be vivified with mural painting. That this was his intention is fully confirmed by Emmet's engraving of the interior of St. Paul's, which engraving was, in all probability, executed under the great architect's supervision; for therein we may discover indications of mural decoration, but none, no, not the slightest hint, at painted glass. Should it, however, be argued that Wren's genius was essentialy mechanical, that he had never seen the great mural works in Italy, and that little was known of fine art in the England of his day, yet it will be curious to observe, in the engraving referred to, that his instinct was in accordance with the practice of the great Italian masters. But that St. Paul's should be decorated with mural painting was not merely the opinion of Wren, but of the artists who succeeded him. Thornhill approved, and attempted to carry out, the wishes of Wren; and Sir Joshua Reynolds, Barry, &c., desired and volunteered to carry the project of pictorial embellishment still further.

As to painted windows, we can only stop to inquire whether the gloom of the cathedral would be increased or diminished by their adoption? On that point there can be but one opinion; the general light would, in all probability, be lowered 50 per cent., and their deterioration would be aggravated by the lodgment which the "leading" would afford for soot and dust. The windows of St. Paul's ought to be filled with either a semi-ground, grisailled, or slightly milky glass, just sufficient to prevent external things from being seen through it, while, at the same time, admitting a soft radiance, divested of irritant colour, to be diffused through the building. This would isolate the sacred edifice from the external world. Each window might be the gift of a town or city in England, or of one of the City Companies. The only colour permitted in these windows should be a small escutcheon and legend to indicate the donor.

I am not an admirer of Thornhill's art, but I cannot neglect this opportunity of maintaining that no better decorative disposition of the surface of the dome could be devised and substituted for that which he has given us. We have but to introduce colour and better art for the present monochrome "Acts of the Apostles," and a gold ground instead of the sky seen through the painted architectural framing, and the effect would be magnificent. W. C. T.

A RAINY SUMMER.

Sir,—In a state of ignorance of the subject upon which I presume to address you, and on the principle that folly steps in where a wise man dare not enter, I offer the following explanation of the rain which has damaged our harvest this year, and disappointed the hopes of a "day in the country," nourished by so many town-bred school children.

The influence of forests on climate has not only been a subject of investigation of late years, but has been suspected for many years past. I remember, after a perusal dating possibly half a century back, a statement in one of several books issued by several lady authors for the instruction of that rising generation which is now grey headed, if not altogether extinct,—authors like Maria Edgeworth, Letitia Barbauld, Sarah Trimmer, and Priscilla Wakefield,—I remember a statement, I say, that some one had conceived a plan for inviting the descent of showers of rain in a period of drought, by erecting tall poles in the earth.

I wish now to point out that this inventor, if still living, might witness on the most magnificent scale the realisation of his project. He might witness telegraph-posts on the tops of houses, telegraph-posts on the tops of embankments. He might witness an extensive rigging of these forests of stumps with electrical wires, well qualified to supply the place of natural foliage in the vigour of its energy, and who shall say that it may not overstock the demand within its sphere of influence? Thus supposing a large public assembly at Birmingham or Bristol provoke a display of oratory, taxing the powers of the wires to the utmost with the conveyance of the deluge of words, who shall say that the electric effect on the clouds shall not be a deluge of rain on the earth?

There is one particular, indeed, in which the course of nature, if not quite inverted, is set at right angles; a difference somewhat like what of late years has been termed the Arcuated and the Trabeated in architecture. For whereas natural trees form vertical conductors down to the earth, the course of electricity is carefully kept horizontal by the insulators in the telegraph. But it is too early to speak of detail like this. G. M.

WHO SHALL BE FOREMAN?

Sir,—I did not intend to trouble you with a communication on the above subject until I saw, in the current issue of your valuable paper, a query put forward by "A Bricklayer Clerk of Works," viz., "Are not adult schools open to the bricklayer the same as the carpenter?" &c. No doubt they are, but the facts go to show that while the bricklayers do not avail themselves of their opportunities, the carpenters do, as the following statement will prove. The classes named below are those conducted by Mr. Busbridge, and are in connexion with the Science and Art Department, South Kensington. I send it to you, as it clearly proves which class of men in the building trade are most anxious for success, and whose energies are rewarded every week by seeing in the advertisement columns of your paper,—"Carpenter and joiner preferred," while the others do nought but look on and grumble, while the "best man wins."

1874-75. Name of Class.	Branch to which Students belong. Carpenter.	Mason.	Bricklayer.
Marylebone.....	41	1	1
Westminster ...	55	3	0
Paddington ...	36	0	3
Battersea	19	5	0
Lambeth	67	14	1
Somers-town ...	52	0	2
Deptford.....	17	0	2
Kennington.....	18	0	1
Hoxton	13	0	1
	318	23	11

Perhaps it might be thought by some that the instruction given at these classes is better suited to carpenters than bricklayers; but if any one would take the trouble to look over the questions on the examination papers he would find that they are fairly distributed among the various branches, and the student is told that unless he shows a good general knowledge of construction he has no chance of passing, especially in the higher stages. Again, it may be said by some that the above list speaks only of a few London classes conducted by one teacher, but if you took the classes throughout the country the result would be different. I do not believe it would, and I give as a reason for my belief the following fact.

There are 200 classes throughout the United Kingdom, 400 prizes are awarded to them. The above list of classes, together with one held at Woolwich by the same teacher, take 200, or one-half of the whole number awarded; so that if the bricklayers in the provinces took greater interest in drawing than they do in London (and I am assured that such is not the case), they would still be a long way behind the carpenters and joiners.

If these statements should have the effect of inducing bricklayers throughout the country to become more alive to their own interests, I have no doubt they can soon alter this state of things, and by so doing they will not only benefit themselves, but will do lasting good to the nation; because I believe the enlightenment of the working classes will do more than anything else can do to increase the prosperity of the country.

A Carpenter who has passed in Honours.

Sir,—As a constant reader of the *Builder*, I have been much interested in the discussion that has been carried on in your columns for the past few weeks, as to which of the building trades should take the precedence in the management of buildings; and I hope it may not be without good results, and have the desired effect of stimulating workmen to improve themselves by studying the technicalities of their various trades. We know it is impossible for all to become foremen, but it is possible for all to become better workmen; and we also know that there is room for a vast deal of improvement in many of those who act as foremen, for I am sorry to say there are too many in all branches of the building trades who are lamentably deficient in technical education. F. C.

FLOORS.

Sir,—Our rooms and, especially bedrooms, would be more wholesome, and gain in appearance, if the French system of *marqueterie* floors, with partial covering, were adopted, instead of carpeting every inch of them, which makes a dance a difficulty, floor-cleaning an undertaking, the air stuffy, and the use of a bath objectionable. G. S.

THE SHEFFIELD PROPOSED NEW WORKHOUSE.

The Sheffield Board of Guardians some months since adopted plans, prepared by Mr. Hall, a local architect, for a new workhouse for 1,800 inmates. The plans were duly submitted to the Local Government Board, who, after having them under consideration during a lengthened period, invited some of the guardians to attend in London to discuss the arrangement of the contemplated buildings with Dr. Mouat, one of their inspectors, and Mr. P. G. Smith, of the architect's department. A large deputation of guardians, accompanied by their architect, availed themselves of the invitation, and were received at Whitehall on the 23rd ult., by the above-named gentlemen and Mr. Cane, the district inspector. Dr. Mouat explained to the deputation the objections on sanitary grounds to the aggregation of large numbers of persons in one building, and pointed out the difficulty of keeping the inmates healthy in a building of the size proposed for the principal block, which was to hold 750 aged and able-bodied inmates besides lunatics and children, and would be about 900 ft. long. Mr. Smith recommended that the main block should be cut up into distinct blocks or pavilions, and explained the advantages of such a system. The pavilion system was also recommended for the lunatic wards and general infirmary, and one-story huts, partaking more of the character of temporary buildings, for the infectious wards. The schools were recommended to be placed entirely distinct and away from the rest of the workhouse, and arranged in blocks or "homes" for about 50 children each. After considerable discussion it was arranged that Dr. Mouat and Mr. Smith should visit Sheffield to inspect the site. The guardians were then invited to visit the new workhouse at Lambeth, where the separate block system has been mainly adopted, and the various arrangements there were explained by the master. The conference terminated with a cordial vote of thanks to the officers of the Local Government Board for the valuable advice they had tendered.

THE DARESBURY REREDOS CASE.

At the meeting of the Chester Consistory Court, on the 23rd ult., the cause of Jones *v.* The Incumbent and Churchwardens of Daresbury came on for hearing. In his affidavit, Mr. Jones stated that he had been actuated in taking the present proceedings by a feeling that the reredos, containing the scourge, the hammer, the nails, the pincers, the lamb, the crown of thorns, the ladder, the spear, the reed, the sponge, is unmistakably idolatrous, and was not an erection consistent with the doctrines of the Reformed and Established Church, or with the second commandment; and that, if allowed to remain, it might have the effect of encouraging superstitious worship. In reply, affidavits were read in which it was alleged that a considerable part of the materials of the old reredos had been used in the erection of the present one, and the reredos proposed to be erected by Mr. Jones was neither in style nor material identical with the old reredos. When the design of the reredos was brought before the vestry meeting, at which Mr. Jones was present, he offered no objection to it; only stating that he wished it should be put up by the Restoration Committee, and not at the cost of Mr. Gilbert Greenall. In reference to the charge that the reredos was idolatrous, Mr. J. Douglas, architect, stated that he had examined the emblems, and none of them were in greater relief than ⅛ in. The case was adjourned to the 14th inst., when the arguments of counsel will be heard.

A CLERK OF WORKS EXCEEDING HIS DUTY.

The General Purposes Committee of the Wrexham Town Council have lately been thrown into a state of great consternation by the contractor for the new cemetery buildings, Mr. Clark, refusing to go on with the works unless he was paid a sum of 240*l.*, for which the architect, Mr. Turner, had already certified. The committee had forgotten the terms of their contract with Mr. Clark, by which they were bound, as is usually the case, to pay whatever sums were certified by the architect as being due to the contractor. They (or some of them, at least) seem to have eagerly caught at a statement made by the clerk of the works that the contractor had already been overpaid to the extent of 236*l.*, and made this the ground of their refusal to pay the 240*l.* certified for by the architect. The contractor's threat to stop the works determined the mayor and town clerk to call a special meeting of the committee, at which the contractor, clerk of the works, and architect were requested to attend. The contractor and clerk of the works were present, but the architect resented the indignity of being called upon to reply to the imputation cast upon him by the clerk of the works, and did not put in an appearance, conscious of having acted in a straightforward and professional manner. After an acrimonious discussion, in which one or two of the members of the committee exhibited an amount of intelligence in striking contrast to that of the majority of their *confrères*, the Town Clerk advised the committee that they must pay the amount certified by Mr. Turner. The clerk of the works, who appears to have been an especial *protégé* of some of the members of the committee, seems to have had an exaggerated idea of the importance of his office, and to have been ignorant of the fact that the duties of a clerk of the works are confined to seeing that the works are properly carried out with good materials and workmanship, and in accordance with the instructions and drawings of the architect, the architect alone being responsible for certificates for payment for work done.

NEW CEMETERIES.

Clee (*Lincolnshire*).—A new cemetery is about to be provided for the parish of Clee, including Cleethorpes, Weelsby, and Thuncoe, and Mr. Wallis, of Louth, has been instructed to prepare plans for laying out the ground. The site fixed upon is at Crow Hill, Cleethorpes, and is eight acres in extent.

Nantwich.—The ground of the new cemetery at Nantwich is now being laid out, and Messrs. Madeley & Heywood, the contractors, have commenced the erection of the chapel and lodge.

Cromford (*Derbyshire*).—The works in connexion with the formation of the new cemetery at Cromford have been commenced. The contract for building chapel, lodge, and boundary walls has been let to Mr. James Walker, of Bolehill, and that for the woodwork to Messrs. Killer, of Wirksworth.

DESTRUCTION OF ANTIQUITIES IN BRITTANY.

Sir,—In his interesting paper on "Brittany," read before the Royal Institute of British Architects, Mr. Brewer mentioned, in terms of great praise, the Curé of Guimilian, who, by his exertions and interviews with the Minister at Paris, saved the very fine Renaissance font-canopy of his church, when the stalls and other rich carved work were being swept away by the local "keepers of the fabric." Unfortunately this conservative spirit seems scarce in Brittany; certainly that Curé's neighbours at Landivisian do not follow the example set before them by him. There, standing up grandly on a hill, is one of the fine Late Gothic churches characteristic of that district; it is now undergoing an ignorant "restoration"! and when visiting it last week I found the churchyard strewed with the timbers of its fine old roofs, new kingpost roofs having been erected in their stead. The old roofs were on our own Cornish and Devonshire type, with boarded barrel-vaults, divided by moulded ribs, with richly-carved purlins, ridges, cornices, and tie-beams, these last terminating in the favourite Breton fashion by grand dragons' heads. All that needed doing to repair these roofs was to splice new ends on to some of the tie-beams, the timbers being as hard and sound as the day they were put up. Unfortunately, it is now too late, and those fine old roofs are gone for ever. One is the more surprised, after seeing the really careful restorations at the Cathedral of St. Pol de Leon, not many miles away.

I noticed at Carnac also an instance of neglect on the part of some one to keep proper guard over its famous Druidical avenues of stones. I saw a man diligently at work digging out stones and sand in their midst, and on remarking to him that it was a dangerous practice, he said he always took care not to throw down the stones, as he would be fined if he did so, *but he was allowed to get as near to them as he could!* He pointed out some great stones resting on a basis of sand no larger than their own diameter! Their future fate was beyond a doubt, for a short season of wet weather would wash the sand from under them, and lay them prostrate with their fellows! Surely, when our own Avebury and Stonehenge are so carefully protected, one would expect the French Government to take care that their greatest Druidical monument should be secured from such bad usage.

R. Herbert Carpenter.

NEW DRINKING FOUNTAIN, MANCHESTER.

Sir,—In your issue of the 18th ult. the above work was described as having been executed in polished Aberdeen granite. We shall be obliged by your correcting this statement. The whole of the work was supplied by us from the Carnsew quarries in this neighbourhood.

Penryn, John Freeman & Sons.

UNDER THE ROAD IN MANCHESTER.

Sir,—A very remarkable work is now in course of execution in Manchester, one which is the subject of very general comment and remark. In Cross-street, facing the portico of the Royal Exchange, stand the publishing and printing offices of the *Manchester Guardian*, and a hoarding recently erected in front of that building surrounds an excavation in which a high-pressure steam boiler has been fixed, projecting into the street six yards at least from the building line, and several feet under the setts of the roadway beyond the curb of the pavement. Iron girders are being fixed over the boiler to support the pavement, and no doubt, by-and-by, the place will have an appearance of solidity equal to other parts of the street. But I fancy that in the future, I, and others who think as I do, will in the course of our journeys in that street, follow the example of the Levite in the parable, and pass by on the other side! We should like to be informed, and perhaps our city surveyor will afford us the information, how it is that while the public are not permitted to build a covered window area more than 18 in. into the street, and such a harmless thing as a baker's oven is absolutely prohibited, the proprietors of the *Guardian* are permitted to put a steam boiler there?

Notetaker.

HANDRAILING.

Had your correspondent "A. B." read the article in the *Builder* of the 28th ult. rightly, he would have seen that by Mr. Jones's work any wreath can be cut out square from a plank the thickness of the diameter of the rail; so that if the section of the rail was inclosed in a circle 3 in. in diameter, the wreath for any number of winding-stairs would be cut out 3 in. wide and 3 in. thick, which I think "A. B." will not find described in any other work on handrailing.

As for the square cut being practised in the metropolis by efficient staircase hands for many years, it is not very surprising, since Mr. Jones discovered and taught efficient staircase hands the method of cutting rails out square twenty-eight years since.

R. J.

CONTRACTS FOR "PERSONAL SERVICE."

At the Lambeth Police Court, on the 21st ult., Mr. Pierrepoint, a builder at Peckham, applied for a summons against a person named Kent, who had entered into a contract with him to plaster some houses, which he had left unfinished after an advance of money. On a former occasion Mr. Chance (the magistrate) had referred the applicant to a county court, on the ground that it was not a contract for "personal service," as mentioned in the new Act, but the work might have been performed by others. Mr. Pierrepoint said he found a summons could not be heard in a county court for a month, and he was referred to this court, as it was necessary to complete the work, and he required security to be given by Kent either to do the work or pay the money. The question now raised was whether the Court had jurisdiction, as the contract did not specify "personal service," and the point was important under the Employers and Workmen Act.

Mr. Chance held that he had no jurisdiction, as the contract was not for "personal service." In future contracts, if "personal service" was inserted, although the work was done by others, the Court would have jurisdiction under the new law.

THE CUSTOM OF THE TRADE.

ALCHIN *v.* TYLER.

This was an action brought in the Bloomsbury County Court, on Friday last, before Mr. Judge Russell, in which the plaintiff, a sawyer, sued the defendant, a builder and timber merchant, carrying on business in Bonny-street, Camden-town, to recover the sum of 12*s*, for two days' services. The plaintiff stated that on the 21st of July last, he entered into the defendant's employment, and two days after gave the defendant notice to quit, as he wished to re-enter the service of Messrs. Brooks & Co., his former employers, and that on informing his employer of his intention was told to leave at once. On the plaintiff, on the following Saturday, applying for his wages accruing due, he was told that he would not be paid, and that if he wanted his money he had better apply to the County Court for it, hence the present action.

Mr. Charles Williams, solicitor, in conducting the defendant's case, said that it was the custom of the trade to give a week's notice, and that the plaintiff, having discharged himself at a moment's notice, was not entitled to recover, and called the defendant, who said that the plaintiff, after being two days in his employment, left his work in an unfinished state at a moment's notice, and returned to his previous master's employment. This conduct had caused him (the defendant) considerable expense and annoyance, as he was unable to carry out his contracts on a particular day owing to the difficulty he had experi-

enced in obtaining hands to do the work. The plaintiff's wages were 6s. per day, payable weekly, and it was the custom of the trade to work on till Saturday, and be paid on that day.

The learned Judge said that he considered the plaintiff had acted very unfairly towards the defendant in the manner he had, and as no custom of the trade had been proved by the plaintiff, judgment would be for the defendant, with costs.

CATHEDRAL RESTORATION.

Salisbury.—A meeting of the Salisbury Cathedral Restoration Committee was held at the Deanery on the 20th ult., when Sir Gilbert Scott attended. The progress of the works was reported to be satisfactory, and it is hoped that the choir may be re-opened for divine service by Michaelmas, 1876, or, at the latest, by the following Christmas. The treasurer reported that the amount of subscriptions, in response to the recent appeal, was 6,012*l.* 12s., and the balance remaining, after defraying the cost of the works now in progress, is 2,000*l.*

Worcester.—By way of completing the restoration of Worcester Cathedral, or rather as supplementary to it, two additional features have just been opened to public view. These are the erection of new altar-rails, the gift of the Countess of Dudley, and the filling in of the great west window of the cathedral with stained glass, the gift of the Earl of Dudley. Both are from designs by Sir Gilbert Scott, R.A. The altar-rails are of brass. The window is by Messrs. Hardman, of Birmingham. The subject is the Creation. The six days' work is represented in the outer triplets (three on each side), and the sequel of the Creation,—the story of Adam and Eve and their fall,—is continued in the two central lights. Above all, in the great wheel of the tracery, is represented the seventh day,—that of rest. The glass is of thick antique quality, not "antiquated" in the painting, but left to acquire by time and weather the mellowness of tone that age can give.

CHURCH BUILDING NEWS.

Stonehaven.—The foundation-stone of the new Episcopal Church of St. James, Stonehaven, was laid on the 25th ult. by the Bishop of Brechin. The architect is Mr. R. Anderson, of Edinburgh, and the building will comprise nave, aisles, choir, chancel, and tower and spire. Accommodation will be provided for 450 worshippers. The church will be 77 ft. 4 in. in length, 52 ft. 6 in. in breadth, and the height from floor to apex of the roof will be 47 ft. The height to the top of the spire will be 115 ft. The style is Early English. The stone used is from Brechin and Newmill. The total cost will be between 7,000*l.* and 8,000*l.*, but at present only the nave and aisles are being proceeded with, at a cost of about 3,500*l.* The contractors are:—Alexander James, Bervie, mason work; Robert Weir, Stonehaven, carpenter work; Robert Burness, Stonehaven, slater work; Alexander Cormack, Stonehaven, plaster work; and John Nicol, Stonehaven, plumber work.

Gedney Hill.—The church of Holy Trinity, Gedney Hill, Lincolnshire, was re-opened on the 16th ult. The church, a most interesting structure, has been thoroughly restored under the superintendence of Mr. James Fowler, architect, Louth, at a cost of 1,880*l.*

Surbiton.—The new church of St. Matthew, Surbiton (which has been erected at the cost of Mr. William Coulthurst, in memory of his sister), was consecrated on the 21st ult. The church consists of nave, aisles, and transepts, with semicircular apse with roof of stone groining, 40 ft. high. The nave is 94 ft. long, and 24 ft. wide, the height of the roof being 61 ft. from floor to ridge. The walls are of Kentish rag stone, faced internally with yellow bricks. The windows, arches, and other dressings are of Bath stone. The lower part of the tower forms the principal entrance to the church. The height of the spire, when completed, will be 170 ft. The cost of the church, with its fittings, is about 15,500*l.*, exclusive of the organ, which was built by Mr. Hedgland, of Gower-street, at a cost of 1,000*l.* The stained-glass windows were executed by Messrs. Powell, of Whitefriars, the five windows of the apse from drawings by Holliday. The church fittings were executed by Messrs. Cox & Son, from the architect's designs. The pulpit, reading-desk, and chancel stalls are of oak. The font is in Caen stone, with serpentine marble shafts. The whole of the carving has been carried out by Mr. Thomas Earp, of Kennington-road; and the decorations by Messrs. Pike & Son, of Surbiton. Mr. C. L. Luck is the architect, and the work has been carried out by Messrs. Manley & Rogers. Mr. Vare has acted as clerk of the works. Mr. Coulthurst has also, at a further expense of some 3,500*l.*, provided a parsonage.

Heighington.—Heighington Church, near Darlington, was re-opened on Michaelmas Day, after restoration, under the direction of Mr. Ewan Christian. The work was commenced in April, 1874, by taking down the galleries, square pews, ceiling, &c. The additions made to the church comprise a new north aisle, organ-chamber, south porch, and a roof of high pitch following the lines of the original roof as marked on the old Norman tower. The chancel arch is a fine specimen of Early Norman work; and an arch at the west end at the entrance to the tower, hitherto blocked by the gallery, is scarcely inferior. The pulpit, of richly-carved oak, is of the fourteenth century. The whole of the interior of the church has been fitted with open sittings, those in the chancel being of oak. Three stained windows have been added,—one in the north aisle by Clayton & Bell, to the memory of Mr. and Mrs. Aylmer, and their eldest son, killed in the dreadful railway accident at Abergele; the other two by Heaton, Butler, & Bayne, in the chancel, memorial windows presented by Captain Barritt.

Newmarket.—On the 17th inst., at a meeting of the committee for the erection of the proposed new church in All Saints' parish, Newmarket, in memory of the late Lord George Manners, the plans and specifications prepared by Mr. Chambers, architect, of Lowestoft, were unanimously adopted.

Adforton.—A new mission church at Adforton, Herefordshire, was opened on the 23rd ult. The church, which is Gothic in style, will seat about 150 persons, at a cost of 400*l.* Mr. J. P. Seddon, of London, is the architect; and Mr. Ingram, of Leintwardine, the contractor.

Slough.—It is intended to enlarge and restore the parish church of Slough, under the direction of Sir Gilbert Scott. It is proposed to erect a transept and chancel at the east end, near Church-street. The transept will provide increased accommodation for 350 people. The present high pews will be removed, and the whole of the building fitted with open benches. The materials used in the construction of the addition will be brick, with stone dressings.

DISSENTING CHURCH-BUILDING NEWS.

Ocker-hill.—A new Wesleyan chapel at Ockerhill was opened on the 7th ult. The building is constructed to seat between 500 and 600 persons. It is in the Grecian style, and has been erected from the plans of Messrs. Saxton Brothers, architects, of Wednesbury, by Mr. John Trow, of Wednesbury. The cost will be about 2,600*l.*

Hatfield Peveril.—A new Wesleyan chapel at Hatfield Peveril, Essex, was opened on the 9th ult. The building is of red brick, and will accommodate 230 persons, at a cost of about 1,000*l.* The architect is Mr. A. C. Lewis, of Woodford, and the contractor Mr. H. Gozzett, of Maldon.

Earl's Barton.—The new Baptist chapel at Earl's Barton has just been decorated by Messrs. Smith Brothers, of Northampton, under the direction of Mr. D. Sheffield. The decorations have been studiously carried out to accord with the architecture of the chapel, which is Gothic in character.

Northampton.—A new chapel for the Plymouth Brethren, capable of seating 300 persons, has just been erected in Duke-street. It is built of red brick, with white arches, and is provided with open deal seats, with slanting backs. The floor is also of deal, the roof being match-boarded, stained, and varnished. The total cost was 500*l.* Mr. Poole was the builder.

Goole.—The foundation-stone of a new Congregational church, to be known as Christ Church, and situated in the Hook-road, Goole, was laid by Mr. C. H. Denham, of Halifax, on the 14th ult. The edifice, which is designed by Mr. T. Porter, of Westminster-chambers, London, will accommodate nearly 500 persons. A free treatment of the Decorated style of Gothic architecture has been adopted.

Gloucester.—A new Congregational chapel, called Tyndale Chapel, in commemoration of William Tyndale, the translator of the Scriptures, was opened at Gloucester on the 7th ult. Only a portion of the chapel, giving accommodation for 500 persons, has been erected, but when completed it will accommodate 750 persons. The style is Early Gothic, the walling being of Painswick stone lined with brick. The principal entrance is in Barton-street, and consists of a deeply-recessed doorway, with moulded jambs and arch, in the gable over which are three traceried windows. A ventilating *flèche* rising from the centre of the main roof is a prominent feature. The cost, exclusive of the land, is 2,800*l.* The architect is Mr. Tait, of Leicester; and Mr. Joseph Meredith, of Gloucester, was the builder.

Books Received.

Elementary Mechanics. By Philip Magnus, B.Sc., B.A. Longmans, Green, & Co. 1875.

Most writers on mechanics begin with an explanation of the conditions of matter at rest,—with statics; but the author takes a different view, and one which we think to be the better. He begins with motion, as being the normal condition, not only of life, but of that which we call inert matter. Motion, indeed, is common to everything, whether it be organic or inorganic matter. There is no absolute rest. The ordinary condition of equilibrium is arrested motion, producing pressure, and the arrested body resumes its natural condition of motion as soon as the restraining force fails to hold it. Therefore dynamics is to be considered before statics. In the book before us the author measures motion and measures force, and shows its application to useful work by means of machines. Then he comes to the theory of equilibrium. "Every variety of matter seems to be endowed with the faculty of movement. The stone falls to the ground, the flower opens its petals to the sun, and living creatures of every size and shape move in endless ways."

Steam and the Steam Engine. By D. Kinnear Clark, C.E. London: Lockwood & Co. 1875.

After stating at length the history of the many contrivances to produce continuous power by applying heat to water, the author of this volume of "Weale's Series" proceeds to consider the nature of steam, and its power; beginning with the general properties of air and gases, of water, and what is known of the nature of heat. Useful information is given of the worth of different kinds of coal for steam purposes; of peat as a fuel; of coke and coke-ovens; of steam-boilers; of the various kinds of engines,—beam-engines, horizontals, and verticals, and portable and traction engines; forming altogether a very useful book. It may, however, be pointed out that (p. 142) the weight of nitrogen gas is, by an evident *lapsus calami*, stated to be ·9736 ounce per cubic foot, whereas it should have been 1·25 ounce.

Earthwork Tables. By Joseph Broadhurst and Francis Campin, Civil Engineers. London: Lockwood & Co.

These tables enable us to calculate the quantities in cuttings and embankments, of any height occurring in ordinary practice, and of any slope whatever. The tables advance by only one-tenth of a foot in height, which makes the quantity found very accurate; for when the heights are small,—say 7 ft. or 8 ft.,—if the heights of whole feet only be calculated, the quantity derived from a table may vary considerably from the true quantity.

Strike of Dumfries Joiners.—The journeymen joiners of Dumfries, numbering upwards of forty, struck work on the 20th ult. Recently they memorialised their employers for a rise of wages of ½d. per hour at present and another ½d. per hour at the beginning of the month of March. The masters agreed to an increase of ½d. at the present time, but left the question of a further increase in March open. The men, however, determined to stand out for the whole of their demands, and left work, intimating to the masters that they were ready to resume work on the increase of ½d. in March being promised. The dispute has now terminated, having lasted less than a week. The masters have acceded to the demands of the men for a rise of wages at the rate of ½d. per hour at present, and the promise of a further rise of ½d. per hour in March, and the men have resumed work. Their wages will now be 7d. per hour.

Miscellanea.

Proposed Street Improvements in Chester.—At the last monthly meeting of the Chester Town Council, plans, according to the local papers, for widening North-gate-street, Chester, were discussed. The Improvement Committee reported that they had considered four plans. Plan No. 1 was for a new street from the corner of the market, which would come out at the west side of St. Peter's Church. Plan No. 2 was a suggestion to take down the whole of Shoemakers'-row, set back Northgate-street some feet, and run straight into Foregate-street. Plan No. 3 was pretty much the same as No. 2, only bringing the west side of Northgate-street a little more east, and taking down St. Peter's Church and the News-room. By plan No. 4, which was recommended for adoption by the council, it was proposed to take down St. Peter's Church and the News-room, and part of Shoemakers'-row and Northgate-row. It was further proposed to lease or sell the land for building purposes on the whole west side from the market to the cross, which would all be rebuilt. It was intended there should be a good row with shops under and over, and that the street should come out somewhere opposite the middle of Bridge-street. The rows were to be 12 ft. wide, and they would have good shops both above and below. The estimated cost of carrying out plan No. 4 was from 126,000*l.* to 150,000*l.* The further consideration of the subject was postponed.

Maidstone.—On the 29th ult., the Archbishop of Canterbury laid the foundation-stone of the new church of St. Michael and All Angels, which is now in course of erection in the Tunbridge-road, Maidstone. The church is designed to accommodate 555 persons, in addition to clergy and choir. The building comprises nave and aisles, chancel, with transeptal chapels, and tower. The style adopted is the Geometrical, the material used being Kentish rag, in horizontal courses, with hammer-dressed quoins of the same material. Bath stone is used for windows, stringcourses, &c., and for internal work. The roofs of nave and aisles will be open-timbered, the chancel and side chapels having wagon ceilings of wood divided into panels by moulded ribs. The whole will be covered with plain tiles. The general dimensions are as follows:—Length of nave, 82 ft.; width of nave, 24 ft.; total width of church, 56 ft.; length of chancel, 33 ft. 6 in.; height from floor to ridge, 31 ft.; external square of tower, 14 ft.; total height of tower, 74 ft. The architect is Mr. Arthur W. Blomfield, and the builder is Mr. J. G. Naylar, of Rochester, Mr. J. R. Edmunds being clerk of the works. The estimated cost (exclusive of organ, heating, lighting, boundary-wall, gates, &c.) is 8,082*l.*

"Fireclay and Other Refractory Materials."—This was the subject of a paper by Mr. G. J. Snellus, which was "taken as read" at the recent meeting of the Iron and Steel Institute at Manchester. He remarked that bricks are very porous bodies, and absorb a good deal of moisture even when under cover, and, of course, much more if allowed to get wet. In fact, apparently dry bricks often contain a good deal of water, and if put into a furnace in this state, and if the heat is got up rapidly, the bricks crack and crumble to pieces. This is especially the case with silica bricks, and the writer had known instances of bricks being condemned as chemically bad when the fault lay with those who used them without properly drying them. It is well in the case of silica bricks to actually set them as hot as they can be handled. In all cases when a furnace is first started, and especially with Siemens furnaces, a very small fire should be kept up for several hours, and then very gradually increased. This plan would add weeks to the life of these furnaces. Most blast-furnace managers know and practise this very slow and careful drying of their plant, but it is too often neglected in mill and other furnaces.

Florence.—Professor Dupré has generously offered to make a statue of Michelangelo for the Piazzali, if the block of marble be given him. Subscriptions for the purpose were immediately opened, the French artists, Meissonier and Guillaume, giving 100 francs each. Serious projects are being set on foot for the completion of the façade of the duomo, and a general appeal for subscriptions to be made throughout the country for the purpose is talked of.

New Bank Buildings at Turriff.—New premises for the North of Scotland Bank have just been completed at Turriff, from a design by Mr. Matthews, architect, Aberdeen. The building occupies a site at the corner of Main and Balmellie streets, the frontages being respectively 45 ft. and 56 ft. The style of architecture is somewhat mixed, but the prevailing characteristic is the Old Scottish Baronial. The most striking feature of the structure is a square clock-tower at the angle facing High-street, which rises to a height of 63 ft. The main building is three stories in height. The contractors who executed the work were Fordyce & Sons, masons; John Morrison, carpenter; Joseph Ross & Son, plasterers; John Gillespie, slater; W. & C. Duthie, plumbers; and Alex. Watson, painter, all of Turriff. The encaustic tiles were laid by Hawley, of Edinburgh; the bell-hanging was executed by Bailie M'Hardy, of Aberdeen; the grates, ranges, &c., were furnished by Knox & Webster, Aberdeen; while the lightning-rod was fixed by "Steeple Jack," of Dundee.

Bicentenary of the Great Fire of Northampton.—The 20th of September, 1675, is a memorable day in the annals of Northampton, for on that day 600 houses were burned and 700 families rendered homeless, all within the space of three hours. The damage was estimated at 150,000*l.*, but only eleven lives were lost, owing to the fact that the fire commenced at mid-day, in a thatched cottage near the castle. The wind was blowing strongly from the west at the time, and the houses being for the most part of timber, and roofed with thatch, were readily consumed by the flames. All the streets were narrow and crooked; not only the Drapery (which was then, as it is now, the principal thoroughfare), but Sheep-street, Gold-street, Bridge-street, Abington-street, and the rest. A Northampton paper states that Mr. John Taylor is preparing a commemorative volume.

Industrial Dwellings in Newcastle.—The Newcastle Industrial Dwellings Company, at its annual meeting the other day, passed the following resolution:—

"That while this company recognises the fact that their proceedings up to this time have resulted in great benefit to those for whose interest the company was created, and that the demand for such accommodation was increasing, yet having received tenders for the enlargement of the buildings, and finding that the amount required is far in excess of their previous calculations, they recommend that no step be taken in the matter; but this company would respectfully, yet earnestly, urge that the corporate authority of this town should at once carry out the powers recently conferred upon them for the erection of dwellings for the industrial classes."

It is stated that during the last four years the price of materials and labour in the building trade of Newcastle has gone up fully 50 per cent.

Ford School Board.—Plans for proposed Board Schools by four architects, under the assumed names of "Hope," "Ventilation," "Marchio," and "Diogenes," were laid before this Board at its monthly meeting in South Hylton on the 6th ult., when it was decided that a special meeting should be held on the 20th, at which meeting the Board selected the design of "Marchio," No. 3, for the proposed new Board Schools, this selection being, of course, subject to the approval of the Educational Department. The design selected is by Mr. Martin Greener, and comprises a range of buildings about 246 ft. long. The general character of the buildings is plain Gothic, and the accommodation is for 600 children.

Parish Church of Maynooth, Kildare, Ireland.—The friends and parishioners of the late Rev. George D. Blacker, rector of Maynooth, have recently erected by subscription a memorial pulpit, at a cost of 120*l.*, from designs by Mr. Fredk. A. Butler, M.A., architect, of Dublin. It is principally of Caen stone, with polished shafts of grey and red Irish marbles, and is enriched with appropriate carving. A reading-desk of the same material, and corresponding in style with the pulpit, has been presented by the Duchess of Leinster. Both pulpit and reading-desk have been executed satisfactorily by Mr. A. P. Sharp, of Dublin.

Light.—Mr. Uriah A. Boyden, of Boston, Mass., has deposited with the Franklin Institute the sum of 1,000 dols., to be awarded as a premium to "any resident of North America who shall determine by experiment whether all rays of light, and other physical rays, are or are not transmitted with the same velocity."

Merton College Tower, Oxford, Struck by Lightning.—During a violent thunderstorm which passed over Oxford on the 27th ult., the lightning struck one of the pinnacles of Merton College tower, which has just been restored by Messrs. Fisher & Hobdell, splitting from the apex to the base the vane, part of the stonework being deeply imbedded in the lead and woodwork on the roof of the tower. The moulds on the edge of the pinnacle were divided for about 4 ft. as clearly as if cut with a saw, and the massive stones were turned at almost right angles to their original position. Several workmen narrowly escaped injury.

A Fraudulent Foreman.—At the Guildhall Police Court, on the 27th ult., James Townsend, a foreman painter, until recently in the employ of Messrs. Bracher & Sons, builders, was sentenced to a month's imprisonment, with hard labour, for obtaining 12*l.* 17*s.* 6*d.* by false pretences from Mr. Henry Batt, the general manager to Messrs. Bracher. The prisoner had represented that his wife was seriously ill, and eventually that she was dead, and the sum in question had been collected by Mr. Batt, and handed to the prisoner, whose statements were afterwards discovered to be totally untrue.

Another Thriving Town for the Map of England.—One of the most thriving, and for builders especially, new places in the North of England, is Byker, a suburb of Newcastle-on-Tyne, and houses are being erected on every available piece of ground thereabouts. Such being the case, the first great enterprise thought of is a bridge across the river Ouseburn, and already a company has been formed to construct the Byker-bridge, at a cost of 50,000*l.*, and the contract has been taken by Mr. Walter Scott, to complete the bridge at the earliest period, for the sum of 36,212*l.*, the other portion of the capital going for land, &c.

A Grateful Town Council.—At a meeting of the Norwich Town Council, on the 21st ult., it was unanimously resolved, "That this council desires to record its appreciation of the services of Mr. A. W. Conquest during the temporary absence, through illness, of the city engineer and surveyor [Mr. Thwaites], and to testify to the ability and intelligence which he manifested in the management of about sixty miles of road and streets, the sewage and pumping station, the erection of buildings, and the various duties of the department, and to the zeal and courtesy with which he fulfilled the orders of the council."

Aid in Turning Hard Metals.—Hitherto, mechanical engineers and turners have been baffled in turning very hard alloys, the highest tempered tools becoming blunted when moistened with the usual liquids. It is now found that tools wetted with petroleum work with ease alloys of zinc, copper, and tin, and in working steel a mixture of petroleum and essence of turpentine acts like magic. In setting a razor, the petroleum and turpentine act better than oil. We are indebted to the French for this hint as to cutting metals.

Dwellings for Workmen at Cardiff.—It is stated that the Messrs. Cory Brothers have leased from Lord Bute a large portion of Ten Acres-field, and have commenced the erection of twenty large shops, which are to form the basements of a number of rooms, which will be let off in "flats" as dwelling-houses, a balcony extending the whole length at the front, access being obtained to them also at the back. The upper story will be formed into a kind of winter-garden or conservatory. The cost is estimated at about 20,000*l.*

Strike of Masons at Whitehaven.—The stonemasons of Whitehaven have made a demand upon their employers of an advance of 2*s.* 10*d.* per week upon their present rate of wages, bringing what they now claim up to 34*s.* per week. The masters, at a subsequent meeting, made an offer of 33*s.*; but this the men refused, and there has in consequence been a general strike in the town. There are about forty masons employed in Whitehaven, and of this number it is stated that nearly one-half have since left for other places.

"Commission."—Some scandal has been caused in Ipswich by the discovery on the part of the School Board that their architect had received 20 per cent. on the price of heating apparatus, supplied by Messrs. Wright & Co. The fact came out in consequence of the apparatus not answering the purpose, and the makers being called upon to take it away, and return the money paid.

Extension of the Use of Natural Gas.—The highly satisfactory results obtained by the use of natural gas in puddling and heating furnaces at Erie, Leechburg, and other places in Pennsylvania, has induced a serious effort to bring this excellent fuel from the great gas-well in Butler county, Pennsylvania, to the ironworks of Graff, Bennett, & Co., and Spang, Chalfant, & Co., in Pittsburgh. It is proposed to use a pipe 6 in. in diameter, and 17 miles long; this will be carried in a trench 3 ft. deep, and the work is under contract to be finished within a month.

Proposed New Public Offices for Newbury.—The town council of Newbury lately resolved to erect new municipal offices, and have made application to the Local Government Board for permission to borrow 3,500*l.* for the purpose. Plans having been advertised for, those of Mr. J. H. Money were selected.

Proposed Park for Gateshead.—The Town Council of Gateshead have applied to the Local Government Board for sanction to borrow 35,000*l.* for the purchase of the Saltwell Estate for a public park and pleasure-ground. Messrs. Richard Cail and E. B. Reed, who have surveyed the property, value it at 33,525*l.*

Barracks.—The tender of Messrs. Hill, Higgs, & Hill, at nearly 50,000*l.*, was accepted on the 24th ult. by the War Office for building the new barracks at Caterham, Surrey. The same firm are also building the barracks at Bedford, which are proceeding with considerable rapidity.

The School Board for London.—The School Board for London held its first meeting after the recess on Wednesday last (29th ult.), when Sir Charles Reed gave a *resumé* of the work of the Board since the passing of the Elementary Education Act.

Builders' Benevolent Institution.—The annual dinner in aid of the funds of the above institution will take place at Willis's Rooms on Thursday, the 11th of November next, when Mr. John Aird, jun., will preside. We trust the committee will be well supported on the occasion.

The Works of David Cox.—The Liverpool Art Club proposes to exhibit early in November a selection from the works of David Cox, which it is hoped to make, will be thoroughly characteristic of this painter.

The Roofs of the New Law Courts will be covered, we are told, with the permanent green slates, to be supplied by Messrs. Ashton & Green, from their quarries. The slates are to be cut to a pattern.

Greenwich Hospital.—The tender of Messrs. Hill, Higgs, & Hill has been accepted by the Lords of the Admiralty for the new dining-hall at the Naval Schools, Greenwich, to accommodate 1,000 boys.

New Bank in Rochester.—In our brief description of the new London and County Bank in Rochester (p. 871, *ante*) we omitted to give the name of the architect, Mr. E. Evans Cronk.

TENDERS

For the formation of new street from Old-street to High-street, Shoreditch, with sewers and other works connected therewith, for the Metropolitan Board of Works. Sir Joseph Bazalgette, engineer:—

Marshall	£50,000	0	0 !
Farrar	37,870	0	0
Oliver	37,530	0	0
Pearson	37,150	0	0
Webster	36,900	0	0
Mowlem & Co.	36,000	0	0
Beevers & Co.	33,570	0	0
Cardus	33,024	19	2
Griffiths	33,000	0	0
Dover & Co.	31,616	0	0
Turner	31,000	0	0
Downs & Co.	30,590	0	0
Stevens & Co.	29,950	0	0
Nowell & Robson	29,500	0	0
Goodair	28,342	0	0
Carey (accepted)	25,550	0	0 !

For new schools, Stockwell-road, Lambeth, for the School Board for London. Mr. E. R. Robson, architect:—

Jerrard	£8,739	0	0
Wall, Brothers	8,604	0	0
Hobson	8,586	0	0
Taylor	8,500	0	0
Cullum	8,415	0	0
Tyerman	8,415	0	0
Oliver	8,352	0	0
Brass	8,288	0	0
Hill, Higgs, & Hill	8,258	0	0
Cooper (accepted)	8,240	0	0

For the erection of new shop near to the Brixton Station, for Messrs. Bell, Cheshire, & Co. Mr. John Dunkley, architect:—

Vincent*	£122	10	0

* Allowing for old materials.

For the erection of ten shops at Brixton, for Mr. E. G. Chapman. Mr. G. Treacher, architect:—

Dunkley (accepted)	£4,380	0	0

For erection of District Hospital at Lewes. Messrs. C. & F. Rutley, architects:—

Oxley	£2,400	0	0 !
Longley	1,750	0	0
Kempling	1,725	0	0
Steer	1,530	0	0
Card & Son (accepted)	1,442	0	0 !

For the erection of the new Memorial Church at Newmarket to the late Lord George Manners, M.P. Mr. W. Oldham Chambers, architect:—

Downing	£6,325	0	0
Andrews	6,000	0	0
Lacey	5,875	0	0
Tooley	5,823	0	0
Brett	5,735	0	0

For the erection of a school to provide accommodation for 572 children, on the site in Princes-street, Bedford-row, for the School Board for London. Mr. E. R. Robson, architect:—

Dove, Brothers	£6,415	0	0
Scrivener & White	6,372	0	0
Williams & Son	6,303	0	0
Sheffield	6,286	0	0
Boyce	6,285	0	0
Stimpson & Co.	6,254	0	0
Ennor	6,221	0	0
Brass	6,147	0	0
Hobson	6,146	0	0
Pritchard	6,057	0	0
Lawrance	5,986	0	0

[Total cost of buildings per head, 10*l.* 9s. 3d.]

For the erection of a school to provide accommodation for 1,104 children, on the site in Canal-road, Hoxton, for the School Board for London. Mr. E. R. Robson, architect:—

Webber	£11,775	0	0
Shurmur	10,444	0	0
Williams & Son	10,441	0	0
Kirk & Randall	10,110	0	0
L. H. & R. Roberts	9,918	0	0
Pritchard	9,911	0	0
Lawrance	9,860	0	0
Grover	9,784	0	0
Boyce (accepted)	9,503	0	0

[Total cost of buildings per head, 8*l.* 12s. 1d.]

For the erection of a school to provide accommodation for 572 children, on the site in Glengall-road, Cubitt Town, for the School Board for London. Mr. E. R. Robson, architect:—

F. & F. J. Wood	£6,830	0	0
Wall, Brothers	6,764	0	0
Atherton & Latta	6,647	0	0
Downs & Co.	6,574	0	0
Nightingale	6,553	0	0
Kilby	6,530	0	0
Sewell & Son	6,469	0	0
Sheffield	6,455	0	0
Ennor (accepted)	6,332	0	0

[Total cost of building per head, 11*l.* 1s. 4d.]

For additions and repairs to Carlisle House, Soho. Mr. Edward Lavender, architect:—

Nightingale	£457	0	0
Cock (accepted)	455	0	0

For the erection of new schools at Lexden, Essex. Mr. G. Gard Pye, architect:—

Shepherd	£630	0	0
Beard	615	0	0
Garwood & Eady	608	4	9
Eade	585	0	0
Diss	566	10	0
Garwood (accepted)	543	0	0

For alteration and additions to Cavendish House, on the north side of Burlington-gardens, and to No. 33, Old Burlington-street, in the parish of St. James, Piccadilly, for Mr. F. Last. Mr. C. E. Barlow and Mr. J. E. Boys, architects. Quantities prepared by Mr. W. Matthews:—

Browne & Robinson	£16,210	0	0
Brass	15,959	0	0
Scrivener & White	15,900	0	0
Lucas	15,834	0	0
Elsdon	15,090	0	0
Newman & Mann	15,650	0	0
Bayes & Ramage	15,561	0	0

Alterations to warehouse, No. 2, Bevis Marks, for Mr. S. Beyfus. Mr. H. H. Collins, architect. Quantities prepared by Messrs. Batstone & Sons:—

Mark	£3,030	0	0
Waldram & Co.	2,806	0	0
Moreland & Nixon	2,760	0	0
Newman & Mann	2,695	0	0
Oliver	2,625	0	0

For farm buildings, Oxgate Farm, Hendon. Mr. Chas. J. Shoppee, architect:—

Wall	£930	0	0
Hoopel	925	0	0
Donne	862	0	0
Wicks (accepted)	779	0	0

Sir,—With reference to the tenders for five villa residences at Knight's-hill, Norwood, which appeared in your issue of the 20th inst., we beg to say that in our tender for the single villa we omitted to include an addendum amounting to 335*l.* Our tender should have been 2,015*l.* not 1,680*l.*

Hook & Oldery.

TO CORRESPONDENTS.

J. L.—D.—C. J.—A.—G. M.—Mr O.—J. H.—P. G. S.—E. G. C. C. H.—R. M.—J. L. S.—D. C.—J. B. R.—M. A.—W. T. B.—A. C.—R. C.—L. A.—R. H. C.—E. L.—S. & S.—A. A.—G. G. P. Lumps (reflectors of various kinds have been and are being tried). M. W. & Co. New Haven (received).—D. R. (they have mostly been mentioned in our pages, and we cannot look back).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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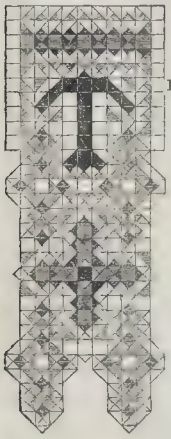
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London Bridge and London Traffic.

THE inadequacy of London Bridge to accommodate the enormous traffic which is now concentrated upon that line of communication is by no means a new subject to our readers. Public attention has anew been called to the question, and proposals of different natures have been freely discussed in the daily press. We cannot say that the matter has hitherto been approached in a manner that promises satisfactory results. In regarding an admitted inconvenience, it is wise to ascertain the cause of that inconvenience before prescribing a remedy. In the present instance, we cannot see that this wise precaution has been taken. The fact of the pressure of traffic on the bridge is the only one as to which there is no dispute. It will be well to ascertain the principal causes of that pressure before we come to the conclusion that the difficulty can be removed, or even permanently palliated, by the expedient of widening the bridge.

It will be in the remembrance of many of our readers that on the last occasion on which this subject was upon the *tapis*, we took the opportunity of pointing out that the simple expedient of police regulation was at once less costly, more practicable, and equally efficient, than the clumsy and questionable tinkering that it has from time to time been proposed to apply to this noble monument. In the *Builder* of 30th of October, 1869, the subject was discussed at some length. There can be no doubt that the stationing of one or two policemen on the bridge and its approaches, and the subjecting the independent vagaries of drivers of all kinds to a little wholesome despotism, had the effect of increasing the accommodation afforded by the bridge. It is possible that we have arrived at the length of our tether, so far as the mere orderly conduct of the traffic is concerned. But it is best to take nothing for granted; and the question of direction of vehicles is one which, in the first instance, it is important to have distinctly set at rest.

The next point on which we have to insist is, that before the engineer is called in to exert his structural skill, he is bound to exercise his preliminary function as a surveyor. As in all architectural work, plan is the first matter to settle, and elevation should rise out of plan, so is it the case, most especially, in bridge-building. The first question here is the stratigraphical one. The disposition of the roads and streets shows, to a certain extent, the natural channels sought by the traffic. But it must be remembered that these indications are not absolute. In the gradual growth of a great city, it sometimes becomes necessary to cut new thoroughfares through neighbourhoods that have slowly grown up without due provision for the future wants of the population. We have had some fine examples of this lately in many of the chief cities of Europe,—in none more striking than in London. The energy which insisted on hewing the noble opening which now flanks Charing Cross, at the cost of one of the most conspicuous ducal residences in London, has not stopped at Temple Bar. The City Surveyor has shown himself fully alive to the advantages of new lines of street. How is it that it is sought to solve the problem of London Bridge without the preliminary of distinctly stating its elements?

If we look at such a map as Wyld's new plan of London, we shall see that London Bridge is situated almost exactly on the central line between the east and west boundary of the map. To the west of this line we count no fewer than fourteen bridges, taking the West London Railway Bridge, which crosses the Thames about 1,000 yards higher up than Battersea Bridge, as the last. To the east of London Bridge we have only the small footway tunnel near the Tower, and the original Thames Tunnel, which, for several reasons, mainly connected with the great cost incurred in the execution of the project, has not hitherto taken the full share which it was expected to take in the accommodation of the public traffic. As it is, the actual statistics of the traffic of these two tunnels is a piece of information which it is important to possess, in order adequately to discuss the matter in hand.

Dealing, however, with such information as the map supplies, we find that for about sixty square miles of the metropolitan area, lying to the east of London Bridge, no provision for crossing the Thames exists other than that furnished by the two tunnels we have mentioned, which cannot be regarded as equal to the accommodation of a single good bridge. To the west, on the contrary, for the sixty-two square miles of area, there are no less than fourteen bridges for road and railway purposes; or a bridge for every four-and-a-half square miles of area. If we consider London Bridge with regard to the duty which it has to perform in proportion to its sister structures, we thus find that while it has to carry the traffic of two-and-a-quarter square miles of the metropolitan area to the west of its position, it has also to carry the traffic of at least thirty square miles of the eastward area. Thus, supposing, for the sake of approximate solution, that each bridge is equally well adapted for the public service, and discharges its fair share of public duty (which of course is a very rough estimate), London Bridge is now called on to perform eight times the duty for which we have found it requisite, in other spots, to erect a bridge.

But even this estimate, considerable as is the stress that we thus see is thrown on this great artery, is very far under the mark. We have been supposing the eastern traffic to be equally divided between London Bridge and the two tunnels. No one will argue that such is the case. We suppose no one would argue that the two tunnels convey a united stream of traffic equal to that which flows over Blackfriars Bridge or over Westminster Bridge. Instead, therefore, of crediting the tunnels with the accommodation of half the eastern district, we must not allow them more than the average traffic of one of the fourteen western bridges; an amount represented, in our present calculation, at four-and-a-half square miles of area accommodated. On this view we now throw upon London Bridge twelve times the average duty of a river bridge.

It would be perfectly possible, by taking comparative returns for a week or two, to convert the above rough estimate into a definite statistical table, which would furnish a certain standpoint for the discussion of the subject. Not only is it possible, but we take the liberty of suggesting that it is the bounden duty of the civic authorities to obtain such information, before proceeding to a measure which would be questionable from an engineering point of view, and, as we think we have shown, utterly inadequate from a surveyor's point of view. All that we can do, in the absence of information with which the public have a right to be supplied, is to indicate those causes which tend, either on one hand or on the other, to complicate the question of average; and to give to each of the seventeen lines of communication now existing across the Thames a public and a traffic of their own.

The first of these considerations is that of the stratigraphical position of each bridge, depending on the course of the river, and the corresponding direction of the streams of traffic. Thus, London, Blackfriars, Southwark, and Waterloo bridges must be regarded as almost exclusively adapted for the conveyance of north and south traffic. Westminster and Lambeth bridges, on the contrary, provide chiefly for the eastward and westward traffic, although all these six bridges have the common feature of affording communication between the Surrey and Middlesex banks of the Thames.

Again, we have to consider the different duties discharged by the road and the railway bridges. These, again, are complicated. Thus the Victoria railway bridge may be regarded as chiefly occupied by country and suburban traffic. The Charing-cross and Cannon-street bridges, on the other hand, though conveying not only suburban and country, but even Continental, traffic, play an important part in disembarrassing the streets by the City and Charing-cross trains, and these come into competition with the Underground Railway. The crossing of the river twice by the Cannon-street and Charing-cross passengers is only, so to speak, an accident. These bridges do the work, in this respect, of the streets lying parallel to the river. Thus not only the actual number of passengers over each bridge requires enumeration, but the nature of the passenger-journeys, whether internal or from without, must be ascertained before we are in a position to decide as to the duty performed by our several bridges.

Facility of access is another main point to study. This facility may be interfered with by two distinct causes: one is financial, the other is of an engineering nature. Thus one of the most accessible and convenient of our road-bridges, the beautifully level way that leads over Waterloo, is greatly relieved from the traffic that would otherwise flow over it, by the toll, both for pedestrians and for vehicles. Southwark Bridge, on the other hand, is rendered comparatively useless by the double difficulty presented by the plan, and by the level of its approaches. There can be no doubt that an appreciable amount of the enormous traffic that pours over London Bridge is driven to that channel in order to avoid either the toll of Waterloo or the difficult ascent of Southwark Bridge.

With regard to this latter structure, as to which it is lamentable to see how ill it performs the promise of its graceful elevation, it may be well here to note a remark often made by the late Sir Charles Fox, who was certainly a very competent and experienced authority on ironwork in general, and iron bridges in particular. Sir Charles was long in the habit of saying that he would be glad to take down the iron superstructure of Southwark Bridge, and rebuild it, at his own cost, for the sake of the iron that might be saved in the new structure. We can suggest no method that would provide additional bridge accommodation at so small an expense as a reconstruction of this kind. The portion of the work of a river bridge which is both the most costly and the most difficult to estimate, would be avoided in this instance. The objectionable rise in the roadway might be obviated by a reconstruction of the superstructure of the bridge. And even if Sir Charles Fox's idea did not meet with a contractor who had the courage to support it, there can be no doubt that the sale of the large quantity of iron to be removed would reduce the cost of the new structure to a very moderate sum. The difficulty of the approaches would thus be reduced to that of plan alone. The levels might be easily adjusted. And, in that case, we cannot doubt that the rearrangement of the approaches so as to give adequate width would prove comparatively inexpensive, or at least remunerative of the actual cost. To enable Southwark Bridge to take its fair share of the traffic, ought to be, in our opinion, one of the first steps taken for the relief of London Bridge.

Facilitating the passage of the Thames to the westward of London Bridge, however it might relieve that structure of the traffic now unduly thrown upon it from the area west of its line, would have no effect in reducing that enormous traffic from the eastern districts, which we have seen reason to estimate at from eight to twelve times the average duty of each of the fourteen bridges above the ancient line of passage. Here the map has to be consulted. Aldgate, just half a mile to the east of the meridian line of London Bridge, and at an equal distance to the north of the north bank of the Thames, is a great natural convergence of lines of traffic. The great arteries of the Whitechapel-road and the Commercial-road here unite; while Houndsditch brings down a large share of the traffic from the north, to join that thus flowing from the east. The Eastern Counties Station at Shoreditch, the Liverpool-street Station of the North-Western line, and the Blackwall Station, all lying within about a mile of distance north and south, discharge an enormous amount of traffic in this locality. On the south of the river, and nearly opposite to Aldgate, if the connecting-line be drawn at right angles to the current in this locality, the important line of Bermondsey-street provides a channel which, with comparatively small improvements, would tap the great artery of the Old Kent-road, and draw to any means of crossing the river established in the position indicated, all that portion of the traffic which had an eastward tendency when the Thames was crossed. A well-constructed and well-approached tunnel, crossing the Thames between the Custom House and the Tower, would so obviously and advantageously accommodate this traffic, and lighten London Bridge of at least half of its pressure from the eastern districts, that we must suggest that the construction of such a line of communication is only a question of time.

As to further communications of this nature, or as to any endeavours to provide for the fuller use of Mr. Brunel's original tunnel, we need not now speak. Neither do we at present do more than suggest whether the enlargement of Mr. Barlow's cheap little passenger-tube might not be the wisest step to adopt in the first instance. Important questions of an engineering character, as well as of a surveying character, have to be made quite clear before a judicial decision can be properly arrived at on these points. But we think it highly important thus to intimate what are, to the best of our judgment, the controlling features of the case.

London Bridge, with Southwark Bridge rendered passable, Waterloo Bridge free, and the Tower Tunnel thoroughly practicable, would be relieved of at least half of its present traffic,—so relieved, we may hope, that it will stand to the times of our children's children as one of the noblest monuments of that great era of highway engineering which preceded the introduction of railways.

That it will stand, if interfered with, whether in stone or in iron, we think to be highly questionable. We have not, at this moment, the detailed information on the subject at hand, but, as far as memory serves, we believe that the question of permanent stability is one with which it will be extremely unsafe to tamper. Those persons who propose to add to the width, or even to the weight, of the bridge, should study the account left on record of the difficulties that attended the laying of the foundations. They will find that the platform under at least one of the piers was described as out of level, and that the increased scour of the river, which has been so much affected by the construction of the Embankment and various other works, may at any time have an effect even upon the existing piling. However this may be, the man who would attempt to meddle with the actual foundations would be more bold than wise. From our recollection of the difficulties to which we refer, it seems to us to be far within the limits of possibility that even such a weighting of the bridge as would be caused by iron cantilevers or segments, and projecting footways might have a sensible effect on the platform or on the piling. We are quite sure that an engineer would be altogether unjustified in taking such a responsibility without two previous steps. One of these is a careful examination of all records that are accessible as to the conduct of the works during the actual erection of the bridge. The result of that search,—unless we greatly err,—will only render more imperative the second precaution. That is, with the actual working plan in hand, to make a careful submarine survey of every pier, and a cross section of the river beneath, above, and below the bridge. If such a survey, which should identify every outside pile, show how much hold it actually has in the bed of the river, detect what is the actual condition of the river bed, and what is its tendency to deepen, or otherwise, under existing tidal and fluviatile conditions, show that we may with safety either further weight the pier foundations, or endeavour to extend them, then it may be time to raise the question whether any attempt to add to the bridge will have any result but its ultimate downfall.

Supposing these apprehensions to be ill, founded—which must be done not by a sneer, but by a professional report,—we shall be in a position to discuss the propriety of either scheme of widening. Nor can we omit to say that the City authorities stand, with respect to this noble structure, in a position of national trustees.

As to the plan of actually widening the bridge, as at present advised, we recommend the advocates of an iron addition to the bridge to pay a visit to the viaduct that carries the London and North-Western Railway over the high-road at Watford. The utter disfigurement of a handsome and simple design of Robert Stephenson's that they will there observe, may give some idea of the consequences of adopting a similar mode of eking out London Bridge. Further, we hold that the engineering objections are likely to prove very serious. The cost could not be much less than that of the original bridge. It would, we should consider, be likely to be far more than that of either of the two methods for relieving the traffic which we have taken the liberty to suggest, if not as much as both put together. Such a work, if undertaken, must be done adequately. We must provide for a century or more, remembering that the population of London doubles in forty years; and thus, if things go on as they do at present, will be four times what it now is in 1955. It would be ridiculous to attempt such a task as this on a smaller scale than that of doubling the width of the bridge. What will this entail as to the approaches?

And there is more than the question of cost. There is the question of the wise ordering of the arterial communications of the metropolis. If the matter be duly reflected on, it will become obvious that, if we could, to-morrow, double the width of London Bridge, and adequately increase that of its approaches, we should be rather complicating than simplifying the question. We should be giving an additional stimulus to that very concentration of traffic which is the evil from which we suffer. As it is, as has been shown by Mr. Haywood, obstructions occur more frequently in the approaches than on the bridge. It is rather from the conflict of the different streams of traffic, than from the friction of the general stream in its channel, that confusion occurs; and the main cause of this is, as we hope we have shown, that we pour over this one bridge a vast amount of traffic that is turned from its natural course by the want of proper communications. We reduce the services of Waterloo and of Southwark Bridges to perhaps one-fourth of their capacity, by financial and engineering obstacles, and we fail altogether to provide a means of crossing the river for the traffic that flows to Aldgate, and the parts eastward of Aldgate. So long as we do this we shall have a block at London Bridge. We may spoil its beauty, we may attempt to widen it, or we may bring it down with a run. But we shall never make it a commodious crossing for the Thames until we pay intelligent attention to the plan of London, and to the requirements of London traffic.

MANCHESTER AND ITS TOWN HALL.

The Manchester Town-hall, the largest building in progress in England next to the Law Courts, is now nearly completed externally, and so far forward internally that the extensive range of offices allotted to the Waterworks Department is already occupied, though in other parts of the building a good deal yet remains to be done before it can be habitable. What remains to be completed of the exterior is only the spire and upper part of the lantern of the great tower, this portion of which is still enveloped in scaffolding; the remainder of the building is now in a condition to allow of a fair judgment of the effect of the whole, and we may say at once that this quite realises the expectations we have previously formed and expressed as to the fine architectural result of Mr. Waterhouse's largest and most important building. No other provincial town can boast of a modern edifice on such a scale as this, and presenting such a picturesque *coup d'œil*.

The drawback to the effect of the Town-hall, considered as the architectural centre of the town, is the want of space round it, and of a good approach to it. The principal approach, Cross-street, which connects Market-street with Albert-square, comes in at a corner of the Square and by a rather straggling and circuitous line. There is a want of a main central approach opposite to, instead of at angles with, the principal front. This cannot be had, owing to the side-ways position which the site of the Town-hall occupies in relation to the most important quarter of the city; and Manchester is peculiarly irregular and out of right angles in regard to the laying out of the older and more central thoroughfares. Some alteration is really required at the end of Cross-street nearest to Market-street and the Exchange, which contracts into a narrow neck exceedingly inconvenient for traffic, and entirely deceptive in its appearance; for no one coming from the Market-street direction would for a moment suppose that this was the main thoroughfare to the municipal and architectural centre of the town. The compulsory setting back of a few blocks of property here, as they come to be rebuilt, would effect the object, which ought not to be lost sight of. Albert-square, the site of the Town-hall, is, as a good many of our readers will remember, not a "square," but a triangle, the lines of which have fixed those of the Town-hall, and given to the great block of building the peculiar shape which has done a good deal, probably, to suggest and help its picturesque composition, while at the same time greatly increasing the difficulty of planning and arrangement. On the side to which the principal front looks there is a considerable open space, in the centre of which stands Mr. Worthington's pretty,—rather *too* pretty,—Albert Memorial; and on this side it is possible to get far enough away to take in the front as a whole, and even to get a fair view of the tower in not too sharp a perspective angle. On the other two sides there is little more than a street's breadth to

afford a view of the building; and this consideration justifies the rather broken-up treatment of the two sides, which otherwise might be considered a little too varied and wanting in continuity; as it is, the principal front only is treated as a uniform design on a grand scale, and the two flanks have rather the aspect of a collection of buildings in one block. The buildings flanking the Town-hall on the Princess-street side are of such a description (third-rate street houses) that it is to be hoped there will not be much difficulty in eventually getting rid of them, widening the street, and replacing these with a style of building more in character with the locality. The rest of the surroundings are mostly comparatively new buildings of the office and warehouse type, all of solid and superior character, some possessing considerable architectural merit.

Externally, the Town-hall is in that modification of Gothic of the Geometrical period which its architect has made his own, and which, perhaps, has fairer claims to the merit of originality and consistency than most modifications of former styles which are at present practised. The masonry is close-jointed rubbed stone, with thin courses at intervals, which, however, scarcely show much as a source of effect, except on a near inspection. The principal front consists of a centre (marked by the tower) and sides entirely symmetrical in general disposition, but differing slightly in the arrangement of the windows. What may be called the "order" of the design (to borrow a Classic term) is formed by windows with stilted square heads on shafted jambs in the ground story,—over which comes the large tier of windows of the state suite of rooms, with deeply-recessed and moulded jambs and archivolts, and divided into two lights each by a centre mullion, with a foliated circle in the head. Over these is a range of plain pointed arched windows and dormers. The centre of each wing is broken by a semi-octagonal projecting bay, the windows of which have the stilted square head, though ranging in height and otherwise with the pointed windows of the main story. The same design of windows and strings is maintained with little interruption round the building, except that on the flanks the place of the large windows of the main story is occupied by two stories of pointed windows, the upper tier (second floor) with a double string-course under and with small balconies carried on brackets the depth of the space between the two strings: beneath the windows of both these floors are panels of open tracery of various designs. These, with a bracketed cornice and balustrade consisting of a small arcade of pointed arches between the dormers, form the principal decorative features of the exterior, which is perfectly free from any of the overloaded carving and profusion of ornamental detail which in many modern Gothic buildings defeats its own object. The treatment of the small and varying foliated ornament in the labels of the ground-floor windows is very artistic and delicate. The central entrance is marked by a deeply-recessed and moulded doorway, with a large canopy filled with open tracery-work over, and crowned by a statue as a finial; this stands well out from the plane of the main wall, with very good effect. Over this rises a large gable at the roof level, and behind this the centre tower with octagonal angle turrets, and a principal stage formed by three large deeply-recessed lights with centre mullions. The transition from the square tower to the octagon lantern is broken by gablets on each face of the tower, rising through the line of the cornice and balcony, as well as by the terminations of the angle turrets. The lantern will terminate in a short stone spire, and the whole, judging from a perspective sketch which we were enabled to see, will form a picturesque termination to the tower; and we decidedly approve of the stone spire rather than the slated spire with iron "sprontings," a kind of ultra-development of the Mansard roof, which is so much the fashion at present. The height of the tower to the cornice is about 175 ft., and 280 ft. to the apex of the spire.

Our readers are acquainted with the admirable plan of the town-hall, in which all the various suites of offices required by the different departments have been arranged with compactness, convenience in detail, and a simplicity of general plan, seldom achieved in a building so extensive and complicated in its requirements. The complete corridor thoroughfare all round, with its circular staircase at each of the three angles, is one of the best characteristics of the building. The architectural details of these staircases, and of the vaulted entrance-lobbies, we have before described: it may be mentioned here that the shafts of the arcading are of English, Irish, and Scotch marble, respectively, in the three staircases. The whole of the floors, both corridors and apartments, are fireproofed on the Dennett principle, the office-floors being laid with boarding on shallow joists laid on the fireproof floor, and the corridors paved with a random mosaic work in small tesseræ in cement. This has a very good effect, and will make a remarkably durable floor, with a better appearance than could be produced by ordinary tiling. In certain parts of the building, in the main entrance under the tower for instance, and the part of the corridor adjoining, a real design in mosaic will be laid down; in the other corridors the random work with a simple border has been adhered to. The remainder of the corridor decoration consists of a dado of wall tiling, the design of which is not yet decided on; of bands of flat incised ornament in a grey-toned terra-cotta, which has a very good effect, and of transverse arches with mouldings and enrichments in reddish-brown terra-cotta, which we do not like quite so much, the style of work being scarcely refined enough to be in keeping with the character of other ornamental detail in the building. The internal windows of the corridors, looking upon the central courts, have been very effectively but simply glazed, in small square leaded lights, with the introduction of a slight amount of colour and of "bottle-end" glass in the borders. It was proposed to glaze these internal lights with obscured glass; but this idea has been rightly abandoned, for the interest of the interior would have been much impaired by shutting out from the thoroughfares the view of the architectural detail of the interior courts, which is as well considered and executed as the main external design, and gives to the building a look of architectural completeness in every part quite different from that produced in buildings where they "make the back part shabby."

The state entrance to the Town-hall is of course under the tower, in the centre of the Albert-square front; and to the right of this, on entering, a large space with a vaulted roof on marble shafts is left as a *salle d'attente* for visitors of importance, and will have a decorative pavement in mosaic, and probably be further embellished with statuary and stained glass designs. Opposite the centre entrance is the principal staircase, the landing of which on the first-floor forms a large vestibule between the great hall and the Mayor's state suite of rooms, giving access to both. This upper vestibule, lighted from the roof, and with open arcades forming the boundary of the staircase, will be one of the most effective and picturesque portions of the interior. The Mayor's suite of rooms and the council chamber and ante-chamber occupy the first-floor of the principal front. The principal dining-room has a panelled oak roof of effective though simple design, the ornamental treatment throughout the building being remarkable for good taste, in a quiet and reticent style, rather than for costliness and elaboration. In the great hall, all the decorative work has still to be done; but the timber roof is complete, and is a fine and very solid and substantial design, which may be called a modified hammer-beam roof, with a peculiar treatment of the roof-springing between the feet of the principals, which are connected by a kind of arch leaving a deeply shadowed recess between the woodwork and the wall. The fine range of windows on either side of the hall offers ample opportunity for the introduction of high-class stained glass design on a large scale. The offices of different departments, which occupy the remainder of the first-floor, and the ground and second floors, are mostly finished internally in a plain and simple manner: the chief sets of rooms have a wainscot carried round them, one or two of the larger rooms boast an ornamental plaster ceiling, and the necessity for supporting a solid wall above has been made the occasion for one or two internal arcades across the larger rooms on the ground-floor, consisting of pointed arches carried by marble shafts with carved capitals. An ample range of windows with a north aspect affords the requisite light to the large drawing-office in connexion with the town surveyor's department.

The thoroughfare portion of the building is heated by hot-water pipes in the corridors, served from two boilers in the basement, and lifts are provided at certain points where they may be of use, but they do not, apparently, form an important feature in the internal working. A considerable quantity of spare room is available in the second-floor and in the roofs, room which it seems difficult at present to utilise; a portion of the upper rooms was spoken of as available for a free library and reading-room, but the conclusion that has been come to, that rooms so high up in the building would be too "uneasy" of access for such a purpose, is no doubt correct. It may be mentioned here that the mosaic used in the building is supplied by Mr. Burke, of Newman-street; the ornamentally-glazed windows, by Mr. Odell; the terra-cotta, by Messrs. Gibbs & Canning; the ornamental iron-work, by Messrs. Jackson & Peard; and the stone carving has been in the hands of Messrs. Farmer & Brindley. The heating-apparatus is put in by Messrs. Haden & Co., and the whole building has been, from the commencement, under the immediate superintendence of Mr. Osborne, as clerk of works.

The Manchester Town Hall is a good example of the truthful working out into architectural form of a complicated problem in planning, and of the combination of a picturesque treatment suggested by the outline of the site, combined with the really symmetrical (though at first sight apparently irregular) treatment of plan required by considerations of convenience and comprehensiveness in the practical working of the municipal machinery. In regard to style, it is of some interest to compare this with the architect's earlier building in the same town, which first gave him a reputation, the Manchester Law Courts. The difference between the detail of the two buildings marks, in a general way, the nature of the course which modern Gothic has taken in the hands of its ablest revivers during the interval; though, as we have already indicated, the building just being completed shows a distinct phase of the style.

No other very extensive building operations seem to be in progress in the town. A block of new shops and offices, or warehouses, in Cross-street, shows a florid Italian style not of a very refined type, nor suited to preserve effect in so smoky a neighbourhood. It is not a style that we should recommend Manchester to encourage in her street architecture. We heard with regret that talk had arisen as to seizing the open space at the top of Market-street, in front of the infirmary, for building, and carrying up the line of street across the space. We hope no such unwise piece of false economy will be carried out; such open spaces in towns are of the utmost importance, both in regard to appearance and healthfulness, and Manchester is particularly short of such areas, and cannot afford to spare this.

We mention, with pleasure, the good average of pictures in the exhibition at the Royal Institution, the standard of the collection being higher than we remember in some previous years when we have had the opportunity of visiting it. Among Academy pictures of this year, Mr. Anmonier's fine work, "The Thames at Great Marlow," occupies a very good place, and appears a far better work than in the unfavourable position which it occupied at Burlington House. Mr. Holman Hunt's "Haidée and Don Juan," painted some time since, is exhibited here. The water-colour department is very strong in artistic quality, and includes a very large and really grand drawing, "In the Fens, Lincolnshire," by Mr. Sam Bough, now known as a member of the Scottish Academy, but the ultimate reputation of whose works will be quite independent of Academy prestige. There is no truer genius among contemporary landscape-painters in water-colour.

MODERN ATHENS.

Following up our account (p. 875, *ante*.) of modern works in Athens, the example of Greek architecture which we will now describe, namely, the University, owes its interest to the fact that it exhibits the application of the Classic style to a building the plan and purpose of which are essentially Western, and to its own peculiar merits and defects, more especially in the matter of colouring, as Mr. Hansen, of Denmark, the architect under whose superintendence it was erected, sought to illustrate in his design the polychromic system of the ancients.

It will not be out of place here to call attention to some remarks on the subject of the Greek polychromy, contained in a book published as lately as 1873. We refer to the last edition of Messrs. Bell & Daldy's abridgment of Stuart & Revett's "Antiquities of Athens." The original work is so expensive and so un-

wieldy that a handbook, professedly containing its substance and core, was undoubtedly welcomed by the architect and the traveller, and has probably already circulated extensively among the profession. It is reluctantly, then, that we are obliged to record that the text is ill-selected, and to express our surprise that such original matter as the observations on polychromic decoration, contained on pages 11 and 12, should ever have been allowed to be printed.

The following is the passage, and its accuracy happily the most ignorant might well suspect; for the foam of eloquence which boils upon this flood of words warns us how shallow are the waters:—

"Yet there is one circumstance of comparatively recent discovery, and still more recently ascertained to its full extent, which gives a strange contradiction to our cherished notions concerning the purity of Grecian taste, and its antipathy to all coarseness and exaggeration. It should [*sic*] seem that the Greeks *painted their temples*, not merely in chiaroscuro, or in subdued tints, for the purpose of giving relief to projections or expressiveness to ornamental details, but with glaring colours,—reds, and blues, and yellows, with violent contrasts, the columns one hue and the entablature another. Nay, there is a shrewd suspicion that the sculptures were painted, like the figure-head of a man-of-war, and that the pillars were *striped!*—the flutings being left of the unstained marble, while the rest was daubed with villanous ochre; and, unluckily, the evidence of these incredibilities is most exasperatingly clear. . . . . We cannot believe that the architects of the best days of Greece would so carefully select the purest materials in the prospect of their concealment by a mask of tawdry colour,—that they would give such an anxious finish to their carvings, knowing that their sharpness and delicacy would be impaired by the brush of the ornamental painter. Neither is it probable that, if this vile practice had existed in the olden time, no hint of it should occur in Pausanias or Vitruvius. . . . . But that Ictinus and Callimachus, to say nothing of Phidias and Praxiteles, practised these atrocities, while Pericles approved and patronised, can only be believed *quia impossibile est*."

The argument of the anonymous author of this diatribe seems to be that, because the idea of polychromic decoration is opposed to his "cherished notions concerning the purity of Grecian taste," therefore, although "unluckily the evidence of these incredibilities is most exasperatingly clear," the fact of polychromy having been practised by the great artists of Greece is not to be believed. Did it not occur to him that some might consider the Greeks, who had proved the correctness of their taste by their works, sufficiently competent to determine what constituted purity of taste, and might go on to conclude that his "cherished notions" were incorrect, and, consequently, that he was not a fitting person to say what "coarseness and exaggeration" consist in? Does he not know that the three primary colours have been selected for decorative purposes, from Moses to Solomon, and from Solomon to Owen Jones, all the world over, by those who have possessed a true sense of beauty? And why would he have the whole front of one hue?

The "suspicion that the sculptures were painted like the figure-head of a man-of-war" is by no means "shrewd." What was done is, in all probability, this: the only doubt being as to the exact meaning of the descriptions of the process given by the ancients. Wax, tempered to a suitable consistency, was laid upon the surface of the statues, and was then fused by means of a brazier being held close to it, so that it penetrated the surface of the marble; the statue was finally brought to a fine and permanent polish, by means of rubbing it with a candle and a cloth. As to the colours, they were mixed with the wax before it was laid on. For the flesh, the wax was either left pure, or else was tinted with flesh colour; for the eyes, lips, and hair, suitable colours were used at the discretion of the artist whose profession it was to tint statues. The hair was sometimes gilded, as were frequently the drapery and armour, though these latter might be cast in solid metal, and fastened to the figure. Although our author objects to columns being "*striped*," we cannot suppose that he would prefer that they should be decorated with horizontal rings, or, remembering that they are fluted, with a spiral pattern; and we may even trust that, had he seen any of the "*striped*" pillars which are met with not unfrequently in modern works, he might be reconciled to a practice which, it appears, now exasperates him. There is a church in Bologna in which, in keeping with the rest of the interior, the Ionic columns are coloured a soft blue-grey, with the exception of the fillets of the shaft, of the base, and of the volutes, which, with the astragal, and the eggs of the egg-and-tongue moulding, are gilded; and the effect, though more suitable to a drawing-room than to a church, is extremely pleasing.

The expression, "good taste," denotes in England a negative quantity when used in relation to the matter of colour. If a person is said to possess a good taste, it is understood to convey that he confines himself to the most "quiet" hues, and the most obvious harmonies. Many attribute the inability we thus show to appreciate the use of stronger and more cheerful colours to our origin and our climate; but that it does not arise from these causes will be admitted by all when they are reminded that, previously to the Reformation, and even down to the time of the Puritans, brilliancy of decoration, personal and otherwise, was employed by the English to a greater extent than it is now by any nation of the earth.

We will not occupy ourselves any longer with the consideration of this extract from the "Antiquities," beyond mentioning that, contrary to the assertion of the author, the subject of colouring statuary and architecture is certainly mentioned by Vitruvius, and, we believe, by Pausanias.

Returning, now, to the subject with which we began, we will describe the University. The space which it encloses is in the form of an oblong, about 200 ft. broad, and 250 ft. deep; but of this area a considerable part is given to the two court-yards. The block plan of the building itself resembles in shape the letter H, the blocks toward the front and toward the back representing the perpendicular strokes of the letter, and the third block which connects them representing the horizontal stroke. The front and back blocks are each of them about 200 ft. by 45 ft., and the central block about 160 ft. by 38 ft. The ends of the front block are returned towards those of the back block for a distance of 12 ft., and the ends of the back block are returned towards those of the front block for the same distance; the returned portions being in every case 28 ft. in breadth. The ends of the front block are connected with those of the back block by breast-walls and railings on either side of the building, which enclose the two court-yards, and complete the oblong described above. A portico, 12 ft. wide, formed of square piers, runs round each court-yard or quadrangle until it is stopped by the returned ends of the front and back blocks. The central portion of the connecting block, 22 ft. wide, projects over each portico, and is carried on the piers. The entrance portico, situated centrally in the front block, projects 4 ft. towards the street, and there is a projection of similar dimensions towards the street in the back block. The plan which we have thus described, and which it will be seen is entirely symmetrical, though possessing no feature of novelty, is well adapted to its purpose, affording full means of ingress and egress, through-ventilation, and light.

In approaching the main front on foot, one mounts three marble steps, 40 ft. wide, into an oval space 100 ft. broad and 72 ft. deep, enclosed by a coping, also of white marble, which is intended, probably, to support, at some future time, a metal railing. Following the line of this coping, and on the farther side of it, is a bed of flowering-shrubs, along the centre of which runs a gravel path. In the greater axis of the oval two fountains gently trickle over the rims of buff-coloured vases into basins of white marble. Crossing the oval in the direction of its shorter axis, and mounting seven steps corresponding to those behind, but having on one side a statue of a professor seated in his "chair," and on the other a sentry-box, one reaches the carriage-drive, which, on either hand, sweeps round the plantation from the high road. Beyond this is the limestone peribolus or platform from which the building rises. Directly in front stands the Ionic portico of white Pentelic marble, distyle in antis, crowned with a pediment, which bears upon its apex an acroterium,—an unsightly Romanism, to our minds, in any case, and in this one made horrible as the resting-place of a dreadful creature, a sort of "two-headed nightingale" among sphinxes, for its double haunches, to procure symmetry, we suppose, sit one on the right and one on the left of a sorrowful countenance. On each side of the portico extends a corridor (some might call it a loggia), formed by square piers with moulded capitals standing upon a wall, the top of which, some 14 ft. above the peribolus, carries mouldings, and serves them for a pedestal. These piers support an entablature, for the whole building in the divisions of its height is treated as of the Ionic order, and, consequently, has a base and plinth, which together, are 5 ft. in height, an architrave, a frieze, and a cornice,—the two former of which are marked off one from the other, and from the rest of the wall, in each case by an echinus and fillet. No windows show in this front, and a considerable degree of repose is obtained, there being about 50 ft. of unbroken wall towards each angle; but the means adopted to obtain it do not help to solve the problem of applying Grecian architecture in a manner suitable to present requirements.

On the peribolus stand four ornamental "street-lamps," painted yellowish green, and closer to the building, and near to the extremities of the front, stand, on pedestals, two statues of heroic size, representing a priest and a civilian who became eminent in the revolution. The wreath of the civilian and the borders of the vestment of the priest are gilded; but such a faint-hearted approach towards the practice of the ancients only serves to suggest the want of something more. The drapery of these figures is elaborately worked in many tedious folds, and seems, more than the heroes themselves, to have occupied the attention of the sculptor. The life-size representation of the professor already mentioned pleases far more than these would-be embodiments of patriotism: it possesses sufficient of the caricature to relieve it from the nauseating insipidity so common to second-rate statuary.

The portico of this face is the only external part of the building which is of marble; it was presented to the university by King Otho, and in its dimensions and proportions is a very noble object. The fluted columns, which are raised upon a stylobate of three steps, each rather more than a foot in height, are of the temple on the Ilissus type; that is to say, without necks below the volutes. We cannot consider as an improvement the introduction of the flower which occurs on the Corinthian abacus centrally between the lateral fillets of the Ionic volute. This flower, the threads of the volutes, the eggs of the echinus, and the astragal, are gilded in each of the columns, and they form in this respect a very agreeable variety from the beautiful white marble of the other parts. The portico is 21 ft. in depth, and the inner wall, with that of the corridors on either side of it, are stained brick-red, a colour which here, in shadow, is rightly applied. The soffit is coffered, and the framing is moulded with three alternations of fillets and echini before it reaches the panel. As to the polychromic decoration of the echinus, we here meet for the first time an abomination which recurs again and again as we pass through the building. Wanting means, or inclination, to carve eggs and tongues upon the echinus, the architect has painted them on; and beyond this, as though for perpetrating so cruel a libel on those who raised their shrines of old the gods on Olympus had deprived him even of that sense which guides a servant-girl in the choice of a bonnet, has selected very hideous combinations of colours. In the present case we believe them to be those of green and brown; but there is an appearance here, as in many other parts of the work, of the painter having used the same brush throughout, without troubling to clean it. This is surely a strange way of illustrating the polychromic art of ancient Greece. Delicately to carve ornaments, and delicately to tint them with vivid colours, is one thing; but to represent them with the brush, in cadaverous hues, is another thing. It bears comparison with an ingenious device of the Russians, who when in the Crimean war they were unable to garrison a village with living soldiers, painted upon the walls representatives of the military calculated to be effective *at a great distance*.

Within the portico is the main entrance of the building; but, as all the internal doorways are of the same type, we have selected a more favourable example, which will be described below. Returning to the front, we remark the decorations, which consist of a faint green upon the frieze of the building and the tympanum of the pediment, painted eggs and tongues wherever the echinus occurs, and on the capitals of the piers daubs of blue and red of a dirty hue, and sickly-coloured honeysuckle round the neck. Passing round the exterior, nothing occurs requiring description except the quadrangles. The railing which encloses each of them is coloured yellowish-green; two lamps of the same colour adorn the space within the capitals of the piers, which form a portico on one side and on the greater part of two others are treated similarly to those in the entrance front, and being moulded thus,—echinus (very much under-cut by what we may best describe as a scotia inclined in the wrong direction), cavetto (?), fillet, astragal,—do not invite a second glance; a plain drinking-

fountain occupies the centre, on the top of which is perched a golden owl, an emblem perhaps of wisdom, but certainly not, in this case, of common sense. The interior area of the building is thus distributed. On the ground-floor, the front block is given to the entrance-hall and two lecture-theatres; on the upper floor to the library, which is broken in its length by three reading-rooms, one at each end and one in the centre. The central one is a mistake. The back block corresponds, on the ground-floor, with the front block; the upper floor is occupied by the natural-history museum, with stuffing and skinning rooms. The connecting block has, on the ground-floor, a series of class-rooms, and centrally on each side of a passage between the courtyards the care-taker's apartments; on the upper floor the grand hall. As there are no less than twenty-four external doorways in all, they need not be particularly specified to prove that the means of ingress and egress are sufficient. The lighting is satisfactory.

The two entrance-halls, with their staircases and landings, are of the same design, so that in describing one we shall be describing both. The first flight of the staircase is central; from the first landing it divides and ascends on either side. In both flights it is extremely plain, even to meanness, but on the lower landing is the entrance to the grand hall, and two Ionic columns, all of which deserve attention. The walls of the staircase are stained in imitation of masonry laid in the manner termed by the Greeks pseudisodomum, the deeper courses being cream-colour, and the more shallow brick-red.

The entrance to the grand hall, which, with the two columns, forms the most successful piece of polychromy in the building, has above it an hyperthyrum, thus constituted. The uppermost member is a large cyma of slight curves, bordered above with a white fillet, and decorated with honeysuckle flowers and foliage in red and white upon a blue ground; below this is a small gold bead, next comes a white fillet, then another small gold bead. The architrave is of two faces, with the ordinary fillet and ogee moulding round it. The fillet of the moulding is white, the ogee decorated with the honeysuckle ornament in dull green and brown-red, the bead gold. The outer face of the architrave is white with a circular floral pattern in blue, at intervals; and the inner face is covered by the Grecian fret or key-pattern in gold. The brightness and clean appearance of this piece of work is very refreshing after the dulness of the exterior and the heavy richness of the grand hall. Each of the columns on this landing is thus treated. The abacus, which shares in no degree the merit of the other parts, has eggs in red and tongues in white painted upon a blue ground. Of the capital, which follows the Erectheum type, the fillets and eye of the volute are gilded, and the eggs of the echinus; below the echinus is the bead moulding, and, below, the same moulding forms the astragal. Both these mouldings are left white, and between them the neck of the column is truly adorned with white honeysuckle upon a blue (ultramarine) ground. So much does the blue retire from the eye that the white foliage has quite the appearance of relief.

The grand hall, 125 ft. long by 36 ft. broad, is divided in its length into three parts,—the central one, marked off from the two others by two Ionic columns, with their entablature at each end, is 78 ft. long; the western portion, 42 ft.; and the eastern, 15 ft. On either side of the central division is a gallery, or aisle, 15 ft. broad, the floor of which is 4 ft. above the level of that of the body of the hall, and which is enclosed by six square piers. The hall is decorated extensively with eggs, tongues, and honeysuckle, in paint of an endless variety of colours. The frieze has medallions and scrolls upon a ground of Egyptian red. The walls and the ceiling, which is marked out in imitation of caissons, are embellished with vases and figures in the Pompeiian style, and the whole is very gorgeous.

Reviewing the decorative part of the design, we may say that it is not so much an exemplification of ancient Grecian polychromy as an experiment in the art, and that even when so regarded it is not successful. We hope that, before long, the polychromic system will come to be illustrated under the direction of some more sympathetic mind.

Liverpool Architectural and Archæological Society.—The first meeting of this session was held at the Royal Institution, on Wednesday evening, October 6th, and the President delivered an address on "The Education of the Student."

SOCIAL SCIENCE IN BRIGHTON.

The first step taken in Brighton on Wednesday morning in connexion with the Congress of the Social Science Association was the opening of the Sanitary and Educational Exhibition with an address from Sir J. Cordy Burrows, the Mayor (Mr. Brigden) presiding. To this we may return. The Congress itself was opened in the evening by the president, the Right Honourable Lord Aberdare, part of whose address we print:—

"I trust that it is hardly necessary for me to marshal before you arguments to prove that the ignorant man is exposed to dangers from which education might have preserved him; that education tends to make a man skilful in his business, and therefore to earn good wages, and so to escape the temptations of poverty; that it increases his prudence and foresight, and so saves him from many a pitfall into which ignorant men are heedlessly led; that it operates to disgust him with the lowest and most degrading forms of indulgence, and so assists in preserving him from drunkenness and its manifold miseries; that, without exactly making him moral or religious, it gives him clearer and juster views of right and wrong, and so increases his abhorence of crime. For all these reasons we can, I trust, feel no doubt that the progress of education and the decrease of crime will march together.

I need not the aid of statistics to prove to you the great advance made by elementary education since the first national aid given to it in 1836, and especially since the Education Act of 1870. Neither do I require the same aid to prove that we are still far from having attained all the objects which our educational reformers have had in view. We have, indeed, nearly provided a sufficiency of school room; we have, by the aid of compulsion discreetly exercised, filled those schools in about one-third of the kingdom, and, without such aid, increased the number of scholars everywhere; but the compulsory process is still much needed in places to which it will hardly extend unless enforced by fresh legislation; and even then there will remain an ugly gap between our ordinary schools and those to which entrance can only be obtained by an apprenticeship in crime. This gap, I fear, can appropriately be stopped by those voluntary efforts which have already given us such institutions as the Refuges for Homeless and Destitute Children, the Ragged and Industrial Schools, the Training Ships, and Boys' Country Homes,—admirable results of Christian zeal, which equal, if they do not eclipse, the most pious efforts of preceding times.

I do not doubt that this generation will not pass away without seeing these deficiences supplied. But there will still remain much to be done, which no pious effort, however wise and earnest, can speedily effect. It cannot retrieve the time which has been lost; it cannot, without long and patient labour, extirpate the evil seeds which have been sown; it cannot soon or easily supply that deep reverence for education which is the slow-ripened fruit of time. We are suffering from the consequence of neglected duties, of lost opportunities, which it will take ages of unrelaxed effort to repair. That these are no reasons for despair,—on the contrary, that wise endeavours have been and may still be plenteously rewarded,—I have striven to show; not with the poor aim of exalting the present over the past, but with the just object of inspiring hope and courage and perseverance by pointing to victories already won and conquests which may yet be made.

To the defects in our national education may easily be traced much of the pauperism which has of late excited so much well-founded anxiety. I have called pauperism the fertile mother of crime; and a little consideration will show that the expression is not exaggerated. For honest poverty, the result of untoward circumstance or inevitable misfortune, I have respect and sympathy; for the pauper dependent upon others, often as poor as himself, who owes his degradation to his vices, his laziness, his want of self-respect and independence, I have no such feelings. It is true that the pauper is not necessarily a criminal; from that extremity he may be preserved by his prudence, his want of daring, or some shred of conscience which still clings to him. But his mode of life too often brings him into evil associations; he rapidly degenerates into the tramp and the vagrant; and experience tells us how nearly allied these characters are to the thief and desperado. The man who habitually lives upon charity or the poor-rates needs but little pressure or temptation to resort to a more forcible or fraudulent appropriation of other men's goods. . . . .

As to the influence of the sanitary conditions of our large towns on crime, the materials are ample; but my remaining space is short, and happily I need not long occupy your attention in proving what may be so easily demonstrated. Narrow streets, close courts, ill-ventilated and crowded houses generate disease, disease poverty, and poverty but too often produces crime. Evil communications corrupt good manners; and evil associations are inevitable in these resorts of the miserable, the vicious, the drunkard, and the criminal. Foul air depresses, depression craves for stimulants, and stimulants beget drunkenness and its long train of curses. Crime is promoted by security from detection and punishment, and the difficulties of detection and the facilities for escape are multiplied in those Alsatias which are found in all our larger towns. It is, indeed, difficult, if not impossible, to prove how large a part of our national crime is due to the bad housing of our poorer classes; it is assuredly very great. And one instance will suffice to prove at once that proposition and the good results which may be expected everywhere from a determined effort to grapple with the evil.

The Glasgow Police Act, on which it is well known that the Artisans' Dwellings Act of this year was mainly, although not wholly, founded, and from which I confess myself to have derived, while in office, many useful suggestions, passed in 1867. Last year, at the last meeting of this Association, Mr. Morrison, chairman of the Committee of Management of the Glasgow Improvement Trust, read a paper which described some of the results of that Act, especially as regarded workmen's dwellings. Let me venture to repeat, for they cannot be too widely known, some of those results as bearing upon crime. Splendid and spacious as are the modern parts of Glasgow, the older town is notorious for the closeness of its wynds, the height and narrowness of its streets, and the density of its population. 'We question,' said Sir James Watson, the Lord Provost, 'if in any city of Europe the vicious are allowed to congregate in such clusters as in Glasgow; and in no city that we are aware of are such facilities given, by means of the buildings and localities, both for hatching and perpetrating vice and crime.' Well, the Glasgow authorities, deeply conscious of these evils, set to work like men and Scotchmen.

Here is the net result of the multifarious labours of six years from 1868 to 1873. Out of 10,000 condemned houses, they had demolished 3,085, displacing 15,425 people. But these were the worst specimens of houses and inhabitants.

	Crimes reported.	Apprehensions.	Convictions.
1867	10,899.....	5,042	2,975
1873	7,869.....	5,791	3,526
	Decrease 3,030	Increase 749	Increase 551

The least remarkable part of these results is the diminution of crime, large as it was; far more striking is the fact that, as the number of crimes diminished, the apprehensions of criminals increased from 46·2 per cent. to 73·7, and the convictions from 27·2 per cent. to 44·8; thus clearly proving the facilities for escape afforded by this crowding together of human beings 'without anything to remind them of God or nature.' In the same periods the thefts by prostitutes and in brothels had fallen from 1,192 to 264. Nor had the scattered population any difficulty in finding accommodation elsewhere, for while the 3,085 houses were being demolished, 26,794, with accommodation for 134,000 inmates, were being built in the healthier suburbs of Glasgow.

It is said, and this argument has the great authority of Lord Shaftesbury, that the population of great cities, and especially of such a town as London, cannot be moved from the centre to the circumference without inflicting great, almost intolerable suffering; that thousands of families inhabit, and can only afford to inhabit, single rooms, and that to remove them is to doom them to starvation or the poor-house. With the greatest deference to the opinion of one who has so intimate an acquaintance with the condition of the poor of London, I venture to express an opinion, founded on that of those who have specially devoted themselves to the study of this question, that the transfer of a full half of the population which now crowds the most miserable haunts of London would be a gain to them, and to those they leave behind them. Not only because they would exchange bad air for better, and unhealthy for healthy houses, but because they would be removed from the parts

of London in which what is called 'charity' is easily obtained, and where regular work, if hard to find, is frequently not sought. Whether the Artisans' Dwellings Act will perform all that its promoters hope is a question which the future will answer. It arms every important municipality with powers as large as those of Glasgow, and it will be their fault, and the fault of those who elect them, if they neglect to take the measures required for the prevention of disease and the diminution of crime. And I have a strong hope that the Government will not long delay the completion of this good work by supplementing this Act with another, applicable to the different circumstances of the smaller towns and rural districts. . . . . I feel bound to say that my inquiries have forced me to the conclusion that an excessive proportion of the crime in England and Scotland is committed by Irish-born residents.

Whence does this arise? Why do Irishmen, comparatively free from crime at home, fall so readily victims to its seductions in England, Scotland, and America? The only explanation I can offer is that, even more than the migrating Englishman or Scotchman, the Irishman suffers from being removed from his home and the many safeguards, social and religious, which there environ him. There is much to be said for a system under which the more ignorant submit themselves, their consciences, and their actions to the guidance of those whom they believe to be wiser and more virtuous than themselves. Only that guidance must be continual; for, once withdrawn, its objects fall a helpless and easy prey to temptation or bad example. Removed from the influence and precepts of their 'guide, philosopher, and friend,' they wander from the right way far more readily and more fatally than those who have been accustomed to rely upon themselves and to seek guidance from their own thoughts and convictions.

It is a necessity of our national position that a large part of our population should forsake the shelter of their homes. They cannot avoid temptation; they must learn to face and conquer it, or to perish. And, such being the law of our existence, it follows 'as the night the day' that a good education, in the largest sense of that elastic word, is at once the best instrument of success in life, and the strongest security against vice and crime.

While neglecting no precaution, while attacking the great citadel of crime on every side and with every weapon, our most assured hope of success must ever rest upon the increased morality and the manly intelligence of our people. Not that I venture to dream of a Utopia from which crime shall have disappeared. We may improve, we cannot radically change our human nature. And the moral I would draw from the history of the past and the picture of the present is not that we should contentedly and lazily acquiesce in the present state of things as being about the best which human means and human effort can attain, but that, gathering confidence from past experience, we should extend and enlarge those direct agencies which have been successfully tried, and enter resolutely upon those new and indirect paths which are opening around us with so fair a promise of good. We have received from those who immediately preceded us a world much better than they found it; let it not be our fault if we do not transmit it to our successors improved, purified, and invigorated. 'Absolute perfection, indeed,' said Archbishop Whately, in his 'Thoughts on Secondary Punishments,' 'the entire prevention of crime is a point unattainable; but it is a point to which we may approach indefinitely; it is *the* point towards which our measures must always be tending, and we must estimate their wisdom by our approach to it.'"

The Strand.—The *Metropolitan* says:—"The *Builder* of this week contains an article strongly condemning the Board of Works for want of attention to the proper paving and cleansing of their district. We have before expressed our regret that so important a district of the metropolis should be under a District Board, instead of the more direct supervision of a Vestry under Schedule A of the Local Management Act. Until very lately the members of this Board were enabled to keep their deliberations from the public by excluding the Press from their meetings, and we presume that opening the doors to outside criticism will, at all events, make the members more amenable to the ratepayers' interests."

AS TO OBELISKS.

A few notes, supplementary to the article upon obelisks, which was published at p. 543 of the current volume of the *Builder*, may be of interest in connexion with the renewed proposal to bring to this country and erect the obelisk known as Cleopatra's Needle. In selecting a site with a view to the monumental effect of the structure to be raised upon it, the object aimed at is so to place that structure in relation to the surrounding works of nature, or of art, as the case may be, that these shall by their presence and position make its excellencies more apparent.

It may be an object aimed at so to place the structure in relation to other works of art that it shall not by its proximity diminish the appearance of grandeur or of beauty possessed by them; but it is not for the architect to consider whether the natural objects among which it stands suffer an apparent diminution in any respect through the effect produced upon them by his work. Should an architect raise upon the plain of Lombardy a monument of such enormous dimensions that the Alps themselves were dwarfed beside it, he would not, on that account, be condemned.

When a constructed work is viewed together with the features of the site on which it stands, there appears either harmony or discord of colour, size, and form. If the constructed work is more or less beautiful, it is in harmony with the natural forms around it, and with the artificial forms, in so far as they themselves are beautiful: if it is not beautiful, it is in discord with them. The harmony existing may be either harmony of concord or harmony of contrast. When the qualities of the objects are similar, their harmony is harmony of concord; when they are dissimilar, their harmony is harmony of contrast.

If there were built, among grass-covered hills of curvilinear form, a house or other monument, as far as possible of mountainous size, presenting a flowing outline, and faced with green basalt (supposing that it did not, by reason of its want of beauty, form a discord), it would be in harmony of concord with the scenery about it. If on the same site were built a monument of red brick, rectilinear, and of convenient dimensions, it would be in harmony of contrast with the scenery about it.

In the former case, a comparison between the work of art and the works of Nature would be inevitable; in the latter case, in respect to every quality but that of size, it would be impossible. In the former case, if the hills were larger than the monument, the impression received with regard to it would be one of comparative smallness; and if the hills were superior in colour or outline, the effect produced on the monument would be one of poverty in that quality in which it was excelled. Even supposing that the monument surpassed the hills in each of these qualities, the effect of them would be lessened by precisely the amount of effect produced by the same qualities as exhibited in the hills.

In the latter case, the monument not vying with the hills in point of size, either no idea of dimension would be raised in the mind, or the very smallness of the monument would become a grace; the beauties of its form would be afforded full play; the red colour of its material would contrast in the most harmonious degree with the green of the hills. It is not possible to compare a rectangle and a curve, or two complementary colours; and when two objects which cannot be compared are seen together, the beauties of each are heightened.

It is useless for the artist to enter into competition with nature, or to seek from geographical accidence direct assistance in the attainment of artistic results. To place a lofty monument upon a mountain is a mistake. If seen at all from the plain or valley below, its height appears altogether insignificant; and when the summit on which it stands is reached, the same effect is produced by the great depth which lies in view. A monument so placed answers no purpose except that of a landmark. A lofty monument must be erected in the valley, or, better, on the plain. In the valley it will be near the eye while the mountain range is still distant, and owing to the imperfection of the sense of distance, which is not born in us, and developes but slowly with experience, it will seem proportionately larger than it actually is; and on the plain, where there is nothing with which the eye can compare the height of the monument but the sky and clouds (and the altitude of these the sight never appreciates), this will be far more the case.

To place the pyramid of Cheops upon Mount Atlas, and Trajan's column upon Soracte, would be to destroy their monumental existence.

The truest works of art were constructed for the sites on which they stood, the site was not selected for them, and harmony of contrast was obtained. The pyramids and obelisks of Egypt possess on the flat expanse that spreads around them a grandeur of elevation not inherently their own. The tas of China, the pagodas of India, the minarets of Arabia, the high-roofed châteaux of the Loire, and the lofty spires on the fens of Lincolnshire, were raised, in valleys and on plains, by builders who had learnt, from the palm tree and the poplar, that by comparison alone can anything appear great; and all of them, when represented, at the dictate of religion, ambition, or imbecility, on sites differing in character from those which gave them birth in the mind of the builder, lose in great part that merit which has been perceived, but little understood. Of this fact the obelisks on the Pincian at Rome are an example. The mountains of Switzerland and of Greece caused the production of cottages of small elevation with low-pitched roofs, and of the "classic" school of architecture with its predominence of horizontal lines; and this predominence of horizontal lines produced the stylobates on which the "classic" temple is elevated. The Parthenon upon the Acropolis is, with regard to position as in every other respect, an example of perfection in art.

When a structure is to be surrounded by other structures the same principles must be applied as when it is to be surrounded by natural forms. A church spire must not be raised upon the body of the building as it is in Martin's-in-the-fields, but must rise directly from the ground so that it may benefit by the contrasts between the perpendicular lines and the horizontal outlines of the body of the church, and between its loftiness and the comparative lowness of the other parts.

If an appearance of height is required, the monument must overtop all conspicuous objects, otherwise the effect produced will be similar to that seen in the "cross" which stands before and is "killed" by Charing-cross railway station, the result on the mind being an unpleasing sense of combined perpendicularity and lowness. The campanile of St. Mark's, Venice, having on the one side the level piazza, and on the other the unruffled lagoon, rising direct from the ground, and far overtopping all surrounding buildings, stands the most sublime monument in the world; and although the cathedral and Government offices, together with the very human beings that swarm about its base, are dwarfed to an extent truly wonderful, yet these buildings have been so judiciously designed (with the exception, perhaps, of the "clock-tower") that their beauty is of a kind altogether independent of altitude. Giotto's campanile at Florence suffers much from the nearness of the lofty duomo. It is, perhaps, useless to hope that ever again in England the site will not be selected for the building, but the building designed for the site.

Reverting to the subject which suggested these notes, the proposal to erect in this country the obelisks known as Cleopatra's Needles, it may be suggested that they should not be placed upon hills, but upon some level piece of ground; that they should not be raised upon any kind of basement, and that, if they are erected in London, they should be higher than the surrounding buildings. C. C. O.

DEATH OF THE FOUNDER OF THE BUILDERS' BENEVOLENT INSTITUTION.

On the 27th ult., Mr. Thomas Cozens, the founder of the Builders' Benevolent Institution, and who was well known in Marylebone for the active part he took in the cause of philanthropy and parochial affairs, died at his residence, Marylebone-road, at the age of 76. The deceased gentleman, who was born at Blandford, Dorsetshire, on the 7th of January, 1799, had been in ill health for some time past. The funeral took place on the 1st inst. at Kensal-green, and was attended by several representatives of the building trade and philanthropic associations.

Yarmouth Aquarium.—The contract for this building, the foundation-stone of which is to be laid by Lord Suffield (previously to his departure for India), on Saturday next, the 9th inst., has been taken by Messrs. Aldin & Sons, of Queen's Gate-gardens, South Kensington.

THE PROPOSED R.C. CATHEDRAL OF WESTMINSTER.

When, as far back as Michaelmas, 1850, now a quarter of a century ago, the Pope ventured on that step which all Protestant England resented as an aggression and an insult,—namely, of creating an Archbishopric of Westminster, and appointing Cardinal Wiseman to fill it,—there is little doubt that he had before the eye of his mind, so to speak, a cathedral "looming in the future"; and we believe it is no secret that, so long as Cardinal Wiseman lived, he never ceased to cherish the idea that he should be able to transfer his archiepiscopal chair and throne from St. Mary's, Moorfields, to a handsomer church situated in the city whence he derived his titular designation. But up to the time of his death, in 1865, nothing was done in the matter, and the idea was allowed quietly to sleep. But the idea was never really abandoned.

No sooner was the cardinal laid in his grave at Kensal-green than a public meeting was called, under his successor, Archbishop Manning, who lost no time in persuading his flock that it was a fit and proper step to take to secure a site and open a subscription list for the erection of a Roman Catholic cathedral, and to connect the edifice with the memory of Cardinal Wiseman. This was accordingly done without delay. In the very next year, about an acre of land was purchased to the west of the Bridewell in Tothill-fields, near the angle made by the meeting of Victoria-street and Vauxhall-bridge-road. In or about the year 1868 another plot of land adjoining the former, together with a large house, formerly used as a club by the non-commissioned officers of the Guards, was purchased, mainly through the influence of the archbishop, and the two plots were thrown into one, Dr. Manning himself making the former club-house his archiepiscopal palace.

The two plots of land together cost about 36,000*l.*; they amount to between two and three acres, and form an oblong parallelogram, running nearly due north and south. The consequence is that it is found impossible by the architect of the future cathedral to provide for the due and ecclesiastical "orientation" of the building. But although all our English cathedrals stand nearly due east and west, the objection is not so very serious to Roman Catholics when they remember that even St. Peter's at Rome stands north and south, departing from the old tradition which placed the altar at the east end of a church, whether large or small.

Ten years ago Archbishop Manning took upon himself the responsibility of inaugurating this work. But he did not accept the task except with one proviso, and that was, that he should not be called upon to lay a single stone of the material structure until he had provided for the spiritual and educational wants of the poorer and younger members of his flock. This condition, in the opinion of the Cardinal, is now morally secured, if not virtually performed; and, accordingly, it is not impossible or improbable that in the course of a very short time the first stone of the cathedral will be laid.

"It was much feared," remarks a writer in the *Morning Post*, "by many persons that influence would have been brought to bear upon Archbishop Manning to have the cathedral designed in the Italian or Roman style; but fortunately good taste prevailed over all foreign impulses, and the style of architecture chosen is, if not strictly the English type of Gothic, at all events of the finest period of Gothic architecture, when the grandest specimens of Christian art upon the Continent were but slightly divergent in their general outlines from those which rose upon our own soil." In solution of the question implied in the above remarks, Cardinal Manning thus expresses himself in a Minute which he has issued for circulation among "the faithful,"—"Whatever might be my own personal preferences, I could not hesitate for a moment, knowing how deeply our national feeling is seated in the minds of my flock, to determine that the style of the cathedral shall be English. Believing also that a sound judgment prevails in favour of grandeur, stateliness, solidity, spaciousness, and majestic elevation, rather than of minute and elaborate ornament, especially in the atmosphere of London, which in a few years defaces and obscures the decorations of our public buildings, I have thought it wiser to prefer the earlier period of the English style."

Such being the avowed feelings of Cardinal Manning, and also of his co-religionists in general, the architect chosen to carry them out, Mr. Henry Clutton, has adopted the style of the latter half of the thirteenth century, when our church-builders contrived to cover the largest areas by aid of the fewest supports and by the application of the very least possible quantity of dead materials. The capacity of the building has been largely regulated by the size and exigencies of the site, compelling the architect, for instance, to be content with very shallow transepts, but allowing great breadth to the nave. Still in it nearly all the features common to our larger cathedrals will be found to be represented, though there is no external baptistery, or galilee, or chapter-house.

To come to a more detailed description of the building itself. Standing before what would be, if the orientation were duly observed, the great west front, we shall see before us a façade 125 ft. or 130 ft. in height, and not less than 170 ft. in breadth. It will be flanked with two towers, each 50 ft. square, and pierced with three portals, as at Peterborough, Lincoln, and Exeter. The towers will rise to about 200 ft.; and at some future time they may possibly be surmounted by light spires which will rise to double that height, about the height of the cross of St. Paul's. On entering the building, the visitor of the future will find himself in a spacious nave, 50 ft. in breadth, with double instead of single side aisles on his right and left. These will be separated from the central nave by arcades of seven lofty and solid arches, each of which will be 22 ft. wide and 60 ft. in height. Of the side aisles the two inner ones will be each 24 ft., the two outer ones 20 ft. in width, the total span of the interior being 144 ft. Surmounting the arches of the nave at about 60 ft. from the ground will be a triforium running round the whole building from end to end. This triforium, again, will be surmounted by, or rather incorporated with, the clearstory, which will raise the total height of the nave inside to 125 ft. The inner portion of the double aisles will have above it a triforium and a clearstory of its own, so as to throw light down into the centre of the edifice. The windows both above and below will correspond with the arches in number, and be each of four lights, with simple geometrical tracery.

Of the transepts we have already spoken as being of necessity very shallow,—in fact, they will be scarcely distinguishable in the external view. Internally they will be only a trifle longer than the total width of the nave and aisles. Each transept, however, will have an aisle running parallel to it and at right angles with the side aisles.

Passing on to the choir we will only say that it is designed to terminate in an apse, the outer aisles of the nave being carried on in such a way as to run round the choir at the back of the high altar, and to open into seven octagonal chapels, which will form, so to speak, a corona of altars, somewhat after the plan of the eastern chapels of Westminster Abbey, through which the vergers conduct visitors who gain access to them with a silver key. Like the nave, the choir will be surmounted by a clearstory. The side chapels of the choir, transepts, and nave will amount in all to no fewer than twenty-five, each with its separate altar, if the present design is carried out; and it is quite possible that other chantry chapels may hereafter be added. A light spire or flèche, of foreign rather than English design, will surmount the building at the intersection of the transepts with the nave and choir.

Portland stone is to be the material used throughout the entire structure, and the whole of the interior will be vaulted with the same material. The glazing to be used throughout is to be plate-glass of British manufacture, set in copper frames instead of the usual lead, for the sake of permanence. It is intended that there shall be hereafter an abundant supply of stained and painted glass, in order to tone down the effect of so large an area of windows; and this will be so contrived as that it may be hung on the interior of the other glazing, like pictures on walls; in this case it can easily be detached at any time.

The dimensions of the edifice will be as follows:—Length, 400 ft. (the same as that of Westminster Abbey); breadth, 144 ft.; height, 130 ft.

Cardinal Manning has publicly declared that it will take more than a century to build this cathedral, and that only about his tenth successor will live actually to consecrate it. He well knows the old adage which says that "Rome itself was not built in a day"; and he is equally aware that out of those splendid cathedrals which have come down to us as so many legacies from the Middle Ages, not one, except Salisbury, was built within the compass of a single half-century. Hence it is intended that only a portion of the entire building, horizontally and perpendicularly also, shall be commenced at first. This part, in all probability, will consist of some few bays of the nave, with the side-aisles; and possibly, when these have been carried up to the height of some 60 ft. or so they will be roofed in temporarily, and made to serve for worship, the upper portion of the work being left to be finished hereafter. The lower and western portion, however, will be fitted up in such a way as to serve, at all events for a time, for the general purposes of a cathedral, as it will afford space for the celebration, not merely for the solemnities of Christmas, Easter, and Holy Week, and of high mass and vespers on all days of obligation and of precept, but also for the public ordinations of the Romish clergy in due form, as required by the canon law.

It is understood that the cost of executing this preliminary portion of the work will not be less than about 80,000*l.*, towards which at present only some 10,000*l.* or 15,000*l.* have been actually promised. Amongst the contributors are the Emperor and Empress of Austria, the ex-Queen of Spain, Countess Tasker, Comte de Montalembert, Mr. J. Hope-Scott, Q.C., and most of the Roman Catholic nobility and gentry of the United Kingdom. As yet Ireland does not figure largely in the catalogue, though even Rome sends its quota of gold and silver in aid of the work.

The sale of photographs of the intended cathedral is expected to realise a sufficient sum to enable its promoters to lay down a firm basis of concrete over the entire area of the site, and a commencement was made about three weeks ago to this extent, when Cardinal Manning held a temperance demonstration here, and assembled together all the metropolitan branches of the Temperance League of the Cross.

THE LATE DR. GEORGE ROSS.

We greatly regret to have to announce the death, on the 26th ult., after a few days' illness, of Dr. G. Ross, who for some years past has occupied the position of medical officer of health for the St. Giles's district. George Ross was born at Stonehouse, Devon, on the 2nd of August, 1815, and was educated at Penzance Grammar School. In 1832, he entered the medical profession as a pupil of Mr. F. G. Phillips, of Albion-street, Hyde Park. During his stay with this gentleman he attended at St. George's Hospital, and entered for his lectures at Lane's School. At an early age he developed his taste for literature. When twenty he wrote leading articles on æsthetical subjects for a weekly paper, and tales and poetry for a monthly magazine.

Soon after leaving Mr. Phillips he went to assist Mr. Asbury, of Enfield, in whose extensive practice he acquired a large amount of clinical experience. While at Enfield he wrote various papers, amongst others those on typhus fever published in the *Lancet* in 1842. A year or two after this papers on digestion and nutrition appeared in the same journal. In these papers he established from his experiments the fact, then in dispute, that lactic acid was found in the stomach, but not in the intestines. Dr. Ross afterwards contributed to the same periodical various other papers.

His first essay in political life occurred in connexion with a "General Medical Protection Assembly." When the National Association was established, overtures were made to him to undertake the office of secretary, which duty he accepted and performed for many years, and resigned only when its possession had become incompatible with increasing professional duties. During the time of his connexion with the Association, and while that great body was battling for professional rights, he wrote all the political leaders in the *Medical Times*.

In the year 1852 Dr. Ross established, in conjunction with the late Mr. Yearsley, the *Medical Circular*, of which he was for many years sole editor. It was in this journal he ventilated the idea of a system of cottage hospitals, following up the leader, which appeared in the issue of August 8th, 1858, and in which his friends claim the conception was first advanced, by an article in the No. for September 22nd of the same year, wherein the scheme is more thoroughly enunciated.

Also in this periodical his annual addresses to medical students appeared, and lectures on cholera. In about the year 1854 he became a

member of the Corporation of London, taking an active part in all sanitary business, and especially for bringing to a successful issue the project of covering Smithfield with a new dead meat market, for which on his retirement from the Common Council a testimonial was presented to him by the Wardmote which he represented.

In the year 1869, Dr. Ross was appointed Medical Officer of Health for St. Giles's and Bloomsbury, which he held until his death. Dr. Ross filled various positions, and in all was an active worker. He was a man of the age, always interested and active in every movement of progress and philanthropy. He possessed great energy, was kind of heart, and gentle of manners.

THE IMPROVEMENT SCHEME FOR HOLBORN.

Sir J. W. Bazalgette, C.E., and Mr. G. Vulliamy have reported to the Metropolitan Board of Works strongly in favour of such a scheme as that proposed, as already mentioned in our columns, under the Artisans and Labourers' Dwellings Improvement Act. They properly draw a distinction, however, between the course to be pursued in Gray's-inn-road and the courts behind it, saying:—

"In forming the four new streets into Gray's-inn-road, it will be necessary to purchase and pull down some of the houses in that road. Most of them are very old, dilapidated, and overcrowded, and Gray's-inn-road, which is a very important thoroughfare, is only 30 ft. wide. It cannot be doubted that the widening of this portion of Gray's-inn-road will materially improve the sanitary condition of the neighbourhood, although it may be questioned whether this improvement can properly be regarded as the necessary widening of an existing approach to the area under the terms of the Artisans' Dwellings Act, or whether it should not be treated and paid for as a local improvement; but whatever view may be taken of this question, we are of opinion that this portion of Gray's-inn-road ought to be widened to at least 50 ft., and that this is the proper and economical time for effecting that improvement."

This is their estimate:—

For the improvement scheme, exclusive of the cost of widening Gray's Inn-road:—

Purchase of property, gross	£187,500
Formation of new streets, drainage, &c.	17,000
Erection of proposed dwellings	170,000
Total expenditure	£374,500

Upon the assumption that the new rents will be equivalent to the present rental, or 16,000*l.* per annum, and that persons will be found to erect the required houses upon a return of 5 per cent. interest on the outlay, the annual expenditure will stand thus:—

The Board would have to expend, in money borrowed for the purchase of property, 187,500*l.*, at 3½ per cent.	£7,266
Account for forming roadways and sewers, 17,000*l.*, at 3½ per cent.	700
	7,966
And would receive in return ground-rents valued per annum	1,500
Leaving a deficit of say	£3,466

per annum to be paid out of the rates in respect of this improvement scheme. The society erecting the buildings would pay:—

Interest on 170,000*l.* at 5 per cent.	£8,500
Rates and taxes	1,800
Repairing, &c.	1,250
Ground-rents	4,500
	16,050
Present rents	£16,000

It was decided that the report should be printed, and taken into consideration at the next meeting of the Board.

The statements of Lord Shaftesbury's society as to the number of inhabitants of Tyndall's-buildings, concerning which a correspondence took place in the *Builder*, are fully justified by the present report. The writers say:—

"Our attention has been specially called to the number of persons occupying Tyndall's-buildings, the surveyor of the Holborn District Board having in his report returned 608 persons as occupying 19 houses there. Tyndall's-buildings is under the management of a society for improving the condition of the labouring classes, presided over by the Earl of Shaftesbury, who affirm that the inhabitants of Tyndall's-buildings do not exceed 321 living in 19 houses, and Lord Shaftesbury has appealed to this Board to inquire into the accuracy of these figures. We find, including the registered lodging-house, and two houses in Gray's-inn-road, belonging to Lord Shaftsbury's society, in all 21 houses, with 113 rooms, that the population does not exceed 204 adults and 134 children, or a total of 338. This for the 19 houses in dispute is below the number returned by Lord Shaftesbury's society, and gives an average per room equivalent to that stated above for the whole area. The condition and management of Tyndall's-buildings is very superior to other houses in that neighbourhood."

Mr. Thomas Smith, of Hertford.—Mr. Thomas Smith, architect, died, we regret to hear, on the 1st inst., in his seventy-seventh year. He had held since 1832 the office of county surveyor, and in 1868 served as mayor.

SOME OLD HOUSES AND THEIR STORIES.*

MISS MITFORD'S COTTAGE IN "OUR VILLAGE."

The late Charles Dickens, describing that amusing scamp, "Harold Skimpole," in "Bleak House," tells us that he was educated for the medical profession, but knowing nothing of weights and measures,—except that they disgusted him,—"he had never been able to prescribe with the requisite accuracy of detail," and, moreover, that when his patients wanted him he was generally in bed reading the newspaper, and would not be disturbed. It has often struck us that at one period of his life, Dr. Mitford might have sat for this character. He was a good-looking, impulsive, indolent, happy-go-lucky, gay, young fellow, when fresh from the North of England, and, having been educated for the medical profession, he became assistant to one of the most remarkable and shameless of London quacks, a Dr. Graham, of the last century, whose curious electrical apparatus, indescribable "celestial bed," and exhibitions of the brazen, unblushing woman, called "the Goddess of Health," had rendered him notorious all over Europe. Bidding adieu to these things, together with the famous mud baths associated with them, the assistant doctor, who had always been a favourite with the foolish ladies of rank and fashion who crowded his master's "temple" in the Adelphi, married Miss Russell, a lady of wealth and beauty, the daughter of a Hampshire clergyman, and settled down to a life of ease and enjoyment. So long as the wife's fortune lasted, this was very well; but when it had gone, and debts were accumulating, when tradesmen sent coarse, insulting messengers, and awful threats of legal proceedings came by post,—when the wife's face grew pale and thin, and every knock at the door made her heart leap and her limbs tremble,—then one might have imagined that Harold Skimpole, —we beg pardon, Dr. Mitford,—would have made efforts, more or less desperate, either to meet the difficulties before him, or to shelter his devoted wife and her only child, born in 1786, and in Hampshire, from the full violence of the storm. Not he. His trust was in friends and good fortune, and no effort beyond that of appealing to the one, while indolently trusting to the other, seems to have been expected from such a simple-minded, unworldly, comfort-loving being. He folded his hands, had his little laugh over his little jokes, accepted gaily whatever wife, child, or friend contrived, at any sacrifice, to procure for him, and, with Harold, almost felt that people ought to be grateful to him for the opportunities he gave them of displaying those nobler qualities of human nature, unselfish affection, self-sacrifice, generosity, and devotion,—all of which he most enthusiastically admired, but never dreamt of emulating. Without patients, prospects, or purposes, he drifted onward from bad to worse. Good luck and kind friends came over and over again to his rescue, but for no lasting good. At one time he won a large sum of money by a lottery-ticket, purchased for his daughter Mary as a birthday gift, because she had dreamt of its number,—but this fortune followed his wife's, and the horizon was soon as gloomy and threatening as before. He has been described as a man whose heart and brain had changed places, so prone was he to obey the impulses of feeling, when reason should have been his guide, and to waste time in irresolute, unnecessary thinking, when the proper course was clear, and right feeling prompted immediate action.

When his daughter Mary was a mere girl she wrote poetry, and before she was twenty years old three octavo volumes of her works were in print. They sold well, although the *Quarterly* castigated them severely,—she afterwards said, deservedly. Domestic troubles still accumulating, the wife and daughter conceived a notable scheme. They would abandon their large white house, take some quiet little cottage in a more retired part of the country,—

"Some cottage-home from towns and toils remote,
Where love and lore alternate hours employ,
To snatch from heaven anticipated joy;"

and there, where house-rent would be low and living cheap, aided by the scanty earnings of Mary's pen, the doctor could lead that indolent, pleasant, comfortable life which he loved, fearless of duns and writs and prison, with a pretty garden for his amusement.

Three miles from Reading there was a quiet old-world picturesque little village, called Three-mile Cross, surrounded by beautiful rustic scenery, the few inhabitants of which lived apart by themselves, insulated, "like sailors in a ship." At the lower end of this village, on proceeding up the hill, and by the side of the high road, they found a cottage to be let. "A cottage,—no, a miniature house," as Miss Mitford says, "with many additions, little odds and ends of places, pantries, and what not, all angles, and of a charming in-and-outness; a little bricked court before one-half, and a little flower-yard before the other; the walls old and weather-stained, covered with hollyhocks, roses, honeysuckles, and a great apricot-tree . . . . the closets, which the landlord had the assurance to call rooms, full of contrivances and corner-cupboards, and the little garden behind full of common flowers,—tulips, pinks, larkspurs, peonies, stocks, and carnations, with an arbour of privet not unlike a sentry-box, where one might live in a delicious green light, and look out on the gayest of flower-beds. That house was built on purpose to show in what exceedingly small compass comfort may be packed." Such a place was Swallowfield Cottage when it became the residence of the Mitfords, and there, while his daughter toiled unceasingly for his support,—now hopefully, now with a heavy heart and tearful eyes, and often far into the night,—he acquired new habits, settled quietly down to a country life, contented with the humblest comforts, and was the same light-hearted, cheerful, pleasant man that he had always been. His wife and daughter were devotedly attached to him; he retained the esteem of his remaining old, and attained that of new friends; but he "toiled not, neither did he spin," with hand or head. He was a retired physician.

And Mary Mitford, apart from the unceasing toil of her precarious profession, found the change a delightful one. Her simple cheerfulness and childlike readiness to be pleased were qualities which never suffered diminution through all the trials and cares of narrow circumstances and the most bitter disappointments. She went about amongst the villagers smiling and gentle, full of sympathy and kindness, until her round good-humoured face, kind voice, and rotund little figure, were as familiarly known as they were joyously welcomed by every man, woman, and child in "Our Village." In her gratitude for their esteem and affection, and from the genial unconscious influence of habit, she learned to know and love them all, studied their characters, their lives, grew enthusiastic in praise of their virtues and good qualities, shared their cares and troubles, touched lightly and with reluctance upon their follies and faults, smiled at and was amused by characteristic peculiarities which the peevish or ill-natured would have bitterly denounced, and the worldly would have mocked and sneered at. Her exuberant good-nature and cheerful habits carried her bravely through all that heart-sickness of unremunerative brain-labour which has slain its thousands, and her simple

"Pleasures were as melodies from reeds,
Sweet books, deep music, and unselfish deeds."

Lovingly did she wander amongst the woodland hollows and hills; over the breezy common, noting how the golden sunset glorified its sandy banks, and in the noonday twilight of the narrow tree-sheltered lanes; through golden cornfields, and along the cattle-dotted, sunny pasture-lands surrounding "Our Village." Out of the fulness of the heart the mouth speaks, and from the same source comes the inspiration of the writer. The editors of the more important publications of the day began to receive from one Mary Russell Mitford, of Berkshire, certain wonderful life-like word-pictures, called "Sketches of Rural Life and Character," and one after another the said editors sent them back to Swallowfield Cottage, probably unread, but always "declined with thanks." Campbell, the poet, who was then editing the *New Monthly Magazine*, was one amongst these editors, and it was not until 1819 that the "Sketches" saw light in the *Lady's Magazine*. But with the public they at once found favour, and their popularity continually increased, until their publication in a separate form crowned the edifice of her fame, and made her name a power in the land. Even the *Quarterly* gave them high praise. The bitter disappointments, the awful terrors of failure which had preceded the success of these "Sketches," gave this her great triumph new delights, but above all her affectionate, unselfish nature rejoiced in the ability it bestowed upon her of surrounding her beloved parents with fresh comforts and luxuries. It would be difficult to exaggerate

* See pp. 817, 861, *ante*.

the intensity of her satisfaction, pride, and delight when she bought a second-hand pony-carriage, with a pony, for the darling mother who worshipped her, and the beloved father who so enthusiastically appreciated all she did for him. She has been described as the merriest and happiest of gleeful little women, standing in a high state of child-like excitement by her cottage-door, as that small vehicle, in all the glory of a new coat of paint, was brought out, and her mother and father got into it for the first time. Some years since a London reviewer, describing this scene, said,—"We think little of pious Æneas, with his father on his shoulder, in comparison with Mary Mitford working that she might seat both her parents in her own chaise, and clapping her hands for joy as she saw them take their first drive," and we are of the same opinion. Picture her watching the dear old couple in the pony-chaise until it was out of sight, and then going in to work with renewed vigour for corn to feed the pony.

Wider and wider spread the circle of her fame; farther and farther from her cottage-door went the grim, gaunt wolf of the gloomy old saying. The gentry, whose mansions stand so thickly in the Berkshire and Hampshire woodlands, were proud to make her acquaintance, and great literary lions from London sought her out with the same end in view. Soon they came, too, from America, where her poems were all reprinted. She welcomed them all with equal heartiness and simplicity,—sincere, lady-like, hospitable to all, and without the slightest particle of affectation. Her visitors were delighted with her cheerful, child-like father, and with her bright and pretty cottage-home. Maria Edgeworth, Joanna Baillie, and Felicia Hemans were amongst those of her own sex who, proud of her genius, congratulated her most warmly. A writer in the *St. James's Magazine* recently remarked,—"It says much for a local literary reputation 'in the country,' when a lady living in a cottage—a real cottage—almost covered with roses, jasmine, honeysuckle, and an apricot-tree spreading all over the south wall, who, giving an evening party, with no 'spread' whatever beyond tea and coffee, and a prodigality of strawberries, shall yet have a line of private carriages waiting outside, astonishing the little hedges of the highway and green lanes for nearly half a mile, and bringing the *élite* of the county families for miles all round,"—and so it does. The "retired" doctor, with his clear, florid complexion and bright eye, his strongly-built figure, and brisk, hearty frankness of speech and manner, was a capital host,—much admired as a free-spoken, honest, unaffected gentleman, who loved a rubber of whist, a good table, and choice wine, but had no ambition, and no false pride. In due time he became chairman of the petty sessions held at Reading, and, with a constant leaning to the side of mercy, despite his ignorance of legal matters, made, it is said, a tolerably good and useful magistrate.

And now all seems happiness and content in Swallowfield Cottage, which "Our Village" so well describes. Its daily life is there photographed for us with wonderful fidelity,—a peaceful round of kindly duties and pleasures agreeably interwoven with visits and visiting,—nothing more; and yet how interesting it is! How well we can recall that most faithful of domestics, Lucy, with her round, dimpled face, dark hair, red lips, and white teeth, whom all the visitors used to pause at the hall-door to speak to, and ask for if she did not appear. Don't you remember how she used to rouse "half the family in the middle of the night at the first symptom of a thunder-storm or an apparition"; how she used to sing to herself, in "a tremendously powerful, shrill, high voice," which "rang through one's head like the screams of a peacock," and, when offended, "used to scour through half-a-dozen doors in a minute, for the mere purpose of banging them after her." Surely you have not forgotten, or never read, of these things; nor how she was such a gossip that "she could have furnished a weekly paper from her own store of facts, without once resorting for assistance to the courts of law, or the two Houses of Parliament"; and such a flirt that Dr. Mitford, whom she greatly amused, "had the habit of calling her by the name of the reigning beau,—Mrs. Charles, Mrs. John, Mrs. Robert; so that she answered in her time to as many masculine appellations as would serve to supply a large family."

Nor can you have forgotten how "a whimsical experiment in legislation" making a preliminary visit to Swallowfield Cottage essential to all the inhabitants of "Our Village" who were about to marry, introduced many a blushing belle and awkward beau to the notice of the inhabitants. The romantic story of Hannah was probably the most striking of all the village love-stories with which that little old cottage thus became associated. One morning the limping parish clerk introduced to the little hall on a matter of business in the matrimonial way, a pair of lovers: he a fine handsome athletic young man, holding the hand of his young woman, "who, with her head half-buried in a geranium in the window, was turning bashfully away." Miss Mitford was crossing the hall; "the shrinking grace of that bending figure was not to be mistaken." She cried in surprise, "Hannah!" and, with a woman's eager curiosity and interest, at once took the pretty, lady-like village girl aside to hear a love-story. It was very short. The young man, who said he was a journeyman hatter, had come to "Our Village" to see the cricketers, whom Dr. Mitford took delight in patronising. He saw Hannah, and he came again. Hannah's hard-working widowed mother liked him; in fact, as Hannah gushingly said, "Everybody liked her William," and so she was going to——. "Was it wrong?" she anxiously asked. "Certainly not," was the emphatic response. William had expressed a fear lest Hannah should find his poor home in some narrow street or lane in Reading a sad exchange for her cottage home at Three-Mile Cross; but, said Hannah, "He little thinks, anywhere——", and broke off, finishing with a clasping of the pretty hands and blushing of the soft cheeks, far more eloquent than words. You remember the rest of that romantic story, how the "journeyman" turned out to be the son of a "Great Hatter," who lived in the market-place of Reading, and had much wealth; and how, when Miss Mitford visited the happy, blushing bride in that town, she found her so prettily quaint and awkward as the mistress of one of the best houses in Reading, with fine servants, fine furniture, fine clothes, fine gardens, and more money than she knew what to do with. A touching little story that, perfectly true, and one fairly belonging to this little old house.

And you will not have forgotten that terrible disaster when a stage-coach passing that way,—quite a new thing,—a sleepy coachman and a restive horse contrived to knock down the wall protecting the court of Swallowfield, and fairly drove "through the front garden, thereby destroying sundry curious stocks, carnations, and geraniums." Miss Mitford said it was a mercy that the unruly steed was content with battering the outer wall, for the message itself would have fallen about their ears almost at a touch. There was one little end parlour, an afterthought of the original builder, which had been made, or was afterwards, the library, and wherein she usually, we believe, worked, which she very much wondered how the sagacious quadruped missed. It is on the left in our sketch. There was a terrible uproar on that occasion. The three lady passengers inside the coach shrieked, the gentlemen outside swore, the coachman, while still half asleep, took to blowing his horn, passers-by shouted or screamed according to their sex, the ladies of the cottage joined the screaming, and the deep, lion-like voice of Mayflower, the dog,—you'll remember him, too, as the predecessor of Dash,—overtopping all, added to the din. The damage was soon repaired, however.

We get an amusing, but hardly good-natured, sketch of an interior scene of Miss Mitford's cottage, in the Rev. J. Richardson's "Recollections of the last Half-Century." It belongs to the period of her dramatic experience. Visiting the dingy little theatre at Reading, to witness the performance of one of her own pieces, she there saw a young actor named Cathcart, who played the principal character. She had no very high opinion of the great leading actors of her day,—Kean, Kemble, Young, and Macready,—but in Cathcart she believed she recognised superior talent, which only lacked some fitting opportunity to become a shining and conspicuous light. The actor was most anxious to appear upon the London boards, and he appealed to Miss Mitford, as one who, by virtue of her dramatic writings, might have sufficient influence with London managers to advance his strong desire. With that end in view, a choice selection of visitors had been invited to Swallowfield, where, after dinner, Cathcart was to read to them the part of *Hotspur* in Shakspeare's "Henry IV." Dr. Richardson says:—

"At the appointed time the reading of the play came off. The company invited to partake of the mental treat consisted of myself, on whose critical qualifications some confidence was reposed. I had, however, been previously instructed to abstain from interruption, and reserve the items of my criticism till the conclusion. Dr. Mitford, fully aware that a mere mental banquet even of the best ingredients is a thing very little appreciated in a rural district, and especially when a critic has to come ten miles across the country to enjoy it, very wisely arranged that a more substantial feast should precede the putative inducement to the journey. It happened that the day was one of the most sultry of a very sultry summer; and as the refectory of the cottage was too small, the dinner was served in a sort of outhouse, used as a conservatory for flowers, but, unfortunately, from its proximity to a farmyard, redolent of odours unmistakably distinct from those which flowers diffuse. The fare was more substantial than elegant; the *pièces de resistance* consisting of a boiled leg of mutton, and the delicacies of a roast pig. These, with vegetables to match, with kindred pudding, having been despatched, the cloth was cleared away, and what is termed the business of the meeting commenced." But the doctor and the clergyman partook a little too freely from the decanters placed before them, or the warmth of the weather, combining with the closeness of the room, had a very unfortunate effect, for Mr. Cathcart, proceeding with "emphasis and good discretion, and the doctor nodding his approval at intervals, at length began to nod a little too frequently, and at last proclaimed, with a most provoking nasal snort, that he was no longer an auditor." The reading then commenced, to the great amusement of those present, as follows:—

"*Hotspur.*—Speak of Mortimer.
Dr. Mitford.—(Repeats the snort.)
Hotspur.—Zounds!
Dr. Mitford.—(Snort repeated.)
Worcester.—Peace, cousin.
Dr. Mitford.—(Snort repeated.)
Hotspur.—But I will find him where he lies asleep.
(Smothered laughter, and the snort repeated.)
Hotspur.—I'll have a starling that shall be taught——
Dr. Mitford.—(Snort repeated.)
Hotspur.—I'll have him poisoned with a pot of ale.
Dr. Mitford.—(Snort repeated.)
Worcester.—I will talk with you when you are better tempered to attend."

At this passage the doctor, as if a joke had been preconcerted, emitted a sound which had the effect of startling its perpetrator from the impropriety of his interruptions, and for a time the reading ceased.

There was some merriment in the old cottage with a dash of transient bitterness in it when ultra-loyal Mary's anti-republican play, "Charles the First," having been accepted by a manager, and approved by his actors, was, to her intense astonishment, declined and inexorably thrust from the major stage by the author of "Broad Grins," Mr. George Colman, who was then licenser of plays, on the ground that it was fraught with danger to the British Monarchy, embodying, as it did, the trial of a king by his subjects. The tragedy was afterwards played at a minor house, unlicensed, and it is a remarkable fact, worthy of frequent recording, that the reigning dynasty actually survived it. Then what fun there was, with no dash in it but that of pride, in recalling the rehearsing of Mary's play on that "vast dusky and cavernous" stage of Covent-garden Theatre, where solemn tragedians of the night, hatted and great-coated, laughed and joked and skipped about, chatting and telling merry stories, just like common mortals; where tragic heroines sauntered languidly through their parts "in the closest of bonnets and thickest of shawls," where a solitary fiddle occupied the almost invisible orchestra, "striking up as if of its own accord," to the sounds of which untidy ballet-girls walked through the figures of their dances. In our fancy we hear Miss Mitford's merry laugh echoed by the old cottage walls as she tells how in selecting and arranging the scenery a fine view of the Rialto got mixed up with a bit of Charing-cross and a slice of the Forest of Ardennes, how violent disputes arose as to the proper size for the moon and the best way of arranging the muslin clouds which were at night to dim its brilliancy, and how she added to the general noise and confusion of carpenters, of prompters, call-boys, actors, scene-shifters, &c., when a gun, which Macready had promised her should not be



Miss Mitford's Cottage, in "Our Village."

fired at rehearsal, went off and set the tragic authoress shrieking. She had been frightened by a gun when a child, and hated it "like a wild duck."

Again our fancy pictures the pleasurable excitement of a return to this quiet dear little leaf and flower-embowered home, after Miss Mitford had sat in the room of George Robins, the auctioneer, waiting and trembling to hear how a first representation of one of her tragedies was received; she never had the courage to witness it herself. The good tidings of success usually found a willing messenger in the person of poor Haydon, the painter, "whose quick and ardent spirit," she says, "lent him wings on such an occasion."

But it is impossible that our fancy should wander unrestrained calling up the great and good, the interesting or the merely famous, who have entered this humble cottage-door, as their voices, now hushed for ever or still within our hearing, come back to us in the silence of our thoughts echoed from these old walls. We could fill column after column of reminiscences culled from almost innumerable sources, and still lack space when we had monopolised an entire number of the *Builder*. These old walls witnessed their amiable owner's intense grief when one after the other her parents died; her equally intense joy and pride when the author of "Ion," the young but famous Mr. Justice Talfourd, helped her, as he helped many a worthy struggler afterwards, by that judicious advice and sincere sympathy of which "Foscari" was the result. They witnessed her unceasing delight in rearing and perfecting the beautiful flowers of which she was at least as proud as she was of her writings, and saw her in the library there absorbed hour after hour in the pages of those favourite authors of hers who figure so pleasantly in the "Notes of a Literary Life,"—a book we are constantly taking from its shelf. In the conservatory she loved, and of which the Rev. J. Richardson speaks so depreciatingly, it was her delight to pass day after day during the summer months in the midst of her choice geraniums, reading, or in other ways ministering to the comfort and happiness of her father, of whom she wrote, "his gay and careless temper all the etiquette in the world could never tame." They looked out upon the glowing odorous bee-haunted garden, with its privet sentry-box and its soft patches of quivering green shade and hot brilliant sunshine, chatting pleasantly of the present and the past. In the gardens full of choice plants and rare blossoms, seedlings, and cuttings, floral novelties and varieties of almost all sorts, of all ages, and of all kinds and degrees of beauty, abounded, the products of Miss Mitford's loving handiwork and industry. Year after year went by, until at last her father had gone and she was alone in her cottage. And her nut-brown hair grew white, and old age set its marks upon her pleasant face and round her cheerful eyes. Illness confined her to her little bedchamber, and there patiently and uncomplainingly she endured it, seeking consolation when she could in her books and flowers, and always in pious exercises. At that time she wrote as follows to a friend:—

"I take it for granted that you know of my afflictions; but God is very merciful. He has left unwithered my intellect and my affections, and at this very moment I am sitting at my open window, inhaling the sweet summer air; a jar of beautiful roses on the window-sill within-side; a perfect sheath of fresh-gathered meadow-sweet sending in its almony fragrance from without; and although too much sunken in the chair to look down on my little flower-beds, I have the blue sky, the green trees, and the distant harvest-fields for a prospect. There is consolation here—the best consolation next to the goodness of God is the beauty of nature."

And this is the last glance we shall turn towards her and the little old house to which so large a section of Miss Mitford's life-story belongs. She died twenty years ago in her sixty-ninth year, and there are many living who remember with tender love and sadness the authoress of "Our Village" and Swallowfield Cottage.

RUINOUS HABITATIONS AT AND NEAR CARMARTHEN.

During the recent meeting of the Cambrian Archæological Society, at Carmarthen we had many opportunities of seeing some of the wretched and dilapidated habitations pertaining to that part of South Wales. The illustrations now published need very little comment, as they speak for themselves, and we may hope the state of things as now illustrated will soon pass away. It cannot be denied that the destruction of similar objectionable tenements, together with the carrying out of sweeping sanitary reforms, has done very much to improve the general health and condition of the whole country. This fact is now fully admitted by all thinking persons, and the time will probably soon come when the men who have been foremost in urging these reforms, through good and ill report, will receive the full credit of their really good work.

The sketches were all taken with a camera-lucida, and are exact. No. 1 is one of a series of sketches taken at Kidwelly, near Carmarthen, on the 20th of August last, and is a good example of the dilapidated habitations common in some parts of the town. There is a very large ruined castle at Kidwelly, and the houses illustrated in fig. 1 are within the castle precincts. The streets here are grass-grown, and sprinkled with great stones from the ruined walls and tumble-down houses and castle.

No. 2 is one of a series of sketches taken at Laugharne, also near Carmarthen. The one on the left is (or was) the "Three Tuns" public-house; the middle structure was a carpenter's shop; whilst farther along the street are stables. The whole street is grass-grown, and at the time our sketch was taken the ruinous thatched roofs were regular botanical gardens of wild plants.

The remaining sketches are from Carmarthen itself. Nos. 3 and 4 form part of the priory, and the view from the windows of these houses is over the beautiful vale of Abergwily, which includes Merlins Hill, altogether one of the most lovely and quiet pastoral landscapes it is possible to imagine. Near this spot is the so-called "Nuns' walk," and some celebrated earth-works. The houses illustrated are in an abominable state of squalor, and some have their only entrance on the first-floor, which is reached by steps, if a heap of rude stones may be so called, from the outside. One of the houses is furnished with a handrail,—the other not. Five not very distant closets (adjoining each other) may be seen in the right-hand sketch. These two engravings may be said to represent a "pretty getting-up-stairs" at the Carmarthen Priory. How an inebriated householder could ever reach his street-door on the first-floor up these steps, and possibly at night, it is difficulty to say, for if he by good fortune reached the landing, there are still two more steps to ascend before the hall is gained, as the sketch will show.

The last sketch, No. 5, falsifies, in one sense, the old adage that "cleanliness is next to godliness," for this row of unclean houses is by the side of a somewhat new and stylish church. One of the peculiarities of this row of one-roomed cottages is the absence of front windows: the tenants, however, are doubtless honest folk, for they keep their stores of fuel, &c., in a sort of common stone shed next the street, as shown. Whilst we were at work with our camera, two of the tenants were curious to see what was going on. One, a Welshman, stood outside a door; and the other, a donkey, looked out of window and we sketched both for the *Builder*.

W. G. Smith.



Fig. 1.



Fig. 2.



Fig. 3.

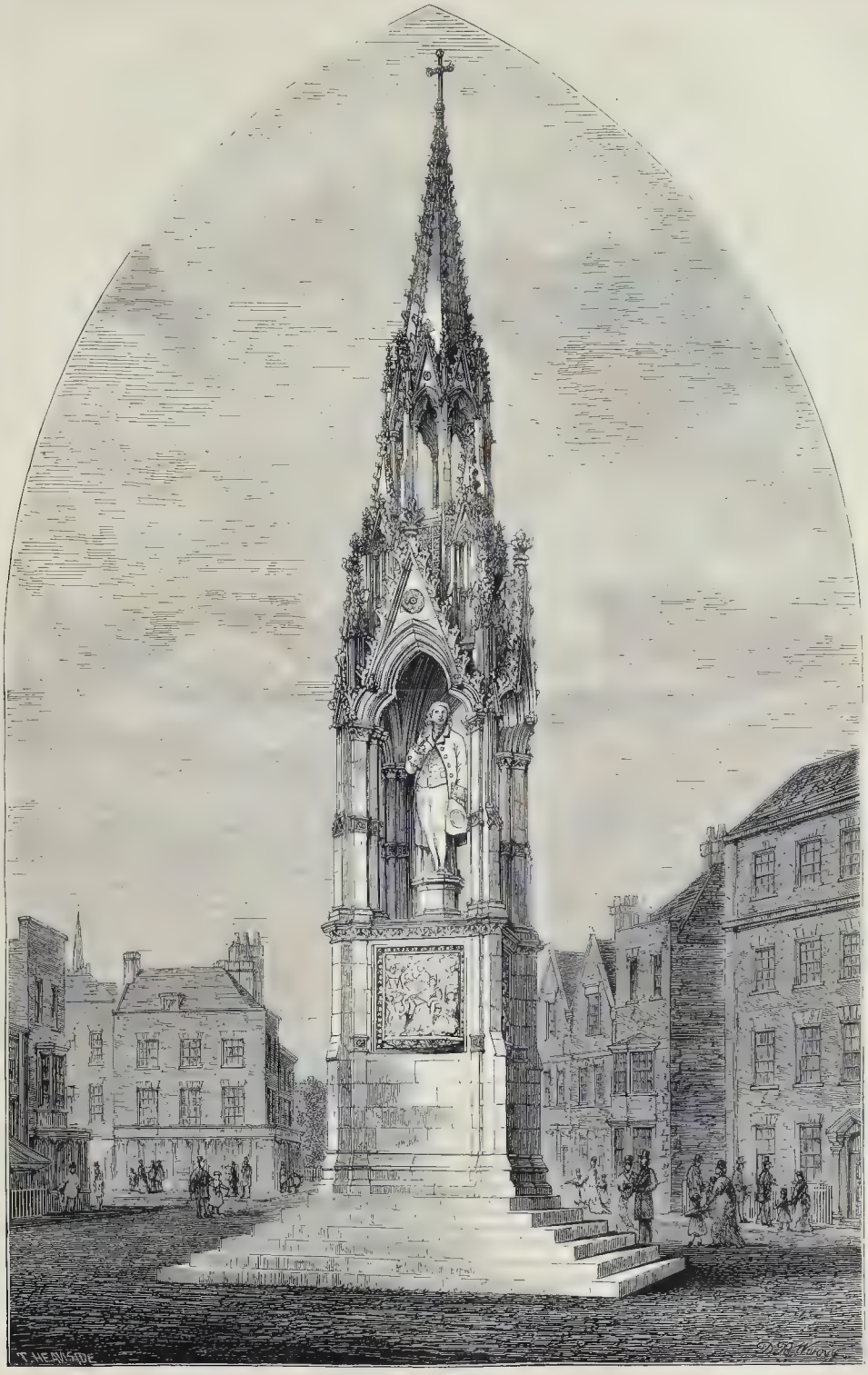


Fig. 4.



Fig. 5.

HOW PEOPLE LIVE AT AND NEAR CARMARTHEN.



PROPOSED CLARKSON MEMORIAL, WISBECH.—Designed by Sir G. G. Scott.

THE PROPOSED CLARKSON MEMORIAL, IN WISBECH.

It is proposed to erect a memorial of the late Thomas Clarkson (the indefatigable advocate of the cause of the oppressed African, and a prominent member of the distinguished and devoted body of men who laboured for many years, with great success, for the abolition of the slave-trade), in his native town of Wisbech, from a design by Sir G. Gilbert Scott, R.A.

It is so right and proper a step that we publish a view of the design, in the hope of inducing some of our readers to give their aid to the undertaking. Let us remind them a little more in detail who Thomas Clarkson was, and what he did. He was born in Wisbech on the 28th of March, 1760, his father, the Rev. John Clarkson, being the master of the Grammar School there. From St. Paul's School he proceeded to St. John's College, Cambridge, where he took his M.A. degree, and was subsequently ordained deacon. He did not, however, proceed to priest's orders. In 1785 Dr. Peckard, Vice-Chancellor of the University, deeply impressed with the iniquity of the slave-trade, announced as the subject for the Senior Bachelors of Arts' Latin essay, "Anne liceat invitos in servitutem dare?" Clarkson became one of the competitors, and spared no efforts in collecting the materials. "No person," he writes, "can tell the severe trial which the writing of it proved to me. I had expected pleasure . . . . . but all my pleasure was damped by the facts which were now continually before me; it was but one gloomy subject from morning till night. . . . . I sometimes never closed my eyelids for grief. It became now not so much a trial for academical reputation as for the production of a work which might be useful to injured Africa." The work thus projected was published in London in 1786. In London he became acquainted with a small band of philanthropists who were already engaged in exposing the cruelties of the slave-trade. Dining one day with Sir Charles Middleton, afterwards Lord Barham, the conversation turned upon the subject, and Clarkson stated his readiness to devote himself to the cause; and this he did with untiring energy and perseverance during the remainder of his long life. He had for his coadjutors, among many others, Wilberforce and Granville Sharp. The former undertook the cause in Parliament, some of the London newspapers, including the *Times*, supporting the movement. To Clarkson fell the arduous task of informing the mind of the public on the subject. He got up meetings and gave lectures in all the chief places in the provinces, with the view of exposing the atrocities of the traffic. In the course of this mission he travelled over England, and visited France during the heat of the Revolution. He had an interview with Louis XVI., and was befriended by Necker and Lafayette. He was also publicly honoured with a seat in the French Assembly during the discussion which Mirabeau commenced at his instance, and which resulted in the abolition of all slave-trade bounties. He returned to England, and "for seven years," he said, "had a correspondence to maintain with 400 persons. I had some work or other to write annually for the cause. During this time I had travelled more than 35,000 miles in search of evidence, performing a great part of these journeys in the night. All this time my mind had been incessantly on the stretch upon one subject only, for I had no leisure to attend to my own concerns."

All these pains and exertions were, however, repaid by the triumph which Mr. Clarkson and his fellow-labourers achieved. On the 25th of March, 1807, after long and obstinate resistance from interested persons, the Bill for the total abolition of the slave trade by the British nation was passed. But neither he nor his associates considered their work as yet accomplished. It took upwards of twenty years more to effect the total abolition of slavery and the slave trade in the British colonies; but this was accomplished by the Act of 1833, which, as from the 1st of August, 1834, manumitted, for a compensation of twenty millions to the owners, over a million of slaves. He subsequently lived in retirement at Playford Hall, near Bury St. Edmunds, and died there on the 26th of September, 1846, in the 86th year of his age, and was buried in Playford churchyard. The present Astronomer-Royal, and a few other private friends, erected a granite obelisk to his memory over his remains; but it is remarkable that some more considerable memorial should never have been erected by the public to one who was so truly the friend of his country and the benefactor of the human race. We have pleasure in adding that subscriptions may be forwarded to Mr. Frank Metcalfe, Wisbech, who acts as honorary secretary to the committee which has been formed to carry out the undertaking.

If the memorial be completed (as proposed), with marble statue and bas-reliefs, a sum of between 2,000*l.* and 3,000*l.* will be required.

A BENEFACTOR TO IRELAND.

The death is announced of Mr. Charles Bianconi, D.L., which took place on the 22nd ult., after having been prematurely announced a week earlier. Mr. Bianconi was a native of Northern Italy, where he was born at the village of Tregola in September, 1785. He left Italy in his fifteenth year and came to England in the care of one Andrea Faroni, who had agreed with the boy's father to teach him the business of dealing in prints, mirrors, and other goods. A further stipulation of the arrangement was, that should the young Carlo not like the trade, he was to be placed with Mr. Colnaghi, the well-known picture and print dealer, who was a particular friend of the Bianconi family. However, after a short residence in London, Faroni went, in 1802, with his young charge to Dublin, where they settled down in a little shop in Temple Bar. At this time little Bianconi could speak no language save his own, and vended his cheap wares by signs, holding up as many fingers as there were coppers in the price asked. But he was shrewd and observant, and before his eighteen months' apprenticeship had expired he had not only acquired a full knowledge of English, and an acquaintance with the business modes of his adopted home, but had also learnt enough of the country to direct him in the choice of his business, and the locality most likely to pursue it in with success. After successive endeavours to settle prosperously in Carrick-on-Suir and Waterford, Mr. Bianconi set up in Clonmel in 1809, and by the time he determined to put in operation his long-cherished scheme of an improved system of public conveyance he had made considerable wealth. In 1815 he started his first experiment, a common jaunting-car, running between Cahir and Clonmel. He persevered, despite discouragements which would have conquered another, till regular coach-lines were established between New Ross, Wexford, Enniscorthy, Dungarvan, Waterford, Kilkenny, Limerick, Tralee, Cahirciveen, and many other centres. His coaches were the great means of communication in the South of Ireland till the introduction of the railways, and their excellent management, their regularity, and comfort were the admiration of strangers. Notwithstanding the introduction of railways, Mr. Bianconi's cars continued to run on many bye-routes till 1866, when he finally retired from the business, having made a large property by it.

THE SHEFFIELD PROPOSED NEW WORKHOUSE.

We last week (p. 893) referred to the suggestion made by Mr. P. G. Smith, of the Architect's Department of the Local Government Board, to the effect that the plans prepared by Mr. Hall, a local architect, for the proposed new workhouse, should be amended by being divided into blocks, on the pavilion principle. The suggestion has not been adopted, however. At the meeting of the Sheffield Board of Guardians on the 29th ult., Mr. Hall, the architect, reported adversely to the block system, principally because it would require a larger site than would be necessary by the adoption of the original plans. He stated that the drainage would be quite as effective under one system as under the other, but that the cost would be increased 20 per cent. by the adoption of the block system: supposing the new workhouse to cost 60,000*l.* in accordance with the original plans, the cost, on the block system, would be 72,000*l.* After some discussion, it was unanimously resolved:—"That the plans originally prepared be approved and adopted by the Board in preference to the suggested block system, with the exception of the hospital, and that that part of the intended new building be erected upon the block system."

The Ruins of Newark Castle.—The Lords of the Treasury have sanctioned an outlay of 300*l.* to maintain the ruins of Newark Castle.

ECCLESIASTICAL DILAPIDATIONS.*

Secular dilapidations are, as regards leases, assessed according to the special language of the repairing covenant in each lease; as regards other lay tenancies dilapidations are valued according to the principles ruling numerous legal decisions thereon; some allowance for wear and tear is made because the rent paid entitles the tenant to the fair usufruct of the gradual consuming property.

But the principle upon which surveyors estimate ecclesiastical dilapidations is entirely different to that ruling secular dilapidations, and was clearly laid down by Mr. Justice Bayley in the year 1829, in his lucid judgment, after a most elaborate discussion, in the case of Wise *v.* Metcalf (10 Barn. and Cress., 299); that judgment enables properly qualified surveyors to define the nature of the repairs which an incumbent is bound to do to the buildings attached to his benefice, and to estimate their expense upon a definite and equitable basis. As an incumbent enjoys the occupation of buildings and premises for which he pays no rent, the legal presumption is that he is bound to hand them on to his successor in as good a condition as when they were first built.

Formerly, the custom was for the new incumbent to appoint a surveyor, or too often a local appraiser, to claim as much as possible for him; the late incumbent, or his executor, often entrusted to the auctioneer of the furniture in the parsonage the duty of opposing the claim about to be made for dilapidations; the two representatives met, and after agreeing to the name of an umpire who was to settle any differences between them, they wrangled and disputed upon first principles, rules of practice, and every conceivable detail; the matter was then, from the necessity of the case, referred to the umpire; thus the sum to be paid was in point of fact the expression of opinion of one man who was probably unable to cope with the subject. If the sum awarded was duly paid, it by no means followed that the necessary repairs were executed, although the 14 Elizabeth, c. 11, s. 18, made it penal not to expend, within two years, money recovered for dilapidations.

These and other abuses brought about the "Ecclesiastical Dilapidations Act, 1871," for the purpose, not of setting up a new standard of perfection in glebe buildings, but to carry into practical efficacy the old law with certainty of action. Under this Act fifty-two ecclesiastical surveyors have been appointed by the archdeacons and rural deans in the several dioceses of England and Wales.

As soon as practicable after their appointment, the surveyors formed themselves into an association for mutual counsel, to insure uniformity of practice throughout both provinces.

By the courtesy of the Governors of Queen Anne's Bounty, the first and second meetings of the association were held in the Board-room of the Bounty office, when their able secretary and treasurer, Mr. J. K. Aston (at the request of the Association), gave his valuable legal services upon the new duties the Act imposed upon the governors; thus, at starting, accidental conflict with the Bounty office was avoided.

The Ecclesiastical Surveyors' Association holds frequent meetings in London, where questions of doubt or difficulty are received from any part of either province for discussion; if necessary they are adjourned, printed, sent to every surveyor, legal opinions taken thereon, then rediscussed at a subsequent meeting. When a decision has been arrived at, it is sent to every surveyor for his guidance. The following questions may be cited as samples that have been so dealt with, viz.:—

Question.—Where tuck-pointing on brickwork is decayed, can an incumbent be called on to restore it?

Answer.—No,—tuck-pointing being simply a matter of ornament; but ordinary pointing, necessary for keeping out weather, is chargeable.

Q.—When a hedge fence has in part disappeared, is it right to charge for its reinstatement?

A.—Yes. There may, however, be cases in which the land would be improved for farming purposes by a division fence being grubbed, and reinstatement need not then be insisted on.

Q.—Who is responsible for the repair of a stile over a public path where the fence belongs to the glebe?

* By Mr. R. Reynolds Rowe, F.R.I.B.A., F.S.A., Diocesan Surveyor of Ely. Read at the Church Congress at Stoke-upon-Trent.

A.—The incumbent; except in cases where it is customary for the road surveyor to maintain it.

Forms of notices and certificates under the Act have, with the aid of the Bishop's secretaries, been settled.

The Association is now engaged upon a tedious and laborious work; it has obtained from each of its members two copies of reports with specifications made in ordinary course: these are being carefully abstracted and tabulated for the purpose of producing a model report and specification, so that local peculiarities of technicology and custom may as much as possible be reduced to uniformity of practice.

It is sometimes alleged that "The Ecclesiastical Dilapidations Act, 1871," imposes new hardships upon the clergy; no doubt, to the present generation of clergymen, the Act will occasionally press disagreeably; but (subject to the principle in Wise *v.* Metcalf) the surveyor can, to some extent, mollify the pressure of the Act in certain cases.

There is, however, a very serious hardship that the surveyor cannot reduce in intensity, although it, more than any other cause, has tended to make the Act unpopular; viz., when the Act was passed in 1871 Europe was disturbed by a gigantic war; prices were rising, and strikes in the mining districts disorganised all productions into which coal entered: thus lime, bricks, glass, metals, and other building materials, and their carriage, increased in cost to an amount incredible by persons unconnected with building operations; the incidence of this pressure was well stated by the chairman at the half-yearly meeting of the Midland Railway Company held at Derby, August 17, 1875, as follows:—"At the present time the construction of all railways was very much more costly than a few years ago. They must add at least 50 per cent. to the cost of construction at the present time as compared with six years ago."

An umpire in a secular dispute feels sure he has acted justly when he learns that his award has equally offended both sides. This axiom applies forcibly to an ecclesiastical surveyor; the outgoing incumbent objects to the heavy demand he alleges is made upon him, while the new incumbent protests that he expected much more than the surveyor awarded him; so all the assumed hardship under the Act does not press on one side only: he who is called to pay protests more vehemently than he who receives; hence the public are led to believe he is a suffering victim.

But take a case as a fair type of a class with which I am familiar; a non-resident rector with a stipend of 800*l.* held a benefice for twenty years, while a curate at 100*l.* a year lived in the rectory house; the rector died leaving heavy legacies; upon a survey it is found that the residence house, chancel, farm buildings, fences, and gates, are in a dilapidated and almost ruinous condition; the patron, after due consideration, presents a needy, hard-working curate to the benefice; is not he subjected to a great hardship upon entering this wilderness if the surveyor does not estimate the dilapidations at the full value which a respectable builder would charge for executing the necessary work in a substantial manner?

Lord Romilly said, in a recent important case, "the arbitrator was obliged to treat many hardly; it was due to those who had to receive that everything should be demanded from those who had to pay."

As soon as the new incumbent finishes the repairs which are necessary to make good the neglect of his predecessor, he can demand from the surveyor a certificate of protection for five years: the question naturally arises how can the surveyor grant the certificate if the work be not done, and how can the work be done if, from want of vigilance, he neglected to demand a sufficient sum in these times of high prices, or if, from inability, the late incumbent paid nothing?

This difficulty might be met if the Bounty Board would reconsider and relax their rules, which in this matter press with unnecessary harshness upon the poorer clergy. Section 38 of the Act of 1871, and section 1 of the Act of 1872, were framed purposely to enable an incumbent to borrow money for repairs upon the security of the possessions of the benefice for a term of years to be agreed upon, but the Bounty Board refuse to render the aid herein that in many instances would be of service. Another grievance caused by a Bounty Board regulation may be illustrated by a case that came under my own notice. A new incumbent took possession of a benefice at much personal expense and inconvenience, for the purpose of waking up two centuries of torpor in a parochial valley of dry bones. The parsonage had been converted out of two old cottages, and was repulsive to modern civilisation. Finding the Bounty Board would not lend him money for repairs, he asked for a loan to be applied in rebuilding and substantially improving part of the parsonage; the bishop and patron consented, but the Board refused a loan, upon the plea that, as the benefice was worth only 100*l.* a year, the incumbent, if disabled by chronic infirmity, could not repay the annual instalment and interest of the loan, together with the stipend needful for a curate carrying on the church services during his infirmity. This refined torture was applied to a healthy, muscular Christian, and is here made public with the view of inducing the Bounty Board to temper justice with mercy.

In parishes having glebe farms, Section 58 gives considerable relief to the clergy if they will grant leases for fourteen years to their tenants, known as "Bishop's Leases." All buildings included in a bishop's lease are free from any claim for dilapidations; if the section be carefully studied and wisely acted upon, it will be found to be of the greatest importance. In an ordinary case, a lay tenant is only bound as between himself and the incumbent to repair the buildings upon a glebe farm as upon any secular estate, but the incumbent is bound as between himself and the bishop to repair the buildings upon the principle in Wise *v.* Metcalf. Now, if a bishop's lease be carefully drawn with reference to the Act of 1871, the tenant can be placed under precisely the same obligations to the incumbent with regard to the amount of repairs needed as the incumbent is to the bishop, and the ecclesiastical surveyor (upon the request of the incumbent or archdeacon), can call upon the tenant to repair, instead of the incumbent, and can have jurisdiction over the method of husbandry adopted, and the condition of subsoil drains, so as to prevent the impoverishment of the land during the last years of the term created by the lease; an arbitration clause in the lease making the ecclesiastical surveyor, as a qualified impartial person, the sole arbitrator in case of any dispute or matter in difference, will effectually prevent litigation.

The greatest difficulty the surveyor meets with in entering upon the survey of a vacant benefice, is the general absence of terriers; he applies to a parish clerk, who knows only that the parson kept all papers, and the parsonage-house is now empty; he then searches the inclosure award, or tithe-commutation award, if he can find either, or he inspects the parish poor's-rate book if the overseer be at home; he next hunts up some old parochial factotum, and while taking down his oral tradition, the surveyor finds pieces of glebe in other parishes, and so the inquiry has to be repeated there. This state of things would not be tolerated for one day by any man who possessed property of his own; why should it continue from year to year as to church property when the remedy is so simple?

At each episcopal visitation the clergy are requested to hand to the bishop's registrar a terrier upon parchment approved and signed at a parish meeting called for that purpose, no expense is involved in the matter, only a little care and trouble are required; each visitation, as it comes round, affords an easy public way of correcting terriers by inserting additions, exchanges, or sales; it may be boldly affirmed that much property has been and is being lost to the church for want of terriers; the need of them is greater now than ever, because "The Land Transfer Act," 1875 (38 and 39 Vic., cap. 87), enables a qualified title to be registered (sec. 9), and constitutes valid ownership from twenty years' undisturbed possession (sec. 17). By way of example, in my own parish while churchwarden, I investigated parish records with a view of increasing (if possible) the vicar's stipend. I found land had been converted into money, the money lent on bonds, the parties dead, and principal and interest lost. Again, a railway was made severing a glebe, the purchase-money was paid to the vicar, and applied by him to his own purposes, he died, his executorship accounts are closed, and the land alienated for ever. Again, where a rector was non-resident a parish map was in charge of a parishioner whose freehold abutted on glebe land; upon a field on the map has been written, "exchanged with rector," neither can any record of the exchange, nor the land for which it is alleged to be exchanged, be found, and so the present rector and his successors are ousted, nobody knows how. Triennial terriers would have prevented all these losses. It is respectfully hoped that their lordships (the bishops) will be pleased to issue a pastoral upon the necessity of terriers being presented at their next visitations, and that any clergyman omitting as before to deliver his terrier be specially pressed to do so, and that an adjourned day be fixed for receiving terriers at the bishop's registry; in case such a request of the bishop's be not as cheerfully obeyed as it ought to be, a clause should be inserted in the next Act that may be passed to amend the Dilapidations Act, to compel the ecclesiastical surveyors to prepare terriers of parishes where there are none, at the expense of the incumbent so refusing to obey his bishop.

It needs but a moment's reflection to see the advantages a surveyor would possess for making his survey with accuracy, where he entered a parish with a terrier, as compared with one where it takes more time for him to learn in a bungling way what he has to do, than it occupies to survey the property when found.

On the whole, the Act has worked well in the interest of the church, and for the permanent improvement of church property; but in case of further legislation the following suggestions are worthy of consideration:—

1. Lay rectors should in the case of chancels be amendable to the Act equally with incumbents.

2. That in cases of vacant benefices treated under the Act, provision should be made for referring the question of fixtures to the diocesan surveyor, and in the event of his finding they belong to the late incumbent, that he should value the same, and the new incumbent be empowered to borrow the amount of such valuation from Queen Anne's Bounty and purchase the fixtures, and thenceforth those fixtures and all future fixtures should belong to the benefice. Appeal from the diocesan surveyor's award to be provided, as in the case of repairs.

3. The five years' protection should date from the bishop's order.

4. Where there is no bishop's lease the surveyor should be required and empowered to survey the tenant's method of cultivating glebe as to whether the land is being impoverished; also as to underdrained land whether the drains are silting up, as they will in course of years.

5. Surveyor should be empowered to inspect repairs during progress, because bad work and materials may be covered up from view (*e.g.*, in drains, floors, roofs, partitions), which the surveyor cannot possibly see when all repairs have been fully completed.

6. It is advisable that the surveyor should be empowered by legislation to allot the glebe timber for sale for effecting improvements to the glebe land, and for similarly applying the proceeds of it for repairs to the buildings, or for new buildings, whenever the surveyor shall find it available.

7. To prevent the erection of buildings in an inefficient manner, or such as are likely to become unduly burdensome to the benefice, or are incongruous with existing buildings, it should be required by law that every building to be newly erected, and every addition to existing buildings, shall be approved by the surveyor under the Ecclesiastical Dilapidations Act, 1871, or by the surveyor to the Bounty Office or to the Ecclesiastical Commissioners.

8. There should be one uniform scale of fees for the whole of England upon the principle of payment for amount of work done; a sliding scale as to acreage of glebe might be framed.

If the country clergy would plant timber trees in paddocks, and corners, and other suitable parts of their glebe so as not to injure the arable land, their successors would in due course find an accumulating dilapidation fund at hand. A renewal of this kind of property should be created by planting a tree for every one felled.

One simple remedy nearly every clergyman possesses for freeing his family from the burden of dilapidations after his decease, viz., to request the Ecclesiastical Surveyor to survey the premises, and report to him for his private information how much his executors would be called upon to pay if he died to-morrow. Upon ascertaining the amount, if he insures his life for a small increase thereon, he will feel rid of burdensome doubt and responsibility.

In conclusion, it may be observed that the Ecclesiastical Surveyors are duly impressed with a deep sense of the responsibility that rests upon them in working this new Act of Parliament; they are not satisfied with a merely perfunctory

performance of their duty, but cheerfully incur self-imposed journeys, labour, and expense, in the hope that in some small degree they may be privileged to serve the clergy, and permanently benefit the Church they revere.

NEW CONGRESS HALL FOR STOKE-UPON-TRENT.

The new hall for the Church Congress at Stoke-upon-Trent, which has been held this week, has been erected very near to the railway station, and almost in the centre of the town, the spot selected being at the rear of the Town Hall. The contract was let to Mr. George Harvey, of Stoke-upon-Trent, for 1,220*l.*; Messrs. Lynam & Penn, are the architects. The material used in the construction is principally wood, with strong iron stays where necessary. The flooring is wood, strong planks being used. The building is not unlike a church in shape. It is 120 ft. wide by 110 ft. long, including the side aisles, which are subdivided into eight bays, with a gallery over each aisle. The centre span of the roof, which is supported on wooden beams and iron girders, is 70 ft. wide, and the ridge is 56 ft. from the floor. The galleries and aisles are 20 ft. wide. At the northern end is a raised platform with speakers' rostrum. It is approached by two staircases from the committee-rooms below, and there is good accommodation for reporters. On either side of the platform are private entrances. The main entrances are at the south end, along which runs a lobby. Over this is a retiring-room for ladies, approached by a private staircase. Out of the lobby run the staircases to the galleries. The gentlemen's lavatories are on the outside of the building at the north end. The hall is lighted by clear-story windows running round the central nave or body of the hall, and there are windows under-neath the galleries. The artificial lighting is by means of gas-jets placed a foot apart along a pipe running round the hall. There are also side-lights, but there will be no sun or centre lights in the body of the hall. The whole of the interior is painted.

DESIGN IN AMERICA AND ENGLAND.

Writing in the *School Board Chronicle*, Mr. E. R. Robson says:—

American educationists have not been properly seconded by American architects. Architecture has no status with Brother Jonathan, is not recognised as a profession, and is commonly reduced to the level of the signboard. The most highly educated men, therefore, do not become architects, and the result is plain. Whenever we find anything beyond the general run of the indigenous wooden house, it is usually of the most abject common-place kind, or a wonderfully ambitious failure. Whether in schoolhouses or in any other kind of structure, architecture in its highest æsthetic conditions is never found. Even the Capitol at Washington, built of white marble, can, at best, be regarded only as a costly piece of architectural floundering. If, instead of parodying the styles of Europe, unsuitable both to the country and the people, American architects would as steadily set themselves to develop artistic buildings of their own (embodying, of course, the great fundamental truths which are present in all great architecture) in the same manner as American educationists have developed a school system, the result would perhaps be more respectable.

Nor in the matter of scientific school-planning have they, as yet, done anything serious. Two rows of rooms with a corridor down the middle and a staircase at each end can scarcely be called planning. The German in this respect, plodding heavily on, beats the quick American hollow, for in his schoolhouses every part of the fabric has its purpose as certainly as in any building of the thirteenth or fourteenth century. This is the more remarkable because school building is no longer with Americans any new subject, and because in other walks their science holds its own. Fertile of invention, and quick to seize new ideas, they are usually first in the field with useful inventions, such as the sewing-machine (to quote one only among a thousand), yet their workmanship is never equal to that of England. Old countries are slower to adopt change, and our own, in particular, often resists the adoption of the most manifest improvement, especially when originating elsewhere. On the other hand, it is this very superiority of age which, as a result of many generations of training in handicrafts, gives them their superiority in skilled workmanship.* America is striving to raise the quality of workmanship, and to manufacture within her own borders all kinds of things hitherto imported from Europe. To instance only one, carpets are now being largely made, and if English manufacturers do not yet know it, the fact will speedily be felt.

In the struggle after science, good workmanship, and extended manufactures, one weak point has been keenly felt. America is profoundly ignorant of art. Further, she knows so much as to know her ignorance in this respect. Competition in all manufactures requiring artistic design (and what manufacture does not?) must result in failure if wanting in this initial necessity. Efforts are therefore now being made in the direction of art-education *with a purpose*. This purpose is no other than the creation of a national school of designers who at all points shall be able to cope successfully with the artists of Vienna, Paris, and London. The movement has its beginning in Boston, where by great good fortune, one of the best English instructors in elementary art and design, Mr. Walter Smith, has been induced to settle. It is not generally known that our system of schools of art, as carried on under the South Kensington *régime*, is merely a road which leads nowhere, because the ultimate aim and goal of all drawing or modelling, viz., the knowledge of the art of designing, is not taught. The advent of Mr. Poynter to South Kensington may probably inaugurate a new era for us. But the evil is radical, and arises from a bad system of teaching. Meantime, that drawing and designing can be taught at one and the same time by a skilful teacher, Professor Smith, of Boston, is proving every day.

CONSTRUCTION OF FLUES.

Chimney Sweepers' Acts, 1840 and 1875.

The new Act for the enforcement of the law of 1840, which prohibits the use of climbing boys, will come into operation on the 1st of December next. Lord Shaftesbury draws our attention to the fact that the Act of 1840 contained provisions for the construction of flues, but these provisions have been almost universally neglected. By the Act of 1875 the police are empowered to enforce these provisions, the principal of which is:—

"And whereas it is expedient, for the better security from accidents by fire or otherwise, the improved construction of chimneys and flues provided by the said Act be continued: Be it enacted, that all withs and partitions between any chimney or flue which at any time after the passing of this Act shall be built or rebuilt shall be of brick or stone, and at least equal to half a brick in thickness; and every breastback and with or partition of any chimney or flue hereafter to be built or rebuilt shall be built of sound materials, and the joints of the work well filled in with good mortar or cement, and rendered or stuccoed within; and also that every chimney or flue hereafter to be built or rebuilt in any wall, or of greater length than 4 ft. out of the wall, not being a circular chimney or flue 12 in. in diameter, shall be in every section of the same not less than 14 in. by 9 in.; and no chimney or flue shall be constructed with any angle therein which shall be less obtuse than an angle of 120 degrees, except as in hereafter excepted; and every salient or projecting angle in any chimney or flue shall be rounded off 4 in. at the least, upon pain of forfeiture, by every master builder or other master workman who shall make or cause to be made such chimney or flue, of any sum of not less than 10*l.* nor exceeding 50*l.* Provided, nevertheless, that notwithstanding this Act chimneys or flues may be built at angles with each other of 90 degrees and more, such chimneys or flues having therein proper doors or openings not less than 6 in. square."

Considering that the Metropolitan Building Act gives certain instructions on this subject to be carried out under the supervision of the district surveyors, we have here a pretty specimen of our mode of bit-by-bit legislation with divided responsibilities.

THE DERBY SURVEYORSHIP.

A special meeting of the Derby Town Council was held on the 29th ult., for the purpose of proceeding to the election of a surveyor to the Corporation and to the Sanitary Authority. There were ninety-six candidates, and from this number the special committee charged with the duty of reading and collating the candidates' testimonials selected six, viz.,—Mr. E. J. Purnell, of Coventry; Mr. J. Lobley, of Hanley; Mr. A. Latham, of Margate; Mr. T. C. Bretland, of Belfast; Mr. E. B. Ellice-Clark, of Ramsgate; and Mr. J. A. Bryson, of Newcastle-on-Tyne. This number was further reduced by two, and the four gentlemen recommended by the committee to the Council were Messrs. Purnell, Lobley, Latham, and Ellice-Clark. After having decided that the salary should be fixed at 500*l.* per annum, the council proceeded to vote upon the candidates. The result of the first voting was:—Clark, 26; Latham, 23; Purnell, 10; Lobley, 7. Mr. Lobley's name being struck off, a second vote was taken, resulting as follows:—Clark, 25; Latham, 20; Purnell, 5. Mr. Purnell's name having been struck off, the final vote was taken, which resulted in the election of Mr. Clark by 26 votes, against 15 recorded for Mr. Latham. Mr. Clark will enter upon his duties in about a month's time. Mr. Ellice-Clark has been for the past four years engineer and surveyor to the Ramsgate Local Board, and has taken a prominent part in the proceedings of the newly-formed Municipal and Sanitary Engineers' and Surveyors' Association, being the honorary secretary of the Home Counties section. The *Derbyshire Advertiser* says it ought to be stated to his credit that Mr. Clark purposely refrained from "interviewing" or canvassing, and until the 28th ult. was an entire stranger to the committee, as he was to the council until he appeared before them.

* This superiority of workmanship threatens in England soon to become a thing of the past, owing to the large abandonment of apprenticeships in all trades. Already, in very many branches, workmen are inferior.

ST. ENOCH'S SQUARE STATION, GLASGOW.

The works in connexion with the grand new Central Station of the Union Railway in St. Enoch's-square are being vigorously proceeded with, and on the large space of ground bounded by Argyle-street on the north, Howard-street on the south, Dunlop-street on the east, and the square itself on the west, warehouses, shops, and even public buildings are being demolished to make room for the improvement. In some cases, notably those of the Whitebait Music-hall, one of the oldest places of amusement in Glasgow, and the office of an evening news-paper now connected with a morning daily, the company had to pay the proprietors enormous sums in the shape of compensation. The laying of foundations, the buildings of walls and arch-ways, and indeed the greater portion of the structural work for the station and approaches being complete, the erection of the frame-work for the iron roof has been commenced, and it is anticipated that the station will be open for traffic during next year. The travelling public will then, at least, be provided with one station affording adequate accommodation, for the principal railway stations in the City at present can be described as little better than vast wooden sheds, having no pretension to architectural beauty, and being singularly ill adapted to the requirements of a large city like Glasgow. Indeed, this has been a matter of frequent comment, and has at least formed the subject of one recent Government inquiry.

NEW TOWN-HALL AT TREGARON.

This town now possesses a building which, besides being eminently useful, is a great benefit to the town and neighbourhood. Tregaron has a very large and extensive market, and for the last few years has been rapidly increasing both in importance and population. The need of a Market-hall and Town-hall was greatly felt by the inhabitants, and Colonel Powell, of Nanteos, seeing this want, resolved to erect a building which should meet the exigencies of the public. The building, which stands nearly in the centre of the town, was erected under the superintendence of Mr. Roderick Williams, builder, of Aberystwith, and serves both as a Market-place and Town-hall. The ceremony of opening the building was performed on Friday, the 24th ult., by the Right Hon. Earl of Lisburne.

A New Aid to Swimming.—At the City of London Baths, in Golden-lane, a new apparatus was tried on the 23rd ult., the object of which is to facilitate the acquisition of the art of swimming. The invention, which has been patented by Mr. F. Wrigley, consists of a thick wire stretched taut along the length of the bath; from this wire depends an indiarubber cord with an adjustable bandage at the end. This bandage is fixed round the chest of the intending swimmer, and he goes into the water with the certainty that he cannot sink. The cord is fixed to a running wheel that passes along the wire as the swimmer progresses.

DANCING FOR WORKMEN.

The Trustees of the Grosvenor Workmen's Club, in Pimlico, numbering some 1,500 members, having given the usual notice to the Vestry of St. George's, Hanover-square, of an intention to apply to the magistrates for a dancing licence, the Vestry resolved to oppose the granting "tooth and nail," even to employing counsel.

This coming to the knowledge of the Duke of Westminster, who may be said to have founded the club, Mr. Boodle, his solicitor and chief agent, wrote as follows to the Vestry:—

"I am instructed by the Duke of Westminster, the ground landlord, and one of those most interested in the usefulness and success of the Grosvenor Club for Working Men, in Buckingham Palace-road, to communicate with the Vestry of St. George's, Hanover-square, through you, as to the application to the magistrates for a licence for music and dancing in the new hall lately built at the rear of the club.

His Grace understands that the Vestry contemplate employing counsel to oppose the application for the licence so far as dancing is concerned, and he cannot help thinking that the Vestry are not fully aware of the facts of the case. The buildings of the club are held by respectable trustees selected by the Duke of Westminster. Their names are:—Mr. Herbert Praed, M.P.; Mr. Hodgson Pratt, Mr. Henry Arthur Hunt, and the Hon. Philip James Stanhope. The lease provides that the buildings are to be used for the social intercourse, mutual help, mental and moral improvement, and rational recreation for working men, artisans, and others; and not for any illegal or profane use, &c.

The hall, by the lease, is entirely under the control of the trustees, subject as above. It was always contemplated, before the hall was built, to let it sometimes for entertainments, which would help towards its support. Dancing, if properly conducted, is certainly not an improper or unreasonable entertainment, either for working men or women, or for others.

The Vestry may rest assured that neither the trustees nor the Duke of Westminster will ever allow the hall to degenerate into a casino, or into anything not entirely respectable. His Grace desires me to submit to the Vestry that where there is a reasonable prospect of respectable management, the Vestry would naturally desire to encourage places of entertainment as calculated to prevent resort to objectionable places.

I would therefore express a hope that the Vestry, after this explanation, will withdraw from their opposition to the licence. H. F. Boodle.

A very long and stern discussion arose on the reading of this epistle and a similar one from the trustees of the club, and the motion to oppose the licence was again carried by an overwhelming majority, the Vestry being now pledged to employ counsel.

CHURCH OF ST. MARY WOOLNOTH: ALTERATIONS.

Sir,—In reference to the question of the gallery being no part of Hawksmoor's design, I am, as an architect, quite at loss to understand how that can be. As far as I have been capable of judging, the gallery fronts appear to be of the same date as the other oakwork, and carvings of the noble and majestic interior. The features of the pulpit, altar-piece, &c., certainly agree most closely.

The proposed removal of the organ is a very serious matter. This fine old organ of Father Smith's has been in its present position ever since the church was built. My experience of the removal of church organs, after being placed in the position as at St. Mary Woolnoth and other churches in London, is this,—that when removed and rebuilt in the body of the church, you never again get the same power or tone out of it as before. Organ-builders will testify and truly say that if an organ is fixed upon a gallery, or elevated above the ground, you will get twice as much power out of it than if built on the ground. The late doings in St. Paul's Cathedral tend to prove it. What was the case? Simply this. The fine old organ of Father Smith stood on a rood-loft as you entered the choir. It was taken down, rebuilt under one of the arches in the choir. The result was a perfect failure: neither music nor tone could be got out of it. It has since been taken down, and rebuilt in two halves, and placed in an elevated position, on brackets, from the face of the wall. The result is a perfect success.

Mr. W. Hopkins, of the Temple Church, in his work on "Organs," says:—"It ought always to have plenty of space around, above, and below it, if you want to get the power out of it."

I trust these few remarks, sir, in your journal may be the means of saving this fine old organ at St. Mary Woolnoth's from being removed, and of preserving the gallery. An Architect.

Elland.—The Elland Building Association has instructed Mr. T. Helliwell, architect, Brighouse, to prepare plans for a block of thirteen houses in Elizabeth-street. It is proposed to erect a new town-hall, with a limited liability proprietary.

LONDON BRIDGE.

Sir,—Schemes are being proposed for increasing the usefulness of London Bridge; but I have not heard that any one has mooted the following, namely, build gangways for all the foot passengers at a height sufficiently above the present foot-paths for cabs, &c., to go underneath, and convert present foot-ways to the use of the said cabs, &c. The foot-passengers must go up steps or inclined planes at the ends of the bridge, but being already educated to that process at various railway stations, would not perhaps grumble to the same degree as they might formerly have done. Hop wagons must keep to the middle, which would be still open to the sky.

I presume that my plan (by a series of stone arches built on the present parapet, &c.) would cost less trouble to render endurable to the eye than would any addition to the faces of the present masonry of the bridge. G. M.

*** Mr. Lewis Angell has already proposed a raised gangway in the centre of the bridge.

Sir,—Additional bridge accommodation is clearly requisite below London Bridge. Additional dock accommodation is clearly requisite below London Bridge. The exact form of bridge accommodation, whether on suspension or tubular principle, has to be determined. Inclined planes or approaches probably will be requisite in either case. It is also a question whether, considering the facilities of railways, the larger class of vessels should navigate the stream above Blackwall. Paulatim.

COMPETITIONS.

Gloucester Public Baths.—In the *Builder* for the 11th ult. (p. 813) we gave the report of the committee of the Gloucester Town Council appointed to consider the designs sent in in this competition. The committee recommended that the first premium (15*l.*) be awarded to the design marked "1875," and the second premium (10*l.*) to the design bearing the motto "Pro Bono Publico." At a special meeting of the Town Council, held on the 1st inst., it was announced that the author of "1875" is Mr. A. P. Bell, of Manchester, and that "Pro Bono Publico" is the joint design of Messrs. F. N. Pettingell & T. B. Thompson, of Hull.

SCHOOL-BUILDING NEWS.

Manchester.—St. Margaret Schools, Moss Side, Manchester, opened on the 24th ult., comprise, on the ground-floor, girls' and infants' schools, with one class-room to each, with separate hat and cloak rooms and lavatory; on the first-floor, a spacious boys' schoolroom (also intended for use as a lecture and meeting room), two class-rooms, hat and cloak room, lavatory, kitchen, office, &c. Each department has a separate entrance, with spacious playgrounds. Accommodation is provided for 373 girls and infants, and 359 boys. The cost, including the fittings, will be about 4,000*l.* The building has been erected by Mr. John Wilson, Mr. John Lowe, Manchester, being the architect.

Chalvey (Bucks).—New infant schools at Chalvey, near Slough, have been completed. The cost has been about 450*l.* and accommodation is provided for 100 children. The architects were Messrs. Edgington & Summerbell, of Windsor; and Mr. H. Liddiard, of Slough, was the builder.

CHURCH BUILDING NEWS.

Thetford.—The chancel of St. Cuthbert's Church, Thetford, is being restored to the joint memory of Messrs. S. C. Bidwell and George Tyrell, two old inhabitants of the borough, at the joint expense of their families. The architect is Mr. A. H. Brown, of London, and the contractors are Messrs. Bishop, of Diss.

Shrewsbury.—On the 25th ult. the Earl of Shrewsbury laid the foundation stone of the new church of All Saints, in Castle Fields, Shrewsbury. The church, when completed, will consist of a wide and lofty nave, with clearstory, a porch at the west end of the north aisle, and another entrance on the south side, north and south aisle, the former being rather wider than the latter; chancel, with north chancel aisle; organ-chamber, and vestry, and will provide for 650 persons. The north aisle will be separated from the nave by an arcade of four bays, the south by five bays. The chancel arch will be lofty, and of the width of the chancel. There will be a low stone screen between the nave and chancel, an ascent of three steps into the latter, and a further gradual ascent of six steps to the altar. Chancel stalls will be provided for a choir of 28 men and 16 boys. The style is Decorated. The contract for the nave and aisles, which alone for the present will be carried out, is taken at 3,400*l.*, the intended accommodation being for 541 adults. The materials used for the walls will be Redhill stone, pointed inside, and unplastered, and Shelvoke for most of the dressings. Blue Pennant (Bristol) will be used for the columns to the arcades and shafts to the chancel arch. The roofs will be covered with Staffordshire tiles. It is proposed at some future time to build a lofty tower to the south of the chancel. The architect is Mr. Haycock. The contractors are Messrs. Bowdler & Darlington.

Stockton Heath.—A memorial is being got up by the parishioners and friends of the late vicar, the Rev. W. Hayes, which will most likely take the form of a reredos. The sum of 250*l.* has been promised, and Messrs. Palin, the architects who carried out the restoration of the church, have been asked to furnish a design.

Dalton.—The foundation-stone of the new Church of St. Michael and All Angels, Dalton, near Wigan, was laid on the 29th ult. by Lady Skelmersdale. The new church, which has been designed by Mr. W. H. White, architect, London, is estimated to cost from 3,000*l.* to 4,000*l.*, and will accommodate 250 people.

Epsom.—The foundation-stone of a new church for the parish of Christ Church, Epsom-common, was laid by the Bishop of Winchester on the 25th ult. The late Miss Trotter having left by will 8,000*l.* for a new church and vicarage, and the endowment thereof, a separate parish was formed in July, and Mr. Blomfield was commissioned to furnish plans, and the work was entrusted to Messrs. Adamson & Sons, of Putney. The style adopted is Second Pointed, and on plan the church will consist of nave, chancel, north and south transepts, north aisle, tower, and baptistery. The internal dimensions of the nave are 68 ft. long by 23 ft. wide, and 50 ft. high, and seats will be provided in all for 500 worshippers. The tower will for the present only be carried up to 30 ft., but will ultimately be continued to twice that height. A south aisle is also contemplated. The material used externally will be flint, with Bath stone quoins and dressings.

Birmingham.—The new church of St. Margaret, Ladywood, Birmingham, was consecrated on the 2nd inst. by the Bishop of Worcester. The church stands at the junction of Ledsam-street and Alston-street, and has been erected by Messrs. Wilson & Son, contractors, from designs by Mr. Frank Barlow Osborn, architect. It consists of nave, baptistery, north and south aisles, with apsidal terminations, organ-chamber, vestries, and porch at west end, with children's galleries over. The length of the nave is 80 ft. 6 in., and the width 40 ft.; the chancel is 28 ft. long and 22 ft. wide. The height to the ridge of the roof is 60 ft. The building is after the style of the twelfth century, and is of red brick with tile roofs. In the interior, the nave arcade, arches, and reveals and quoins of windows and doorway, are of red brick. The columns of the nave are of stone, with boldly-carved capitals. The light is principally derived from a series of large clearstory windows, and from a large west window over the porch. There is also a row of lancet windows in each of the aisles. The aisles are intended to be used only as passages to the nave seats. The walls are partly lined with red brick and partly plastered, and left for future decorations. The nave is furnished with stained and varnished seats for about 720 persons. The carving has been executed by Mr. Charles Allen, of Victoria-road, Aston. The subject carved in the tympanum of the west door is the Last Judgment. The glazing is the work of Mr. John Davies, of Shrewsbury.

New Offices at Winchester, for the Hampshire Friendly Society, were opened on the 28th ult. The style adopted by the architect, Mr. T. Stopher, is Tudor, flint being the principal material used. Mr. Marsh was the contractor, the contract being taken at 1,800*l.* The society is apparently in a flourishing condition, and is stated to have 5,000*l.* surplus funds after satisfying the claims of its nearly 8,000 members. It was founded in 1825.

THE ECCLESIASTICAL DILAPIDATIONS ACT, 1871.

The clergy,—at any rate those of Shropshire, Herefordshire, and the adjoining counties,—are animated by a strong feeling of hostility to this Act, judging from the speeches made at a meeting held at Shrewsbury on the 30th ult., and reported at great length in the *Shrewsbury Journal*. Bishop Abraham presided, and in the course of his opening speech said :—

"I consider that the principle which the Act was intended to establish is a just one. It was meant to make the incumbent (literally) 'set his house in order' before his decease, and preclude his leaving that burden to his widow and family. But the 48th clause of the Act defeats that excellent object, by imposing the tax of the surveyor's fees upon the incumbent, if he calls in the surveyor himself; but laying that burden upon his successor, if the former had not called him in during his tenure of his benefice. It is clearly then, against the pecuniary interest of the incumbent to call in the surveyor in his lifetime; for I know of several cases where the new incumbent received sums under 20*l.* for dilapidations (even as low as 16s.), and had to pay the surveyor 12*l.* or more for his double survey. I should say, then, that according to its own great principle the Act requires amendment; and the task should be laid absolutely on the outgoing incumbent, some other plan being devised for the relief of the clergy admitted to their livings under the old system before the Act of 1871. One such plan may be the formation of Local Boards cognisant of the condition of the buildings and of the amount received by the incumbent under the old system. (2) There is a proposal that approves itself to many, and myself among the number, that a Local Board should be appointed to check the surveyor's report. It is clear, however, that this Board would cut both ways, and not always relieve the outgoing incumbent, but occasionally raise the surveyor's estimate. (3) There is a plan recommended by the Edgmond Committee, to appoint a number of surveyors—as it is quite clear the present staff cannot do their work. There are about ten cases in Staffordshire and Shropshire belonging to the years 1872, 1873, and 1874, not yet reported by the surveyor. This shows that it is by no means desirable to have surveyors appointed who have a large private practice besides this public duty. I question very much whether the Act will allow of anything being done in this direction. Only vacancies can be filled up. The Board of Nominators could have appointed six or more from each diocese to begin with, but not subsequently; at all events, it would not be desirable to have an action at law to try the question, but let us get the law made clear. I own that I would rather have salaried officers; and if every incumbent would tax himself 10s. for every 100*l.* of his living, one good man of business for the whole work of each diocese might be procured. (4) But, generally, with regard to fees, they are unreasonably large, considering the poverty of the clergy. The present Act admits of relief being given at once in this respect. The Rev. Edward Walter (rector of Langton, diocese of Lincoln) shows, in a letter to the *English Churchman*, that the fees payable every five years under this Act alone for Lincoln diocese are 33,165*l.*, and for the whole of the Church of England, 360,000*l.* No other class in England would have been taxed to this amount without their having had some notice and voice in the matter. I will select one particular clause in the Act which I have not seen mentioned, but which I can illustrate from the diocese of Lichfield, in the case of Holy Trinity, Chesterfield. The 24th clause subjects the new incumbent to the expenses of a fresh survey, even while the surveyor is receiving fees for inspecting and carrying out his own report, having been called in voluntarily by the previous incumbent, who resigned before he had got in his certificate. The facts of the vicarage of Holy Trinity are these:—The Rev. M. H. called in the surveyor, February 16th, 1875. The report was sent in March 16th. The Rev. M. H. resigned April 29th, before he had received his first certificate. The surveyor then received notice May 6th, according to clause 24, to survey his own work again. He sent in a report for 2*l.* 18s. dilapidations. The Rev. J. M., the new incumbent, died July 26th, without his final certificate. Under the 24th clause the surveyor receives full fees for both inspections from both incumbents, and he might receive full fees again from the present incumbent if the bishop were to call him again. The 24th clause, then, ought to be amended in justice to the clergy. But, meanwhile, the archdeacons and rural deans, with the chancellor of the diocese, can modify the fees in such a case, and assess the second or third incumbent at a nominal fee."

The following resolutions were unanimously adopted :—

(1.) "That in the opinion of this meeting the Dilapidations Act, 1871, is harsh and oppressive to the beneficed parochial clergy, and especially to those who were admitted to their benefices before the passing of the Act."

(2.) "That the present mode of assessment is objectionable, and an alteration in this respect, so as to allow the clergy greater freedom, and a more satisfactory resource of appeal, is called for."

(3.) "That the repair of buildings belonging to benefices should be classified and defined, and the benefice charged with the cost of those of a 'substantial' character, leaving the incumbent, as heretofore, responsible for ordinary tenantable repairs."

PROPOSED AQUARIUM AND BATHS FOR DOUGLAS, ISLE OF MAN.

The Douglas Aquarium and Baths Company, Limited, has held a meeting at Douglas for the furtherance of its objects. Plans were exhibited of the proposed erections, which are estimated to cost 20,000*l.* The aquarium, which will be in the lower part of the structure, will be 245 ft. long, and adjacent will be a concert-room capable of holding about 2,000 persons. It is also in contemplation to make the building the nucleus, at any rate, of a free public library and museum. It is intended to have two large plunge-baths, one for ladies and one for gentlemen, each bath being about 70 ft. long by 40 ft. in width. The style of architecture adopted is Italian Renaissance. At each end of the building it is proposed to have a tower, one of which will contain a public clock. Running along the front of the building would be a balcony or verandah of 6 ft. projection, which could be used as a lounge from the concert-room in warm weather. In connexion with the buildings there will be a restaurant, assembly-room, &c., besides some shops and dwelling-houses adjacent which it is believed will be a profitable element in the scheme. We do not know who is the architect, but we see that Mr. Pons is the engineer to the Company. It is estimated that about 100,000 persons annually visit Douglas, and of these it is calculated that 70,000 would visit the aquarium at least once. Sea water will be obtained much more advantageously than is the case with some existing aquaria, and the situation is a very favourable one for obtaining good specimens for the tanks. Altogether the scheme seems to possess many elements of success.

A DISPUTED NOTICE.

WRAITHALL *v.* PAXTON.

In this case (heard in the Lambeth County Court on the 27th ult., before Mr. Pitt Taylor, Judge), the plaintiff, a builder, claimed 5s. 6d. from the defendant, a journeyman carpenter.

Plaintiff said he engaged the defendant in July last to work for him at 7½d. per hour, and after working two days the defendant left, only having given an hour's notice of his intention so to do. Plaintiff considered he should have given a day's notice at least, and hence the present claim.

His Honour having elicited from the defendant that he was engaged by the hour, and not by the day, said judgment must be in his favour, for it was quite competent for plaintiff to have discharged him at an hour's notice.

Judgment for defendant.

New Steam Ferry for the Thames.—The crying necessity for a new bridge across the Thames below London Bridge is to be seen in the fact that the first of the two boats which are to be launched by the New Steam Ferry Company is in the hands of the builders, and will, it is anticipated, be in operation in April next. The distance of the ferry station from London Bridge is one mile and a half by water. The ferry will constitute a "floating bridge," and cannot fail to be in great demand, both by owners of vehicles and by pedestrians.

NEW MUSEUM AND LECTURE HALL AT GREENOCK.

The foundation-stone of the new museum and lecture-hall, in connexion with the Watt Institute, Greenock, has been laid by Mr. Allan Swan, chairman of the library committee. The site of the new building is at the rear of the present Institute in Union-street, with a frontage to Watt-street, and an entrance from Kelly-street. The design of the museum and lecture-hall will accord with that of the older building, founded by the inhabitants of Greenock in memory of their celebrated townsman, James Watt, and when completed will be an ornament to the neighbourhood in which it is situated. The library committee, who have always had the management of the Institute, have long felt the desirability of having a museum in connexion with it, but for want of funds the project was postponed from time to time, until, at the commencement of this year, Mr. James McLean, of West-bank, generously presented the large sum of 6,400*l.* for the building of the museum, and also a hall in connexion with the Institution, the only condition attached being that the Greenock Philosophical Society should have the use of the hall, free of charge. The building is expected to be ready for occupation during the coming spring.

DISSENTING CHURCH-BUILDING NEWS.

Roade (Northants).—A new Wesleyan Chapel was opened at Roade on the 9th ult. The chapel, of which Mr. S. J. Newman, of Northampton, is the architect, and Mr. Gooderidge, of Roade, the builder, is Gothic in style, and is built of red brick, with Bath stone and white brick dressings. It will accommodate about 200 persons. The roof is open. The cost has been 500*l.*, including land.

Birmingham.—Eleven memorial-stones of a new Wesleyan chapel in Coventry-road, Small Heath, Birmingham, were laid on the 22nd ult. The architects are Messrs. D. Smith & Son, of Birmingham, and the style they have adopted for the new chapel is Romanesque. The exterior is to be of faced brickwork, with Bath and Hollington stone dressings. The interior walls and ceiling will be plastered. Side and end galleries are to be provided, with open fronts, decorated with ornamental ironwork. An orchestra will occupy the space at the back of the rostrum. Open seats will be provided for the entire congregation. The chapel is intended to accommodate 870 persons. The internal dimensions are, 88 ft. long, 48 ft. wide, and 33 ft. high. Spacious vestries are also provided in the rear. The heating apparatus is being provided by Messrs. Redfern, of Hanley. The builder is Mr. J. A. Mountford, of Small Heath; and the carving is being executed by Mr. J. Rowney.

Brechin. — The new United Presbyterian church in Bank-street, Brechin, was opened on the 22nd ult. Mr. Leiper, of Glasgow, is the architect, the style adopted being Early Gothic. The decorations were entrusted to Mr. Clark, of Brechin. The colours used for the walls are principally brownish-red and yellow, the roof stained in imitation of dark oak, relieved with gilded stars, and the pews, front of gallery, and pulpit are also oak-coloured. The church is seated (the pews being wide and comfortable) for 650; and in the hall behind, which is intended for meetings in connexion with the church, 100 persons can be accommodated. There are also a vestry and a session-house. The total cost will be about 4,000*l.*

Bradford Church Institute School of Art and Science, and Training School for Teachers.—The annual promenade and *conversazione*, in connexion with the above Institute, was held in the building of the Society on Thursday evening, September 30, when the prizes and certificates awarded to the successful students by the Science and Art Department were presented by Bishop Ryan, who addressed the students. Other speakers referred with satisfaction to the great progress made in the school of art during the past year,—the school having taken the highest prize in the district in the award of a silver medal for a design for damask, with a Queen's prize and eleven third-grade prizes for sets of works, and twenty-seven commendations; and twenty-seven second-grade certificates and five prizes were also taken. Mr. Daniel Smith is head master.

Books Received.

A Treatise on the Resistance of Materials. By De Volson Wood, Professor of Civil Engineering in the University of Michigan. New York: Wiley & Son. London: Trübner & Co. The author accepts the theory that materials are perfectly elastic within certain limits, *i.e.*, that they return to their original state when the force which causes compression or extension ceases to act, without leaving any permanent set, and accepts, within the same limits, Hooke's law,—*Ut tensio sic vis*; although Mr. Hodgkinson considered he had reason to doubt this, from his own experiments, and that even the smallest force applied produces a permanent set, and that if our appliances were sufficiently delicate, we should probably observe that that is so; but the author quotes against this view Morin's observation that in this respect a perfect elasticity might have been found to exist if a sufficient length of time had been allowed for the material to resume its original state after the release of the external force.

It is quite conceivable that there may be a relation between the force applied and the sectional area of the piece under trial, which, if not exceeded, may enable the piece to return to its original state; but what that relation is has never been determined, and the element of time during which a piece of material is subjected to a strain is of great importance, for if that strain be beyond the assumed condition of equilibrium, the longer the time the weaker the piece becomes. All we can do, practically, is to observe the behaviour of heavily-loaded structures, and test their condition most accurately from year to year. We shall then probably observe the signs of weakness soon enough for safety; for an unduly loaded structure does not pass at once from a state of safety to one of ruin, but passes through the interim state of danger.

Beams subject to a cross-strain have the fibres on the convex side extended, and those on the concave side of the neutral axis compressed, and the common theory is that there are no strains but those of compression and extension; but the author says that, in addition to these, there is what Mr. Barlow called the "resistance of flexure." This expression, however, he thinks, does not convey Mr. Barlow's meaning, and that "longitudinal shearing strain" would be more appropriate. "It is a strain in addition to the direct extensive and compressive forces, and is due to the lateral cohesion of the adjacent surfaces of fibres or particles and to the elastic reaction that ensues when they are unequally strained." The resistance to both longitudinal and transverse shearing varies directly as the sectional area. The modulus of resistance to shearing is as follows, for each kind of material, per square inch:—Fine cast steel, 92,400 lb. (Weisbach's "Mech. and Eng.") ; rivet steel, 64,000 lb. (Kirkaldy's "Exp. Inq."); wrought iron 50,000 lb. (Weisbach); wrought-iron plates punched, 51,000 lb. to 61,000 lb. (Proc. Inst. Mech. Eng., 1858); wrought iron, hammered scrap, punched, 44,000 lb. to 52,000 lb. (Idem.); cast iron, 30,000 lb. to 40,000 lb.; copper, 33,000 lb. (Stoney, on "Strains").

The following are for wood *with the fibres*:—White pine, 400; spruce, 470; fir, 592 (Barlow on the "Strength of Materials"); oak, 780; locust, 1,200. The following are for wood *across the fibres*:—Red pine, 500 to 800; spruce, 600; larch, 970 to 1,700 (Tredgold's "Carpentry"); English oak trenails, 3,000 to 5,000 (Murray on "Shipbuilding"). "It will be seen from these results that the shearing strength of wrought-iron is about the same as its tenacity; of cast steel it is a little less than its tenacity; of cast iron it is double its tenacity, and about two-fifths its crushing resistance; and of copper it is about two-thirds its tenacity."

The theory of flexure is fully treated, both analytically and graphically, and so is the transverse strength; but the author remarks that there are many practical problems in regard to the resistance of materials which cannot be solved by any known laws of resistance, such as the strength of a flat circular iron-plate of uniform thickness, supported all round its circumference and loaded uniformly; or of the same plate with its edges bolted down; also of a square plate under the same circumstances.

A paper on the preservation of timber, and a table of the properties of the materials of construction, are given at the end of the book, in compiling which the author seems to have consulted all the best authorities.

British Metric Arithmetic. By Isaac Gregory, F.R.G.S., Principal of Merchants' College, Blackpool. London, Paris, and New York: Cassell, Petter, & Galpin. Manchester: John Heywood.

Mr. Gregory shows how, with but little alteration, our system of weights and measures may be made entirely metric in every detail. The French mètre (or, as we should write it, meter), is equal to 39·37079 English inches, or 3·28089 ft. It is the $\frac{1}{40000000}$ part (one forty-millionth) of a meridian,—that is, of a circle supposed to be drawn on the surface of the earth through both poles. The author proposes to divide this measure into 40 in., so that the new inch would be $\frac{1}{984}$ part less in length than our English inch. The meter would be divided into 1,000 millimeters, and the new 2 ft. rule would be divided into 24 in. of 25 millimeters each, being in absolute length $\frac{1}{984}$ part less than that of our present 2 ft. rule.

Ten of these millimeters would make 1 centimeter, and 25 millimeters 1 in.; 4 in., or 10 centimeters, would make 1 decimeter, and 12 in. 1 ft.; 40 in., or 100 centimeters, or 1,000 millimeters, would be 1 meter. In technical cubic measure, 1,000 cubic millimeters would make 1 cubic centimeter; 64 cubic inches, or 1,000 cubic centimeters, would make 1 cubic decimeter; 27 cubic decimeters, 1 cubic foot; and 1,000 cubic decimeters, 1 cubic meter.

The unit of liquid measure is to be the liter, being the contents of a 4-in. cube; *i.e.*, a cube of $25 \times 4 = 100$ millimètres each side. The pound weight would be half a liter of water at its greatest density, and would be divided into 20 oz. of 25 grams each. The liter of water would therefore weigh 2 lb., or 1,000 grams. The whole system is very cleverly arranged, and would assimilate our measurements with some of those now in use in France; and as the present French system is very inconvenient in retail commercial transactions,—*i.e.*, in shopping,—it might with advantage be made the same as that which the author proposes for ourselves, and which he hopes may be also introduced into the Colonies, the United States, and Russia. For wholesale commercial transactions, and for international purposes, this proposed British mode of the metric system is the same as the present French mode.

VARIORUM.

The "Transactions of the Manchester Statistical Society for 1874–5," just now published, includes interesting papers, "On the Facts of the Census," by Mr. R. B. Walker, and "Sanitary Progress, and its Obstacles in Manchester," by Dr. Robert Martin.——"The Panoramic Guide to the London, Brighton, and South-Coast Railway," by R. Kemp Philp (Bemrose & Sons), is published just in time for those who are going to attend the Social Science Congress. It is a very good sixpen'orth. The object of these guides (several have been published) is to relieve the railway journey of its usual tedium, and render it interesting. By the plan adopted information is given at a glance on the many objects of interest that arrest the attention while travelling by rail. A diagram of the line occupies the centre of the page, and on each side are sketches of places in the order in which they occur.——*Cassell's Magazine* has the following on working men's clubs:—"Most of the patrons of working men's clubs and societies would like to see everything made subservient to what they are pleased to call mental improvement; they would combine 'instruction with amusement'; continually introduce the fly of science into the pot of social ointment, and, worse than all, not only the mental and moral improvement, but the amusement also must be on a pattern which has been ordained by dull respectability as a concession rather than a recognition,—an experiment with little hopefulness attending it, rather than as a hearty endeavour to lend a helping hand to a cause common to humanity at large, and enlisting general sympathy. In fact, there is often a too evident intention on the part of patrons to provide what *they* think will be beneficial to 'the working man,' without enough inquiry into what his own tastes and recreations might lead him first to appreciate. Perhaps, on the whole, he would be best pleased to have an opportunity of choosing for himself what should be the groundwork of the attractions that are necessary for making his club popular, and giving it an undoubted claim against the attractions of the public-house. . . . . It is very doubtful whether classes and lectures on the 'ologies' and dry studies,—or politics, except as a topic of private conversation, and not in the sense of a debating society,—are not all foreign to a club in its true meaning. It is a place for recreation, for pleasant intercourse, for the refined enjoyment of leisure; and though classes for studying certain agreeable acquirements may be a useful accessory, just as a free library is almost a first essential, it should never be confounded with a literary and scientific institution, or it will lack that kind of flavour of *bonhomie*,—that personal interest, which even a benefit club can command. Indeed, it would be well to unite to every working man's club certain beneficial associations, but they should not be essential to it."——"Calisthenics and Drilling Simplified, for the Use of Girls' Schools and Families," by Duncan Cunningham (Junor, North-street, Brighton), is published mainly to show that Mr. Cunningham is a good teacher; nevertheless it will be found useful by many without any teacher at all.——A full and curious history of Great Queen-street, Lincoln's-inn-fields, is given as a preface to Wyman's "Dictionary of Stationery," a trade-book, just now issued.——The *Contemporary* for October contains an erudite article on "The Etruscans," by Mr. Alex. S. Murray. The author considers that both the Greeks and the Etruscans were descendants of the remote Pelasgi.

Miscellanea.

Chinese Oil-Tree.—In a paper addressed to the Academy of Sciences, M. Cloetz treats of this tree, "Elæococca Vernicia," or "Tong-yeon" in Chinese. It belongs to the family of Euphorbiaceæ: its fruit is a nut containing several shells, in each of which there is a large seed covered with thick teguments. Under a strong pressure this seed will yield about 35 per cent. of its weight of a thick, colourless oil, having no smell and scarcely any taste. Its specific gravity is 0·9362; exposed to a cold of 18 degrees it will thicken, but not crystallise. By digestion with ether, the pounded seed will give about 41 per cent. of an oily liquid, differing but little from the other; but if, instead of employing ether as a dissolvent, we use purified sulphuret of carbon, the fatty matter obtained after evaporating the sulphuret at 100 degrees becomes solid in cooling, forming a number of pearls which under the microscope present a manifest crystalline structure; the mass melts at 32 deg. Centig. (89 Fahr.). M. Cloetz has ascertained that heat does not alone produce this difference between the two oils extracted, one by pressure, the other by the sulphuret. Another curious property of the oil extracted by the press is this, that it will quickly become solid under the influence of light alone, in the absence of air. It was interesting to ascertain whether this was a property belonging to white light only, or whether the colours of the spectrum might perform the same office. M. Cloetz accordingly exposed the oil in closed tubes to different lights. At the end of the third day he found it had become solid under the white and the violet rays, but not under the yellow ones, where it was still liquid ten days after. Oil of Elæococca is the most drying one known.

A Too-Enterprising Foreman.—At the Liverpool Police-court, the other day, Patrick Fleming was charged with stealing about 200*l.* worth of paints, oils, ladders, &c., belonging to Messrs. A. Thomas & Co., oil and colour merchants. The prisoner had for five years been foreman to the prosecutors, and managed their retail business. It was alleged that for a considerable time past he had been in the habit of taking jobs on his own account and using his employers' material, that he falsified the accounts, and that he had stocked a shop of his own with their property. It appears that the prosecutors' retail business was not paying, and on intimating to Fleming their intention of giving it up, he proposed to take the place at a valuation, stating that he could find 1,000*l.* This aroused the suspicions of Messrs. Thomas, and inquiries were made which resulted in the prisoner being arrested. He denied the charges, but was committed for trial at the Sessions.

Screw Jacks.—A recent invention by Mr. E. G. Sheward, of Negapatam, India, consists in constructing screw-jacks with a double casing and central screw in combination, so as to obtain with a screw-jack of a given height nearly double the lift which is obtained by using screw-jacks of ordinary construction.

Restoration of St. Alban's Abbey.—The *St. Alban's Times* states that preliminary steps are being taken for the restoration of the nave of St. Alban's Abbey. "For many years" (it continues) "the Early English clearstory on the south side has shown evidence of weakness, and a considerable leaning towards the south. It has, therefore, been determined for a long time past, as soon as funds would permit, to commence the work on this section of the building. The committee, however, even at this stage, are without funds for such a heavy undertaking; but we are happy to say that a gentleman who is about to reside in this neighbourhood, Sir Edmund Beckett, has in the most handsome manner come forward, and at his own expense, after personal inspection, ordered the south aisle, triforium, and clearstory, to be strongly shored, as a precautionary measure. Sir Edmund is fortified in his idea as to the urgent necessity of so doing by the opinion of Sir Gilbert Scott, who on Friday last made a careful personal inspection, and whose report upon the point may shortly be expected."

Public Fountain for Moffat, Dumfriesshire.—There is now being erected in the Marketplace of Moffat a public fountain, at the cost (500*l.*) of Mr. William Colvin, of Craigieland. In consideration of the pastoral character of the district, a ram forms a prominent feature in the design, which is by Mr. William Brodie, R.S.A. The ram is rather larger than life-size, and is made to stand with its fore-feet raised on a piece of rock. It has been cast by Messrs. Young & Barton, Leith-walk, and is being chased by Mr. Brodie. The pedestal, formed of unhewn blocks of red sandstone, from Corn Cockle Quarry, is roughly pyramidal in form. Round the base are fixed four basins of polished red granite, into which water will trickle from the rock, the overflow being caught in other basins underneath for dogs. The whole structure, when the figure is put up, will attain a height of 15 ft. or 16 ft.

Monumental.—More than two years ago, Mr. Watson, a visitor to Penzance, while gathering wild flowers or ferns near Lamorna, fell over a treacherous bit of cliff to the rocks below, and was killed on the spot. A memorial cross has now been erected on the spot where the accident occurred, by Messrs. Bradbury & Son, of Penzance. The cross is of Greek character, the head pierced with four holes, and the shaft tapered towards the top. It is similar in style to some examples of ancient Cornish crosses. It is cut in Lamorna granite, and is directly over the zawn, generally known as Lamorna cave, and about 40 ft. above the sea.——At the parish church of Winterborne-Monkton, Dorset, a new tomb has been erected in the chancel in memory of the late Miss E. B. Wilmot Williams. It consists of a full-length effigy of the deceased lady, moulded in terra-cotta by Colonel Elliott. The sides of the tomb have each three panels, which have been carved by Mr. Grassby, of Dorchester

A Liverpool Synagogue.—On the 26th ult. the Prince's-road Synagogue, Liverpool, was re-opened, on the completion of elaborate decorations. The building has been closed about four months, and the embellishments accord with the style of the building, which is Byzantine. The total cost of the decorations is about 2,000*l.* The work has been executed under the direction of Messrs. W. & G. Audsley, architects, by Mr. J. Wannop. A rich marble reading-desk, which cost upwards of 700*l.*, has been presented by Mr. David Lewis, of Ranelagh-street. It is the work of Mr. Norbury. Mr. Edwin L. Samuel has presented an embroidered cover for the reading-desk. There are on the reading-desk a number of very handsome chairs, two of which have been designed and presented by the Messrs. Audsley, Messrs. Urquhart & Adamson being the makers.

New Discovery of Coal.—An important discovery of coal is reported to have been made on the Cannock and Huntington Estate. On the property of Lord Hatherton, which is outside the formerly-defined boundary of the Staffordshire coalfield, a seam 8 ft. thick has been bored through by the Diamond Rock-boring Company. This one seam contains more in itself than is found in the other seams before passed through. At 434 ft. down, 5 ft. 4½ in. was come upon; at 440 ft., 4 in. was passed; at 446 ft., 1 ft. 2 in. was revealed; at 460 ft., a one-foot seam was found; and now at a depth of 532 ft. this 8-ft. seam has been revealed. Further boring will, it is believed, bring in the highly valuable deep coal of the Cannock Chase field.

The Cab Exhibition.—This exhibition, to which we have previously called attention, was opened on the 1st inst. at the Alexandra Palace. In Class 3, which was for [cab] builders, Messrs. Forder & Co., of Wolverhampton, gained the first prize for their patent "Hansom." Mr. Charles Thorn, of Norwich, who exhibited an improved Hansom, was second. In the four-wheeled cab class, Messrs. John Marston & Co., of Birmingham, were first, and Mr. G. R. Blacknell, London, second. The first prize for designs for cabmen's shelters, the cost not to exceed 75*l.*, was taken by Mr. John Gibson, architect, of Parliament-street; and the second by Mr. E. P. Willins, architect, of Great James-street, W.C. A design was exhibited by Mr. Charles Thorn, of Norwich, but as it exceeded the prescribed cost it was disqualified.

New Public Hall at Tonbridge.—A new public hall has been opened at Tonbridge. It is Gothic in style, and has been erected, from plans prepared by Messrs. Cattermole & Eade, by Mr. Samuel Woods, of Weybridge. It has a frontage of 64 ft. At the upper end is a clock-tower, 74 ft. in height. In front, on the ground-floor, are two shops and an entrance to the hall, from which there is a staircase leading to offices and a large room which has been leased to the Local Board; also to the gallery. At the south side is an entrance leading to the corridor and back of the hall. The great hall is 69 ft. by 39 ft. 6 in., with a platform under a recess. The room is capable of holding 800 persons.

The Drainage of Maidstone. — The drainage of Maidstone has, after about ten years of indecision, been decided upon. At a special meeting of the Maidstone Local Board, on the 2nd inst., the plans of Mr. Lewis Angell, C.E., which will involve an outlay of 30,000*l.*, were adopted, subject to one or two minor alterations. Mr. Angell proposes to lay down about twenty-seven miles of pipes, and to conduct the sewage out of the town to a point where it will be filtered and subjected to clarification by the lime process. The solid matter will be retained in tanks, and the effluent water, in its clarified state, discharged into the Medway.

Non-Inflammable Timber. — Messrs. A. Gardner & Sons, of Glasgow, have lately patented a process by which the original sap of the wood they use is artificially withdrawn, leaving the fibre free from this promoter of decay, and its place is occupied by a chemical solution, which is said to have the effect of, in a few hours, fire-proofing wood of every description, seasoning, adding to its strength and density, and fitting it for immediate use. So inexpensive is the process that the whole of the wood-work necessary for a fifteen-roomed villa could, it is stated, be rendered non-inflammable for about 20*l.*

The Walker Art Gallery, Liverpool.—It is stated that within the last few days Mr. Warrington Wood has received a *carte blanche* commission, not only to carve the bas-reliefs of the large panels on the front and end of this building, but to execute in the choicest Carrara marble three figures of heroic size,—one representing Michelangelo, and another representing Raffaelle. These figures will occupy the pedestals at each side of the front entrance. The third will represent the "Goddess of Art," and will occupy the apex of the building. The above subjects have been suggested by Mr. Alderman Walker, the ex-Mayor.

A New Locomotive.—It is stated that experiments have lately been made upon a small private line of tramway, leading to the quarries at the foot of Mount Avron, near Neuilly-sur-Marne, with a new noiseless and smokeless locomotive, worked with a mixture of hot compressed air and steam. It was found that 800 litres of atmospheric air, compressed and heated, sufficed to move a car containing twenty-five persons, and itself weighing 4,500 kilogs., over a distance of three kilomètres.

A Memento of the "Northfleet."— A memorial window has just been erected in the Parish Church of New Romney, as a memento of the wreck of the "Northfleet" off the coast in January, 1873. The window is by Clayton & Bell, of London, the subject illustrated being "The sea giving up its dead."

The Royal Aquarium and Summer and Winter Garden Society's first ballot for the election of Fellows was held on Friday, the 1st inst., when 632 ladies and gentlemen came up for election, of whom 463 were duly elected, amongst whom were many well-known persons.

Demolition of Baghill.—On the 29th ult., the work of demolishing this ancient and rugged mound, so closely connected with the history of Pontefract during the Civil Wars, was commenced by the contractors for the new line of railway from Swinton to Knottingley. When the Yorkshire Archæological and Topographical Association visited Pontefract, in 1870, Baghill was examined and fully discussed. The elevation of Baghill is level with the Castle, although it is divided from it by a valley of about 440 yards.

Thames Valley Drainage.—Mr. Richard B. Grantham, the inspector appointed by the Inclosure Commissioners of England and Wales, will hold a meeting, at the town-hall, Abingdon, on Tuesday next, for the purpose of making inquiries as to the propriety of declaring the jurisdiction of the Thames Valley Drainage Commissioners to extend to the limits proposed in respect of No. 7 District from Abingdon Bridge to Long Wittenham, including the Ock District.

The Diamond Rock-boring Company.— Sir Stafford Northcote (the Chancellor of the Exchequer), on Wednesday, the 6th, paid a visit to Stockton-on-Tees, on the occasion of the opening of a new dock, and went down the River Tees to view some of the other important improvements being made by the Tees Conservancy Commissioners for the purpose of improving the navigation: among others, the boring and blasting operations now being carried on by this Company.

Society of Engineers.—The first ordinary meeting of this Society for session 1875–6, was held on the 4th inst., in the Society's Hall, Westminster-chambers. Mr. J. H. Adams, president of the Society, addressing a considerable audience of members, associates, and friends, reviewed the work done during the vacation in visiting various establishments of engineering interest; and Mr. Thomas Maude read a paper on "The Government Break Trials," near Newark.

Stone Cutting.—M. Degen, of Kriens, has lately used a new description of saw for cutting free-stone into slabs for window mouldings, plinths, cornices, and so on, with, it is said, excellent results. The speciality of M. Degen's invention is, that the saw itself remains stationary, the work being performed by drawing the stone to and fro beneath it. Several saws are mounted side by side, at various heights, each admitting of a certain amount of vertical displacement and adjustment.

Mr. Ruskin's Museum. — The *Sheffield Independent* understands that Mr. Ruskin has just purchased a site for his Sheffield Museum, so that it is likely that the "two-windowed garret" and the "poor little cabinet" mentioned in his recent letter (*Builder*, p. 827, *ante*) will become accomplished facts, and instrumental in exhibiting "what deserves respect in art or admiration in nature."

Cambrian Sanitary Pipe and Terra Cotta Company.—Among companies recently registered is the above, which seeks to acquire the goodwill of a business, with the plant, and a colliery under twenty-one acres of land, by purchase of the vendor's interest in the lease of the Cambrian Fireclay Works, at Trefynant, near Ruabon. The company is registered with a capital of 25,000*l.*, in 5*l.* shares.

The Lincoln Tower, Lambeth.—On the 28th ult., the top stone of the "Lincoln" tower and spire, attached to Christ Church, Westminster Bridge-road (now erecting for the congregation of Surrey Chapel), was laid by the Rev. Newman Hall. The tower has been erected as a memorial of the abolition of slavery and of the late President Lincoln.

Vandalism near Inverness. — A correspondent of the *Inverness Advertiser* says that, on a recent visit to the great cairn or cairns on the moor just behind Essich, called Glasard, he found two workmen busily engaged in quarrying out the few remaining large blocks from the already sad ruins left by their predecessors, for the purpose of building some paltry dyke.

Walsall Cottage Hospital.—At a special meeting of the General Committee of the Walsall Cottage Hospital, held on the 27th ult., plans for the enlargement of the hospital, by Mr. Henry Naden, architect, Birmingham, were recommended by the Building Committee, and adopted, subject to certain conditions relative to the cost of erection.

The Bury St. Edmunds Surveyorship.—At a meeting of the Bury St. Edmunds Town Council, on the 5th inst., Mr. Henry Siggers was appointed Assistant Surveyor, at a salary of 150*l.* a year, and the salary of Mr. Croft, the surveyor, whose ill-health has made this appointment necessary, was reduced to 150*l.*

Proposed New Vestry Hall for Westminster.—At a recent meeting of the Westminster District Board of Works, it was resolved to take steps for the provision of better offices for the Board, and for the combined vestries of St. Margaret and St. John.

TENDERS

For the construction of works for drainage and water-supply at Ingatestone, Essex. Messrs. Whitmore & Fertwee, engineers. Quantities by Messrs. Carter & Son :—

	Drainage.	Water.
Botterill & Co.	£1,750 0 0	£1,550 0 0
F. & F. J. Wood	1,583 0 0	1,252 0 0
Jackson	1,450 0 0	1,250 0 0
Dover, Son, & Co.	1,349 0 0	1,037 0 0
Docwra	1,265 0 0	1,025 0 0
Roper	1,227 0 0	—
Tanner	1,155 0 0	1,057 0 0
Goodair	1,139 0 0	1,055 0 0
Rogers (accepted)	1,040 0 0	880 0 0
Bragg	—	1,100 0 0
Hastings	—	1,023 11 0
Walker	—	830 0 0

For the Congregational church, Hessle-road, Hull. Mr. Samuel Musgrave, architect. Quantities prepared by the architect :—

Musgrave	£4,153 0 0
Barry	3,975 0 0

For additions and alterations to the Eleusis Club, Chelsea. Mr. G. Ginn, architect. Quantities supplied by the architect :—

Hancock	£572 10 0
Andrew	530 0 0
Webber	470 0 0
Beach (accepted)	415 0 0

For new Congregational chapel at Tredegar, Monmouthshire. Messrs. A. O. Watkins & Son, architects. Quantities supplied :—

Stephens & Bastow	£3,490 0 0
Foster, Brothers	3,300 0 0
Morgan	3,200 0 0

For four cottages, stabling, and carriage-shed, Nottingham, for Mr. J. Challands. Mr. Alderson, architect :—

Walker & Cullen	£843 16 0
Johnson	800 0 0
Daunt	685 0 0
McPherson	669 10 0

For the erection of new iron railing and gates round the enclosure of Soho-square. Mr. S. J. Thacker, architect :—

Wilson, Brothers	£933 0 0
Jones & Co.	926 0 0
Warne & Sons	891 0 0
Addis (accepted)	825 6 3

For the erection of a shop and residence at Croydon. Messrs. Trythall & Sons, architects :—
Ridge & Kingsland (accepted).

For erecting a villa residence at Shepherd's-green, Chislehurst, for Mr. Joseph Allen. Mr. W. F. Harriss, architect. Quantities by Mr. S. J. Thacker :—

Boyce	£4,794 0 0
Willson, Brothers	4,734 0 0
Grover	4,687 0 0
Bayes & Ramage	4,681 0 0
Braid, Jopling, & Co.	4,589 0 0
Smith	4,511 0 0

For new infant school-room, Ashby-street, St. John's-street-road, adjoining the Martyrs' Memorial Church. Mr. J. C. Hukins, architect. Quantities not supplied :—

Moreland & Nixon	£878 0 0
Bodman	790 0 0
Staines & Son	676 0 0

For new warehouse, Douglas-place, Bayswater, for Mr. W. Whiteley. Mr. J. E. Saunders, architect. Quantities supplied by Messrs. Osborn & Russell :—

Merritt & Ashby	£13,470 0 0
Brass	13,273 0 0
Trollope & Sons	13,197 0 0
Tarrant & Sons	13,162 0 0
Elkington	13,050 0 0
Sewell & Son	12,554 0 0

For the proposed new Wesleyan chapel, Holderness-road, Hull. Mr. Samuel Musgrave, architect. Quantities by the architect :—

Sargeant	£5,050 0 0
Habbershaw	4,851 18 9
Jackson	4,724 0 0
W. & J. Hall	4,576 0 0
Barry	4,518 0 0

For additions and alterations to the Star of the East, Limehouse. Messrs. Wilson, Son, & Aldwinckle, architects :—

Sheffield	£1,057 0 0
Johnson	1,015 0 0
Palmer (accepted)	893 0 0

For the Portswood main drainage, Southampton. Contract No 3. Mr. James Lemon, engineer. Quantities by Mr. J. G. Poole :

Wilcocks	£27,000 0 0
Marshall	21,500 0 0
Nowell	17,600 0 0
Bull & Sons	14,616 0 0
Sanders	13,893 0 0
Nichols (accepted)	13,050 0 0
Barnes & Co.	12,250 0 0

For the erection of Board schools, at Pirton, Herts. Mr. James Shilcock, architect. Quantities by Mr. H. Lovegrove :—

Sharpe & Maxwell	£2,913 0 0
Twelvetrees	2,597 0 0
Moore	2,517 0 0
Redhouse	2,311 0 0
Dunham	2,300 0 0
Bates	2,295 0 0

For enlarging the Royal London Ophthalmic Hospital, Moorfields. Messrs. Lander & Bedells, architects :—

Carter	£3,2-5 0 0
Merritt & Ashby	2,749 0 0
Dove, Brothers	2,595 0 0
Kelly, Brothers	2,582 0 0
Axford	2,460 0 0
Williams & Son	2,430 0 0

For the erection of a block of buildings and factory premises, at Phillips-street, Custom House, for Mr. A. Normandy. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons :—

Mortar	£5,797 0 0
Enuor	5,779 0 0
Sharpington & Cole	5,621 0 0
Perry & Co.	5,439 0 0
Bangs & Co.	5,435 0 0
Deards	5,098 0 0

For alterations to house, Albert-terrace, Knightsbridge. Mr. H. H. Collins, architect :—

Cohen	£1,020 0 0
Vernall	956 0 0
Stimpson	945 0 0
McIntosh	880 0 0
Moreland & Nixon	865 0 0
Mark	837 0 0

For alteration to house, Portland-place. Mr. H. H. Collins, architect :—

Mark	£3,420 0 0
Vernall	2,716 0 0
McIntosh	2,486 0 0
Bird	2,423 0 0

For building a warehouse in Bevis Marks, E.C. Mr. H. H. Collins, architect :—

Mark	£3,030 0 0
Waldram & Co.	2,806 0 0
Moreland & Nixon	2,760 0 0
Newman & Mann	2,695 0 0
Oliver	2,525 0 0

For alterations to the Bedford Arms, Seven Sisters-road, Holloway, for Mr. Mills. Mr. E. Brown, architect :—

Stamp & Bowtle	£946 7 6
Loring	913 7 6
Mark	843 7 6
Salt	702 7 6

For alterations to the Crown Tavern, Lower Clapton, for Mr. Hartwell. Mr. E. Brown, architect :—

Shurmur	£360 0 0
Loring	316 0 0
Stamp & Bowtle	299 0 0
Hayworth	283 0 0
High	261 0 0

For additional works at Ash-grove, Hackney, for Messrs. W. J. Bush & Co. Mr. C. Chapman, architect :—

Perry & Co.	£1,350 0 0
Little	1,186 0 0
Waldram & Co.	1,175 0 0
Kilby	1,155 0 0
Boyce	1,144 0 0
Pritchard	1,133 0 0
Harding	1,115 0 0
Allen	1,110 0 0
Dubbs	997 0 0

For the West Herts Infirmary, Hemel Hempstead. Messrs. Coe & Robinson, architects :—

Honor	£12,639 0 0
Chappell	11,800 0 0
Harris	11,750 0 0
Shepherd	11,700 0 0
Sear	11,550 0 0
Morter	11,230 0 0
Cook	11,023 0 0
Bird	10,978 0 0
Downs	10,960 0 0
Saunders	10,900 0 0
Waterman	10,050 0 0
Hailey (accepted)	9,990 0 0

For three warehouses, Jewin-crescent, City. Messrs. Herbert Ford & R. L. Hesketh, architects :—

Killby	£10,324 0 0
Mark	10,243 0 0
Lawrence	10,238 0 0
Crabb	9,973 0 0
Adamson & Sons	9,880 0 0
Perry & Co.	9,715 0 0
Scrivener & White	9,673 0 0
Kirk & Randall	9,680 0 0
Downs & Co.	9,548 0 0
Browne & Robinson	9,340 0 0
Brass	9,238 0 0
Hobson	8,994 0 0

For new works at the City Mills, Stratford, for Messrs. Howard. Mr. J. T. Newman, architect

Mortar	£745 0 0
Rivett	587 0 0
Bangs & Co.	568 0 0

For works after fire at the City Mills, Stratford, for Messrs. Howard. Mr. J. T. Newman, architect :—

Rivett	£2,296 0 0

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*Sanitary Architecture and Appliances.**

IT is sometimes urged, mostly by persons not fully acquainted with the scope and proceedings of the Social Science Association, that at its congresses matters are discussed which are not reducible to laws, doubts that cannot be determined, caprices rather than science; and that, after a great deal of talking and writing, little is removed from the cloud-land of "I think," to the permanent domain of "I know." If the proceedings of any of the departments did offer foothold to such an objector, he would not find it here, in the midst of the exhibition of sanitary, educational, and domestic appliances organised (and organised annually), in connexion with the Congress of the Association. Here we are beyond theories and scarcely entertain doubts: here we have to deal only with facts, facts which concern all, facts which include life and death.

The exhibition is arranged under six headings, and it is of the third of these that I have been requested to speak. It runs thus:—"Sanitary architecture, and appliances, for outward and interior ornamentation, including cisterns, lavatories, baths, closets, filters, fountains, indicators, paving and roofing materials, ornamental bricks and tiles, garden ornaments, terra-cotta, selenitic compounds, cements, plaster, concretes, slag, stoneware and clayware, building materials, models of dwelling-houses, cottages for the poor," with an *et cetera* besides. The list is enough to take away one's breath; the idea of treating of all these subjects at one sitting is out of the question. We have here the texts, rather, for a complete course of lectures, such a course as might very fairly be imposed on the whole of the rising generation. I was about to suggest that no one of either sex should be allowed to contract marriage before following such a course, but this might prove a check to a very useful institution; we must do nothing to discourage matrimony. But I should be glad if I could hope the time will come when all persons who have passed a fair examination in such a course will be excused from paying a certain proportion, say 25 per cent., of their rates and taxes, or in some other way be exonerated from obligations. It is quite certain that a much smaller amount of rates would then be required, for pauperism, crime, illness, and premature death are results of the ignorance which the truths that should be taught in such a course would greatly lessen. In sanitary matters, often, ignorance is literally death.

Knowledge in this direction is spreading, though it may be but slowly, and it is agreeable to the few who have, for long years, sought to force the public to believe in the importance of sanitary science, now to find it largely recognised and made, in fact, the war-cry and basis of a government.

Sanitary Architecture is our subject, as illustrated by arrangements and inventions in the Exhibition now open. What may be rightly termed Sanitary Architecture is not too often produced. The reverse is everywhere about us; courts and narrow streets; rooms underground; houses built back to back without the means of ventilation,—damp, stuffy, and fetid,—while in residences of greater cost there are found insufficient drainage, sealed up bed-rooms, and cisterns communicating with the drains, and so receiving and disseminating poisonous sewer gases. If we look to our public buildings, there is little less to be condemned. Our hospitals, until a few years ago, when some of us worked hard to make known the advantages, and enforce the adoption of what is termed the *pavilion plan*, were places where patients had less chance of recovery, aided by the most skilful surgeons or physicians, than they would have had if placed under a tent in a field, with an old woman for doctor; and even now there are such evil-conditioned buildings in use; as there are also Reformatories, Industrial Schools, and other asylums, where the children are never free from ophthalmia or some other man-created disaster.

Examine into the condition of our schools, and it will be found that many of the arrangements are destructive of health. Scores of children are crowded together without proper or indeed any arrangements for the removal of the vitiated air and the supply of pure air. The schools erected by the recently-appointed School Boards mostly show proper attention to sanitary requirements, but they are at present deficient in objects of delight. The walls of the school-room should be used to educate the eye, improve the taste, and elevate the nature of the rising generation. The education of a nation must begin in the cradle. I remember the feeling akin to disgust with which a visit to one of the school-rooms at famous Eton College a few years ago filled me. It was a low, dark, mouldy apartment with bare walls;—not one picture, print, or thing of beauty of any kind to be seen within it. Its aspect assisted to account for the coolness with which educated gentlemen are often heard to say, sometimes even as a sort of boast, "Oh! I know nothing whatever of art, and don't pretend to it."

Leaving for a time this question of beauty as a sanitary agent, I would notice that a feeling seems to be growing up which will eventuate, it may be hoped, in a general demand for sanitary architecture,—that houses shall be built not merely to sell, but fit to live in; with all those arrangements which make healthful and vigorous life possible. To obtain this, space is above all things necessary. Each inhabitant of a house should have at least 700 ft. cubic space,—say 9 ft. by 9 ft., 9 ft. in height. Even then the air requires to be constantly changed. I have entered scores and hundreds of sleeping-rooms, with little or no means for changing the air, where each inmate had not 100 ft. of space. What is the consequence? A degraded condition of health,—a kind of half-life,—no energy, no power. More than half the children born in such places die before they are five years old, and the death-rate, generally, is three times or four times as high as it is amongst people living under more healthful conditions. Overcrowding, as I have for years taken occasion to urge, means want of pure air; and want of pure air means debility, continued fever, death, widowhood, orphanage, pauperism, and money-loss to the living. I name money-loss last because, strange to say, a large number of persons seem to think that of much greater consequence than all the other evils put together. But,—

> "Ill fares the land, to hastening ills a prey,
> Where wealth accumulates and men decay."

What is the value of material progress,—the piling up of money, the creation of property,—if the race degenerate, and the stamina of Old England be lost?

Let us now go a little into detail with the view of mentioning some of the more prominent or valuable objects in the exhibition, bearing on our part of the general subject.

The importance of a good *Foundation*, when about to build, cannot be over-rated; yet a scandalous practice of removing gravel and substituting slush and decomposing material prevails amongst speculative builders. The emanations cause serious evils. A good layer of cement concrete over the whole area ought to be insisted on, and a "damp-proof course" in the walls, just above the ground-line. There are specimens in the Exhibition, by Messrs. Stiff & Sons, in pottery-ware. They also exhibit some masses of concrete.

The value of *Concrete*, not merely for foundations, but as a building material in certain localities, is very great. It was my privilege, by an Essay in student-days, to assist mainly to bring it into use. Much abused in print, in more than one quarter, for what I foretold of it, it is satisfactory to find those views confirmed. Concrete is now used as a building material to a great extent. A large building in this material is being carried up in Church-street, Brighton, at this moment. Some of the concrete exhibited by the firm last named and by Mr. Hole is formed with selenitic mortar, which is cheaper than cement, and is said by some who have used it to be nearly as good. The process, which depends on well-known chemical action, is the discovery of General Scott, of South Kensington.

The *Drains* of our houses are often ill-formed and of permeable material, not seldom laid without proper fall, even with fall the wrong way, so that the solid matter remains in them.

The condition of the lower part of many

* From a Lecture on Sanitary Architecture and Sanitary Appliances exhibited in connexion with the Social Science Congress at Brighton: by Mr. George Godwin.

houses, if they were examined, would startle the country.

Messrs. Doulton & Co. exhibit good Drain-pipes, also Stanford's joint, the object of which is to allow a length of pipe to settle slightly without actually breaking the connexion.

Traps (proper expression, "Trap,"—"Trap to catch a fever") are for the most part delusions. The connexion of waste-pipes from cisterns, and pipes from sinks, with drains, has produced deadly results, the presence of an ineffectual trap lulling suspicion. There are specimens in the Exhibition of improved traps,—more or less improved traps,—from several inventors, Doulton, Middleton, Boswell, Sharp, Skeats, who sends Mr. Banner's arrangement (including a cowl to aid in ventilating the soil-pipe), McNeil Greig, and some others. The latter, Greig's, has considerable advantages. It is formed so that the solid matter immediately passes away, holds sufficient water to seal the end of the soil-pipe, and has attachments for ventilating tubes, as also have the others. This is the one great improvement which lately has been well laid hold of by the public,—the necessity for the ventilation of the house-drain.

Walls should resist moisture, and to do so should be formed of impermeable material. Dampness is costly—the cold produced requiring more firing—to say nothing of damage to health. Messrs. Brace & Co. exhibit bricks of a good sound material, as well as others of ornamental character, the forms of which might in some cases be better than they are. The use of burnt earth or *terra cotta* in architecture is becoming considerable, and it is, indeed, a most valuable material; properly manipulated and burnt, it is amongst the most durable of substances.

The application of pottery in the manufacture of cisterns is most desirable, the continued use of lead being bad in the extreme,—for soil-pipes also. No one has done more to introduce this sanitary ware than Mr. George Jennings, who exhibits practically in the lavatories of the Pavilion. In fact, there is scarcely a railway station or large building of any kind in which he does not do so. His career should be an encouragement to all strivers. With reference to *cisterns*, I would refer to the frightful condition of many,—constantly the cause of illness,—as I could prove by cases within my own knowledge. Connexion with drains, by means of waste-pipe, is the main cause, especially when the cistern is covered. This connexion should never exist. Cisterns should be often cleaned out. Messrs. Kay exhibit a model of a cistern to be formed in lava.

The exhibition of "closets" includes several novelties. Messrs. Pontifex & Son, whose brass-work, in the shape of cocks, taps, and so on, is distinguished for excellence, has one with a water-waste preventer attached, the arrangement of which is very ingenious. The same may be said for Mr. Howard's disinfecting closet. The earth-closet exhibited by Mr. Parker is self-acting, strong, and cheap. A specimen of Mr. Conyer Morrell's ash-closet is sent by the Sanitary Manure Company, and an arrangement on the same principle by Messrs. Gibbons & Green has merits of its own. To Mr. Morrell, I believe, belongs the credit of originally applying the house refuse, separating for other use the cinders. There can be no doubt of the usefulness of earth or ash closets in certain situations, but I am quite satified they will never meet the necessities of large towns.

I must hurry on to conclusion:—Mr. Meakin's *Sash-fastener* and Sash-raiser have established themselves as valuable appliances. The *parquet* flooring sent by Messrs. Howard & Son should be looked at. It is somewhat surprising that parquetry is not more used in England than it is. Mr. Stephens sends specimens of his well-known stains for woods, and Messrs. Maw & Co. of their flooring *Tiles*, in which they have deservedly a great reputation. Why are they not cheaper? *Filters* are sent by so many persons, and they are all so alike in principle, that it would be invidious to mention any one in particular. I earnestly recommend every one of them: no water should be drunk without being filtered.

The *Electric Bells*, sent by Messrs. Francis and Mr. Faulkner, should receive attention. Mr. Faulkner, by the way, has made a great discovery, by which the power of the permanent magnet is immensely increased by very simple means. It will surprise me if this discovery does not lead to the introduction of electricity as a motive power.

After speaking of the *useful* we must not omit to regard the *beautiful*, which to my mind is the highest kind of usefulness; and this is illustrated in the Exhibition by the Lambeth ware, produced by Messrs. Doulton: the jugs and other utensils are especially good. Messrs. Bailey, of Fulham, send some of a similar character; but Messrs. Doulton, by the course they adopted, have distanced all competitors. This course includes taking to their aid some of the students, male and female, of the Lambeth School of Art; an example, by the way, which ought to be followed, as I have before now urged, by other manufacturers in their various localities.

Uninteresting as some of these matters may seem individually, they go to make up a whole of supreme importance,—the production of healthful, happy, homes. The largeness of the interests involved, and the enormous extent to which good or bad arrangements in house-building will apply, may be shown by a few figures. In the past year, 1874, there were built in London alone 7,800 houses, and 3,500 more were in progress. If we take as an average cost per house 300*l.*, and those in progress at half that sum, we find there were, in that year, 2,865,000*l.* spent in house-building in the metropolis alone,—and this is much under the mark. The length of new streets and squares built in London within the last twenty-five years is found to be 1,181 miles; and if we give 18 ft. frontage to each house, and retain as the average cost per house 300*l.*, we find an expenditure of close upon 10½ millions sterling.

Looking a little further, that is, taking all England and Wales, we have built dwelling-houses within the last ten years to the value of more than 220 millions sterling. If the population continue to increase as it has done, there must be more than a million of additional houses erected within the next ten years, at a cost of at least 300 millions sterling. These figures are too large for the mind to grasp, but they will serve to show you how enormous is the field over which good or bad building extends, and how important it is that these immense sums should be spent in the manner best calculated to conduce to the health, progress, and happiness of the people of this kingdom.

CURRENT NOTES IN LIVERPOOL.

The great recent disaster of Liverpool, the burning of the Landing Stage, is now near being repaired, as the new stage is rapidly approaching completion, and a considerable portion of it is already finished, and available for the passenger traffic of the ferry-boats to and from the Cheshire side. The approaches to the stage from the town,—considering the extent of the traffic, and the vast numbers of persons, many of them business men in a chronic state of hurry, who pass and repass every day,—are by no means yet what they should be, either in regard to directness of route or comfort to the pedestrian (not to mention the cab-horse). The amelioration of the neighbourhood in these respects must, no doubt, be a work of time and expense, but it should be regarded as a thing that has to be done.

Liverpool has been on the move recently in the matter of railway stations. The removal of the old "front" of Lime-street Station, the terminus of the London and North-Western Railway, and the erection of the great London and North-Western Hotel, from Mr. Waterhouse's plans, as the new front, is still to be counted among the rather recent architectural changes in the town; but already the demands of the traffic have led to the scheme of a further extension of the station (which had previously been considerably enlarged from its old dimensions), for which a considerable quantity of ground has been acquired, and which will, if we are correctly informed, include the continuation of the hotel on the same scale across the additional frontage. The Midland Railway Company have not long since opened their new station in Ranelagh-street, not much more than a furlong from the London and North-Western terminus, under the title of "Central Station," and which partly occupies the site of one of the most noted of the hotels of old Liverpool, the "Waterloo," now swept away. The Midland Station, though in reality no more "central" than the other one, is very decidedly so in a comparative sense; for the Midland Company, previously to its erection, had only a wretched and comfortless terminus near the North Docks, to which passengers were conveyed from the central portion of the town in omnibuses over the singularly uneven and jolting pavement of the "line of docks" road. The station would, no doubt, have been built long ago, but for the financial and legal difficulties in the way of acquiring land for it, and bringing the railway into the centre of the town. This has now been accomplished, by dint of tunnelling and deep and narrow cuttings, with less disturbance of property than might have been expected. The new station presents nothing much in the way of architectural style,—nothing certainly to vie with the North-Western Hotel architecturally; the main building forming the front is an Italian edifice which may be called inoffensive in treatment, but scarcely claims any higher title to respect. But the general arrangement of the building on the ground is very good; the oblique angle which the station forms with the street, owing to the irregularity of the boundaries of the site, has been cleverly dealt with so as to be rather an advantage to the approach, and to the effect, than otherwise: the line of the street is kept by a separate small block of buildings, containing parcel offices, &c., forming a kind of advanced guard to the main building, and having the outer wall parallel with the street line, and the inner wall parallel with the front of the station. Between this and the main front is the carriage entrance from the street at an oblique angle, and the space between the outbuildings and the front is bridged over with a glass roof carried on light iron girders. Within the station itself there is nothing to find fault with. The iron roof, of large span, is remarkably light and economical in construction, and there is a general look of spaciousness and airiness which is very satisfactory.

At the top of Ranelagh-street, in which the new station stands, was situated the old Adelphi Hotel, one of the houses most familiar to visitors to Liverpool, and long regarded as the principal hotel of the town. After a long lease of life, this has now gone,—the old building, not the hotel,—to make way for "larger and more commodious premises," as the shop-people say. The old "Adelphi" consisted, in its first estate, of some dwelling-houses thrown together; it was, if we mistake not, added to in a similar style, a long time since, and showed one of those respectable whitewashed, verandahed, and balconied fronts which in former days supplied all that hotel architecture was supposed to demand. More recently additions were made to each flank, in the shape of return wings facing the two adjoining streets, in a more ambitious architecture of stone dressings and patent brick; and now the old front has at last disappeared, and is being replaced with a new building, still in an early stage, in keeping with the new style of the wings.

The Liverpool Art Club is, or was a week or two since, giving an exhibition of Japanese lacquer-work, very complete in its way. The tendency of this club, which is an active institution in the illustration of art, seems however to be rather too much towards that sort of work which is illustrative of manual ingenuity and dexterity rather than of mental genius, of workmanship rather than art; and the prevalence of the fashionable adoration of everything Japanese (for it is no more than a fashion) is a little too apparent. The club are forming an exhibition of the collected works of David Cox, which will be more to the purpose, and it is to be hoped they will succeed in getting a fine and really representative collection of the drawings of our great water-colour artist.

In other respects art subjects in Liverpool do not seem so prosperous as might be wished, in so large and active a town. The munificent gift of an art-gallery by a recent Mayor was not unnaturally regarded as giving a great impulse to art in the town. Art-galleries, however, do not in themselves immediately create a taste for art, or an appreciation of what is best in it; and it would seem that the works already purchased and presented for ultimate position in the new gallery have by no means been the result of unerring judgment, and that, in fact, however respectable they may have appeared as contributions to a temporary exhibition, only a minority of the number are really worthy of a position in a permanent gallery of art. An art-gallery filled with pictures of only mediocre merit may almost be regarded as an evil rather than a good; the most that could be urged for it would be as a place of amusement to those to whom innocent amusements are scarce; in any other sense it can only do harm, by habituating people to an inferior standard of work. The

best use the Liverpool people could make of their art-gallery at present, probably, would be by establishing a fine loan exhibition, for a time, of really high-class pictures. There are good private collections within reach of Liverpool, whose owners, as well as those in other parts of England, would probably be willing to lend works for a considerable period for such a purpose; and the gallery would thus be put to the best possible immediate use, and time afforded for the exercise of care and judgment in the selection of pictures to be permanently hung there. At present the idea seems to be that the gallery should be filled by pictures purchased out of the annual exhibition, whereby the exhibition fund is benefited and the gallery filled at the same time. As only a very moderate proportion of the best contemporary paintings are sent to provincial exhibitions, and the best of those are often sold previously, it is obvious that such a system cannot lead to a very satisfactory result; but it is only an illustration of the decidedly "pound-shillings-and-pence" view of art which seems to prevail in the great port on the banks of the Mersey. If we are to credit newspaper reports which have reached us, it would appear that a short time since the rapid formation of the Art-gallery and the artistic decoration of the Council Chamber were specially urged by a "patron" of art in the Municipal Council, on the ground that there was nothing to detain visitors in Liverpool at present; and that the interests of the Liverpool tradesmen suffered seriously from the fact that there was no inducement to the hundreds of Americans who landed at Liverpool *en route* for a European tour to stay a day or two and spend money in the town. This notion of the value of art, as a means of catching the spare cash of travelling Americans, at all events deserves the praise of "cuteness." The building itself, now being erected for the proposed permanent collection of pictures, we gave a view of some time since. The style seems to be suggested by that of the adjoining Free Library; and though the building may, and we hope will, answer its purpose very well, as a repository for works of art, it can hardly be reckoned as an important addition to the architectural interest of the town, or as illustrating very fortunately the particular art of architecture. A space which now exists between the Free Library and the new Art Gallery will eventually be filled, or partially so, by a new circular reading-room, the foundation-stone of which, according to a resolution of the Town Council, is to be laid by an old member of the architectural profession, Mr. J. A. Picton, and the room to be called after him "The Picton Reading-room." Mr. Picton, whose name is known to many of our readers, has taken for many years a prominent and active part in the management of the Free Library, an institution which, like the new Art Gallery, was the gift of a wealthy townsman. In the upper rooms of this building is held the annual picture exhibition, which, it must be said, is not quite worth the jubilations which have been made over it by the local press. Mr. Poynter's "Golden Age" is there, looking as beautiful as it did at the Academy*; and Mr. Armitage's "Emperor Julian" and Mr. Leighton's "Slinger" (which latter, we fear, will nowhere be deemed quite worthy of the artist's fame), and some other good pictures; but there is a large proportion of works which it can do no real good to hang up, and the average interest of the oil-paintings is not equal to that of the Manchester exhibition; while in the class of water-colours there can be no comparison. Manchester is ahead of its rival at present in regard to painting and architecture, the latter especially.

The central architectural work of Liverpool, St. George's Hall, has received renovation and redecoration internally, and was reopened to the public two or three weeks since. We printed recently a short report of what had been done, and from the wording of the communication which reached us it would seem that the prevalent idea was to brighten up the interior, which was regarded as "gloomy." This it scarcely could be said to have been, but it was deficient in light to some extent from the omission of windows on the east side, in accordance with the supposed exigencies of Greek architecture, which Elmes desired to reproduce as far as possible in its purity. What has been done now amounts really to destroying, in great measure, the aërial effect and the scale of the great hall. The history of St. George's Hall includes a curious catalogue of mistakes and unfortunate experiments. Putting aside the question of the adaptability of the style to a northern climate, the building was an absolute mistake from the first, in regard to convenience, or rather inconvenience of plan and arrangement, and in regard to the ostensible object of the great hall as a music-room, for which purpose it is probably the most unfit room in England. This arose partly out of what, viewed in a practical light, must be considered the bigotry of its enthusiastic architect in favour of his own art, which led him absolutely to scout all suggestions for the improvement of the acoustic properties of the room which might seem to interfere with his architectural ideal. The one success, practically, of the building, is the small concert-room, which is as good for its purpose as the other is bad. Elmes was deprived, after all, of his ideal effect of an uninterrupted vista through the Hall into the courts beyond, by the interposition of the large organ obstructing the view. Considering the immense size of the instrument this was, perhaps, scarcely to be avoided. Then a series of experiments were made with the approaches: pillars and gates put up and removed, balustrades the same, levels altered, and so on. The present arrangement of the approach on the principal side is perhaps the best that has been arrived at. The exterior itself has never been finished as its architect intended; a fact of which we suspect many people in Liverpool, even among those who profess an interest in art, are perfectly unaware. The complete design includes the carving the square panels on the surbase and in various parts of the building with bas-reliefs, and the addition of statues in the interspaces between the square columns at either end of the building, in the portions occupied by the courts of law. Those who are inclined to spend money upon art in Liverpool could hardly spend it better than in completing the exterior of St. George's Hall by the addition of sculpture of a high and severe type, in the positions where it was intended by the architect. Defective as the building is practically, it must be regarded as by far the finest example we have of the modern revival of Greek architecture, and as such it would be well worth while to render it complete.

In the midst of all these alterations and incompletenesses of the exterior, the great hall has always impressed every one as a noble and dignified interior, in spite of some Roman impurities of style in the decorative detail. Indeed, the hall, with its deeply-recessed arches at the side, and its barrel-vault, is Roman and not Greek. The recent operations have consisted in raising the floor, decorating the whole anew in colour, and reglazing the windows. The raising of the floor is a decided improvement. In the original design the interior was surrounded by a kind of dais or platform a few feet wide, and the centre portion sunk three or four steps below this, so as to form a kind of well, as if a large artificial pond were contemplated. What was Elmes's object in constructing the floor thus it is difficult to understand; when the building was quite empty it might add a grandeur to the whole by furnishing a kind of continuous pedestal for the architectural design; when the hall was filled the sight of the audience seated on this low level was uncomfortable-looking enough, and of course very bad for hearing. A good while ago a temporary wooden floor on the higher level, laid down for some large ball, was thought so much more convenient that it was suffered to remain, though the fine and elaborate tile design of Messrs. Minton, on the main floor, was thus entirely hidden from view. Now, the wooden floor has been at last got rid of, the tiles taken up, and the centre raised to the higher level, and the tiles relaid. This is in every way an improvement; for the raising of the floor takes away nothing from the apparent height of the hall, which the eye always reckoned from the dais that formed the floor line to the architectural design of the interior. But the result of the decoration of the ceiling and upper portion is far from satisfactory. The original decoration of the ceiling, under the direction, it may be presumed, of Cockerell, who was appointed to superintend the completion of the building after Elmes's death, was of a very light and delicate description, a good deal of white, if we remember rightly, being left, with slight touches of gilding. This when new had an admirable effect, but of late years had become much obscured by dust and the effects of gas. Renovation was required; but instead of restoring the old design, which might very well have been done, the whole feeling and effect of the thing has been altered and deteriorated by a decoration in much stronger and more pronounced colours, of such a tone as entirely to destroy the distant effect which was evidently intended in the former decoration, and to bring down the ceiling in appearance much closer to the eye, losing all the aërial tint and reducing the apparent height considerably from what it was. Moreover, the general key and tone of the whole is in no way above what might be called "house-decorator's" work of no very refined type. Before, there was a very fine effect of aërial perspective in looking up to the vault; all this has gone, and with it much of the impressive effect of the interior. The scale of the building has been interfered with in other ways. Part of the original decoration in Cockerell's design consisted of large (colossal) figures in relief in the spandrels of the side arches. These were in a certain sense a defect, for they falsified the scale of the architecture near them. They have now been thrown further into prominence by a strong gold ground, from which the white figures stand out in a most glaring manner. A treatment of the ground in a broken-up diaper design would have served to correct the scale to the eye; the flat gold background only increases the false effect as to size. The same mistake has been made in the treatment of the windows. These were glazed in comparatively small lights of a simple ornamental pattern, which it had been contemplated to fill with colour, and some small bits of stained glass, by way of experiment, were for a long time to be seen in one or two of the windows. Any stained glass that might have been inserted ought to have been very light in tone and with very little strong colour; so treated it would have been an improvement. But in deference to the notion that the hall was gloomy, the whole of the original glazing has been removed and the windows filled with great pieces of obscured plate-glass the full width of each light. Those who know the effect which glazing has on the scale of a building will easily understand what the result must be, not to speak of the bald and common-place appearance of the windows as thus treated. The old glazing made scarcely any appreciable obstruction in the light, and gave surface and extent to the windows; and if it were determined to do away with all the framing and have whole glass, at least the glass might have had an enamelled design to give surface and scale to it. Those who care much about the effect of the hall have been greatly annoyed at its treatment; and the question we heard asked on one occasion, "Have you seen St. George's Hall since it was made into a gin-palace?" may be taken as an indication of the sort of result produced. That may perhaps be putting it a little too strongly; but certainly we have seldom seen a case of a fine interior so decidedly, and we fear, for the present, irremediably vulgarised; and considering that St. George's Hall is, as we observed, the finest modern building of its class, anything relating to its architectural or decorative treatment is of more than local interest.

* Since writing the above, we hear that this picture has been bought and presented to the town as a contribution to the Art Gallery. It can hardly be called a work of genius; but its solid merits of execution, and the point and meaning with which the subject is treated, justify the selection, which is, in fact, one of the best that has been made.

THE SOCIAL SCIENCE CONGRESS, BRIGHTON.

Many good papers have been read, and useful discussions, if they had been reported, have taken place, so that from the higher point of view the Brighton Congress was a success. Financially, however, it will, we fear, prove a failure. A certain few of the inhabitants, always ready for any good work, threw themselves heart and soul into the matter, but the bulk of the population know little and care less for the subjects treated of. This is a serious thing, because the Association depends mainly on the amount realised at its congresses, over and above the expenses, for its maintenance and efficient working in London during the year. The Exhibition of Sanitary and Educational Appliances was a successful feature, and would have been more so if some of the leading members of the Association had not cold-shouldered it. Although such an exhibition is now regularly organised in connexion with each congress, it is not regarded as actually part of the proceedings. Mr. James Robinson, the assistant secretary, has worked night and day to make it useful, but he cannot fight successfully against the pre-

sent want of clear understanding on the subject. We fully admit that there is something to be said on both sides, but the executive when they next begin work in town ought to settle the question one way or the other.

We cannot attempt to give an account of the proceedings, the papers and discussions in connexion with the Health Department alone would more than fill our number. We have, however, strained a point, and printed several of the papers on subjects most likely to interest our readers. We have printed, for example, the paper read by Mr. Collins to introduce the first special subject for discussion in the department in question, viz.:—"To what causes are to be attributed the ill construction and want of sanitary provisions which exist in the dwellings of the upper and middle classes, and what is the best method which should be adopted to remedy and rectify the same." A paper on the same subject by Mr. W. Eassie was partly read. A valuable discussion followed, and, ultimately, it was resolved unanimously:—"That it be recommended to the Council to call the attention of the Local Government Board to the necessity for further and more complete legislation on the construction of dwelling-houses for all classes, showing that a clause is necessary for enforcing that all newly-built houses should be properly certificated previously to their occupation."

At the second meeting of the Health Department, the special question for discussion was: "What are the advantages of English as compared with foreign watering-places and health resorts? What are the best means for rendering the English watering-places more efficient, for obviating the dangers arising from the occasional introduction of infectious diseases, and determining the annual rate of mortality?" The first paper was by Dr. John Macpherson. It gave a description of the character of winter and summer resorts abroad and at home. In regard to sea-bathing places, it was alleged that those of England were superior to all others in regard to natural beauty, ranges of houses, piers, jetties, and bathing-ground; the French watering places were the only ones that could compete with our own, and their social arrangements were much more lively. In regard to mineral waters, we were behind other countries. Several suggestions were made in the paper for the improvement of watering-places as places of recreation, general comfort, instruction, and so on; and it was specially recommended that greater protection from the sun by means of shady avenues should be afforded.

A paper on the same subject was read by Dr. E. F. Fussell, Medical Officer of Health for East Sussex, which dealt mainly with the question of health. The meeting-place, in the Pavilion, was crowded, and a long and earnest discussion ensued. In the course of it,—

Professor Wanklyn said it was impossible to disinfect large masses of material, which could only be dealt with by being subjected to a high temperature or burned. The numerous "rookeries" in Brighton and London ought not be pulled down, but to be burned down. The houses removed for the erection of the New Law Courts should have been burned down. The materials were now spread over London, and were scattering disease among the people; and the cost to the nation of adopting that course would equal a year's national revenue.

Dr. Farr said he believed that English watering-places were quite equal as health resorts to any of those on the Continent; and Brighton was justly called the Queen of Watering-places. Of course, the sanitary condition of such places should be of the first order. He was not, like Mr. Tawle, afraid of town sewers; but these should be well trapped and flushed in order to make them perfectly harmless. Professor Wanklyn's proposal for burning down rookeries might, he thought, be tried; but the Professor himself should be required to superintend the process, and be responsible for the conflagration not spreading. The speaker thought the children who had had measles, scarlet fever, &c., might be better dealt with at home instead of being taken to the seaside. If such patients were permitted to go to health resorts, they should be sent to localities specially appointed for convalescents. He had no doubt that Brighton would henceforth be classed by the Registrar-General among "principal towns."

The president (Dr. B. Richardson) said it appeared that they were all agreed that English watering-places bore a favourable comparison with any others; but it was singular that they showed such great differences in point of mortality, the death-rate varying in ten years from fifteen at Bognor to twenty-four at Whitby. He then alluded to the importance of registering disease as well as death, including the diseases of animals and plants. Only by such registration could the proper means of prevention be ascertained and adopted. He agreed with other speakers as to the desirability of certifying lodging-houses at watering-places, and he thought it would only be fair to the lodging-house keepers that their visitors should bring certificates as to their own freedom from infectious disease. There was no doubt that the laundry was one of the most common causes of the spread of disease.

Ultimately it was resolved "That it be recommended to the Council to suggest to the local sanitary authorities of our English watering-places and health resorts the desirability of establishing a system by means of which owners of lodging-houses and hotels should be enabled to have their premises inspected by a competent authority, and certified if found free from infection, and in a general healthy condition with reference to drainage and other sanitary arrangements," and "That it be recommended to the council to take into consideration the desirability of compelling, by legislative enactment, medical men attending cases of an infectious character to report the same to the medical officer of health."

DEEP WELLS.

Water procured from wells is too hard for domestic purposes, for trades, and for sanitary purposes. That which is caught before it sinks into the ground is much superior; but when the hardness of water is caused by an excess of carbonate of lime, it may be removed by Dr. Clark's process. All water obtained from the chalk formation has this excess of hardness. The best water procurable by means of wells is obtained from the new red sandstone formation, and these two great geological formations,—the cretaceous and the trinssic,—are the two chief sources from which water is procured by means of deep wells. As to shallow wells in the midst of dwelling-houses, which are supplied with water from the drainage from the immediately-surrounding surface, they are an abomination, and deep wells only are worth consideration; and notwithstanding the objection we have named to deep well-water for the general purposes of a town supply, we must acknowledge the service Mr. Spon has done in bringing together from various sources the information contained in a book now before us.*

It appears that in the new red sandstone there are several wells belonging to the Tranmere Local Board, the Birkenhead Commissioners, and the Wirral Water Company, which yield altogether about 4,000,000 gallons per day. The new well of the Birkenhead Waterworks is 7 ft. diameter for a depth of 105 ft., with a bore-hole 26 in. diameter for a depth of 35 ft., 18 in. for 16 ft., 12 in. for 99 ft., and 7 in. for 150 ft., or a total depth from the surface of 405 ft. The water stands in the shaft at a depth of 95 ft. from the surface when the engine is not at work.

It is stated that out of the 7,000,000 gallons per day supplied to Birmingham in the year 1865 by the Water Works Company, 2,000,000 were derived from wells in the new red sandstone.

At the London and Colonial Brewery at Burton-on-Trent, a shaft, 6 ft. 8 in. diameter in the clear, is sunk to a depth of about 35 ft., and from the bottom of the shaft a bore-hole, 4 in. diameter, was made down to a depth of 182 ft. The water rises to within 6 ft. 3 in. of the top of the well.

At Leamington there is a well at the foot of Newbold hill, 5 ft. diameter, sunk to a depth of 50 ft., and a bore-hole, part of the way 18 in. diameter, and the remainder 12 in., is carried down 200 ft. The yield is said to be 320,000 gallons per day.

At Liverpool there are several wells sunk into the new red sandstone, the oldest of which is at Bootle, to the north of the town. The yield of the Bootle well in 1865 was 643,678 gallons per day. Since this time a new well, of oval form, 12 ft. by 9 ft., and 108 ft. deep, has been sunk, and at its completion the yield rose to 1,575,000 gallons per day, but it has again diminished considerably.

At the Green-lane wells the surface of the ground is 144 ft. above the sea level, and the depth is 185 ft., the botton being 41 ft. below the sea level. At first the yield was 1,250,000 gallons per day. A bore-hole, 6 in. diameter, was then made to a depth of 60 ft. from the bottom of the well, when the yield increased to 2,317,000 gallons per day. In June, 1856, the bore-hole was widened to 9 in., and carried down 101 ft. farther, when the yield amounted to 3,000,000 gallons per day. A new shaft was sunk here in 1869 to a depth of 174 ft., and from the bottom a bore-hole was made to a further depth of 310 ft., and the additional quantity of water from the bore-hole was 800,000 gallons per day.

The Windsor station well at Liverpool is of oval form, 12 ft. by 10 ft., 210 ft. deep, from which a bore-hole, 4 in. diameter, is put down to a further depth of 245 ft., the yield being nearly 1,000,000 gallons per day.

The Dudlow Lane well, 12 ft. by 9 ft., is sunk to a depth of 247 ft. from the surface of the ground, and an 18-in. bore-hole has been made to a further depth of 196 ft. The yield is nearly 1½ million gallons per day. From all these shafts headings are driven into the rock to collect more water, and to form lodge-room or reservoirs to equalise the daily pumping-power.

At Longton, in Staffordshire, there is a series of wells in this formation, from which part of the supply to the Pottery towns is derived. One is 12 ft. diameter and 135 ft. deep. The water rose to within 35 ft. from the surface. The author gives the cost of sinking this well, and other particulars of it, as well as other wells of this series.

A deep well in the new red sandstone was sunk at the works of Messrs. Bolckow & Vaughan, at Middlesbrough, under the direction of Mr. S. C. Homersham. A trial-hole was first put down to a depth of 398 ft., and a shaft was afterwards sunk by Messrs. Docwra & Son to that depth. At the bottom of the shaft a bore-hole of 18 in. diameter was made, on Mather & Platt's system of sinking, to a depth of 1,312 ft. This bore-hole was sunk in 510 days, being at the average rate of 2 ft. 5 in. per day. The author gives the particulars of other wells in the new red sandstone; in the Permian strata at Sunderland; in the oolite strata at Northampton and Swanage; and in the chalk, or rather in the cretaceous strata as a whole, there are, it appears, upwards of 260 wells and bore-holes within the area of the London basin alone, the depths and other particulars of which are given.

There are several methods of sinking shafts and bore-holes, the most recent which has been adopted in England being that of Messrs. Mather & Platt, of Oldham, mentioned above. It is an adaptation of the old Chinese method of working with a rope, and not with rigid rods, which is the other mode. In the Chinese method a chisel is suspended by a rope and is worked by means of a spring-pole or lever at the surface. The twisting and untwisting of the rope is useful in preventing the chisel from always striking in the same place. In boring through hard rocks it is necessary to watch the tools, and replace them before their sides are worn and the breadth diminished. If this is not attended to the size of the hole decreases, so that when a new chisel of the proper size is put in, it will not pass down to the bottom of the hole. In soft ground cylindrical augers are used, having a valve at the bottom opening inwards, through which the *débris* passes into the shell, and is there retained and drawn to the top. This and similar methods of boring are applicable to holes of small diameter only, but M. Kind invented a system of boring great wells with a heavy trepan. In sinking the well at Passy the weight of the trepan was 36 cwt., and it cut a hole 3 ft. 4 in. diameter nearly. The trepan was usually worked for about eight hours at a time, after which it was withdrawn, and the comminuted material was then drawn out with a shell. The average number of men employed was about fourteen.

By the system of M. Chandron, which is a modification of Kind's, a shaft of 14 ft. or 15 ft. in diameter is sunk by means of trepans, the small trepan being first used to cut a central hole, 4 ft. 8 in. in diameter. The small trepan weighs eight tons, and it is generally kept at a depth of ten to thirty yards in advance of the large trepan, which follows it, and widens out the shaft to the full dimensions. The large trepan weighs sixteen tons and a half. The *débris* in the small hole contains pieces of a maximum size of about 8 cubic inches. In the large boring, pieces of rock measuring 32 cubic inches have been found. As a rule,

* The Practice of Sinking and Boring Wells. By Ernest Spon. London: E. & F. N. Spon. 1875.

however, the material is very fine. In both the large and small borings the *débris* is raised by a shell.

The system of M. Dru is the application of a free-falling tool, self-acting, to the sinking of wells of large diameter. The cutting-tool is detached from the rod by a self-acting catch. The boring-rods employed for large wells are of wood, and are stiffer, for the same weight, than iron rods.

The system of Messrs. Mather & Platt combines the advantages of the systems hitherto used, and is free from some of their disadvantages. The distinctive features of this plan are the mode of giving the percussive action to the boring-tool, and the construction of the tool, or boring-head, and of the shell-pump for clearing out the hole. Instead of these instruments being attached to rods, they are suspended by a flat hemp rope, about ½ in. thick and 4½ in. broad. The quickness of the operations in this system is remarkable. The boring-head is lowered at the rate of 500 ft. per minute. When in its place it is made to give twenty-four blows per minute, and this rate of working continued for about ten minutes in red sandstone and similar strata is sufficient to enable the cutters to penetrate a depth of about 6 in., when the boring-head is wound up again at the rate of 300 ft. per minute. The shell pump is lowered and raised at the same speeds, but only remains down two minutes, and the emptying of the pump when drawn up occupies about two or three minutes.

The breaking of tools is of frequent occurrence under any system of boring, and the various appliances for the recovery of the working tools are fully described by the author.

As to the quantity of water derived from the chalk formation by wells, the author has given the quantity from about forty wells in the "London Basin," situated in the counties of Bedfordshire, Berks, Bucks, Essex, Hants, Herts, Kent, Middlesex, and Surrey. In some cases the quantity is stated at per day, and this we have taken to mean twelve hours, when twenty-four are not expressly stated. In most cases the quantity is stated at per minute, and reducing the rest to the same time, we find the average yield of each of the forty wells to be 183 gallons per minute.

At Bishop's Stortford a shaft is sunk 160 ft., and a bore-hole to a further depth of 140 ft. The depth of chalk penetrated is 183 ft. The water rises to within 140 ft. of the surface of the ground. The yield is said to be 10,000 gallons per minute, but this must surely mean per hour, although it is again stated at the same quantity per minute in another page; but only 25 gallons per minute come from the bore, the rest is from headings driven at a depth of 154 ft. from the surface.

At Brighton, also, the headings intercept many fissures, the largest of which yielded from 100 to 150 gallons per minute. At another well at Brighton, a length of 160 ft. of heading was driven without meeting with any water, and then an enormous fissure was pierced, which yielded nearly 1,000 gallons per minute. The total length of the headings at this well is 13,000 ft., and the total yield about 3,000,000 gallons daily.

At Chelmsford a well belonging to the local board yields about 95,000 gallons per day. It is sunk for 200 ft., the rest bored. Water overflowed at first, but now that the well is in use and pumped from, the water does not rise higher than to 76 ft. from the surface.

At Dorking, in Surrey, the water is obtained from a well sunk in the outcrop of the lower green sand. The shaft is 11 ft. diameter and 160 ft. deep; but the yield is not more than thirty gallons per minute. At Harrow there is a shaft 193 ft. deep, the rest is bored, the total depth being 412 ft. In a bed of dark red sand 144 ft. down the water was very foul. The yield is 190 gallons per minute. Many other examples are given by the author, and altogether we must come to the conclusion that well sinking and boring are very uncertain and expensive operations, without an adequate result in a supply of water of desirable quality and quantity.

Bo'ness Harbour Improvement.—A meeting of the Trustees under the Town and Harbour Improvement Act was held on the 30th ult., when the question of harbour improvement was considered. Messrs. Thomas Meik & Son, C.E., Edinburgh and Sunderland, were appointed engineers for the works, and instructed to prepare plans and estimates for the new pier.

A MODEL CITY OF HEALTH AND COMFORT.

As President of the Health Department at the Brighton Congress, Dr. Benj. Richardson, F.R.S., delivered his address last Monday morning. He said,—"Mr. Chadwick has many times told us that he could build a city that would give any stated mortality, from 50, or any number more, to five, or, perhaps, some number less, in the thousand annually. I believe Mr. Chadwick to be correct to the letter in this statement, and for that reason I have projected a city that shall show the lowest mortality. I need not say no such city exists, and you must pardon me for drawing upon your imaginations as I describe it. Depicting nothing whatever but what is at this present moment easily possible, I shall strive to bring into ready and agreeable view a community not abundantly favoured by natural resources, which, under the direction of the scientific knowledge acquired in the past two generations, has attained a vitality not perfectly natural, but approaching to that standard. In an artistic sense, it would have been better to choose a small town or large village than a city for my description; but as the great mortality of States is resident in cities, it is practically better to take the larger and less-favoured community. If cities could be transformed, the rest would follow. Our city, which may be named Hygeia, has the advantage of being a new foundation; but it is so built that existing cities might be largely modelled upon it. The population of the city may be placed at 100,000, living in 20,000 houses, built on 4,000 acres of land,—an average of 25 persons to an acre. This may be considered a large population for the space occupied, but since the effect of density on vitality tells only detrimentally when it reaches a certain extreme degree, as in Liverpool and Glasgow, the estimate may be ventured. The safety of the population of the city is provided for against density by the character of the houses, which insure an equal distribution of the population. Tall houses overshadowing the streets, and creating necessity for one entrance to several tenements, are nowhere permitted. In streets devoted to business, where the tradespeople require a place of mart or shop, the houses are four stories high, and in some of the western streets, where the houses are separate, three and four-storied buildings are erected; but on the whole it was found bad to exceed this range, and as each story is limited to 15 ft., no house is higher than 60 ft. The substratum of the city is of two kinds. At its northern and highest part there is clay; at its southern and south-eastern gravel. Whatever disadvantages might spring in other places from a retention of water on a clay soil is here met by the plan which is universally followed of building every house on arches of solid brickwork. So, where in other towns there are areas and kitchens and servants' offices, there are here subways through which the air flows freely, and down the inclines of which all currents of water are carried away. The acreage of our model city allows room for three wide main streets or boulevards, which run from east to west, and which are the main thoroughfares. Beneath each of these is a subway, a railway along which the heavy traffic of the city is carried on. The streets from north to south which cross the main thoroughfares at right angles, and the minor streets which run parallel, are all wide, and, owing to the lowness of the houses, are thoroughly ventilated, and in the day are filled with sunlight. They are planted on each side of the pathways with trees, and in many places with shrubs and evergreens. All the interspaces between the backs of houses are gardens. The churches, hospitals, theatres, banks, lecture-rooms, and other public buildings, as well as some private buildings, such as warehouses and stables, stand alone, forming parts of streets, and occupying the position of several houses. They are surrounded with garden space, and add not only to the beauty but to the healthiness of the city. The large houses of the wealthy are situated in a similar manner. The streets of the city are paved throughout in the same material. As yet, wood pavement set in asphalte has been found the best. It is noiseless, cleanly, and durable. Tramways are nowhere permitted, the system of underground railways being found amply sufficient for all purposes. The side pavements, which are everywhere 10 ft. wide, are of white or light grey stone. They have a slight incline towards the streets, and the streets have an incline from their centres towards the margins of the pavements. From the circumstance that the houses of our model city are based on subways, there is no difficulty whatever in cleansing the streets, no more difficulty than is experienced in Paris. That disgrace to our modern civilisation, the mud-cart, is not known, and even the necessity for Mr. E. H. Bayley's roadway movable tanks for mud sweepings—so much wanted in London and other towns similarly built—does not exist. The accumulation of mud and dirt in the streets is washed away every day through side openings into the subways, and is conveyed, with the sewage, to a destination apart from the city. Thus the streets everywhere are dry and clean, free alike of holes and open drains. Gutter children are an impossibility in a place where there are no gutters for their innocent delectation. Instead of the gutter, the poorest child has the garden; for the foul sight and smell of unwholesome garbage he has flowers and green sward. It will be seen, from what has been already told, that in this our model city, there are no underground cellars, kitchens, or other caves, which, worse than those ancient British caves that Nottingham still can show the antiquary as the once fastnesses of her savage children, are even now the loathsome residences of many millions of our domestic and industrial classes. There is not permitted to be one room underground. The living part of every house begins on a level of the street. The houses are built of a brick which has the following sanitary advantages:—It is glazed, and quite impermeable to water, so that during wet seasons the walls of the houses are not saturated with tons of water, as is the case with so many of our present residences. The bricks are perforated transversely, and at the end of each there is a wedge opening, into which no mortar is inserted, and by which all the openings are allowed to communicate with each other. The walls are in this manner honeycombed, so that there is in them a constant body of common air let in by side openings in the outer wall, which air can be changed at pleasure, and, if required, can be heated from the fireplaces of the house. The bricks intended for the inside wall of the house, those which form the walls of the rooms, are glazed in different colours, according to the taste of the owner, and are laid so neatly that the after-adornment of the walls is considered unnecessary, and, indeed, objectionable. By this means those most unhealthy parts of household accommodation,—layers of mouldy paste and size, layers of poisonous paper, or layers of absorbing colour stuff or distemper,—are entirely done away with. The walls of the rooms can be made clean at any time by the simple use of water, and the ceilings, which are turned in light arches of thinner brick or tile coloured to match the wall, are open to the same cleansing process. The colour selected for the inner brickwork is gray, as a rule, that being most agreeable to the sense of sight; but various tastes prevail, and art so soon ministers to taste that in the houses of the wealthy delightful patterns of work of Pompeian elegance are soon introduced. As with the bricks, so with the mortar and the wood employed in building, they are rendered, as far as possible, free of moisture. Sea-sand containing salt, and wood that has been saturated with sea-water, two common commodities in badly-built houses, find no place in our modern city. The most radical changes in the houses of our city are in the chimneys, the roofs, the kitchens, and their adjoining offices. The chimneys, arranged after the manner proposed by Mr. Spencer Wells, are all connected with central shafts, into which the smoke is drawn, and, after being passed through a gas-furnace to destroy the free carbon, is discharged colourless into the open air. The city, therefore, at the expense of a small smoke rate, is free of raised chimneys and of the intolerable nuisance of smoke. The roofs of the houses are but slightly arched, and are, indeed, all but flat. They are covered either with asphalte, which experience, out of our supposed city, has proved to last long and to be easily repaired, or with flat tile. The roofs, barricaded round with iron palisade, tastefully painted, make excellent out-door grounds for every house. In some instances flowers are cultivated on them. The housewife must not be shocked when she hears that the kitchens of our model city, and all the kitchen offices, are immediately beneath these garden roofs; are, in fact, in the upper floor of the house instead of the lower. In every point of view, sanitary and economical, this arrangement succeeds admirably. The kitchen is lighted to perfection, so that all un-

cleanliness is at once detected. The smell which arises from cooking is never disseminated through the rooms of the house. In conveying the cooked food from the kitchen, in houses where there is no lift, the heavy-weighted dishes have to be conveyed down, the emptied and lighter dishes upstairs. The hot water from the kitchen boiler is distributed easily by conducting pipes into the lower rooms, so that in every room and bedroom hot and cold water can at all times be obtained for washing or cleaning purposes; and, as on every floor there is a sink for receiving waste water, the carrying of heavy pails from floor to floor is not required. The scullery, which is by the side of the kitchen, is provided with a copper, and all the appliances for laundry work; and when that is done at home, the open places on the roof above make an excellent drying-ground. In the wall of the scullery is the upper opening to the shaft of the dust-bin shaft. This shaft, open to the air from the roof, extends to the bin under the basement of the house. A sliding door in the wall opens into the shaft to receive the dust, and this plan is carried out on every floor. The coal-bin is off the scullery, and is ventilated into the air through a shaft, also passing through the roof. On the landing in the second or middle stories of the three-storied houses there is a bath-room, supplied with hot and cold water from the kitchen above. The floor of the kitchen and of all the upper stories is slightly raised in the centre, and is of smooth, gray tile. The floor of the bath room is the same. In the living rooms, where the floors are of wood, a true oak margin of floor extends 2 ft. around each room. Over this no carpet is ever laid. It is kept bright and clean by the old-fashioned beeswax and turpentine, and the air is made fresh and ozonic by the process. Considering that a third part of the life of man is, or should be, spent in sleep, great care is taken with the bedrooms, so that they shall be thoroughly lighted, roomy, and ventilated. Twelve hundred cubic feet of space is allowed for each sleeper, and from the sleeping apartments all unnecessary articles of furniture and of dress are rigorously excluded. Old clothes, old shoes, and other offensive articles of the same order are never permitted to have residence there. In most instances the rooms on the first-floor are made the bedrooms, and the lower the living rooms. In the larger houses bedrooms are carried out in the upper floor for the use of the domestics. To facilitate communication between the kitchen and the entrance-hall, so that articles of food, fuel, and the like may be carried up, a shaft runs in the partition between two houses, and carries a basket lift in all houses that are above two stories high. Every heavy thing to and from the kitchen is thus carried up and down from floor to floor, and from the top to the basement, and much unnecessary labour is thereby saved. In the two-storied houses the lift is unnecessary. A flight of outer steps leads to the upper or kitchen floor. The warming and ventilation of the houses is carried out by a common and simple plan. The cheerfulness of the fireside is not sacrificed; there is still the open grate in every room, but at the back of the fire-stove there is an air-box or case which, distinct from the chimney, communicates by an opening with the outer air, and by another opening with the room. When the fire in the room heats the iron receptacle, fresh air is brought in from without, and is diffused into the room at the upper part on a plan similar to that devised by Captain Galton. As each house is complete within itself in all its arrangements, those disfigurements called back premises are not required. There is a wide space, consequently, between the back fronts of all houses, which space is, in every instance, turned into a garden square, kept in neat order, ornamented with flowers and trees, and furnished with playgrounds for children young and old. The houses being built on arched subways, great convenience exists for conveying sewage from, and for conducting water and gas into, the different domiciles. All pipes are conveyed along the subways, and enter each house from beneath. Thus the mains of the water-pipe, and the mains of the gas, are within instant control on the first floor of the building, and a leakage from either can be immediately prevented. The officers who supply the commodities of gas and water have admission to the subways, and find it most easy and economical to keep all that is under their charge in perfect repair. The sewers of the houses run along the floors of the subways, and are built in brick. They empty into three cross main sewers. They are trapped for each house, and, as the water supply is continuous, they are kept well flushed. In addition to the house flushings there are special openings into the sewers, by which, at any time, under the direction of the sanitary officer, an independent flushing can be carried out. The sewers are ventilated into tall shafts from the mains by means of a pneumatic engine. The water-closets in the houses are situated on the middle and basement floors. The continuous water supply flushes them without danger of charging the drinking-water with gases emanating from the closet,—a danger so imminent in the present method of cisterns, which supply drinking as well as flushing water. As we walk the streets of our model city we notice first an absence of places for the public sale of spirituous liquors. Whether this be a voluntary purgation in goodly imitation of the National Temperance League, the effect of Sir Wilfrid Lawson's Permissive Bill and most permissive wit and wisdom, or the work of the Good Templars, we need not stay to inquire. We look at the fact only. To this city, as to the town of St. Johnsbury, in Vermont, which Mr. Hepworth Dixon has so graphically described, we may apply the description Mr. Dixon has written:—"No bar, no dram-shop, no saloon defiles the place. Nor is there a single gaming-hell or house of ill repute." Through all the workshops into which we pass, in whatever labour the men or women may be occupied,—and the place is noted for its manufacturing industry,—at whatever degree of heat or cold, strong drink is unknown. Practically, we are in a total abstainers' town, and a man seen intoxicated would be so avoided by the whole community that he would have no peace to remain. And, as smoking and drinking go largely together,—as the two practices were, indeed, original exchanges of social degradations between the civilised man and the savage, the savage getting very much the worst of the bargain,—so the practices largely disappear together. Pipe and glass, cigar and sherry cobbler, like the Siamese twins, who could only live connected, have both died in our model city. Tobacco, by far the most innocent partner of the firm, lived, as it perhaps deserved to do, a little the longest; but it passed away, and the tobacconist's counter, like the dram counter, has disappeared. The streets of our city, though sufficiently filled with busy people, are comparatively silent. The subways relieve the heavy traffic, and the factories are all at short distances from the town, except those in which the work that is carried on is silent and free from nuisance. This brings me to speak of some of the public buildings which have relation to our present studies."*

* The conclusion in our next.

QUEEN ANNE'S MANSIONS, WESTMINSTER.

The late fire at Mr. Hankey's new mansion, adjoining Birdcage-walk, gives a more than ordinary interest to the exceptionally lofty block of new buildings which he is erecting immediately adjacent to his own residence, and which has attracted much attention within the last few days on the part of visitors who have been drawn to the scene of the recent conflagration. The new buildings under consideration are the loftiest in the metropolis, as residences, and may, perhaps, not inaptly be described as a huge tower, rather than as a block of dwellings. Had the Metropolitan Board of Works obtained the Building Act for which they applied last year, Mr. Hankey would have been prevented from erecting such a structure as that now in progress.

Queen Anne's Mansions, as they are designated, stand upon a plot of land at Queen Anne's-gate, immediately opposite the St. James's Park Station of the Metropolitan District Railway, and have their principal frontage in Broadway, from which they are approached under a spacious archway, having a span of about 24 ft. This archway also leads into a courtyard, which the western frontage of the building overlooks, and through which Mr. Hankey's mansion is also entered. The elevation contains the unprecedented number of ten stories, and is 97 ft. in height to the cornice, which is immediately above the eighth floor. A Mansard roof, 19 ft. in height, and containing two floors, brings the elevation up to 116 ft. At the south-west angle of the building there will be a tower, 22 ft. square, which will be carried up to a height of 130 ft., and contain a tank capable of holding 8,000 gallons of water. At the base of the tower there will be a hydraulic lift, for the purpose of conveying residents and others to and from the upper portions of the building, and in the tower there will also be a stone staircase. The tower will have a brick cornice, and will be surmounted by a belvidere, with an iron railing, upwards of 20 ft. high, the extreme height of the tower being thus about 150 ft. The Mansard roof will be covered with zinc of the shell pattern, and surmounted with an iron cresting. In addition to the east, or Broadway frontage, and that overlooking the court-yard to the west; there is also a north elevation, giving a commanding view of St. James's and the adjoining parks. The several elevations have about 250 windows, all of which will have projecting pediment heads, covered with zinc, uniform with the Mansard roof, whilst at the foot, or sills, of each range of windows there will be iron balconettes. In consequence of the unusual height of the building extra precautions are said to have been taken to ensure security. It is to be hoped this is the case. The main external walls at the ground line are 2 ft. 6 in. in thickness, and at intervals between the several floors iron girders are thrown across, upon which the building rests. For the ventilation of the building, ventilating valves are placed in the walls both at the floor and ceiling lines of each story. Some of these will be self-acting, whilst others will be regulated according as it may be found necessary to increase or decrease the air and circulation. The building is internally "fire-proof" to the floor above the mezzanine, whilst all the other floors are supported on iron columns and girders.

The ground and mezzanine floors are intended to be let as offices and chambers for engineers and other professional persons, while the whole of the rest of the building will be occupied as residences of a high class. The reception and other apartments on the several floors are spacious, some of them being 30 ft. by 20 ft., whilst others are 20 ft. square. Each floor contains several bath-rooms and lavatories, and the approaches to the rooms on the different floors are along corridors 10 ft. wide. A large area on one of the floors of the building, about the centre, is ultimately intended for musical purposes, and the erection of an organ is contemplated. The present building is also intended to be carried southward in the direction of York-road, and will contain a large dining-room and all the domestic arrangements in connexion with the establishment. It is also stated that on the present lease expiring, another wing will be eventually erected on the north side facing Birdcage-walk, and overlooking St. James's Park.

The building has been designed by Mr. Hankey himself, and is being carried out by his own workmen, under the personal supervision of Mr. Nash as his clerk of works. It may be added that the restoration of that portion of the mansion destroyed by the fire last week will be commenced in a few days, the owner himself, as in the case of the buildings just described, being his own architect; whether wisely or not, it is unnecessary for us to say.

Alarming Gas Explosion at Brighton.—On the 29th ult., about seven o'clock, an explosion took place which might have been attended with grave results, at the premises of Mr. Eyles, a newspaper publisher, at the top of North-street, one of the most crowded thoroughfares in Brighton, and most miraculously only one person happened to be passing at the time, on the other side of the road, which is 50 ft. wide just there, and who was considerably hurt. It appeared that a smell of gas had been previously observed, and the result proved that the gas must have accumulated in a great quantity behind the fascia board over the shop-window, and that an outside draught must have caused the outside hanging lamps to ignite the gas, causing the explosion, which hurled the whole of the fascia and some of the lead covering, &c., a distance outwards of 50 ft., smashing the plate glass of a shop on the opposite side, the report being heard over a great part of the town, and causing great consternation in the neighbourhood. Strange to relate, very little damage either inside or over the premises took place. But the case is one of warning to shopkeepers and the public, for in many cases death may in a similar way be waiting for victims.

BUILDING SOCIETIES IN AMERICA.*

The Department of Social Economy in the American Social Science Association have forwarded a Report on "Homes for the People in American Cities." Being too long for reading on this occasion, the Committee have requested me to lay before the meeting a condensed view of it. It is an interesting and valuable communication, and will doubtless find a place in our Transactions. It appears that in 1870, when the last national census was taken, there were about fifty cities in the United States with a population exceeding 25,000, of which *seven* (New York, Philadelphia, Brooklyn, St. Louis, Chicago, Baltimore, and Boston) had each a population exceeding 250,000, and seven more had a population of above 100,000 each. The aggregate population of the seven first-named cities then somewhat exceeded 3,200,000, New York alone containing 942,292. The remaining cities had an aggregate population of about 2,000,000, so that the whole urban population of the United States, dwelling in towns of more than 25,000 people, was not far from 6,000,000, or nearly one-sixth part of the whole population of the United States. So rapid is the increase of the urban population, however, that in the present year, 1875, it includes nearly one-fifth of the whole present population of the United States. Ten years hence, it is probable that the United States will have a hundred cities larger than Boston was at the beginning of this century. Hence the great importance of the question now to be considered,—*the ownership, situation, and quality of the homes in which so many millions of the people are to live, and where their children are to be brought up.*

Shall they be tenement houses, like those of New York and Boston, in which so many of the industrial classes now dwell, or shall they be smaller houses, in better locations, owned by their occupants, like the humble homes of Philadelphia, Chicago, Syracuse, Detroit, and so many of the smaller American cities? In answering this question, each city will need to consider its own needs and possibilities, varying greatly as these do; but it will also do well to consider attentively the means by which Philadelphia, now a city of more than 750,000 inhabitants, has provided for its industrial population better homes than any large city in the world can show for an equal number of working men and small tradesmen.

The contrast between the two largest American cities, New York and Philadelphia, in this respect is very marked, and in the highest degree unfavourable to New York, where also the condition of things is growing worse, while in Philadelphia it is growing better. By the census of 1870 the number of dwellings in New York was but 61,044, for a population of nearly a million,—an average, therefore, of nearly fifteen persons to each dwelling. But in nine of the twenty-two "wards" of New York, a population of 365,000 was housed in only 17,110 dwellings, an average of 21¼ persons to each dwelling. When Paris (in 1835) contained about the same population that New York now has, the number of houses there was 50,476, and the number of persons to each dwelling was 22, or just about the same overcrowding that we now find in the worst parts of New York. In Philadelphia, on the other hand, a population of 674,000 in 1870 was housed in 112,366 dwellings, giving one house to every *six* persons, while in the worst part of Philadelphia the average number of persons to a dwelling did not much exceed *eight*, or only a third part of the highest New York average.

The number of dwelling-houses built in Philadelphia since 1870 is about 24,000 (at the rate of a little less than 5,000 a year); so that the present number of dwellings in that city is upwards of 135,000, which, at an average of six persons to each dwelling, would give a population in 1875 of 810,000. This is more than the estimated population of the city, and therefore the proportion of dwellings to population has been increasing there,—the very result we should expect from the system of building pursued in Philadelphia (which is afterwards described).

In other cities the contrast is not so striking. In Boston, for example, in consequence of successive annexations of suburban territory, the proportion of persons to each dwelling in the whole city has considerably diminished in thirty years, and does not now, apparently, exceed 7½ persons to each dwelling.

Taking together the three cities of New York, Brooklyn, and Jersey City, there was, according to the census of 1870, an aggregate population of about 1,421,000 living in less than 120,000 dwellings (one for twelve persons). At the present time it is probable that these three cities contain more than a million and a half inhabitants, occupying no more dwellings than are found in the single city of Philadelphia, with less than half as many inhabitants.

The results of the overcrowding in New York are painfully apparent. The reporters attribute the difference between New York and Philadelphia to several reasons, one of which is that in Philadelphia the custom of letting land for a term at a ground-rent has long prevailed and made it easier for persons of small means to build and own their own houses than it would have been had they been compelled to purchase the land on which they built. It is a novel thing to us in England to hear a system applauded which has produced amongst us so much bad building, and is, for other reasons, now so suspiciously regarded.

Foremost amongst the causes, however, which have provided healthful homes for the people of Philadelphia, the reporters place the operations since the year 1850 of Building Societies, closely resembling the Benefit Building Societies of England as they existed in Lancashire and other northern counties from 1820 to 1850, and while, as they very properly point out, these societies were yet controlled in the interest of the working people. The first society of this sort in America, admittedly following the English model, was founded in 1831. It is estimated that the present number of building societies in Pennsylvania is upwards of 1,000, more than half of them being in Philadelphia, where it is stated there are more than 30,000 houses now occupied by their owners, and which became their property through the operation of these associations. A long account of the working of these societies is given in the report with strong commendation.

Speaking of the prevalence of tenement-houses in New York and Boston, they point out that the death-rate is highest in the parts of these cities where the tenement-houses, each containing numerous families, are the most numerous; and there, also, crime, vice, and pauperism most abound. Complimentary reference is made to the doings of Miss Octavia Hill, whose example has been followed in New York and Boston with more or less success.

It is found in Boston that the New Building Laws there, requiring greater strength, have almost put an end to the building of small houses, by adding greatly to the cost of construction.

A full description is given of the small houses built in Philadelphia under the operation of the societies; they are said to be uniformly in good repair, and neat in appearance. The party-wall between two houses is uniformly of brick. They are from 12 ft. to 17 ft. front, and from 26 ft. to 34 ft. deep; the average of the two-story houses being 14 ft. by 30 ft., on lots 14 ft. by 50 ft. or 60 ft., and even 80 ft., in remote parts of the city. They have four, six, and sometimes, in three-story houses, eight rooms and a bath-room. The front doors are rarely over 2 ft. 6 in. wide and 6 ft. 6 in. in height; the entry usually runs through the house, with stairs at the back, and is narrow. These streets are in good order, and the neighbourhoods are proverbial for the quiet behaviour of the people. The policemen say they never have any trouble there, and other people speak of them as being good citizens. Drunkenness is not common among them, they are generally temperate, industrious, and frugal.

The State of Pennsylvania, in which these Building Associations exist in greater numbers than in all the rest of the United States together, had, in 1870, a population of more than three and a half millions, and now has probably more than four millions. Close beside it is the little State of Delaware, with only 125,000 inhabitants in 1870, of whom about one-fourth (30,841) dwelt in its single city of Wilmington. Here the proportion of persons living in one dwelling is less even than in Philadelphia, being only 5¼; and here, too, a great many of the working people have become owners of their homes through the aid of Building Associations like those of Philadelphia.

It is about twenty years since these associations began to exist in Wilmington, and none has ever been known to fail. All classes of the people there invest in them, but the borrowers, who are more than half of the shareholders, belong almost wholly to the middle and labouring classes. In some of the States these societies are discouraged by the Legislature or by the Courts, on the ground that they exact usurious interest. This was formerly the fact in Pennsylvania also, but they are now allowed there, in Illinois, and in several other States, to deduct what premium they choose from the loans they make, without being liable to forfeiture of contract by reason of usurious interest. They do not at present exist in Massachusetts or New York, and in Michigan the Act creating them has been declared unconstitutional.

Briefly to recapitulate the statements set forth in the report,—it appears that overcrowding already prevails in a few American cities,—notably in New York and its suburbs, in Boston, and in Cincinnati; but that in most of the cities there are more dwellings in proportion to the number of inhabitants than in the cities of Europe. The tendency is for overcrowding to grow worse from year to year, as the city population rapidly gains; but this tendency is counteracted in many cities by the inclusion of cheaper land within the city limits; by the changes which often take place in the localities of trade and manufacture, making crowded quarters more useful for other purposes than habitation; and by many other causes. Among these may be named, as a matter of certainty, though sometimes called in question, the generally increased prosperity of the working people (who have been quite steadily improving their condition since the beginning of the civil war), and the action of municipal government and benevolent citizens. In Philadelphia and a few other cities, a great check has been given to overcrowding by the action of the Benefit Building Societies, which, contrary to the custom of such societies in England, as the reporters say with emphasis, do provide homes of their own for working people, even of the humblest grade. The management of these societies in Philadelphia is described at some length, both because of their extraordinary results, and because they differ in many respects from the English Building Societies as now constituted, though originally the plan and working of them seems to have been much the same in the two countries. The difficulties and dangers attending these societies are not dwelt upon, because their success in Pennsylvania has been unquestionable, and because, their principle in the opinion of the reporters being sound, they only need vigilant and honest management, to succeed elsewhere. They think it is but fair to say that in some portions of the United States, where Building Societies or Loan-fund Companies somewhat resembling those in Pennsylvania were attempted twenty years ago, with unfortunate results, their failure seems to have been owing to a departure from the true method of management. These societies need to be managed (at least in America) by the whole body of their members, and for the mutual benefit of the borrowing and non-borrowing members. This was not done in the unsuccessful associations of Massachusetts and Connecticut; and whenever it ceases to be done in Philadelphia, misfortune will sooner or later be the result.

It was not thought necessary to point out the moral, social, and political advantages to be derived from the best practicable arrangement of homes for the people in cities and large towns. These advantages are even greater in a democracy than under any other form of Government; and hence one reason for the increased attention which Americans are giving to the subject. The theory of their institutions requires that every citizen should have a home and a family interest in the community—that he should be self-supporting and self-controlled—giving naturally his aid to the Government which exists by his own choice. The risks and evils attendant upon overcrowding and ill-government in their great cities are now quite as formidable as those which relate to the condition of the southern freedmen; but a vigorous effort, such as becomes a great nation, will, they believe, by the blessing of Providence, give them security, stability, and prosperity, even greater in the future than in the past.

The Duomo, Florence.—At last a design for the Façade of the Duomo is fixed upon,—that by De Fabris. His plan was carried by vote. We hear opinions for and against De Fabris's design. There will be a still graver point to think of,—the how to get the money to pay for it. A collection throughout Italy is to be made.

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*From "Some Notice of a Report, from the American Social Science Association, on Homes for the People in American Cities," read at Brighton, by Mr. George Godwin.

TO WHAT CAUSES ARE TO BE ATTRIBUTED THE WANT OF SANITARY PROVISIONS IN THE DWELLINGS OF THE UPPER AND MIDDLE CLASSES,

*And What is the Best Method which should be adopted to Remedy and Rectify the Same?**

"Builder and House Decorator. Funerals Furnished with economy and despatch."—A truthful irony which most peripatetics must have noticed, and the veracity of which all, sooner or later, will probably have realised.

Like the plumber who always left a defect in his work that it might be rectified by some brother workman, "to make good for trade," so the modern genius of the British builder ingenuously advertises, with honest candour and charming *naïveté*, his intention of so building for the living that he may bury them the sooner with "economy and despatch"; thus emulating the philanthropy of Sairey Gamp, who, you will remember, expressed an equal pleasure "in laying people in" as she did "in laying them out." * * * *

I propose, in the first instance, to inquire, 1st. How the evils which I shall indisputably prove to exist have arisen, and why? 2nd. To enumerate in what they consist. 3rd. To endeavour to suggest the means of remedying and preventing them.

To what causes are to be attributed the grossly defective sanitary condition of the abodes of the upper and middle classes? I shall show beyond a doubt that these pretentious houses of the "well-to-do" contain more unknown and concealed immundities than the unobtrusive dwellings of the poor. Let us consider the history of the circumstances under which a house of the metropolis or its suburbs rises into existence.

The land is let by the owner upon the shortest lease that he can procure a builder to accept, and at the highest ground-rent that can be obtained.

The lessee, building for speculation, generally not overburdened with cash, more often impecunious from the commencement of the transaction, immediately creates an improved ground-rent, disposes of the same at less than the market value, and thus provides himself with funds. He then proceeds to finish with as much celerity as he possibly can, borrowing as large an amount on mortgage of the building during its progress, or after its completion, as he can obtain. Then he lets and sells, or, more frequently than not, the property passes into the possession of the mortgagee, who hastily and economically completes it himself. The house being let, is probably again parted with, both on the part of lessor, lessee, and mortgagee, and the unfortunate tenant finds himself in possession of a structure which he must either mainly rebuild to live in with comfort, or he must submit with resignation to its inconveniences and defects. Throughout the process thus sketched, it will be observed that each party to each transaction has his interest opposed to his honesty. The landlord, eager to convert his land into ground-rent, cares but little how or by whom this desirable consummation is obtained; the builder, anxious for his profit, and working for "dear life," expends as little as he can, and depends on the ignorance or avarice of the public to recoup his minimum outlay. The mortgagee, desirous of realising (finishing by compulsion), emulates by necessity the example of the builder. Throughout all is speculation, seldom or never "investment,"—which latter would be a panacea for the evil. When the transaction is concluded, all the original parties to it have vanished, leaving not a trace behind. Then comes the tenant, who, whilst able to pay a fair rental, cannot afford, or is unwilling, to expend the large sum necessary to make this Frankenstein of a house fit for habitation in executing that which he not unnaturally considers as improvements to another man's property,—a property to which in a few years he will have no claim, and which will have in due course passed to his successor: he therefore complies in as niggard a mode as he can with the terms of his holding; the landlord, in obtaining re-possession, copies his late tenant's example, and so the "Town house," originally ill constructed, and now deteriorated by time and use, becomes a "death trap" for those who enter into its portals. But, you will say, "Is all this done without any architect's or engineer's supervision?" I am obliged to answer in the affirmative. As a general rule, the public of the Metropolis are totally unprotected in this respect. It is true that oftentimes the professional man lays down the plan of the estate, and sometimes designs the elevations, because the interest of the owner would otherwise be affected; but here his duty stops. The surveyor who advises as to value for purposes of mortgage only directs his investigation as to the "market value" of the property submitted to his consideration,—if badly built he advises less, if well, more to be advanced; he simply determines what the public will, in his opinion, give for the house, what it will fetch, whether the locality is an improving one, and then calculates its worth in market overt, and so reports to his employer. With its defects of plan or its want of sanitary arrangements he has absolutely nothing to do; the public will not appreciate them in the price, why should he? It is a pure business transaction. Ay, but you rejoin, how about the legal enactments? Surely the local authorities or the district surveyor intervene, and the public is thus protected? This time I am compelled to answer negatively,—It is true that there are Acts of Parliament which in theory afford great and useful powers; it is equally true that up to the present (as facts prove) they have been inoperative, or, at all events, have not stemmed or prevented the evils to which I am directing your attention. I venture to assert that London and its suburbs are infinitely worse provided for than many second-rate provincial towns, most of which have the construction of their buildings and streets regulated by bye-laws issued under powers of the Public Health Act, and sanctioned by the Home Secretary. If you turn, by way of example, to "the bye-laws" of this town wherein we are now assembled [Brighton], you will find most admirable arrangements for the preservation of the public health. If these are effectually carried out, house sanitation is undoubtedly greatly if not perfectly protected. Doubtless in the course of our discussion we shall learn how far these provisions have passed from theory to practice, and if they have been adopted, and with what success. I will merely mention a few points, and I may say that most of the bye-laws of similar towns which I have inspected contain the same provisions. The widths of streets and heights of houses are stringently regulated. The strength, construction, and quality of materials for building the walls of houses are defined; a wise precaution is taken, it being stipulated that no new house shall be inhabited without a certificate has been given by the Board that the same is fit for habitation. A considerably larger space surrounding the houses for ventilation is demanded than compelled by the Metropolitan Building Act. Careful provisions are made as to the drainage and ventilation of drains, some of which, however, are, I think, open to emendation.

Within the metropolitan area, the regulations affecting the widths of streets, drainage, &c., are provided for by the Metropolis Local Management Act and its amendments. Before I had carefully considered their provisions, I judged from the irrefragable testimony of facts which experience had presented to my notice, that enactments contained in these Acts were, from some occult cause beyond my ken, impossible to be put in execution; that they were, or had become, as I have said, practically inoperative. I found, however, on careful perusal that the clauses were sufficiently numerous, and the language sufficiently wide, to admit of such construction as, if enforced, would largely contribute to the sanitary welfare of the population. By the 73rd section Vestries can compel houses to be drained at proper levels, and it directs that fit and proper sinks, and fit and proper syphoned or otherwise trapped inlets and outlets for hindering stench therefrom, and fit and proper water supplies, &c., and all such other fit and proper works and arrangements as may appear to the vestry or to the board, or to their officers, requisite to secure the safe and proper working of the said drains, shall be provided. By subsequent clauses it declares that it shall be unlawful to erect any house, or to rebuild any house, or to occupy any house, unless the drainage is constructed to the satisfaction of such surveyor, provisions for notices to be given by builders, &c., and general precautions to prevent evasion are laid down. Yet, I repeat, the majority of our London houses, new or old, are badly drained and badly constructed. I fear the apathy of the public, the ignorance of those who should administer the provisions of the Acts, and official red tapeism, are the foundations of the neglect. At present the clauses are, for all practical purposes, as far as the interior of our houses are concerned, dead letters. I point to facts as evidence that this is so, and in answer to your why? I ask you to examine into the subject for yourself, and you will soon receive a definite reply to your query. That it is possible to put these clauses into effect we have triumphant evidence; but then the officer who has vivified the dead bones of the law, clothed them with practical intelligence, and moved them with the motive power of the strength of his will and intellect, is a gentleman thoroughly versed in the subject,—I am proud to add an active member of our Council and Association,—I mean Mr. Arntz, the surveyor to the Board of Works for Westminster. He has not only laid down an admirable series of regulations for the drainage of the houses in his district, but he has thereby, in compliance with the Act of Parliament, pointed out, in clear and unmistakable language, so that "he who runs may read," that which he will pass as fit and proper works; and in order not to afford any excuse for non-compliance, he has illustrated his intentions by means of a working diagram, which by his favour I exhibit and direct your attention to. Now, whether houses are allowed to be occupied until "passed" by him, I know not, but in answer to my inquiries he has written to me, that "the system has been in operation about two years, and has been applied to a large number of houses and buildings in and outside his district"; that as yet there have been no refusals to comply with his requirements; and he adds that he is sure "the public is willing enough to adopt improvements when they are shown to be practicable and without serious difficulty," an opinion with which I am sure most of us will coincide. Possible, then, as it is to ensure good drainage by Act of Parliament, it will only be accomplished by the active co-operation of the public.

The construction of our town houses is governed by the Metropolitan Buildings Act, an Act passed to regulate the construction of buildings so as to prevent accident by fire, and which does not pretend to affect, except very indirectly, the sanitation of the buildings themselves. Impressed with its anomalies, with the confusion of its clauses, the ambiguities of its language, and the difficulties attending its working, the Metropolitan Board of Works, in that public spirit which always distinguishes its action, in the Session of 1874 introduced into Parliament a Bill containing most wise and useful material for ensuring the future health and welfare of the house-dwellers of the metropolis. This Bill was referred to a select committee.

I think if the Board had been content with a little it might have obtained more; if it had determined to amend the present Act it would have succeeded; but, unhappily for the sanitation of the metropolis, it endeavoured to combat with the selfish interests and conveniences of various bodies, which rose hydra-headed at every step taken: these proved strongest, and the Board succumbed. One unanimous expression of opinion embodied in the form of a resolution was arrived at by the committee, *inter alia*, viz., "That it was important that the District Surveyor should have full power to stop the progress of any building in which the material or construction is calculated to be dangerous to health, and to summon the builder or owner before the magistrate." At present on this head we are legally helpless. As I actively assisted the Bill, I may state that it was prepared with great care, drawn with the skill which pervades the work of the Board solicitor, promoted with vigilance by Col. Hogg and the members of his Board, defended with acumen by Mr. Philbrick and Mr. Bazalgette, and withdrawn with great regret, after a protracted struggle before one of the most prejudiced and hostile committees which it has ever been my lot to encounter. It is to be sincerely hoped that the Board will not be deterred from performing its bounden duty,—that of securing an efficient workable Building Act, for the preservation and protection of its numerous and ever-increasing constituents,—and that it will shortly re-introduce an amended measure.

The present Act entirely fails to maintain anything like proper sanitary construction in metropolitan houses, besides which the conflicting decisions of magistrates weaken its authority and enfeeble the efforts of those who seek to construe its provisions to serve the public interest. But determination and zealous energy have now and again succeeded, and but recently Mr. Knightley,

* From a paper by Mr. H. H. Collins, elsewhere alluded to.

our district surveyor for Hammersmith, obtained from Mr. Ingham, the magistrate, an order for the demolition of a wall which had been erected with mortar consisting of 20 per cent. of sand and 80 per cent. of clay, and which was wittily described by the *Daily Telegraph* as a wall on which "Humpty Dumpty could not sit with any chance of safety, to say nothing of the 'eligible tenants' who, in times to come, might seek the shelter of the wall, together with three others and a roof covering all; the whole forming what is called by courtesy a house." Probably, however, if this decision be appealed against, it may be upset. I only quote the case as an exception to prove the rule. The Building Act, for all practical points of sanitation, is, I much fear, unworkable, without, indeed, the magistrates would uphold the efforts of the district surveyor, which hitherto they certainly have not done.

There is one other Act, the Nuisance Removal Act, which in some measure is incorporated with the Metropolitan Local Management Act, and the provisions of which are constantly applied by vestries, but as a rule its application is limited to the houses of the poor, and seldom or never is it applied to those of the upper and middle classes. Here, again, the poor man's dwelling has an advantage over the rich one. Inspection, which would be resented as an interference by the wealthy, would in reality prove a safeguard and a blessing.

In the course of my own experience, extending over more than twenty years, I am able to speak of the utter neglect and crass ignorance of sanitation which I have encountered, and with which, indeed, I have to combat every day. I select a few examples with which to conclude this part of my subject.

A few years ago a client of mine who resided in a large house in a wealthy suburb informed me that his wife and two daughters had suffered in health ever since they had occupied their house; that he had consulted several medical men without beneficial result; and that he wished me to make a survey of the premises. He paid a rental of about 200*l.* per annum. I found that the drainage was in every way defective, although he told me that he had expended a large sum of money in making it "perfect"; the gradients were bad, the pipes choked, and the joints unsound. The servants' water-closet was adjacent to the scullery, which was in communication with the kitchen,—the sink being directly opposite the kitchen-range. The water-closet was supplied direct from the cistern, the waste from which entered the drain, although it was said to be trapped. The waste of sink was simply connected with the drains and trapped with an ordinary bell-trap, the cover or trap of which I found broken. Under the kitchen-range hot-water tap I found a trapped opening also leading into the drains. The domestics complained of frequent headaches and general depression; and I need not add that it excited no surprise, seeing that the kitchen fire was continuously drawing in from the sewers and house-drains a steady supply of sewer gas to the house and drinking-water cistern. In addition, I found the basement walls damp owing to the absence of a damp-proof course and the want of dry areas. The upper water-closets, house-closets, and cisterns were situated over each other off the first-floor landing and directly opposite the bedroom doors. The bath and lavatory were fixed in a dressing-room communicating with the best bedroom, the wastes from which were carried into the soil-pipe of closets; this latter was unventilated, but was trapped with an S pipe at the bottom. The water-closets were pan-closets, and were trapped by D traps. The upper closet periodically untrapped the lower closet and bath traps, giving the impure air free access to the house and cistern, which latter was also in communication by means of its waste-pipe with the house-drains. The overflows from safes of the water-closets were practically untrapped. The peculiar nauseating odour of sewer gas was distinctly perceptible, and I had little doubt but that atonic disease was rapidly making its inroads on the occupants. The landlord refused to recognise the truth of my report. My client, acting on my advice, relinquished his lease, took another house, the sanitation of which was carefully attended to, and his wife and children have had no recurrence of illness.

Some short time since I had to report on a new house not quite completed, built in a fashionable quarter of the metropolis, the rent being 160*l.* per annum. This is the state of sanitation I found to exist. The basement cistern, lined with zinc was in direct communication with the pan of the servants' water-closet. Both cistern and water-closet were inclosed in an unventilated space. The sink was placed in a scullery directly opposite the kitchen range, with waste connected with drains. Numerous sinks had their wastes carried directly into house-drain. The upper closets and bath-room were fairly positioned, but the hot-water pipes were in contact with the lead pipes, and the wastes of cisterns were tapped into the soil-pipes, which in this instance were common iron rain-water pipes with joints made in oil cement. Of course I recommended my client not to take the house without these sanitary defects were properly rectified. A surveyor of some repute called at my office with my report in his hands: he characterised my objections as puerile and my requirements as unnecessary, and informed me that in the house in which he dwelt (a yet more fashionable locality) the state of things I complained of had existed for over twenty years, and that neither himself nor his family had ever experienced any inconvenience. It was simply a case of "persuade a man against his will, and he is of the same opinion still." I refused on behalf of my client to take the house without my demands being satisfied: the landlord, however, consented, and the alterations were effected.

I have recently purchased on behalf of a client the lease of a mansion in Portland-place, from a well-known nobleman, who had spent, as I was informed, a fortune in providing new drainage. Indeed, I found the principal W.C. built out of the house altogether, the soil-pipe of which, however, was carried through the basement, where it was supposed to be connected with the drain. Upon removing the floor-boards, to examine it, I found the ground surrounding the connexion literally one mass of black sewage, the soil oozing through the joint even at the time of examination, and the connexion with the main drain laid in at right angles. The 9-in. drain-pipes ran through the centre of the house, having a very slight gradient, and had evidently not been laid in many years. They were nearly full of consolidated sewage, and but little space was left for the passage of the fluid. With but a slightly-increased pressure the joints would have given way, and the sewage would have flowed under the boards, instead of into the sewer. The sinks, W.C.s, and cisterns were all badly-positioned, and all more or less defective in sanitary arrangements. In the butler's pantry the sink was placed next to the turn-up bedstead of the butler, who must have inhaled draughts of impure atmosphere at every inspiration. The soil-pipes of the closets have, indeed, been ventilated with a zinc rectangular tube; but as this had been so positioned as to let the sewer-gas through an adjacent skylight into the house, and the odour being extremely disagreeable, it had been, by his lordship's directions (as I have been told), closed. Here was evidence that it had, at all events, been doing some service, and probably had only poisoned a few of the domestics. I found the heads of soil-pipes likewise riddled with holes, as described by Dr. Fergus. There happened to be a housemaid's sink situated close to a bedroom-door, the waste from which had been carefully connected with the soil-pipe, so that, probably, had the closets been satisfactorily ventilated, this arrangement would have defeated the object in view. I should also mention that the best W.C. was situated on the bedroom-floor, under the stairs, and was lighted and ventilated through a small shaft, formed of wood boarding, and carried to the roof; it also opened by a window to the main or principal staircase. The gutter of the roof ran through the bedrooms, and under the floors at the time of examination it was full of black, slimy filth. This is a fair specimen of the sanitary arrangements of a nobleman's "town house," situated in one of the best streets of this great metropolis, and in the year of grace 1875.*

Thames Valley Drainage Act.—Mr. Grantham, C.E., the inspector appointed by the Inclosure Commissioners, will shortly hold meetings in Berkshire, Oxfordshire, Wiltshire, and Gloucestershire, to make inquiries for declaring the jurisdiction of the Commissioners appointed under this Act to extend to the limits proposed, constituting the Districts and District Boards, fixing the number of Commissioners to be elected, and as to any other matters connected with it.

* To be continued.

THE FLORENCE CONGRESS OF ARCHITECTS AND ENGINEERS.

This their second congress was held in Florence on the 13th of last month and following days. The first congress of architects was held in Milan, when the noble monument raised to Leonardo da Vinci was inaugurated. The meeting in Florence was attended by men of art and science from all parts of Italy. The Syndic Peruzzi opened the meeting. Of architecture, which Cavaliere Francolini, president of the congress, justly styled the queen of the fine arts, Professor Villari spoke at some length, on the first motion,—"To point out the difference between an engineer and an architect, and say what are the limits of the professions." He remarked that the architect is an *artist*; the engineer studies science and practises it. He wished to see the architect surrounded by an artistic atmosphere. Architecture as an art is being neglected. In works of great importance it must be seen that industrial art is entirely subservient to artistic art. A professor of architecture of Zurich had said that in the Academy of Dresden, in the midst of all that is artistic, architects are formed; in the Polytechnic schools they are not; but could give no reason for this. Professor Villari was of opinion that the art could be studied perfectly there; but thought it absolutely necessary that schools of architecture, purely as art, should be founded. Men such as Alvino, Betti, and others were of his opinion. All noble professions have especial schools; why not architecture?

It was then suggested that as there does not exist in Italy, in the Academy of Fine Arts, any scientific instruction, or at least such as to create good architects, that in one or more of the Academies of Fine Arts a school of architecture should be founded, in which should be given, with all the artistic instruction, also the necessary scientific teaching indispensable to the exercise of the profession, and which should also confer diplomas. Also that Florence, on account of her artistic traditions and her monuments, is the best adapted for such schools, and the Government should be asked to institute at least one, and in this city, for Italy.

Debates were held on fluvial hydraulics. The suggestion of Engineer Goretti was approved of for the prevention of torrents, namely, his system of immersing trees with sacks full of stones or other heavy material; or for the defence of rivers, immersion of sacks similarly filled with heavy material, and large barges loaded with stones, by which the vortex would be stayed, and cover the part threatened, while barriers could be constructed behind.

Maritime hydraulics were discussed; the best modes of ventilation; the construction of roads in towns and country; the best means of cleansing the Tiber; and the working of mines in Italy. The meeting closed on the 22nd, and with the proposition that the next congress should be held in Naples.

INDIAN PREPARATIONS FOR THE RECEPTION OF THE PRINCE OF WALES.

Great activity begins to prevail throughout India in making preparations for the reception of the Prince of Wales, and cabinetmakers, upholsterers, and decorators are working against time in order to be ready for his arrival. In Bombay his Royal Highness will occupy a suite of apartments in Government House, Parell, and these are being refurnished for the occasion by Messrs. Deschamps, of Madras. As Indian styles of furniture are scarcely consonant with European notions of comfort, that known as the Louis XVI. style has been selected; but a much more Eastern character might obviously have been given to the carvings, while native textile fabrics might also have been much more largely employed both for the coverings and draperies. The woodwork is principally carved black wood—of course, with the Prince's plumes and badge appearing everywhere—although Chittagong mahogany is also used. For the sitting-room at Parell a handsome ottoman, two sofas, four armchairs, four easy-chairs, and a host of other chairs have been constructed. The covering is of faint bluish grey satin cretonne, of French manufacture. The pattern represents large vases in sapphire and gold, filled to overflowing with flowers of every hue, and the stiffness of the design is relieved by wreaths and creepers, which surround the vases and ramify in every direction. Besides the articles above mentioned for this room have been manufactured a pair of pier

ables, an *étagère* with glasses, a chiffonier, the usual round table, and a pair of what are known in India as ten-poys. Two massive wardrobes have been made for the bed-room and dressing-room, and the hangings are of faint lake colour, throwing into strong relief ribbon-bound groups of musical instruments — not tom-toms, but guitars, flutes, and trumpets—alternating with vases of richly-coloured flowers, round which gaily-plumed birds flutter through an intricate net-work of creepers and wreaths. Although India is a land of carpets, the native manufactures have been discarded, and that in the drawing-room is a fine velvet pile of European make, while the bed and dressing room floors are covered with good Axminster.

In Madras the Prince will occupy the suite of rooms in Government House usually reserved for the Governor, and these also have been partially refurnished by the same firm in a similar style. They have devised a peculiar sofa for the drawing-room, which, in addition to the ordinary large seat, has two lounging seats, one at either end of the couch, forming a sort of tripartite sofa. The whole of the woodwork is richly carved, the centre piece showing the Prince of Wales's plumes rising into a prince's coronet. The coverings are to be of silk; but when the last mail left, the colour had not been decided upon, as it would necessarily have to be in keeping with the decorations of the room, which had not been begun. The pier-table is to be the *chef-d'œuvre*, and local report says it will cost 120*l*., and the trade description is, that the framework will be very rich, "with massive reversed foliage at the base of the columns, ornamental capitals with falling flowers, while from corner to corner, at the top, will be a doubly-looped wreath, the whole surmounted by the Prince's feathers, with coronet and motto. From each of the four feet a bracket will form a graceful sweep, until the four meet in the middle under the table, and support an elaborately-carved urn, which is imbedded in graven flowers in very great detail." Whether this design was suggested by anything celestial, terrestrial, or infernal, we know not; imaginative readers can try to realise it for themselves, while prosaic folks will be glad to be spared similar details with the lamp-stands, chairs, tables, &c., which are in keeping with it. The Prince's bedstead is chiefly noticeable for its massiveness,—rather an unusual feature in Indian beds,—and bears on its cornice the inevitable feathers and coronet. A couple of wardrobes and a lot of chairs complete the furniture, and a new white marble bath has also been provided in one of the two dressing-rooms. The banqueting-hall is to be made very brilliant; all the furniture is being regilt and re-covered with crimson Utrecht velvet, and, in addition to the large chandeliers, 150 two-light wall-brackets are to be filled up. The portraits of her Majesty and other celebrities which decorate the apartment are to be reframed; and altogether it is estimated that the expenditure on Government House, Madras, will not fall short of 3,000*l*.

It is said that the durbar for the reception of the Rajpootana chiefs will be held at Agra, and not at Ajmere, as was originally contemplated. Consequently, it has been decided to have a great illumination, which will even throw into the shade the display which was made two years ago when the Viceroy visited the city. Not only are the palace and the public gardens being prepared for such a lighting-up as has never been known before, but the whole city, in every lane and street, will be brilliantly illuminated. Every shop in the main street will be re-painted in the gayest colours, and hung with banners and crossings of the gaudiest hues. The public treasury will contribute 10,000*l*. towards illuminations and fireworks only.

Since we are on the topic, it may be stated that the latest bit of native gossip is that Sir Jung Bahadoor has got a splendid specimen of a Royal Bengal tiger in training to be shot by the Prince of Wales. The *Madras Mail*, to which we are indebted for this piece of information, adds:—"It is being carefully fed and groomed, and on the day that it will perform its part in 'realising the dream of a life,' it will have its claws gilded, and be otherwise decorated for slaughter."

A Vacant Professorship.—News has been received at Calcutta of the death of Mr. J. M. Scott, professor of civil engineering at the Presidency College, on the voyage to Australia, where he was going for the benefit of his health.

FROM MALTA.

The port-town, viewed from the sea, is remarkably picturesque. Its white houses, each with a green wooden balcony supported on bold stone consoles, rise, tier above tier, from the beach to the Strada Reale, the curtains of its forts encircle the high places on every side, domes and spires seem to crowd the island, and the whole scene lighted up by the brilliant costumes of Oriental inhabitants, presents a contrast and a harmony which satisfies the most exacting observer, and is peculiarly delightful to eyes weary of the waves. The architecture is similar to that of southern Italy, though the varied fortunes of the place have favoured the introdution of foreign elements, which give a weird charm to some few spots. Building operations are proceeding with activity, and there is still room for a judicious use of capital. A new town is rising inland, towards the east, and churches continue to multiply. This latter idiosyncrasy of Malta's, for such it is, has been produced by the priests, who adopt the following ingenious method of putting their doctrines into practice.

When a bricklayer, carpenter, or other person engaged in the building trades, strays from the narrow path of discipline, the penance assigned him is to devote a certain number of Sundays and other feast-days to the building of a specified church; when a landholder falls into error, he must give a site; and woe to the frail owner of forests and quarries; when a man possessed of wealth and not otherwise qualified to lend his help transgresses, he is requested to pay down a lump sum. Thus through the zeal of the Roman Catholic clergy for the chastisement of her erring children, and the consequent glory of the Church, the Maltese seem likely to be provided before long with a church a piece. It is not known who are the architects; perhaps some of those gentlemen who occasionally supply designs for charitable institutions, free of charge, had better go to Malta.

The long-talked-of restoration or reproduction of the Opera House, burnt down a few years ago, is now in progress under the direction of Mr. Paulson, C.E. It is annoying to find so much architectural practice in the hands of a profession unqualified for the work, but undoubtedly possessed of superior enterprise. This building is one of those which give "Goths" an excuse for denouncing the Classic style as out and dry: it consists of a Corinthian colonnade, &c., with two stories of windows between the columns; no one, however, could quarrel with an estate-agent for describing it as a "noble pile," suitable to more purposes than we can stay to enumerate.

No one should land on the island before he has read Colonel Potter's "Knights of Malta."

A YEAR'S BUILDING IN GLASGOW.

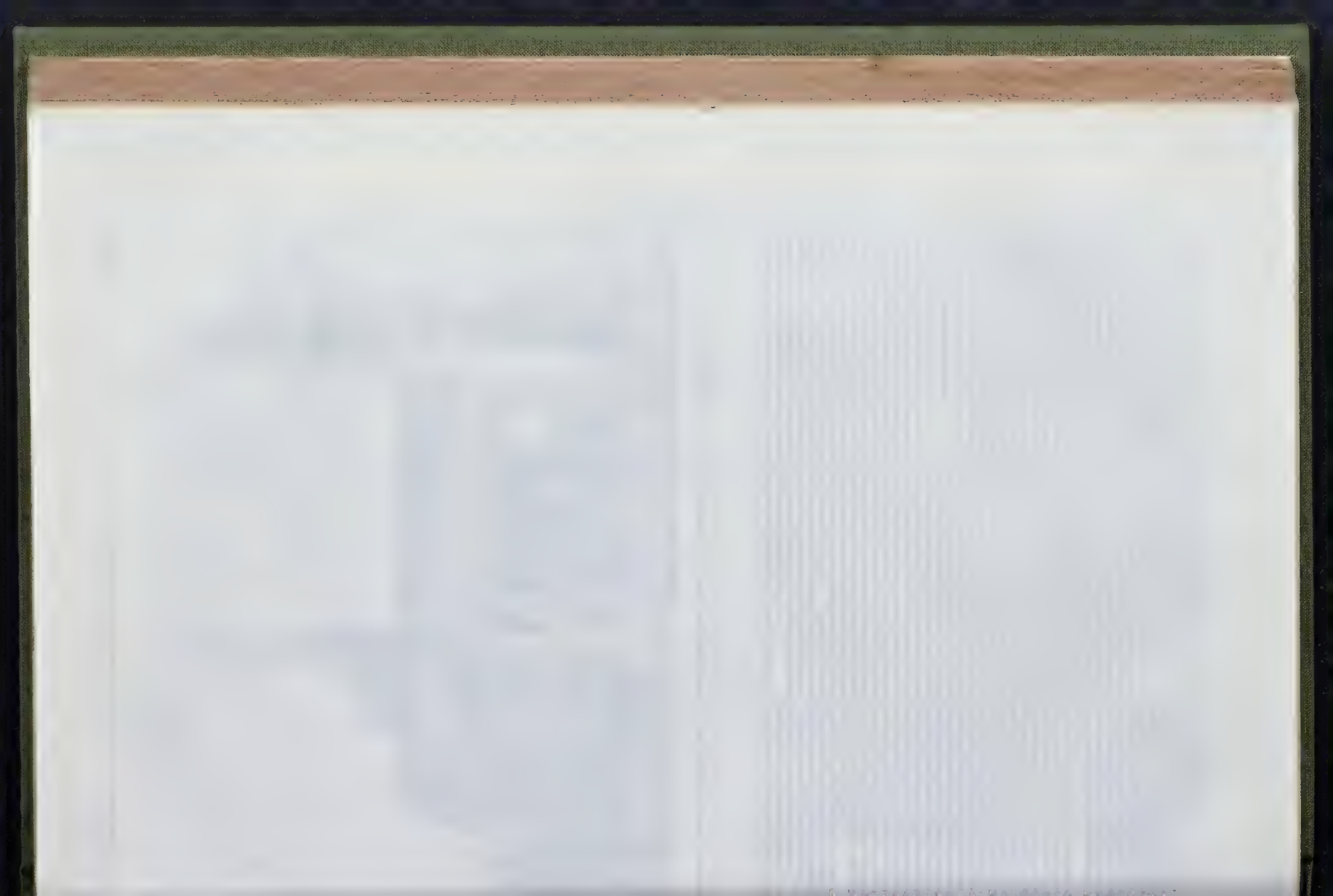
The official year of the Glasgow Dean of Guild Court, which is the local authority for granting "linings," or permissions to erect new and alter existing buildings within the city, was brought to a close on the 23rd ult., when Mr. King, the Lord Dean, made a statement as to the work sanctioned by the Court during the past twelve months. The number of linings passed for houses and shops in the central district during the period named was only three, but the property to which they referred amounted in value to 13,500*l*.; in the western district there were twenty-one linings, the value of the property being 172,100*l*.; eastern district, forty-six linings, value 293,200*l*.; southern district, forty-three linings, value 405,850*l*.; northern district, thirty-six linings, value 245,500*l*., and St. Rollox, twenty-two linings, value 128,700*l*., making the total number of applications passed 171, representing an aggregate value of 1,258,850*l*., as against 140 linings, and a total value of 707,300*l*. for the previous year. This he proceeded to point out was a very large increase, and was most observable in the southern district, where the value of buildings for houses and shops was two and a half times as large as in the western portion of the city. Comparing the figures of this and last year relating to churches, halls, and schools, he found that this year the number of applications passed was forty-five, representing a value of 130,350*l*., as against twenty-one last year, which amounted in value to the larger sum of 201,300*l*. For warehouses, stores, and shops this year, the applications numbered 201, representing 176,000*l*., while last year the number was 202, and the value of the property, 242,100*l*. The applications for alterations and additions this year numbered 240, representing 260,000*l*., while last year the number was 196, and the value 184,000*l*. The total number of applications of all kinds which passed the court was 676, representing in value 1,826,000*l*., as against, in 1874, 578 applications representing in value 1,345,800*l*., and in 1873, 591 applications, the value being 1,210,000*l*. Thus it might be safely said that during the past year considerably more business had passed the court than in any preceding year, and he was happy to be able to say that after consultation with those who were well able to speak on the subject, the character of the erections during the past twelve months was certainly not inferior. No doubt where so many buildings of different classes had to be erected, there must be good, bad, and indifferent; but by the careful attention and practical skill of the master of works and the "trade's liners" (or practical men connected with the court), to whom they were much indebted, no plans passed which did not furnish, if properly carried out, thorough ventilation and thorough security to the lives of those who might occupy them. After the plans passed from their hands, of course it was absolutely necessary that a very strict supervision should be exercised to see that the plans were adhered to, and it was with very great pain that the court had had occasion from time to time to inflict larger or smaller fines on parties who had not adhered to their linings. The deviations in many cases were very important, and such as made it absolutely necessary for a very strict scrutiny to take place, and he was glad to think that the scrutiny which was so much required was very actively carried out. During the past year no one could have sat in the chair he occupied without seeing that many improvements might be made even upon that so-called immaculate Act, the Police Act of 1866. He would not occupy time by referring to these in detail, but was glad to find that in one or two cases the suggestions of the "trades' liners" were adopted by parties who saw it was not their ultimate real advantage to adhere strictly to their rights. The dean concluded by thanking those who during the year had been associated with him in conducting the business of the court.

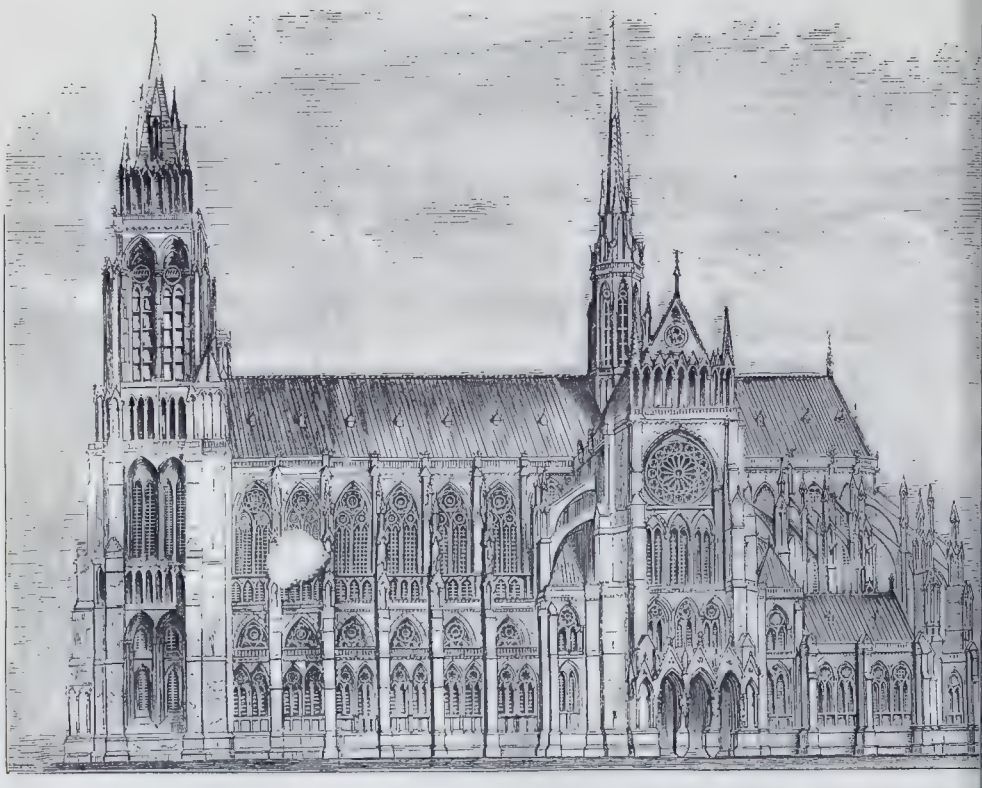
AVONDALE PARK, OLD KENT-ROAD: NEW BUILDINGS.

A plot of land, between four and five acres in extent, situated on the north side of the Old Kent-road, and bounded by the South-Eastern Railway, has just been laid out for building purposes, and upwards of 200 houses of a good character are intended to be erected on the land, which is called Avondale Park. About one half the number of the houses to be erected will be carried round the area of the estate in the form of a crescent, and the remaining portion will be erected on each side of streets in the centre. About one-third of the entire number of houses intended to be erected are already completed, and several of them occupied, whilst several others are in progress. The builders are Messrs. W. & F. Croaker and Mr. H. J. Searle. A new church (St. Philip the Evangelist) has just been erected on a portion of the land, and was consecrated and opened for service last week by the Bishop of Winchester. The church, which is built of Kentish rag, with Bath stone dressings, is Gothic in character, and will ultimately have a tower and spire at the south-east angle. Mr. Coe is the architect, and Mr. Nixon, of Old Kent-road, the contractor. The cost of the church is about 4,000*l*.

PROPOSED ROMAN CATHOLIC CATHEDRAL IN WESTMINSTER.

In our last we gave particulars of the cathedral proposed to be built in Westminster for Cardinal Manning. We now add a sketch of the building as designed by Mr. Clutton. The site is near the angle made by the meeting of Victoria-street and the Vauxhall-bridge-road. We may recapitulate that the entrance front will be 125 ft. or 130 ft. in height, and not less than 170 ft. in breadth. It will be flanked with two towers, each 50 ft. square, and pierced with three portals. The towers will rise to about 200 ft.; and at some future time they may possibly be surmounted by light spires which will rise to double that height. The nave will be 50 ft. in breadth, with double instead of single side aisles right and left. These will be separated from the central nave by seven arches, each of





THE PROPOSED ROMAN CATHOLIC CATHEDRAL FOR WESTMINSTER.—Mr. Henry Clutton, Architect

which will be 22 ft. wide and 60 ft. in height. Of the side aisles the two inner ones will be each 24 ft., the two outer ones 20 ft. in width, the total span of the interior being 144 ft. Surmounting the arches of the nave at about 60 ft. from the ground will be a triforium running round the whole building from end to end. This triforium, again, will be surmounted by, or rather incorporated with, the clearstory, which will raise the total height of the nave inside to 125 ft. The inner portion of the double aisles will have above it a triforium and a clearstory of its own. Each transept will have an aisle running parallel to it. The dimensions of the edifice will be as follow:—Length, 400 ft. (the same as that of Westminster Abbey); breadth, 144 ft.; height, 130 ft.

THE BELL-TOWER AT EVESHAM.

Our readers may remember that, at the last Congress of the British Archæological Association, held in Evesham, a discussion arose concerning the real date of the bell-tower there, always attributed to Abbot Lichfield, who received that office in the year 1513. The Rev. Mackenzie Walcott, in a paper then read, brought documentary evidence to show that, so far from this being the case, it was built about a century earlier, probably by Abbot Zetten, in which view he was supported by Mr. Parker. The question excited considerable interest, and the architectural members of the Association who happened to be present met on the spot the next morning, and agreed unanimously, on the evidence of the building itself, that the ordinary belief was correct. In this we fully agree, and the tower being a noble one, and amongst the latest works in the Gothic style in England, we give a view of it,* and append some documentary evidence on the subject. Thus, Tindall, the historian of Evesham, says*:—

"Clement Litchfield, before prior, and a man who cannot be mentioned without emotions of pity and reverence, was made abbot of Evesham on December 28, 1513. . . . . Both the learning and virtues of the man were admirable. He was a munificent patron to his convent, and laid out much money in repairing old buildings and erecting new ones. He adorned the choir with much elegance and splendour; *built a very handsome tower in the cemetery, which still remains entire;* and added two chapels of extraordinary beauty, one to St. Lawrence's Church, and the other to All Saints. . . . He continued abbot till near the dissolution; and then, not choosing to surrender his abbey to the king, was, by the vile arts and low devices of Cromwell, obliged to resign his pastoral office to Philip Hawford, *alias* Ballard, a young monk of Evesham, who was, in the year 1539, created abbot, for the sole purpose of surrendering the abbey. This he did on November 17, in the same year. The grief and indignation of poor Litchfield, who survived this catastrophe but a short time, may easily be imagined. It may, without exaggeration, be supposed to have broken his heart. He died at, or near, Evesham, and was buried at the entrance into his own chapel, in the church of All Saints, where there is still to be seen a large blue slab, which protected his remains, but of which the inscription is now entirely defaced. The following was put up in his lifetime, in a window of the same church:—'Orate pro anima Clementis Lychfeld sacerdotis: *cujus tempore turris Eveshamæ ædificata est.*' This inscription also has long disappeared."

Again, speaking of this tower, Tindall says it is one of the finest specimens of architecture "left by our Popish ancestors in the kingdom, and is likewise allowed to be the latest, if not absolutely the last."

Gough speaks of this tower as "t building erected by Popery in England."

Habington, who wrote in the time of Ch gives the following account of the cha tomb of Abbot Lichfield:—

"About the middle of the south aisle Saints' Church) is a curious building Lichfield's Chapell, in whose embowed is a scutcheon, with the letters of gold, and on another the lock and chain, en the Abbey of Evesham. At the entrance chapell lyeth humbled on the ground the blance of an abbot, truly great in the dignity of his high place; and wis foreseeing the storm which overthrew t other religious houses, he struck sail shipwrack. His resemblance is engrave altar in prayer. On his right hand, " *nomine tuo salvum me fac.*" On the left *virtute tua judica me.*" Below, on o "*Quia in inferno nulla est redemptio.*" opposite, "*Miserere mei Deus, et sal* Underneath his feet an inscription, wh also painted on one of the windows:—" *anima domini Clementis Litchfield sa cujus tempore nova turris Eveshamiensi cata est.*"

It is only right to say as respects Mr. W statement that he considers these records to the central tower of the Abbey, and this. The building itself, however, sel question. Amongst the obvious indicat be noticed:—1. The general square treatment; 2. The use of the four-c arch; 3. The drip-stones of the archw 4. The great similarity to the chapels Lichfield attached to the churches Lawrence and All Saints.

* Our drawing was made from a fine photograph, produced by Mr. Earl, of Worcester.

* History and Antiquities of the Abbey and Borough of Evesham. By W. Tindall, M.A. (Evesham, 1794.)



THE BELL-TOWER AT EVESHAM.—*Sixteenth Century.*

THE QUEEN'S PARK ESTATE, HARROW ROAD.

The tract of land in the Harrow-road called the Queen's Park Estate, consisting of eighty acres, which was lately purchased by the Artisans' and General Dwellings Company, is now being laid out for building purposes. The roads are in course of formation, and the drainage of the several streets is already completed, and the company will shortly commence the erection of the different classes of houses intended to be built. The total number of houses to be erected, it is stated, on the estate is upwards of 2,000, in addition to schools, a lecture-hall, and baths, and three acres of land in the centre of the estate will be appropriated to recreation and pleasure grounds, and is now being ornamentally laid out for that purpose. The main frontage of the estate is in the Harrow-road.

It has been decided that the houses shall be built in four classes, so as to accommodate the varied requirements of the purchasers or occupiers. The different classes will contain five, six, seven, and eight rooms respectively, the eight-roomed houses to have a bath-room, and the probable weekly rental of the three smaller class of houses will not exceed from 5s. 9d. to 8s. per week, including taxes. The rental of the best class of houses has been fixed at 26l. per year, exclusive of taxes. Upon a calculation which has been made as to the cost of building, the purchasing price of the house will range from 170l. to 310l., on a lease of 99 years, subject to a small annual ground-rent. The first batch of houses to be erected on the estate will be about 500 in number.

WARMING, VENTILATION, AND LIGHTING.

The first of the lectures in connexion with the Sanitary and Educational Exhibition at Brighton was delivered by Captain Douglas Galton, C.B., who had undertaken to speak of those matters in it which related to warming, ventilation, and lighting.

Captain Galton commenced by directing attention to the sanitary principles which should guide the inventor in his design, because so far as this exhibition was concerned, the merits of the several inventions rested upon their fulfilling sanitary conditions. In sanitary science it may be broadly stated that pure air was essential to purity of blood, and that pure air consequently afforded the best safeguard to enable the human frame to resist attacks of epidemic disease. Directing attention to a class of apparatus for the preservation of pure air in our homes, and to the prevention of pollution of external air by smoke, the speaker pointed out that the temperature of the body was about 98° Fahr., and the tendency of the surrounding air was to cool down the body, which, if carried too far, was productive of disease. Thus, whilst requiring ventilation for providing pure air in dwellings, the ventilation must be combined with warming. Ventilation could only be accomplished by the creation of currents of air,—one to remove the air of the room, and the other to bring in fresh air, the amount of fresh air required in an occupied room being very considerable. A space occupied by six persons would require 11,200 cubic feet of air to be passed through in order to keep the atmosphere sufficiently pure for health; or, in other words, the air of the room ought to be removed and replaced seven times in an hour. In such a room so inhabited it would be very difficult to provide any means of warmth within the room which would counteract the repeated cooling down which an adequate amount of ventilation by means of cold air would create. The inflowing air should therefore be warmed, otherwise every means would be sure to be taken by the occupants to shut out fresh air rather than to encourage its inflow. The methods of warming houses in general use might be classed under (1) Open fire-places of one sort or another; (2) Hot air carried in flues from some central source of heat; (3) Hot-water pipes or steam pipes carried round the house from a central boiler. In this exhibition the first mode of warming, viz., by open fire-places, was the one which appeared to preponderate. With an open fire-grate of ordinary construction the warmth in the room was derived from the direct radiation of the fire. The greater the draught up the chimney, the greater the inflow of cold air to replace that removed, and the greater inducement to make the fire blaze to increase the radiation. But the more the fire blazes the faster is the draught up the chimney and the consequent removal of air from the room. Therefore, the tendency of the open fire is to accelerate the evils which it is intended to remove. There was a novel apparatus, well worthy of examination, exhibited here by Mr. G. B. Sharp, by which he proposed to place the fuel in an iron movable grate or cradle, provided with a cover. Amongst the warming apparatus exhibited, some are designed to use gas, and others to consume mineral oils. The characteristics of these he explained at some length. Gas was useful for heating purposes in many places, but it contaminated the rooms in which it was burnt largely. The apparatus for lighting by artificial heat was not very fully represented in the exhibition, but the mineral oils, besides the gas, deserved consideration. Mineral oils are about as cheap as gas, but it is not probable that they will ever supersede the use of gas. As to other sources of artificial light, magnesium was too costly to rival gas, and its dazzling brilliancy rendered its application very difficult for domestic use. Such was also the case with the lime light and the electric light, but the broad fact remained that the present modes of obtaining artificial light were clumsy, and he trusted that it might not be long before some new system of artificial lighting was produced. Having thus briefly explained some of the leading principles which affect health in the warming, ventilating, and lighting of buildings, Captain Galton proceeded to point out the apparatus in the exhibition which appeared to deserve especial mention.

THE NEW YORK POST OFFICE.

The New York Post Office is just now completed. The new building, which has cost over seven millions of dollars, is nearly in the centre of New York; has a frontage of 900 ft.; the floor is an area of over 600 square yards. The sub-basement is 12 ft. high; the basement, or cellar, 17 ft. high; the first story, 30 ft.; the second, 26 ft.; the third, 22 ft. 9 in.; the fourth, 22 ft.; and the attic, 19 ft. high. The cellar is occupied by eight boilers for heating purposes and motive power, with engines, coal-bunkers, and lumber-rooms. The basement, which is an immense apartment, extending under the side-walks, is the room for receiving and managing heavy packages and newspapers, &c. To this room all mail-bags and parcels are lowered from the first or ground floor, where the wagons deliver them. For this and other transfer business there are fourteen elevators, of which ten are exclusively for mail matter. The first story is the place where the mail-wagons deliver their loads. Ten wagons can load or unload at the same time. The building above this story is devoted to offices, giving ample quarters to the five divisions under Postmaster James, the cashier's office, the mailing and distributing department, the city delivery, and the money-order office. The incoming mails are received from the wagons on the first floor, the newspapers being sent down to the basement by shoots, while the bags of newspapers only are lowered by elevators. The letters are distributed to carriers, general delivery, or key-boxes, on the first floor. The newspapers are handled below.

There is a drop for each of the thirty-seven States in the Union, and below each of these is an opening for each principal city in the State. This helps the distributors, and enables the outgoing mails to be kept open fifteen minutes later than hitherto.

The general delivery has six windows. The key-boxes number 5,795, with 520 drawers ranged below the boxes for larger mails, such as the newspapers and larger business houses. There are besides 360 newspaper-boxes for the use of the mail service to facilitate the delivery of papers. About 5,000 of the key-boxes have already been taken, the price paid being 4 dols. a quarter, which goes to the public. The salary of the postmaster is 6,000 dols.; in all there are about 1,000 persons employed in the office. The average number of letters received and distributed daily by this office is 225,000, and the mail matter received daily is about 120,000 lb. Inside the office there are three sets of newspaper men, and, unlike our English post-offices, newspapers are treated like letters. The style is Renaissance, with Mansard roof. It contains 350,000 cubic yards of granite, 20,000 yards of concrete, 45,000 barrels of cement, 16,000,000 bricks, and 19,000,000 lb. of iron. The roof, constructed of slabs of slate, with 1 in. thick at the lower edge, and ¼ in. at the upper, weighs 888,000lb.

DESTRUCTION OF THE TERMINUS OF THE EASTERN BENGAL RAILWAY.

The floods have completed the work which they began last year, and have ended by sweeping away the Goalundo, or Northern Terminus of the Eastern Bengal Railway. This line was constructed to convey the produce of the fertile valley of the Ganges to Calcutta, and the terminus originally selected was Kooshtea, about forty-five miles farther up the stream than Goalundo, and distant about 107 miles from the Presidential capital; but it was subsequently thought that if the large traffic in goods derived from the boats plying on the Ganges was so valuable it would be worth while to establish a similar port on the Brahmapootra, and the end of the deliberations was the construction of the Goalundo extension. Plenty of people foresaw the danger—but, not for the first time, the desire for profit prevailed over plain common sense. In India the confluence of two large rivers subject to violent floods has always been considered a perilous point. The flood in one river rises above that of the other, and a consequent disturbance takes place in the currents, causing changes in the channels and frequently erosion of the river banks, which the peculiar nature of the soil encourages. So great are these changes sometimes that the entire geographical features of a district are altered. The whole system of the Eastern Bengal Railway runs through a country liable to inundation, and perhaps this very familiarity with danger encouraged its engineers to construct this extension at the confluence of two such mighty streams as the Ganges and the Brahmapootra, relying on their success in staving off danger in other quarters. The station was built, a town grew up around it, and for a time all went well. But it became evident that the immunity of the place from misfortune was only temporary, and a spur was thrown out into the Ganges for 500 ft. to protect the terminus. The work was costly, for it consisted of a massive construction of rubble and concrete blocks protected by a solid stone apron, and connected with the shore by an embankment of brick ballast with a clay hearting. Last year the floods were unusually heavy, and the effect of these precautions was watched with much interest At the close of the season it was found that the end of the spur had subsided considerably, but that it had curbed the force of the stream which had been diverted 300 ft. from the south bank. This year the water rose higher and flowed swifter than before, and the Ganges has now ended by sweeping spur and terminus and town away. Happily by the forethought and activity of the local authorities and engineers employed upon the line, the inhabitants of Goalundo had been moved in a body, and, so far as movable materials are concerned, the property of the company has also been saved from the general destruction. It is, however, too much to hope that Indian contractors and engineers will learn the lesson of the disaster, or that they will in consequence abandon their persistent habit of building bridges and constructing great works without accurately calculating the natural forces with which they will have to cope. The calamity is only one added to many, and it is by no means the last of a long and terribly expensive list.

THE PAVILION SYSTEM OF PLANNING WORKHOUSES.

Sir,—In your last number you state, with reference to the proposed new workhouse at Sheffield, that Mr. Hall, the architect, had reported adversely to the pavilion system of planning, which had been suggested by the Local Government Board, on the grounds that such a system was considerably more costly, and required a larger area of site than the corridor system.

As I believe that, before coming to this decision, the Sheffield Board of Guardians and their architect had visited the Lambeth New Workhouse, designed upon the pavilion system, and of which I was one of the joint architects, perhaps you will kindly allow me to correct any misapprehension as to the relative advantages of this and the corridor system.

I will take Mr. Hall's objections first. He states that the pavilion system involves an

increase of 20 per cent. in the cost. This can be very easily answered. This system, in the first place, requires considerably less corridor, which being necessarily of fire-proof construction, is a heavy item of cost; and, in the second place, it admits of the erection of double wards, having four rows of beds. These double wards are not practicable in the corridor system, and can be built at a less cost per bed than single wards, having a proportionately less quantity of walls, windows, &c. In short, so far from being more expensive, I have found, by experience, that this system effects a saving of from 5 to 10 per cent. in the cost.

So far as regards the suggestion that the pavilion system requires a larger site, I have no hesitation in stating that I have found it quite the reverse. Indeed, the arrangement in blocks of a moderately large workhouse will be found more compact, and covering a less area, than if arranged as one long range of building, and a visit to the Lambeth Workhouse, or an inspection of the plans, would convince any one of this. Moreover, in this particular case it was necessary to leave as much land as possible for a future infirmary, so that in the competition of designs, in which the competing architects were free to adopt either system, any plan which occupied an excess of area would have stood no chance of success.

Much more, however, can be said beyond answering objections to the system. The distribution of the several wards and departments in a series of pavilions, or blocks, standing parallel to each other at distances of 60 ft. to 100 ft., is the only arrangement which admits of the wards having external windows on opposite sides, thus insuring *through* ventilation, as it is obvious that wards placed sideways on one or both sides of a continuous corridor cannot be so treated. And further, it admits of the lavatories, water-closets, and bath-rooms being placed at the extreme end of the ward, with a free current of air around three sides.

Another great merit of the pavilion system is that it admits of a more complete classification of the inmates; the several classes of aged, able-bodied of good character, and able-bodied of bad character, being housed in separate blocks, each with its own staircase, airing-grounds, and conveniences. This insures a much better description, and renders the "house" a stricter "test."

A very grave defect in the old system is the inevitable corridor, of great length, having wards on both sides, and being but very imperfectly lighted and ventilated. From this corridor there generally leads, not only the wards, but the bath-rooms, lavatories, and water-closets. A visit to almost any large workhouse built from ten to fifteen years ago will reveal these defects in all their hideousness.

Not to occupy any more of your valuable space, sir, I will end this letter by claiming for the pavilion system, as applied to workhouses, a great superiority in respect of cost, ventilation, classification, lighting, separation of the sexes, and compactness of plan.

Thos. W. Aldwinckle.

THE BLOCK IN THE NEW PUBLIC HEALTH ACT OF 1875 CONSIDERED.

The Public Health Act of 1875 would appear, from the proceedings of the Rural Sanitary Authorities in various districts in the north of England, where so much needed, to be obscure.

The part of the Act which immediately concerns builders is that which shows whose duty it is to put in sewers; and here considerable differences of opinion have arisen.

The 15th clause of the Act recites,—"Every local authority shall keep in repair all sewers belonging to them, and shall cause to be made such sewers as may be necessary for effectually draining their district for the purposes of this Act." No doubt this clause confers power on the authorities to make the sewers, but it does not settle who is to pay for them. Supposing a large quantity of land is laid out in building sites in agricultural districts, who is bound to provide the main drainage for it? A case has arisen thuswise:—Lord Boyne and other large landholders have laid out extensive tracts of agricultural land as building-ground, and have demanded that these lands be drained at the expense of the general body of ratepayers. The length of the streets, as shown by the block-plans of Lord Boyne and Major Cochrane, are 9,854 yards, or nearly six miles of sewers—according to the measurement of the surveyor. In order to render this land suitable for building purposes, the sewers would have to be 5 ft. deep, at an estimated cost of 1*l.* per yard. If the sewers have to be constructed by the ratepayers, they would not be made for anything like that sum, for the money would have to be borrowed; and in that case the Local Government Board would step in and compel the ratepayers to drain the cellars. It is also urged that if this be carried out, it would be years and years before all this land could be built upon, as the ratepayers would be in no particular haste to make the sewers.

AN ENGLISH CHURCH AT ST. SERVAN, BRITTANY.

A new church has been built by the English residents at St. Servan, Brittany, near the port of St. Malo. Hitherto a small chapel has been rented, but this had long been found to be inconvenient, and too small for the increasing English population. The new building, which was used for the first time last Sunday week, will accommodate about 300 people, and consists of nave (without aisles) and sanctuary. A wooden screen divides off the westernmost bay, forming an entrance-lobby, and, with another smaller screen, a vestry, and it may eventually be used as a support for a small west-end gallery. The building is an instance of a remarkably cheap church, the total cost being less than 1,000*l.*

Freestone, being costly in the neighbourhood, is very sparingly used. The walls stand upon a granite plinth, and are formed of the *maçonnerie ordinaire* of the neighbourhood. The east and west windows are filled with tracery, and the side windows are coupled lancets. The roof is pitched at an angle of 45 degrees, and has curved principals and collars. The works have been carried out by Mr. Saunders, of Jersey, from designs by Mr. W. Niven, the masonry being done by French workmen, and the carpentry and joinery by men from Jersey, both being much less expensive than in England.

NEW BANKING PREMISES AT MIDDLESBROUGH.

A substantial block of buildings, for Messrs. Backhouse, was opened for business last week. The site, a corner one, measuring about 82 ft. by 66 ft., is one of the best in the town, being close to the new railway station, now in course of erection. It has been erected from the designs of Mr. G. G. Hoskins, of Darlington.

The buildings, which embrace the bank itself and a manager's house at the side, are built entirely of rubbed ashlar, with moulded segmental pointed doors and windows, the latter on the ground-floor being filled in with ornamental wrought-iron grilles. The floor above the bank portion, which is of fire-proof construction by Messrs. Dennett, of London and Nottingham, is devoted to suites of offices.

The interior of the banking-room is somewhat novel in treatment; instance the arcade between the public and the cashiers, which appears to have been adopted to meet the requirements of the fire-proof arrangements.

The contractors for the work have been:—brickwork and masonry, Mr. Jackson, Middlesbrough; carpenter and joiner's work and fittings, Messrs. R. Robson & Son, of Durham; slating, Mr. George Pattison, Darlington; plastering, Mr. R. M. Ormerod, Carlisle; plumbing, glazing, &c., Mr. Hudson, Middlesbrough; the carving was executed by Messrs. Farmer & Brindley, of London; strong rooms, doors, and safes, by Messrs. Chubb; metal work, Mr. Siddell, Darlington; gas-fittings, Messrs. Russell & Sons, Darlington; principal chimney-pieces, Messrs. J. Priestman & Sons, Darlington; and tile pavements, Messrs. Maw & Co. Mr. Hindmarch acted as clerk of the works.

TOWER OF ST. ANTHOLIN, WATLING STREET.

Sir,—As this tower appears to be in no little danger at utilitarian hands, may I suggest through your columns, that if a clock, and a really good set of chimes (not the ordinary ones, but those "silvery chimes," which lend such a charm to foreign cities) were added, the plea for its retention would be greatly strengthened, and a boon would be conferred on the public generally. Few Englishmen who have had the opportunity but must have been struck with the singularly exhilarating effect of such chimes in the midst of the stern, matter-of-fact round of daily life in a great city. G. McD.

A RECTOR'S DEFENCE OF THE ECCLESIASTICAL DIPAPIDATIONS ACT.

Speaking at the Church Congress at Stoke-on-Trent last week, in the discussion which followed the reading of Mr. Rowe's paper (*Builder*, p. 911, *ante*) on the Ecclesiastical Dilapidations Act, the Rev. C. F. C. Pigott said he had made trial of the Act. He believed when it was better understood it would be appreciated as a great boon, especially to the poorer clergy. The old state of the law had received a very bad character, and the new might be compared with the old to its great advantage. Under the old law a clergyman who allowed his holdings to fall out of repair was liable to a criminal prosecution, and almost anybody might proceed against him. This blot has now been taken from the Statute Book, and a much milder process substituted for it. If a clergyman allowed his holdings,—*i.e.*, the property of the Church,—to fall into decay, the bishop was directed by the Act to write and admonish him to put them in repair. If he consented and did it the matter was at an end. If he refused, the new law might be put in force against him, as might the old law in the previous state of things. But in the new it was a civil process; in the old a criminal one. He need not say which was best for them. What made the new Act unpopular was its not being understood; next, the great increase of late in the expense of building. Further, the surveyor's fees not yet having been put on the moderate footing which they would soon occupy. He felt sure when this was done (and it would be done soon) the average cost of the surveyor would be, he had no doubt, from five to seven guineas. This would be all a clergyman would have to pay during the whole tenure of his benefice, except in the rarest cases. He might of course call in the surveyor every five years if he liked, but the Act did not require this except in sequestrated benefices. But the great boon to the poorer clergy was the privilege of borrowing for their repairs, and charging the loan on the benefice. English law had never, he believed, given this boon to tenants for life before,—landowners, being tenants for life, could borrow money at 5 per cent. to drain and build, but never to repair. English law had been greatly stretched in this Act to benefit the poorer clergy, and the Act required that they were not to be charged over 4 per cent. for a loan. It was a great boon, especially to a poor man entering on a benefice with many expenses of furnishing, &c. Let them make this power to borrow a full reality, by bringing to bear some pressure upon the governors of Queen Anne's Bounty. But let them not be led astray from their own interest by persons ignorant of the Act. There would presently be a reaction in favour of the Act, when it came to be duly administered. For his part, he greatly admired its main provisions.

STATUE TO A MAN FROM THE RANKS.

Last week a statue was erected to one of those representative men, who at the time he entered life was only a lonely, friendless boy, who toiling early and late at a bottle factory, died a member of Parliament for his native town, Sunderland.

The memorial consists of a full-length figure of about 8 ft. 6 in. high, elevated upon a pedestal measuring about 7 ft. 6 in. from the ground. The figure, which is composed of bronze, is so placed that the light from the south falls full upon it, and is represented holding a scroll in the hand as if about to address an assembly. The pedestal, which is composed of finely polished granite, bears the inscription,—"John Candlish, M.P.; born 1815, died 1874."

The base is of light shap granite finely executed, and the whole rests upon a substantial concrete foundation. The bronze figure was cast at Young's foundry, Pimlico, Mr. C. Bacon being the sculptor.

Sunderland is indebted to the deceased for its sanitary reform, that from being once a mass of fever and stricken lanes it has now for years past been a very healthy town.

The New Hospital for Aldershott.—A large number of workmen are already engaged making preparations for laying the foundation-stone of the new military hospital. The building will be on the plan of the military hospital at Woolwich, and will, when completed, cost about 30,000*l.* One wing, at a cost of 3,000*l.*, will be erected probably before the end of this year.

DEATH IN THE SEWERS.

Our attention has been called by more than one correspondent to such passages as these in the Agenda papers of the Metropolitan Board of Works:—

"That the sum of 20*l.* be granted to Thomas Jupp, lately employed as cleaner at the Crossness Pumping Station, who has been discharged from the hospital hopelessly blind."

"That Mrs. Helen Crichton be informed in reply to her letter apprising the Board of the death of her uncle, John W. Wilkins, late inspector of Flushers under the Board, and requesting the Board to grant her some pecuniary assistance towards the support of his daughter, who is left unprovided for, that the Board have no funds at their disposal for such a purpose."

Such entries occur so often that it becomes necessary to inquire whether or not the Board have taken any proper advice on the subject.

INVERNESS TOWN-HALL COMPETITION.

The plans sent in in competition for the proposed new town-hall in Inverness were remitted some months ago to Mr. David Bryce, R.S.A., to be reported on by him. At the meeting of the town council on the 6th inst. Mr. Bryce's report was read, as follows:—

"I have carefully considered the several competitive designs for the proposed town-hall at Inverness, consisting of forty-one drawings, along with the instructions given by the committee to the various competitors. I have also procured from Mr. Andrew Lawrie, a thoroughly qualified ordained surveyor, probable estimates of the cost of erecting such buildings, and, on the whole, have to report as follows:—

I am of opinion that none of the plans can be carried out for the specified sum, even with the additional rent capitalised that might be obtained for places and apartments not actually to be occupied for the business purposes of the town. I have valued the rental of the apartments shown on the different plans at about the same relative proportions, so as to arrive as near as possible at what would be the probable return from them. These amounts are embodied in Mr. Andrew Lawrie's report, dated September 30th, 1875, which is sent herewith.

The first set of plans, consisting of the drawings numbered from 1 to 11 inclusive, and with the motto "Let Honour Follow," is the best; and taking into account every expense necessary to render the building fit for occupation, I do not think it could be erected for a less sum than 15,000*l.* If however, the perspective elevation, marked No. 13, is adopted in place of elevation No. 11, it would cost less, say 14,112*l.*, both these sums being exclusive of architect's fees and clerk of works' salary, but including every other expense, painting, marbles, gasfitting, bells, street pavements, &c. I have only further to add that all the drawings are highly creditable to the several competitors, who must have bestowed upon them a great deal of labour and study. I will be glad to furnish any further information that may be required."

The design thus selected is by Mr. Lawrie, architect. Mr. Bryce's report was remitted to a committee for consideration.

NEW HOSPITAL FOR SHEFFIELD.

Mr. Thomas Jessop, a steel manufacturer, of Sheffield, has signified his intention of defraying the cost (22,000*l.*) of the erection of a new hospital for women in that town. At a meeting of the hospital committee, on the 4th inst., twelve tenders for the erection of the new building were opened. Mr. Jessop having intimated a preference for the tender of Messrs. John Chambers & Son, of Commercial-street, who offered to do the work for 16,250*l.*, their tender was accepted. This does not include the cost of heating apparatus and other matters, which, with the cost of the land, will bring the total up to 21,000*l.* To this, again, will have to be added the cost of furnishing,—all which Mr. Jessop proposes to defray. The plans of the building have been prepared by Mr. J. D. Webster, architect. Its style will be Gothic, and it will be built of brick, with stone dressings. The building, which on plan takes the form of the letter T, will have three stories, and will be divided into two distinct parts, although one roof will cover the whole. The main portion of the structure will be used as the hospital proper, but the wing abutting on Victoria-street will be utilised for the purpose of midwifery only, and will be entirely detached from the rest of the building. The ground-floor of the hospital portion will be set apart chiefly for administration and out-door patients. In the next story there will be four wards for the use of the in-patients. Two of these wards will hold five beds each, but the others will be only large enough to accommodate two patients in each. Bath-rooms and lavatories will be erected near the wards, and on the same floor will be the operating theatre. The upper story will have a similar disposition of wards, and will be designed to accommodate the same number of patients. The midwifery department of the institution will also contain three stories, the ground-floor being divided into a day-room for the in-patients, a consulting-room, and a sitting-room for the matron. The next story will comprise two wards capable of accommodating four persons, and the upper story one small ward, with bed-rooms and other conveniences. The building has been designed with a view to the accommodation of about thirty-five in-patients.

THE TRADE UNIONS CONGRESS.

The eighth annual National United Trade Unions Congress, consisting of between one and two hundred delegates from all parts of Great Britain and Ireland, commenced its sittings on Monday last, in the Assembly-rooms, Crown-street, Glasgow. Mr. John Battersley, president of the Glasgow Trades Council, was elected president of the congress; and Mr. James Wilkie, of the Glasgow Trades Council, secretary. The business of the congress during the week will include discussions on the various Acts affecting labour, the composition and payment of juries, the election of magistrates, the Merchant Shipping Bill, arbitration in trade disputes, and the Patent Laws. Mr. Robert Knight, chairman of the Parliamentary Bills Committee, presided at the opening. The officials of the congress were afterwards elected. Mr. Howell read the Parliamentary Committee's report. The committee expressed their satisfaction with the passing of the Employers and Workmen Act, and the Conspiracy and Protection of Property Act, and with the tone of the speeches in the House on these Bills. They recognised the great value and importance of these new laws. Workmen being no longer under an exceptional criminal code, their emancipation was complete. The committee have prepared a memorial setting forth the amendments they desire on the Trade Unions Act, and expressing a hope that Sir Stafford Northcote will introduce a measure on the subject next session. The committee had always advised trade societies to register under this Act. While they felt the Compensation to Workmen Bill to be in the right direction, they objected to the limitation of time for preferring claims, to the limitation of awards to 200*l.*, to the deduction of sums contributed by employers to accident funds, and to the exemption of employers of fewer than ten persons. They advised that the committee should act in concert with any other body to get a satisfactory measure next session. The committee regretted that the Factory Act Commission did not include some one member acquainted with the condition of children, young persons, and women in wholesale and retail shops, whose practical knowledge would be of immense value. The committee were strengthened in this by the fact that the Commission had held a private sitting in Glasgow to hear the evidence of persons who would not otherwise come forward on the ground that some workpeople had been threatened with dismissal if they gave evidence. The balance-sheet from January to October showed an income of 549*l.*, and a similar expenditure.

THE ORGAN AT ST. MARY'S WOOLNOTH.

Sir,—"An Architect" is, I think, quite right in regarding the removal and rebuilding of an old organ, such as that by Schmidt in the above-named church, as an operation rather hazardous to the instrument. The old pipes often will not bear the knocking about consequent on removal, organ-pipe metal being generally comparatively soft, and not one of the most durable of materials.

The mere transportation from a gallery to the ground-floor is not, however, necessarily prejudicial to the effect of an organ, but rather the contrary, *unless* the organ is placed in a narrow and confined situation. That is almost always fatal to its effect, and that is unfortunately what is constantly,—in fact, all but universally,—done now. The removal of the St. Paul's organ from the screen to the position under the choir-arcade is a case in point; the deterioration of effect there was not the result, I conceive, of removing it to lower level, but of the confined situation. The great desideratum for an organ in regard to position is free open space all round it; and if this is ensured, a low position is no disadvantage to its tone, but rather the contrary, as it then derives increased resonance from the proximity of the floor; and, in fact, an organ in a gallery is often injured in effect by being too near the roof, and having the sound driven down on it, and the larger pipes partially smothered.

If the intention were to put the organ of St. Mary Woolnoth into one of those abominable receptacles called "organ-chambers," which architects persist in contriving to ruin the effect of an organ, every effort ought to be made to keep it where it is. But if a tolerably open and unconfined space can be found for it on the ground-floor, there need not, I think, be any apprehension of its effect being injured merely by the altered position, though its removal should be a matter for great care and caution.

H. H. Statham.

THE INSTITUTE LIBRARY.

Sir,—It appears that during the somewhat extended holidays of the officers of the Institute, the Library takes care of itself. One of the uses of the Library is as a place of reference to the serial publications connected with architecture, for those who wish to know all that is being said without taking in half-a-dozen publications, weekly or monthly. The other day the whole of these serials were in entire confusion, and the latest numbers not to be found in any case; in some cases they were a month in arrear. It would certainly seem possible that whoever is left in charge might be instructed to keep these papers in order, and see that each is put in its place as it comes in.

By the way, if you turn in to look at the week's papers on Saturday, they are never in the Library, but always have to be sent for from the secretary's office. As the journals are taken in for the use of the subscribers generally, and not for the secretary's private reading, this also is not quite the correct thing. A Member.

TELEGRAPH WIRES OVER HIGHWAYS.

The stipendiary magistrate (Mr. A. Bigge) of the Brighton Borough Bench was last week engaged some time over the hearing of a case, in which Messrs. Cramer and Co., the well-known musical publishers, were the complainants, and Henry Neale and William Lewry, both officials in the Town Surveyor's department, were the defendants. Mr. Warner Sleigh (instructed by Mr. Alderman Lamb, solicitor), acted for complainants, and Mr. Merrifield (instructed by the Town Clerk) did the same for defendants.

Mr. Sleigh, in stating the case, said that Messrs. Cramer had, at considerable cost, erected a telegraph wire over the houses connecting their two establishments, to which nobody objected, and it was a thing done in all the large towns of England and America, and without objection. However, the Brighton Corporation objected to this wire, and some time ago preferred an indictment against Messrs. Cramer, but never proceeded with it, and the telegraphic communication continued until last June or July, when in the middle of the night the connexion was severed, the fire escape (it was since ascertained) being used for the purpose. Some correspondence ensued between Messrs. Cramer and the Town Clerk, and the wire was re-connected, and remained in use until three o'clock in the morning of the 29th of September last, when it was again severed in two places, and the present defendants being proved to be the delinquents, this action arose, and as the Town Clerk had given him notice that the defendants would be represented by counsel he took it that the wrongful and wilful act was ordered by the Town Council or the Works Committee, especially as two members of the Corporation now on the Bench had intimated that they would take no part in this case.

Mr. Merrifield hereupon stated that although the defendants pleaded guilty, he did not admit that the wire was cut by the authority of the Council.

Mr. Sleigh could not accept this,—either the wire was cut by authority or on the defendants' own responsibility, and this latter was highly improbable.

Mr. Merrifield repeated his former pleading, and added that the defendants had acted on a wrong impression, and must take the consequences. The Corporation, if they wished to try the question by cutting the wire, would give notice of their intention.

Mr. Sleigh said his friend was blowing hot and cold in one breath; first, he said that defendants did an unwarrantable act; and, secondly, that if the Corporation chose to do a similar act they could on giving notice. It was saying, "Let us off easily this time, and we will do it again if we think fit." This would not do, and he demanded the authority for these men to go prowling about in the night doing wanton damage; and, instead of counsel pleading apologetically, this ought to be done.

There being no response to this, and Mr. Sleigh calling no witnesses, the Stipendiary and his colleagues were agreed that nothing could be worse than the way in which the transaction, to which the defendants pleaded guilty, had been effected. The law regarded it as especially bad in all such cases when committed between the hours of nine p.m. and six a.m. Neale would be fined 5*l.*, and 1*l.* 10*s.* as half the damage (estimated at 3*l.*), and Lewry the remaining 1*l.* 10*s.*, and a fine of 1*l.*

Before the parties left the Court, the Stipendiary remarked that the erection of telegraph wires across the streets might be a fit subject for the Social Science Congress to discuss.

New Font for Gloucester Cathedral.—A Gloucester paper states that the late Mr. W. Gibbs, of Tyntesfield, had expressed a desire to present a new font to Gloucester Cathedral, but was prevented from carrying out his wish. His son, knowing of this intention, has instructed Messrs. Farmer & Brindley to construct a font, "without limit as to cost."

THE STRAND AND COVENT GARDEN.

Sir,—My neighbours and myself ought to be very much obliged to the press for having, however tardily, taken up the subject of our local administration. Permit me to thank you for your article on the "Government of the Strand and its neighbourhood," and, in confirmation of that part of it relating to street-cleansing, to offer you the following notes carefully taken on the spot.

On Tuesday, the 28th of September last, scavengers began to sweep up Bedford-street at twelve noon. On Thursday, the 30th ult., scavengers carted away at one p.m. On Saturday, the 2nd of October, we were favoured with what is known as a pouring wet day, and at half-past eleven Bedford-street was not even swept up; only at ten minutes past twelve did the functionaries of the broom appear, when they collected the horse-dung, liquid matter, vegetable and other refuse, into heaps in the kennel, thereby damming at intervals the steady and necessary flow of the street drainage. These heaps, which were sliced and smashed every minute by the wheels of passing vehicles, were still visible in Bedford-street at two p.m.

On Thursday, the 5th inst., at eleven a.m., none of the streets immediately surrounding Covent-garden were even swept. Itinerant cabs and carriages rolled over a carpet of vegetable leaves. On Thursday, the 7th inst., at a quarter to one, a cart was being filled by dustmen in King-street. At the same time the usual heaps of broken vegetables, straw, dung, and other "matter in the wrong place" were carefully arranged along Garrick-street and New-street. On Saturday, the 9th inst., at a quarter to twelve noon, six scavengers began to sweep up in Bedford-street. The heaps of refuse were removed from the same street about half-past two; and at a quarter past five p.m. a dustman was engaged in Chandos-street with the cart in shovelling up a heap of vegetables which, like the last rose of summer, had been left dying alone.

It is useless to apply to Mr. Fry, the surveyor to the District Board. Two horses and two carts cannot do more work in one day than two horses and two carts are accustomed to do. Householders here are poisoned at three in the afternoon with the long stagnant contents of their dust-bins, which are often emptied at that hour. Mr. Colam has just offered a reward for the discovery of certain offenders who have poisoned some local cats. Can he do nothing to prevent the men and women who live in this neighbourhood from being poisoned? A society for the prevention of cruelty to ratepayers, and for the entire abolition of modern vestrymen, would be hailed with delight by every one who is unfortunately

A Resident in Covent Garden.

PROPOSED PLATFORM ON LONDON BRIDGE.

Sir,—As a matter of fairness, I trust you will reprint the following from the *Builder* of January 15th, 1870. T. I.

"*London Bridge Traffic.*—Provision for extra accommodation for the constantly increasing traffic on London Bridge, which is urgently needed, has been suggested to be supplied by various methods. Amongst them a plan is proposed by Mr. T. Ivison, who some time since submitted a design to the Corporation of London, for steel or iron bridges for the accommodation of foot-passengers at street crossings. His design for London Bridge is based upon the same idea, namely,—to carry the foot-passenger traffic over the carriage-road. This he proposes to do at London Bridge by a platform of 25 ft. wide extending along the centre of the bridge, with cross galleries at each end of the platform, which would serve for street crossings, and with cross galleries over each pair of piers, to give firmness to the structure. The gallery would be 18 ft. high, clear, and would be supported upon clusters of Corinthian columns. Two spaces of 25 ft. wide would be left on each side over each arch of the bridge, to allow cross carriage traffic if required. The piers and abutments would be carried up to the top of the structure in Portland stone, enriched with Caryatides.* The footways on the bridge would be thrown into the carriage road, and thus provide for six lines of vehicles, the number for which there is space upon the new Blackfriars and the Westminster Bridges. One objection to this plan is the asserted insufficiency of the foundations of the bridge to carry any greater weight than they already bear."

Sir,—Would not an additional bridge, simply for foot-passengers, parallel to the eastern side of London Bridge, be a good expedient? It would enable enough of the present footways to be added to the roadway to admit of one line of traffic extra, and it would afford as good a view of the bridge as any to be obtained from the river. There is great outcry against disfiguring the bridge, but very few who are on it comprehend its beauties.

A bridge for foot-passengers only could be cheaply approached, and might be very lightly constructed compared to what wheel traffic accommodation would necessitate.

Draymen walking beside their horses' heads require some footway, and the raised gangway scheme would be of no service to them. H. W.

ACTION AGAINST A MASON FOR DEFECTIVE WORK.

The plaintiff in this case is a shopkeeper of Martley named William Charles, and the defendant, Thomas Wintle, is a stone and marble mason of Worcester. Mr. Bentley was for the plaintiff, and Mr. Meredith for the defendant. The action was for the recovery of 9*l.* 8*s.*, amount paid to the defendant for a headstone which it was alleged was now defective and faulty. In May, 1874, the plaintiff ordered the defendant to erect a marble headstone in Martley churchyard, and the defendant undertaking that it should be a good sound stone. On the Sunday succeeding its erection, the plaintiff discovered that the stone was cracked, and the fault had since become worse. On seeing the defendant as to this he promised to try and repair the error, but, if he found that impossible, to erect a new stone. Evidence in support of the plaintiff's testimony was given by a Mr. Saunders, of Martley, who had seen the stone lately, and described it as being a bad, unsound stone.

For the defendant, it was contended that there was no crack at all, but merely a water-mark, which was common in marble, which would get no worse, and would not disfigure the face of the stone.

The defendant's testimony on these points was confirmed by that of Mr. William Perks, marble mason, of the Tything, who had lately seen the stone, and who persisted in saying that there was no displacement of substance or any crack whatever, but merely a discolouration, which would not injuriously affect the stone.

His Honour gave judgment for the full amount claimed.

SCHOOL BOARD SCHOOLS.

Garth.—On the 6th ult. the second school erected by the Llangollen School Board was opened at Garth, near Llangollen. The architect was Mr. Owen, of Liverpool, the builders being Messrs. V. J. Roberts & Co., Llangollen. The plan is that of a Latin cross, the school-room forming the shaft, and the class-rooms each side forming the arms. The size of the school-room inside is 30 ft. by 18 ft., each class-room being 18 ft. by 13 ft., and there are small porches each side forming separate entrances for boys and girls. The building is intended for a mixed school, but there are separate playgrounds, closets, and class-rooms. The style adopted is simple domestic Gothic, and the total cost has been about 600*l.*

Newcastle-upon-Tyne.—The Snow-street Board Schools were opened on the 20th ult. for the reception of pupils. Mr. Johnstone was the architect, and Mr. Whichello, builder, Newcastle, was the contractor for the execution of the whole of the works. The accommodation for the mixed school comprises a boys' hall, lighted by windows along either side, and six class-rooms. The infants' school, besides a commodious hall, with three galleries, has two class-rooms. Each of the schools has a room set apart for ablutions, and there are spacious playgrounds provided, with suitable contrivances for the amusement of the children, and covered sheds for wet weather.

Fordoun.—At a special meeting of the Fordoun School Board, on the 17th ult., Mr. Johnston, architect, was instructed to prepare plans and specifications for a new school for sixty scholars at Landsend.

Stourbridge.—At a meeting of the Stourbridge School Board, on the 27th ult., designs for new schools, by Mr. Smallman Smith, architect, were adopted, and it was resolved to borrow 5,000*l.*, for defraying the expenditure.

Bungay.—Mr. John B. Pearce, of Norwich, has been appointed architect to the Bungay School Board. The number of children to be provided for is 700.

Montrose.—The Lochside School, just erected by the Montrose School Board, is a plain, one-story Gothic building, and contains a school-room, 47 ft. by 18 ft. 6 in., and a class-room, 16 ft. by 12 ft. There are separate play-grounds and offices. The contractors for the work were,—mason, Mr. Ford; joiner, Mr. David Milne; slater, Mr. Andrew Brown; plumber, Mr. Robert Fairweather; plasterer, Mr. David Hogg. The total cost, including fittings, has been about 600*l.*——The Townshend School, now in course of erection, has a frontage of 182 ft. There is a school-room, 51 ft. 6 in. by 20 ft., capable of accommodating 128 scholars. There are two class-rooms, one for boys and another for girls, each 20 ft. by 16 ft., and each accommodating forty pupils. The building is already well up, contracts having been entered into with the following tradesmen:—Mason, Mr. Ford; joiners, Messrs. Fettis & Stephen; slaters, Messrs. Stewart; plumber, Mr. Robert Fairweather; plasterer, Mr. William Grant. The total of the contracts is about 1,450*l.* Mr. Wadie (Brand & Wadie) is architect of both schools.

Liverpool.—At a meeting of the Liverpool School Board, held on the 27th ult., the Sites and Buildings Committee recommended that the tender of Messrs. R. Wells & Sons, amounting to 11,447*l.*, for the erection of Walton-lane school, be accepted, provided that Messrs. Wells & Sons consent to the brickwork being supplied by Messrs. Makinson & Glover, as sub-contractors. The last proviso in the recommendation gave rise to considerable discussion. Subsequently the Clerk stated that a letter had been received from Messrs. Wells withdrawing their tender unless they were allowed to increase it by 160*l.*, in consequence of the rise in the price of bricks. The tender, as amended, was then accepted by the Board.

Copdock and Washbrook (Suffolk).—New Board schools for the parishes of Copdock and Washbrook were opened on the 27th ult. at Copdock. Accommodation is provided for 130 children. The principal schoolroom is 46 ft. 6 in. by 18 ft., fitted with five groups of desks. The infants' schoolroom is 21 ft. 6 in. by 13 ft. Lavatories and conveniences are provided in the playground. A master's house is attached to the school, containing a parlour, kitchen, scullery, and out-offices, and three bedrooms. The buildings have been erected by Mr. George Edwards, of Washbrook, from the plans of Messrs. F. Barnes and E. F. Bishopp, architects, Ipswich, at a cost of 750*l.*

Wivelsfield.—Mr. R. Pannet, builder, of Hayward's-heath, has got the contract for building the Board schools at Wivelsfield, the site of which is just to the west of the present schools. The architect is Mr. Card, of Lewes.

Chickerell.—On the 4th inst. a new Board school was opened at Chickerell, Dorset. The building is Gothic in character. The walls are built hollow, of red brick, relieved with bands and patterns of dark grey burnt headers, and pointed with white mortar. The roofs and bell-turret are covered with red Bridgewater tiles. The school has been designed for 150 children, and comprises a large room to be used as a mixed school, 40 ft. long by 18 ft. wide; two class-rooms, 12 ft. 6 in. by 18 ft. and 18 ft. by 16 ft. The larger class-room is fitted with a gallery for younger children. The fittings of the mixed school are of pitch pine, and are made movable, with reversible desks. The separate entrances for boys and girls are fitted up with wash-basins and hat and cloak pegs. The master's house contains a hall, sitting-room, kitchen, scullery, pantry, store-closet, and three bedrooms. The building has been erected by Mr. Innes, of Weymouth, from the designs of Mr. C. Greaves, architect, of London. Mr. Taylor acted as clerk of works. The cost, exclusive of land, was 1,300*l.*

Felmingham.—The School Board for the Felmingham and Banningham united district has instructed Mr. John B. Pearce, of Norwich, to prepare plans and specifications for new schools and teacher's residence at Felmingham.

Chignal St. James. — The tender of Mr. H. Kennel, builder, Writtle, has been accepted by the Chignal St. James's School Board for the erection of a new school.

SCHOOL-BUILDING NEWS.

Wokingham.—On the 30th ult. the endowed elementary schools known as "The Palmer Schools," which have been in course of erection for the past twelve months, were opened by the Bishop of Oxford. The schools stand in an enclosed space about an acre and a quarter in extent, and they are constructed for 325 children. The building is of plain red brick, in the Tudor-Gothic style. The walls are 16 in. thick, and hollow. There are a mixed school and an infants' school. The mixed school-room is 54 ft. long by 20 ft. wide, with two class-rooms, one 20 ft. by 16 ft., and the other 14 ft. by 16 ft. There is a porch and clothes-room for both boys and girls, with a separate entrance to each, and the boys and girls will be separated in both rooms by curtains. The infants' school is a distinct department, having a room 40 ft. by 20 ft., at the end of which is a gallery with a movable platform. Seats are arranged for classes, and attached to the infants' room is a small room for very young children, which will be furnished with mattresses for the infants to sleep upon. A clothes-room is also attached to the infants' department. The buildings are ventilated on Tobin's principle. Messrs. Morris & Stallwood are the architects; the builder being Mr. Maynard, of Wokingham. The cost, including the site and teacher's residence, will be about 2,800*l.*

Lewisham.—A small building about 30 ft. by 20 ft. has just been erected by Messrs. Staines & Son, in Nightingale-grove, Hither-green, for mission and school purposes in connexion with the Lewisham Congregational Church.

Hermitage and Hilfield.—On the 27th ult. new school buildings for the use of these adjoining parishes were opened. The school, with teacher's residence, has been built of green stone (given by Lord Digby) and brick facings, from a design by Mr. Walter Fletcher, county surveyor, and carried out by Mr. E. W. Kingman, of Lydlinch. The cost has been 700*l.*

Hampstead.—On the 29th ult. the new Infants' Schoolroom, in connexion with the Baptist Chapel at Child's-hill, was opened. The style of the building is in harmony with the chapel which it adjoins, and was designed by the same architect, Mr. W. Allen Dixon, of Kentish Town. Messrs. Staines & Son were the builders.

* The cross galleries were supported on Caryatides placed at the inner angles of the piers, which were not otherwise interfered with.—T. I.

Wyke (Yorkshire).—The foundation-stone of new Church infant schools was laid on the 29th ult. The buildings will accommodate 160 infants, the estimated cost being about 750*l*. The Low Moor Company presented the site. The architect is Mr. W. H. Haworth, of Hipperholme.

Newnham (Cambridgeshire).—A large school building for the "higher education" of women has just been erected at Newnham, and will shortly be opened. The building, which is called "Newnham Hall," is in the "Queen Anne" style, and consists of a ground floor and three stories. On the ground floor there are a dining-room, lecture, reception, and principal's rooms, kitchen and other accommodation. There are fourteen rooms on the first floor, including a lecture-room, 17 ft. square, bath-room, &c. The other rooms, which measure about 14 ft. by 11 ft., will be used by students. There are the same number of rooms on the second floor as on the first, and on the third or attic floor there are eight rooms and a music room, the latter measuring 22 ft. by 17 ft. The material used is red brick, and the roof is covered with red tiles. The chimneys are lofty, with moulded cornices, and connected together by arches. There is an ornamental brick cornice surrounding the building level with the attic, and at the angles of the various gables rusticated quoins have been placed. The total cost will be about 6,000*l*. The architect is Mr. Basil Champneys, of London; and the builder is Mr. J. Bell, of Cambridge and Saffron Walden; the clerk of the works being Mr. W. Burgess.

Calveley.—New National Schools at Calveley, Cheshire, have just been completed, from plans by Mr. Bowers, architect, Nantwich. They are built of red brick with ornamental blue facings and stone dressings. They are divided into master's and mistress's apartments, and the school proper. The house upstairs contains three sleeping-rooms, and below are sitting-room, kitchen, scullery, pantry, &c., all well lighted. The large schoolroom, which measures 63 ft. long, 22 ft. wide, and has a height of nearly 26 ft., has an open high roof, supported by timber beams resting on stone buttresses springing from the walls. There are two large class-rooms, 26 ft. by 19 ft., adjoining. All the rooms have boarded floors. The contract was undertaken by Mr. Adams, of Calveley.

Bradford.—On the 29th ult. the Bradford Girls' Grammar School, at the bottom of Hallfield-road, was formally opened by Lady Frederick Cavendish. The building was formerly a private school, and was purchased for the sum of 5,000*l*. by the Bradford Ladies' Educational Association for a Girls' Grammar School, and altered for that purpose at a further cost of about 2,000*l*. The contractors for the several works required in carrying out the alterations were:—Masons', slaters', and plasterers' work, Messrs. Illingworth Bros.; plumbers', Mr. Rushworth, Shipley; decorators', Mr. E. Harland.

Lexden.—The foundation-stone of a new schoolhouse was laid at Lexden on the 29th ult. by Lady Greathed. Messrs. Pye & Haywood are the architects of the schools, which are to accommodate 150 children.

Bridport.—New National Schools are in course of erection in Gundry-lane, Bridport. They will accommodate 420 children. The architect is Mr. R. Cornick, of Allington, and the builder Mr. H. Jerrard, of Bridport. The cost will be about 2,000*l*.

Coventry.—New Roman Catholic Schools, in connexion with St. Osburg's Church, Hill-street, were opened on the 5th inst. The new schools are built of red brick, with blue brick bands and white stone dressings. There are two large schools, one for boys, 62½ ft. in length by 22 ft. in height and width; and one for girls and infants, 75 ft. in length, and of the same height and width as the boys' school. A private house for a master and mistress adjoins the schools. The architect is Mr. T. P. Donnelly, and the contractors Messrs. Hallam & Price, of the Palace-yard.

Brindley's Steam Slate Works. — A company has been formed to acquire and work the well-known slate and slate enamelling business of the late Mr. Joseph Brindley, of Bermondsey-wall, and for that purpose contracts have been entered into under which the whole of the business, including goodwill, machinery, plant, utensils, and stock, will become the property of the company. The transfer of the business and its formation into a joint-stock company has been made on account of the direction in the will of the late proprietor to sell.

STRIKE AND LOCK-OUT OF PLASTERERS AT DUNDEE.

A DISPUTE has arisen between the Dundee operative plasterers and their employers, regarding the employment of apprentices. In a letter to the *Dundee Courier*, Mr. Alfred Guthrie (president), and Mr. James Johnston (secretary), of the Master Plasterers' Association, state that some time ago, after four months' correspondence and personal negotiation, the men conceded to the masters the privilege of keeping a message-boy in addition to the number of apprentices allowed to each master by the rules of the Dundee Operative Plasterers' Society,—some masters being allowed three, and others two apprentices. At the time the men granted this concession (which was to come into immediate operation) to the employers, the latter agreed to certain arrangements as to the wages of the men, which were not, however, to have effect for a period of six months. When the employers acted upon the arrangements they had made with the men by taking on the message-boys, the men informed the employers that they had resolved that all the rules must come on together, and that unless the boys were put away an immediate strike would be the consequence. One employer, who had a lad fourteen years old working as a labourer in his yard, made arrangements with his men to retain the lad, agreeing that if the society objected he would at once put him away; but, instead of acting on this, the men struck work. The lad was immediately sent away, but instead of resuming work the men continued the strike on the plea, as stated in their secretary's letter, that two of the shops would be struck till the masters would make arrangements satisfactory to the men. This was followed by an intimation to both the employers, on the fourth day after the strike occurred, that no plasterer would be allowed to work for them unless they (the masters) paid all the expenses of the strike.

The other employers in the town, with one exception, have intimated that until the men return to their work in the two struck shops, the other shops in the town will be shut.

"ELIGIBLE SITES" FOR DWELLING-HOUSES AT STOKE NEWINGTON.

At the meeting of the Hackney District Board of Works, on the 1st inst., Dr. Tripe, the Medical Officer of Health, reported that a number of houses in Defoe-road, Stoke Newington, were being erected on a large rubbish-shoot, and that the gases arising from such refuse would be injurious to health for at least two years. He suggested that counsel's opinion should be taken as to whether an injunction in Chancery could be obtained to restrain the builders from continuing the work without laying down a concrete foundation; whether an order for the removal of the refuse might be obtained under the Nuisances Removal Act; and whether the erection of buildings on such foundations could be prevented. He also recommended that a representation be made to the Metropolitan Board of Works of the necessity for an alteration in the Building Act, so as to give greater powers to local authorities in such cases. It was resolved that the clerk should take counsel's opinion on the subject. The *Hackney and Kingsland Gazette*, it appears, called attention to the subject three months ago, and now protests against the delay which will be caused in getting counsel's opinion, and then applying for an injunction in Chancery. It maintains that the District Board ought to be fully conversant with its powers, and should exercise them with promptude and despatch. While the lawyers are "taking time to consider," this fever hotbed (which is stated by Dr. Tripe to be 5 ft. deep) may be covered with houses which, as soon as inhabited, will afford plenty of work for the doctor and undertaker. Those who are compelled to live in new houses would do well to act upon the advice given in the following advertisement in the *Hackney and Kingsland Gazette*, evidently inserted, *pro bono publico*, with especial reference to the houses now building in Defoe-road:—"Built to sell. To let, not to last. Inspect carcass buildings. Avoid bad foundations, dear ground-rents, and rotten-built erections."

Bristol Cathedral.—At an influential meeting held on the 12th inst., at Bristol, it was resolved to erect a tower at the west end of the cathedral as a memorial to Bishop Butler.

CHURCH BUILDING NEWS.

Ospringe.—The restoration of Ospringe Parish Church, Kent, is now completed. The works have comprised a new north porch, a new west window, and the decoration of the inner walls of the church. The total cost has been 442*l*. 1s. 11d., including 165*l*. for the stained-glass west window, by Clayton & Bell. The whole of the works have been carried out from the designs and under the direction of Mr. E. L. Blackburne, architect, London; the contractors for the north porch and the west window were Messrs. Whiting; and for the mural decoration, Mr. William Boorman.

Tunbridge Wells.—On the 4th inst. the Archbishop of Canterbury consecrated the new church of St. Peter, on the St. Mary's-hill Estate, Tunbridge Wells. The building is as yet unfinished, however, owing to lack of funds. It is a plain structure, and has been built by Messrs. Willicombe & Oakley, from plans prepared by Mr. E. E. Cronk, architect.

Hughenden.—The parish church of Hughenden, Bucks, dedicated to St. Michael and All Angels, was re-opened on Michaelmas Day, after restoration, enlargement, and partial rebuilding. The old nave and tower, to which no special architectural beauty or interest attached, have been removed, and the whole of the work westward of the chancel is entirely new, the chancel itself and a chapel on the north side of it remaining intact, beyond the restoration and rearrangement of the interior. The new building consists of a nave and north aisle, with a tower at the west end, the whole forming, with the old portion, a picturesque and harmonious group. The work is carried out, like the old building, in flint rubble, with stone quoins and dressings. There is a peal of six bells in the tower, two new ones having been added by Messrs. Mears & Stainbank since the rebuilding. The total cost is between 6,000*l*. and 7,000*l*. The whole of the works have been carried out by Messrs. Dove Brothers, of Islington, under the direction of the architect, Mr. A. W. Blomfield.

Skirbeck.—The Church of St. Nicholas, Skirbeck, Boston, was reopened on the 23rd ult., after restoration, under the direction of Sir G. G. Scott, by Mr. H. Clipsham, of Norwell, near Newark. The upper walls of the nave have been completely renewed externally, the north side restored to an upright position, and a pitch-pine roof placed upon them to the ancient pitch. The north aisle has been entirely rebuilt, and the south aisle refaced. The Early English buttresses have been restored according to discoveries made in the progress of the work. The original floor level has been adopted, the paving in the chancel being by Godwin, of Lugwardine. It is said that there have been found traces of a work of demolition, probably that in 1284, alluded to by Thompson in his history of Boston, when, by a flood in consequence of the breaking of the bank, all Boston was drowned, and many of the churches of North Holland damaged. The cost of the present works has been 3,000*l*.

Dartford.—The committee for the warming of Dartford Parish Church having received the following tenders, have accepted that of Messrs. Weekes & Co.:—Hot air,—Redfern, 60*l*., for apparatus only, to 55 degrees; water,—Telegraphic Engineering Works, Harrow-road, 231*l*. 5s. 6d. (small pipes, high pressure); Kiddle & Co., Sevenoaks, 270*l*.; Jones, Bankside, 270*l*.; Cannell, Woolwich, 253*l*. 5s.; Weekes & Co., Dartford, 230*l*.

Chatham.—The works in connexion with the restoration of St. Bartholomew's Chapel, Chatham, built by Bishop Gundulph, in the twelfth century, have been commenced, from the designs of Sir Gilbert Scott. The restoration works include the circular apse, chancel, and north transept, together with other portions of the edifice, should the funds at the disposal of the restoration committee prove sufficient. The contract has been taken by Mr. White, of London, who has been engaged in the restoration of Rochester Cathedral.

St. Giles's-in-the-Fields.—The Parish Church of St. Giles-in-the-Fields having been recently restored, under the direction of Mr. A. W. Blomfield, was reopened on the 10th inst.

Bourton-on-the-Water.—The parish church of Bourton-on-the-Water, of which the nave has been closed for the last three months, during the completion of the new aisle, is to be reopened on the 17th inst. The work of restoration has now been going on for three years. First, the chancel was restored, with new roof and oak fittings, a

new chancel arch built, and the nave reseated; and the church, thus far restored, was opened for service by the Bishop of Gloucester on December 23, 1873. During the past twelve months further works have been in progress. The north wall of the nave has been arcaded, and an aisle of the same size as the nave has been added northwards; and to the east end of the aisle has been added a vestry and organ-chamber. The architect is Mr. T. G. Jackson; the builder is Mr. Bartlett, of Witney.

DISSENTING CHURCH-BUILDING NEWS.

Monton.—A new Unitarian church, built at a cost of 13,679*l.*, in place of a smaller structure erected in 1802, was opened on the 23rd ult. at Monton, near Eccles. The church has been specially planned with a view to congregational requirements, all the sittings in the nave being placed within the line of the columns, so that the whole of the congregation can see the pulpit and reading-desk, clear of any obstruction from pillars, the aisles being formed into spacious, well-lighted ambulatories, 7 ft. in width, which can be made to accommodate a number of additional seats when necessary. There is accommodation for 510 sittings. The exterior of the church is faced with parpoints, with dressings of Darleydale stone, the interior arches and columns being of Hollington stone. There are a tower and spire at the south-west angle, rising to a height of 150 ft., and containing a lofty belfry stage, pierced by two large traceried windows of two lights on each face. Mr. T. Worthington, of Manchester, is the architect, and the contract was undertaken by Messrs. Clay & Son, of Audenshaw.

Stroud.—On the 23rd ult. Mr. Marling, M.P., laid the foundation-stone of a Wesleyan Chapel in Castle-street. The new site was purchased for 800*l.*, and the contract for the building amounts to about 2,700*l.* The style is Grecian, and the materials will be freestone and brick. Mr. Tait, of Leicester, is the architect, and Mr. Drew, of Chalford, the builder.

Hull.—On the 30th ult. the foundation-stone of the Hessle-road Congregational Church was laid by Mr. W. Irving, J.P. The building will be in the Geometrical style of Gothic architecture, and will accommodate about 850 persons. Galleries will be erected over the north end of the nave, and in the transepts. The plan of the building shows a nave of good width, and lofty proportions, whilst the east and west transepts are rather shallow, but of nearly equal width. Immediately adjoining the chapel is a school-room, opening from the main building, and close by are vestries, &c. Red stock bricks, with dressings of Ancaster stone, will be the materials used. The woodwork inside will be of fir, lightly stained and varnished. The architect is Mr. Samuel Musgrave, of Hull; and the builder, Mr. John Barry, of Scarborough, to whom the contract has been let for 5,400*l.*

Birmingham.—The Church of the Messiah, Broad-street, Birmingham, was reopened on the 3rd inst., after alterations and redecoration by Mr. Taylor, of the firm of Taylor & Parker. The architect was Mr. Phipson.

Malvern.—On the 29th ult. the memorial-stone of a new Congregational Church at Great Malvern was laid by Mr. T. R. Hill, M.P. The new church, which is estimated to cost 4,500*l.*, will occupy a site at the foot of North-hill, on the Holly Mount estate, and is designed in the Middle Pointed style, the walls being built of Cradley stone lined with brick. A tower and spire will be built at the north-east angle, to a height of 110 ft. The church will consist on plan of a nave and side-aisles, with 400 sittings on the ground floor, provision being made for a gallery at the north end if required in the future. Its dimensions are, internally, 70 ft. by 42 ft., and the architect, taking advantage of the levels, has provided for a series of class-rooms below. Mr. J. Tait, of Leicester, is the architect, and Mr. Meredith, of Gloucester, is the builder.

Weymouth.—Memorial stones of a new Primitive Methodist Chapel were laid at Weymouth on the 29th ult. The style of the building is Gothic, and the materials to be used are brick, with stone dressings. The cost will be 650*l.* Mr. L. Bartlett, of Weymouth, is the contractor; and Mr. Samuel Jackson, of Weymouth, the architect.

Crowborough.—The foundation-stone of a new Primitive Methodist Chapel was laid at Crowborough, Kent, on the 6th inst. The chapel, which will be erected from plans prepared by Messrs. Weeks & Hughes, architects, of Tunbridge Wells, will be of red brick with stone facings, and will seat 200 persons. The cost, including site, will be 500*l.*

Mold.—The Welsh Calvinistic Chapel, Mold, was reopened on the 3rd inst., after alterations and redecoration. The chief alteration has been the pewing off and raising in tiers of the gallery. The architect has been Mr. Owens, of Breck-road, Liverpool, and the contractor, Mr. E. Peters, of Leeswood, the cost being about 600*l.*

ROMAN CATHOLIC CHURCH BUILDING NEWS.

Birmingham.—A new Roman Catholic Church, dedicated to St. Catherine of Sienna, was opened at Birmingham on the 28th ult. The site is in the Horse Fair, and the style is that of the transition from Norman to Early English. The principal material used is brick, with stone dressings. The main or west front is 80 ft. high, and is relieved with intersecting round-arched colonnades in Bath stone, the shafts being of Kilkenny marble. Above this is a large five-light window, and below are the principal entrance doorways. Internally the walls are faced with white bricks, relieved with bands of red. In plan the church will ultimately comprise nave, aisles, and chancel, but at present only the nave and aisles are completed. The nave is 105 ft. long, divided into nine bays by eight columns of red Mansfield stone, with bases of grey Pennant, and capitals of white Mansfield. The arches are circular-headed, and relieved with nail-headed mouldings. The clear-story windows will be twenty in number, and very lofty. The breadth of the church, including nave and aisles, is 57 ft. The chancel arch, which is at present bricked up, is 50 ft. high. The roof principals spring from corbelled shafts of polished Kilkenny marble. At the west end is a small organ-gallery over the porch. The cost, including site, is about 10,000*l.*, but in order to build the chancel and erect the tower and spire, which is to be 175 ft. high, about 5,000*l.* more will be required. The architects are Messrs. Dunn & Hansom, of Newcastle.

Guildford.—The memorial stone of a new Roman Catholic Church was laid on the 21st ult. in the grounds of Sutton-place, near Guildford, the seat of Mr. F. H. Salvin, by Dr. Danell, bishop of Southwark. St. Edward's Church, as it is to be called, will be built in the Early English style, and constructed of brick faced with flint. The site is a commanding one, and close to the ancient mansion of Sutton-place, built by Sir R. Weston, knight, in the time of Henry VIII.

York.—The new Convent and Church of St. Joseph, just outside Walmgate-bar, York, were dedicated on the 29th ult. Mr. G. Goldie, of London, is the architect.

West Bromwich.—On the 5th inst. the Rev. Dr. Ullathorne, of Birmingham, laid the foundation-stone of a new Roman Catholic Church at West Bromwich, dedicated to St. Michael and All Saints. The new church will be in the Early English style, and will, when completed, cost about 4,500*l.* When finished it will have a frontage to the High-street, with a tower at one corner. At present it is not intended to complete the edifice according to the plans. What will be done will be the erection of a nave 65 ft. by 20 ft. wide, and a chancel 21 ft. by 20 ft. There will also be a north aisle, 11 ft. by 9 ft., and one side chapel at the east end of the aisle. Until the base of the tower is finished it will only be aisle high. Afterwards, and when the whole of the alterations are made, there will be a south aisle with a chapel at the end of it, with a space for a sacristy, and, if required, an organ-chamber. The nave piers will be of Bath-stone, having brick arches above them, and will be lighted by six lancet windows. Externally red pressed bricks with Bath-stone dressings will be used, and internally the edifice will be lined with white bricks and ornamental bands of terra cotta. The building, so far as it will be immediately completed, will cost 2,500*l.*, and will seat 400 people. Messrs. Dunn & Hansom, Newcastle-on-Tyne, are the architects, and Messrs. Barnsley & Son, Birmingham, the builders.

Monkwearmouth.—The prizes and certificates granted by the Science and Art Department to the students of the science classes, at the Workmen's Hall, Monkwearmouth, who passed the last examination, were presented by the Mayor of Sunderland, at that institution, on the 12th of October.

STAINED GLASS.

Shippon (Oxon).—A memorial window has been executed by Messrs. Holland & Holt, of Warwick, for Shippon Church, containing two subjects under canopies,—Christ bearing His Cross, and the Ascension; in the tracery an angel bearing a scroll and ornament. A brass plate is fixed under the window explaining that the whole was erected by the committee, in memory of the Rev. James Hodges, for eight years vicar of the parish, and Caroline Mary, his wife.

Epsom.—A window has been recently placed in the chapel of the Royal Medical Benevolent College, Epsom, to the memory of Bishop Wilberforce, who held a confirmation there only two days before his sad death, and which, it is believed, was the last public duty performed by him. The window will be in the style of art prevalent in the latter part of the fifteenth century. The subjects are placed beneath canopies, and are "Confirmation," and "Our Lord blessing little Children." The head of the Bishop in the confirmation subject has been taken from a likeness of Bishop Wilberforce. In the tracery-pieces at the upper part of the window are figures of St. Peter and St. Paul, and at the extreme base is a short memorial inscription. The window was designed and completed by Mr. Francis A. Oldaker, of Epsom.

Miscellanea.

The Thames Steam Ferry.—The Thames Steam Ferry Company (Limited) is instituted to supply in part the much-felt want of a below-bridge communication between the Middlesex and Surrey sides of the River Thames, by means of a steam ferry for the transmission of loaded wagons of any size or weight, carts and carriages, with their horses, as well as of passengers and goods. The site which has been selected for the ferry is one mile and a half below London Bridge. It is close to the Thames Tunnel, and is in immediate proximity to the London Docks and St. Katherine's Docks on the one side, and to the Commercial Docks on the other. The outlay which will be required is estimated at 56,360*l.*, and it is estimated that the annual earnings will be 30,000*l.*, as against 11,300*l.* expenses, leaving a net profit of 18,700*l.* The first portion of the works, consisting of river walls, and engine and accumulator houses, is now in hand. Messrs. A. R. Stenning and J. B. Tyerman are the architects; and Messrs. Lee & Son, of Westminster, are the contractors. On Monday last a large number of gentlemen assembled to witness the ceremony, performed by the Lord Mayor, of driving a main pile of the company's pier at Wapping.

Druidical Stones at Holywood.—A correspondent of the *Dumfries and Galloway Courier* gives some particulars of the Druidical circle of stones at Holywood, near Dumfries. He says that the cromlech and the tall stone opposite to it are in precisely the same relative position with regard to each other as are the altar stone and the stone of astronomical observation at Stonehenge; that is to say, when standing on the altar stone at Stonehenge, and looking over the top of the stone in the avenue called the "Friar's Heel," you will find that this friar's heel is a little to the north of the east, and that is exactly the position which the tall stone facing the cromlech at Holywood bears to the cromlech. At the summer solstice, the Arch-Druid or any one else standing on the altar stone at Stonehenge and looking over the top of the stone in the avenue would see the sun rise exactly over the top of that stone on the morn of the summer solstice, and any one who likes to stand at the cromlech at Holywood, at sunrise on the 21st or 22nd June of any year, can see the same thing, for the sun does not rise exactly in the east at the summer solstice, but a little to the north of the east.

The Kensington and St. Luke's Surveyorships.—At a meeting of the Kensington Vestry on the 5th inst., the Works and General Purposes Committee *inter alia* reported that they had turned their attention to the retirement of Mr. James Broadbridge, consequent upon ill-health, from the position of surveyor to the Vestry, and they recommended that a superannuation of 250*l.* per annum be granted to him. The recommendation was agreed to. At the last meeting of the St. Luke's Vestry, the death of Mr. Niblett, the surveyor of the parish, was announced.

Water in England.—At the Bristol meeting of the British Association for the Advancement of Science Mr. De Rance read an abstract of the preliminary report of the committee appointed last year "for the purpose of investigating the underground waters in the new red sandstone and permian formations of England, and the quality and character of the water supplied to various towns and districts from these formations." The committee have circulated a form of inquiry to elicit the information necessary to carry out the investigation with which the Association has entrusted them, and valuable returns have already been made. But it seems that through the action of certain corporations and companies seeking additional Parliamentary powers, and from other causes, information has been withheld from the committee; and that firms and individuals in some towns have also refused to communicate the results of wells and well-borings made by them. The report mainly consists of long lists of strata passed through in the sinking of various wells, and analyses of the waters obtained.

The Artisans' Dwellings Act.—We learn that Dr. Tidy, the medical officer of health for Islington, has submitted to the Sanitary Committee of the Vestry a list of places in the parish to which the Act should be applied. We can bear witness to the necessity.——The Committee of Works of the Chelsea Vestry are deliberating, and in conjunction with the medical officer of health, will immediately report to the Vestry, in accordance with the following resolution just passed by that body:—"That the medical officer of health of the parish of Chelsea do furnish the Vestry with a list of houses in the parish over which he has sanitary *surveillance* which are, in his opinion, by reason of want of light, air, ventilation, sanitary convenience, and other causes, unfit for human habitation, and require re-arrangement and reconstruction according to the terms of the Artisans' Dwellings Act; and that the surveyor do furnish the medical officer with all particulars."

The Birmingham Improvement Scheme. The Birmingham Town Council held a special meeting on the 12th inst. to consider the new improvement scheme. It is proposed to construct a new street over a length of forty-three acres and a half of land, demolishing a great number of rookeries. The total cost is estimated at over 1,000,000*l.*, but by reselling land the net cost of the street will be reduced to 461,000*l.* The Mayor stated that 9,000 people would probably be displaced by its operation, and in the opinion of several architects he had consulted, by an improved construction they would be able to build abodes for 18,000. A long debate followed, but no opposition was offered, and on the resolution being put it met with unanimous approval. A resolution was passed authorising the Improvement Committee to take such formal and legal measures as are necessary for the completion of the scheme.

"Improving Away." — "Conservator" writes to the *Times*:—"For nearly 600 years the full-sized effigy of Sir Robert de Septvans, a crusader—one of the most famous brasses in England—had remained undisturbed in the chancel of Chartham Church, Kent. Hard by were the effigies of two priests, who were rectors of the parish, and died in 1454 and 1508. Can it be believed that on the authority of the rector, these interesting monuments have been removed to make way for a modern encaustic tile pavement? I appeal, Sir, to you, in the hope that at last some practical steps may be taken to protect monuments of historical interest from Vandalism, which is none the less destructive because it may have been done with the plausible motive of 'improving' a church."

Drinking Fountain for Kidderminster.—Mr. Brinton, J.P., intends presenting a drinking-fountain to Kidderminster, and has instructed Mr. Meredith, a local architect, to prepare a design, which was on the 30th ult. submitted to the Improvement Committee of the Town Council. The fountain will be a satisfactory substitute for the old Kidderminster toll-gate, upon the site of which it will be erected. The structure will be Gothic in style, octagonal on plan, 12 ft. 6 in. across, and will stand on a pedestal 22 ft. across. Its total height is 32 ft., the materials used being granite and Forest of Dean and York stone. It will contain a clock with illuminated dial, and on each of three faces drinking-fountains, together with one for dogs. It will be inclosed by railings, and in front and around evergreen shrubs will be planted.

Curious Discovery.—The *Cronstaat Messenger* announces that, during the reconnaissance recently effected in the Steppes by the Russian troops of the Transcaspian section, they discovered the ruins of an ancient city, the existence of which was hitherto unknown. From what is reported, the remains prove that the place possessed a large sedentary population. Several minarets of Arabic architecture were found in a very good state of preservation, owing to their remarkably solid construction. The inscriptions which were found on many of these ruins were copied by the officers of the expeditionary column, and have been submitted to the examination of competent Orientalists. The site of the unknown city bears the traces of a vast system of irrigation, and a plentiful supply of drinkable water is still found there.

Work and Wages.—It is announced that at the solicitation of the Cobden Club, Professor Leone Levi has consented to deliver during the winter a series of lectures on work and wages to the members of the working men's clubs of the metropolis. It is probable that the lectures will be delivered in the theatre of King's College, the use of which has been granted by the council of the institution. After each discourse opportunity will be given for asking questions and discussing the views advanced by the lecturer; and at the close of the series an examination will be held and prizes will be given by the Workmen's Club Union to those who give the best answers to the questions which will be asked in reference to the matters dealt with by the lecturer.

Palestine Exploration.—A correspondent from the East writes:—"The American Palestine exploring party left for the east of the Jordan on Thursday, September 1st. It consists of Colonel Lane, chief engineer and commander of the party; Dr. Selah Merrill, archæologist; Mr. Rudolph Meyer, assistant-engineer; and Mr. J. Harvey Treat, general assistant. They will make a preliminary reconnaissance of forty-five days in the Hauran, Bashan, and Moab, and then begin their cartographical work. The maps to be constructed by the American expedition east of the Jordan, and by the English expedition west of the Jordan, will be of immense value, and the Porte might well afford to assist in bearing the expense."

Ecclesiastical Exhibition.—As usual for many years past, an ecclesiastical exhibition accompanied the Church Congress, but (according to the *Staffordshire Advertiser*) the exhibition held last week at Stoke failed to keep pace with the use of ecclesiastical adornment, structural and otherwise. The display of material ornamentation in matters that have moved, and are still moving, the Church, was confined to a competitive exhibition between Messrs. Jones & Willis and Messrs. Cox & Sons. Both firms exhibited a quantity of brass work; the former added a carved oak lectern, and other carved oak work; and the latter exhibited in a piece of tapestry, a modern adaptation of the weaving and printing machines to meet the taste for mediæval religious industries. The Campbell Brick and Tile Company were exhibitors.

The Regent Murray Memorial, Linlithgow. — Three centuries have elapsed since James Stuart, Earl of Moray, was assassinated. The people of Linlithgow have erected a commemorative bronze medallion or mural tablet, which has been unveiled by the Earl of Rosebery. The medallion was drawn by Sir Noel Paton, and modelled by Mrs. D. O. Hill; and the bronze of which it is composed was manufactured by Messrs. Milne & Son, Canongate, Edinburgh. The figure of the Regent, it is stated, was taken from a painting in Holyrood Palace. The tablet bears the following inscription:—"On the street opposite this tablet Iames Stvart, Earl of Mvrray, Regent of Scotland, was shot by Iames Hamilton of Bothwellhaugh, on 20 Ianvary, 1570. Erected in 1875."

Goole Market Hall.—The Goole Market Hall Company has accepted the tender of Messrs. Radcliffe & Radcliffe, of Rotherham and Doncaster, for the execution of the works in connexion with the new Market Hall. The contract is to be completed by December 31st, and includes besides the re-erection of the old Doncaster Corn Exchange, the construction of a row of offices and shops.

South Milford School Board.—The Board have selected Mr. Bakewell's (of Leeds) design bearing the motto "Apollo," and have appointed him architect to the Board. Six architects were invited to compete.

Treasure Trove.—The leases of the greater part of the property on the east side of High-street, Shoreditch, having recently lapsed, nearly the whole of the shops between Bethnal-green-road and the parish church are about to be pulled down and rebuilt. On the 9th inst., while the workmen were engaged in excavating the foundations of the shop known as the "Bonnet Box," an immense chest, 6 ft. long, 3½ ft. wide, and 3 ft. deep, was discovered, we are told, buried at a considerable depth from the surface. On being opened, it was found to contain a large quantity of church plate, consisting, among other things, of a ciborium, two silver pyxes, an ancient chalice, an elaborately-chased sanctuary lamp of great size, and a number of other articles.

Sewage Works at Kingston.—The Hampton Wick Local Board, at their last meeting, after hearing the opinion of the medical officer of health that the contemplated erection of sewage-works by the Native Guano Company to Kingston would be prejudicial to health, resolved to give notice to the town council of the latter place that they would instruct their solicitor to file a bill in Chancery against the corporation of Kingston, to restrain the erection of the works, when they received an intimation in the course of the week that the intention to erect the works would be abandoned.

Artisans' Institute, Castle-street, Upper St. Martin's-lane.—The following lectures will be delivered in October (free to members):—October 16th, "St. Eligius, the Patron Saint of Goldsmiths and Jewellers, a Mediæval Hero," by the Rev. P. H. Wicksteed, M.A.; October 23rd, "Our Indian Empire, with Recollections of the Indian Mutiny," by Mr. James Neat (late corporal in the 80th regiment); October 30th, "On Railways, their Construction and Working," illustrated by models and diagrams, by Mr. W. Smith, C.E.

New Rectory House at Wimblington.—Some active preparations are in progress for building the new rectory-house for this parish, the plans showing a building of the domestic Gothic style of architecture similar to the rectory-house of St. Mary, March. The site chosen by the rector, the Rev. J. Hill, is what is known as Reed's Closes, adjoining the turnpike-road, not far from the toll-house, and on the same side of the road. The site is such an admirable one that we are not surprised at its being selected. Mr. W. Smith, Adelphi, London, is the architect; and Mr. W. Hutchinson, of March, the builder.

Slate Laps. — At the Salford Police-court lately, Thomas Valentine, builder, Broughton-road, Pendleton, was convicted, at the instance of the Town Clerk (Mr. C. Moorhouse), of having covered a number of new houses in Bury-street, Pendleton, with slates having laps only 2½ in. wide instead of 3 in., as required by the regulations of the Corporation. The Town Clerk said builders were getting very loose in their dealings with the authorities, and therefore he must press for the imposition of a heavy penalty. The Bench ordered Mr. Valentine to pay 10*l.* and costs.

The Ramsgate Surveyorship. — At the meeting of the Ramsgate Local Board, on the 5th inst., the resignation of the surveyor (Mr. Ellice-Clark) was received, and it was unanimously resolved that the clerk be instructed to write to Mr. Ellice-Clark, and thank him for his very efficient services, and congratulate him upon his promotion to an appointment of a more lucrative character. Mr. Ellice-Clark, as stated in last week's *Builder*, has been elected to the Derby surveyorship.

Dancing for Workmen.—In continuation of the paragraph, under the above heading, that appeared in last week's *Builder*, the application, on behalf of the Grosvenor Workmen's Club, for a licence for music and dancing was brought before the bench at the Middlesex Sessions, when counsel for the Vestry urged that dancing was quite foreign to the interests of working men. The music and dancing licence was refused by a very large majority of the justices, but a licence for music only was granted unanimously.

Chatham Dockyard.—The vacant appointment of principal draughtsman in the constructing department at Chatham dockyard has been conferred by the Admiralty on Mr. A. H. Malpas, first-class draughtsman at Portsmouth, and acting foreman at that yard. Mr. Malpas will, for the present, continue his duties at Portsmouth, Mr. R. Palmer having been appointed acting first-class draughtsman at Chatham.

The Park-lane Drinking-Fountain.—Attention is called to the fact that although it is now some months since Mr. Thorneycroft completed, by the orders of the late Miss Browne, the drinking-fountain which stands near the bottom of Park-lane, it is as yet a mistake to call the structure a drinking-fountain, for though it is plainly erected as such, not a drop of water comes from it. The present surroundings of the fountain, too, are, to say the least, not very creditable.

Epping Forest.—At a meeting of the Court of Common Council on the 7th inst., it was reported that 2,000 acres of land, which had been enclosed, would now be thrown back into Epping Forest, making its whole extent 5,000 acres. The occupants of about 1,400 acres, on which large mansions had been built, would not be called upon to clear away their buildings, as they had paid full value for the land, but they would have to pay quit rents, which would be spent in keeping up the forest.

Sowerby Town House.—The erection of this building is to be proceeded with at once. The contractors are Messrs. Siddal & Siddal, masons; Messrs. Schofield & Boocock, carpenters; Mr. Joseph Barker, plumber; and Mr. George Hoyle, slater, &c. The total cost will be under 1,000*l.* The site, containing about 360 square yards, has been given by Mr. John Rawson, of Brockwell. When completed, the building will supply a great need to the town of Sowerby.

South Kensington National Training School of Art.—The first of the seventh course of forty lectures on the Historical Development of Ornamental Art, with special reference to architecture, sculpture, painting, and the general principles of æsthetics, was delivered by Dr. Zerffi, in the Lecture Theatre, on Tuesday last. These lectures were formerly delivered at three o'clock in the afternoon, but will in future be delivered every Tuesday evening at half-past seven.

Artificial Stone.—Mr. Firling, painter, &c., of Dorchester, is stated to have invented a process by which he converts chalk into a substance exactly resembling stone, not only in appearance but in consistency, hardness, and durability, as well as resistance to the action of weather. It is claimed that it possesses the merit of economy, as the proportions are six of chalk to one of cement. The new material can be moulded to any desired form.

The Engineer to the Tunbridge Wells Town Commissioners.—At a meeting of the Tunbridge Wells Town Commissioners, on the 6th inst., the salary of Mr. Brentnall, the engineer, was increased from 300*l.* to 400*l.* An amendment proposing to fix the salary at 350*l.* was rejected by 16 to 5.

Opinions differ.—Some letters have appeared in the daily papers as to the pulling down of "a grand old mansion" in Leadenhall-street. A correspondent writes to us that he went to see it and found nothing, from an art point of view, to pay him for the trouble. The house is of the time of Queen Anne.

New Temperance Hall at Banbury.—On the 5th inst. the foundation-stone of a new Temperance Hall, in Bridge-street, Banbury, was laid. The building will cost about 3,500*l.* Mr. Ingall, of Birmingham, is the architect; and Messrs. J. & T. Davis, of Banbury, are the builders.

The Improved Industrial Dwellings Company.—With a view to much extended operations, the directors have decided to recommend that additional capital to the amount of 250,000*l.* be raised by the issue of 25,000 shares of 10*l.* each.

The Exeter Reredos.—The *Western Times* states that the reredos in Exeter Cathedral, about which there has been so much litigation, is being taken down. It is not known, however, whether it is to be removed from the cathedral altogether.

Sutton School Board, Surrey.—Mr. C. Woods, of Brixton, has been appointed as clerk of the works to the Sutton (Surrey) Board School buildings by the School Board of that town. Mr. Richard Gane is the architect.

Durham City Improvements.—The corporation of this city, on Wednesday, the 6th inst., unanimously elected Mr. William Crozier, C.E., county engineer and architect for the county of Durham, engineer for the improvements.

Photographic Society of London.—The annual exhibition of photographs is now open in the Gallery of the Water Colour Society, Pall-mall East, and well deserves a visit. The chief advance made is in the enlargement of smaller works.

Church Building in the Diocese of Lincoln.—At the Lincoln Diocesan Conference, held last week, the Bishop (Dr. Wordsworth) stated that since 1810 nearly a million sterling had been spent in building and restoring churches in the diocese.

The Rugby Brickmakers' Strike.—The brickmakers of Rugby, who have been on strike for an advance of wages, have resumed work, the masters giving the men what they asked for, viz., 7d. per hour. It was previously 6½d. per hour.

Architectural Association.—The first incident in the Architectural Session is usually the *conversazione* of the Architectural Association. It will be held on the present occasion on Friday evening, the 29th inst.

TENDERS

For sewerage works, Hertford-heath, Herts, for the Hertford Rural Sanitary Authority. Messrs. Smith & Austin, engineers. Quantities supplied:—

Clark & Randall	£638	14	0
Acock	757	12	10
Taylor	716	0	0
Pound	614	15	0
Dover, Son, & Co.	649	0	0
Potter	548	0	0
Williams	525	0	0
Bloomfield	514	0	0
Green	500	0	0
Gray (accepted)	486	0	0

For sewers, Field-road and adjoining streets, Fulham, for the Fulham District Board of Works. Mr. Alfred C. Bean, engineer. Quantities by Mr. Alfred J. Bean:—

Dover & Co.	£2,516	0	0
Pizzey	2,250	0	0
Wigmore	2,210	0	0
Howell	2,050	0	0
Acedie	2,023	0	0
Torkinton	2,017	0	0
Thompson & Son	1,9	0	0
J. & S. Williams	1,890	0	0
Nowell & Robson (accepted)	1,795	0	0
Kelly	1,770	0	0

Accepted for St. Catherine's Church, Sandal Magna, near Wakefield. Mr. William Watson, architect:—

Fawcett (stonework)	£1,200	0	0
Craven & Lloyd (carpenter, &c., work)	595	0	0

Accepted for Goole Cemetery Chapels, &c. Mr. William Watson, architect:—

Senior (drainage, roads, &c.)	£903	0	0
Elliott (excavating, stone, and plastering)	1,638	7	0
Rawlins (slating)	111	0	0
Huntington (carpenter and joiner's work)	3 8	10	9
Shirtcliffe (plumbing and glazing)	93	11	4
Heaps & Robinson (ironwork)	217	0	0
Butler (painting and staining)	41	15	0

Accepted for Fever Hospital, Wakefield. Mr. William Watson, architect:—

J. & G. Summers (excavating, brick, and stonework)	£2,050	0	0
Rycroft (slating)	2 1	0	0
Daniel (plastering)	81	14	8
Craven & Loyd (carpenter, &c., work)	638	10	0
Jones (plumbing and glazing)	291	0	0
Heaps & Robinson (ironwork)	256	14	2
Naylor (painting)	39	0	0

Accepted for schools for 225 children, teacher's residence, outbuildings, and boundaries at Carlton, for the Lofthouse and Carlton School Board. Mr. William Watson, architect:—

Chapman & Sons (excavating, brick, and mason's work)	£1,798	17	8
Rawlins (slating)	120	0	0
Welsh (plastering)	52	18	4
Gill & Son (carpenter & joiner's work)	397	0	0
Brooke (plumbing, glazing, ironwork, and gasfitting)	267	0	0
Barker (painting and staining)	34	17	3

Accepted for schools for 225 children, teacher's residence, outoffices, and boundaries at Robin Hood, for the Lofthouse and Carlton School Board. Mr. William Watson, architect:—

Verity (excavating, brick, & stonework)	£1,835	8	0
Pycock & Sons (slating)	128	10	0
Walsh (plastering)	56	12	7
Colam (carpenter and joiner's work)	419	0	0
Brooke (plumbing, glazing, ironwork, and gasfitting	291	0	0
Barker (painting and staining)	32	16	8

For the erection of new warehouses in Addle-street, City, for the Worshipful Company of Brewers. Mr. E. H. Martineau, architect:—

	Warehouses.		Repairs.	
Ashby & Horner	£6,920	0	£170	0
Longmire & Burge	6,811	0	160	0
Holland & Hannen	6,393	0	152	0
Cubitt & Co.	6,344	0	170	0
Brass	6,189	0	175	0
Lawrance	6,189	0	115	0

For erection of a new Wesleyan Chapel at New Basford, Notts. Mr. Wm. Ranger, architect:—

Bell & Son	£3,779	0	0
Hodson & Fweon	3,709	0	0
S. & J. Cargill (accepted)	3,304	0	0

For erection of the Temple Works in Cursitor-street, Chancery-lane, for Mr. Bell. Mr. H. S. Legg, architect. Quantities supplied by Mr. Griffiths:—

Bamford	£7,750	0	0
Ebbs	7,103	0	0
Wagstaff	6,515	0	0
Downs & Co.	6,470	0	0
Elkington	6,410	0	0
Chapman	6,310	0	0
Scrivener & White	6,295	0	0

For additions and alterations to No. 17, Marylebone-road, for Mr. R. Shaw. Mr. C. N. Deazley, architect. Quantities by Mr. F. T. Mullett:—

			Deduct for old Materials.		
Vernall & Griffiths	£1,489	0			
Longmire & Burge	1,436	0			
Perley	1,374	0	£6	0	
Kelly, Bros.	1,359	0	23	0	
Adamsons	1,353	0	15	0	
Bayes & Ramage	1,321	0	20	0	
Staines & Son (accepted)	1,273	0	25	0	

For the Stirling Castle, Camberwell, for Mr. John Wright. Messrs. Nunn & Green, architects:—

Grimwood & Sons	£2,818	0	0
Pigerstill	2,750	0	0
Coles	2,694	0	0
Lamble	2,620	0	0
Toms	2,570	0	0

For new buildings at the Hants County Lunatic Asylum at Fareham. Mr. T. Stopher, architect:—

Dover & Co.	£32,681	0	0
Martin & Wells	30,353	0	0
Hill, Higgs, & Hill	28,900	0	0
Longley	28,457	0	0
Ward	28,200	0	0
Light	28,100	0	0
Stevens	27,416	0	0
Hayter	26,700	0	0
Crook	26,495	0	0
Cole (accepted)	24,199	0	0
Oxley	22,880	0	0

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We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

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The Builder.

VOL. XXXIII. No. 1707. SATURDAY, OCTOBER 21, 1875.

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Religious Art, on the Theory of the "Inspired Workman."

THE series of unjustifiable attacks on the architects, and indeed on most of the educated classes of this country, which have so much tended to impair the long-established prestige of a well-known Review, have been continued in an article which opens the October number of the *British Quarterly Review*, under the title of "Religious Art." The appearance of such an article in any journal, except those that avowedly cater for the taste which mistakes total absence of delicacy for vigorous writing, is matter for surprise, as, although the chief injury done is to the credit of the periodical itself, the mishap tends to confuse and mislead the minds of those readers who are taken by surprise.

A notion of the style of the article may be easily conveyed. "At Windsor the new reredos, bedaubed with heavy gilding, parti-coloured marble, and cheap jewelry, looks as if especially designed for a casino, and the old tomb-house has been made to don the spangles of a pantomime." "The pretty reredoses at Gloucester and at Worcester and Carlisle are . . . . costly exhibitions of mere baby-mindedness." "In the public eye an altar with its reredos and impressive symbolism is allied with the insignia that conjurors and wizards use to impress their wondering spectators." At St. Paul's the "altar-cloths are exhibitions of mere flunkeyism, which associate in strict propriety with hammer-cloths and shoulder-knots." We cannot wonder, after this, to find that "the clergy evidently are bewildered," since "the great authoritative mission of the church of old was to proclaim the inevitable alternative of a blessing and a curse; but now a curse is constantly associated with the blessing." The curse seems, however, to revel in one in the pages we have cited.

One clergyman, a man known and respected in literature and scholastic labours, who holds that art has her ministry to fulfil in the religious life of man," is oracularly informed that though his "knowledge is defective, the opinions erroneous, and the feeling not quite true, the will is evidently good." It must be highly satisfactory to Professor Plumptre to obtain even such small mercies among "clerics, respectful, if clergymen ridiculous." Others of his cloth have less credit. "The whole assembly" of connoisseurs and clerics, men of the profession, and of Parliament," that were gathered together at the re-opening of the Chapter-house at Westminster "was not in acumen, or artistically, worth the wages of the Mediæval carver that hewed out" the figures over the door "at a workman's rate of pay." This indicates the belief of the writer.

The chief virulence, however, of the pages under notice is concentrated on two very different pictures by Gustave Doré and Holman Hunt. We are not about to assert that either of these pictures is beyond criticism. Quite the reverse. We are not amongst their great admirers. Very varied opinions are formed as to each. That each evinces extraordinary powers, that each has long occupied the anxious care of an earnest artist, who did not disbelieve in the religious character of art, and that each is dear to the memory of a large number of enthusiastic and grateful admirers, there is no doubt. Criticism of such works should be somewhat reticent. It should respect the feelings, and remember the honest labour, of men who have made for themselves great fame. It should respect the feelings of their friends and admirers. Nor should it omit to show what qualification a volunteer critic has to speak on the subject, beyond the faculty of throwing mud with both hands.

Of the object of this article, further than such as is common to incompetent persons afflicted with the *cacoethes scribendi*, it is difficult to form any distinct idea. Of general abuse there is abundance, but no light comes from behind the sulphurous smoke. Our old acquaintance, "the inspired workman," comes to the fore, but his form is as unreal, shadowy, and incongruous as ever. He is affronted at not being asked to meet "the connoisseurs and clerics, men of the profession and Parliament," at the reopening of the Westminster Chapter-house. He is stated, on the assigned authority of the Pentateuch, to be "wise-hearted, that is, a free imaginative workman." Of his productions the "unperverted influence is always good," although at the same time he is yet in need of some one "to gain for him his ancient social dignity and mental freedom," and to restore him "to reasoning intelligence, to imaginative power, and to artistic self-control." We feel that he is thus a being not of the present, but of the future, and might possibly mitigate the enormity of the omission by the Dean of Westminster to invite artworkmen to the gathering above designated; even if such had been the case, and we know it was not.

Art, indeed, is a noun substantive to which so many adjectives are attached in the objurgations of the writer quoted, that it becomes something far more unintelligible than the most perplexed *substantia* of the schoolmen. First of all, "Art is work. Labour is its foundation." "Art has no religious side," although it "has undoubted influence on the mind," and "charms and glorifies the non-religious side of human nature." Further, "it seems that Mr. Hunt has fallen into the very common error of esteeming art to be didactic." "Art can teach no lesson save that it cannot teach." If we refer to the logical debates as to the quantification of the predicate, we shall be able freely to admit that there are persons whom art cannot teach. It would be more difficult to point out what could teach them. At the same time, "Art is in its origin divine." That being so, and it being also synonymous with work, we conclude that it is here regarded as the primeval curse,—under which man was to eat his bread. Such is not the usual conception. But we must not quarrel with the sense in which a writer uses a term he does not understand, so only that he states what he understands by it, and always keeps to the same sense of the word. Still, it passes our poor capacity to understand how anything that not only is so far from being religious, that it is thought a capital bit of satire to add to it the epithet religious in turned commas, but that has not even a religious side, and that cannot teach, should yet by "its spirit" bring "the workman into apposition with the Almighty worker," lead "men into glorious association, and to glorify the heavenly Creator."

We have, we hope, said enough. His own words are all that are requisite to give an idea of the taste and of the calibre of the writer. It would be loss of time to seek for any clear idea in such pages. A fierce spirit of hatred bursts in lambent flame from the obscurity of the language, and darts angry tongues at anything within sight. "Clerics,"—that is to say, the ministers of religion,—"padrones (an original plural) who farm the draughtsmen,"—that is to say, educated professional men; those who, following, like women, the prevailing fashion, "accept all the trash that weak and wily connoisseurs and drawing-masters set before them"; that is, persons who wish to pay decent reverence to the house of God, and seek the best advice they can obtain for the purpose; those who receive an impression "directly kin to the delight of gaping rustics at a fair"; that is, all persons who are impressed by "storied windows richly dight," or by the tender and lofty emotions of some "dim religious aisle"; the "silly sanctimonious multitude," who form "the almost universal type"; our artists, characterised by "promiscuous venality"; "the latest style of millinery by Millais, or of top-boots by Grant"; all come in for the same courteous and discriminating allusion. Nay, even the hope of the future, "the artificer in each material," when any idea of "the æsthetic side of culture and religion" is to be awakened, only yields us "the drudging work of artisans."

The influence of such a mode of covering paper with print is mischievous in various ways. First, it tends with much certitude to obviate the effect, or to prevent the expression, of any intelligent criticism of the men, the works, or even the schools of taste, so grossly outraged. We lose all sense of actual fault under the weight of the utterly disproportioned abuse. Secondly, it ignores, and tends, so far as it has any influence, utterly to destroy, that craftsman-like bond of fellowship which ties together the good and honest workman, with the chisel, the hammer, the trowel, or any other implement of manual skill, and the equally good and honest workman with the pencil and the pen. It attempts to dis-

connect the pioneer from the main body. It would ensure military success in a camp, by suppressing videttes and sentinels, as well as by the abolition of officers. It recalls the story, at once grotesque and humiliating, of the civilian delegates who in the time of "the terror" were sent to control the military operation of those generals who, having received a military education, were suspected of being national traitors to the republic. It spreads broadcast the seeds of hate, envy, mutual contempt; it denies the ancient traditions of literature and of art; it has no gospel but the gospel of petroleum.

How different the temper, how much more subdued the tone, of the great teachers, and the great critics, of our own or of any other civilised country, we need not say. How clear, and yet how subtle, the bond that links the student of the day to the master of his art in the past, those are happiest who best know. How much necessity exists for the spread of that culture which the ignorance that we condemn seeks to destroy, the culture of which the drawing-board is the A B C, is illustrated by the very fact that men of literary eminence sufficient to raise them to the editorial chair of serious periodicals can allow such productions as we have quoted to appear in their columns.

The very transparent fallacy which underlies the whole series of attacks on professional education is the assumption that, because every true artist is a workman, therefore every workman is a true artist.

Art, indeed, can be but very dimly apprehended by any one who speaks of it as labour, enduring as is the toil of the true artist. For art, in its essential nature, is the embodiment of the conceptions of the imagination. It is the outward and visible form given to the creations of the fancy. To restrict the use of the true art to the manipulation of the chisel, of the brush, or of the trowel, by the workman, inspired or uninspired, is to indicate an advanced stage in that backward course towards savage life which forms so strong an eddy in the current of our actual civilisation. The definition given by the great legislator of European thought of poetry and music as imitating, by instruments generically different, different things, is not without its application to painting, to sculpture, and to architecture. In the last art, indeed, science has her share; and when scientific building is substituted for architectural building, we have engineering displacing architecture. By reversing the method of progress, by contemning study, by denouncing hierarchy in art and in education, by proposing that the individual whims of the several hands should dominate the studied design of the cultivated head, not only would architecture and engineering disappear, but contented squalor would replace them. There is no doubt that many powerful elements are at work, with a distinct tendency in this direction. When unchecked, they revel in the demolition of every noble monument, of every secular chapter of human history written by the builder. Improvement is always the cry; but it is, in this instance, improvement down to the dull, low level of the primæval savage.

But in so far as architecture is a fine art rather than a science, she comes under the same general rules as those which regulate not only plastic and graphic, but rhythmical and vocal arts. The genius of the great architect is allied to that of the great sculptor, painter, composer, poet, and orator. It demands, for its full display, a double sustenance. It requires the presence both of the seed and of the watered soil. Men have not been wanting, since sophists plied their trade at Athens, who have endeavoured to attract notoriety by shouting that one of the elements of successful genius was *the* element. Some have fancied that they made the discovery that man was altogether the creature of his surroundings. This heresy not only founded New Lanark, but is constantly producing, on paper, some whimsical and unhealthy Utopia. Others have given to such a phrase as *Poeta nascitur non fit*, a development never imagined by the cultured man from whom the quotation is taken. The carrying out of this error, unchecked, to the extreme, has resulted among races of our own Aryan blood in the establishment of caste. Such are the results of attempting to sever what God has joined. We are as yet too far from possessing adequate statistical information to speak with great certitude as to the probability of the appearance of native and commanding genius in any particular class of society or walk of life. But we do know that, such an appearance being granted, the height to which that genius will soar will be determined by the culture of its possessor, and that from the very earliest hours of infancy. And we are aware that, apart from disturbing causes, all that we know of animal training, as well as all that we know of ancient and established pedigree, is in favour of the assumption that there is something of heredity in the intellectual, imaginative, moral, and practical faculties. It is natural that such should be the case. It is a doctrine that was so far taken for granted by those nations which of old raised monuments of a grandeur and a beauty never since attained, that crafts and callings were among them invariably hereditary. That any advantage, personal or national, has arisen from the abandonment of this ancient family pride, has yet to be shown. That certain disadvantages have resulted there is no doubt. But we only here refer to the subject as illustrating the mode in which the different elements of birth and of education have to be regarded in our search after excellence.

Art, then, being the expression of the imagination, will reflect the colours, as well as the forms, of the conceptions of genius. The imagination of a musician breathes melody and harmony,—it expresses itself by the art of music. The religious imagination broods over religious subjects, and the resulting art, whether in its character or in its object, will be a religious art. When the natural bent of the genius seeks to express its conceptions by the methods of architecture, and when it is not towards the magnificent, the gay, the socially comfortable, or the pictorial, that the temper inclines, but towards the solemnity and the awe of religious worship, the natural language of that genius,—that is to say, its art,—will find expression in some such form as the lofty nave of St. Ouen, or the shadowy arches of Westminster. It is as absurd to say that such an expression of religious emotional sentiment is not religious art, as it is to say that mere imitation, or conventional manufacture, is entitled to that appellation. In the divine harmonies of the Messiah, or in the chants ascribed to seraphim and cherubim in the hymn of St. Ambrose, the wonderful genius of Handel is vocal. It finds expression in its appropriate art. The rugged and storm-vexed mind of Michelangelo found the vehicle of expression in marble; that of Æschylus found it in language. Whatever be the material or the method of embodiment, it is the emotional temper, as well as the intellectual power of the artist, that is reflected by his art. Thus, to deny the propriety of such a phrase as religious art, when properly applied, is to show equal unacquaintance with the genius of art, and with the true spirit of religion.

DESIGNS FOR MONUMENTS.

It is not long since we had to notice a volume of designs for sepulchral monuments emanating from Manchester, and we now have a volume of a very similar description from New York.* As in the former case, the designer appears to be also the publisher, but Mr. Franke, unlike the publisher of the English work referred to, places "architect" after his name, and we may therefore infer that he is only professionally concerned in the designs to which his name appears, and is not interested in a business way in the supply of monuments: at least, if we may argue from English custom.

Mr. Franke's designs occupy forty plates, photo-lithographed and sufficiently well executed, and are progressively arranged, proceeding from the simple headstone to the more elaborate and ambitious form of monument of an architectural character, and with the added expression derivable from sculptured figures. In regard to one point we see evidence of a marked improvement in sepulchral monuments as illustrated by this and similar publications, in the increased solidity and massiveness of their treatment. We seldom see the mere slice of headstone; nearly always some architectural form and some appearance of stability are imparted to it by a solid thickness of material, a more or less distinct and well-considered form, and a sufficiently massive base. The first headstone in the book is a very good example of these merits, and as a simple unpretending memorial stone is very pleasing, and there are others of the same kind also good. Speaking generally, this tendency to weight and solidity of aspect is entirely in the right direction as regards monumental design. Such a quality is, indeed, part of the essence of what is called "monumental" character, a word which has come to be used by critics to signify a certain quality in architectural design, independently of any "memorial" object. But we hold that a character of solemnity and immobility is that which is most suitable, on grounds of sentiment and feeling, to places of sepulchre. Certain new theories as to the disposal of the dead may, in the end, overturn a great many of our cherished associations and habits of thought in these matters, though that will not be so soon, perhaps, as some people think; and there are those, also, who are disposed to object to a prevalent aspect of melancholy and "gloom," as they say, about monuments of this class. Gloom there need not be; melancholy we think there must be, as long as human nature is what it is, in the contemplation of records of the departed; and we cannot think the feeling misplaced which would give to the structures of a "Campo Santo" an expression of calm and repose, unbroken by anything which would clash with the prevalent sentiment belonging to the place and its association.

A collection of designs like this may be criticised from two points: in regard to architectural style, and to the sentiment and idea embodied. In regard to style, Mr. Franke seems to have no special predilections, and indulges impartially in Gothic and quasi-Greek styles, the qualifying adverb in regard to the latter having reference to a certain want of purity and refinement of detail, which, however, seems to be partly the result of an endeavour at massiveness, and is at any rate no serious drawback to any other merit the designs possess. His Gothic is of the rather coarse and pronounced square type prevalent in England for some little time past, and which seems to have crossed the Atlantic; though we find sins against good taste which few English architects would now commit. Among the best of the larger architectural designs is a Saracenic one (plate xxiv.), supposed to be to some Oriental resident, apparently; the general treatment is good, but the octagonal pillar of granite which forms the centre block of the design, and up the angles of which are carried the shafts which support the canopy, is too heavy in appearance for its surroundings; the surface should have been relieved a little by ornament. It is no much use attempting to combine the monumental character with the graceful; one or other should be aimed at; the two neutralise each other when attempted in combination. The Gothic design on plate xxii. is very bad,—the Batty Langley type revived. One can hardly understand the same designer doing this attenuated thing, which shows in other pages such a decided preference for solidity of style. Indeed, the comparison of this with the canopied Gothic tomb on plate xxx., which is far superior, and utterly different in style, suggests the idea that the book has been the result of a good deal of copying of different manners in architecture, rather than of original invention or taste. There is some originality in the small drawings on plate xxxiv., in particular in the "military monument" in the form of a small built-up pyramid, with gabled doors on each face, and a cross at the apex.

As to the sentiment embodied in the monuments represented here, we fear much cannot be said. The Americans have got rather a reputation lately, rightly or wrongly, for a kind of special tendency towards the elaboration of monumental verses and inscriptions in which vulgarity of expression and "gush" of sentiment combine to produce a result decidedly "racy of the soil," at least if we may believe some of the things we have seen quoted as specimens from American newspapers. At any rate, the *mo* of a good many of Mr. Franke's designs rather unfortunately reminds us of some of these effo in memorial literature. Our old friend the brok column is in great force, but is generally ma the desk or stand for a neat scroll placed in graceful curve on the top of it, recording t name, &c., of the deceased. In one case t broken stump of the column is decorously hidd and draped with the stars and stripes. A sim head-stone, rather in the form of a desk, wit sloping top in scroll form for the inscription unobjectionable as a "notion." So is the he stone to a lieutenant of cavalry, with a sou tured sword, sheathed, carved in relief acr the inscription; though we would have prefer a more typical and less realistic sword. But idea of the incongruity of things ancient modern, classical and American, does not se to strike the American mind. We have

* Designs for Monuments, by W. B. Franke, architect. New York, W. B. Franke; London, Sampson Low & Co.

ambitious Greek monument with an obelisk at the top, and the word "BROWN" in conspicuous letters in the centre. There is nothing in a name, of course, but somehow the associations do seem to clash. The best monuments in Mr. Franke's plates, in regard to architectural style and monumental (in the sense of "durable") appearance, are those in the sarcophagus form; but these are not really suitable, because this is a form of monument in which the sarcophagus is supposed actually to contain the remains of the deceased, which of course is not the case here; and when regarded merely as inscription stones they are quite unmeaning, and absurdly large and bulky for the purpose. In the more ambitious sculptured monuments the element of gush comes out. In one a full-size figure is carved kneeling sideways on the steps and praying; in another, a female figure leans over the top of the headstone and scatters flowers, which are carved as having fallen on the tomb below. These may be regarded by some as pretty fancies; to our thinking they are obtrusive and out of place. In contemplating a tomb, the spectator or the mourner is himself the figure, and does not require a second stone figure to represent his grief or interest. The one which pleases us most among the more important designs, and which is really in completely good taste, is that on plate xxxii., a Greek design in a pure and good style, with a bas-relief of a female figure, in an attitude of mournful contemplation. In such a case the bas-relief of course merely strikes one as part of the monument, not as an obtrusive presence apart from it. The name on the pedestal of this quiet and melancholy monument is that of "Vanderbilt,"—we presume all the names given on the drawings are imaginary, but this one gives us one more instance of the strange jumble of the most opposite associations of names and things in which American life is so rife.

SCHOOLS FOR TEACHERS.

On the 30th of October, 1850, the Right Hon. W. E. Forster attended a great educational conference at Manchester, and was enrolled upon the general committee of an association consisting of about 300 influential gentlemen resident in all parts of the United Kingdom. Among members of the committee, deceased or surviving, may be noticed the following then members of the House of Commons:—Sir T. Birch, Jos. Brotherton, Wm. Brown, Richard Cobden, Sharman Crawford, Wm. Ewart, W. J. Fox, Right Hon. T. Milner Gibson, Rich. Harris, Alex. Henry, Joseph Hume, Wm. Scholefield, Colonel Thompson, and Sir Joshua Walmsley. Among others were:—Lord Lawrence, Bacup, John (now Sir John) Hawkshaw, Professor Hodgson (now of Edinburgh), Recorder Pope, Q.C., Mark Philips, R. N. Philips, W. R. Callender, Peter Rylands, Jacob Bright, Samuel Smiles, George Dawson, Mr. W. E. Forster, &c. The declared object of the association inaugurated at the conference was to promote "the establishment, by law, in England and Wales, of a general system of secular instruction, to be maintained by local rates, and under the management of local authorities, specially elected by the ratepayers." Among Mr. Forster's utterances on the occasion were expressions of his great satisfaction with the leading part taken by Mr. Cobden, and that in the West Riding they had "put an extinguisher on the will-o'-the-wisp notion of hap-hazard education." He (Mr. Forster) stated that "he should be happy to give his help to this cause, and promote it as far as he could." Since that time, Mr. Forster has attained place and power, and has employed them in the honourable redemption of his pledge.

The Elementary Education Act of 1870, of which the right hon. gentleman may be considered the legislative parent, provides something more than the system of "secular" instruction demanded a quarter of a century ago. A London School Board inspector, who has 110 schools under his charge, reports, concerning Bible instruction, that extended observation has strengthened his opinion that it is "as thoroughly and reverentially imparted in Board as in voluntary schools." The actual working of Mr. Forster's Act of 1870 demonstrates that the "religious difficulty" excited much somewhat misapplied zeal, and groundless fears. The Board inspector just referred to states that out of 60,000 children registered, only 28 have been withdrawn from religious instruction under the powers of the 74th section of the Act. Of the 28 children so withdrawn, 17 are children of Hebrew parents.

In one vitally important matter (to which little or no attention has been given as yet, and which the London School Board and the school boards throughout the country will be called upon imperatively to deal with ere long) the scheme of the Act of 1870 is radically defective, and inferior in its provisions as compared with the plan of the Association with which Mr. Forster became connected in 1850. The Act makes no provision whatever for the establishment of normal schools or training colleges for teachers. The Association referred to provided, as an essential part of its plan, that united school boards should "establish and support normal schools for the training of teachers; should have power to engage and dismiss teachers, to decide on the course of instruction to be pursued, and on all matters relating to the management of the normal schools." Should have "power to draw from the townships, parishes, and school unions, in proportion to their population, the sums necessary for the erection of buildings for the normal schools. The current expenses to be defrayed by the pupils, or by the townships, parishes, or school unions, for whom the pupils are in training." A precise definition of the powers of normal school governing boards, or discussion as to the constitution of such boards, may be dispensed with at present, but the necessity of providing such schools cannot be too strongly insisted upon. Without an adequate supply of competent teachers, the cost of building and supporting schools will prove comparatively barren of educational results. The supply of properly qualified teachers for the schools already in existence is even now notoriously inadequate, as are also the complete means for increasing the supply; how much more inadequate must both be when the London School Board system, and the Board schemes throughout the country, are fully developed?

It can scarcely be supposed that the establishment of normal schools was not in Mr. Forster's mind when he framed his Bill. He had possibly the fear of the economists before his eyes, and doubtless the additional Act or Acts that may be necessary for the establishment of such training schools, and the cost of maintaining them, will cause an outcry, but common-sense policy and justice demand that the provision be made. Surely if it be considered necessary to fitness for following the learned professions, to pursuit of the sciences, to practice of the arts, that the entrants upon such vocations should be specially trained for them, how much more so that the school-master should be specially equipped for his work, one of the most important of the professions, the highest of sciences, and the first of arts.

> "'Tis education forms the common mind:
> Just as the twig is bent the tree's inclined."

Education is the work of the whole life; but the clergyman, the teachers in the counting-house, the workshop, and other teachers after the day-school is done with, operate upon the already bent twig, and the schoolmaster, with the home teachers, must always have most to do in bending it. A youth with average aptitude to learn and to teach makes great progress in his own education, and acquires considerable ability in the art of teaching in the course of a five years' apprenticeship as a pupil teacher; but as schools are now conducted, the head-teachers have their own classes to attend to, and the pupil-teacher is necessarily left a good deal to himself in forming his methods and acquiring the art of teaching. The engagements of the school admit of few opportunities for his watching the processes of teachers more capable than himself, and acquiring from them a knowledge of the principles upon which education should be based, and of the art and practice of educating others. In the properly-conducted training-college, among his special duties would be to watch and note the conducting of classes by some of the most highly-qualified professors of the art of teaching; to add to his own stock of useful knowledge, and to his aptitude for its ready and skilful communication; to cultivate method, temper, activity, kindness, firmness, and the other qualities with which a teacher should be endowed; and to go forth to his work fitted for his high functions, and to exercise, it may be, more important influence for good upon the inhabitants of an entire parish than any other individual in it. An important economical consideration arising out of this question is, that the school course may be shortened, inasmuch as an efficient teacher will impart a given amount of instruction to a child in half the time in which it can be done by an incompetent instructor. The school term may thus be abridged in time, without detriment to the scholar, and to the saving of school-pence and public money, or the course may be liberally enlarged in scope.

The anomalous relations between the supply of teachers and the demand for their services, and justice to pupil-teachers, demand the establishment of as many normal schools as are necessary to accommodate the pupil-teachers who have served their apprenticeships who desire admission to such schools, and have passed such examinations as shall give them an indefeasible title to admission.

Much has been said and written of late years as to the desirability of elevating the status of the teacher, but the means employed to do so are neither sufficient nor consistent. That teachers are much wanted, and that the supply falls far short of the demand, is sufficiently evident from the advertisements under the heading of "teachers wanted" that are constantly appearing in the educational papers. One of these, published a few days since, contained advertisements announcing about 250 vacancies for fully-certificated headmasters and mistresses, assistant-masters and mistresses, and for transfer and ex-pupil teachers; the emoluments offered being in a majority of cases fairly liberal; in several instances 70*l.* to 85*l.* per annum, with share of the Government grant and of the school-pence, also houses and gardens, and coal. With the masters and mistresses already certificated we are not herein concerned, but with the obstructions in the way of ex-pupil teachers obtaining certificates. When young persons of either sex commence to learn some business or trade, they devote to it several years of the most vigorous time of their lives, acquiring experience and skill that are to be as a stock-in-trade to them in after-life. They have no reason to fear,—say a young woman in a telegraph or insurance office, or in a millinery or pastry-cook's establishment; or a young man after serving his time as a warehouseman, a mechanic, or aught else,—that they are to be barred from progress by anything extraneous to themselves, other than what is unforeseen or accidental. With pupil-teachers the matter is very different. Many of them that enter upon their apprenticeships with the intention of following teaching as a permanent profession may, unless adequate provision of training colleges be made, find themselves debarred in their career, and their position in their profession degraded, not elevated. To be "fully certificated" it is a *sine quâ non* that they pass through a training college, and obtain a certificate of a class according to their merits in examination, after going through the curriculum. The accommodation in existing training colleges has hitherto been taxed to nearly its limits. The transfer of some efficient denominational and voluntary schools to school boards may have diminished the demands upon their space to some extent, but their being for the greater part denominational will detract from their availability as training colleges for pupil-teachers that have served their time and passed their examinations in board schools. For the limited number of vacancies they may have, and these only available for the adherents of the respective denominations, we have heard that a rule of admission has been already laid down. Candidates for admission are placed upon a list according to an order of merit. There may be 150 applicants, all of whom have passed their examinations as pupil-teachers, but there may be only twenty vacancies in the college. The first twenty on the list are admitted, and the remaining 130 are to be left to seek such employment as they can find as *uncertificated* assistant masters or mistresses, or abandoning their profession, obtain such situations as may be open to them in the commercial or industrial worlds. But, besides, touching the present inadequacy of accommodation in training colleges for pupil-teachers who are eligible for admission to them, the magnitude of the operations of the school boards in the large centres of population shows conclusively that in the not distant future, unless such colleges are provided, and within a limited time, the school-board system must become dislocated or even break down. The London School Board had, at midsummer last, 199 schools under its charge, embracing 436 departments of boys', girls', infants', and mixed schools. The total accommodation in these schools was for 112,901 scholars; number on the rolls, 115,414; highest attendance, 103,210; average attendance, 88,749, or 76·9 per cent. of the number on the rolls. The teaching staff of these schools embraced then,—419

masters and assistant-masters, 692 mistresses and assistant-mistresses; 397 male, and 906 female pupil-teachers; and 122 candidate male pupil-teachers, with 298 female candidates;—that is, 1,723 young people employed as pupil-teachers, a large proportion of whom will one day ask for, and be entitled to, admission to training colleges. The salaries of the masters and mistresses and their assistants, exclusive of pupil teachers, amount in the aggregate to 93,713*l.* 10*s.*, and range in their separate amounts from 40*l.* to 200*l.* per annum, exclusive, in the case of masters and mistresses, of share in the Government grants and payment for the instruction of pupil-teachers. The prevailing amounts of salaries paid to masters, exclusive of allowances, are 100*l.*, 110*l.*, 120*l.*, 150*l.*, 170*l.*, and 200*l.* per annum; to mistresses, 85*l.* to 100*l.* The increase in the attendance of scholars is satisfactory: from the spring of 1871 to Christmas, 1874, the increased average attendance at efficient schools was 100,000, or 58 per cent. upon the former attendance. Of these it is computed that 60,000 should stand to the credit of board schools, and 40,000 to that of voluntary schools, the gain to the former being from their having opened schools in districts where schools did not before exist, or where the accommodation was insufficient; or in districts where existing schools are inefficient. Last quarter there was an increase of twenty-two masters and thirty mistresses and assistants; and of six male and ninety female pupil-teachers, but there was a decrease in pupil-teacher candidates of 23 boys and 77 girls. The need for increased teaching power is pressed by a number of the inspectors in such notes as, "all departments overcrowded, additional teaching power required," "staff not efficient, a good assistant required," "a thoroughly good pupil-teacher required," "school full, staff inadequate"; in several instances inspectors insist strongly that the best teacher on the staff should be placed in charge of Standard I., or lowest class. One of the Board inspectors complains, in his general report, that the younger pupil-teachers and candidates, nearly half of the whole number of 1,359 teachers in his district, are almost worthless. He urges the need for more teaching power, and laments the misfortune that the demand for pupil-teachers so much exceeds the supply. "It is desirable," he adds, "that a better class of youth should be attracted to the profession, otherwise, as the senior pupil-teachers' terms of service expire, there will be no alternative but to fill the vacancies with assistant teachers." The Manchester Educationists are impressed with the same facts, and have formed a society for the express purpose of raising funds for exhibitions, and other inducements to attract the "better class of youth." The London School Board have 71 pupil-teachers in the last year of their term; next year, 177 will have done their fifth year; and in the year following 346 more. What is to be done with such of those as demand, and are entitled to, admission to training colleges? To encourage a better class of youth to enter into the profession, and not to provide them with means of prosecuting it to its legitimate issue, is to

> "Palter with them in a double sense,
> To keep the word of promise to the ear,
> And break it to the hope."

Unless an adequate provision be made soon of efficient and accessible normal schools, the dearth in the supply of fully-certificated masters and mistresses, and of a better class of pupil-teachers, is likely to be much greater than it is even now.

THE PROFESSIONAL "HOUSEBREAKER."

Of late years a building industry has developed itself, principally in London, and the calling is extending yearly. The "housebreaker" in the building world, we need hardly say, is quite a different personage from the burglar *de facto*, though there are some people who are not at all satisfied that the former is a much more honourable profession than the latter. Some allowance, however, must be made for people who give expression to their feelings while smarting under a wrong, or a supposed wrong. The professional housebreaker, like a man of any other calling, may or may not be an honest man, and no reason exists that he should necessarily belong to the knavish class, notwithstanding his many temptations to "make hay while the sun shines." Unlike the burglar, the professional housebreaker does not break into houses: he rather breaks them down, or breaks them up, per agreement. The follower of this new industry generally unites two other branches or callings with his leading profession; so, in fact, his profession is a tripartite one. Already in London his showboard may be seen towering high above houses, peering over the back roofs on chimney-tops in semi-suburban quarters, and displaying in legible Brobdingnagian letters to the passer-by in front streets, the following unmistakable announcement:—"Contractor, Carman, and Housebreaker." In some instances these words are transposed according to the celebrity attained by the professor in any one branch of his business. The professional housebreaker, besides being a general carman and contractor, belongs to the speculative class of builders denominated "Jerries," and his dealings are often varied and extensive in connexion with local boards and vestries. He is not above taking a dust contract, and he is ever ready to enter upon a sand, gravel, or shingle contract, as his building speculations on his own account supply him at once with a sand quarry, and a "shoot," where parish and other *débris* may be "shot" in an inexpensive manner, but with the highest profit to himself. Nothing is too hot or too heavy for a break-up or removal at the hands of the professional housebreaker. His acquaintance is courted by Jew and Gentile, the broker of Petticoat-lane and the virtuoso of Wardour-street. Collectors of Roman tiles and pavements, all are after his heels every other week, and other collectors of the antique in marble, marble chimneypieces, and carved woodwork of the reign of Elizabeth, the good Queen Anne, and the first George. Numismatists look up the professional housebreaker pretty often as sharply, and he can seldom begin a new job of breaking-down and breaking-up without their knowledge, for panelling and brick walls and removed skirtings and flooring-boards in old houses are always supposed to reveal treasures. The professional housebreaker himself is an active-minded and supple-limbed personage, and he hunts up his patrons with a keen scent. He is well acquainted with auctioneers, house agents, valuers, trustees, and other officials or guardians having to do with house property. The housebreaker is generally one of the first persons who get an inkling that such-and-such a house, or number of houses, are condemned, or are about to be pulled down to make way for a public improvement, or an improvement determined upon by a proprietor or trustees. The professional housebreaker is a large employer of labour at times, and those of his workmen engaged in house-breaking vocations are men who have acquired taste and skill in the pursuit of their calling. Among these workmen will be found handy building labourers and ordinary labourers, and the skilful and handy housebreakers, though their employment is dusty and dirty and often dangerous, earn good wages, a pay often equal to skilled mechanics, and sometimes higher, according to the extent and nature of their work. Some house-breaking work is of course of a most common-place description, requiring little care, and acres of it, if needed, could be tumbled without destroying anything of much value. House-breaking in the City requires caution and skill, for slates must not be let fly out in the streets, or front walls be let down in broadside. Neither must clouds of dust be let escape to annoy or destroy the sight or clothes of the travelling or on-looking public. The professional builder who takes down houses with his ordinary gang of labourers, assisted of course by carpenters, joiners, and bricklayers, where needed, mostly does his work of housebreaking quietly and systematically, but the professional housebreaker has rough and ready methods of his own which are not always free from danger. If the house to be pulled down happen to be a detached mansion, and if there be good space in front or rear and little public traffic near, the housebreaker's workmen, once the roof is off, will make quick work with the walls. The walling will often go down in sections instead of brick by brick. If the mansion, however, is a good one and contains old and curious work that will find a market, or if the joinery and timber are good and can be worked in with advantage in new buildings or alterations, the professional housebreaker is more cautious. If the house is a poor one, the doors, sashes, stone cills, lintels, and bricks receive the most attention, for these with the roof timber and the joistings can be sold at their value, if not otherwise worked in on the jobs of the housebreaker. The old broken or rotten timber is generally sold to the firewood cutters and dealers, who are always on the look out for a cheap job lot, and the rubbish of old plaster or mortar is either kept for filling purposes or sold to others for the same ends. There is always a ready market in the trade for half or broken bricks, and in fact for all sorts of building rubbish to boot in these days of road-making, concrete bottoms, and "shoot"-formed foundations.

The professional housebreaker does not care much for the mere contract of taking down a house; he prefers to offer a lump sum for the doomed house as it stands, all material included. The lead on good old houses is generally heavy and valuable; so are massive marble chimney-pieces in the old style; and so are also wooden chimney-pieces displaying carved woodwork, fruit or foliage. If a good chimney-piece, or other carved work in panellings and libraries in old mansions have no authenticated history, Grinling Gibbons is likely to be credited with the workmanship by the happy purchaser or broker who speculates to sell. The scroll-work of massive old oak staircases, and their twisted balusters, find ready purchasers, and so do other old oak panelling and woodwork. These are purchased by the dealers in or the manufacturers of antique-furniture, and it matters not whether the wood be worm-eaten or not, for this enhances its value in the eyes of the antique furniture dealer. The older, the more ancient and more valuable, and so well are specimens of this furniture manufacture doctored up in French and English, that many are deceived into believing that they are purchasers of veritable pieces of the age and style of Elizabeth or Louis Quatorze, and even earlier French and English periods. In time the professional housebreaker will be educated up to the standard of discriminating between works of art and high handicraft, for constant contact with the antique or relic hunters is ripening his faculties, and enabling him to drive better bargains. The results will be that the furniture-dealer and curiosity-man will have to charge higher prices to my lord and lady, and other wealthy customers. The professional housebreaker always likes to secure the breaking up of an old City-house, a mansion of the era of Queen Anne, or one built in the reign of one of the first three Georges. He does not care much for the commonplace houses of Queen Victoria's reign, unless they are of a massive and well-finished character.

There are professional master housebreakers in London at present with several thousand pounds, and large house properties, who began their career a few years ago as owners of a horse and cart, and who in their first contracts in one or other branches of their now tripartite profession, had to hire the horses and carts of other carmen contractors. Some of them, to the writer's knowledge, have been large speculative builders, and have built largely in suburban districts, but the houses they built were sold as fast as they could find purchasers, for they were shrewd enough to know that the keeping of such house property in their own hands would entail a dead loss for yearly repairs. An old Queen Anne mansion that stands on its own ground in a suburban district near London, with out-offices, green-houses, and conservatories, large garden, good boundary walls, good entrance gates, massive ironwork, ornamental piers, sculptured urns, or other varied stone and iron ornamentation, is the class of house that gives joy to the professional housebreaker. The breaking up of such a house and clearing it away bring large profits. If the site is to be prepared for the erection of a number of new modern structures, the housebreaker is likely to have a more profitable job, as he generally goes in for the excavations, and these bring him sand and shingle, which he can cart away to his own yard. If the houses to be erected on the site are only of a cheap speculative kind, the housebreaker may be so fortunate as to secure the contract for their erection. If so, he can use his sand and a portion of his other materials on the spot. If the houses, however, are to be of a superior class, and an architect is moving in the matter, a recognised builder will appear generally on the scene as soon as the housebreaker has carted his materials away, and levelled the ground.

It may be asked, Why has such a profession been developed as that we have described, or why in general are not regular legitimate builders employed to take down houses? To answer this query would lead us into a digression upon the tendencies of the age, and the organisation of labour, which is not our object. We took up the pen for the purpose of describing

the professional housebreaker, hitherto, as far as we are aware, a nondescript in London history.

"DOMESTIC APPLIANCES."

The second lecture delivered in the Dome, in connexion with the late Sanitary and Educational Exhibition in Brighton, was given by Mrs. Amelia Lewis, and had for its subject "Domestic Appliances." Mrs. Lewis spoke not merely fluently and well, but with judgment and good sense, and succeeded, as she had done in several of the departments, in obtaining the considerations of those who heard her. After reviewing a number of the exhibited appliances connected with the preparation of food, including an arrangement of her own, known as "the People's Stove and Cooking Utensils," the lecturer thus concluded:—I have said enough to show that our exhibition has a value in the machinery of preparing food, in addition to other valuable sanitary appliances that will be noticed by others. Let me, then, most earnestly place before you the importance of attending to such questions. We complain in our lives of a great many evils that could be prevented were we to learn the science of life, and good food is so great an item of this that we cannot undervalue it. Half your crime comes from drunkenness; I say that good nourishing meals do away with it; half the unhappiness in families is derived from the fact that the wife does not know how to manage her house; and lastly, disease, sickness, and bad health can be greatly alleviated by a proper diet. This body of ours is not the vile thing we often talk of; it is finely, I may say divinely constructed mechanism, the highest this globe contains, full of such beautiful principles that we need only study it to have a new view opened to us, to see that being possessors of it, we have something to do to carry out God's instructions, not in debasing it by vice, profligacy, drunkenness, and laziness, but by exerting all its powers, and studying well to give it its proper nourishment so as to keep all its proportions in good measure, to carry out fully its capabilities so as to let it become more harmonious every day, and to let it finally pass away, not in agonies and disease, but with a smile on our lips, going to meet a better light. That is my view of the food question, and, if I have but strength, I mean to begin with this meeting at Brighton to carry my views wherever I am in connexion with my own appliances, and to make all women, high and low, that I can meet with, understand that food preparation is a science and an art that ought to be cultivated not in a dirty kitchen, but in a cleanly apartment, and freed from the low position it has taken.

NEW BUILDINGS IN CAREY-STREET FOR THE LEGAL PROFESSION.

The Serle-street and Cook's-court Improvement Company have just commenced the erection of a large block of new buildings in Carey-street, opposite the new Law Courts, which are intended to be called "Court Chambers," and built chiefly for the accommodation of members of the bar and the lower branch of the legal profession. The new buildings will involve a very large expenditure. For the purposes of the undertaking the company obtained an Act of Parliament in 1872, empowering them to raise a capital of 300,000*l.*, and to purchase a block of property covering an area of more than an acre of ground. The block in question is bounded by Carey-street on the south and west, Serle-street on the east, and Portugal-street on the north, with the open area of Cooke's-court in the centre. When purchased by the company under their compulsory powers the block contained fifty-six houses, the materials of which have been sold, and the site cleared, and the excavations for the foundations of the intended new buildings are now in progress by Mr. William Jay, of Pembroke-wharf, Caledonian-road. Messrs. Perry & Co., of Stratford, are the contractors for the building, the designs for which have been furnished by Mr. Waterhouse.

The materials used in the several elevations will consist of Portland stone, with polished granite introduced for ornamentation. They will be erected round four sides of a square, and be approached by an entrance archway, with porters' lodge, at the angle of Serle-street and Carey-street. The several frontages of the building will be generally uniform, but the chief elevation, and the one showing to the greatest advantage, will be that in Carey-street, immediately overlooking the Law Courts. This frontage will be about 134 ft. in length, and will contain, in addition to the basement and ground floor, three stories, surmounted by a cornice. Above the cornice are ornamental dormers, between four lofty pediments or gables, the entire height of the frontage to the iron cresting of a high-pitched roof being upwards of 80 ft. Each floor contains a range of twenty-two windows, those on the first and second floors being circular-headed. A range of ornamental chimney-shafts rises considerably above the ridge of the roof. The archway entrance at the junction of Serle-street and Carey-street is the most prominent architectural feature in the entire structure. It is about 30 ft. in width, and flanked on either side with angular piers carried up to a line with the cornice, and surmounted by turrets. The entrance itself consists of a spacious archway, above which are three oriel windows, richly moulded and carved. The window over the archway, and on a line with the first floor, is in two divisions, with the inscription "Court Chambers" on each side. The two oriel windows on a line with the second and third stories respectively are angular in form, and in four divisions. They are surmounted by a cornice, above which rises a tower, with balustrade, and above this again is a spire or turret finally surmounted by a vane, the extreme height of this part of the elevation being about 120 ft. The Serle-street and West Carey-street elevations are respectively about 102 ft. in depth.

The "chambers," consisting of thirteen distinct houses, will all be entered from the interior of the square, through the archway approach at the corner of Serle-steeet and Carey-street. And here it may be observed that a considerable portion of the open area within the square will be laid out as a garden, and be entirely private, for the sole use of the occupants of the several houses, which, it may be stated, will be varied in size. Nine of them will contain five rooms on a floor, which may be appropriated as one or two sets of chambers, according to arrangement. The houses at the corners of the building will be of larger dimensions, with an increased number of apartments. Although, however, the company intend to rely for their main source of revenue upon the rentals of the houses within the square, there will be entrances from Carey-street and Serle-street to portions of the basement and the ground-floor, which will be let for various business purposes, such as banking and insurance, and also to law stationers and publishers. We may add that in the basement of the building strong-rooms of a large size will be constructed, similar to those of the Law Institution in Chancery-lane.

FUNNY THINGS ABOUT DARLINGTON.

At the opening of the Pease statue, a man named Thomas Pease was marched off for picking pockets; and as he was taken past the veiled statue, it was remarked among the by-standers that in the features of the pickpocket there was a decided similarity to those of the Joseph Pease about to be unveiled.

Occasionally about the town is seen a van having on the back of it "Henry Pease, esq., licensed hawker," it is somewhat unusual for a quaker to dub himself as an esquire.

Against the rough-cast side of a house in Skinnergate is a notice that "Bill-stickers will be prosecuted"; but whether for not sticking bills or doing so does not appear; so that were any prosecution to take place, no judge would convict on such a notice.

The teetotallers and the beer-drinkers have settled their differences in the town in this fashion: — There are two stations a good mile apart. At the Bank Top one set of travellers can get their beer; while at the North-road one the teetotallers are triumphant, and the working-classes who want a cup of tea on a journey have there to pay 6d. for it, which is looked on as a swindle.

The Jubilee-day was shorn of a deal of its interest by the oldest passenger-engine, as well as the finest modern one, not being allowed to take part in the procession through the town; and it would have been more fitting had the statue been that of the Pease who gave so liberally towards the making of the first line. The old engine is still without a roof to it.

Most English railway companies give excursion trips during the summer months to London; not so with the North-Eastern Company, who, during July, August, and September, gave none until the Jubilee time, when they knew every one wanted to remain in the town during the week. The fact is, another railway to London is wanted here; and were the Midland, Great Northern, or other company, to obtain the necessary powers for giving a fresh link to London, it would be universally welcomed by the great public, and I sincerely trust that the first centenary of railways in this country may testify to the want being supplied, and that, too, with a central station.

Most towns with a population of 35,000 and two railway-stations have an inn close to the station, for travellers requiring to rest for the night; but the idea here is scouted, and only last month, at the Brewster Sessions, plans were submitted for an hotel, adjoining the Bank Top station, to cost 6,000*l.*, but not allowed on the plea of not being large enough; and so the travelling public are humbugged, without any accommodation at either station. Two miles out of the town is Blackwell Bridge, a neat, substantial one, for which the public are charged 1d. every time they cross; the consequence is, the shareholders seldom see a dividend,—as one of the last, for a 100*l.* share, the shareholder received a blessed penny postage-stamp by post. Why do they not at once make over such a paltry-paying investment to the county and do away with the tolls, especially on foot-passengers? A few miles out, in an inn at Winston, the tap-room has a screen formed out of the old pewing from the parish church, so that it is now doomed to hear more cursing than blessing. As a final, but sad, feature in the manners of the young men in the town, seemingly well-dressed, I may mention the amount of blaspheming that can be heard among them when they meet together, and, I am told, it is yearly on the increase.

In Parkgate can be seen a Mr. Stillborn, alive and kicking, and in the same thoroughfare a Mr. Pigg, a porkbutcher. J. B. Watts.

ARCHITECTS' DESIGNS AND THE GREENWICH DISTRICT BOARD OF WORKS.

At the meeting of the members of the above Board, held on the 13th inst., Mr. J. Norfolk presiding, a report was read from the building committee, to whom twenty-two designs of architects for the building of new offices of the Board had been referred, selecting three of them, Nos. 13, 3, and 10, to receive the premiums offered of 50*l.* 30*l.*, and 20*l.* The recommendation of the committee was agreed to, and on the letters of the architects being opened, to ascertain the successful competitors, it was ascertained that the first premium was awarded to Mr. Waller, of Bexley-place, Greenwich; the second to Messrs. Kersey & Garrett, Moorgate-street, City; and the third to Mr. Henry Roberts, Sandfield-terrace, Lewisham-road. It was left to the same committee to invite the attendance of the architect chosen to ascertain upon what terms he will superintend the erection of the building, the Board deciding to apply to the Metropolitan Board of Works to sanction the borrowing of 10,000*l.* for the purpose.

METROPOLITAN ASYLUMS BOARD COMPETITION.

Designs have been submitted by Messrs. Currey, Wyatt & Salter, A. & C. Harston, Pennington & Bridgen, and Giles & Gough, for an imbecile asylum or school for 500 children to be erected by this Board at Darenth, Kent. The committee have selected the design of Messrs. A. & C. Harston, and their report will be considered by the managers at their meeting on the 23rd inst.

The estimated cost of the selected design is 52,000*l.*

A NEW TOWN-HALL FOR LIMEHOUSE.

At the last meeting of the vestry, plans for a new Town-hall, prepared by Messrs. A. & C. Harston, were laid before the meeting and approved.

According to the report of the architects, the principal entrance is by a portico in the centre of the Commercial-road frontage. A hall, 12 ft. in width, thence runs through the building to the main staircase in the rear. A side entrance is obtained in Church-row, with a separate staircase to the gallery and rear of the Town-hall. On the ground-floor, and on the left of the principal entrance-hall, is the committee-room, 40 ft. by

28 ft. 3 in. Upon the left-hand side will be found the two clerks' offices, with a strong-room for books and papers in use. In the rear of these is the collectors' office.

The Town-hall, upon the first-floor, is 70 ft. by 40 ft., and 26 ft. high. It contains a gallery and platform, each about 12 ft. in width, and has three doors to the body of the hall in addition to the platform and gallery doors. It is lighted by eleven windows, occupying three sides of the room.

NEW COVERED MARKET AND FREE LIBRARY, BRADFORD.

At a meeting of the Bradford town council, on the 12th inst., tenders were accepted for the erection of the second half of the covered market and Free Library Buildings, in Darley-street and Godwin-street, the total amount of the contract being 37,500*l.* The Market-hall itself, or rather the new portion,—for when completed it and the existing hall will form one large covered market,—is to cost 16,254*l.*, and the Free Library buildings, the shops, &c., 21,300*l.* The new portion of the Market-hall will measure inside about 120 ft. by 100 ft., and will be planned and fitted up in the same way as the existing building. Around three of the sides will be nineteen shops, and in addition to these there is to be a *restaurant*, occupying the site of a twentieth shop, with kitchen and scullery in the rear. The Free Library buildings, and the shops fronting to Kirkgate and Godwin-street, and forming part of the same scheme, will be a no less important addition to the public buildings of the town than the market. The exterior fronts to Darley-street and Godwin-street will be treated so as to form a continuation of the shops already erected in connexion with the market scheme in Darley-street, although there will be a slight modification of the design in the upper portion, in order to better accommodate the Free Library and the reading-rooms. The ground-floor of these buildings will be occupied entirely by shops, eleven in number,—seven fronting to Darley-street, three to Godwin-street, and one at the corner of the two streets. The portion of the first-floor which is over the Darley-street shops will form the Men's Reading-room, extending to the top of the building, 74 ft. by 37 ft., and 28 ft. in height, with a small gallery running round it. This room will be well lighted from Darley-street. Over the entrance to the Covered Market at the lower extremity of the new building, is a Specification of Patents Reading-room, 33 ft. by 21 ft. Turning to the Godwin-street portion of the buildings, there is another entrance. The first-floor here contains the Women's Reading-room, 50 ft. by 40 ft., and 19 ft. high; the Issue Department of the Lending Library, 41 ft. by 40 ft.; Librarian's Offices, &c. The next floor of this part of the building will be occupied with the Reference Library Reading-room, 112 ft. by 40 ft. In each story will be lavatories, closets, &c. In addition to the Free Library rooms and the covered market, the block of buildings will include some extensions of the Market Tavern and Trevelyan Hotel, which were erected originally with a view to the new market being joined up to them. The architects are Messrs. Lockwood & Mawson.

STRAIGHTENING A FACTORY CHIMNEY.

The chimney-stack (132 ft. high) of Messrs. Peter Mathews & Son's Chemical Works, Pitchcombe, Stroud, built in 1862 by Mr. Gideon Morris, had gradually fallen on one side until it was 3 ft. 10 in. out of the perpendicular. Mr. H. J. Taylor, of Nailsworth, lately undertook to restore it to its orginal position, without the use of scaffolding. He was assisted by three workmen. The chimney is octagonal, and the operations of Mr. Taylor consisted in cutting out one course of bricks from five of the sides, and inserting a thinner course, and then letting the chimney fall upon the latter and so pull itself upright. For this purpose he erected a platform about 40 ft. from the base, and with hammers and chisels he and his men cut through the chimney, which at this point was of the thickness of about 2 ft. As the bricks were removed from each side, a thinner course was substituted, and the intervening spaces were filled with iron wedges. This work lasted for about three weeks, and unfortunately the weather was most unfavourable, being frequently very boisterous. However, the chimney stood through it all, and when everything was in readiness for the *coup de grace*, the wedges were withdrawn by Mr. Taylor and his three men, and the lofty stalk was brought within an inch or two of its perpendicular position. This finishing stroke was performed on the evening of the 5th inst.

THE CHIMNEY SWEEPERS ACTS.

Sir,—You raise a smile as you point out how "the almost neglected" Chimney Sweepers Act of 1840 (which the Act of 1875 attempts to reanimate) clashes with the Building Act, both in its structural provisions and by these provisions being placed under the care of "the chief officer of police." And this smile broadens when we observe its requirements as to the size of flues. My reasoning faculties, untrained in legal and police difficulties, can conceive nothing more absurd than a chimney with a throat at bottom 7 in. by 9 in., or 4 in. by 14 in., a pot at top 8 in. in diameter, and a swollen bag 14in. by 9 in. between, where the smoke can wander and disport itself at leisure.

We do not sweep our chimneys every day, and so, no doubt, must leave room for soot to gather; otherwise the swift current the contracted throat causes would suggest the size for the flue. For my part, I believe in flues 9 in. by 9 in., with 9 in. wythes between. A wall so constructed, in solidity, strength, freedom from smoky fires, and danger of intercommunication between the flues, puts to shame the bony skeleton containing roomy channels 14 in. by 9 in., separated by 4½ in. wythes.

The mention of climbing-boys, and the need of channels large enough for them to pass along, explains, no doubt, how flues of the larger size came to be adopted. And if the Acts referred to were intended to secure a way for climbing-boys, the reason why (allowing wythes to be 4½ in. thick) they enact that no rectangular flue shall be less in size than 14 in. by 9 in., would be obvious. When, however, we look at the Acts, we find that, so far from intending to provide a passage for climbing-boys, the chief object for which they are framed is to prevent any such use of flues. One of their enactments consists indeed in the imposition of a penalty, "not more than Ten Pounds nor less than Five Pounds," on "any Person who shall compel, or knowingly allow, any Child or young Person to ascend or descend a Chimney." Such penalties touching old flues would have been easily comprehensible in an Act requiring new flues to be not *larger* than 9 in. by 9 in., because then the ascent and descent of old flues being forbidden, the absolute inability of the "Child or young Person" to ascend or descend a new flue would also be secured. As, however, Acts enacted to prevent any child or young person ascending or descending a chimney, not only allow flues to be 14 in. by 9 in., but forbid them to be less, I can only understand such seeming conflict in their provisions by supposing that, not satisfied with the chief officer of police having the chance to detect the child or young person when he attempts to ascend or descend the chimney, they determine that new flues shall be large enough to allow him to catch the child or young person in them.

H. Field.

SHAFTESBURY PARK ESTATE DRAINAGE.

COMBINED BACK DRAINAGE.

Mr. William Swindlehurst, jun., appeared before Mr. Ingham, at the Wandsworth Police-court, to answer two summonses, for unlawfully obstructing Mr. John Thomas Pilditch, surveyor to the Board of Works for the Wandsworth District, in the execution of his duty, in Sabine and Eversleigh roads, on the Shaftesbury Park Estate, belonging to the Artisans and Labourers' Dwellings Company.

Mr. Corsellis, clerk to the Board, attended in support of the summons; Mr. Bullen for the defendant.

It appeared from the opening statement of Mr. Corsellis that the Company in laying out the estate applied to be allowed to adopt a system of combined back drainage, which was approved of in some places, but was objected to in the metropolis. The District Board refused to sanction the adoption of that system of drainage, but required them to drain the houses in pairs in front. The Company, however, proceeded to drain their property at the rear, the estate now being nearly completed. The case of obstruction arose on the surveyor proceeding, by order of the Board, to drain the houses in question in front.

Mr. Bullen submitted that the magistrate had no jurisdiction, as the drains were vested in the Company, who had a right to do what they liked on their private estate.

In reply to the Magistrate,

Mr. Bullen said there was no doubt the drains were connected with a public sewer outside the estate, but his contention was, this was an attempt to connect the Company's sewers on their own land.

Mr. Corsellis said the sewers in these streets were expressly sanctioned by the Board, and he referred to the 120th section of the 18th and 19th Vic., to show that all sewers made, and to be made, were vested in the Board.

Mr. Bullen contended that the Act of Parliament contemplated other sewers which were not vested in the Board. In referring to another objection, he said the Board were influenced by a crotchet, and he should be able to show by evidence that the Company's mode of drainage was equal to the Board's, if not better. The Company believed they had a right to defend their property, and that the defendant, who acted under their authority, was perfectly justified in what he had done.

Mr. Ingham found that the sewers were vested in the Local Board, and that there was no colour of right to obstruct the surveyor. He fined the defendant 1s., and 2s. costs in each case.

Mr. Bullen intimated that the Company would file a Bill in Chancery.

Curiously enough, there are still officers at the Metropolitan Board of Works, who, under a previous Board, equally invested with power over the sewerage of the metropolis, compelled builders to adopt combined back drainage as the only proper mode.

SCHOOL BOARD SCHOOLS.

Margate.—Schools in New Cross-street, Margate, until recently known as the British Schools, were reopened on the 4th inst., after alterations and additions, which have been carried out under the direction of Messrs. Drew & Bower, architects.

Epworth.—At a meeting of the Epworth School Board, held on the 4th inst., tenders were received for the erection of the new schools and master's residence. The tender of Mr. Henry Kelsey, of Epworth, was accepted.

Musselburgh.—New schools for 400 children are in course of erection at Musselburgh, for the Musselburgh School Board. Mr. James Simpson, of Leith, is the architect, and the cost will be about 2,000*l.*

Birmingham.—The Birmingham School Board has accepted the tender sent in by Mr. Goodwin, of Kidderminster, amounting to 9,196*l.*, for the enlargement of the new schools at Brookfields.

Pudsey.—At a meeting of the Pudsey School Board, on the 13th inst., plans of a school in Rickardshaw-lane, to accommodate 600 children, were submitted by Messrs. Holtom & Connon, architects, Dewsbury, and adopted, the estimate for the buildings being 4,500*l.*

Baildon.—At a meeting of the Baildon School Board, on the 12th inst., Mr. Bennett, the architect, was instructed to prepare plans for a new school at Baildon-green to accommodate 350 children.

Elgin.—On the 11th inst. the new West-end School at Elgin was opened by the Burgh School Board. The school has been erected and furnished at a cost of upwards of 2,000*l.*, from plans by Messrs. A. & W. Reid & Melven, architects, and will accommodate 240 pupils of both sexes. The contractors for the buildings were Messrs. Alexander Robertson, builder; John Kitchen, carpenter; David Simpson, plasterer; John Hunter, plumber; John Kintrea, painter; and George Ogilvie, slater.

Alloa.—On the 8th inst. the foundation-stone of the new Burgh School, Alloa, was laid with Masonic honours by the Earl of Mar and Kellie. The plans have been prepared by Mr. J. Melvin, architect. The building is estimated to cost 3,600*l.* On the principal floor there are to be three class-rooms, and a separate room will be provided for the sewing department. The school will accommodate 400 scholars.

How they Make "Plaster" in Bradford

At a meeting of the Bradford Town Council on the 12th inst. it appeared from the minutes of the Sanitary Committee that a report had been presented to the committee by Mr. Rimmington, the borough analyst, in reference to the materials which had been used to plaster some houses in Priestman-street, and which, it had been alleged, contained night-soil. The borough analyst says in his report:—"As delivered to me, the plaster consisted of two parts—one a thin layer of ordinary plaster about the eighth of an inch thick, and the other a stratum of earthy-looking matter about one-half or three-quarters of a inch thick. My attention has been confined to this. It consists of small stones, cinders, sand, &c., but is *quite void of lime*, and I do not find any organic matter that can possibly be construed into night-soil,—in fact, the quantity of organic matter is very small, and" is certainly not of animal origin. *It has so little cohesiveness that if put into water it falls to powder.*"

ABOUT MALVERN ABBEY CHURCH.

"Watering-places," whether on the coast or inland,—whether frequented for salt water taken externally, or medicinal springs taken internally, —seldom offer much in the way of architectural and historical interest. Malvern, it is true, in spite of the name of "Malvern Wells" applied to one portion of the district (there are, we believe, not less than seven Malverns in the district distinguished by different adjectives), is not pre-eminently a water-drinking place at the present date, but it has an architectural character and type, in common with Bath and Cheltenham, and other places which rose into fame when "drinking the waters" was a more fashionable cure for various ills, real or imaginary, than it is at present. The sites of the three places are different enough in natural character, but the artificial character is not dissimilar; trim, neat, and respectable, with a nearly utter absence of interest or picturesqueness in the modern buildings. On the whole, however, Malvern has a little more to boast of than the other two places named, and in the vicinity of the Abbey gateway, which sets an example in this way, are one or two houses of good architectural character, which form a little variation from the prevalent cubes of cemented wall. With a fluctuating population largely composed of temporary visitors, building operations are not very active, and the only new building of any importance, as far as we observed in a passing visit, is the memorial church to the late Vicar of Malvern, Mr. Fisk, in whose time the Abbey Church was restored. This is now just completed, from the designs of Messrs. T. D. Barry & Sons, of Liverpool; and its spire, in the brightness of fresh-hewn stone, is one of the first objects to catch the eye on coming over the hill from the West Malvern side, whence it makes a very pleasant feature in the extended view that opens on descending the path. The details are rather pretty than effective, perhaps, but the interior is well treated, and has a fine spacious effect for its size, and good taste is evinced in the quiet and refined style of the ornamental window-glazing and other details.

The real architectural interest of Malvern, however, is entirely centered in the Abbey Church, which does not seem to get quite as much notice as its fine and, in some respects, nearly unique character entitle it to; and we believe no special reference has been made to it in our columns since its restoration some years ago by Sir Gilbert Scott. The church, which externally is entirely Late Perpendicular work, stands very effectively on the slope of the hill on which Great Malvern is mostly built, and with the upper portion of the hill rising as a background to westward. The main portion of the exterior presents nothing out of the usual run of the Gothic architecture of the period, and is in general somewhat flat and ineffective in treatment; but the central tower thoroughly redeems the whole, and is really one of the most finely-proportioned and artistically-built towers of the late period which we possess. For the scale of the building, the tower has the effect of being rather larger on plan than ordinary, and might be called short in its proportions but for the admirable manner in which the face is broken up, and the vertical lines emphasised by the disposition of the lights and buttresses. The angle buttresses are well designed, so as to give just sufficient taper to the outline of the structure to take away all appearance of heaviness; and a piquant effect is produced by the short deeply-splayed openings under the heads of the wall arches of one story, emphasising the head of the arch by a deep shadow. The pinnacles and smaller buttresses on the face of the tower show the peculiarly thin and hard manner of treatment belonging to the decadence of the Perpendicular style, and will not bear criticism in detail; it is the total effect and the fine balance and solidity of the whole which compel admiration.

Entering the church by the north-west porch, which is closed by some new wrought-iron outer gates of rather too *prononcé* fashion of design, the appearance presented is sufficiently unusual. The nave is flanked by the heavy cylindrical piers of a Norman arcade, with arches with square recessed soffits; and over this arcade, without the slightest interposition of string-course or any other feature on the flat wall where the triforium would or should be, rises the lofty tier of windows of the fifteenth-century clearstory. The wall being plastered here, there is internally nothing whatever to mark the precise point where the Norman masonry ends and the Perpendicular work begins; and the effect of these two utterly opposite styles, the commencement and close of English Gothic architecture, with nothing but the flat wall between them, is curious in the extreme. Architecturally, of course the effect is faulty, and the clearstory windows very much want something to connect them with each other and to divide them from the substructure; archæologically, it is an interesting curiosity. The treatment of the "crossing" arches, of fifteenth-century date, is also unusual, the jamb of the arch being square on plan with shafts at the angles, in a manner almost recalling the "transitional" way of building in regard to general arrangement; then the face of the jamb is divided in the centre by a triple shaft, a large centre shaft of a very flat segment on plan, with a small half-shaft on either side; the whole stuck, as it were, against the face of the jamb, in a manner quite unusual in fifteenth-century work, which the capitals show it to be. The jamb is quite flat and unornamented in the interspaces between the shafts; but at the impost the soffit of the arch is set back by a set-off above the interspaces, so as to allow room for a deeper and heavier arch-moulding above the shafts. To complete the singular medley of the whole, the shafts aforesaid start about 10 ft. from the floor, from a kind of sill with a drip-moulding under, beneath which level the pier is an absolutely plain square block of masonry, giving the idea that it is the base of the crossing-pier of the original church, upon which the fifteenth-century pier has been built. The effect of the whole is singular enough. The crossing-space is groined with a kind of modified fan-work, with ribs of greater weight and depth of section than usual at the period. That the substructure of the choir includes reminiscences of the older church seems probable, again, from the semicircular screen wall at the back of the altar, and which looks as if it were suggested by and built on the foundations of the old apse. Beyond this comes the fifteenth-century east wall, leaving a passage between it and the apse wall, behind the altar. The eastern side of the apse wall, next the passage, is decorated to a considerable height from the floor with wall-tiling, with geometrical designs in low tints. South of the chancel is the chapel of St. Anne, now fitted up for separate service.

The church has been ceiled, when restored, with flat or nearly flat ceilings of panelled wood, stencilled with decorations of conventional foliage, &c. The most remarkable feature of the ornamental accessories of the interior is the large quantity of old stained glass preserved in the principal windows. The east and west windows, those of the chancel clearstory, of St. Anne's Chapel, and of the north transept (the south transept no longer exists), are entirely filled with old glass; very little of it, probably, *in situ* as originally designed, but still of the greatest interest even in its present state, and presenting very fine effects of colour, rich, though subdued. The upper part of the north-aisle windows in the nave is also filled with old glass. Of modern glass, there are heraldic devices occupying the centre portion of the clearstory windows, and harmless at that distance; the light would be far too white without them, certainly; and there are three windows in the south aisle by the firm of Hardman, as we understand, for which, in regard to general colour effect, we should be disposed to think that repentance has since overtaken their designer; there is a certain richness of surface and texture attained, however, which we do not always see in modern work. The church contains two sculptural monuments by Hollins, the best of which, at the end of the north aisle of the chancel, seems to be a palpable plagiarism from one of Chantrey's at Worcester; and beneath the west window is an architectural monument of some elaboration designed by Sir G. Scott, and consisting of a canopied recess with an inscription, the head of the canopy filled with open tracery work. The church contains two old tombs, not of very high interest, and much curious and humorous carving on the *miserere* seats of the stalls. The interest of Malvern Abbey Church to the architect, however, is in the tower, the general internal architecture, with its singular combinations of early and late work, and the old stained glass; and any of our readers going near Great Malvern will find it worth a turn out of the way to look at the Abbey Church. External restoration, it may be added, has not been necessary to such an extent as at all to impair the archæological interest of the structure, and is mostly confined to a general rubbing up, and patching a new bit of tracery or other work here and there, where the old had entirely decayed.

THE COMING SESSION.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The first general meeting of the Session will be held on the 1st of November next, when the President, Sir Gilbert Scott, R.A., will deliver the usual opening address; and a portrait of his predecessor, Mr. T. H. Wyatt, will be formally presented to the members of the Institute. The list of papers to be read is already complete, and is as follows:—

Nov. 15th.—On the Decoration of Basilican and Byzantine Churches. By R. P. Pullan, Fellow.

Nov. 29th.—Notes on Ancient and Modern Egypt. By Professor T. H. Lewis, Fellow.

Dec. 13th.—On the Rise and Fall of Wages in the Building Trades. By Mr. T. Brassey, M.P.

Jan. 3rd, 1876.—On the Lantern of Ely Cathedral. By R. R. Rowe, Fellow.

Jan. 17th.—On the National Safe Deposit Company's Premises. By J. Whichcord, Vice-President.

Jan. 31st.—On Old Cleeve Abbey. By the Rev. Mackenzie Walcott, M.A.

Feb. 14th.—On the Palace of Tiroomal Naik, Madras. By R. F. Chisholm, Fellow.

Feb. 29th.—On Some Sixteenth Century Chantries. By J. D. Sedding, Fellow.

March 13th. — Biographical Notices of Deceased Foreign Members. By F. P. Cockerell, Hon. Secretary.

March 27th.—On Dwellings for the Poor. By H. A. Darbishire, Fellow.

April 10th.—On Concrete as a Building Material. By A. Payne, Associate.

May 15th.—On the New Guildhall at Plymouth. By Messrs. Norman & Hine.

May 29th.—On the Applicability of Terra-cotta to Modern Church Building. By E. Sharpe, M.A., Fellow.

June 12th.—An Historical Sketch of the Institute. By C. L. Eastlake, Secretary.

It will thus be seen that the fifteen Monday evenings which go to compose the session are likely to be occupied with the discussion of a great variety of subjects peculiarly interesting not only to the architect, but to the archæologist, the builder, and the workman. The Committee appointed by the Council of 1875-76 to determine upon the choice of subjects for the consideration of the members, consisted of Professor Lewis, Messrs. Wyatt Papworth, W. M. Teulon, and W. H. White, as well as Messrs. Aitchison, Anderson, and Pullan, the last name having been added by a vote of the Committee. However easy may be the task of assigning certain subjects to certain individuals, it is by no means easy to induce fourteen gentlemen to deliver each a lecture upon a particular subject, even though it be a thoroughly familiar one to the person selected. As we hinted once before, the thirty and odd lectures delivered yearly at the rooms of the Institute and the Association are a rather serious concern one way or the other. Some of them at least, must treat of current topics; and in the list we have printed it may be premised that the proposed completion of St. Paul's Cathedral dictated the choice of Mr. Pullan's subject. The description by its architect, just elected vice-president of the Institute, of an exceptionally new kind of building—the National Safe Deposit Company's premises opposite the Mansion House—will illustrate the latest improvements in what is often erroneously called fireproof construction. The problem, unsolved and to all appearances likely long to remain so, of dwellings for the poor is peculiarly appropriate at the present moment for the serious consideration of the building profession and trade, while the paper to be read on the 13th of December, by Mr. Brassey, the member for Hastings, is of importance in a political as well as an industrial point of view, and we venture to express a hope that the building trade will be not only represented upon the occasion, but that the secretary will be requested to procure the attendance of the leading metropolitan contractors, and a few of their foremen, as well as of the best known building surveyors and clerks of works. The occasional reunion of all classes engaged in the art and science of architecture is of benefit to themselves generally, and to architects in particular, and nowhere can that reunion

be more happily effected than in the rooms of the Institute. Nor do some of the other contributors, whose antecedents are of a contrary character, appear indisposed to be practical and prosaic. Mr. Sharpe, who this session reserves his archæological bias for a second and greater effort at Willis's Rooms, will probably revolutionise the standard ornaments of modern churches, if he succeed in showing that a cast material like terra-cotta can be applied to their construction without prejudice to the æsthetic dogma contained in Pugin's celebrated words,—"Ornament your construction, but do not construct your ornament."

The description of the lantern of Ely Cathedral cannot fail to be interesting. Mr. Rowe, the architect of that diocese, and a well-known member of the Institute, has had the good fortune of being enabled to make a valuable set of drawings showing the construction of the old lantern, which is now covered up both internally and externally with a lining,—good as far as modern work can be,—but completely hiding the remarkable Mediæval framing, which, sandwich-like, still exists. Mr. Gambier Parry, who has been lately decorating the interior of it, will probably lend his valuable aid in a discussion, which will derive additional interest from the fact that the president of the Institute has been engaged for nearly a quarter of a century upon the restoration of the entire cathedral. The evenings devoted to purely archæological subjects are happily few; after all, the tourist season affords so many opportunities for the exchange of statistics, and the ventilation of ideas more or less visionary thereon, that we think the members of the Institute are to be congratulated upon the fact. But old Cleeve Abbey, which was founded by the Cistercians, and remains a picturesque and extensive ruin on the shore of the Bristol Channel, in Somersetshire, will lose nothing from the graphic pen of the Rev. Mackenzie Walcott; and Egypt, to which country the Professor has lately paid a visit, is both old and new enough to furnish impressions quaint and fresh to an architect as able to receive them as Mr. Lewis.

We believe we are correct in stating that the Committee for obtaining sessional papers have made one or two suggestions which, if carried out, may conduce towards rendering the Institute of more interest to provincial architects than it is stated to be at present. It has been thought that members resident in the country frequently decline to prepare a paper from a fear of their inability to attend in London at the time advertised for its delivery. Others refuse from other causes, and some object to the trouble of reading, or the necessity of publicly exhibiting themselves. It was suggested, therefore, that gentlemen, members or otherwise, possessing information likely to be useful or interesting to the profession should be invited to send contributions, both literary and artistic, to the Secretary, under cover to the Committee of Sessional Papers; and such contributions, if approved, should in some cases, be read by one of the Committee, or, in others, taken as read and printed in the Institute Transactions. If, on the contrary, they should not be considered of sufficient technical interest, they would be returned to their respective authors. Another suggestion, which, perhaps, is only the development of the present custom, was to invite several members to prepare short papers upon a particular subject, and to devote one evening to reading and discussing them. Thus an evening might be devoted to an Indian topic, and men like Mr. Fergusson, whose intense literary occupations render him quite unable to prepare a long paper, would perhaps be not unwilling to write a short one. It may be urged that this result can be obtained in the usual discussion which follows every paper, but it is not obtained, for the very good reason that men who talk the best and most glibly are not always those who have the most information to impart; at least, if so shrewd an observer as Swift is to be believed, and his words are worth repeating:—"Men of most learning are generally . . . . the worst talkers on a sudden, ... because they are confounded with plenty of matter, variety of notions and of words, which they cannot readily choose, but are perplexed and entangled by too great a choice." Indeed, we cannot but think that the ordinary discussions of the Institute illustrate too frequently that "barrenness of invention and of words by which men, who have only one stock of notions upon every subject, and one set of phrases to express them in, swim upon the superficies, and offer themselves upon every occasion." We would further impress upon the authors of all papers announced for this session, the absolute necessity of furnishing the Institute printer with their manuscript in time for the committee to take cognisance of the author's proof before it is read to the members, and become thereby the property of the public and the press.

At one of the meetings of last session it was casually proposed that there should be an annual lecture upon the subject of new, or the revived application of, materials. One delivered at an interval of years runs the risk of becoming a mere catalogue of discoveries and inventions; while inventors themselves are apt to regard an invitation from the Council to be present at such a discussion as an opportunity to advertise their wares; and this is exactly what the authorities of the Institute have been always, perhaps, over-careful to avoid. It is nevertheless an evil, and one which has already been remarked in our columns; and we are glad to again call the attention of inventors to the possibility of leaving their own productions to be treated from a general rather than a personal point of view. Indeed, it would be well for any architect who has been enabled to make a trial of a new invention of importance connected with building to communicate with the secretary, so that on some specified evening several short descriptions, thus accumulated, of a similar nature might be offered to professional notice.

The approaching session is of more than usual promise, seeing that the Biennial Conference of Architects is to take place next year, and that the report of the Special Committee appointed to consider "the financial condition of the Institute and the best means of increasing its efficiency" is likely to be presented to a special meeting of the members. The reconsideration of this report, which is already agreed to and ready for presentation, cannot possibly be settled at one meeting. The rumour that it was slightly revolutionary in suggestion is improbable, from the fact that six out of the twelve members consisted of Messrs. Donaldson, T. H. Wyatt, T. H. Lewis, Roger Smith, Worthington, and Cockerell. At the same time, by many of those members who have of late years been the most diligent attendants at the meetings, reform of a radical type in some, at least, of the business departments of the Institute of British Architects would neither be received with disfavour nor deemed, however startling, to be beyond the possibility of practical amendment.

SOME OLD HOUSES AND THEIR STORIES.

WADDINGTON OLD HALL AND KING HENRY VI.

In Lancashire are great mountainous hills commanding the most extensive prospects, whence keen-sighted watchers might mark advancing foes from great distances, and by means of horn-blowing, signal-posts, or bonfires spread warnings far and wide. Amongst them still stand many of those ancient halls in which of old brave squires and knights spent their rude hardy lives, when in their neighbourhood were vast tracts of wild uncultivated land, roadless and pathless, which partially remain, and are even now full of difficulties and dangers for travelling strangers. In the midst of forests almost impervious to the light of day, protected by mist-generating swamps and bogs, these tracts afforded many safe hiding-places for those who might need them, as many did in the days of which we are to speak. It was in the midst of this and such scenery that Robin Hood of old preserved his freedom to a ripe old age, despite all that the sheriffs could do or devise for his capture.

But in the days we are to deal with bold Robin of Loxley no longer,—

> "O'er the hills of Hallam chased
> The wide-horn'd stag, or with his bowmen bold,
> Waged war on kinglings."

He had been long under the sod of that green hill-side, in Kirklees Park, where his grave is still shown, or rather is not shown,* when the old hall at Waddington,—one of those referred to above,—received the guest by whom it was to be made so memorable in history.

Lancashire was then wild, half-savage, thinly-populated; its towns and villages were small, few and far between, and its mountainous and swampy regions were vast solitudes, known only to wandering vagrants and outcast robbers. It was the native home of superstition, where relics of old heathendom survived in their greatest strength; there, as in Northumberland, witches, fairies, and goblins made their great stronghold, wherein they held their own, long after the spread of education and knowledge had driven them from other parts of the country. Waddington Hall stands by a tiny little picturesque village of the same name, not far from Clitheroe, on the banks of the Ribble, and about twenty-nine or thirty miles from Manchester,—a remote out-of-the-way place, where, even in these railway days, the arrival of a stranger is quite an event. The building, which has been modernised, and despoiled of its former beauty, consists of a centre and two gables, in a partly ruinous condition, and has been converted into a farmhouse of the meaner kind. It is in the parish of Milton, where Lancashire and Yorkshire join their boundaries, and belonged, in the fifteenth century, to the Tempests, of Bracewell, in whose time the country surrounding it was hardly less primitive than it had been in the days of the Saxons. One who visited this old Hall some twenty or more years ago says mournfully, "'To what base uses may we come,' was our reflection as we went under a roof which had given shelter and hospitality to a king. Meanness and dirt, cows and cowhouses, dogs and stables, with sheltered implements of husbandry, alone saluted our sight; and even after we were within a part where human beings we thought might dwell, we still doubted if we were where we should find any one of our own species. Turning a little to the right, however, we found that it was 'feeding time' for others besides the quadrupedal live stock. There, around a clothless table, and up and down a filthy room, sat, or stood, grandfather and his wife, master and his wife, a serving-woman, and several brawny lads, with one intelligent-looking girl, literally devouring fried fat bacon and boiled potatoes, with a gusto which an epicure could not fail to envy. The condition of their persons we pass, lest we should be charged with caricature. The character of the group was as singular as their appearance. We saluted them and received no reply. We put a question, and was answered by a simple 'yes.' Another interrogatory brought forth a 'no.' Clearly were we defeated in our purpose of getting information." But the writer, whose perhaps unceremonious interruption of a meal at first gave offence, was afterwards more fortunate, being shown over the building. The apartment still called the King's Room, when viewed from the front, is seen in the right-hand gable; the large window is, within, in a deep recess, formed by the great thickness of the walls. The floor is of oak. It is reached by two staircases, one in a turret visible from the outside of the hall, the other inside; the former, that by which the king descended while his pursuers were ascending the other, is called "Henry's Staircase," and is built of stone. Our sketch of the hall was taken from behind the building, to show the large window from which it is said the king escaped.

We will now glance backwards through the mists of time and pass in review, briefly, the events which in the year 1463 brought Henry of Windsor, a wretched, hunted fugitive to Old Waddington Hall.

There are no pages in history more melancholy or terrible than those which record the last years of that most unfortunate, unhappy monarch, Henry VI. From his infancy upwards fortune sported with him as a cat does with a mouse, as cruelly and capriciously. His glorious father, the hero of Agincourt and conqueror of France, grieved at his birth, seeing, as he believed, that the stars had shed upon it a malignant influence. Tradition has preserved the rude stanza in which his prophetic forebodings found expression:—

> "I, Henry, born at Monmouth,
> Shall small time reign, and much get:
> But Henry of Windsor shall reign long, and lose all,—
> But, as God will, so be it."

The infant grew up constitutionally ailing and weak, unfitted for those robust sports and exercises by which the youths of his time were strengthened to endure hardships and trained to the use of arms. He took no delight in war, was gentle in word and deed, and, as a man, won the love, if not the admiration, of all about him. Chaste, temperate, and self-denying, he displayed, when provoked by insults or injuries, the most perfect command over his passions, was forgiving, patient, and merciful. A contemporary historian notes as a very remarkable and extraordinary peculiarity in his character that he did not swear in common conversation himself, and even re-

* We quite recently had the greatest difficulty in procuring admission to the park, and were told that Sir George Armitage persistently refuses to admit visitors of all kinds on any pretext.

proved others who did so. From the time of his ascending the throne, or rather from the time of his father's death in 1422, when he was but eight months old, England presented a scene of ceaseless contentions and disturbances. Selfish and designing ministers made the boy-king their unsuspecting tool; he was systematically misinformed, hoodwinked, and misled by those who were his appointed guardians. Discordant elements which the strong hand and resolute will of the late king had kept in subjection grew more and more threatening and stormy as he approached manhood. The ambitious and unscrupulous welcomed every fresh disaster as favouring their own evil designs, and the general state of the country engendered widespread feelings of dread and discontent. The population had been so ruinously decreased in the course of that long and desperate warfare by which the crown of France had been won, that there were not labourers enough to carry on the ordinary field work, so that miles upon miles of fair land which had long been devoted to the growth of corn, &c., were either converted into pastures or entirely neglected. The taxes had become most oppressively heavy, and the starving poor were forced to live upon fern-roots and ivy berries, for wheat was 2s. 6d. a bushel, then a monstrous price. The appearance of Joan d'Arc and the expulsion of the English from France formed a new element of disorder and dissatisfaction, which was fearfully increased when Henry married the beautiful and accomplished Margaret of Anjou,—she was but sixteen years of age,—in April, 1445, and by treaty ceded the keys of Normandy, Maine, and Anjou to her father, René, an amateur poet, painter, and sculptor, the titular king of Jerusalem, Sicily, and Naples, and last, for England worst, a dependent of the French monarch, Charles VII.

When in 1449 the French army invaded Normandy, and effected its entire conquest, the long-smouldering fires of popular discontent burst into flames. To pacify the tumultuous people, the Duke of Somerset was conveyed to the Tower for surrendering Caen; but men moodily and with threats asked, Who surrendered Maine and Anjou? From bad, things progressed rapidly to worse. The Kentish men rose, under Jack Cade. Other insurrections followed, and alarming rumours and suspicions became rife in all parts of the kingdom. The poor bewildered, helpless king began to realise the full terrors of his position, grew ill, became dangerously worse, and then a new horror arose, for a report spread far and wide that the taint of insanity inherited from the French king, his mother's father, who died a raving maniac, had developed itself in Henry. A Parliamentary record, still existing, informs us how certain nobles, accompanied by the Bishop of Chester, were deputed by the House of Lords to ascertain in a personal interview the exact condition of the king, and obtain his wishes with regard to matters of serious moment, "to the which matters," says the melancholy record, "nor to any of them they could get no answer nor sign; for no prayer nor design, lamentable cheer nor expectation, nor anything that they or any of them could do or say, to their great sorrow and discomfort. After dinner they came to the king's highness in the same place where they were before, and there they moved and stirred him by all ways and means that they could think to have answer of the said matter," but all in vain; for the king, sitting motionless, would neither by word, action, nor look reply to them, and so they "with sorrowful hearts came their way." Under such affecting circumstances even it was rather with scorn than pity that the great mass of Englishmen regarded their sovereign's mysterious and awful affliction. Some months after, however, he recovered his senses, and resumed the reins of government.

Queen Margaret, a proud, imperious beauty, whom her father had probably petted and spoiled, had a powerful mind and resolute will, but was wanting in prudence, and was without sufficient control over her passions. Impelled by the dangers surrounding her beloved husband, she resolved to play a prominent part in the business of government, and displayed the most untiring energy, diligence, and industry in the transaction of business. The still-existing records of large sums which she expended in the purchase of paper, wax, account-books, bags for money, legal advice, &c., show how largely state matters passed through her hands. Yet the private affairs of her own household do not appear to have been in the least neglected. The expenditure of carefully-regulated sums, for her grooms, pages, beds, bakery, saddlery, kitchen, larder, scullery, water-house, laundry, poultry, pantry, almonry, herbman or gardener, scalding-house (wash-house), armour-bearer, esquires, clerks, secretaries, &c., all received her constant supervision. Nor was she too busy to look after the poor; for her charities were large and numerous, and, so far as we can tell, judicious. Proofs of a kindly, womanly nature are not wanting, terrible as she was in war and cruel as she was in her anger. There is an item in her accounts of 200*l.* bestowed as a marriage portion on one of her maidens, a large sum in those days, and one much in excess of that she had spent during that entire year upon her own royal wardrobe. There are other sums mentioned in her private accounts of daily offerings to the poor, of sums paid to three esquires who had suffered from heavy infirmity by Divine visitation, and of a generous gift to two poor men at Newmarket, whose stable had been burnt on the occasion of her paying a visit to that town. Her tenderness for her husband is also illustrated in the record of sums spent "for divers tailors and painters, for divers parcels and stuffs bought by the queen's special command for a disguising made before the said king and queen at the Manor of Pleasaunce," at Greenwich, famous for its beautiful gardens.

Crushed by taxes, carried off in shoals by plague, famine, and a desolating foreign war, the people of England might well grow reckless, and be ready to embrace any desperate project promising a change which they thought could not possibly be for the worse, and to foster and create such feelings those were not wanting who were only too willing to avail themselves thereof directly their long and secret preparations were completed.

In 1451, some little time before the above-mentioned illness of the king, occurred an event awakening in its greatest intensity a terror which must have haunted Henry from his childhood upwards, and had influenced his father before him: evil news came from Ludlow Castle, where Richard Plantagenet of the House of York, a proud, overbearing, ambitious man, who, the year before, in defiance of law, had laid violent hands upon several gentlemen because they were his personal enemies,—had raised a powerful army of half-savage kernes and gallow-glasses in the marches of Wales. With this army he soon after reached London, although in a declaration formally published and signed by his own hand, he protested his unabated loyalty to the king, who had received his oath of allegiance, and asserted that he had no object beyond securing attention for national grievances. The citizens of London knowing well enough his real purpose, closed their gates and manned their stout walls, whereupon he retreated into Kent, where the king, in his anxiety to escape warfare, listened to his desires and promised compliance with them under certain conditions, wherewith the duke was seemingly satisfied. But the reconciliation meant nothing real, and not long after the duke, dropping the mask, openly proclaimed his claim to the crown, and his intention of enforcing it. Then ensued the horrible Wars of the Roses, which proved to be the longest and most devastating of civil wars, lasting, as they did, from beginning to end, about fifty years, the first ten of which were marked by deeds of cruelty, hatred, and blood-thirstiness which would have disgraced the veriest savages. Yet we must not forget how, when even "good" men once abandon themselves to the impulses of their worst passions, they soon become their slaves, and are whirled away in a furious torrent of brutality, to perform acts of vengeance and cruelty, the mere thought of which would, under other circumstances, make their blood run cold. Warfare never existed at any period of the world's history without demonstrating that awful warning. This tigerish quality is latent in our race. This it was which the Saxons, Danes, and Germans knew of old as Berserkerwuth, at which the ancient Romans, who so loved to see the fighting gladiators, shuddered; a frenzy of fierceness in which men spared neither friend nor foe,—not even themselves. Our fathers, who shuddered at the doings of the Duke of Alva, as the Spaniards may have shuddered at the doings of York and Lancaster, grew pale as they read of savage doings in the time of what is called the first French Revolution. So too did the Germans, who in their War of the Peasants had filled us with horror; and so, too, in our own day did we, when not long since the same blind, brutal ferocity began to characterise the fighting of France and Germany. We must not pause to moralise, of course, but it is as well to remember that war is war, the relic of our former savage state when might was right, and that, modify as we may its outer seemings and pretensions, its real nature never can be changed. As it was in the great civil war we are now looking back upon, so it was before, and has been since, and doubtless ever will be. The business of civilisation is not half done while the possibility of war exists, excuse it as we may.

Passing over the complicated horrors of fire, famine, and disease, through field after field of battle, where the dead have been hurriedly and imperfectly buried, and often left unburied; through deserted half-destroyed towns, past the ruins of smoke-blackened churches and castles, hearing the shrieks of maddened women, and the unheeded cries of starving orphans, we pass hastily on to the year 1462. Strangely changeful fortunes have carried victory or defeat, now to this side, now to that. Yesterday Henry of Lancaster was king, and Edward of York a wandering exile, with a price upon his head. To-day Henry has fled from victorious York; so it comes about in the year we have named, that although Richard Duke of York had been killed, with many thousands of his partisans, yet Edward, his son, sat in seeming security on the English throne; that the dauntless Amazonian queen, Margaret, was in exile, vainly imploring assistance, now in this court, now in that; and that her unfortunate husband was in Scotland amongst the moors and mountains of Kirkcudbright, protected by his relative, the King of Scotland; praying daily, in an agony of despair, for the safety of his wife and son. A few months later Henry is at Harlech Castle, in Merionethshire, and Margaret is once more on the sea with brave Pierre de Brezé, her old admirer, and his 2,000 Frenchmen, storm-tossed, and in terrible danger. Bearing every reverse with fortitude, and every humiliation with dignity, this extraordinary woman remained active, vigorous, and helpful, despite a long series of the most overwhelming misfortunes, hardships, and disasters. For five days she subsisted on the third of a dried herring, and had been exposed to every variety of weather and change of temperature. She attempted to land at Tynemouth in October, but was repulsed and driven off to encounter a dreadful storm, in which two of her ships were driven ashore, on the rocky coast of Northumberland. Soon after, she landed, cheering her half-drowned troops with a smiling face and confident air, near the regal fortress of Bamborough, the largest of the great northern fortresses, which, while a new castle, gave its name to a famous town, which still bears it—Newcastle-on-Tyne. Stout bands of friends flew to her from various parts of Scotland and England, and with their aid she soon took not only Bamborough, which commanded the northern frontier and the port, but also the neighbouring castle of Dustanburgh, and Alnwick, the great baronial fortress of the Percies, standing on the high road from London to Berwick. Then armed and trusty horsemen were sent in hot haste to fetch Henry to the arms of his heroic wife and his only son.

Again hurrying forward, we leave the poor queen with her little force of Scotch and English, and her 2,000 Frenchmen, to encounter an army 40,000 strong, advancing under King Edward and the king-making Earl of Warwick to defeat and once more drive her from the land. But once more she returns, and once more the three important northern fortresses are in her hands. Then followed the terrible battle of Hexham Levels, fought on the 15th of May, 1464, which ended again in the defeat and flight of the Lancastrian army. Then it was that the poor queen, flying with her son, sought refuge in the gloomy thickets of that savage old forest, where she was stripped of her treasure and part of her clothing by robbers, and where in the darkness of an awful night her romantic encounter with the compassionate outlaw took place. The king fled in another direction towards Scotland, and the old historian, Hall, tells us that Henry was the best horseman of that day, for he fled so fast that no one could overtake him; yet he was so closely pursued that three of his horsemen, or bodyguard, with their horses trapped in blue velvet, were taken, one of them wearing the unfortunate monarch's cap of state, called a bicocket, embroidered with two crowns of gold and ornamented with pearls." The two crowns were utterly lost now, for that of England had followed that of France, and the cap might well be abandoned by its homeless and almost friendless



Waddington Hall, Lancashire, in which Henry VI. found Refuge (1464).

owner. He reached Scotland at last, passing through no one knows what hardships and perilous adventures, and there his poor wife and son once more embraced him, and he heard the story of her wild adventures, how she slept in the outlaw's cave, and how she was befriended by the robber's wife, who claimed the royal sympathy on the ground that she, like the queen, had known a better and higher state. There they probably heard first of the wholesale slaughterings which followed the loss of their last battle, and wept for the dear and faithful friends so cruelly done to death.

But Scotland was no longer a safe asylum. There were treaties of alliance in progress between the two countries, and alarming rumours were current concerning certain secret conditions which were on the eve of ratification. With her faithful friend De Brezé, who had staked and lost all he had in her service, save life, Margaret bade her husband a sad farewell in his old place of concealment, amongst the wild desolate moors and barren mountains of Kirkcudbright. She intended to set sail secretly and by night, aided by a treacherous Englishman named Cork, who suddenly made, first the queen and her son, and then her friend and his esquire, prisoners, and would have delivered them into the hands of her enemies, had not De Brezé, bursting his fetters in the night, released his esquire, who, seizing the oars, fought with him against, and overcame, Cork and his crew of five. Leaving the poor queen to continue her voyage, and then to recommence her wearisome wanderings and vain appealings, during years of peril, misery, and disappointment, we must follow Henry, who on parting with his queen started forth in disguise, and probably alone, to seek a safer refuge in the wilder and more secluded parts of England. Historians have denounced this step as the extreme of folly,—we do not agree with them. In those days there were many spots in the north of England unknown to even those who lived within a comparatively few miles of them, being shut in by impenetrable woods and great tracts of dangerous swamps and bogs, where criminals had defied pursuit many and many a time. Indeed, there are some such spots there even now. In many of these lonely places secret caves existed, known only to wild beasts and the wretched outcasts whose necessities or dangers made them seek such places of concealment or shelter. With these beasts, and amongst such wretched beings, was the former King of England and France glad to herd until the numerous parties of troops sent in search of him had one by one abandoned or relaxed their efforts for his capture. Then from time to time he would venture to visit some of the halls and castles still held in these remote places by his secret friends, and to this day, in such old mansions, tradition records the rooms in which he enjoyed the occasional luxury of a bed after a good meal, while his host kept anxious watch, and trusty eager spies were sent abroad to the neighbouring mountain and hill-tops, to give the earliest note of an approaching enemy. In these old halls the relics of his visits are still pointed out; the bath he used when haggard, worn, and weary, soiled with mud or dust, he came in from his secret wanderings, is still shown, together with the spoon he used; his boots and gloves, which he left with his host, Sir Ralph Pudsay, at Bolton Hall, in Yorkshire, where rooms still bear the name of "King Henry's Chamber," and "King Henry's Parlour." Dr. Whitaker, describing these relics in his History of Craven, speaks of them as indicating a frame of almost feminine delicacy, which he thinks was in itself sufficient to make their owner contemptible in the eyes of men when the habits of the great, both in peace and war, demanded the utmost bodily strength and robust health. He says,—"The boots are of fine brown Spanish leather, lined with deer's-skin tanned with the fur on, and about the ankles is a kind of wadding under the lining to keep out the wet. They have been fastened by buttons from the ankle to the knee; the feet are remarkably small (little more than 8 in. long), the toes round, and the soles, where they join to the heel, contracted to less than 1 in. in diameter. The gloves are of the same material, and have the same lining; they reach up to the elbows (as women's gloves did), but have been occasionally turned down, with the deer's skin outward. The hands are exactly proportioned to the feet, and not larger than those of a middle-sized woman."

From Bolton Hall, where he had been under the care of Sir Ralph and his wife, who was the daughter of the king's esquire, Sir Thomas Tunstal, Henry came to Waddington "Old Hall," having probably some good reason for doing so, and there he appears to have remained for several months. There he may probably have received secret messengers, who, in one unsuspected guise or another, contrived to bring him news of his unhappy wife and son. He may have read of her arrival on the dangerous coast of Flanders, whereon she was driven by tempestuous weather; of her being in a destitute condition, and travelling in a common carrier's cart, followed by the devoted Pierre de Brezé and a few other gentlemen; of the people coming out from the towns in crowds to see the once great queen thus lamentably reduced. And the poor king, looking at the letters through a mist of tears, might well have exclaimed,—

> "Can this be Margaret's lot? fair England's
> Queen,—rival in counsel, to the wise; in
> Valour to the brave; and single-handed
> Sole antagonist of kings!"

He may also have heard how, near Bethune, she barely escaped two hundred English horsemen, who lay in wait for her, having sworn they would compass her death; and how at length, reduced to despair, she had settled down in the castle of Knerere, in the diocese of Verdun, and near the town of St. Michael, where her father, being poor, was allowing her all he could afford, namely, 2,000 livres a year.

Thankful for her safety, the long-suffering, gentle monarch at length passed his days in some degree of peace, watchful and anxious, going out by stealth, and only when there were no strangers near; enjoying the beauties of nature in the immediate vicinity of his latest refuge.

Close by the Old Hall at Waddington, which was then the property of Sir John Tempest, of Bracewell, the father-in-law of Thomas Talbot, is a pretty spot still called "King Henry's Meadow": why, no one knows; whether it was his favourite resort, or is associated with some one or more of the numerous stirring adventures he must have met with at this time, is more than we can say.

Not far from here, at Whalley, which covers an extensive tract of ground in the honour of Clitheroe, stood a famous Cistercian abbey, the mere presence of which indicated the solitary and uncultivated character of the surrounding country; for it was the custom of this order of monks to select such spots that they might, by their influence and example, redeem them from the charge of unfruitfulness. The king, in his disguise, it appears, occasionally shared the hospitality and the devotions of the charitable and pious white monks, and it may be that he was on his way from them through the merry green woods by which it was surrounded one day in July, 1464, when a wandering Benedictine monk from the abbey of Abingdon, in Berkshire, saw and recognised him! Cautiously the black monk followed in the steps of the hapless Henry, and, exultingly, he noted the place where he had found shelter and protection. Then he hurried to a well-known Yorkist, Sir James Harrington, of Brierly, near Barnsley, who at once assembled his friends, and, marching secretly forth before the day was out, made the fact known to the Talbots and other partisans of York, residing



DESIGN FOR PROPOSED BELFRY AT CHRISTCHURCH, OXFORD.— By Mr. James Fergusson, F.R.S.

near Waddington, who also made their secret preparations; for the friends of Henry were numerous in that locality, and the news of his capture, when once made, would spread far and wide with dangerous rapidity. It was not, however, desirable that attention should be attracted by the movement of any large body of men; therefore the capture would be best effected by the small but sufficient force led by Sir James Harrington.

Little thought the poor hunted fugitive, when in the calm of that summer night he looked forth from his window after partaking of the last meal of the day,—called the livery,—how he was taken in the coils of a mesh which busy hands were then rapidly tightening around him. In the darkness of that night, and sheltered from observation by the forest trees, it is most likely that Sir James crept stealthily upon his prey.

Amongst the gentry of that day the dinner-hour was ten o'clock in the forenoon. The common, vulgar herd dined later. Just as King Henry and his friends, "Dr. Manning, a Dean of Windsor, Dr. Bedle, and one Ellarton," had sat down on their wooden benches, to the long, clumsy oaken board on which the great pewter dishes were smoking, amidst great "jacks" of ale and wine, a sudden uproar arose, shrieks of women, oaths of men, and a cry of "Fly! fly! the king is betrayed!" As his enemies burst into the room, amidst the clash and rattle of arms and armour, Henry darts up the stairs. As they ascend after him on one side, he descends by a second staircase on the other, and, leaping from a window, flies desperately towards the river. For a moment the scent is lost, but presently it is regained, and there is a rush of fierce pursuers at his heels. Who can paint the desperation and agony of that awful flight?—the painfully beating heart, the labouring breath, the yielding knees, the horrible staggering, and occasional stumbling; for Henry was no lusty runner, trained, and muscularly strong, but weak of body, and feeble in health.

From Waddington Old Hall to "Bungerley Hippin Stones," by which the river is forded, is a considerable distance. Panting and speechless, the king reaches these stones, essays the leaping from one to another, and falling, in an instant his pursuers have clutched him, and dragged him from the water.

In "Warkworth's Chronicle," printed by the Camden Society, the story is told as follows:—

"Also, the same yere, kynge Henry was takene beside a howse of religione in Lancashyre by the mene of a blacke monke of Abyngtone in a wood called Clethcrwode, beside Bungerly hyppyngstones, by Thomas Talbott, sonne and heyre to sere Edmund Talbot of Bassballe, and Jhon Talbott, his cosyne, of Colebry, withe other moo; which dissesyde him beynge at his dynere at Wadyngton halle: and [he was] carryed to London on horsebake, and his leges bownde to the styropes."

On his way to London he was treated with the utmost indignity, being mounted on a miserable hack with an insulting placard fixed on his back. At Islington Warwick commanded that no respect should be shown him by the crowds who came thronging from London and all the surrounding villages to see him. Reaching the pillory, he was led three times round it, as if he had been a common felon, amidst cries of "Treason! treason! behold the traitor!" One rude churl even ventured to strike him, when Henry, turning meekly, yet with dignity, upon the cowardly knave, merely rebuked him by saying, "Forsooth, and forsooth, you do foully to smite the Lord's anointed!"

But we are now far away from the old house at Waddington, and the story of King Henry's last days is something apart from it, which we are not called upon to tell. We may, however, add that Edward IV. rewarded each of the local gentry who had taken part in the capture, with 100 marks; that Sir Thomas Talbott received the larger reward of 100*l.*; and that Parliament confirmed a grant of lands to Sir James Harrington, consisting of the castle, manor, and domain of Thurland; a park called Fayzet Whate, with other estates in Lonsdale, county York; and Holme, in Kendal, county Westmoreland, and in six townships in the county of Lancaster, the forfeited estates of Sir Richard Tunstell, and other "rebels." The lands were afterwards lost to the family when Lancaster was once more in the ascendancy after the battle of Bosworth, and Sir James was sent to the Tower, where his captive had died broken-hearted, or had been murdered, and where the poor widowed and childless Queen Margaret of Anjou had a narrow escape from sharing the same dire fate.

PROPOSED BELFRY AT CHRISTCHURCH, OXFORD.

There are few, if any, of the recent improvements at Oxford which have given rise to so animated a discussion, or have drawn forth so much diversity of opinion, as the proposal to erect a tall belfry over the staircase hall in Wolsey's quadrangle at Christchurch. Nor can it be said that the interest manifested in this proposal is at all unreasonable; for, if carried out on true principles, it may become an ornament to the city. If, on the other hand, a mistake is made, it may tend to the disfigurement of one of our noblest collegiate institutions, and be a reproach to the arts of the nineteenth century for ever afterwards.

One of the main obstacles to an architect using his own common sense in this matter is the existence of a tradition in Oxford that Cardinal Wolsey intended to use the hall, containing the stairs as a basement, for a great tower, and made the lower walls proportionately strong, in order that they might be sufficient to carry the superstructure. Like most traditions, no one seems to know when and how it arose, and when looked a little closely into it vanishes, like the baseless fabric of many such visions, into very thin air.

Cardinal Wolsey died in 1530, and there is in the Bodleian a drawing by Neele of this quadrangle as it existed in 1566. Though not in the best possible perspective, it is quite sufficient to enable any one familiar with the existing buildings to see what Wolsey not only intended, but carried out. The hall was complete as we see it now, and adjoining it, in the south-east angle of the quadrangle, there stood an octagonal tower,



SALOON AND STAIRCASE, DOBROYD CASTLE, TODMORDEN.—Mr. John Gibson, Architect.

very little higher than the hall itself. Under this tower was a gateway, through which a roadway led diagonally across the site of the present staircase to the cloisters of the cathedral. This tower was removed, apparently, when Dr. Samuel Fell in 1640 determined on erecting the present staircase. This he carried out with the assistance of an architect of the name of Smith, and completed it about the date just quoted.* So far, therefore, from Wolsey proposing to raise a great tower on the staircase, it seems quite certain that the design of the hall which contains it was not conceived, or the foundations laid, till after the Cardinal had been for more than 100 years in his grave. Notwithstanding this, the authorities of Christ Church determined to carry out what they conceived to be the pious wishes of their illustrious founder, and for this purpose first strengthened the roof over the vault to such an extent as to enable it to bear the weight of a wooden structure to contain a peal of bells. This, which is irreverently called the meat-safe, has been the subject of infinite jokes, and an immense expenditure of wit during the last few years, but not very fairly. It always was intended that it should be concealed by carrying up the stonework of the tower, and being only an internal part of the structure, its outward appearance was of no consequence.

The next stage of the proceeding was to invite six eminent architects to send in designs for the proposed tower. One of these, by Mr. Jackson, was exhibited at the Royal Academy last season, and has recently been published in a contemporary periodical. The public have no means of knowing whether it was the best or the worst, nor is it necessary, at present, to express any opinion on its merits. It is quite sufficient, however, to exemplify the inherent difficulties of the problem. Either the tower, built on so broad a base, must be so low and squat as to be a deformity, or if carried out to its legitimate proportions, as is done by Mr. Jackson, it must be such a mass as to dwarf everything in its neighbourhood. Even if beautiful in itself, its juxtaposition would reduce the apparent dimensions of the hall to those of a room. The buildings round the quadrangle, already too low, would be still further reduced in height; and as for the poor cathedral, already thrust into a corner, it would become only an ordinary-sized parish church, and its spire a pinnacle. It seems almost impossible to conceive any unfettered intellect proposing to add so monstrous a nose to so small a face, and certainly there is no authority for it in the Middle Ages,—no such mass was ever deliberately added to such comparatively diminutive surroundings; and unless it was with the idea of carrying out the founder's wishes, it is not at all probable that it would be suggested now.

Under these circumstances, Mr. Fergusson submitted to the Dean and others connected with the College, a suggestion embodied in the accompanying woodcut, which he believes would meet the exigencies of the case. In the first place, because it is easy of construction. There is now between the hall and the staircase a passage, across the centre of which, if an arch or girder were thrown, it would divide it into two equal squares, and then over that one next the quadrangle a tower could be erected without any constructive difficulty.

In the next place, because its position, if so placed, is exactly where some object is wanted to break the monotonous skyline of the present building.

Thirdly, because its dimensions,—in area about one-fourth of those of the staircase,—are exactly such as are sufficient for its purposes of containing the bells, and such as would harmonise perfectly with the surrounding objects, without interfering with any of them.

Fourthly, it could be erected for about one-fourth of the expense, and without any danger of crushing its foundations, which is more than can be said of the other proposals; and,

Lastly, because it is reverting, as nearly as can now be done, to the design of the quadrangle as it was conceived and erected by its pious founder.

The details of the design may be made anything anybody wishes. All its author contends for is that its position and dimensions are correct, and that if carried out it would add to the beauty of the group to which it is attached, without the possibility of its interfering prejudicially with the effect of any of its surroundings.

* These particulars have often been stated, but are here quoted from Dr. Ingram's easily accessible "Memorials of Oxford," published by Parker, with engravings by Le Keux, in 1837.

SALOON AND STAIRCASE, DOBROYD CASTLE, TODMORDEN.

We published not long since an outside view and ground-plan of Dobroyd Castle, the residence of Mr. John Fielden, and we now give a view of the interior of the saloon and staircase, the works having been carried out from the designs of Mr. John Gibson, of Westminster. The columns and pilasters are of Devonshire marble, the capitals of the columns being richly carved with representations of English national sports.

The panels over the doorways are of Caen stone, with representations of,—1st, Picking cotton; 2nd, Packing cotton; 3rd, Arkwright, with a lathe, wheels, and mechanical instruments near him, in his father's the barber's shop, apparently in deep thought upon some invention; 4th, Working the cotton-girls in a mill. There are several carved shields in the saloon, each bearing the monogram of the proprietor and his wife. From the floor line to the top of the saloon is 34 ft.; the floor dimensions are 27 ft. by 44 ft., the grand staircase rising from the saloon to the upper corridors. The woodwork generally is of oak, the doors being inlaid. The saloon chimney-piece and fender are of selected and choice marbles. The stairs are of Spinkwell stone, with elaborately gilt balusters, and inlaid oak handrail. The clustered columns of the corridors surrounding the saloon are of Devonshire and Greek green marbles, with carved capitals representing floral and animal life. The base of the saloon and the staircase is a square; it then forms into an octagon, and culminates in a circle. The lantern-lights are double, the inner one being glazed with stained glass specially designed. The artificial lighting is by two powerful sun-burners. The general walling of the saloon internally is Bath stone.

A MODEL CITY OF HEALTH AND COMFORT.*

It has been found in our towns, generally, that men and women who are engaged in industrial callings, such as tailoring, shoemaking, dressmaking, lacework, and the like, work at their own homes, among their children. That this is a common cause of disease is well understood. I have myself seen the half-made riding-habit that was ultimately to clothe some wealthy damsel rejoicing in her morning ride act as the coverlet of a poor tailor's child stricken with malignant scarlet fever. These things must be, in the ordinary course of events, under our present bad ordinary system. In the model city we have in our mind's eye these dangers are met by the simple provision of workmen's offices, or workrooms. In convenient parts of the town there are blocks of buildings, designed mainly after the manner of the houses, in which each workman can have a workroom on payment of a moderate sum per week. Here he may work as many hours as he pleases, but he may not transform the room into a home. Each block is under the charge of a superintendent, and also under the observation of the sanitary authorities. The family is thus separated from the work, and the working man is thus secured the same advantages as the lawyer, the merchant, the banker now possesses; or, to make the parallel more correct, he has the same advantage as the man or woman who works in a factory, and goes home to eat and to sleep. In most towns throughout the kingdom the laundry system is dangerous in the extreme. For anything the healthy householder knows, the clothes he and his children wear have been mixed before, during, and after the process of washing with the clothes that have come from the bed or the body of some sufferer from a contagious malady. Some of the most fatal outbreaks of disease I have met with have been communicated in this manner. In our model community this danger is entirely avoided by the establishment of public laundries, under municipal direction. No person is obliged to send any article of clothing to be washed at the public laundry; but if he does not send there he must have the washing done at home. Private laundries that do not come under the inspection of the sanitary officer are absolutely forbidden. It is incumbent on all who send clothes to the public laundry from an infected house to state the fact. The clothes thus received are passed for special cleansing into the disinfecting-rooms. They are specially washed, dried, and prepared for future wear. The laundries are placed in convenient positions a little outside the town; they have extensive drying-grounds, and, practically they are worked so economically that home washing-days, those invaders of domestic comfort, are abolished. Passing along the main streets of the city we see in twenty places, equally distant, a separate building surrounded by its own grounds, a model hospital for the sick. To make these institutions the best of their kind no expense is spared. Several elements contribute to their success. They are small and are readily removable. The old idea of warehousing diseases on the largest possible scale and of making it the boast of an institution that it contains so many hundred beds is abandoned here. The old idea of building an institution so that it shall stand for centuries, like a Norman castle, but, unlike the castle, still retain its original character as a shelter for the afflicted, is abandoned. The still more absurd idea of building hospitals for the treatment of special organs of the body, as if the different organs could walk out of the body and present themselves for treatment, is also abandoned. It will repay us a minute of time to look at one of these model hospitals. One is the *facsimile* of the other, and is devoted to the service of every 5,000 of the population. Like every building in the place, it is erected on a subway. There is a wide central entrance, to which there is no ascent, and into which a carriage, cab, or ambulance can drive direct. On each side of the gateway are the houses of the resident medical officer and of the matron. Passing down the centre, which is lofty and covered in with glass, we arrive at two side-wings running right and left from the centre, and forming cross corridors. These are the wards,—twelve on one hand for male, twelve on the other for female patients. The cross corridors are 12 ft. wide and 20 ft. high, and are roofed with glass. The corridor on each side is a framework of walls of glazed brick, arched overhead, and divided into six segments. In each segment is a separate, light, elegant removable ward, constructed of glass and iron, 12 ft. high, 14 ft. long, and 10 ft. wide. The cubic capacity of each ward is 1,680 ft. Each patient who is ill enough to require constant attendance has one of these wards entirely to himself, so that the injurious influences on the sick which are created by mixing up in one large room the living and the dying, those who could sleep were they at rest with those who cannot sleep because they are racked with pain, those who are too nervous or sensitive to move, or cough, or speak, lest they should disturb others, and those who do whatever pleases them,—these bad influences are absent. The wards are fitted up neatly and elegantly. At one end they open into the corridor, at the other towards a verandah which leads to a garden. In bright weather those sick, who even are confined to bed, can, under the direction of the doctor, be wheeled in their beds out into the gardens without leaving the level floor. The wards are warmed by a current of air made to circulate through them by the action of a steam-engine, with which every hospital is supplied, and which performs such a number of useful purposes that the wonder is how hospital management could go on without this assistance. If at any time a ward becomes infectious it is removed from its position and replaced by a new ward. It is then taken to pieces, disinfected, and laid by ready to replace another that may require temporary rejection. The hospital is supplied on each side with ordinary baths, hot-air baths, vapour baths, and saline baths. A day sitting-room is attached to each wing, and every reasonable method is taken for engaging the minds of the sick in agreeable and harmless pastimes. Two trained nurses attend to each corridor, and connected with the hospital is a school for nurses, under the direction of the medical superintendent and the matron. From this school nurses are provided for the town; they are not merely efficient for any duty in the vocation in which they are always engaged, either within the hospital or out of it, but from the care with which they attend to their own personal cleanliness, and the plan they pursue of changing every garment on leaving an infectious case, they fail to be the bearers of any communicable disease. To a hospital four medical officers are appointed, each of whom, therefore, has six resident patients under his care. The officers are called simply medical officers, the distinction, now altogether obsolete, between physicians and surgeons being discarded. The hospital is brought, by an electrical wire, into communication with all the fire-stations, factories, mills, theatres, and other important public

* From address by Dr. B. Richardson, at Brighton See p. 923, *ante*.

places. It has an ambulance always ready to be sent out to bring any injured persons to the institution. The ambulance drives straight into the hospital, where a bed of the same height on silent wheels, so that it can be moved without vibration into a ward, receives the patient. The kitchens, laundries, and laboratories are in a separate block at the back of the institution, but are connected with it by the central corridor. The kitchen and laundries are at the top of this building, the laboritories below. The disinfecting-room is close to the engine-room, and superheated steam, which the engine supplies, is used for disinfection. The out-patient department, which is apart from the body of the hospital, resembles that of the Queen's Hospital, Birmingham; the first out-patient department, as far as I am aware, that ever deserved to be seen by a generous public. The patients waiting for advice are seated in a large hall, warmed at all seasons to a proper heat, lighted from the top through a glass roof, and perfectly ventilated. The infectious cases are separated carefully from the rest. The consulting-rooms of the medical staff are comfortably fitted, the dispensary is thoroughly officered, and the order which prevails is so effective that a sick person who is punctual to time has never to wait. The medical officers attached to the hospital in our model city are allowed to hold but one appointment at the same time, and that for a limited period. Thus every medical man in the city obtains the equal advantage of hospital practice, and the value of the best medical and surgical skill is fairly equalised through the whole community. In addition to the hospital building is a separate block, furnished with wards, constructed in the same way as the general wards, for the reception of children suffering from any of the infectious diseases. These wards are so planned that the people generally send sick members of their own family into them for treatment, and pay for the privilege. Supplementary to the hospital are certain other institutions of a kindred character. To check the terrible course of infantile mortality of other large cities—the 76 in the 1,000 of mortality under five years of age—homes for little children are abundant. In these the destitute young are carefully tended by intelligent nurses, and mothers, while following their daily callings, are enabled to leave their children under efficient care. In a city from which that grand source of wild mirth, hopeless sorrow, and confirmed madness, alcohol has been expelled, it could hardly be expected that much insanity would be found. The few who are insane are placed in houses licensed as asylums, but not different in appearance from other houses in the city. Here they live, in small communities, under proper medical supervision, with their own gardens and pastimes. The houses of the helpless and the aged are, like the asylums, the same as the houses of the rest of the town. No large building for the poor, of pretentious style, uprears itself; no men badged and badgered as paupers walk the place. Those poor who are really, from physical causes, unable to work are maintained in a manner showing that they possess yet the dignity of human kind; that, being worth preservation, they are therefore worthy of respectful tenderness. The rest, those who can work, are employed in useful labours which pay for their board. If they cannot find work, and are deserving, they may lodge in the house and earn their subsistence, or they may live from the house and receive pay for work done. If they will not work, they, as vagrants, find a home in prison, where they are compelled to share the common lot of mankind. Our model city is, of course well furnished with baths, swimming-baths, Turkish baths, playgrounds, gymnasia, libraries, Board schools, fine-art schools, lecture-halls, and places of instructive amusement. In every Board school drill forms part of the programme. I need not dwell on these subjects, but must pass to the sanitary officers and offices. There is in the city one principal sanitary officer, a duly-qualified medical man elected by the Municipal Council, whose sole duty it is to watch over the sanitary welfare of the place. Under him, as sanitary officers, are all the medical men, who form the Poor Law medical staff. To him these make their report on vaccination and every matter of health pertaining to their respective districts, to him every registrar of births and deaths forwards copies of his registration returns, and to his office are sent by the medical men generally registered returns of the cases of sickness prevailing in the district. His inspectors likewise make careful returns of all the known prevailing diseases of the lower animals and of plants. To his office are forwarded for examination and analysis specimens of foods and drinks suspected to be adulterated, impure, or otherwise unfitted for use. For the conduct of these researches the sanitary superintendent is allowed a competent chemical staff. Thus, under this central supervision, every death and every disease of the living world in that district, and every assumable cause of disease, comes to light and is subjected, if need be, to inquiry. At a distance from the town are the sanitary works, the sewage-pumping works, the water and gas works, the slaughter-houses, and the public laboratories. The sewage, which is brought from the town partly by its own flow and partly by pumping apparatus, is conveyed away to well-drained sewage farms belonging to the city, but at a distance from it, where it is utilised on Mr. Hope's plan. The water supply, derived from a river which flows to the south-west of the city, is unpolluted by sewage or other refuse, is carefully filtered, is tested twice daily, and if found unsatisfactory is supplied through a reserve tank, in which it can be made to undergo further purification. It is carried through the city everywhere by iron pipes. Leaden pipes are forbidden. In the sanitary establishment are disinfecting rooms, a mortuary, and ambulances for the conveyance of persons suffering from contagious disease. These are at all times open to the use of the public, subject to the few and simple rules of the management. The gas, like the water, is submitted to regular analysis by the staff of the sanitary officer, and any fault he may detect which indicates a departure from the standard of purity framed by the Municipal Council is immediately remedied, both gas and water being exclusively under the control of the local authority. The inspectors of the sanitary officer have under them a body of scavengers. These, each day, in the early morning, pass through the various districts allotted to them and remove all refuse in closed vans. Every portion of manure from stables, streets, and yards is in this way removed daily and transported to the city farms for utilisation. Two additional conveniences are supplied by the sanitary scientific work of this establishment. From steam works steam is condensed, and a large supply of distilled water is obtained and preserved in a separate tank. This is conveyed by a small main into the city, and at a moderate cost distilled water can be supplied for those domestic purposes for which hard water is objectionable. The second sanitary convenience is a large ozone generator. By this apparatus ozone can be produced in any required quantity, and is made to serve many useful purposes. It is passed through the drinking-water in the reserve reservoir whenever the water shows excess of organic impurity, and it is conveyed into the city for diffusion into private houses for purposes of disinfection. The slaughter-houses of the city are all public, and are separated by a distance of a quarter of a mile from the city. They are easily removable edifices, and are under the supervision of the sanitary staff. The system of inspecting every carcass which is killed is rigorously carried out, with this improvement, that the inspector is a man of scientific knowledge. All animals used for food,—cattle, fowls, swine, rabbits,—are subjected to examination in the slaughter-house, or in the market if they be brought into the city from other depôts. The slaughter-houses are so constructed that the animals killed are relieved from the pain of death. They pass through a narcotic chamber, and are brought to the slaughterer oblivious of their fate. The slaughter-houses drain into the sewers of the city, and their complete purification daily from all offal and refuse is rigidly enforced. The buildings, sheds, and styes for domestic food-producing animals are removed a short distance from the city, and are also under the supervision of the sanitary officer. The food and water supplied for these animals comes equally with human food under proper inspection. One other subject only remains to be noticed in connexion with the arrangements of our model city, and that is the mode of the disposal of the dead. The question of cremation and of burial in the earth has been considered, and there are some who advocate cremation. For various reasons the process of burial is still retained,—first, because the cremation process is open to serious medico-legal objections; secondly, because by the complete resolution of the body into its elementary and inodorous gases in the cremation furnace, that intervening chymical link between the organic and inorganic worlds, the ammonia, is destroyed, and the economy of nature is thereby dangerously disturbed; thirdly, because the natural tendencies of the people lead them still to the earth as the most fitting resting-place into which, when lifeless, they should be drawn. Thus the cemetery holds its place in our city, but in a form much modified from the ordinary cemetery. The burial-ground is artificially made of a fine carboniferous earth. Vegetation of rapid growth is cultivated over it. The dead are placed in the earth from the bier, either in basket-work or simply in the shroud; and the monumental slab, instead of being set over or at the head or foot of a raised grave, is placed in a spacious covered hall or temple, and records simply the fact that the person commemorated was re-committed to earth in those grounds. In a few months, indeed, no monument would indicate the remains of any dead. In that rapidly resolving soil the transformation of dust into dust is too perfect to leave a trace of residuum. The natural circle of transmutation is harmlessly completed, and the economy of nature conserved. Omitting necessarily many minor but yet important details, I close the description of the imaginary health city. I have yet to indicate what are the results that might be fairly predicted in respect to the disease and mortality presented under the conditions specified. Two kinds of observation guide me in this essay, one derived from statistical and sanitary work, the other from experience, extended now over thirty years, of disease, its phenomena, its origins, its causes, its terminations. I infer, then, that in our model city certain forms of disease would find no possible home, or, at the worst, a home so transient as not to affect the mortality in any serious degree. The infantile diseases, infantile and remittent fevers, convulsions, diarrhœa, croup, marasmus, dysentery, would, I calculate, be almost unknown. Typhus and typhoid fevers and cholera could not, I believe, exist in the city except temporarily and by pure accident; small-pox would be kept under entire control; puerperal fever and hospital fever would, probably, cease altogether; rheumatic fever, induced by residence in damp houses, and the heart disease subsequent upon it, would be removed; death from privation and from puerpera and scurvy would certainly cease; *delirium tremens*, liver disease, alcoholic phthisis, alcoholic degeneration of kidney, and all the varied forms of paralysis, insanity, and other affections due to alcohol would be completely effaced. The parasitic diseases arising from the introduction into the body, through food, of the larvæ of the entozoa, would cease, and that large class of deaths from pulmonary consumption, induced in less favoured cities by exposure to impure air and badly-ventilated rooms, would, I believe, be reduced so as to bring down the mortality of this signally fatal malady one-third at least. Some diseases, preeminently those which arise from uncontrollable causes, from sudden fluctuations of temperature, electrical storms, and similar great variations of nature, would remain as active as ever; and pneumonia, bronchitis, congestion of the lungs, and summer cholera would still hold their sway. Cancer also, and allied constitutional diseases of strong hereditary character, would yet, as far as we can see, prevail. I fear, moreover, it must be admitted that two or three of the epidemic diseases, notably scarlet fever, measles, and whooping-cough, would assert themselves, and, though limited in their diffusion by the sanitary provisions for arresting their progress, would claim a considerable number of victims. With these facts clearly in view I must be careful not to claim for my model city more than it deserves; but calculating the mortality which would be saved, and comparing the result with the mortality which now prevails in the most favoured of our large English towns, I conclude that an average mortality of 8 per 1,000 would be the maximum in the first generation living under this salutary *régime*. That in a succeeding generation Mr. Chadwick's estimate of a possible mortality of 5 per 1,000 would be realised, I have no reasonable doubt, since the almost unrecognised, though potent influence of heredity in disease would immediately lessen in intensity, and the healthier parents would bring forth the healthier offspring. As my voice ceases to dwell on this theme of a yet unknown city of health, do not, I pray you, wake as from a mere dream. The details of the city exist. They have been worked out by those pioneers of sanitary science, so many of whom surround me to-day, and especially by him whose hopeful thought has suggested my design. I am, there-

fore, but as a draughtsman, who, knowing somewhat your desires and aspirations, have drawn a plan which you in your wisdom can modify, improve, perfect. In this I know we are of one mind, that though the ideal we all of us hold be never reached during our lives, we shall continue to work successfully for its realisation. Utopia itself is but another word for time, and some day the masses, who now heed us not, or smile incredulously at our proceedings, will awake to our conceptions. Then our knowledge, like light rapidly conveyed from one torch to another, will bury us in its brightness.

"By swift degrees the love of Nature works
And warms the bosom, till at last sublimed
To rapture and enthusiastic heat,
We feel the present Deity, and taste
The joy of God to see a happy world!"

THE ACCUMULATION AND DETERIORATION OF UNEMPLOYED LABOUR.

At the Brighton Congress Mr. Alsager Hay Hill read a paper on "Methods of Preventing the Accumulation and Deterioration of Unemployed Labour in Great Towns." Mr. Hill commenced by referring to the natural and necessary tendency to increase of the population of great towns and cities, indicating the almost miraculous growth of London during the last fifty years. Assuming the metropolis to increase at the same rate for another century, he expressed his opinion that under improved sanitary and other conditions even a population of 8,000,000 might not prove inconsistent with national well-being and the comfort of so vast a multitude. He then glanced at the present condition of London, and dwelt on the necessity of clearly defining what was meant by the term, "unemployed poor." It was, he remarked, often forgotten that slack seasons were as incidental to the various industries as they were to the learned professions, illustrating his view by tabular statements showing the average slack periods experienced by workpeople in London and Paris during the year. It was, therefore, highly necessary to enforce upon all workers of every class the expediency of providing for contingencies.

London was the great receiving place for all the dislodged and disaffected labour of the country, and yet the existing want of organisation for providing information to this vast army of immigrants was most apparent. To some extent the newspapers were sources of information to the unemployed, but only in a very limited degree, whilst there was a large section of the labouring poor still too ignorant to avail themselves of such means of assistance. Mr. Hill then proceeded, chiefly from tables prepared at the Central Labour Agency, to show the classes which made up the ranks of the unemployed, clerks, porters, messengers, and labourers being largely in excess of any other description of workers. With regard to the former of these classes nothing but increased intelligence and discretion in the disposal of their labour was likely to reduce their numbers. With respect to the great body of men passing generally under the name of labourers, he strongly urged the extension of labourers' unions, on sounder and exclusively non-political bases, the secretaries being the collectors and distributors of industrial information for the benefit of members. In addition to the information obtainable from such unions it was also essential that workpeople should have easier access at suitable times, especially in the early morning, to reading-rooms and free libraries where all the industrial papers could be consulted. There was, however, a lower drift of the unemployed who would not be able to avail themselves of such machinery, and for these special arrangements would have to be made. The extent of this class it was almost impossible to calculate, but the eagerness with which a low form of labour appeared to spring up at every passing emergency in the streets, led him to think that it must be reckoned by many thousands. As many as 28,000 persons were during the hopping season withdrawn from the metropolis with hardly any perceptible effect on the mass that remained behind. The influence of the minute subdivision of labour in creating inaptitude for varied kinds of work, and the consequent throwing to the surface of large numbers of temporarily employed persons, was then touched on.

Even with more effectual organisation for supply of information and ready transport to places where it was in demand, much of the town labour was too degenerate for immediate and continuous industrial occupation. With better arrangements for bringing the vendors and purchasers of this lower class labour together, less deterioration and more employment might be expected. With this view he suggested the establishment of a Central Labour Exchange, on a principle advocated many years since by Mr. Greeley, at New York, and already partially adopted in some of the colonies. At such exchange it would be essential that all business should be transacted at an early hour of the day, so as to leave no opportunity for that loitering and loafing out of which so much deterioration resulted. A careful registration of labour should be instituted in connexion with such exchange, and similar and corresponding agencies should, if possible, be established in all the principal industrial centres throughout the country. Towards the maintenance of the exchange and agencies some of the colonies now continually in want of labour, as well as the larger contractors and employers, might be expected to contribute.

It would be well also to allow the various charities that, after due investigation, were interested in obtaining situations for the unemployed, to send their applicants to such a centre; and though he admitted that a large portion of such applicants belonged to an incompetent class, it might be possible, with a little more consideration on the part of employers towards inexperienced labour, to draft off a certain portion to remunerative work. In connexion with the proposed labour exchange, a well-organised labour loan society, if possible associated with night classes for adults, might be established, offering special facilities for labour desirous of migrating or emigrating. In conclusion, Mr. Hill dwelt strongly on the pernicious influence of miscalled charities on the industrial classes, both the poor-law and the thousand and one voluntary societies being responsible for a large amount of stagnated and, consequently, deteriorated labour. The influence of parochial charities was specially detrimental to the interests of female labour, making infinitesimal doles and paltry allowances take the place of regular and self-supporting wages. The effect of the out-door relief system was also largely prejudicial in this direction,—even the orphanages and refuges tended to increase the number of the very class from which the ranks of the unemployed were recruited, many children, after the artificial life of an institution, being unwilling to accept the same level of employment as that from which they had been temporarily raised, and towards which the natural currents of the labour market would take them back.

AN EXHORTATION.

At the Working Men's meeting, held in the Dome, in connexion with the Brighton Congress of the Social Science Association,* Mr. Godwin, being called on by the chairman, said,—I have been invited to address a few words to you on this occasion, chiefly, I fancy, because I have been in the habit for some years past of looking into the condition of each town visited by the Association, and of speaking my mind pretty freely on the subject with reference to the general question of health. Following to-night so many accomplished speakers, I might almost fear to weary you if I confine myself to this subject, and yet it ought not to do so, so supreme and universal is its importance. For years the vital character of this question has been urged by a few, but it is only recently that any large number of the people have listened with their minds to the exhortation. Ignorance of the densest kind has prevailed, and does prevail, and what I want to press upon you is the necessity of looking into the matter each for himself. Say resolutely,—"We will not die before our time if we can possibly help it!" And help it you most certainly can. Do not ease your conscience when you hear of half the children that are born here and there dying before they are five years old, by saying that they have died by the will of God. They die because the laws of God have not been attended to: they die not by the will of God, but the will of the Devil,—the devil of Ignorance, which leads to sin and death. I am by no means disposed to find fault with the municipality of Brighton. Great and resolute efforts have been made of late to render Brighton worthy of her reputation; and if you help them they will do still more. There are black spots in the heart of this Queen of Watering-places. I have seen with my own eyes scores of houses here occupied by the labouring classes, in which healthy life is not possible: low, damp places, with no through ventilation, with bad drainage, and an insufficient supply of water,—places where the death-rate, as your excellent officer of health would doubtless tell you, is half as high again as it is in other parts of the town. Many of you know the neighbourhood of Bedford-street, such as Leicester-street, Edwards-street, and Egremont-street, and in another part of the town Spa-street, Derby-place, and others like them. In some of the better class houses, sanitary defects of the most dangerous character exist; but they are not peculiar to Brighton, they are to be found all over the country, and this leads me to urge all thinking men and women to remember that the State can only do so much in this matter, the individual must do the rest. [After referring to modes by which proper dwelling-places for the wage class might be provided, the speaker said]. But I must not occupy more of your time. I speak from the bottom of my heart when I earnestly advise you to get information for yourselves on sanitary matters, and to give your hearty support, even at money-cost, to every wise endeavour of your governing body to improve the sanitary condition of this wonderful and important town.

* At this meeting there were about 3,500 persons present, the Mayor of Brighton in the chair.

RECENT SANITARY LEGISLATION.

In the Health Department of the Social Science Congress, Mr. F. S. Powell, M.P., introduced the subject of "Recent Sanitary Legislation." He briefly reviewed recent legislation on collateral subjects, including the Alkali Act, the Act to compel the registration of every birth, the Factory Act, 1875, the Adulteration of Food Act, 1875, which established analysts in every district, and the Artisans' Dwellings Act of 1875. He expressed much satisfaction at the advance of public opinion in favour of the purification of rivers. Already the deposit of solids is universally condemned, and will doubtless be forbidden at an early date. The present investigation into the modes actually in use for the purification of rivers will doubtless lead to good results, and will, it is hoped, encourage Government to introduce a comprehensive and effective measure. While commenting on recent amendments in the law, and speaking in terms of hearty commendation of recent enactments which create one central authority, erect sanitary authorities everywhere, and bring into one Act provisions hitherto contained in some twenty Acts, Mr. Powell said,—Drains are now to be ventilated; pent up gases are not to penetrate houses and by insidious poison slay the inmates. But such ventilation has its own dangers. The rain-pipe is a most tempting opportunity; perhaps safe sometimes, it is at all times liable to decay and derangement, and thus becomes a mere conduit from which escaping gases may enter the house. Power is now given to close wells or pumps, public or private. Of all conditions unfavourable to health probably none create more disease than damp foundations. It would be dangerous to give any local authority power to deny an owner the liberty of building on his own land. The law enacts that the authority must construct main drains, that the owner must form private drains, and, under recent statutes, bye-laws may, and I trust will, provide that walls, foundations, roofs, and chimneys are so constructed as to preserve health. Let these bye-laws be carefully framed and diligently administered, and we shall observe a marked decrease, among occupants of new houses, of disease arising from damp. With respect to legislation, and the effects of legislation respecting medical officers, we move slowly. The facts of public health will never be known in such form and at such a time as to exercise their due effect upon science and upon actual administration unless they extend over wide areas or include large populations. The late Act enables the Local Government Board to unite districts for the purpose of appointing a medical officer of health, and to direct the district medical officers of unions within the united district to render this medical officer such local assistance as the board may think fit. But there is another provision of no less remarkable character. Hitherto, the qualifications and duties of medical officers have been prescribed by the Board, in cases where half of their salaries is paid by the Imperial Exchequer, but thenceforward the Local Government Board may in all cases prescribe the

qualifications and duties of medical officers appointed under this Act. Everywhere there are now medical officers performing their duties under central supervision, and at the same time acting in co-operation with those local authorities on whom the administration of local details must ultimately depend. I hope, however, that public opinion will not be outrun, and that experience of salutary results will confirm every advance in practical reform. Already good fruit has been produced. In each district there are reports of medical officers published in local newspapers, with proceedings of local boards. Can any one doubt that the public mind will be stirred by these reports? Local authorities take action upon them, and search out the causes which render localities for the time, at least, plague spots and nests of pestilence. But this often comes too late. Before the death, nay before the disease, the sanitary inspector, with friendly vigilance, should have detected the fatal accumulation which caused the sickness, or some authority with firm but kindly hand should have isolated the first victim of infectious disease. The inspection of the district with a view to the detection and removal of nuisances has long been obligatory, and we must feel confident that present vigilance takes the place of past neglect, the isolation of the sufferer being more uniformly practised, and care being taken to secure the disinfection of houses and clothing. It is, however, deeply to be regretted that Government did not extend security against infection to those attending schools. Compulsory attendance is fraught with peril, unless there be security that infected children are not thereby brought into the school. The simplification arising from concentration of authority and consolidation of the law has already brought greater energy into the action of the Government Department, and corresponding activity into local administration. The law is now, to speak in general terms, as free from complication as the nature of a subject full of details admits. The authority to execute the law cannot cherish doubts and seek pretexts for inaction from the uncertainty either of authority or of law. The citizen, by perusal of one statute, can, unless vexed by local Acts, readily understand the law he is called to obey. The voter, when exercising his franchise, knows, or can easily learn, the laws, the administrators of which he is called upon to elect. Hence must arise a real and living law, instead of dead enactments; and intelligent opinion in place of sloth and apathy. But of all results which may spring from a new sanitary code none will be more beneficial than the abandonment or restriction within limited proportions of the system of local Acts. Already several have been abolished by provisional order. It must be admitted that early progress was made by local Acts, largely in advance of the general law. But this necessity no longer exists. Some localities may have special wants to be met by local statutes, but in ordinary cases these fall within the range of broad, general principles. But the system is unsound. It is a degradation to the Legislature to sell laws in exchange for fees; it is wrong to individuals affected by those laws to have no voice in the passing of them, except on payment of legal expenses; it is an injury to the community itself, which often suffers in liberty, or even in health, by the sanction at the hands of a committee of clauses which would not bear the test of discussion in the House of Commons; it is an injustice to neighbouring towns whose competition in business with the town obtaining the Act is conducted on equal terms, in consequence of mischievous privileges conceded by the local Act. In result and as a conclusion we may fairly say that we have now a valuable body of public health law. Amendments will doubtless be made; some are, indeed, already promised, but laws little serve unless enforced with strictness and obeyed with promptitude. The law is now far in advance of the administration of the law; public opinion passes a statute, but, fatigued by the effort, has not strength to exercise the powers; principles are asserted daily: practice fails to conform to principle. We have all a work to do in this business; upon the co-operation of each inhabitant of this country does it depend to render England as healthy as, compared with other countries, she is undoubtedly happy.

Society of Biblical Archæology.—At the meeting of this society, to be held on November 2nd, amongst the papers to be read is one "On some Fragments of the Babylonian Account of the Creation," by Mr. George Smith.

THE SUPPLY OF WATER.

Mr. W. Rendle, M.R.C.S., whom our readers will remember as of Southwark, read a paper on this subject in the Health Department of the Social Science Congress. He thought that water, as a necessary of life for which no substitute can be found, ought not any longer to be sold by private people for profit. The policy which at first put the supply of it into private hands was shortsighted, and the evils are found now to be so great that it must without delay be placed in the hands of real representatives of the public to supply it at prime cost. In a matter of such constant and vital importance these managers should be answerable. The Marquis of Salisbury thinks our ancestors unwise in placing the supply with private companies, but thinks it utopian to try to alter it. In so saying the marquis shows that he does not understand the times nor the condition of the people in England, nor of the numerous important places in which the change has been effected with the best consequences. The very use of legislative chambers is to do away with great evils, such as water companies now are, and to adapt things to our improved and altered conditions. The companies over and over again have supplied dangerous water in epidemic times, and multitudes have died from this cause side by side with neighbours who, having a supply of wholesome water, have suffered very little. Further, a very deficient supply is forthcoming at great fires, constantly complained of by Braidwood and others as the great difficulty in this respect. The supply to the poor also is, and always has been, very deficient, especially on Sundays and in summer, when the supply would be so specially beneficial. London in these respects is very much behind other places. This is owing to the enormously obstructive power of vested and private interests, which flourish at their highest in that great centre of schemes and money-making. The business should be taken out of the hands of the companies, but of course they ought to be fairly compensated. But they are aiming at an unfair compensation. An Act was passed in 1869, the Valuation Metropolis Act, for revaluation every five years,—a wise Act no doubt, as value rapidly changes; every ten years, however, like the census, would have been better. The Act was a public Act, for public not for private purposes, as any attentive reader will see, *i.e.*, to make taxation equal, and to keep it equal. The companies who supply water having been permitted to make their charge upon the rental have taken advantage, by the misconstruction of a few words of the Act, to raise their charge 30, 40, and 50 per cent., and this for the same quantity of water supplied under the same conditions. This has a two-fold effect,—it makes their present income much larger, and it opens a steady increase, and so prepares for raising the income to the maximum height, with a view to a large and very unjust compensation when the time comes. It has always been the policy of the companies to keep their accounts dark; they have objected to let the public know the costs and profits. Those most skilled in such matters have found the accounts mixed up and so confused as to be difficult to understand. In a recent Act the publication of accounts is ordered, and an auditor appointed by the Board of Trade. But a nominee of this Board, known to be not very popularly disposed, is not, perhaps, the best source of appointment for an auditor. He should be appointed by the representatives of the people supplied. The maximum profit allowed to certain water companies, namely, 10 per cent., is not justified by the conditions, which are, that the business is altogether an exceptional thing; customers are many and certain, and are rapidly multiplying; there is no competition; there are no bad debts to speak of; the article dealt in is so needful that not one in the district supplied can do without it; the water supplied, which is public property, is permitted to be had at a nominal cost, and the use of the public roads the same. No doubt the companies have been put to expense to supply more and better water, but they look to increase of custom for remuneration. Now, they have an enormous and ever-growing increase of custom, and yet by every device they are raising their charges on rentals, and making the most of the suspicious word—"extras." The evils so common formerly might be thought to have passed away, but on inquiry the matter is still so bad, so doubtful, and so expensive, that it is desirable to remove the supply into other hands. As to the supply of water by what are called the intermittent and constant methods, it is the opinion of all who are not immediately interested that the supply should, as soon as possible, be made constant. The evils of intermission are—short supply to the poor, contained in bad receptacles, among very filthy surroundings, so that the water either leaks away or is tainted and unwholesome, and generally so disgusting that the gin-shop, always handy, becomes more and more attractive. There is parsimony with great waste; the pipes, when empty, act as exhausted receivers, sucking in unwholesome matters at hand; as the medical officer of health for Bermondsey says, gas products, tar, blue dyes, and foul air. On the other hand, with a supply of water always at hand in the pipes—namely, the constant supply—most of these evils are prevented. As to fires, Manchester and other places are so supplied that great fires can scarcely be. It is doubtful, taking everything into consideration, whether, on the whole, any good is effected by relying entirely on the fussy method of locomotive fire-engines, which so often arrive and must arrive too late to be of any effectual service. The constant-supply system is that of the future, but in order to prevent great waste, to protect the careful and provident against others, ample power must be put into competent hands to compel the best fittings and a careful use—ample power for prompt entry, remedy, and, if needful, punishment. But powers cannot be entrusted to companies working for profits and large dividends, and making every other consideration second to that. Now and then, in great emergencies of fires and sickness, and unusual filth, the saving money and making a great profit must for the time be entirely disregarded, and the public benefit alone considered. It may seem difficult to have a constant supply, almost impossible in the case of private companies supplying the water—so it is, and so it will be till the public authority is ready. It is, however, shown by its perfect success in Manchester, Nottingham, Durham, Glasgow, Derby, Dundee, and now Birmingham, that there are no real difficulties which cannot be surmounted. On the contrary, there are enormous advantages which cannot long, in consideration of private interests, be kept back. The water companies of London are the only real stumbling-blocks there. Then in great emergencies unity of management is needful; one permanent authority is wanted to make the best of all resources in the time of need, an authority which can be held answerable afterwards that the best was done. Companies with districts separately mapped out for each, with diverse interests, cannot or are not likely to act together. The Acts of Parliament on the subject always appear to be hampered with conditions unfavourable to the people. Some vestries report that they are insufficient, filled with delay, and some appear to be unworkable. Later Acts are so permeated with the permissive principle that, however necessary and vital the provisions, they are only workable among willing people. The paper ended with this *resumé*:—"The water supply must be taken out of the hands of the trading companies altogether, and as soon as possible, a monopoly in a first necessary of life being a very odious thing indeed. London, in this vital matter, ought without delay to be served at least as well as the larger provincial towns and cities. It is especially open to danger in its crowded condition with the present very defective arrangements. A stop should at once be put to the companies raising their charges by means which appear to be improper, if not unlawful, so that the basis of compensation may be just to both sides, and not be made an excuse for plundering the ratepayers. The public, by its chosen representatives, in this case to be selected as specially adapted for the work, must have the entire control of the water supply, the charge for water to be the actual cost and no more."

THE BELL TOWER OF EVESHAM.

Sir,—I had intended, on my return to town to offer some answer to the adverse opinion taken by, I believe, a small party of the British Archæological Association to the date which I ventured to assign to the noble Bell Tower of Evesham. As I find, however, that in a recent article you have endorsed it with your editorial authority, I must, in ordinary discretion, reserve those observations for the present, until I can make them at less disadvantage.

Mackenzie E. C. Walcott.

THE ARCHITECTURAL ASSOCIATION.

The first meeting of the session usually commences with a *conversazione*, which, as already announced, will be held on the 29th inst. The president, Mr. Quilter, delivers his address on the 5th of November, when the reports from the different classes will be presented. The syllabus of papers to be read at the ordinary meetings, subject possibly to modification as to date, according to mutual arrangement, is as follows:—

Nov. 19th.—On the Use of the Supernatural in Art. By Wyke Bayliss.
Dec. 3rd.—How the Parisians build a "House in Flats." By W. H. White.
Dec. 17th.—On Things in General. By W. Burges.
Jan. 7th, 1876.—On Consistency and Refinement in Architectural Detail. By J. P. Seddon.
Jan. 21st.—On certain Mathematical Instruments, and some Suggestions for new Combinations. By F. C. Penrose.
Feb. 4th.—On Plan as the Basis of Design. By H. H. Statham, jun.
Feb. 18th.—On the Characteristics of Ground Plans adopted by the Greater Conventual Orders of England. By the Rev. Mackenzie Walcott, M.A.
March 3rd. — On the Treatment of Scientific Engineering artistically. By Professor Kerr.
March 17th. — On the Metropolitan Building Act. By T. R. Smith.
March 31st.—On the Architecture of South Holland. By H. W. Brewer.
May 5th.—On the Proportions of Gothic Buildings. By R. P. Pullan.
May 19th.—On the Architecture of La Charente, France. (Annual Excursion.) By E. Sharpe, M.A.
June 2nd. — Notes on the Construction of a Public Aquarium. By J. Norton.
June 2nd. — On the Principles and Application of the Theory of the Truss. By W. W. Robertson.
June 16th. — On the Organ architecturally considered. By G. A. Audsley.
June 30th.— On the Architect and the Pupil. By T. Blashill.

THE REGENT'S CANAL BRIDGE, ST. JOHN'S WOOD.

A start has at length been made towards the reconstruction of the bridge over the Regent's-canal, which was destroyed by the great explosion on the barges some twelve months ago. Last week a number of men were set to work to clear away the *débris*, preparatory to the rebuilding of the bridge being proceeded with. We learn that the new bridge is to be of similar design to the one which was destroyed by the explosion, and that it is expected to be completed before the commencement of the ensuing year.

BORROWING DESIGNS.

At the last sitting of the Darlington Board of Guardians, the clerk said that there had been an official application from the guardians of the Middlesbrough Union for the loan of the architect's plans of the Darlington Workhouse.

It was moved, seconded, and carried, that the application be complied with.

Another guardian created some laughter by observing that he was given to understand that the Middlesbrough Board of Guardians *had advertised for plans*, offering a premium for the best one. He supposed the Darlington Union would get that premium if their plan proved to be the one chosen.

The master of the Darlington Workhouse (Graham) said two architects from Middlesbrough had called upon him, and he gave them permission to look round the house, and he understood that each of those gentlemen was going to compete.

LONDON BRIDGE WIDENING.

Sir,—I venture to take the liberty, through the columns of your influential journal, of explaining my project, having for its object the relieving of the overwhelming and increasing passenger and vehicular traffic of London Bridge.

In lieu of widening the bridge itself, it is proposed to construct an arcade on each side of it. The entire width of such arcade to be 35 ft., 15 ft. of which to be used for the passenger traffic, and in the remaining 20 ft., shops (not exceeding 12 ft. in height) will be erected.

The arcades will be constructed of light ironwork and glass, supported underneath by columns, or light ironwork on blocks of masonry.

It will be seen that the convenience to the public will be very great, inasmuch as the present footways of the bridge can be added to the roadway, which will be thus widened to the extent of 20 ft. or thereabouts.

The new or substituted footways will be 5 ft. wider than the existing ones, with the addition of a verandah erected over them for the protection of foot-passengers from the weather, while they will avoid the inconvenience and danger now necessarily consequent on the vehicular and passenger traffic being carried on the same thoroughfare. It is also proposed to make provision for communications between such new footways and the steam-boat piers or jetties beneath for the convenience of the large number of passengers travelling on the river.

It is submitted that the above project will commend itself for, among other reasons, the following, viz.:—

That it will preserve the bridge in its entirety, and the view will not be seriously interfered with, while the structure viewed from the new thoroughfare will be seen to greater advantage than now; and that the cost to the corporation will be comparatively small, inasmuch as the principle of combining the cost of street improvements with works of themselves remunerative, is adopted, and therefore the amount of contributions will be based on the value of the new thoroughfares, which will be vested in the corporation for the use of the public in perpetuity, and which contributions would be agreed at 25,000*l.*, or less than one-half of the amount of the outlay now to be made for the widening.

Plans and elevations of an ornamental and suitable character are in course of preparation by an eminent City architect, and will, if an opportunity is afforded, be submitted to the corporation for approval; and as capitalists are prepared to provide the necessary funds so soon as the requisite approvals are obtained, the work may be speedily carried out.

Chas. Baylis.

A NEW PHASE OF ARCHITECTURAL COMPETITION.

Enclosed is one of three copies of a circular sent this morning addressed "To the Clerks" in my office. It offers six prizes, varying from 4*l.* down to 15*s.* (!) for designs for a villa to cost 2,000*l.*, *open only to assistants and apprentices.* A bookseller at Elgin is, so far as appears, the source and object of everything in the matter, including the deposits of 2*s.* 6*d.* to be paid by each competitor. All the drawings, you will observe, are to become the property of the *prize-giver*!

Is this a case of "anonymous munificence," or is it an attempt to tap the information which may be in one's office on the subject of villa architecture for the benefit of a sharp North Countryman who means to build a villa in the spring? In either case it deserves publicity, as will also the names of the assistants and apprentices who lend themselves to it without some satisfactory explanation. Civis.

*** The object is so transparent that we can scarcely suppose any one will be taken in by it.

A VERY GRAND ORGAN.

Sir,—Returning home from a quiet dinner party the other night, to the quiet suburb where I reside,—leisurely sauntering along and enjoying the fragrant weed, a grand idea occurred to me. All around was still and calm, when the silence was broken by a shrill railway whistle, then another and yet another, and each with a different note. These sounds reached me from a distance of at least two miles.

Among other things we had been talking of church organs, and the grand idea struck me that it might be possible to construct a grand organ, the pipes to be acted upon by steam instead of air. Conceive such a grand organ erected in a grand tower, pealing forth a grand anthem on a quiet Sunday morning over a half-awakened city!

More astonishing things have been done, but some might say, as Sidney Smith did when asked if he liked the bagpipes, "Yes, at a distance, and the farther off the better."

If we do not forestall them, our American cousins will surely take up the grand idea, and "lick all creation" in musical instruments.

Signet.

Additions at St. Pancras Workhouse.—Extensive additions, consisting of new dining-rooms, kitchen and bakery, and sundry alterations to the laundry, are about to be made at St. Pancras Workhouse. Mr. Bridgman is the architect, and the contract has been let to Messrs. Manley & Rogers, at the sum of 11,342*l.*

THE EXETER REREDOS.

Sir,—The following paragraph appears in your issue for the 16th:—

"The Exeter Reredos.—The *Western Times* states that the reredos in Exeter Cathedral, about which there has been so much litigation, is being taken down. It is not known, however, whether it is to be removed from the cathedral altogether."

As this is calculated to produce a gross misconception, permit me to state the real facts of the matter.

Sir Gilbert Scott being anxious to give greater dignity to some parts of his very beautiful creation, has determined to raise a portion of it 1 ft. or 1 ft. 3 in. Hence, the central part, as far down as the re-table, has been lifted from its bed, so that the suggested addition may be the more readily made.

How such an idle and absurd cock-and-bull story as the bare possibility of our hardly-fought-for reredos being removed can have been put into circulation I am altogether at a loss to understand. It is utterly without foundation. Harry Hems.

WEIGHT OF ZINC.

Sir,—Will you permit me to notify to architects and engineers that the Vieille Montagne Zinc Mining Company have altered the weights of their several gauges of sheet-zinc? The new tariff is a combination of the Belgian and French tariffs, which are no longer to be different. It is sufficient to say that the new tariff is in each gauge lighter than the old—that is to say, an architect who desires to have No. 14 old weight, must now specify No. 15 in order to obtain about the same thickness. Thus No. 15, according to the old tariff, weighed nearly 1 lb. 8 oz per square foot; but, according to the new tariff, No. 16 will weigh nearly the same, or rather less than 1 lb. 9 oz., instead of rather more than 1 lb. 10 oz. as heretofore.

James Edmeston.

LOCAL BOARD SURVEYORS AND THEIR SALARIES.

TO ENGINEERS, SURVEYORS, AND "OTHERS."

The Fleetwood Local Board are in want of a surveyor at a salary of 30*s.* per week.

The duties of a town surveyor usually comprise drawing plans, specifications, &c., of any and every structure, from a town-hall to a town-pump, the construction and repairs of sewers, drains, streets, sidewalks, &c.; in point of fact, embracing professional knowledge and administrative ability, to an extent wholly incomprehensible to the livery-stable keepers, publicans, shoemakers, &c., it has now but too frequently become the practice to elect as members of town councils and local boards.

From the report of the proceedings in the *Blackpool Herald*, of October 8th, it appears Mr. Carter moved "That a surveyor be advertised for at a salary of not less than 2*l.* a week." By the appearance of the streets, they were in great want of a good surveyor.

Mr. Noblet moved as an amendment that they advertise for a man at a salary of 30*s.* per week. They had been in the habit of giving too much to their men.

Mr. Sudy seconded the amendment, which was, of course, carried, and that the advertisement appear twice in the local papers.

By the same report it appears that an inspector of nuisances was then appointed, at a salary of 50*l.* per annum.

After it had been suggested by a member that the work of lamplighting be tagged on to the duties of the inspector, Mr. Noblet remarked "that he (the inspector) should go into tradesmen's and butchers' shops and *see* if the food was adulterated," probably under the impression that the high scientific knowledge and attainments 18*s.* would command would enable the inspector to detect adulterations at a glance without the time and trouble of an elaborate analysis.

I sympathise with the unsophisticated individual who was elected, and after being informed of his appointment, thanked the Board, and who was weakminded enough to express the hope that he should discharge his duties to the satisfaction of "every member" of the Board, and that he would start on Monday morning next.

Now the Fleetwood Local Board seem to have been guilty of a great oversight, and I write to you in the hope that Mr. Noblet may see my remarks. Why not, in addition to lighting the lamps, add the trifling duties of "surveyor" to those of the inspector of nuisances? He would probably accept also those of rate-collecting, &c., and for these extra services the Board might increase his salary, say from 18*s.* to 1*l.* per week. J. P.

THE LIBRARY OF THE INSTITUTE.

Sir,—In reference to a letter which appeared in the *Builder* of last week, permit me to state that the library of this Institute is open to readers daily, all the year round, with the exception of a fortnight in September; and that during my absence the clerk is always in attendance upon readers.

The accidental confusion of periodicals to which your correspondent refers was probably due to the fact that we have recently changed clerks.

S. W. Kershaw, M.A., Librarian.

St. Mary's, Moorfields.—This church, which served as the "pro-cathedral" of the Roman Catholics of London down to the building of the present "pro-cathedral" at Kensington, was formally re-opened on the 17th inst., having been closed for about a year and a half, in consequence of the operations necessitated by the extension of the Underground Railway from Moorgate-street to Liverpool-street. During that time the edifice (for the safety of which fears were at one time felt) has been not only strengthened (as we have before described) in its foundations, but also thoroughly re-decorated and restored. The work has been executed by Messrs. Trollope & Co.

Miscellanea.

Examinations for Medical Officers of Health.—At the examination in State Medicine at the University of Cambridge there were twenty-eight candidates, many of whom were of standing in the medical profession. The examination, which was open to all persons, whether members of the university or not, was intended for those who are desirous of seeking appointments as medical officers of health. The list of successful candidates is not yet issued. It is proposed that the following shall be the form of the certificate:—

"Know all men, by these presents, that —— having been duly examined by ——, the examiners in that behalf appointed by the chancellor, masters, and scholars of the University of Cambridge, and having approved himself to the aforesaid examiners by his knowledge and skill in sanitary science—to wit, in chemistry and physics, in the causes and prevention of epidemic and infectious diseases, and in the means of remedying or ameliorating those circumstances and conditions of life which are known to be injurious to health, as well as in the laws of the realm relating to public health, is certified to be well qualified in respect of knowledge and skill aforesaid to fulfil the duties of a medical officer of health. In testimony whereof the vice-chancellor of the said university, by the authority of the said chancellor, masters, and scholars, has hereto set his hand and seal the —— day of —— one thousand eight hundred and ——.

A. B., Vice-Chancellor."

Reservoir Embankments.—A letter has been addressed by Mr. Robert Rawlinson to the Waterworks Committee of the Bradford Corporation, in which he says:—

"Your waterworks engineer, Mr. A. R. Binnie, has furnished me with further details as to the works at Leeshaw Reservoir, namely, that it will be almost as costly to substitute concrete for puddle in the deep trench below the proposed 'slip-joint' and to bare the masonry culvert to cover the same with concrete, as to remove the masonry of the present culvert, leave the puddle-trench undisturbed, and construct a new outlet with proper valve-well in the solid. This being so, I most strongly recommend the abandonment of the present culvert, and the construction of a new one through and within the solid ground, so as to be in accordance with the only safe mode of dealing with heavy storage reservoir embankments, namely, removing the outlet works from the deepest portion of the made embankment, which is certain to have motion during the period of consolidation, and is exposed to the contingency of the never-ceasing action of water under high pressure upon material which may be washed and wasted if there is any leakage from the culvert through the numerous masonry joints. Such failures have taken place under similar conditions. The only safe mode of dealing with an outlet culvert required to pass water under high pressure is to construct the works solidly in the solid ground, and not as at present this culvert is placed, namely, beneath and through the loose earth of the artificial embankment."

The Colossus of Rhodes Eclipsed.—The Colossus of Rhodes, not to speak of the German statue of Arminius, is (says a Paris correspondent) shortly to be eclipsed by unquestionably the tallest statue in the world. To commemorate and keep alive the international sympathy excited by the assistance given by Lafayette, Rochambeau, and the French volunteers in the American War of Independence, it is proposed, on the approaching celebration of the centenary of the declaration, to offer to the United States a gigantic brazen statue, representing Liberty enlightening the world. This colossal work is designed by M. Bartholdi, and the model is already completed. It is to be 100 ft. in height, and will be placed on a pedestal of 70 ft., thus surpassing the statue of Arminius by upwards of 60 ft. The site selected is the entrance of the harbour of New York. By night it will serve as a lighthouse. Both nations will participate in the erection of the monument, the French furnishing the statue and the Americans the pedestal.

The Galloway Memorial, Newton-Stewart.—The "inauguration" of a memorial to the memory of Randolph, ninth Earl of Galloway (who died in 1873), took place on the 8th inst. at Newton Stewart. The monument is 57 ft. in height, 22 ft. across the bottom step, and 10½ ft. across the basement proper. The structure is composed principally of Dalmeny stone, interspersed with red Annan stone. It is square on plan, flanked by angle buttresses, upon which pedestals are set, forming seats for four lions rampant, each lion holding a shield with a banneret. Above the buttresses the memorial becomes octagonal, and, after a series of intakes, is formed into a clustered column, the shafts of which are red freestone, with capitals of white, a moulded band running round the centre. Further up, the monument is corbelled out with enriched cornices, over which is the cornice from which the intake of the spirelet starts, round which are eight gurgoyles of grotesque description. The architect was Mr. R. Park, Newton-Stewart; and the sculptor was Mr. John Rhind, Edinburgh.

A Great Architectural Exhibition.—If we are rightly informed, the Union Centrale de Beaux Arts Appliqués, of Paris, will organise for next year a retrospective exhibition on a still larger basis than that which drew crowds to the Palais de l'Industrie last year. The programme of the coming exhibition will not be confined to a collection of artistic productions grouped in classes, but an attempt will be made to give the public as complete an idea as possible of the application of architecture, sculpture, and painting to dwelling-houses during past centuries. From the commencement of the eleventh to about the thirteenth, only drawings of public monuments are generally to be obtained. Of such the Administration of Beaux Arts has placed at the disposal of the committee for the exhibition a magnificent collection from the fourteenth to the eighteenth century. Each marked epoch will be illustrated by various rooms decorated in the then style, and furnished with real furniture, hangings, and ornaments of the period.

Cumberland and Westmoreland Antiquarian and Archæological Society.—Arrangements are in progress for holding a winter meeting of the Cumberland and Westmoreland Antiquarian and Archæological Society, in Carlisle, early in December. The cathedral and its surroundings will form the chief subject of discussion. A paper on the Carved Capitals of the Choir Piers, by Mr. J. Fowler, F.S.A., of Wakefield, will be read; also some notes on the "Last Judgment," as represented in the old glass of the east window. Mr. Cory will conduct the members over the cathedral and the remains of the conventual buildings, and in the afternoon the programme will, probably, be as follows:—A paper will be read on the Cathedral Library, its History, Contents, and MSS., by the Rev. Canon Dixon; one upon the "Heaf," by Miss Powley, to be followed by the adjourned discussion on that lady's "Past and Present in Cumberland"; and a paper will also be read on the Local (Carlisle) Church Registers, by Mr. R. S. Ferguson.

The Round Tower at Clones.—At the last meeting of the Clones Board of Guardians, Mr. John Brady, J.P., in the chair—the clerk read a letter from the secretary of the Irish Church Temporalities Commissioners, in reply to one he had addressed to them on the subject of the ecclesiastical ruins at Clones. It was to the effect that the Commissioners have no present intention of vesting any ecclesiastical ruins in the Board of Works, to be maintained as national monuments, in addition to those already so vested. A public meeting of gentlemen who take an interest in the preservation of these ancient structures was held some time ago in Clones, when it was suggested that if the one in question were vested in the Board of Works, that body would have the necessary repairs carried out; but in consequence of the above reply those repairs will have to be done by means of private subscription.

Milton's House in Westminster.—Mr. H. W. Henfrey writes:—"Milton's house in Westminster is still standing, although slightly altered. It is situated on the north side of York-street, and is not many yards from the St. James's Park Station of the Underground District Railway. It has been lately occupied by a fishmonger, who placed over his shop-front the words: 'The Noted Fried Fish Shop.' I believe that William Hazlitt lived in this house for some time, and that he caused the tablet to Milton's memory to be fixed to the garden front of the house, which now looks towards the Wellington Barracks. In Milton's time the house had a gabled roof, similar to two or three other old houses in York-street. Subsequently the walls were raised, and the top story now terminates in a square parapet."

Extinguishing Fire on Board Ships.—Mr. Cargill, of Dundee, says he has protected by patent the following plan for extinguishing fire on board ships:—

"Place a cast-iron vessel in the bottom or lower part of the ship, shaped to suit the place, it may be 4 ft. square and 3 ft. deep,—no particular size. Place in this vessel about 100 pounds weight of broken chalk; place a perforated lid on it, to keep out dirt and rubbish, but not close. Lead a copper pipe, 1 in. in diameter, from this vessel to the deck, the pipe to dip under the top, but not to the bottom of the chalk vessel. Should fire occur, take a jug, mix in it 5 pounds sulphuric acid or common vitriol with 10 pounds water. Pour this mixture down the pipe, which will liberate carbonic acid gas from the chalk. This gas, being heavier than air, will send the air above it, find way for itself in every crevice, and extinguish the fire."

A similar plan was suggested in our pages long ago.

The Philadelphia Exhibition.—It is estimated that the total cost of the Centennia Exhibition at Philadelphia next year, including preparation of the ground, buildings, running expenses, &c., will be about 8,500,000 dols. Pennsylvania has appropriated to the Exhibition Fund 1,000,000 dols., and the city of Philadelphia 1,500,000 dols. The gifts and profits from the sale of medals are estimated at about 500,000 dols., and the sale of materials left on hand at the close of the Exhibition at about as much more. A guaranteed fund of 5,000,000 dols. is asked for, and it is thought that it will be fully repaid by the sale of tickets, and that there will be at least 10,000,000 of admissions to the Exhibition at 50 cents. for each admission. This would be at the rate of nearly 65,000 persons daily for the six months the Exhibition will be open.

Arbitration in Trade Disputes.—At the Trade Unions Congress, held at Glasgow last week, Mr. Bailey (Preston) moved, "That this Congress, heartily approving of the principles of arbitration in trade disputes, recommends the various trades to take steps for the establishment of courts of conciliation and arbitration in their respective towns and districts." Mr. Vincent (Birmingham) seconded the motion. Mr. Bloor (Stafford) said they had in his district for some years an arbitration court, consisting of ten employers and ten men. It met quarterly, whether there was any dispute or not, and both employers and men had always submitted loyally to its decisions. Mr. Kane (Darlington) was satisfied after experience that courts of arbitration under proper regulation were the best way of settling trade disputes. The motion was carried unanimously.

Proposed Infirmary Wards at the Altrincham Workhouse.—Messrs. Mills & Murgatroyd, architects, lately prepared plans for certain alterations at this workhouse with the view of providing new infirmary wards. Mr. Corbett and Dr. Monat, inspectors from the office of the Local Government Board, have, however, refused to sanction the erection of the hospital between the girls' wing and the back laundry. The alternative of pulling down the fever hospital and erecting two pavilions on its site and on what is called the Master's garden they considered, but would not seriously entertain until all efforts had been exhausted for procuring additional land at the back, and such additional land ought, they say, to be secured up to the fence next to the racecourse.

Warrington as a Port.—We lately referred to a scheme for constructing docks in Warrington, and the plans for the various works have now been prepared by Mr. R. Vawser, C.E., the borough engineer. The chief feature in the scheme is a new channel for flood and tidal waters out straight across the meadows from Walton Bridge to Bank Quay Reach; and the placing of a pair of locks where the old river course would diverge from the new water-course, so as to convert the whole of the Bank Quay curve into a dock. The water in the dock would be maintained at high-water level of spring tides, which would give a depth of about 18 ft. at all states of the tide, and might easily be increased. When finished, the dock will provide 40 acres of deep water, and 6,000 lineal yards of quay space.

The Disney Professorship of Archæology.—The Vice-Chancellor of the University of Cambridge has given notice that the Disney professorship of archæology having become vacant by the expiration of the term of five years for which Professor Churchill Babington was elected, the election of a person to fill the office was announced to take place at Emmanuel College Lodge on the 22nd inst. The professor must be a member of the University of Cambridge and of the degree of Master of Arts or of some higher degree. He is to deliver six lectures, at least, in the course of each academical year, on such days and at such hours as the Vice-Chancellor shall appoint. The professorship is tenable for five years, and the professor may be re-elected.

New Bank at Banff.—New premises for the City of Glasgow Banking Company have just been completed in Carmelite-street, Banff, from a design by Mr. James Boucher, architect, Glasgow. The building is of two stories, the whole of the *façade* being of axed granite. Mr. Morrison, Aberchirder, was the contractor; Mr. John Mitchell, Banff, did the carpenter work; Mr. John Gibson, Banff, the plaster work; Mr. Alex. Walker, Banff, was slater; and the plumber work was provided by Mr. John Thomson, Banff. The cost was 1,300*l*.

New Drainage Scheme for Rhyl.—Mr. Latham, C.E., has been employed for some weeks past inspecting the town of Rhyl, with the view of advising the Rhyl Commissioners as to the best plan of disposing of the sewage of the town and perfecting the drainage, and has now presented a report thereon. The scheme he advises will take the sewage right under the river Voryd, the outfall being at a point at right angles with the telegraph-house on the Abergele shore, and will therefore carry the matter away to sea miles from the bathing station. By the adoption of this scheme no artificial means will be needed for cleansing the drains, and most of the old drains can be utilised. The entire cost will be about 7,000*l.*

Association of Municipal and Sanitary Engineers and Surveyors.—The seventh meeting of the District Committee for the Midlands was fixed to be held in Cheltenham on the 21st October, and it was intended to inspect the sewage-tanks, works, and irrigation farm, and the waterworks. The following papers were on the list:—The Sanitary Development of Cheltenham, with statistics, by Mr. D. J. Humphris, Borough Surveyor; the Geology of Cheltenham, by Dr. Wright, Medical Officer of Health. A meeting of the members of the Home Counties District will be held at the city of Oxford, on Friday, the 5th of November, when various papers will be read, and works visited.

The Strabane Surveyorship.—Mr. William M'Cullough has been elected surveyor to the Strabane Town Commissioners in the room of Mr. J. F. E. Barnes, C.E. The following resolution was unanimously agreed to:—"Mr. J. F. E. Barnes having resigned his situation as engineer to the Strabane Town Commissioners, through circumstances which he could not control, we have pleasure in certifying that while in our service we had every respect for, and confidence in, his professional abilities, and ever found him energetic in the discharge of his duties, and courteous and unobtrusive in his general demeanour."

An Ancient Sceptre.—General de Cesnola, United States Consul at Cyprus, is reported to have made a valuable discovery. In the course of some excavations which he is conducting at Episcopo, near Limasol, on the site of ancient Curtium, a tomb was opened, of large dimensions, which was found to contain a sceptre of solid gold, bracelets, and a necklace ornamented with precious stones. The sceptre weighs 4½ okes, or about 12 lb. On the bracelets, which are of thin gold, are engraved inscriptions which have not yet been deciphered. The whole will shortly be sent to New York.

Submarine Tunnel at Rio de Janeiro.—The Brazilian Government has under consideration a project by Mr. Bucknall for connecting the north and south railway system of the empire with the capital by a tunnel under the narrow entrance of the Bay of Rio de Janeiro, between the capital and the submarine city of Nitheloy, a distance of about two miles. The preliminary investigations are said to demonstrate the practicability of the undertaking. Mr. Peter W. Barlow, C.E., left for Rio by the steamer of the 24th ult., commissioned to conduct the survey and prepare the necessary plans and estimates.

King's College, London.—The following scholarships and exhibitions amongst others have been adjudged:—Science Exhibition (open) given by the Clothworkers' Company, to J. F. W. Silk. Special Extra Exhibition, W. P. Root. General Literature and Science Department, Freake Exhibitions, to C. H. K. Harper, T. F. Hobson. Applied Science Department, Freake Exhibition, to H. Nettlefold; College Exhibitions, to J. P. Kirkman, D. S. Marjoribanks, J. L. Rigden. Whitworth Exhibitioners, G. C. Marks, W. J. Tilbrook, Wm. Walker; Denis McDonnell and F. H. Norvill equal.

Typography.—The *Paper and Printing Trades' Journal* points out various cases in which difficulties occur through the figures 9 and 6 being confoundable through being turned upside down, and makes the sensible suggestion, that if the figure 9 be cast with a bar across the upper portion of it,—thus 9̄,—all probability of a mistake would be removed.

The Railway Station at Preston.—A correspondent, in reply to our recent notice, says that a new station is about to be built, and that the old station will be cleared away. We are very glad to hear it; the station has long been a disgrace.

A New Trade in Cornwall.—During the past summer months a new industry has been established in Cornwall, that of curing pilchards in tins, as *Sardines à l'huile*. The Cornish Sardine Company (Limited), of Falmouth, has two factories on the coast, at which large quantities of these fish are cured on the method adopted in France. The trade is a perfectly new one in this country, though, as the principal authorities state that the "pilchard" and the "sardine" are identical, there is no reason why it should not have been established long ago.

Velocity of Light.—Professor Cornu, of the École Polytechnique, Paris, has put into successful use a new instrument for measuring the velocity of light between two stations, in which an electrical apparatus is used, giving, it is believed, more accurate measurements than the well-known toothed-wheel arrangement of Fizeau. Foucault fixed the velocity of light, by his instrument, at 185,157 miles per second. Prof. Cornu, by his new instrument, fixes the velocity of light at 186,660 miles per second, or 1,503 miles faster per second than Foucault.

Inverness Cathedral.—Lady Eden and Miss Wilmot have presented several sculptured figures to be placed in the niches on the west front of Inverness Cathedral. The contribution includes a large group of figures in high relief, occupying the tympanum of the door, and illustrative of the Saviour's last Charge to the Eleven Apostles, "Go ye into all the world, and preach the Gospel to every creature." There are besides four single statues, representing St. Peter, St. Paul, St. Andrew, and John the Baptist. The figures are in Portland stone, and the sculptor was Mr. Earp, of London.

Amalgamation of the London Gas Companies.—The *Journal of Gaslighting* announces that the directors of the Chartered and Imperial Gas Companies have resolved to recommend their respective shareholders to amalgamate the two undertakings forthwith, and is of opinion that the reply of the shareholders cannot be doubtful. "Nothing can be lost, while very much can be gained, by the union. The two companies are in every respect so much on an equality that they were clearly marked out for combination on equal terms."

Continuous Breaks.—The directors of the Metropolitan Railway Company, testing the merits of various kinds of breaks, have decided to adopt "Smith's vacuum breaks." These breaks have been in use on the St. John's-wood line since June, 1874, and having been found to work satisfactorily (more than 200,000 stops having been made with them), they have now been applied to the whole of the company's trains, and have been in full operation since the 4th inst.

Presentation to the Liverpool Art Gallery.—In the article headed "Current Notes in Liverpool," in our last number, a misplacement of an asterisk by the printer made it appear, by a note, that it was Mr. Poynter's "Golden Age" which had been bought in Liverpool and presented to the Gallery of Art, whereas the picture really presented was Mr. Armitage's "Emperor Julian," mentioned in the next line of the text.

Pumps.—A special Gold Medal has been awarded to Messrs. John & Henry Gwynne, of the Hammersmith Ironworks, London, for their patent Direct-acting Centrifugal Pumping-engine, at the International Exhibition at Cologne, which has just closed. This firm were the makers of the large pumping-engines of this class which have lately been erected at Ferrara, in Northern Italy, and which form the largest set of pumping machinery in the world.

Prudhoe Memorial Convalescent Home, Whitley, Northumberland.—The demands upon the accommodation of this Institution have of late increased to such an extent that, in order to meet them, the committee have decided to enlarge the building, and have accordingly instructed their architect, Mr. Thomas Oliver, to prepare plans for the accommodation of fifty additional patients.

Mr. Edward Roberts, Architect.—We have heard, with extreme regret, of the death of Mr. Edward Roberts, F.S.A., which took place on the 16th inst., after a long and wearing illness. We will take another occasion to give some particulars of his career.

The Dorchester Surveyorship.—The *Dorset County Express* of the 19th inst. understands that Mr. Philipps, the borough surveyor, has tendered his resignation to the Town Council.

The Westminster Roman-Catholic Cathedral.—Mr. Clutton wishes it understood that the engraved sketch we published was made "from an indifferent photograph of the original drawing," and without his authority. We received copies of the photograph from two quarters, with, as we then believed, the concurrence of the architect.

Fall of a Warehouse at Bacup.—A large stone-built warehouse at Bacup, in the occupation of Mr. Lord, furniture broker, gave signs of collapse on Monday. The surveyor of the Local Board was hastily summoned, and he made all haste in search of men to shore up the building, but during his temporary absence the building gradually gave way.

A "British Workman" for Colchester.—The contract for the erection of the "British Workman,"—or public-house without the drink,—at Colchester, has been taken by Mr. T. Dupont, for 1,135*l.* The plans have been provided by Mr. Humphrey Baker, architect, of Chelmsford. The site is at the corner of St. Nicholas-passage and Culver-street.

"Harrison of Chester."—The death was announced last week of Miss Ann Harrison, the younger of the two daughters of Thomas Harrison, architect, of Chester, who designed the Chester Castle and Assize Court Buildings, and also the Grosvenor Bridge. The bridge over the Lune at Lancaster is also one of his works.

Yarmouth Aquarium.—Last week Lord Suffield laid the foundation-stone of an aquarium which is about to be erected at Great Yarmouth. The site of the aquarium is a piece of ground near the Pier Britannia. The architects are Messrs. Masey & Norton, and the contractors, Messrs. Aldin & Sons.

Mr. C. B. Birch, who was for many years the principal assistant of the late Mr. J. H. Foley, R.A., and who is one of the sculptors named in his will to complete his unfinished works, has just been elected a member of the Graphic Society, in the place of the late Mr. J. Birnie Philip.

The Rotherham Market Scheme.—At a meeting of the Rotherham Town Council, on the 6th inst., the Town-clerk submitted an approximate estimate (7,000*l.*), from Messrs. Hill & Swann, the architects of the proposed new market for Rotherham.

The Worshipful Company of Turners.—The Company's prizes, supplemented by gifts of the Baroness Burdett Coutts, for turning in hard and soft wood, will be presented by the Lord Mayor, at the Mansion House, on this Saturday.

The Royal Aquarium and Summer and Winter Garden Society's second ballot for the election of Fellows was held on the 18th inst. 759 ladies and gentlemen came up for election, of whom 510 were duly elected.

A New Masonic Hall for Surrey is just now being completed in the Camberwell New-road, and will soon be opened. The architect is Mr. E. Clark.

The Tranmere Surveyor.—The salary of Mr. Richardson, surveyor to the Tranmere Local Board, has recently been increased from 180*l.* to 400*l.*

TENDERS

For house at Burgess-hill, Sussex. Messrs. Tress & Innes, architects:—

	Cement Front.	Brick Front.
Norman		£3,446 0
Perigoe	£3,336 0	3,300 0
Niblett & Son	3,057 0	3,030 0
Steer	3,125 0	2,985 0
Colwell	3,050 0	2,910 0
Longley (accepted)	2,590 0	2,490 0

For repairs and decorations to the Grove, Kentish-town. Messrs. Tress & Innes, architects:—

Kershaw	£1,530 0 0
Shaw	1,155 0 0
Hawtrey	1,133 0 0
Sewell	988 0 0
Fish (accepted)	942 0 0

For alterations and additions to stables, &c., at Longcroft, Pickhurst-green, near Hayes, Kent. Messrs. Tress & Innes, architects:—

Gascoyne	£939 18 6
Payne & Balding	872 0 0
Hooker (accepted)	619 0 0

For demolition and re-erection of house, in Goswell-road, and alterations to house adjoining. Messrs. Tress & Innes, architects:—

Sewell & Son (accepted)	£1,527 0 0

For alterations and additions to Cranbourne-court, Windsor Forest. Messrs. Tress & Innes, architects:—

Kempsell & Son (accepted)	£760 0 0

For finishing three villas, at Twickenham, for Mr. Thomas Cook. Mr. Brinsley, architect:—
Bartlett (accepted) £985 0 0

For various works for the Widnes Local Board, Widnes. Mr. Thomas Higginson, surveyor:—
For forming approaches to the New Market Hall:—

	Yorks. Stone.	Welsh Stone.
Wood & Andrews	£992 0	£1,012 0
Hammond	841 0	824 0
Hunking	726 0	--
Heaton	718 0	739 0
Worthington	635 0	635 0
Pickthall & Co.	632 0	674 0
Taylor	580 0	620 0
Potter (accepted)	597 0	588 0

For forming, paving, and sewering Earle-street, Widnes:—
Heaton £1,782 0 0
Allcard 994 0 0
Hunking 963 0 0
Worthington 941 0 0
Hurst 919 0 0
Hammond 9 5 0 0
Pickthall & Co. 853 0 0
Potter (accepted) 850 0 0

For forming, paving, and making-up of Church-street, Widnes:—
Allcard £1,034 0 0
Hunking 993 0 0
Heaton 982 0 0
Hammond 949 0 0
Worthington 893 0 0
Pickthall & Co. 855 0 0
Potter (accepted) 850 0 0

For forming, paving, and making-up of Caroline-street, Widnes:—
Wood & Andrews £526 0 0
Hunking 399 17 1
Laurrie 353 0 0
Heaton 350 0 0
Allcard 347 0 0
Worthington 337 0 0
Hurst 303 0 0
Pickthall & Co. 302 0 0
Potter (accepted) 297 0 0

For cottage, &c., in Woollaton-street, Nottingham, for Mr. B. Dobell. Mr. T. G. Alderson, architect:—
McPherson £260 0 0
Russell 235 0 0
Walker & Cullen 209 10 0
Mason (accepted) 198 0 0

For new gallery and alterations to Wesleyan Chapel, Jevon's-road, Bromley, for the trustees. Mr. Harry Longstaff, architect.
Nagle £248 0 0
Bangs & Co. 196 0 0
Johnson 190 0 0
Gregar (accepted) 179 0 0

For finishing five shops, at Acton, for Mr. T. Hinks:—
Gregar (accepted) £775 0 0

For pulling down old premises and rebuilding new, in Cork-street, and alterations and additions to house, Burlington-street, W., for Mr. Sang. Messrs. Mayhew & Knight, architects. No quantities supplied:—

		If new roof to Burlington-street House, add
Thompson	£4,240 0	£145 0
Browne & Robinson ...	3,998 0	113 0
Clemence	3,895 0	145 0
Laurence	3,864 0	1 2 0
Bywaters	3,197 0	93 0

For the erection of a school, to provide accommodation for 758 children, on the site in Blomfield-road, Burragetown, Paumstead, for the School Board for London. Mr. E. R. Robson, architect:—
Lonergan £9,788 0 0
Downs & Co. 7,949 0 0
Atherton & Latta 7,864 0 0
Sheffield 7,843 0 0
Ennor 7,771 0 0
Nightingale 7,686 0 0
Wood 7,489 0 0
Jerrard 7,373 0 0
Kirk & Randall 7,280 0 0
Tongue* 6,993 0 0
* Recommended by the Works Committee for acceptance.

For the erection of ten-quarter brewery, engine-house, stores, thirty-quarter malting, dray-shed, stabling, boundary-walls, &c., at Market Weighton. Mr. William Hawe, architect. Quantities by Mr. E. Starr:—
Illingworth Bros. £7,803 0 0
Hird 6,666 0 0
Halbershaw 6,351 15 5
Foster & Son 6,305 3 2
Arnott 6,000 0 0
Berry 5,839 0 0
Brown 5,806 0 0
Pape (accepted) 5,798 0 0
Various tenders were also sent in for the trades separately.

For wing to National schools, at Stanton Drew, Somersetshire. Mr. E. T. Boston, architect:—
Keeling & Coles (accepted) £950 0 0

For bay-window, at Kingwell-hall, Bath, Somersetshire. Mr. E. T. Boston, architect:—
Corner (accepted) £200 0 0

For drainage works, for the Clutton Sanitary Authority, Somersetshire. Mr. E. T. Boston, surveyor.—
Maggs & Corner (accepted) £130 0 0

For probationary wards, Sutton Schools:—
Chappell £7,080 0 0
Boyce 6,600 0 0
Crabb 6,258 0 0
Downs 6,230 0 0
Hart 6,180 0 0
Tongue 5,998 0 0
Braid & Jopling 5,893 0 0

For drainage works, for the Clutton and Bath Sanitary Authority, Somersetshire. Messrs. E. T. Boston & E. H. Sheppard, surveyors:—
Leonard (accepted) £165 0 0

For rebuilding the Ordnance Arms tavern, Chatham Intrs, for Messrs. Hulkes. Messrs. John Foord & Sons, architects:—
Bathurst £555 0 0
Jeffery 548 0 0
Naylar (accepted) 547 0 0

For four shops, Kingston-on-Thames:—
Timberley £6,372 0 0
Yates 5,985 0 0
Oxford 5,599 0 0
Wells 5,597 0 0
Seale 5,494 0 0
Dover, Son, & Co. 5,360 0 0
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Ball 5,265 0 0
Sawyer 5,238 0 0
Walker 5,178 0 0
Mason 4,990 0 0
Bartlett 4,324 5 0
Ligat 4,086 15 0

For the construction of the new swimming-bath, in the City of Canterbury, for the Swimming Bath Company. Mr. John G. Hall, architect:—
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Dover, Sons, & Co. 2,090 0 0
Howe 1,930 0 0
Naylar 1,881 0 0
Wilson 1,844 0 0
Gaskin (accepted) 1,795 10 0

For laying in drains and making the roads to the Tower Hamlets Estate, for the Walthamstow Local Board. Mr. J. H. Swan, engineer. Quantities by Mr. E. Morfee:—
Contract No. 3.

Coles	3,469 0 0
Pound	2,946 0 0
Fortescue	2,800 0 0
Potter	2,800 0 0
Wiltshire	2,715 0 0
Bloomfield	2,549 0 0
Wilson	2,330 0 0
Jackson	2,320 0 0
Paice (accepted)	1,999 0 0
Dover, Son, & Co.	1,927 0 0
Kelley	1,806 0 0

Contract No. 2.

Coles	£1,595 0 0
Pound	1,593 0 0
Fortescue	1,443 0 0
Potter	1,440 0 0
Bloomfield	1,439 0 0
Reed	1,404 0 0
Wilson	1,400 0 0
Jackson	1,380 0 0
Dover, Son, & Co.	1,354 0 0
Paice (accepted)	1,200 0 0
Kelley	1,180 0 0

For a house to be built on the estate of Mr. H. W. Draper, Enfield. Mr. T. J. Hill, architect. Quantities by Messrs. Osborne & Russell:—
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Field & Son 2,300 0 0
Sabey & Son 2,089 0 0
Fairhead (accepted) 1,777 0 0
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Gammon & Sons 16,589 0 0
Lucas Bros. 16,440 0 0
Holland & Hannen 16 200 0 0
Conder 16,098 0 0
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Elkington 15,689 0 0
Brass 15,643 0 0
Ennor 15,621 0 0
Downs 15,589 0 0
Chappell 15,500 0 0

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R. M. B. (shall appear; other particulars, if sent, shall have attention).—Omega (take advice on the spot, in view of the local building laws. If wall is wholly on owner's ground, neighbours would be liable to action for trespass at common law).—Architect (do nothing in an action: compromise).—J. M.—E. B.—G. T.—W. G. B.—F.—H. M.—J. G.—Cave.—J. T.—R. C. P.—Carbon Filter Co.—D. B.—J. M. G.—R. K.—Turners' Co.—W. G.—L—J. C.—C. S.—W. R. C.—B. I—B. H. C—G. W.—P. G. S—R. P.—W. N.—E. C.—W. M.—C. L. R—J. G. N.—C. J. B.—H. G.—W. E.—A. L.—J. L.—G. C.—S. W. K.—H. H.—T. G.—A Bricklayer Clerk of Works (next week).—W. C. T. (next week).

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The Builder.

VOL. XXXIII. No. 1708. SATURDAY, OCTOBER 30, 1875.

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"Restauration" and Restoration.

LATELY there has been rather a movement for popularising with English readers some of the numerous writings of M. Viollet-le-Duc, translations of two of which we have had the pleasure of noticing at some length during the present year. We have now a third small volume,* consisting of a publication in a separate form of a translation of the article "Restauration," from the now well-known *Dictionnaire*. To this the translator has added a reprint, with some additions, of a notice of the French architect's work in connexion with the *Commission des Monuments Historiques* which he contributed to the *Times* of August 24th of last year, and an extract from which we printed, in reference to M. Viollet-le-Duc's daily course of life and habits, presenting a sufficiently remarkable picture of un-hurried and indefatigable industry. In regard to this memoir, as it may in one sense be called, we may be glad that general readers in England should have an opportunity of gaining some knowledge of the character and labours of a remarkably gifted Frenchman; but we should have been better pleased if the style of the writing had been more sober and free from "gush," and may doubt whether the unpretentious and hard-working architect and critic to whom it refers would have altogether chosen to be introduced to the English public in this rather over-eloquent fashion. Moreover, if Mr. Wethered were an architect (he tells us that he is a country doctor), or well up in the *pros* and *cons.* of contemporary architectural doings, he would be aware that by some who are at least as well able to judge as himself the principles and practice of the subject of his notice are not considered to be by any means beyond criticism. We do not say that we are among the critics; and no one who has read our various former articles on M. Viollet-le-Duc and his works will suppose that we are wanting in admiration, not to say enthusiasm, for his genius; still, in personal notices, of contemporary men especially, "*point de zèle*" is a motto worth bearing in mind.

The more important part of the present small volume is the translation of Viollet-le-Duc's own theory and reflections upon the now much-vexed subject of "Restoration"; a subject which in England is in this unfortunate and highly unsatisfactory position, that, now that most of the principal and most valuable architectural monuments of the country have been restored, complaints are made, and in some literary quarters especially very loudly made, that irreparable mischief has been done, and that restoration, as we have come to regard and practise it in England, is a radical mistake, and has involved the wanton destruction of the historic realities of our architecture. While always recommending the employment of the greatest caution and conservatism in the restoration of old buildings, it is needless to remind our readers that we have never adopted this more recent attitude of antagonism to it, though admitting that there are cases in which such operations have been carried to an extent which might rather be termed rebuilding or redesigning than restoring. M. Viollet-le-Duc's essay treats the whole subject in so broad and philosophic a light, affording also as it does an opportunity of comparing the French idea of restoration with the English, that its wider circulation in this form seems a natural opportunity for looking at the subject once more from a partially new point of view.

One thing which the author emphasises at starting is what we think is often practically forgotten even by architects, still more by the public,—how essentially modern and without precedent is the whole idea of architectural restoration. Considering what a matter of course the system has become now, as if it were the most natural and inevitable process possible with an old and decaying building, it is curious to reflect that no nation of any time previous to this century (we may almost say) has thought of employing labour and investigation in this manner. Viollet-le-Duc observes that the Romans, though great builders and rebuilders, had not even a word in their language for the process we know as "restoration": only *instaurare, reficere, renovare*, all signifying to re-instate, to make over again. In Asia, again, both in ancient and modern times, "when a temple or palace has become dilapidated, another has been or is now erected beside it. Its decay is not regarded as a reason for destroying the ancient edifice; that is left to the action of time, which lays hold of it as its rightful possessor, and gradually consumes it." And this distinction between the practice of the present and of all past ages M. Le Duc asks us to regard not as a mere caprice of modern architectural practice, but as a part of the general attitude which the present age has assumed towards all past ages; the awakening of the modern world to the consciousness of the value of the past, and the general research into its history carried out by the students of geology, of comparative anatomy, of philology, &c. This is a very broad view of the subject, and it may be true in part; still, we think it is giving somewhat too great a dignity and importance to the Mediæval restoration movement to place it on anything like the same footing as the great investigations of modern science, which deal with things of such far wider and deeper interest; and it must be remembered also that the same dignity must in that case be conferred on the Classic Renaissance movement, which, in one sense, was just the same kind of movement, and arose out of the same kind of impulses (operating in a different direction) as the Gothic Renaissance; though this, of course, the adherents of the latter will never admit.

To come back, however, to the Latin verbs above quoted: the remark in regard to them seems to indicate an important distinction between the French architect's view of restoration and that held by the leading English members of the profession who have been engaged in it. For the word *renovare*, which Viollet-le-Duc repudiates as not expressing the sense of his "*restauration*," expresses well enough that of the English architect's "restoration." For the avowed object of the latter is the preservation and renewal of that which is falling into decay; and in some instances the re-instating of what was manifestly the original form of the work in place of some incongruous and inferior later addition. But this definition does not cover what is included in Viollet-le-Duc's view of the subject. The greatest and most important work of the kind which he has carried out, the restoration of the Château of Pierrefonds, illustrates this. There was an interesting paper and discussion on the subject of this restoration at a meeting of the Institute of Architects nearly two years ago, on which occasion we had it on the authority of a personal friend of the architect, who took part in the discussion (Mr. Bucknall, the translator into English of several of M. Le Duc's works), that the architect in this restoration had aimed at realising the method which the Mediæval builder of the castle would have adopted, and the result he would have reached, "had he possessed the materials, the appliances, the scientific knowledge, and the facilities for study that the nineteenth century affords, in addition to those that were possessed by the fourteenth." That this is a correct view of the French architect's aims is rendered probable by his own remark in the essay before us, that the modern restorer would be justified in using an iron roof where the Mediæval architect would have used a wooden one. We can imagine the lamentations of archæological societies, and the indignant letters of remonstrance which would be addressed through these columns to the English architect who should venture to hint at such a piece of sacrilege. Such iron roofs were used in the restoration of Pierrefonds; and it is obvious that this restoration, of which we have more detailed accounts than of any other of M. Le Duc's work in this direction, was to the architect's mind an attempt to give life and reality, before modern eyes, to a specimen of a form of architecture belonging to the middle ages, and which particular

* On Restoration. By E. Viollet-le-Duc; and a Notice of his Works in Connexion with the historical Monuments of France, by Charles Wethered, London: Sampson Low & Co.

specimen had, in great measure, to be rebuilt, rather than restored in the English sense. And this view of the restorer's office and object is perhaps at the root of that over-restoration and entire pulling to pieces and rebuilding which appears to be carried to such lengths by French architects, and by which not a few travelling English architects have been moved to great disappointment and indignation. And it is needless to point out that the restorer's professed object in England (however his practice may, under one or another temptation, go beyond it) is to preserve a building as it was originally built, with as little alteration as possible. We have, say, a cathedral, a great part of which has much crumbled and lost its original design, but of which sufficient is left in good repair to show what the design was, and to enable us to restore the decayed parts as they were originally, so as to prolong the life of the building in its original form. This is the spirit of English restoration in its best form, and the principle which is at all events avowed by restorers, whether conscientiously kept to or not, and this is a very different thing from attempting to realise what the Mediæval builder would have done had he lived in the nineteenth century.

The essay "On Restoration" does not, however, ignore restoration as understood by the English architect; and some of the author's remarks on this head are very suggestive in regard to the theory and principle to be followed in what may be termed conservative restoration. In particular, our author goes rather fully into one question which is always presenting itself in the restoration of Mediæval buildings, and about which there is frequent difference of opinion both as to general and particular cases. "It has frequently happened that buildings of a certain period, or of a certain school, have been repaired again and again, and that by artists who do not belong to the province where the edifice is found." (This latter remark, of course, applies specially to French architecture, where provincial distinctions of style are so marked.) "This has been an occasion of considerable embarrassment. If both the original and the altered parts are to be restored, should the latter be disregarded, and the unity of style, which has been disturbed, be re-established; or should the whole, with the later modifications, be reproduced? In such a case the absolute adoption of one of the two alternatives may be objectionable; and it may be necessary, on the contrary, to admit neither of the two principles absolutely, but to proceed according to the special circumstances of the case." He then proceeds to instance some typical cases, of which we may quote one nearly in full, as illustrating the writer's method of looking at the subject:—

"The vaulting of a nave of the twelfth century had by some accident been partially destroyed, and rebuilt at a later period, not in its primitive form, but according to the mode then in vogue. This latter vaulting, threatening in its turn to give way, has to be reconstructed. Shall the primitive vaulting be replaced? *Yes;* because there is no advantage in doing otherwise, and there is a considerable advantage in restoring unity to the edifice. The question here is not that of preserving an improvement made on a defective system, but one in which we have to bear in mind that the later restoration was made according to the ancient method, which consisted in adopting the forms in vogue at the time, when an edifice had to be renewed or restored; whereas we proceed on a contrary principle, that of restoring every building in its own style. But suppose that this vaulting, which is of a character foreign to the first, and which has to be rebuilt, is remarkably beautiful. It has given occasion to the opening of windows adorned with fine painted glass. Shall all this be destroyed for the mere sake of an absolute restoration of the primitive nave? Shall this painted glass be consigned to the lumber-room? Shall exterior buttresses and flying buttresses, which no longer have anything to support, be left purposeless? *No*, certainly. We see, therefore, that in solving problems of this kind, absolute principles may lead to absurdities."

This is very well put as a typical case, and will serve as an illustration of a principle for application in a variety of cases. The reference to the buttresses left "purposeless" by the alteration of the vault reminds us of an error in the contrary direction not unfrequently committed, of restoring features that have nearly disappeared, and for which there is no longer any demand, merely because they were there, or may seem to have been contemplated. We may instance an actual case, in the restoration of a nave, where the springings of external flying buttresses had existed, intended to be built, no doubt, if ever a stone vault had been carried out, which never had been. In the restoration the flying buttresses were built, but the vault was not, and the former were thus purposeless. The discovery by means of one or two doubtful and half-obliterated marks of some peculiar feature which had once existed is a great temptation to restoring architects, who find a field for their ingenuity in building up their conjectures on the apparently enigmatical remains, and then indulge themselves by replacing some feature which had almost utterly disappeared, and which in its day was an excrescence and no integral part whatever of the architectural design. Nothing could well be more indefensible than such a proceeding, which, nevertheless, is often carried out. We have frequently pointed out the principle as correct that what is an essential and integral part of the architectural design should be restored, so long as there are indications, however slight to go upon, on the ground of completing the architectural design; but that an accidental addition, which has no architectural value, however archæologically interesting it may be as a part of the history of the building, loses its interest with its disappearance, and that any reconstruction of it is utterly valueless, the whole interest being in the actual feature itself, and not belonging to any imitation of it.

Another kind of case is mentioned by our author, in which it appears to us by no means easy to decide what is the right and logical course to pursue. The case he supposes is, that between the buttresses of a nave chapels have afterwards been added, in the manner so frequent in French cathedrals. "The walls beneath the windows of these chapels do not in any way tie into the more ancient buttresses, but show clearly enough that these constructions are of later date. It is found necessary to rebuild both the exterior faces of these buttresses, which are decayed by time, and the inclosing walls of the chapels. Should we unite these two constructions of different periods, and which we at the same time carefully restored? *No:* we shall carefully preserve the distinct jointings of the two parts, the un-bondings, so that it may always be apparent that the chapels were afterwards added between the buttresses." The understood object is of course to preserve the history of this part of the building in a manifest manner. But this very effort may lead to a false impression hereafter; for when this restoration also decays by age, the very fact of the straight joint between the wall and the buttresses will lead to the conclusion that this is the original work, and no restoration; and this is only a specimen of the kind of way in which we are inclined to believe that the actual history and date of many buildings in this country will be falsified, and the architectural students of the future entirely taken in as to dates, to an extent that our restoring architects scarcely appear to contemplate at present. How possible such a result is, now that the forms and details of Mediæval Gothic have been so studied and learned off by heart, we may estimate from the fact that the present president of the Institute (certainly about the last person likely to be deceived in such a matter), in the course of some remarks on the occasion of the presentation of the Gold Medal to Mr. Street, observed, as a proof of that gentleman's proficiency in Gothic detail, that he had himself mistaken for old work details which had been made from Mr. Street's drawings during his pupilage. Such an admission is suggestive enough as to the confusion prepared for Gothic students of the future, when exercising their enthusiasm on restored buildings.

The remarks in the essay in regard to some of the practical difficulties and problems in restoration of old buildings (p. 46, *et seq.*), deserve special attention from young architects who are turning their minds towards this important branch of professional work. The author's observations on what may be termed the social and industrial aspects of the restoration movement, are very effectively written. He gives a lively sketch of the opposition to the Mediæval revival, or even to the study of Mediæval art and construction, by the class of people "who would presume to tear out entire chapters of the history of human achievements"; who said, "such and such a vein [of history] is insalubrious, do not disturb it; if you bring it to light we will denounce you to your contemporaries as corrupters!" and who were persuaded that the whole movement meant nothing less than the restoration of *oubliettes*, torture-rooms, tithes, and asceticism. "The amusing part of the matter is, that these fanatics (we keep to the term) lavish on us the epithet *exclusive*, probably because we do not exclude the study of Mediæval art, and even venture to recommend it." As to the effect of the large works of restoration undertaken in France of late years on the industrial trades and branches of workmanship connected with building, Viollet-le-Duc speaks most strongly, and we doubt not with reason; stating that these works have been the means of counteracting to an important extent the bad effects of centralisation, by opening fresh centres of building industry and trade in the provincial towns at or near the scene of operations, and in giving rise to the formation of *ateliers* of art-workmanship to which the greatest opponents of the movement have been glad to come in search of workmen and of methods.

Reverting to the dissatisfaction in regard to restoration now felt and expressed in many quarters, we may repeat what we have before now said, that there are two main heads under which buildings proposed to be restored may be considered. There are buildings which are required for practical use, and those which are of no use any longer, and are only of value as architectural or archæological monuments. In regard to these latter, there seems to be little excuse for restoration at all—sustentation is all that is required. It is next to impossible to renovate an old structure at all without materially impairing, sometimes utterly destroying, its real interest and beauty. Keep it in repair as well as it can be, prop it up, preserve it in every way as long as possible, but on the whole rather let it die with dignity of pure old age than put a new face on it to destroy all that interest of association and of reality which, once tampered with, no power on earth can restore. But the case is different with a building which is being put to practical use. Taking the case of our cathedrals, which seem to be thought more of from a practical point of view at the present moment than they ever have been since the Mediæval period; if one of these is in such a state of decay that it is becoming unsafe, or may be expected to become so, what course can be pursued? We cannot, it is to be feared, adopt what M. Viollet-le-Duc calls specially the Asian practice, and build a new one alongside of it, leaving the old building revered and untouched. Political economists would never sanction such a proceeding. It becomes absolutely necessary, then, to do something; and if a great deal of patching is actually required, it may be better to do the thing thoroughly, and renovate the whole, though we confess it is with grief and pain that we see an old architectural friend putting on a new face in the way some of our cathedrals have done, and we cannot restrain a conviction that in most instances more than enough has been done, and that the enterprise of rival deans and chapters has in some cases led to restoring being carried to an unnecessary and wanton excess. It was not without a thrill of pain that we saw flying statements in papers a few weeks ago that the Dean and Chapter of Durham were on the move in the same direction; and we may be pardoned for indulging a fond hope that among so many restored cathedrals, one, and that one so grand in itself, and so gloriously situated as to have been the admiration and joy of generations of artists, might be spared to us in its old and venerated garb. At the same time, having in view the practical considerations aforesaid, we cannot but think that the strictures habitually passed in some journals upon all architectural restoration are the offspring sometimes rather of over-acted zeal, or of personal feeling, than of due consideration, and we are inclined to think that whatever may be said of our restoring architects, they are far more conservative and cautious, and understand their business better, than those of France. The extent to which restoration is being carried on in that country seems to be something really alarming to all who regard genuine old buildings as furnishing part of the character of a country. We have no quarrel with such a rebuilding, rather than restoration, of the Château of Pierrefonds, as an isolated example of a Mediæval castle in its nearly perfect form; but we should stand aghast at the idea of such a proceeding applied to all the old castles of the country, and we are disposed to think nothing but the question of funds stands in the way of such a campaign. And it is really time for architects and Governments to consider seriously whether what is gained in architectural interest and excitement by the renewing of an old castle compensates for what is lost by taking away the real thing, and whether it would not be a grievous thing to find, in travelling in an historical country, all the old buildings practically gone, and nothing but new, clean, smooth, restored erections. It is committing no small theft on a country to rob it of those old buildings, which have become almost a part of its soil, and

dentified with its past history, and give in xchange only cold, hard copies, called "restora-ions."

SIR JOHN RENNIE'S AUTOBIOGRAPHY.*

LONDON BRIDGE.

Sir John Rennie was rightly described, in a nemoir communicated to the Institution of Civil Engineers in the last session, as having "stood lone, the last of a bygone race,—a link con-ecting the Brindleys, the Smeatons, the Rennies, nd the Telfords of the old system, with the Stephensons and the Brunels of the new." His wn works, as we shall take occasion to mention, re such as to entitle him to a very high rank in he noble profession which he adorned. The everence with which, both as a son and as a upil, he invariably speaks, in the pages before s, of his father, Mr. Rennie, is such as to lead o the wish that the complete life of that great ngineer, including a history of his works, and n abstract of his reports, which we believe Sir ohn Rennie left in a state fit for publication, ad appeared at the same time as the Auto-iography; to which it would have formed the nost appropriate introduction.

Taken, however, by itself, the Autobiography s a work of unusual interest, and of unquestion-ble merit. Its style is simple and natural: its anguage has an elegance which breathes of a less feverish, though not less manly, tone of society han that which marks the last quarter of the ineteenth century. His accounts of voyage and ravel, of famous places which he has visited, nd famous men he has known, have a charm which is even more sensible to those familiar with what he describes, than to those to whom the account has the character of novelty. Above all, the kindly tone of his mind, and the clear penetration of his professional glance, are appa-rent in every page.

We propose to give some account rather of the works of Sir John Rennie than of a book which we recommend our readers to study for them-selves. It will well repay the perusal. We may preface what we have to say by supplying some information not included in the volume. Sir John Rennie was knighted on the occasion of the opening of London Bridge, when the Lord Mayor (Alderman Key) received the more easily-earned dignity of a baronet. He was president of the Institution of Civil Engineers from January, 1845, to January, 1848. He died at Bengeo, near Hertford, on the 3rd of September, 1874, just after completing his eightieth year.

The appearance of the autobiography of the engineer of London Bridge is singularly well-timed. Just when alterations are proposed, it is well that the tale should be retold of the diffi-culties with which Rennie had to contend in building the present noble structure, and of the legacy of trouble laid by for those who attempt to meddle with it.

The original London Bridge is said to have been built in the year 1176, on the site of an ancient ford. The numerous piers which sup-ported the small arches on which alone the engineering science of the twelfth century, in this country, was bold enough to venture, so contracted the waterway, that the scour of the current dug channels below the level of the foundations. Great starlings, or timber-casings of piles, were, therefore, erected around the piers, in order to keep them from being actually under-cut by the stream. The remedy increased the malady, until the obstructions became so great that there were little more than 8 or 10 clear feet of waterway left beneath the opening of any one of the arches; and at low water the fall at the bridge was as much as 5 ft. perpendicular. Five openings on the south and one on the north, were occupied with water-wheels for pumping water for the City.

The obstruction caused by these works was so great that the celebrated Smeaton was em-ployed by the corporation of London to take down the two arches nearest the centre, and replace them by a single one of 80 ft. span. The bridge itself was covered with houses, leaving only a narrow way between them; forming, in fact, an actual street across the Thames, and erecting a dam, which so resisted both the influx of the tide and the free efflux of the ebb, as to produce a perfect cataract, especially at low water.

Mr. Rennie, the father of Sir John Rennie (who died in 1821), had prepared a design for the new London Bridge. The elevation was subsequently adopted by the son, to whose lot it fell to prepare all the detailed working drawings, specifications, and estimates, as well as to carry out the work. Considerable dispute had arisen between the Corporation of London and the House of Commons; the City then, as now, recommending that the old bridge should be maintained, and improved so as to give more freedom to the traffic. It was the advice of Mr. Rennie, on the contrary, that a temporary wooden bridge should be erected above the line of the old structure; that the latter should then be entirely removed; and that when the river had been restored to something like its natural con-dition, by the demolition of this great obstacle to its current, an entirely new bridge should be erected on the line of the ancient crossing.

The opposition of the Corporation to the re-moval of the old bridge, before the construction of the new one, was, however, so pertinacious, that an unfortunate compromise between the plan of the City and that of Mr. Rennie was ultimately effected. The engineering difficulties attending the construction of the new bridge were greatly aggravated by this pertinacity on the part of the Corporation, and the line of the approaches was permanently disarranged. Not only had all the works for the formation of the new foundations to be carried on in the teeth of the violent currents caused by the old starlings, but the depth of water in which the foundations were laid was 5 ft. more than would have been the case if Rennie's counsel had been followed, being as much as 28 ft. at low water spring tides. The old bridge, Sir John Rennie remarks, stood on a sort of hill below the water, the foundations of the piers being from 28 ft. to 30 ft. above the bottom of the river immediately above and below it. These holes had been dug by the great fall and scour produced by the con-traction of the waterway. It was in one of these holes, and exposed to the scour of the flood, that the present bridge was built.

It was not until 1828 that the plan ultimately adopted for the approaches to the bridge was decided; and that notices were given for a Bill to empower the Corporation to carry them out. It is probable, however, that the necessary deviation from the original line of Old Fish-street-hill facilitated that feature of the Viaduct to which it chiefly owes the admirable character of its adaptation to the exigencies of the traffic. The original design was to make the approaches at the ordinary highway ascent of one in thirty. The great traffic of Upper and Lower Thames-street, crossing that of the bridge, must thus have created a block which would, long before the present time, have become perfectly in-tolerable. Sir John Rennie remarks that if it had been proposed to divert the traffic from the old line of Fish-street-hill in the first instance, it is most probable that it would never have been carried. But when the question pressed for solution, it was again referred to the engineer, who very gladly took the opportunity of recom-mending an arch over Thames-street. We can judge from a comparison with the approaches to Southwark Bridge how much the City owes to this addition to the original design, which at once disentangled the heavy river-side traffic from the lighter coach and passenger traffic served by the bridge, and abolished the old hill by the present convenient level approach to the structure. The cost of the approaches was estimated at 1,400,000*l*. Neither the actual cost, nor that of the bridge itself, is mentioned by Sir John Rennie. The extra cost of making the roadway 54 ft., instead of 48 ft., as at first designed, was 46,000*l*.; but this is, of course, only an addition on paper,—a totally different thing from an addition to a completed structure. The foundations of the old bridge were removed by the contractors, Messrs. Joliffe & Banks, for the sum of 10,000*l*.; they having the benefit of the old materials, except that they had to fill up the holes in the bed of the river, above described, to the level of 14 ft. below spring tide low-water mark.

At a moment when it is in contemplation either to throw an additional weight of consider-able amount on the foundations prepared by Sir John Rennie for his 54-ft. roadway, or to widen the piers which he erected under such stress of difficulty, caused by a current which now no longer exists, it is highly instructive to be made aware of the careful measures adopted by that able engineer, and of the very threaten-ing circumstances which menaced the stability of a structure, of which the obstinacy of the Corporation of the City of London had compelled the erection under the most disadvantageous conditions that were possible at the time.

Mr. Rennie's design consisted of five semi-elliptical arches, the centre being 150 ft. span, the two next arches 140 ft. span each, and the two side, or land arches, 130 ft. span each. The two centre piers were each 24 ft. wide at the springing, the two side piers 22 ft. each, the whole to be built of the best grey granite. To lay the foundations of these piers it was quite necessary to remove, by dredging, the stone which had been washed from around the piers of the old bridge, and which so filled the holes in the river as to render pile-driving impossible. The cofferdams for the new piers were elliptical in form, in order to resist the strong current in which they were placed. They consisted of two main rows of piles, each 14 in. square, each pile being properly hooped and shod with wrought iron, and driven 25 ft. into the bed of the river. These piles were connected together by three rows of braces, 15 in. square, at the level of low water, half-tide, and high water. At every 10 ft. the two rows of piles were fastened together by 2½-in. bolts, passing through the 15-in. walings, and secured inside and cutside with wooden cleets, 15 in. square and 8 ft. long, so as to cover the joints of the horizontal braces. Six feet without the two main rows of piles was a third row of the same dimensions, braced and bolted as before mentioned to the two inner rows. When these three rows had been driven, the joints between the piles were caulked with oakum, and paid over with hot pitch, so as to render them water-tight. The spaces between the three rows of piles were then filled with strong well-puddled clay.

In the space thus inclosed a fourth series of piles was driven in the form of a parallelogram, corresponding with the exact size of the founda-tions of the piers. This row of piles was again braced to the external cofferdam, so as to bind the whole structure together like a well-made cask. The water was pumped out by a powerful steam-engine, and the earth within the coffer-dam was thus excavated to the low-water spring-tide level. Into the interior parallelogram, piles of Baltic fir, elm, and beech, 12 in. square, and 3 ft. 6 in. from centre to centre, were then driven, penetrating 20 ft. into the solid clay. The heads were cut off level, and Baltic fir sills, 14 in. square, were bolted to each pile-head by jagged wrought-iron spikes. The spaces were filled with concrete, stonework, and brickwork. This was planked over with 6-in. elm plank, bedded in mortar, on which the footing course of the actual pier was laid. The masonry diminished by 12-in. offsets till it reached the shaft of the pier, which was carried up solid to the springing of the arches.

We have given this brief abstract of the de-tailed account furnished by Sir John Rennie, not only to show the thorough system on which the foundations of London Bridge were laid, but further to point out the difficulties and dangers that must attend any attempt to add to this well-balanced structure. The whole of each coffer-dam was prepared for the simple purpose of allowing the proper formation of the pier founda-tion within it. The basis of each pier, resting on the parallelogram of piles driven 20 ft. into the clay, may be considered as equivalent, in the opinion of the engineer, to a solid pier of the net dimensions, resting on the undisturbed London clay, at a depth of 20 ft. below low-water mark. But we have seen that the foundations of the piers of the old bridge, which must have been at least as low as low-water mark, were from 28 ft. to 30 ft. above the bottom of the holes dug in the channel by the force of the current above and below the old bridge. The bottoms of these holes, therefore, were from 8 ft. to 10 ft. below the level at which the weight of the new bridge came upon the London clay. It is true that these holes were subsequently filled up to the level of 14 feet below low water, or 6 ft. above the lowest point of the new foundations. But filling up with stone and rubbish would not restore the original solidity of the clay bed of the river.

This fact must be borne steadily in view, for the reason that we have experience as to the behaviour of the London clay, however apparently solid, under heavy pressure, which has been acquired long since the erection of London Bridge. Even at a depth of 80 ft. or 100 ft. the formation in question partakes of the nature of a semi-fluid. Under a sufficient degree of pressure it yields, and finds the nearest way of

* "Autobiography of Sir John Rennie, Past President of the Institution of Civil Engineers: comprising the History of his Professional Life, together with Reminiscences dating from the Commencement of the Century to the Present Time." London: Spon. 1875.

escape. This fact came to light in the construction of the tunnel for the London and North-Western Railway through Primrose-hill. The designs of Mr. Robert Stephenson for the general tunnel section to be used on the London and Birmingham line gave a partially elliptical section, with an invert forming an arc of a circle. The first tunnel commenced was through the solid chalk, with flints, in the neighbourhood of Watford. The late Sir Charles Fox, then subassistant on this division, proposed the substitution of footings to the side wall for the invert shown on the contract drawings in this tunnel. Mr. Stephenson gave his assent, and the gain in economy, and still more in the facility with which the work could be pushed on, were so great that a similar change of section was ordered for the Primrose-hill tunnel. After some little time, however, it became evident that what miners term "creep" was going on. The solid clay, under the pressure of the undisturbed mass above it, began to rise, and, if no remedial measures had been taken, would soon have filled the tunnel to the roof. The original section was therefore reverted to in this place, and the invert inserted, which effectually preserved the tunnel.

This piece of definite engineering experience has the most important bearing on any plan for adding to the width of London Bridge. We have seen the care with which Sir John Rennie provided for the foundations of his piers. That these foundations might be able to sustain a somewhat greater weight is possible; although, as we shall show, it is not certain. But no addition to the width of the bridge is worth considering that does not add accommodation for two additional lines of carriage-traffic to the four now carried by the structure,—that is to say, it is proposed to make Rennie's foundations do, say, 40 per cent. more duty than they were designed to perform. It may be said that by the substitution of iron for stone the additional weight imposed on the foundations will not be proportionate to the additional width given to the structure. But it must be remembered that it is not only dead, but living, weight that will be added by an increase of carriage-way. The vibration is very likely to increase in a greater ratio than the actual weight. Thus the stress thrown on the foundations cannot safely be taken as less than we have indicated.

The account above given of the mode of erecting the bridge, and of the nature of the channel of the Thames at its site, puts out of the question any idea of enlarging the foundations of the piers. To do this, new cofferdams must be driven, and the contraction of the waterway thus occasioned would soon dig below the bottom of the piles on which the structure rests. The alternative would be to carry up additional masonry from the footings of the present piers. How much width could be thus obtained is not evident from the account we have cited; but whether this plan, which would be architecturally the only admissible one, or that of cantilevers, or that of skew-backs, were adopted, we still come to the doubtful expedient of throwing 40 per cent. additional stress on Sir John Rennie's foundations. Will they bear so much more than they were designed to support?

Let us consult the experience of the engineer of the bridge:—"After the fifth arch, the first on the Surrey* side, was keyed," says Sir John Rennie, "the sinking was observed to be 4 in., or about 1 in. more than the others. . . . I also observed that two of the quoins on the south-east end of the fourth arch from the Surrey shore had splintered off at the soffit. . . . Upon levelling the piers, it was found that the east end had subsided from 10 in. to 14 in. more than the upper or west end. This I could account for in no other way but that there had been a greater scour here than at the upper end, and that the piles had to some extent been laid bare."

The experience above detailed as to the behaviour of the London clay supplies a link that is wanting in the explanation of this subsidence. The scour of the ebb tide was more powerful than that of the flow; the holes dug below the bridge must thus have been deeper than those above. When the full weight came on the London abutment, it is clear that the clay beneath the foundation yielded. To the depth of from 10 in. to 14 in. it must have been squeezed out towards the least resisting line; that is to say, towards the sea. With this degree of movement the abutment came to its bearing. No subsequent movement was detected by Sir John Rennie, who constantly levelled the arches and piers, for several months after that subsidence, from a fixed standard gauge. But what would have been the result had 40 per cent., or even 15 per cent., more stress been thrown on a foundation which had begun to creep? What will be the result if it is now attempted? We do not imagine that any engineer of position will take the responsibility of the experiment.

We have been induced thus far to dwell on the light which is thrown, by the pen of Sir John Rennie himself, on the delicate equilibrium of the foundations of London Bridge, from the sense of the great danger to which the City authorities, as at present resolved, are about to subject that great national monument. Mr. Colleton Rennie, the editor of the present volume, has published a letter on the subject, in which he very clearly points out the inadequacy of any attempt to facilitate the City and borough traffic by the widening of London Bridge. As to that, there is no room for difference of opinion; that is to say, of educated and intelligent opinion. But Mr. Rennie, with a family pride which is not only pardonable but becoming, dwells on the improbability that any public works constructed by his family should not be able to bear a little judicious alteration. We think, however, that the record, written by Sir John Rennie, is enough to prove that the word judicious cannot apply to any attempt to tamper with a structure satisfactorily erected under such stress of difficulties, which so nearly overcame the equilibrium of the bridge.

Sir John Rennie's first professional occupation was to make the working drawings of his father's designs for Southwark Bridge, in 1814–15. He was then between twenty and twenty-one years of age, his education, in languages, in mathematics, and in the mechanical duties of his profession, having been pursued, up to that time, with a care not very usual amongst the engineers of this country, but which afterwards bore ample fruit. He leaped into the saddle at a bound, for his first independent advice seems to have been that the abutment springers for the iron arches of this bridge should consist of solid blocks of granite, of a size not theretofore introduced in England. To carry out this wise suggestion he paid a visit to Aberdeen. He found the granite quarries in that vicinity to be open only on a small scale for obtaining pitching stones. The proprietors would not bestir themselves to produce larger blocks. Young Rennie explored the country, and found promise of solid and accessible stone at Peterhead, thirty miles from Aberdeen. He describes, in very instructive detail, the procedure by which he quarried, transported, and finally shipped a block of this now well-known red granite, of the unprecedented weight of twenty-five tons. A peep at the hearty hospitality of Mr. Fergusson, of Pitfour, reminds the reader that "'tis sixty years since."

We hope to conclude this notice of a very agreeable book in our next number.

* We cite textually, but think Middlesex side is meant.

THE LATE MR. EDWARD ROBERTS, F.S.A.

Mr. Edward Roberts, whose death at the comparatively early age of fifty-six we have already mentioned, has not lately designed many buildings, his practice having mainly consisted of heavy compensation cases in connexion with metropolitan improvements and railway works, in which branch he showed his ability to grasp the general merits of a case as well as the more minute details. Some of his papers which we have seen prove the singular care with which he dealt with his valuations. This attention to the minutiæ of his business contributed to his reputation, and also secured for him the name which he acquired amongst his professional brethren of "Maximum Roberts," on account of the sums which he usually succeeded in obtaining for his clients.

His earliest architectural work of which we know anything is the Institution and Market at New Swindon, a view and plan of which will be found in our volume for 1854.* He was architect of Christ's College, Finchley, where he also built a lodge for Mr. Heal. Mr. Roberts was an enthusiastic Freemason, member of the Grand Lodge for many years, also of the Middlesex and Methuen Lodges, and secretary of the former for thirty years. The Methuen Lodge was consecrated at Swindon, we remember, when Lord Methuen laid the first stone of the Institution already referred to.

Mr. Roberts was a Fellow of the Royal Institute of Architects (elected 1860), and a Fellow of the Society of Antiquaries. He was intimately concerned, in connexion with Mr. G. R. Wright, in the foundation of the Junior Athenæum Club, and converting for its purposes a house in King-street, St. James's. When the club removed to Hope House, in Piccadilly, he designed, amongst other works there, the very handsome and commodious Smoking-room which the club possesses.

The subject of our notice had been elected an Associate of the British Archæological Association in 1856, and became one of the Hon. Secretaries in 1862. From that time he attended the Congresses very regularly, and contributed greatly to their success by his lucid description of ancient buildings visited on those occasions, the salient points of which he laid hold of with much facility, and pointed out with equal felicity. The Journal of the Association contains many papers contributed by him, some illustrated by his measured drawings. He took part in the last Congress, that of Evesham, though it was obvious to his friends that his health was in a serious condition. Soon after that event the news reached him of the premature death of his son in a distant country, and the shock appears to have expedited his death. His remains were buried at Kensal-green Cemetery, on Wednesday, the 20th inst., when besides the members of his family, there came a number of his professional brethren, including Mr. T. Blashill, Mr. Loftus Brock, Mr. Warburton Stent, and others, to pay their last affectionate respects to a departed friend.

Mr. Roberts leaves a widow and three daughters to mourn a very great loss.

* Vol. xii., pp. 346, 347. See also "A Visit to Swindon New Town," p. 289, in the same volume.

WORKS COMPLETED OR IN PROGRESS AT OXFORD.

According to its usual custom at the commencement of Michaelmas Term, the *Oxford Journal* gives a detailed account of the building operations of Oxford during the past twelve months. We cull a few particulars of the more important items of the account, which occupies nearly a page of the *Journal*.

At *Christ Church College* a great deal of work is being done by Messrs. Symm & Co., builders, of Oxford, in the way of alteration if not in the way of improvement. In "Tom Quad" all the decayed stonework is being taken away and replaced with new material, and in place of the parapet erected by Sir Christopher Wren, a new one, consisting of battlements in accordance, it is said, with the original idea, is being erected. Shields bearing the armorial bearings of Henry VIII. and Cardinal Wolsey, the founders, and the benefactors of the college, are being placed at intervals, and it is intended to carry out the alteration entirely round the Quad. Over Kilcanon arch, in the north-east corner, a low tower is being erected with a stair turret, for the purpose of giving greater accommodation. Wall-ribs are being inserted upon the original lines shown round the Quad, and upon the old foundations which were discovered some time since the bases of buttresses are being constructed, the intention being at some future time, it is stated, to erect cloisters. The drive round the Quad has been altered to the original lines, as laid down in an old print bearing date 1673, which will have the effect of making it look much larger, besides providing a more direct approach to the various entrance doorways. A new parapet is also being placed upon the hall, with a pinnacle running up from each buttress to show the diff-rent bays, and each alternate panel will contain an elaborately-carved design of the arms of Henry VIII. and Cardinal Wolsey. The whole of the work is being erected in Taynton stone, but has been delayed by the strike among the masons in the summer. The architects are Messrs. Bodley & Garner, London, and the clerk of the works is Mr. Fitzwilliam.

In the *Cathedral* two stained-glass windows have been put in—one by Messrs. Clayton & Bell, and the other by Messrs. Morris & Co. A memorial window is shortly to be placed in the north transept, facing the pulpit, by Messrs. Clayton & Bell. The old heating apparatus at the back of the cathedral has been pulled down, and enables a better view to be obtained of that side from the Broad Walk. The doorway into the Dean's house has been removed into the next bay to where it originally stood.

The "Tea Chest" in which the cathedral bells were placed a few years since, over the staircase leading to the hall, still remains, but plans have been prepared for the erection of a tower, a

work which will be ere long commenced. Last year the governing body of Christ Church invited and received plans from six architects, Sir G. G. Scott, Mr. T. N. Deane, Mr. Bodley, Mr. Hugall, Mr. T. G. Jackson, and Mr. Champneys, for inclosing the bells within a more suitable structure. A design for this proposed bell-tower, by Mr. James Fergusson, was illustrated in last week's *Builder*.

At *New College* the first portion of the extensive additions in Holywell-street was completed and occupied at the commencement of this year, the additional accommodation provided being two sets of rooms for fellows, and thirty-eight for undergraduates, besides two large lecture-rooms. A further extension of the building is now in progress, and it is expected to be completed some time next year. The length of the building already completed is 273 ft.; depth, 33 ft.; and the height from footing to ridge, 75 ft. This extension will give twenty-one sets of rooms for undergraduates, with a fellow's house at the west end. The fronts are entirely of Milton stone, and the carved work is being executed by Messrs. Farmer & Brindley. For the purpose of access from the old to the new buildings, a stone groined passage has been designed by the architect, Sir Gilbert Scott, and is now nearly completed, this part of the work being executed in Ancaster stone. Messrs. Jackson & Shaw, of London, are the contractors, and Mr. H. Roome is the clerk of the works.

The enlargement of *Balliol College* has been continued this year by the addition of nine sets of rooms for undergraduates at the west and four for fellows at the east end of the hall. A new hall is in course of erection, the floor of which will be laid with Dennett's patent fire-proof flooring. The hall is 90 ft. by 36 ft. in the clear, and the internal facings will consist of Bath stone. The staircases are of York stone, and the windows of the hall will be ornate in character. The total cost of the enlargements will be 25,000*l*. The architect is Mr. Waterhouse; the builder is Mr. Horsman, of Wolverhampton; and the clerk of the works is Mr. Simmonds.

At *Merton College* extensive works have been carried out during the Long Vacation by Messrs. Fisher & Hobdell, builders. The fine old tower has undergone restoration, the old stonework having been removed over about three-fourths of its surface to the depth of from 7 in. to 1 ft. and replaced with new Milton stone. The tracery of the windows is entirely new, and oak louvres have been substituted for the old Stonesfield slates. The parapet also has been restored, and in consequence of one of the pinnacles having been partially destroyed by lightning a few weeks ago, it has been determined to fix one of Newall's patent conductors to each pinnacle.

The last new block of buildings at *Keble College*, containing accommodation for thirty-seven undergraduates and three tutors, will be ready for occupation this term. This block is built in the same style as the other parts of the college, but differs from it in being an extra story higher. The residence for the warden will be at once begun at the south-east corner of the college site. It is intended, if possible, to open the chapel on St. Mark's Day (April 25) next year, and it is also proposed at the same time to lay the first stone of a new dining-hall and library, which have been lately offered to the college by an anonymous benefactor. These will occupy the site of the present temporary chapel and dining-hall on the south side of the large quadrangle, and will divide the two quadrangles of which the college will hereafter consist. Mr. W. Butterfield is the architect for the whole of the works; and the builders are Messrs. Parnell & Sons, of Rugby, Mr. Bond being the clerk of the works.

At *Brasenose College* a new Bath stone parapet has been erected upon the Hall, and a new oak roof has been placed round the front quadrangle. Messrs. Wyatt & Son were the contractors.

A considerable amount of work has been executed at *Wadham College* by Messrs. Wyatt & Son. The old chimney shafts in the front have been removed, and new ones built in Bath stone. Some old outbuildings have been removed for the purpose of enlarging the back quadrangle.

At *All Souls' Chapel* the restoration of the reredos is still in progress, and Mr. E. E. Geflowski, the sculptor, has completed the central piece, which consists of a Crucifixion group in high relief.

A new lecture-room, 31 ft. by 16 ft., has been erected at *St. John's College*, and other works have been carried out by Messrs. Wyatt & Son.

The south end of the Library of *Jesus College*, facing Market-street, is being restored in Bath stone by Messrs. Wyatt & Son.

At *St. Mary's Church* important works of restoration will, it is authoritatively stated, shortly be commenced from designs by Sir Gilbert Scott; the total cost will be about 18,000*l*.

St. Mary Magdalen Church has undergone considerable repair and restoration, under the superintendence of Mr. Wilkinson, architect. The old stone slating has been removed and replaced with Westmoreland slates, the tower has been re-roofed and repaired, and the bells have been re-cast and re-hung by Mr. White, of Besselsleigh. In the interior, the gallery at the west end has been removed, together with all the old pews, and the old vestry walls under the tower have been taken away, and a new vestry provided in the south aisle. Messrs. Wyatt & Son were the contractors, and the total outlay was about 2,000*l*.

The ancient tower of *St. Michael's Church* having been found, upon examination by Mr. Bruton, architect, to be in an unsafe condition, a plan was designed by that gentleman of tying together the structure by a cradle of oak timbers within the walls. Three ancient windows were opened during the progress of the work. Mr. Selby, of Oxford, builder, has carried out the work.

The enlargement of *Summertown Church*, to the extent of about 150 seats, has been carried out by Messrs. Franklin & Sons, of Deddington, from plans by Mr. G. E. Street, R.A. The west and north walls of the nave have been taken down, and the nave has been extended westward about 20 ft., and a new aisle built on the north. A new organ-chamber and vestry are built on the north of the chancel, and provision has been made for the reception of Haden's heating apparatus. The total cost will be about 1,600*l*. Plans are in preparation for a new porch.

The Roman Catholic *Church of St. Aloysius* has made considerable progress. The architects are Messrs. J. A. Hansom & Son, Brompton, and Mr. Claridge, of Banbury, is the contractor. The style is Early Transitional Gothic, and the materials used are white brick, with Bath stone dressings. Mr. Firth is the clerk of the works.

The new *Chapel of King Edward's School*, Summertown, is being proceeded with, from designs furnished by Mr. Wilkinson, the architect of the school. The style is Early English, the materials used being Gibraltar stone for the walling and Box-ground stone for the dressings. Messrs. Symm & Co. are the builders.

The *Barracks* at Bullingdon, in connexion with the Oxford Military Centre, are progressing rapidly in the hands of the contractors, Messrs. Downs & Co., of London. The entire buildings will cost 50,000*l*., and, it is expected, will be fit for occupation by January next.

A large number of minor works have been completed or are in progress. These include additions to and enlargement of chapels, schools, and public institutions of various kinds, and the erection of many new houses and shops. In all the more important works we have noticed great attention is stated to have been paid to drainage and water-supply and to sanitary arrangements generally.

CRANBORNE CHURCH.

The new chancel of the parish church at Cranborne, in the county of Dorset, dedicated to St. Mary and St. Bartholomew, was opened on the 9th inst., by the Bishop of Salisbury. The early records of this very ancient church are to be found in the chronicles of Tewkesbury Abbey, from which it appears that in the year 930, during the reign of King Athelstane, a small monastery was founded there, which was afterwards incorporated with the Manor of Gloucester, and conferred by William Rufus upon Robert Fitzhamer, in the early part of the twelfth century, by whom the church at Tewkesbury was built, and who made Cranborne a priory. The church occupies an elevated position near the interesting manor-house of Cranborne, one of the residences of the Marquis of Salisbury (illustrated by Mr. Nash in his "Mansions of the Olden Times"), which, together with the manor, was granted to the first Earl of Salisbury by James I., and from which the eldest son of the Marquis derives the title of Viscount Cranborne.

The present church consists of a western tower, nave and aisles, a chancel and vestry, which probably was in former times used as a side-chapel. The entrance-porch, on the north side of the nave, has a parvise over it. The church, with the exception of the chancel, which has now been rebuilt, is of an early period of architecture, being of the beginning of the thirteenth century; but the fine Norman doorway in the tower remains to show the existence of a still earlier building upon the same site. The chancel was of very much later date,—the fifteenth century,—and there is also some late work in the tower, though of a somewhat earlier period.

The chancel having become quite dilapidated, has been taken down and rebuilt upon the old foundations. The vestry has been enlarged, and an organ-chamber added on the north side to receive the organ, which was formerly placed in the tower, and greatly obstructed the view of the west window. The new walls are built with brickwork faced with flints, and the new chancel arch, the windows, doorways, and other details of the new work are of the Early English period of architecture, the same as the nave and aisles, and are executed in Tisbury and Bath stone, with Devonshire marble shafts on the inside. A new open-timbered roof has been substituted for the former low plastered ceiling, and new oak seats have been provided instead of the old benches. The floor of the chancel, which was lower than that of the nave, and extremely damp at most times, has been raised and paved with encaustic tiles. The surface of the surrounding ground has been taken off for some distance from the church, and the area of the burial-ground largely increased by the removal of the south wall of the churchyard to a further distance, which enables the fine proportions of the edifice to be seen to much greater advantage.

The works have been carried out at the expense of the Marquis of Salisbury, under the direction of the architect, Mr. David Brandon. The contractors were Mr. Kilford, of Cranborne, and Messrs. Bleathman & Son, of Wimborne; Mr. W. H. Chapman having acted as clerk of works.

The entire area of the church is now warmed by a combined system of warm air and hot water, the apparatus having been supplied by Messrs. Haden & Sons, of Trowbridge.

HOUSE SANITATION.

Amongst the remarks made by Mr. Eassie, C.E., in the paper which he read at the late Social Science Congress at Brighton, he pointed out some of the many mischievous mistakes which are made in the choice of sites. He said,—Where, unfortunately, a house too good to abandon has been built upon marshy land, the land should be systematically drained, and the surroundings of the house planted with vegetation which has been found to rapidly absorb moisture. The Eucalyptus and Helianthus have been found especially useful in this way. All plants and flowers possessing green leaves and aromatic odours are also proved to yield ozone when exposed to the sun's rays, and this agent is malaria's deadliest foe. There is also the rising wet and the drifting wet to keep out of the walls of the house, and this is only to be achieved by using damp-proof courses a little above the ground line, and by adopting hollow walls. Impervious walls are a mistake; for the constant vapour given off in the house will condense inside and soak into the walls, and not allow it to be passed through the pores to the outside. In like manner the new washable wall linings and water-proof paper-hangings are objectionable for the inside of exterior walls. The last kind of dampness which he would notice was that which resulted from the absence of proper area walls, and by the banking up of damp earth against the basement walls. No cure exists for this state of things in the way of damp-proof washings, nothing but the interposition of an area space. When a stone cellar-floor has been laid upon the bare ground, or what is just as common to discover, a wooden ground-floor, the resulting chilliness is unbearable, and when "motley" like this has been the wear, the only cure is concrete. Houses, too, are far too frequently partially built of old materials, and for the most part these old and sodden bricks and brick-bats are used up in the interior partition walls; nor is that all, for the old plaster is commonly worked up with the new to facilitate setting. This is fruitful source of evil, and has been alluded to as accounting for a good portion of our metropolitan mortality. In the author's opinion, these old bricks should never be used until they have been set up again kiln fashion

and cremation performed upon whatsoever of organic matter they contain.

Speaking of the dust-bin nuisance, or what he called the dry cesspool nuisance, they were mostly boxed up in close areas, and near cisterns, to await the dustman's leisure. It would be wiser to provide two movable dust-bins, one for the reception of ashes and house-sweepings proper, and another for the vegetable and kitchen refuse. This would not only save a great deal of labour to the p rish in sifting at the dust-wharfs, but would prevent an incipient putrefaction in the dust-bin itself. We cannot be too careful about the air we breathe, for infection takes place through respired air as well as by inoculation, and enteric fever is associated as well with the pollution of air as of water. Disinfectants are all very well; but it is doubtful whether anything can disinfect the air or render inert the evil agent,—whether, in fact, the atmosphere which is found necessary to destroy contagion is capable of supporting human life. Even the more legitimate dust of the house is mostly charged with matters which might develop into disease if rendered putrescible. We should, therefore, get rid of all dust, the innocence of which it is impossible to test. Cleanse it from our floors, shelves, and cupboard-tops, and not dry-dust, which is simply moving it policeman-fashion, onward; but wipe it with wet cloths. House dust is also sometimes rendered poisonous by the fluffs given off from wall-papers, arsenite of copper from green flock papers, and coralline from wall-papers when an arsenical mordant has been used to fix the red colours.

It ought to be an invariable rule, where well-waters are in use, to have them analysed; for no care during inspection can possibly reveal the many chance agents of underground pollution. Fully two-thirds of these supplies are found to be dangerous to health. It is not always safe to say that, because no apparent source of evil is to-day visible, a well yields an immaculate supply. The author had occasion lately to suspect, from its very sparkling character, the water taken from a well in a very healthy-looking position, which supplied several families and a large dairy, and had the water analysed. Professor Wanklyn's report upon it was that it was absolutely poisonous, and then it was found that the constant drinkers of this water had long been suffering from a skin disease. Inquiry also revealed that a farm-steading had formerly stood there, and we can guess what these used to be in the olden time, and that the subsoil was therefore full of impurities. No amount of filtering could render water of this kind pure. Filters can be made useful, without doubt; but, even they must be examined periodically, and a proper material chosen. He had an analysis made of some water drawn at the butler's pantry in a nobleman's house, and it proved that the filter in use, with its impure animal charcoal contents, actually rendered a pure supply from the mains unfit to drink.

Speaking of the gas-supply of our houses, which has at no time as yet received sufficient attention, Mr. Eassie made bold to say that if the houses of London were carefully tested, not a twentieth part would prove free from escapes of carburetted hydrogen. A few weeks ago he had a partially new house tested for a client, before occupation, and found five very serious leaks in the partitions where mere smell could never have detected them. It is not an uncommon thing to find families who have been suffering for a long time from this slow poisoning. It takes one part of gas to eleven of air to constitute an explosive compound; but an atmosphere containing one-fifteenth of coal-gas will cause the death of a rabbit in a very few minutes. There can be no doubt that numbers die annually amongst us from this fatal carelessness; and amongst the other diseases brought on by gas-poisoning, Dr. Lockie enumerates congestion of the brain and kidneys. The author would therefore say to all those who burn gas, test your gas-pipes without delay, and see them tested in the only safe way,—which is by stopping up all burners but one, and fixing upon that a mercury-gauge, connected with a pump, nor resting satisfied until, when a little ether is introduced into the pipes, its escape cannot be detected, and until no subsidence of reading can be noted on the gauge. In some towns of America the gas companies will not lay the gas on until their inspector is satisfied in this way that no escape is possible; whereas with us, the gas companies do not seem to care a brass farthing whether the house-pipes leak or no, provided that they sell their gas. The system which he explained ought to be practised by every gas-fitter, nor should a gas-fitter be allowed to practise unless certificated and in possession of this contrivance. With us a gas-fitter is sometimes a blacksmith, whitesmith, glazier, brazier, plumber, and bell-hanger, all rolled into one. A common force-pump, however, is not the kind to use for testing a gas-service. And he mentioned this lest the hint he gave might induce some householder to have recourse to it. It was a crying scandal to be obliged to say it, but he was certain that not one gas-fitter in a thousand ever heard of any scientific method of testing pipes after they had been laid down between floors or spiked up in the walls. In country houses coal-gas should never be used, but rather the oil-gas apparatus, which was not only one-third the cost, but was pure enough to use in the finest exotic-stocked conservatories. In Lancaster this gas had been in use for years in many houses, and even in factories, and he had inspected several large establishments thus supplied.

THE PRIZES OF THE COMPANY OF TURNERS.

The offered prizes of the Worshipful Company of Turners were mentioned in our columns some time ago, and on Saturday last the Lord Mayor presented them to the successful candidates; that is,—the first prize, silver medal and freedom of the Company and City of London, to Mr. George Thomas Norris; second prize, bronze medal and 5*l.* 5*s.*, Mr. Andrew Foster; third prize, bronze medal and 4*l.* 4*s.*, Mr. William Ripley; fourth prize, bronze medal and 3*l.* 3*s.*, Mr. Stephen Davis; certificate of merit and 3*l.* 3*s.*, Mr. Chas. Paine; certificate of merit and 2*l.* 2*s.*, Mr. T. G. Olley, Mr. Joseph Bailey Willis, Mr. F. W. Hubble, Mr. Thomas Royffe, Mr. A. Capell, and Mr. John Hegley.

The judges were Mr. Charles Hutton Gregory, past president of the Institution of Civil Engineers; Mr. John Holtzapffel, Assoc. I.C.E.; Mr. John Jaques, Mr. W. H. Northcott, and Mr. Thomas B. Winser.

The exhibition was very satisfactory as a whole. Mr. G. T. Norris, the chief prize gainer, showed some very fine workmanship, but the design of some of his specimens might have been better.

METROPOLITAN ASYLUM DISTRICT COMPETITION.

The Asylums Board have adopted the report of the committee upon the designs sent in for the proposed school for imbecile children at Darenth, selecting the design submitted by Messrs. A. & C. Harston.

The committee say:—

"The managers will remember that the Local Government Board, in their letter approving the instructions to the architects, suggested the advantage of breaking up the building into a number of separate blocks, each containing from thirty to forty children; and your committee having regard to this suggestion, with which they fully concur, and to the General Instructions approved by the managers, laid down, before proceeding to the examination of the designs, certain fundamental principles which they agreed should guide them in estimating the merits of the competing plans, and in determining which of them should be recommended to the managers for adoption."

And they arrive at the conclusion that the design selected far exceeds that of any other competitor in meeting the principles laid down. A cheque for 50*l.* was sent to each of the five architects who submitted designs.

THE BRIDGE ACCOMMODATION ACROSS THE THAMES, AND EAST LONDON.

The authorities in the East of London are actively moving on the bridge question and the alleged insufficient means of communication for the traffic between the north and south of the Thames east of London Bridge. The subject was discussed at the meeting of the St. George's East Vestry, last week, on a recommendation of the Works Committee that the Vestry should express a decided opinion on the matter to the City authorities. Mr. Collyer, one of the members, observed that those acquainted with the City of London, and who knew the large amount of traffic from the East and North of London, in order to pass to the south of the Thames, would admit that the proposed alteration to London Bridge would not afford any relief, because the narrow approaches, which were constantly being blocked up, would be left in the same condition as before. Feeling this was the proper moment to initiate action, he urged that there should be no lukewarmness on the subject, but that the Vestry should take it up promptly, and invite the co-operation of the other East London Boards. Property increased in value rapidly, and in twenty years that task would be impossible which was only difficult now. A resolution to the following effect was unanimously adopted:—"That this Vestry, composed as it is of men actively engaged in trade, having business and other connexions in various parts of London, can testify from experience that the present bridge accommodation across the Thames, and the approaches thereto, are totally inadequate for the heavy and increasing traffic, and having observed that the subject is now receiving the earnest attention of the City Corporation, desires to submit its opinion that the only substantial relief for the present congested traffic eastward of London Bridge is the adoption of the scheme generally known as Mr. Hayward's plan, viz., the construction of a bridge across the river, eastward of the Tower, with suitable approaches.

THE SANITARY CONDITION OF THE PEOPLE.

Mr. C. E. Parker-Rhodes read a paper on this subject at the Social Science Congress, Brighton, on the 12th inst. The following is an abstract:—

Whilst considerable improvements have been introduced into all our public works and private and commerical buildings, the condition of the working-class dwellings has been overlooked, and it is only by national legislation during the present Session of Parliament that an attempt is to be made to remedy the evil. The new Act is wholly inadequate to accomplish the work projected, because it will only remove the causes of disease, epidemics, and immorality from the present localities to others. To pull down dilapidated and insalubrious buildings by Act of Parliament is simply to add to the wretchedness of the laborious tenants, and is, in fact, no remedy whatever. Without any good result for the working-class, it is a costly experiment that will fall heavily on the already burdened ratepayers where the scheme is to be carried out, and will become a new channel for speculation. This new Act is a severe reflection upon all previous Governments for their legislation in sanitary matters, and upon the municipal authorities. If the condition of localities is such as to demand the urgent legislation of last Session, to which other important measures had to give place and to be withdrawn, either previous Acts of Parliament or the municipal authorities have proved to be powerless to prevent this state of things. It is quite true that our labouring classes are huddled together,—parents and children of all ages, strangers of both sexes, the healthy and the diseased,—in one room, without other daylight than that obtainable between high walls, without ventilation, without sewerage, without water and gas, with one privy common to some thirty or more inmates, and that only divided off by a thin partition from the entrance and the overcrowded rooms. Can it be otherwise than true that "fevers and diseases are constantly generated there, causing death and loss of health, not only in the courts and alleys, but also in other parts of such cities and boroughs?" The condition of the inmates can only be in accordance with such dwellings, and that result must inevitably be (notwithstanding all the medical science and treatment resorted to) unchecked disease and sickness and premature death.

The Artisans' Dwellings Act in Liverpool.—At a meeting of the Liverpool Health Committee on the 21st inst., the engineer submitted a report for placing a district of the town, known as Nash Grove, under the operation of the Artisans' Dwellings Act. The area is situated off Scotland-road, one of the lowest parts of the town, and it contains about 22,487 superficial yards, 18,770 of which are covered by low-class dwellings or yards, in use for trading purposes. Allowing for the removal of existing buildings, the engineer estimates the cost to the corporation of acquiring the site, sewering, and paving, at about 92,600*l.* From this amount has to be deducted the value of the land for building purposes after the alteration, which is estimated at 30,746*l.*, leaving 62,254*l.* as the actual cost of the improvement. After some discussion the report was adopted.

PARISIAN PAPER-STAINERS.

Though scarcely a century has elapsed since the French first attempted to manufacture paper for the decoration of houses, this industry has developed itself with the greatest success and rapidity. The origin of cheap paper, suitable for covering the walls of apartments, may be traced to China and Japan, and was imported into Europe by the Dutch and Spaniards towards the middle of the sixteenth century; but it was only in 1760 that a means was found of applying colour to paper which contained a varnish that could prevent the dust from adhering. The creation of this style of paper and this industry in France is due, it will probably be remembered, to M. Réveillon, whose name, however, is perhaps better known as one of the first victims of the great revolution, and to M. Louis Robert, who invented, in 1799, a machine which produced sheets of paper of indefinite length. Like his predecessor, M. Robert was not altogether fortunate in his enterprise. His life was spared, but his country did not manifest any gratitude for his useful conception; and it was not till the year 1803 that, having abandoned France, he found in England the necessary friends and capital to make a practical application of his invention. Eleven years later this French patent was re-imported into France by M. Didot-Saint-Léger; and in 1827 there were four paper-mills where the Robert machine, modified and improved, was constantly employed. In 1834 the number of machines was increased to twelve, and now there are more than 230 in France alone. M. Chapelle, M. Causon, and M. Mongolfier are the most prominent promoters of this industry, and paper is now but rarely manufactured by hand. If in the adoption of new machinery the French have not been so prompt as the English, it must be admitted, on the other hand, that they have not failed to encourage the artists who draw the designs from which the paper is copied, and that in this department they have won the highest commendation. After M. Réveillon, his successor, M. Jacquemard, and M. Oberkampf, of Jouy (Seine-et-Oise), devoted their talents and energy to improvements in the art of engraving for industrial purposes; while among the modern notabilities, Dufour, Mader, Délicourt, Defossés, Zubert, and De Mulhouse, won for French paper a European reputation. At present there are in Paris about forty manufactories of coloured paper, employing from 680 to 700 printers, and some 400 men to feed the machines, &c. There are also workmen and women specially employed for gilding the paper, which is at once delicate and dangerous work, though but poorly remunerated. The gilt is laid on in sheets or in gold-dust, the latter being generally made from the spare bits of the former, reduced to powder by brushes used specially for the purpose. This brushing process creates a dust, which falls on the operator, so that his hair and beard are filled with verdigris; and notwithstanding the respirator and other protective measures, he frequently breathes or swallows the virulent poison that permeates the air. Though constantly exposed to this danger, and often reduced by illnesses which sometimes prove fatal, the manipulators of the gilt-dust only earn 2s. 6d. per day.

The regulation of the rate of wages paid in this trade is organised in a peculiar manner, and often engenders sharp practice between the workmen and their employers. Each year a fresh supply of samples is given to the travellers of the different firms, and when these are completed a general meeting is convoked in each workshop. The blocks are brought forward one by one, and a debate ensues between employer, his workmen, and foremen, as to the price which should be paid for the making, staining, &c., of paper from each of the different designs. These discussions are not free from the bitterness and animosity which will naturally arise when men are bargaining for their bread. To the workman any miscalculation tending to reduce his meagre wages, signifies in the present state of business, absolute want and distress. There is also another incident which tends to augment the evil feeling. These debates occur during the dull season, that is to say, at the moment when work is so scarce that almost any price is acceptable, and the tariff established under these adverse circumstances is maintained during the busy season, when, but for this previous arrangement, much higher wages would be obtained. Yet the workmen are obliged to submit to the lowest terms, as they are proposed in the dull season, and the employers can then afford to discharge their men at the slightest symptom of resistance, knowing full well that starvation will ultimately ensure their return. During the year the workmen note carefully the designs which have occasioned the most trouble, so as to claim an increase if there be a demand for more of the same paper during the ensuing year; and a workman, who is well acquainted with these blocks, may render the utmost service to his shopmates when discussing the tariffs. Unfortunately the employers do not always act fairly to these their best informed workmen, and sometimes seize an early opportunity of discharging the men who bargain with the greatest ability. In other cases, too much power is given to the foremen, who are left to discharge men at their own caprice, and the employers would always be better served if they took greater and personal interest in their workmen. Notwithstanding, however, the precarious position of the men employed in this trade, they were able to subscribe towards defraying the cost of the artisan delegates who visited the Vienna Exhibition; and M. F. Bouchier, the representative of the Parisian coloured paper-makers and printers, does not fail to establish a comparison in his report between the wages earned in the capital of France and of Austria. M. Bouchier maintains that the workmen receive at least 20 per cent. more in Vienna than in Paris, and that with the superior tools the French employ, they might gain at the same rate of payment, at least 30 per cent. more than they actually receive. The Austrian employers also pay their workmen themselves, which is considered to be a great advantage, as there is a tendency to make innumerable deductions from a workman's wages if it passes through many hands before reaching him. The Austrian printers earn from 14 to 16 florins a week; for the flock and gilt work, 25 to 30 florins, and the week consists of fifty-five hours. In Paris the workmen engaged in this trade also suffer from the grave inconvenience of being obliged to find a boy from twelve to sixteen years old to help them. These children are not always easily obtained, and workmen often lose three or four days in hunting for them. Nor will every boy work with the courage and goodwill necessary; and the printer of coloured paper is therefore not dependent on himself alone, but often finds his best endeavours thwarted through the indolence of his boy assistant. Yet these boys are better paid than they were formerly. Out of the 7 francs now earned, 1 franc 75 cents. or 2 francs must be paid to the boy, thus reducing the workman's wages to about 4s. per day. But, according to the custom of the trade, the workman is obliged to pay his boy's salary even when he is himself out of employment, and this contributes still further to reduce his income. Since 1830, the increase in the wages hardly amounts to 2fr. per day, while the boy-help was only paid 60c. to 75c., instead of 1fr. 75c. or 2fr., so that there remains a balance of only 1fr. increase in the workman's favour. On the other hand, the price of the necessaries of life have augmented by about 80 per cent. during the last forty-three years. Thus the workmen engaged in this trade, notwithstanding the 20 to 25 per cent. rise in their salaries, are infinitely poorer than during the earlier portion of this century. The boy assistants, also, though a source of great trouble to the workmen, are themselves in anything but an enviable position. Many are without parents, or even guardians, and, with no one to protect or to teach him, a boy becomes an easy, ready dupe to some hard taskmaster. It is not surprising, in the face of these distressing circumstances, that the Parisian paper-stainers should resort to the common strategy of workmen seeking to improve their position. They have constituted a Syndical Chamber, which is the French term and form of trade unionism. It is only to be regretted, according to the workmen's version, that this was not done sooner. Had the workmen, represented by a duly-elected and competent syndicate, been able to plead their cause, and give expression to the unity of feeling that subsisted among them, the great strike of 1866 would have been avoided, thus saving the workmen from the direst want, and the employers from ruin.

One of the first grievances to be abolished by the action of the Syndical Chamber is the institution of the *livrets*, and this is of special interest, as many persons have advocated the introduction of the system in England. These *livrets*, or little books, are not certificates as to the workman's capacity, in which case they might be considered useful, but resemble rather a ticket-of-leave. Any change of locality or work is inscribed in the book, both by the employer and the local commissioner of police; thus a workman may be traced from place to place as if he was a criminal at large. It also happens that, during the dull season, a workman is sometimes glad to accept employment in a house where very inferior paper is produced; but when, in more prosperous times, he attempts to return to a first-class workshop, he finds that he has lost standing, the *livret* having disclosed that he has been engaged on common work, and it is hastily surmised he is incapable of doing anything better. Other complaints relate to the insertion of secret signs in the *livret*, by which employers can damage the career of their workmen. Some time ago this occurred with a particular firm, where, at the annual meeting, the employers and workmen had failed to agree on the prices for the designs to be produced during the ensuing year. The workmen were, therefore, obliged to leave. Many among them, however, found it impossible to obtain work elsewhere; and on examining their *livrets*, they discovered that their late employers had marked them with the letter M. or B.

For a long time this cabalistic sign remained a mystery; but, by comparing notes, it was ultimately proved that the workmen who were most stanch in resisting the terms offered by the firm they had left, found the letter M. inscribed in their *livrets*, and the natural conclusion was that M. stood for *mauvais*, or bad; while B. stood for *bon*, or good. Thus, while the *livret* is humiliating to the workman, it does not testify to his skill or honour, but lends itself to abuses, and its abolition is earnestly advocated, not only by workmen engaged in the coloured paper trade, but by all classes of the French prolétariat.

In spite, however, of these disadvantages, the Parisian paper-stainers maintain that in the manufacture of paper used for decorating houses, the French excel any other nation. To judge from the reports of the delegates present at the London Exhibitions of 1851 and 1862, England, after France, assumes the first rank; but, while surpassing other nations, our paper, for composition and perfection, cannot be compared with French produce. This judgment is, we repeat, founded on the experience acquired at the two previous Exhibitions; for at Vienna there was but one English firm represented, and their samples were of a common and insignificant character. The Austrian papers cannot be said to have improved since 1862, and there were some very common articles exhibited in a careless and inelegant manner. Hungarian paper was of the simplest, and the gilt affixed failed to shine. Belgian goods were similar to those of Austria, while some of the Prussian paper was well made, but so simple in design and devoid of style that it did not deserve any praise. The German gilding was bad, and altogether it was clearly demonstrated by the Vienna Exhibition that France need not fear the competition of foreign countries. Though many first-class French firms refrained from sending specimens, the French paper was unanimously praised, and many visitors mistook some sheets for silk and others for leather. According, therefore, to the opinions we have summarised above, and which generally prevail throughout the trade in France, the Parisian paper-makers hold the highest position; but the workmen engaged in the craft, though contributing to their utmost in bringing about this success, enjoy a very slender share of the profits.

WINTER EXHIBITION, DUDLEY GALLERY.

The Ninth Winter Exhibition of cabinet pictures in oil at the above-named gallery, opened to the public this week, cannot be considered a very remarkable one, and illustrates what we fear is likely to become more rather than less apparent, that there are too many picture exhibitions at present not to produce an unavoidable lowering of the standard of the works exhibited, in regard to intellectual interest at all events, though there is always a fair average of draughtsmanship and of execution generally. The number of works which have any great interest is certainly not large. Taking the numbers consecutively round the room, we note that Mr. Morris furnishes another contribution to his series of Idyllic subjects in "The Upland Fold" (9), in which the figures are deficient in character, and the tones of the landscape not quite comprehensible. Mr. Val. Prinsep sends, as he did last year, a scene in "The Isle of Wight" (16), remarkably clear in tone and full of light, if a little hard; and near this is a bright

and effective little study called "A Young Tree," by Mr. Adrian Stokes (32), which happily embodies the spirit of Spring in its broken lights, and vivid touches of white blossom. M. Leon Lhermitte's "Cloth Market at Landernau" (61), is a study of a dreary-looking old town with characteristic groups of figures, in that broad and rich though apparently rough style of execution which is peculiar to the artist, and which, in its mingling of depth and luminosity of tint, in the completeness of expression given to the figures and faces by the broadest touches, and in the harmony and unity of the whole in feeling and colour, is, as far as it goes, just perfect; it may be called a "manner," perhaps, but it is the manner of a true artist. Mr. G. F. Watts's "The Days that are no more" (80), is not worthy of him, and has no perceptible relation to the title, which we take to be given for the sake of a title. There is a certain novelty in Mr. Macallum's "Boy at the Helm" (86), a lad seated on the deck of a yacht or coaster on which a strong light falls; it has character in its way. Mr. Severn's effect of light and colour on trees and water "On the Warfe,—Evening" (98), might be labelled "Curious, if True"; it is effective undoubtedly, but strikes us as theatrical. In a very contrary style Mr. Ditchfield's "Cowdray, Midhurst" (99), is a bold and free little painting. We are professedly picking out those that are worth most attention at present, but cannot help asking, in passing, how a painter of Mr. Valentine Bromley's talent can reconcile it to his conscience to send anything so ugly and repelling as "In Maiden Meditation" (104),—such a maiden! Mr. Hemy, whose talent seems to ripen year by year, is excellent in "Along Shore" (105), a line of beach with tide "waste" strewed along it, a lazily curling sea, a couple of dark-sailed coasters, backed by a very distant, soft, and aërial sky. Another work showing original genius we come to in the "Lonely Farm, Sussex" (130), by Mdme. Cazin, who in this kind of subjects, her favourites, shows always a broad and powerful style, and true feeling and poetry of effect. Mr. E. H. Fahey's "Lily and her Butterflies," from *Kenelm Chillingly* (141), is the counterpart of the young lady who figured in "The Path of Roses" in the last Academy Exhibition; there is a brilliant effect produced by the butterflies, and the picture is a new "notion," but the girl wants figure. Near this young woman sits Mr. Leslie's girl in white, this time under the name of "Anthylla" (165), and looking as pretty as usual, but—*toujours perdrix!* This kind of thing is really coming to picture-manufacturing. On either side of this Mr. Whistler puzzles the average spectator by two "Nocturnes" in "blue and gold" and "black and gold" (160, 170), the latter founded on the bursting of a rocket, with masses of fire in the distance; the former a night river-scene with lights reflected. There is genius certainly in these, the river-scene especially; but this artist's fancies are not suited to the uncongenial atmosphere of an exhibition-room. The "Old Dee Mills" of Mr. Bell (164) is a fine drawing, recalling De Wint in subject and composition, though different enough in tone and texture. There is pathos in Mr. Overend's "Men must work and Women must weep" (169), with its wild sea and the two figures at the stormy extremity of the headland. Divers single figures by Mrs. Jopling, of which "Interrupted" (174), is the best, show the artist's usual brilliant execution, though less feeling or sympathy than might be desired. Mr. Albert Goodwin's "St. Michael's Mount," and "The Seaweed Harvest" (201, 259), are fine specimens of his genius; the former a carefully-studied but painfully grey and sombre effect, the latter showing the finest characteristics of the painter. To these we may oppose two works of another original thinker in colour, Mr. H. Moore, whose "Fine Weather in the open Mediterranean" (250) shows a tendency to the exaggeration of a certain phase of marine effect which he has made his own; while "A Surrey Byeroad—Spring-time" (241) illustrates a somewhat new class of subject with him, and is full of fresh atmospheric effect. Mr. Watts's "Found Drowned" (211), a single dimly-seen figure thrown upon the beach, has something of the simple pathos of Blake about it; and among bits of landscape in the vicinity may be noticed Mr. J. D. Watson's "After Sunset" (228), Mr. Sampson's "Berck Sands" (213), Mr. C. Potter's "Welsh Gleaners" (221), and "Landing Fish" (119), by Mr. Henry. "Evening—Waterloo" (234), by Mr. Ernest Crofts, is a noticeable little picture, for its broad style of handling, and the sad tragedy of the dying and wounded groups; as a battle picture, though small, it is the reverse of commonplace. Mr. Burgess has intended real pathos in his "School Teacher" (290), an over-worked and weary woman come to the open door for a moment with her book, to seek air and refuge from the noise; the picture scarcely comes up to its aim, but has feeling and originality. Mr. Joseph Knight's "Sandhills" (296) is the best and most typical example of a style of subject he seems to have given himself up to; it is very good, but not an effect that will bear such frequent repetition as it obtains. Further down we come to what we should call a "corner of horrors," which we pass over lightly. Mr. Harry Goodwin's "In the Lonely Vale of Streams" (371) in the opposite corner is a small picture showing much feeling and richness of colour, and near it Mdme. Cazin's "Evening" (378) is a remarkable little work; the sea seen from an eminence, with dark-sailed craft creeping over it, their hulls and reflections blended in the waning light; there is something quite unusual in the tone, feeling, and effect of this work. Mr. Waterlow's "Summer Evening on the Thames" (393), a tolerably large work, shows an advance on the artist's previous oil paintings in colour and individuality of style. On the screen, amid a number of very infelicitous productions, a small picture by Mr. Heywood Hardy, "Not to be Caught with Chaff" (419), shows a degree of refinement of effect, and point and character in treatment, unusual in equine pictures; and immediately beneath this Mr. Alma Tadema catches the eye with a "Breezy Day in August" (420), a flat, fresh, green field bordered by straggling trees in the true "English country" style. This painter, who thus steps out of his usual path, has in turn been invaded on his own ground by Mr. W. S. Coleman, whose "Butterfly Collector" (308) is certainly inspired by Mr. Tadema. Among small things that pleased us may be mentioned "A Thames Backwater" (4) by Mr. Grace; "Studies of Colour," by Mr. Macquoid (5), and the same artist's "Drying Onion-heads, Brittany" (149); Mr. Chas. Earle's "On the Beach at Beer" (175), Mr. Glennie's "Coast of Thanet" (176), and others.

THE WORSHIPFUL COMPANY OF COACHMAKERS.

Having been invited to look at some drawings, for which premiums had been given by the above-named company, and which were stated to be on view at their hall, in Noble-street (Aldersgate), we may say a word as to the habitation of the company, and their recent endeavours to encourage ability among the apprentices and workmen of the important manufacture which they represent.

The Coachmakers, though not possessing the wealth of some others of the City Companies, are an old and respected guild, with a history of some two and a half centuries or so behind them. Their "Hall" in Noble-street, without the sumptuous style of the wealthier companies' habitations, and presenting a very unpretending front and entrance-door in the narrow street running parallel with Aldersgate-street, has its own interest. It stands on the site of the house of Sir Nicholas Bacon, the father of the great Bacon. The present building is an old one, carried up higher, the company having bethought themselves five years ago of making a little revenue out of their property; and accordingly, under the direction of Mr. F. Chancellor, architect, the buildings were carried up, and the company are now lodged on an upper floor, utilising the lower floors as warehouses. Much of the internal fitting of the rooms is old, however; and the principal, or "Court" room, contains massive wainscot and other woodwork of Old English Classic type, transferred from its position in the original rooms; and an old chair of state of the Master of the Company, preserved as a relic of its former days. The room is lighted by a glass dome, filled with coloured design in panels, of Pompeian character, and in a style rather unusual in stained glass. The dome is capable of being lighted outside at night so as to throw the light into the room through the glass, and not lose the effect of the design. The small anteroom contains a rather carefully designed little stained window, by Messrs. Lavers & Barrand, showing various incidents in connexion with the history of the company.

From the memoranda appended to the list of officers, &c., for 1875–6, it appears that for some years past the company have been making efforts "to stimulate skill and ingenuity among those engaged in the trade of coach-making, and to encourage technical education." To this end an "Operative Coachmakers' Industrial Exhibition" was held in February, 1865, and opened by the Marquis of Lansdowne and the late Dean Milman. In 1866 the company voted medals to be awarded by the examiners of the "Society for the Encouragement of Arts, Manufactures, and Commerce"; in 1868 they made a grant of money to commence a library of reference for the use of coachmakers; in 1869 a grant of medals to the Society of Arts, and also to the Science and Art Department at South Kensington; and in the following years various prizes have been offered for technical and free-hand drawing; and in 1873 prizes were offered for the best reports, by foremen, clerks, workmen, or apprentices in the trade, on the International Exhibition of Carriages at South Kensington. In the present year medals and prizes have been offered for technical and for free-hand drawing; three prizes for the former and two for the latter. The technical drawings, which, of course, are not of much interest except to those learned in the mysteries of carriage-building, are well executed, and show a good deal of care and industry. The prizes for free-hand drawing, we presume, are offered to encourage the use of the pencil generally as a desirable accomplishment; the first prize drawing consists of a copy of a well-known figure entitled "Egeria" (by Mr. Durham, if we remember rightly), but whether from the round or from an engraving there is no evidence; and the others are pieces of classic foliage design. There seems to be no opportunity for cultivating artistic drawing in direct reference to carriage designs, which never are ornamented in any artistic manner, but left to depend on their flow of line and finish of surface and varnish for any beauty they may possess. An eminent English architect, some little time since, designed artistic decoration of an unobtrusive but elegant character for a carriage for some Egyptian potentate; but there is no scope for anything of the kind in England, since any one who attempted to apply artistic decoration to a carriage in this country would at once be set down as either vulgar or eccentric,—charges of which it is difficult to say which is the most heinous. But if the freehand drawing element is intended in this case simply to encourage the pursuit of drawing for its own sake, the promoters of it would do well to look for a somewhat more original and less commonplace order of subjects than is indicated by the drawings we were permitted to see, and which, except the figure referred to, were merely the old Roman scroll ornament, by which, from time immemorial, free-hand drawing seems to have been taught.

The library of the company is open to any visitor on Saturday afternoons, and among objects of interest in it are some large portfolios of drawings, engravings, and photographs, representing every known form of wheeled carriage, past and present, from all parts of the world, even down to the wheel-barrow; and what may be called the "comparative anatomy" of carriages illustrated by the collection presents a good deal of interest, and is curiously indicative of the national character and customs of some of the people who have invented and use the various forms of vehicles.

HYDRAULICS.*

Water flows out of a hole in the side or bottom of a cistern with a velocity which is nearly equal to that of any heavy body falling from a height equal to that of the surface of the water above the centre of the orifice. The velocity in feet per second of any such heavy body is 8 times the square root of the height in feet (more exactly 8·025), or the velocity in inches per second is 27·8 times the height in inches. This is called the theoretical velocity; the actual velocity is less, because of the friction of the water against the edges of the orifice, and of the disturbance of the particles of water.

Mr. Neville has given so much attention to the flow of water under the many various circumstances of practice that what he says may well be accepted as conclusive, and in respect of the velocity we have just referred to he says it is as near the theoretical velocity as ·974 is to 1. It is therefore $·974 \times 8·025 \sqrt{h} = 7·816 \sqrt{h}$,

* "Hydraulic Tables, Co-efficients, and Formulæ." By John Neville, Civil Engineer, M.R.I.A., &c. Third Edition. London: Lockwood & Co. 1875.

when h, the height, is taken in feet, or when the height is taken in inches, it is $27{\cdot}077\ \sqrt{h}$.

But it is to be observed that the velocity thus found does not take place in and through the orifice itself, but at a short distance outside it, at a distance of about half the diameter of the orifice, at which point the sectional area of the issuing stream is contracted. The degree to which the sectional area is contracted is given variously by investigators as follow, the sectional area of the orifice being = 1; that of the issuing stream at the most contracted point is deduced from the observations of Newton to be ·707; Poleni, ·7156 to ·622; Borda, ·6432; Michelotti, ·64; Bossut, ·656 to ·669; Du Buât, ·667; Venturi, ·637; Eytelwein, ·64; Bayer, 617. In general it is not well to take average quantities, they so often lead to error; but really the circumstances of water-ganging are so various that the conditions cannot be shortly stated in any other way. If, then, we take the mean value of the above-named co-efficients of contraction, it would be about ·65; and if into this we multiply the co-efficient of velocity, viz., ·974, we obtain a co-efficient of discharge = ·63 or thereabouts. To ascertain the actual discharge, therefore, we should multiply the following quantities into each other, viz., the area of the orifice, the height from the centre of the orifice to the surface of the water, the constant number 8 (or 8·025) being the square root of twice the velocity which a heavy body attains at the end of one second after the moment of its being released from a state of rest; and the co-efficient of discharge, which we take to be ·63. The result, in cubic feet per second, will be found to be very nearly five times the square root of the height in feet multiplied into the area of the orifice in feet.

But this is a mere outline of the case; the variations are numerous, according to the forms of orifices and other circumstances, all of which are fully set forth in Mr. Neville's comprehensive treatise. The author also investigates with equal minuteness the conditions of the flow of water over weirs, and over notches in thin plates of the usual rectangular form; and also gives Professor Thomson's formula for triangular notches, which is $Q = 3{\cdot}17\ \sqrt{h^5}$, when Q = the quantity passing over per minute, in cubic feet, and h the head of water in inches, as measured vertically from the still water level of the pool down to the vertex of the notch. This formula was given at the meeting of the British Association at Leeds in 1858 for a right-angled triangular notch, for discharges of from 2 to 10 cubic feet per minute. The author of that paper then very truly said that "the ordinary rectangular notches, accurately experimented on as they have been, at great cost and with high scientific skill, in various countries, with the view of determining the necessary formulas and coefficients for their application in practice, are for many purposes suitable and convenient. They are, however, but ill-adapted for measurement of very variable quantities of water, such as commonly occur to the engineer to be gauged in rivers and streams. If the rectangular notch is to be made wide enough to allow the water to pass in flood times it must be so wide that for long periods of moderately dry weather the water flows so shallow over the crest that its indications cannot be relied on. To remove, in some degree, this objection, gauges for rivers or streams are sometimes formed, in the best engineering practice, with a small rectangular notch cut down below the general level of the crest of a large rectangular notch. If now, instead of one depression being made for dry weather, we use a crest wide enough for use in floods, we conceive of a large number of depressions extending so as to give the crest the appearance of a set of steps of stairs; and if we conceive the number of such steps to be infinitely great, we are led at once to the conception of the triangular instead of the rectangular notch." The formula above stated was submitted temporarily as being accurate enough for use for ordinary practical purposes, and for quantities of water limited to nearly the same range as those in the experiments which Professor Thomson made; but as being, of course, subject to amendment by experiments extending through a wider range of quantities of water. Mr. Neville says,—"The great advantage of the triangular notch for gauging is, that the sections for all depths flowing over are similar triangles, and therefore the co-efficient probably remains constant, or nearly so, not only for one, but for all species of triangles, when the depth at the apex is not very small indeed in proportion to the width flowing over at the surface."

To revert to the consideration of the flow of water out of orifices, the effect of rounding off the inner edges of the orifice is to increase the quantity flowing out; also the quantity is increased by adding to the outside of an orifice, in a thin plate, a short cylindrical tube, the length of which is from one and a half to three times its diameter, to a degree which is "nearly an arithmetical mean between the theoretical discharge and the discharge through a circular orifice in a thin plate of the same diameter as the tube, or ·814 nearly." The authority of Mr. Neville on this subject is so high that one ought, perhaps, to apologise for the question, whether this co-efficient is not overstated. He has previously stated that Bayer's value for the contraction, ·617, coincides pretty closely with experiments, and if we multiply this value into the author's value for the velocity, ·974, we obtain a coefficient of discharge = ·60, and the arithmetical mean between this and the theoretical value would be ·80.

One of the most important parts of this book is Section VIII., treating of the flow of water in uniform channels; the hydraulic mean depth; the border; what constitutes "train" in a river; the hydraulic inclination; the effects of friction; formulæ for calculating the mean velocity, and application of the formulæ to the solutions of three useful problems.

The *hydraulic mean depth* is the same measure as the *mean radius*, and for cylindrical pipes flowing full, or rivers with circular beds, it is always equal to half the radius, or one-fourth of the diameter. A river or stream is said to be "in train" when the inclination of its surface bears such a relation to the cross section that the mean velocity is neither accelerated nor retarded by the length of the channel; for the acceleration that would be caused by the inclination is exactly counterbalanced by the resistances, and these are proportional to the length; so that when a river or pipe is in train it might be cut at any part of its length without altering the quantity of water discharged. It is very necessary in short channels and pipes not to mistake the inclination of the bed for the hydraulic inclination. In long pipes or channels, say 1,000 diameters in length, the whole head may be divided by the length to find the inclination or slope, without sensible error; but in every pipe or channel there is a certain head due to the orifice of entry and velocity in the pipe, as well as the greater head due to the resistance of friction, and in short pipes the head due to the orifice of entry and the velocity is a sensible part of the whole. By neglecting this distinction, sound and accurate formulæ, such as that of Du Buât, of which Mr. Neville speaks very highly, as giving results very nearly in accord with his own experiments, have been wrongly supposed to be inaccurate. In all Du Buât's experiments, the author says he carefully deducted the head due to the velocity and orifice of entry before finding the hydraulic inclination, and those who attempt to calculate the velocity from the head and length of the channel only, without making this deduction, will find their calculated results very different from those calculated from such formulæ. The experiments from which Du Buât's formula was constructed are given in full by the late Dr. John Robison, in the article "Rivers" in the "Encyclopædia Britannica."

The best form of channel, and the regimen of rivers, are fully investigated by Mr. Neville, and the maximum velocity which may be allowed without disturbance of the river's bed is given (p. 258) for various kinds of ground. The experiments of Mr. Mallet on syphons are given, and new formula for finding the discharge from syphons, flood-sluices, and tidal sluices.

The section on water supply and sewers, especially as to the cost of such works, is hardly worthy of the book, but the thirteen tables of the velocities, discharges, heads of water, and other conditions of streams, weirs, and pipes, are excellently well arranged, and a table is given which has been arranged from Mr. Francis's experiments upon a centre-vent water-wheel at the Boott cotton mills, Lowell, Massachusetts. The general principle of this wheel appears to the author to be the same as Thomson's vortex wheel, the guide blades however being fewer in the latter, and capable of adjustment.

Another table shows the results of experiments upon the turbine at Tremont Mills, Lowell, arranged from Mr. Francis's experiments, and another for turbines of different diameters operating with different falls of water.

PICTURES AND THEIR SURROUNDINGS.

It is greatly to be feared, in spite of all our progress, that a good many very common things are still in their infancy. We use the word *common* because the matter we propose to say a few words on is all around us, in different forms, and under conditions more or less favourable or unfavourable. We speak of pictures, and their surroundings, and picture-framing,—a little thought-of, but not a little important element in a picture display; the rooms, or galleries in which pictures are commonly found; and the mode of lighting such apartments more or less appropriately and as calculated to do its work, and to help or to mar the objects for which in many cases such apartments are specially built and decorated. The subject, though as we say common enough, is still somewhat out of the world of artistic discussion. The questions what to do best with pictures when acquired; how, and where to hang them best; and how to look at them under the most favourable circumstances, yet need discussion. These are common subject-matters enough, but how little has been done, and how disappointed at times is the picture-lover when he finds at last the work to please him, but is hardly able, perhaps, to see it,—out of place, in a bad light, or in too glaring a light, or so surrounded by incongruous matters great and small that remedy seems past all hope.

Having the picture, we should feel disposed to take note after it of the frame which surrounds it, for it is impossible to see the one without the other, they both filling the eye at one and the same time. Then there is the wall surface at the back of the picture, helping or disturbing it in no small degree, for it is quite possible to put out all the colour of a fine work by a too glaring background. Then there is the light that must needs come in from somewhere, pleasant or unpleasant, the light being reflected in the picture. Then, again, the mere position of the picture as regards the angle at which the light, come from whence it may, strikes the picture surface. To the artist, at least, this is all-important; he never forgets to look to it while the art work is in his own studio. It is really surprising to think of how many thousands of good pictures there are scattered about in all directions, and in all orders of keeping, that are all but lost from the truly unhappy state of their surroundings, and from the incongruities about them. Even in princely mansions this is found to hold, wealth itself not appearing to be all potent here. In such great picture displays as the annual Royal Academy one, it is of course necessary to sacrifice much for the mere sake of room and wall space, so that complaint as things are, artistically, is perhaps vain; but in permanent exhibitions, whether great or small, we most surely ought to expect better arrangements in all ways.

It would perhaps be hard to instance anything secondary of more importance to its primary, the very cause of its existence, than is a picture-frame. The picture itself is first,—that is certain; but its surrounding frame is so important and telling a part of it that it cannot be neglected: it must be looked at whether we will or no. The very perfection of a frame would perhaps be, could we but imagine perfection to exist anywhere, in its not being noticed at all; but, as all know, it is impossible to go through any fine collection of paintings, or through a noble gallery, or suite of rooms filled with pictures, whether ancient or modern, without being struck more or less with the "frames" which surround the at times priceless pictures. We have all heard of how at times things so secondary as they seem become important when the causes of them are but partially or dimly visible. Sir Humphrey Davy, a man of science, but not of fine art, saw picture-galleries as others did, but his remark on the show was but an exclamation of wonder at the "extraordinary display of fine frames." He, indeed, saw nothing but the gilded frames. So much has been said and written about "colour" by those who see somewhat deeply into the things of art, that it may seem surprising that more has not been said and written on the subject of the "frames" which hedge pictures round, and at times, truth to say, well nigh kill their colour. Let any who care for these things consider it well. We may be thanked for calling attention to picture-frames, if but the too heavy and too gorgeous gilding were removed,—if only for experiment's sake,—from round and about some pictures we could name, and the pictures were seen in their full force and beauty. What would Davy have said had he been compelled to look at the pictures?

And now for a thought on the "gallery," or room, in which the picture is exhibited, and on the wall of which it is hung: the colour and nature of the wall-space, and, more than all, the kind and amount of light which comes in to make the picture either visible or invisible, for it does at times come even to this pass. It is really a matter to be wondered at to see how great a difference there is, as it seems, between the same picture as seen by the eye in a good light, and the same picture in a bad light. It is not to be estimated in words. None, perhaps, but the workman himself,—the executive artist,—can realise this difference to the full. To see a fine picture in the studio of its painter, without its future broad and massive gilding round it, and on the easel on which it was painted; and, more than this, in the light carefully tempered and regulated, which satisfied the eye of him who painted it; and then to see the same picture in another place, with all its new surroundings, is to see another object! No wonder the workman trembles at times as he sees his cunning work pass away from his own keeping into that of others, not quite so knowing as himself, and not quite so deep in the mysteries of art. It is possible to kill a good picture by the very size and heaviness and coarseness of the details about it, more particularly if it be a small one, and very delicately and lightly painted. We have been powerfully impressed at sundry times with this fact. The room or gallery should be subdued to the picture, and be compelled to harmonise with it, in colour most surely, if not in form and details. A fine-toned painting makes a dull walled room live.

But if all this, and so much more, may be said of picture-placing and exhibiting in the quiet home corners, what shall be said of great galleries, and whole suites of gorgeous and elaborately-furnished rooms, wherein every object far and near comes almost of necessity into the field of view,—the floor, the ceiling, the walls, furniture of the most costly kind, and even massive chandeliers, all competing with the picture? In some fine picture displays which we could name, the really noble pictures are all but lost, and the eye needs to be shaded to fairly see the cunning work in each one of them. Now and then it happens a special and most convenient picture-viewing apparatus is provided for the smaller pictures. This is not simply, be it observed, a purely artistic problem: it is a scientific one as well, for it includes in it the very nature and construction, and use of the eye itself. The eye cannot see clearly all the objects before it at once. A something is always wanting in clearness of definition, and one bright colour is found sometimes to help, but sometimes to kill or to change at least, another near it. Some of these optical effects, scientifically looked at, are exceedingly interesting, and not a little curious and startling. It would be well if some experiments could be systematically made to test them, and a record made of the results. If generally accessible, they might serve as guides and cautions to very many who have control over these things. A picture, be it observed, is a brain thought, let into a noble room, always present, and surely mere "upholstery" should give way to it.

But if all these influences bear so heavily at times on the picture, of whatever order it may be, still more important is the influence on it of the light which serves to render it visible. A picture seen by sunlight, one seen by the light from a pure blue sky, and one lighted up from a sky-light filled with ground glass, or the light from a dull cloudy sky, will change its colour in a very surprising way. This may at times be tested in our public galleries, and the varying effects noted. A pure colourless light is doubtless the one thing needful. A picture then has to rely wholly on its own internal force, and neither gains nor loses. It is simply made visible. It would be well to keep these facts, for facts they are, well in mind. All are now-a-days more or less interested in pictures, and all are therefore equally interested in seeing them under the best possible conditions. Of *light* first of all. And not only is the kind of light which falls on a picture, whether more or less pure, but the degree or quantity of it a matter of no less importance. It is quite possible to throw too much light on a picture surface, as well as too little. In a finely-tempered as well as pure light is to be found the best condition under which a picture can be seen. Whether this finely-tempered light is best admitted through a window in the wall of the room or gallery, or through a skylight in the roof, might well be made the subject of special experiment, for it makes more difference than many would be apt to imagine. A high light in a side wall does its work well.

We have left ourselves but a brief space to note another item which would, if duly attended to, help matters where the collections are large. We allude to the practice of cramming a room with a vast multitude of pictures of all sizes and, at times, of shapes. A picture much above the eye-level is all but lost and invisible; the workmanship of it cannot be seen, and the artistic touch is thus far totally lost; while a picture on the very ground—and things go to this here and there—becomes a matter of positive pain to get at it at all. Of course, all cannot be equally well placed; some must necessarily suffer, more or less, in the press for room where the picture display is a large one; but much might be done to mend matters in very many places we could name. It is better, surely, to be able to see a *few* pictures well, than a whole numberless host indifferently, or hardly at all, from very crowding. When very large canvasses fill nearly the whole wall of a large room, it would seem injudicious to add a number of small pictures. The small pictures get lost, and the eye, in looking at the large one, gets distracted. We have commented thus on these, may be, too familiar things, in the hope of lessening apparent difficulties here and there; for a thoroughly well-placed picture in a room in harmony with it is surely still, after all efforts, a *desideratum*. We have said nothing of "decorative" pictures, as such may be termed, when they form an integral part of the wall of a noble room. When will the time come when this may be done, and examples of it pointed to?

GLEANINGS FROM THE TRADE UNIONS CONGRESS.

The eighth annual National Trade Unions Congress commenced its sittings at the Assembly Rooms, Crown-street, Glasgow, on Monday, the 11th inst. We glean the following items from the proceedings of this workmen's Parliament:—

Compensation to Workmen for Accidents.—Mr. Evans proposed,—

"That this Congress expresses its determination to do all in its power to get a measure passed through Parliament during next session by which employers should be made liable to pay compensation to their workmen for loss sustained by such workmen because of accidents occurring in the discharge of their duties through the neglect of those for whom their employers ought to be responsible, and that when such accidents are fatal, the employers shall compensate the families of the workmen so killed."

In supporting the resolution, he remarked that they would have some difficulty in getting such a Bill passed through Parliament on account of the peculiar composition of the House of Commons. That House was at present composed chiefly of those who were either themselves manufacturing employers or the directors of companies which largely employed workmen, and whose future profits and future conduct would be materially affected by the passing of such a measure. Railway servants were, perhaps, more than any other class in the country interested in this question of compensation. In a Blue Book of 1874 it was set forth that of the 270,000 railway servants in the United Kingdom, over 800 had been killed and over 1,500 seriously injured. Mr. Allan (Sheffield) seconded the motion. Mr. Banks (Boston) said that he had been requested by the Agricultural Labourers' Union to ask the Congress to press the necessity of such a Bill, because from their occupation they also, as well as members of the mechanical trades, were subjected to great risks in their work. The motion was unanimously carried.

The "Sweating" System.—Mr. Wright (Glasgow) moved the following resolution, which was adopted:—

"That, in the opinion of the delegates at this Congress assembled, the system in the tailoring and other trades known as the 'sweating' system—viz., the giving out of work to be made in the homes of the working people—is injurious to the best interests of the trade and the community, morally, socially, and financially, because it tends to demoralise those so employed, by inducing them to resort to stimulants to excite their flagging energies; because it spreads contagious disease, as in almost all cases the homes where such work is completed are, from the poverty of the occupants, the nurseries where the patients are treated; and it leads in all cases to reduce wages, and ultimately to cast those engaged on the support of the parish, and thus swell the amount of pauperism. We therefore pledge ourselves to use all our influence to suppress this system, and to bring the names of out-workers under the surveillance of the Inspectors of Workshops."

The Labour of Women.—Miss E. Simcox, London, read a paper on the subject of the organisation of the labour of women, which she believed to be an essential part of the labour question. The skilled labour of women could occasionally be procured at one-third and one-half less than the skilled labour of men, and consequently employers had a stock of people to draw upon in the case of a dispute. The result of this was that some unionists might propose to exclude women by force, as at Kidderminster, but this was an expensive and unsatisfactory plan. Speaking for herself, she would have all women refuse to do men's work for anything less than men's wages; because their doing so tended to substitute an unnatural law of competition prices; and she believed if women were made aware that their accepting small wages lowered the rate of pay all round, they would cease doing so at once, as they would find greater advantage resulting from combination than hostility. The object which the promoters of female unions had in view was the raising the rate of wages for skilled female labour to its cost price. If they could only establish a minimum rate, the maximum wages would rise, and women would have no temptation to enter the same trades as men, except on the same terms, in which case the employers would have no inducement to engage them; and then the absurd practice of females underselling their fathers, husbands, and brothers would cease. The low price of female labour made it absolutely impossible for many of them to live honestly. If they could only raise the wages of women to a rate at which the poorest could live decently, many evils would cease of themselves. Permanent organisations would be an advantage to the class, for no woman could tell whether she would have to work for wages all her life or not. At present the rate of pay even for good work was so small that it was hardly worth the employer's while to try to distinguish between competent and incompetent hands. Mr. Shipton, London, proposed the following motion, which was adopted,—"That the members of this Congress regard with much satisfaction the development of the self-helping and self-relying Trade Union movement among women employed in the various industries, and pledge themselves to assist in promoting it in their respective localities." A vote of thanks was also given to Miss Simcox for her paper.

Workmen and the Patent Laws.—Mr Prior, Sheffield, proposed,—"That the Patent Laws of this country require immediate and thorough reform in the interest of our national industries,—especially so as to do justice to the numerous inventors among the working classes, by enabling them to secure to themselves the benefits of their inventions, which the present high scale of charges and the complicated system of the patent law practically prohibits, and that it be an instruction of the Parliamentary Committee to do everything in in its power to bring in a Bill embodying this reform." The resolution was unanimously adopted.

The Regulation of Workshops.—Mr. J. G. Allan (of London) proposed the following resolution:—"That this Congress, feeling the vital importance of simplifyng, consolidating, and extending the Factory and Workshops Acts, 1833 to 1874, to all children, young persons, and women employed in workshops, and shops for the manufacture, sale, and repair of goods; and also of enacting such regulations as shall lead to the proper registration and sanitary improvement of such establishments, in addition to the appointment of a sufficiently qualified staff of inspectors to carry out the provisions of the aforesaid Acts, hereby expresses its firm determination to strain every nerve with the object of attaining the same during the next session of Parliament, and earnestly calls upon every trade society in the kingdom to give the Congress their hearty support." Mr. M'Allan, vice-president of the Congress, seconded the adoption of the resolution. Mr. Self (of London) supported it, and spoke of the want of the enforcement of the Acts in the printing-offices in London. The offices, he said, were in some cases simply abominable, and not fit for savages to operate in. Mr. Allan's motion was adopted.

Union of Painters.—The operative painters of Glasgow, on the recommendation of Messrs. Shipton (London) and Slatter (Manchester) have agreed to open up a communication with the Manchester Alliance of House Painters, with the view of forming a union with that society.

The Congress will be held next year in Newcastle.

BRICKMAKING.

Can any of your numerous readers suggest a remedy to prevent red facing bricks turning partly white when fully burnt? J. L.



NEW VESTRY HALL FOR THE PARISH OF ST. CLEMENT DANES, LONDON.

Messrs. F. Cadogan & J. Butler, Architects.

THE NEW VESTRY HALL, ST. CLEMENT DANES, STRAND.

Our engraving represents the entrance-front of the new Vestry Hall, which has been erected in Clement's Inn Passage, from the design of Messrs. F. Cadogan & J. Butler, architects. Mr. Thorn was the builder.

The former Vestry House, situated in Picket-street, Strand, vested in the churchwardens in trust for this parish, having been taken in the year 1871 of Mr. John Smith and Mr. Daniel Betts, the churchwardens for the time being, by the Commissioners of Her Majesty's Works and Public Buildings under the provisions of the Courts of Justice Concentration (additional site) Acts, this freehold site was purchased in 1874 by the then churchwardens, Mr. Thomas Parker and Mr. Robert John Dobree, and the present structure was erected upon it, and is about to be opened for the use of the Vestry and parishioners. Mr. John Neale and Mr. James Hodges are the present churchwardens; and the Rev. Robert James Simpson, M.A., is the rector. The amount of the contract was 4,600*l.*, and about 1,500*l.* have been spent since. The sum received for the old Vestry House was 10,000*l.*

COMPETITIONS.

The Proposed Municipal Buildings at Newbury.

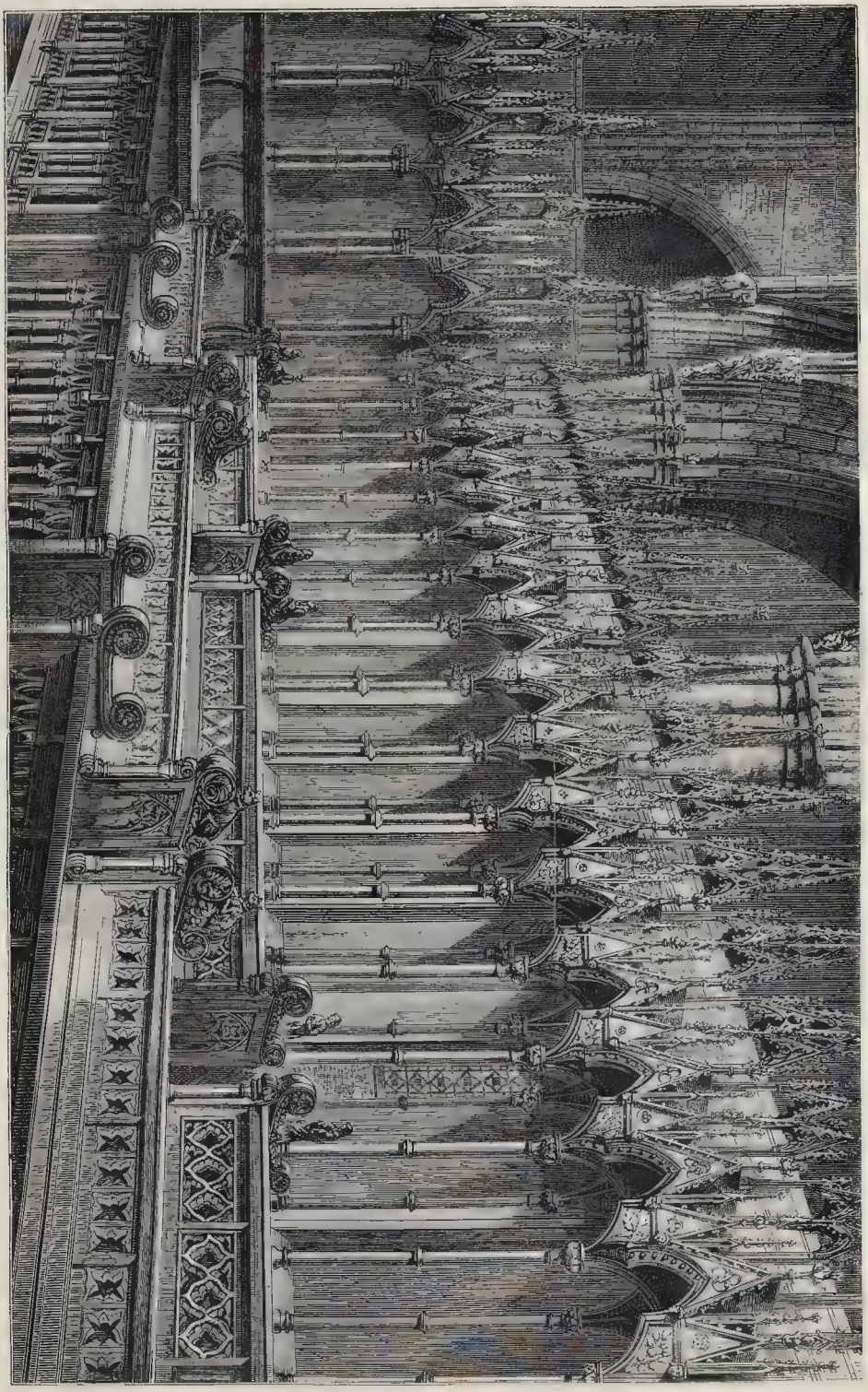
Mr. J. S. Dodd, the author of the design "Berkshire" submitted in this competition, writes as follows to the *Reading Mercury* of the 23rd inst.:—

"A short time since an advertisement appeared in the *Mercury*, inviting designs for the proposed new Municipal Buildings, Newbury. I and other architects responded, and forwarded drawings for the same, with a joint request that a professional man should be called in to adjudicate. Our request was granted, and Mr. Morris reported on the drawings. A copy of the report was sent to the different competitors, and we were requested to forward additional drawings. It seems that one architect did not adhere to the instructions furnished, and Mr. Morris very properly disqualified him. It appears, however, this gentleman was allowed to compete again, and that his design was selected for adoption. In common fairness, I may ask, why such an unusual proceeding was permitted, and whether such a course does not favour the idea that the competitors were asked to forward additional drawings to give the gentleman whose first design was rejected another opportunity?"

Weston-super-Mare Parish Church.—The plans and designs of Mr. E. Tuck, of Bath, have been accepted in the public competition for the re-lighting of the Weston-super-Mare parish church.

THE CHOIR-STALLS, EXETER CATHEDRAL.

The new choir-stalls in Exeter Cathedral, which have recently been completed, are from the designs of Sir Gilbert Scott, and have been made and fixed by Messrs. Farmer & Brindley. The work, owing to its elaborate nature, has necessarily occupied much time. The stalls extend for three bays eastward from the choir-screen on the north side, and rather less on the south, owing to the space occupied by the bishop's throne. There are five returned stalls at the west on each side, and, below the stalls, two rows of seats for the choir, which are divided by the gangways into four blocks on each side. The canopies are of elaborate workmanship, with curved projecting fronts and a great deal of enrichment of Early Decorated style. Shades are provided to the end stalls with carved pattern of roses, pomegranates, &c. There are no panels to the backs of the stalls, but an open stone screen, the arches of which are concentric with those of the canopies.



THE NEW CHOIR STALLS, EXETER CATHEDRAL.—Sir Gilbert Scott, R.A., Architect.

LANCING COLLEGE CHAPEL.

DEDICATION OF THE CHAPEL IN THE CRYPT.

The dedication of this chapel took place on the 26th inst. It will be remembered by many that in July, 1868, the corner-stone was laid by the late Bishop of Chichester, with great ceremony. Since then, the works have steadily but slowly progressed, but had not an unforeseen difficulty arisen, there would have been now much more than 25 ft. of the walls above the ground. The difficulty was, that the rock of chalk on which the college stands was found to suddenly dip down perpendicularly just at the west end of the chapel, to a depth of from 40 ft. to 60 ft. below the ground. The upper strata, composed of clay and loam, doubtless the ancient top soil of the Downs, washed down into the hollows of the chalk, was found not sufficiently stable to bear the weight of a building nearly 150 ft. high. It was, therefore, determined to sink down to the chalk, and it became a matter of very serious importance to construct the foundations in the firmest, and also in the most economical manner,—therefore, instead of putting in continuous foundation-walls, it was arranged to carry down to the rock-chalk a series of great piers of concrete under each buttress and arcade pier, and to arch between them, just under ground, to support the aisle and apse walls. Excepting some of the ante-chapel piers, they are now completed, and are from 40 ft. to 70 ft. deep, with superficial areas of from 40 ft. to 150 ft. On these foundations the walls are raised from 18 ft. to 25 ft. The extreme inside length of the chapel is 168 ft., with an ante-chapel 40 ft. long in addition. The whole width inside, including the aisles, is 63 ft., the width of the choir itself is 30 ft.; there are ten bays, with a five-sided apse to the chapel, and two bays to the ante-chapel, which return as transepts.

The height to which the walls are now built brings them up to the level of the quadrangle, or the top of the hill slope at the west end; there is thus a large space to be utilised at the east end, or bottom of the slope, which although it cannot be lighted on the south, or quadrangle side, yet can be well lighted on the north and east. It was, therefore, decided, to construct this portion of the building as a crypt, or lower chapel, to be used while the great chapel above is being completed.

This lower chapel in the crypt is 93 ft. 6 in. long and 63 ft. wide; it is divided into four aisles by a row of small columns in the centre, and by the two rows of the great piers under the arcade above. The aisles are carried as far eastward as the commencement of the great apse, and the last bay of each, which will be carried up as a tower, does not open into the central space, but is made apsidal inside and forms a separate chapel. The whole space is groined at a height of 17 ft. from the floor, excepting in the apse, where there is formed an octagonal dome under the upper altar-platform rising to the height of 25 ft., and in the chapels the pointed barrel-vaults are 22 ft. high; the ribs of the groining and the arches are in Scaimes-hill sandstone; the filling in is of chalk in courses, with bands of grey chalk in the dome and eastern bays.

The outer walls are 5 ft. 9 in. and 4 ft. 4 in. thick above the plinth; the outer thickness is faced with sandstone ashlar, the inner thickness with chalk. The great arcade piers are built to a height of 7 ft. in brick and cement octagons, 4 ft. 10 in. diam.; on each rests a Portland stone landing or abacus, 12 in. thick, projecting all round 1 ft. for the purpose of carrying the stone arches and groining ribs, behind which rises the solid brick octagon to the upper chapel floor; the brick pier under the abacus is faced with chalk.

The central row of columns is of solid sandstone. The altar stands in the apse raised above the general level. The chapel at the east end of the south aisle is the "founder's (Canon Woodard's) chapel"; it is two bays long including the apsidal bay in which is the altar-platform; this chapel will be separated by stone traceried screens in the arches from the larger chapel. Under the south wall, and 15 ft. southward, is the founder's vault. On the north side is a chapel which may be used for missionary purposes.

Each bay of the apse and north aisle is lighted by a cusped lancet, 2 ft. 6 in. wide; this aisle will be continued westwards and will rise by broad flights of steps into the ante-chapel. The western portion of the crypt is separated from the other by a screen-wall, and is being constructed with plain brick arches and piers and concrete vaults to carry the floor above.

The walls of the upper chapel are now steadily progressing; the double plinth, 6 ft. 6 in. high, is already fixed along the whole length of the south side and round the apse; and the ashlar work and aisle windows are being prepared. The outer and inner facing is of sandstone. The works are being carried on by workmen employed by the college from the designs of the architect, Mr. R. Herbert Carpenter.

TO WHAT CAUSES ARE TO BE ATTRIBUTED THE WANT OF SANITARY PROVISIONS IN THE DWELLINGS OF THE UPPER AND MIDDLE CLASSES,

*And What is the Best Method which should be adopted to Remedy and Rectify the Same?**

I have repeatedly examined houses, the rentals of which would not be less than 600l. per annum, in the most aristocratic portions of the metropolis, and have found sanitary defects equal and on a par with those I have before referred to.

Only a short time since I discovered, in three separate instances, under the basement of houses, disused cesspools filled more or less with excrement, emitting a disgusting odour and covered with loose or rotten boarding; the old brick drains had simply been cut off from the sewer and left as they had been originally laid in.

Upon surveying one house for a client of mine, preparatory to making an offer for its purchase, I noticed the peculiar odour of sewer gas. It had been unoccupied for some months; its care-keepers had evidently from habit lost the use of their olfactory organs. Upon making inquiries I discovered that after living in it for six months the last inmate had given up the lease. No cause was assigned. An investigation of the parish maps showed that at a short distance from the house one of the main sewers terminated, across which a dead wall had been built. A ventilating-pipe from the house had been connected with this sewer, and was conducting the sewer gas congregated at its head into the same.

I narrate one other instance as an illustration how persuasion, when combined with interest, may exercise an influence where force fails. A client being desirous of purchasing two semi-detached houses, situated in a good and rising neighbourhood, instructed me to report on their value and sanitary condition. Accordingly I attended and commenced my survey, accompanied by the builder, to whom, from time to time, I put a few leading questions. Shutting up my note-book on the conclusion of my survey, the builder addressed me thus:—"Ah, sir," said he, "your client will not buy these houses; I know how you are going to report." "Well, my friend," I replied, "you know more than I do, then. There are certain matters which will have to be attended to; but I am sure you will do these rather than lose the sale of the houses"; and I explained to him *what* I considered necessary, and *why*. "Well, sir," said he, "you are right, and not unreasonable; a good many of the things you mention I did to the first two houses I built, but I found it no use. I could not get any return for the money expended. The public did not appreciate them. I asked for those houses a little extra rent to recoup the outlay, but the applicants said that they could get the houses over the way at a less rent, and I was obliged to let them; so, sir, I built these and the others as cheaply as I consistently could, and omitted these improvements." "Well," I rejoined, "consent to these alterations, and I will agree on behalf of my client to pay half the cost." He did so; I purchased the houses, and I am happy to state that the result of my arguments has been to induce him to introduce the same arrangements in the houses now being built by him in the same locality, and he tells me that he has not regretted adopting them, either morally or financially.

We will now consider definitely what are the sanitary defects which exist in most of our London structures? To render these clear to your comprehension, I have prepared diagrams to which I shall refer as I proceed.

As a general rule, the subsoil of the houses is not disturbed: the foundations are at once laid upon the virgin soil, but if the same consists of gravel or sand, then it is quickly excavated and sold, the void thus left being filled up with rubbish of the most improper description, the spongy character of which, combined with its putrescent nature, lays a sure "foundation" for future illness. Subsoils, as a general rule, are quite undrained, sometimes are saturated with impurities, and are seldom in healthy sanitary condition. The next important, and generally the most defective, arrangement is that of the drainage. The ordinary plan in a London house is to bring the main drain-pipe through the passage of the basement into the centre of the house, and to connect thereto the various branches from the water-closets, sinks, cisterns, &c. This system would be objectionable if properly carried out; as generally executed, it is absolutely dangerous. One generally unsuspected, and therefore more dangerous, peril, connected with the drainage of our town houses, is the existence of cesspools in the very centre of the dwellings. These are often very nearly filled with putrescent alvine matter, and are simply covered over with tiles, stones, or boarding, which in the course of time have become rotten or decayed. Connected with these cesspools, we find old brick drainage still left under the houses, forming admirable runs for rats and vermin, and receptacles for the storage of noxious gases. This state of things, as I have before referred to, I have found in my own practice, existing in what are called first-class houses, situated in well-known streets, and inhabited by wealthy and even aristocratic denizens. As corroborative testimony, I quote Dr. Whitmore's observations in his last report to the Marylebone Vestry:—"Many of the best houses in the parish situated in aristocratic streets have brick drains thirty or forty years old, and most of them very defective." How is this to be accounted for? The sewers of London were originally intended for surface purposes; indeed, up to about the year 1847 it was a penal offence to connect soil-drains with the same. In the year 1844 a report of the Commissioners appointed to inquire into the health and state of towns was published, and to their recommendations may be attributed most of the improvements in drainage works, and most of the legislative enactments which have since taken place. About this time, and notably with the advent of the Metropolis Local Management Act, 1855, it became compulsory to connect house-drains with the sewers, and to close up cesspools, sanitary science being little understood, and less appreciated. Avoidance of expense was the first consideration, and instead of eradicating the defects once and for all, the cesspits were left in, and the old brick drains either connected with the sewers, or left in without the precaution, oftentimes, of even stopping their ends. Even when pipe-drains are used, with joints fairly cemented round, they are scarcely ever properly laid. Their gradient is invariably too little, and the consequence is that they soon become silted up, the pressure of the sewage causing the joints to leak, and the saturation of the soil with general escape of insalubrious vapour to the interior of the house.

The undrained subsoil, improper foundation, and defective drainage, naturally render the basement of the house totally unfit for habitation. As a general rule, the walls are thin, built of porous bricks, without impermeable material to act as damp-courses. The boarding is ordinarily laid without tongues or other precaution to keep back the noxious exhalations which at varying alternations of temperature, rise from the sodden earth, and permeate through the superstructure. In truth, the houses constructed for the dwellings of the upper and middle classes are but as receivers over a still below them, in which impurities and gases are distilled over, being collected and condensed above.

The position of the kitchen range, fireplaces, sinks, and cisterns, combined with their connexion with the system of drainage, assists in pumping out the impure atmosphere, disseminating it through the new premises. The basement passages and staircases are nearly always unventilated, dark conduits, forming channels for the diffusion of the soiled air into the ground or principal floor of the house, whence it is guided into the space occupied by the principal and back staircases. Sometimes these staircases are lighted from lantern or head-lights (and which, by the way, are not always constructed to open, and if so constructed are seldom taken advantage of); generally they are ceiled at the level of the best bedroom floor, and have a room or rooms carried over the same. Staircases of most London houses are inadequately lighted (scarcely ever ventilated) from the small yards

* By Mr. H. H. Collins. Read at the Brighton Congress. See p. 926, *ante*.

which are left in the rear of the houses, such yards often forming themselves shafts for the collection of impure air, which is conveyed therefrom into the bedroom floors. From off the landings of these staircases, water-closets, housemaids' closet, &c., are contrived, which contribute by their defective arrangements to further poison the air, and to lead it to the bedroom accommodation of the house.

A favourite arrangement of some of the best and most expensive houses of the metropolis is to place the water-closet in the centre of the house, ventilating the same into the principal staircases (and sometimes, but not often, carrying up a shaft to the roof): this brings the noxious gases thoroughly well into and up to the bedroom floors of the house; by this plan the soil-pipe is also carried through the centre of the premises, and its position can generally be discovered either from the discolorisation of the paper or paint, or from the mephitic odour given off. The staircase, which should act as the ventilator of the house, indeed, as its lung, is made the vehicle of contagion, all the impurities of the house discharging themselves into it. These water-closets are usually planted opposite the best bedroom, and are generally in conjunction with a small housemaid's sink, contrived under the stairs, the waste from which is carefully carried into the soil-pipe of the closet; probably, taken all in all, no better system could well be devisedfor carefully introducing into the house, and retaining therein, any sewer gas which may arise from the choked drains or covered cesspits in the basement. Our coal gas is not half as well laid on as our sewer gas: the smallest leakage of the one is easily detected, and as facilely rectified, and thus danger can be quickly and happily avoided; but with the other the whereabouts of a slight aperture or a minute perforation is most difficult of discovery, and is usually expensive and laborious to rectify; the danger is rampant, and cannot be subdued before the injury has been thoroughly effected. Cupboards for soiled linen, and other impure matter, are generally found under spandrels of stairs, and, being unventilated, contribute their quota to the infection of the air, and by their position promote its distribution. No more considered as a luxury, but assuming its proper position in every well-appointed house, either of the middle or upper classes, is a bath-room; few greater conveniences are rendered more dangerous nuisances by position and construction than these modern appliances. The bath-room is generally located in some small room adjacent to or in connexion with a bedroom or bedrooms, oftentimes without any fireplace or ventilation, and sometimes with only a borrowed light.

The supply-pipes for hot water are generally connected in good houses with a boiler of the kitchen range, and are conveyed to the bath through the house up a chase left in the wall, which contains also the soil-pipe of the water-closet apparatus. These soil-pipes are sometimes of lead, and often of iron, plain or galvanised. The bath, usually of thin iron, zinc, or copper, seldom properly supported or cradled, has the waste therefrom connected with the soil-pipe, sometimes with the trap of the water-closet, or with an independent trap. Under the bath, to prevent overflow to the rooms below, is placed a zinc safe, which again is supplied with a small orifice leading into the before-mentioned soil-pipe. This arrangement is again most prejudicial in a constructive and sanitary point of view. Constructionally, it is wanting in economy. The hot-water pipe causes a contraction and expansion of the joints of the pipe, creating leakage and decay. Sanitarily, it produces defects which permit of entrance to the house of impure air, and by suction draws it into the bed and other rooms. The overflow and waste frequently become untrapped, and in certain conditions the flow of water from the bath waste enters the trap of the water-closet.

The position of the cisterns next claims our attention. Generally speaking, they will be found located in the most out-of-the-way and inaccessible parts of the house, and consequently from this cause alone become neglected and unclean, the water being fouled by sedimentary sludge and feculent matter, which quickly accumulates therein. In the basements they are usually situated in the vaults and over the scullery sinks, the scullery itself being a narrow ill-ventilated slip, inadequately proportioned for its work. The waste-pipe from the cistern is usually carried into the drain, where it is supposed to be trapped. The result of the arrangement is this, that as regards the waste it conducts the sewer gas into the water, where it is absorbed; that the impure air proceeding from the sink, with its generally defective overflow, is also imbibed by the water in the cistern; and that a similar process goes on from the supply of the servants' water-closet, which is also generally connected therewith. When you consider that the whole of the potable water of the establishment is usually drawn from this supply you cannot wonder at the lethal effects which are produced. In the upper portion of the house, more often than not, the cistern is placed in the roof, sometimes on the roof, in connexion with the ventilating pipes or closets (if any be provided), fully exposed to all the contaminating influences of the dirt and filth which congregate there; the wastes and water-closet apparatuses are connected therewith, as just mentioned, and with the same lamentable results.

The facts above enumerated are perhaps the most salient sanitary defects of the internal arrangements of the houses of the middle and upper classes, although many other imperfections might easily, if time permitted, be animadverted on, such as position and plan of landing, want of ventilation, not only of drains and conveniences, but of houses generally, method of heating, and carelessness as to disposition and aspect of rooms with regard to the purposes they are destined to fulfil.

Now, how are these defects to be remedied and prevented?

1. We require additional compulsory, not permissive, sanitary enactments,—the Building Act should be revised, so as to confer greater authority on and larger powers to the district surveyor, and local authorities should be amenable to a central board to carry out with strictness the provisions of the Acts of Parliament.

2. The clauses of the present Acts should be carefully utilised, and not rendered inoperative by the perfunctory manner in which their obligations are construed, amounting to avoidance thereof.

3. It should be imperative that vestries or local authorities should appoint well-qualified and well-paid officers to interpret and to carry into effect the laws relating to the health of the people; men whose professional attainments, scientific knowledge, and social position will command respect and insure obedience; men who have the *fortiter in re* to insist, and the *suaviter in modo* to persuade. *Vide* the success attending Mr. Arnix's efforts. The best prevention, however, will be by educating the people to a sense of their own danger and ignorance; we shall never succeed in making them wise, cleanly, temperate, or pious by Act of Parliament. If we cannot appeal to their higher and better qualities, we must address ourselves to their lower and meaner natures,—we must indisputably prove to them how their individual interest and welfare are combined with a due regard to sanitary precautions. If once it becomes an acknowledged fact that people will not inhabit houses deficient in the essentials of life,—fit air to breathe, fit water to drink, fit drainage for health,—depend upon it houses will be erected with due regard to sanitary considerations, unsanitary houses will be altered and their defects rectified,—the supply will soon equal the demand. Mammon will become good friends with Hygeia, and people will soon learn,—

> "That something there is more needful than expense,
> And something previous to taste, 'tis sense."

The points to be observed, and the precautions to be adopted, in building healthy urban dwellings, happily need no great amount of intelligence for their comprehension, require no scientific skill for their procuration, and involve no large expenditure in their execution; they are but few, simple in the extreme, and only accord with common-sense observation.

Old houses mended cost little less than new before they are ended, and by attention to the following suggestions, laid down with no dogmatic intent, the lives of both old and new houses, together with their inmates, may be prolonged and preserved structurally and sanitarily to their natural term of existence.

All subsoil should be properly drained, proper thickness of concrete should be applied to foundations, damp-proof courses should be inserted over footings. Earth should be kept back from walls by dry areas, properly drained and ventilated external walls should be built of good, hard, well-burnt stock brickwork of graduated thicknesses, and never less than 1 ft. 2 in. thick. Internal divisions should be of brick, in cement. The mortar or cement should be of good quality.

All basement floors should have a concrete or cement bottom, with air flowing under the same, and the boarding thereof should be tongued so as to prevent draught and exhalation penetrating through the joints of the same.

Ample areas back and front should be insisted on, the divisional or party fence walls of which should never be allowed to exceed 7 ft. in height to allow free circulation, and to prevent the areas becoming wells or shafts for stagnant air.

The main drains should be carried through the back yards; and, to prevent inconvenience to adjoining owners from any obstruction, they should be laid in subways, so that the sewer-inspectors could gain ready access thereto, without entering any of the premises, or causing any annoyance to the tenants. No basement should on any account be allowed to be constructed at such a level as will not permit of the pipes having good steep gradients to the sewer.

All pipes should be of glazed earthenware, having joints made in Portland cement, and resting on good solid foundations.

The connexion with the sewer should be direct, merely inserted in the eye with a hanging flap. It is a moot question as to the insertion of a syphon between the house-drain and the sewer. I have always found this to silt up, and to become a nuisance, and of later years I have discarded it. If used, it would be well to ventilate it. All main drains should be ventilated in proportion to their area and length by lead ventilating-pipes carried up to ridges of roofs. Special care should be taken to prevent any direct connexion from the house with the main drains. All sinks should be placed next external walls, having windows over the same, and removed from the influence of the fire-grates. All wastes should discharge exteriorly over, *not into*, trapped cesspits, as illustrated by diagram having splashing stones fixed round the same. These cesspits require care in their construction. Syphon-traps and bell-traps are to be avoided wherever possible; they often cause the very injury they are intended to prevent. Care must be taken to turn eyes in brickwork wherever pipes pass through walls, to prevent joints breaking. The scullery-sink should have a special fat-trap provided, or one of Field's patent self-acting flush-traps, which I have used with great success. The basement cisternage should be placed in a convenient and accessible position, protected from dirt, and guarded from the effects of alternations of temperature. They should be of slate or galvanized iron, and never of lead or zinc. They should be fitted with overflows, discharging over the sink or over trapped cesses, as just mentioned. They should be supplied with stout lead-encased block-tin pipe. The services therefrom for all drinking-purposes should be of the same description, and should be attached to an ascending filter, so that the water may be delivered free from lead or organic impurities. Lead-poisoning is more frequent than is generally believed; but readers of the *Sanitary Record* and other scientific journals find from time to time numerous records of its danger. Dr. Alfred Hill, the borough analyst for Birmingham, states that "it is a cumulative poison—it remains stored in the system to manifest its effects at some future period." Dr. Muspratt writes that "the source of slow lead-poisoning is almost invariably found to be the water employed for domestic purposes, the lengthened use of which causes depression of spirits, emaciation, cholic, and paralysis." Our chairman, Dr. Richardson, also stated his opinion that contamination of water by lead is the cause or source of various obscure diseases. The servants' water-closets, of which there should always be two, for the accommodation of each sex, should be placed in an open, well-lighted, and well-ventilated position. It is a false idea of decency which dictates locating them in out-of-the-way positions—out of sight out of mind; precisely because they are used by the least careful portion of the household should they be open to inspection, if we wish to insure their salubrity. The cisterns should be distinct in position, and supply from the store or drinking-water cistern; the wastes thereof should turn out over cesspits, and the closets should have good earthenware hoppers, with flushing rims, syphon-traps, and pull-down chain.

Cupboards under stairs, under sinks, under dressers, or in out-of-the-way places, should be avoided, and when fitted up should always be well ventilated. All passages should be well lighted and ventilated. Borrowed lights are better than not having any other. Every room should be furnished with a fireplace, and Comyn & Ching's ventilators over doors and windows

should be freely disposed. It would conduce to the health of the house, without adding 1s. to its cost, to build next the kitchen flue a separate ventilating flue, and to conduct the products of combustion from gas and other impure or soiled air, &c., into the same from ventilators placed in the centre of or close to the ceilings as may be found most convenient. By carefully proportioning the inlet and outlet ventilators, the air will be kept moving without draught, and preserved in a pure and sweet condition for respiration. The windows and doors will then serve only their legitimate objects of admitting light and affording egress and ingress to the various apartments. The staircase should be made the main ventilator of the house, and it is essentially necessary to preserve the air surrounding the same uncontaminated, pure, and undefiled. It will be better to light and ventilate it from the top; and to prevent the Ethiopians or blacks of London finding their way into the house, an invisible gauze net may be placed under it, which can periodically be easily removed and cleansed, or to furnish it with a movable, inner, ornamental flat light.

The water-closets, both on the ground of sanitary considerations and constructional economy, should be placed over each other, out of the house, and separated therefrom by necks or lobbies, lighted and ventilated each side by windows extending to the ceilings; these passages should be enclosed by glass screens, and may be made very ornamental features; these lobbies can be fitted up with closets, or as ferneries, or to suit the exigencies or taste of the occupants. The water-closets should be of valve construction, the soil-pipes should be of block-tin cased pipes, and should be ventilated by being carried up well over roofs, and left with hoods or cowls open to the atmosphere. If safes be introduced under the same, the overflows therefrom should be carried through the walls, and furnished at feet with ground brass flaps to prevent any back draught. The water-closets' fittings should be constructed to remove, the risers being hung as doors so as to admit of ready inspection and cleansing. There should be an air grating fixed between the seat and floor to prevent impure air lodging there. All closets should have india-rubber bands between seat and basins to prevent draughts penetrating, —a source of danger productive of illness.

The form of water-closet apparatus always to be avoided is that known as the pan-closet. It is a closet most favoured by the public, because the cheapest in its first cost. It consists of a large chamber called a container, which is made of iron; on this is fixed a movable pan, into which dips the basin. The container is connected with a D trap, which is attached to the soil-pipe leading into the drain. The service-pipe communicates with the cistern either through the medium of valves or service-boxes, as I have illustrated, and by either elevating or depressing these, the water is allowed to flow through the fan of the closet, where it is dispersed round the basin, and, when soiled, is carried away through the pan-container trap and soil-pipe to the drain, washing all before it, and leaving a certain quantity of clean water in the trap and pan of the closet to seal or trap the same. Now you will perceive the cumbersome container is simply provided to enable the pan of the closet to be opened or shut; the excrement descends into it, and in progress of a very short time coats its ample surface with fœcal matter. The container soon becomes honeycombed, and the usual practice of plumbers, in order to cleanse the same, is to burn it out, and thus to roughen and to destroy its surface altogether, the excrement putrefying and causing a continual distillation of gas, which, when the supply-pipe is empty, ascends to the cistern, and is absorbed by the water therein; it also finds its way to the house every time the closet is used; and if the same be unused for any length of time, it is absorbed by the water in the pan, and thus given off into the house. When the soil-pipe is unventilated, it also enables the sewer-gas to penetrate into the premises. No amount of ventilation of the soil-pipe will prevent this, if this form of closet be adopted.

The chamber in which the water-closet apparatus is placed should be well lighted and ventilated top and bottom by ventilators, as before described. A separate cistern should be provided to supply these closets with a good head of water, and at least 1¼-in. pipes, to ensure ample flush. My own experience is adverse to the employment, if it can be avoided, of the small cisterns called water-waste preventers. The cisterns must be furnished with overflows discharging into the open air, and, together with their supplies and services, so positioned and protected that the water shall not be frozen; that they shall be easy of access for cleansing and examination; and be well ventilated, so that the water does not become stagnant or impure. It is advantageous to place the hot-water cistern in the same cistern-chamber, but so far removed as to preserve the coldness and freshness of the liquid. Stopcocks should be supplied to each service and supply, so that in the event of repairs being necessary, the stored water is not wasted.

If lavatories or sinks are employed, they must be used as above mentioned for the W.C. apparatus. Under no circumstances, however, must they be brought in connexion with the drains. Most people desire the bath-room to be in proximity to the bedrooms. Whether so positioned or not, all connexion with the main drainage must be studiously avoided. The hot and cold pipes known as the flow and return pipes should be of galvanised iron, with junctions carefully made with running joints in red lead. On no account should these be in contact with any other pipes. The wastes from the bath safe under (and lavatories if any) should be carried through the front wall of the house, and should turn over and into rainwater-heads, covered with domical wire gratings, to prevent birds building their nests therein, and carried down to the basement area, where they must discharge over a trapped cesspit, as before described, surrounded with a splash-stone or curb, to obviate the nuisance of the soapsuds flowing over the pavement. A brush passed up and down these wastes now and then will effectually remove any soapy sediment which may cling to their surface. The waste from bath, &c., into heads should be furnished with a ground valve flap and collar, to prevent draught, and the bath should be fitted with india-rubber seatings between the metal and wood framing, for reasons before adverted to. Mansard or sloping roofs should be avoided. They are injurious to the health of the domestics, whose sleeping-chambers they are generally appropriated for. They are unhealthily hot in summer, and prejudicially cold in winter, laying the basis of future disease for those least able to bear it. Gutters taken through roofs, known as "trough-gutters," should never be permitted; they congregate putrescent filth, which remains in them for years, to taint and poison the atmosphere.

These simple precautions, so easy of accomplishment at so trivial an expenditure of either study or money, are a *resumé* of what could and should be insisted on in the erection of every structure intended for residential habitation.

I have now as succinctly as possible epitomised the causes which have induced and to which I attribute the unsanitary condition of the so-called houses of the upper and middle classes. I have sketched some of the effects which are produced by the systematic neglect of judicious planning, judicious hygienic precautions, and ill-construction of our dwellings, and I have endeavoured to shadow forth how cause and effect may be rectified or ameliorated, if not effectually prevented. The ignorance which would neglect the accumulated wisdom and experience of years becomes culpable folly. Year by year we offer up our tribute to the devouring Minotaur of disease, sacrificing hecatombs of victims to his insatiable maw,—the strength and flower of our population meekly and passively accepting as the Atropos of fate that which a determined effort could with facility destroy. "Let us look down and see what death is doing."

GENERAL FOREMAN AND CLERK OF WORKS.

Sir,—Before this discussion is entirely closed, will you allow me space to make a few remarks in reply to some of the statements put forth in opposition to the argument with which I opened the question? I will first confine my remarks to the second letter from your correspondent "E. L.," page 868.

To his statement that it is common for the architect to give in working drawings the fullest detail of the brickwork, and leave the joiner to use his own judgment, I beg to say it is in direct opposition to my lengthened experience. Why should it be otherwise, seeing that an architect can possess himself of any number of books illustrative and descriptive of joinery in its most minute detail, while I doubt if upon brickwork there is one in existence worth the name? I decline the honour of the authorship of the absurd remark which he gratuitously attributes to me,—that it takes seven years for a joiner to learn part of his trade; for I, in common with all men, know that a learner, in whatever trade he works, gathers a part every year: how large a part depends upon his adaptability to learn. To his statement that a bricklayer learns his trade in two or three years, I reply that the skill brought to bear upon some so-called brickwork might be acquired even in less time; but my position in this discussion is assumed upon higher grounds; for it is a well-known fact that scarcely a tithe ever obtain the skill sufficient to master the higher grades of the work.

With regard to the mystery of joinery, I suppose it is like all other trades,—the more one becomes acquainted with it, the less mysterious it becomes. Moreover, a very large portion of this very mysterious business is executed by machinery. To the query, "What does a bricklayer know about it?" I reply, "What does a joiner know about brickwork?" Here is the very pith of my argument. Nor is it necessary for a bricklayer to be any further acquainted with joinery than in its connexion with the building; and, when it is brought there, to be fixed in the position already provided for it by the bricklayer. I repeat it is made in the shop, and no one will deny to the joiner his right to the leading position there. Again, the stability of the superstructure is beside the joiner's work, or the carpenter's. To the query, "What is the verdict of the architect?" I say, equally emphatic, that whenever a bricklayer proves his fitness for position, the architect as well as the contractor is ever ready to appreciate him: proof of this being shown in the fact that such a one finds no difficulty in obtaining an appointment, or in holding it; and I confidently assure "E. L." they are more numerous than he seems to be aware, or cares to acknowledge,—"and that is another fact."

To the statistics quoted from the science and art schools, I pay all respect; but they do not alter the premisses of my argument. They certainly show which branch is most anxious to distinguish itself; it is not at all surprising, seeing that the joiners hold it to be their mission,—that it is their own field, or Tom Tiddler's ground. But if the other branches were equally anxious, would not the chances of success be to them the same? And is not the preponderance of carpenter-prizemen owing to the absence of bricklayer and mason competitors? Again, while I acknowledge the commensurate value of the art-school teaching, I deny it is of itself sufficient. I repeat, the principal qualifications necessary to command success in the leading positions can only be acquired on the building, and there they must be displayed. The knowledge obtained in the art-school is but accessory, and can easily be acquired in a man's own home if he have but the will. See *Builder*, vol. xxiii., No. 1153,—a letter of encouragement to artisans,—the writer stating that his studies commenced with a pencil tied with string to one leg of a pair of iron compasses, and that the writer, without a half-hour's instruction from any man, fought his way to the leading position, and holds it still. Again, if the building trade were polled, how many of the numerous able leading men in either branch would be found to have passed in honours. I say the building has been their school, the degree of honour being the amount of confidence reposed in them by those that employ them.

Your correspondent, "C. W.," p. 825, suggests that the clerk of works should be a practical draughtsman and surveyor, with a practical knowledge of all the branches, &c. No doubt he would be a very useful man; but where is he to be found? and, if found, what need for him. Now, Sir, an architect is a practical draughtsman himself, and keeps a sufficient staff of such in his office, and does not delay making his plans until the building is commenced. What he wants in a clerk of works is as much proficiency in drawing as to enable him to carry out his instructions, not to usurp his position; he is also provided with a surveyor in the person of the quantity surveyor. As to the carving, decoration, strength of iron girders, ventilation, heating, &c., what architect would confide the responsibility of those matters to his clerk of works? His art-workmen are selected by himself, from their known ability, and he reserves to himself the prerogative of criticising their work. For the strength of iron girders, he seeks, if he needs it, the advice of the engineer, who makes these matters his especial study; the ventilation

and heating are entrusted to especial men, whose different systems are well understood and accepted by the architectural profession generally, the clerk of works being called upon merely, with his practical knowledge of the building branches, to assist in perfecting their arrangements.

"Country Mason" says, "Put the proper person in the proper place." That is just my argument. I say, put the brickwork in charge of a bricklayer; and as no one has yet denied my statement that brickwork holds the first place as a constructive material in the majority of modern buildings,—even in those stone-faced edifices that have been described as upholding the grandeur of the metropolis, for strip off the masonry, and the fact will still remain, the brickwork is the carcass, the stonework but one of its members,—so the bricklayer would, as a matter of course, hold the first claim to the leading position, provided always that he has made himself fit.

Again, it is a fact not to be denied, that, notwithstanding the extent to which brickwork is applied, there is no improvement, but rather deterioration, in the quality, while at the same time there is an increase in the cost; and while innumerable opportunities have offered themselves for the development of the capabilities of brickwork as an ornamentation, the best intentions of the architect have frequently been,—I can use no milder term,—murdered. I have, Sir, read in your columns the statement of "An Architect," that the reason why the profession generally did not use brickwork as ornamentation to the extent they would wish, was the difficulty in getting it executed, or the certainty of its being spoiled. Now, I venture to assert that this state of affairs has been brought about and perpetuated by the preference for joiners as clerks of works and general foremen, and the preponderance of joiner contractors, for it not unfrequently happens, on an important work, all three positions are held by the favoured branch. In conclusion, I beg to leave the subject, with these remarks, to the consideration of those most interested, trusting this discussion may be the means of awakening bricklayers generally to a sense of their true position, and incite them to turn to good account those educational advantages which are within the reach of all, whether it shall be art-school teaching or self-tuition; to use the knowledge thus acquired in the greater development of their experience in their own craft; and to improve their superior opportunities, and to acquire the necessary insight to the other branches of the trade generally, so that they may be able to enter, with good faith, into honourable competition with the joiner for the leading position, without fear of the result, even should they do no more than advance their present position with regard to the higher grades of their own work, so that it may be developed to the fullest extent of which it is capable. Then may I say my pen has not been used in vain.

To you, Sir, many thanks are due for the cheerful readiness with which you have opened your columns to the numerous correspondents who have contributed to this discussion, initiated by your humble servant in the fullest confidence, knowing that though my pen is feeble my cause is strong.

A Bricklayer Clerk of Works.

NEW CORN EXCHANGE, CAMBRIDGE.

The new Corn Exchange, which has been erected at the back of the Town Hall, in Wheeler-street, Cambridge, is to be opened on the 6th prox. The new Exchange is one of the largest of its kind in the country, the main hall being 163 ft. by 55 ft., and the transept 48 ft. by 30 ft. This form of plan was necessary from the awkward shape of the site. The building is in the Venetian-Gothic style, and is constructed with Cambridge bricks, relieved by red bricks from Woolpit, blue-black bricks from Staffordshire, terra-cotta from Stamford, and stone. The walls internally are fairly worked and pointed, the same as externally, so as to avoid plastering. The roof is in one span, formed by nine wrought-iron semicircular ribs. Upon these rest a lofty timber lantern. No slating has been put upon the roof, which has been covered with transparent sheet glass. The floor is entirely of wood, and provision has been made for heating the building by hot-water pipes. The chief entrance is in Wheeler-street, under a large archway and through a short entrance-hall. As the building may be used for public gatherings, all the doors are arranged to open outwards. The front portion of the building has been carried up much higher than was originally contemplated, for the purpose of providing an extra committee-room for the use of the Town Council, and above that is a complete residence for the custodian of the building. The architect is Mr. R. Reynolds Rowe, Cambridge; and the contractor, Mr. Elworthy, of Upwell.

GLASGOW INSTITUTE OF ARCHITECTS.

At the annual general meeting of this Institute, Mr. John Baird, I.A., the president, in the chair, a committee was appointed to consider and report upon a suitable memorial of Mr. Thomson.

Mr. Honeyman called attention to the announcement recently made by the Lord Dean of Guild to the effect that, in future, his court would undertake the supervision of new buildings. He quite agreed with the dean as to the disgraceful and, in fact, dangerous character of buildings being erected in Glasgow and its suburbs; but he strongly deprecated the assumption of increased powers by the Dean of Guild Court, which, as at present constituted, was utterly incompetent to deal with this undeniable evil. He thought it was high time that Glasgow had the benefit of a well-devised Building Act, and he gave notice of the following motion for next meeting, viz.:—"That a committee be appointed to consider the matter, and the best means of securing the co-operation of all parties interested." A meeting of the council was held immediately after the general meeting, when the following office-bearers were elected, viz.:—President, Mr. John Baird, 112, West Regent-street; Vice-President, Mr. Campbell Douglas, 266, St. Vincent-street; Treasurer, Mr. James Sellers, jun.; Secretary, Mr. William MacLean, 157, St. Vincent-street; auditor, Mr. James Salmon.

WORKMEN'S HALLS AND COLLIERS' HOMES.

The happy idea of transforming, where practicable, public-houses into "British workmen's" and kindred institutions has been attended with cheering results in the North of England. One of the most recent installations is that at Murton Colliery.

The Murton Hall is of the Norman style of architecture, and is 75 ft. by 40 ft., and the hall it contains is 56 ft. by 40 ft. A gallery is erected at the east end, with a platform at the opposite extremity. It contains committee-rooms, library, and reading-rooms. The cost of the building is but 1,300*l.*; but the proprietor of the colliery generously gave the stone and lead, all the materials, as well as added 50*l.* to the men's collection. The men, too, gave a helping hand. Mr. George Phalpas furnished the designs. This is not so bad for a little colliery, and which has opened its hall free from debt, and contrasts very favourably with workmen's clubs in London, that are indebted to wealthy individuals for their places of meeting.

At the opening of the Murton Hall, 900 sat down to tea, and at the meeting following, the speakers,—pitmen,—contrasted their condition with former times, and remarked, that though the working classes of this country had made great progress, there was a deal of lost time to make up. In olden times, if a man lost his work, or if he left his parish, unless he had a licence from the king, it was a crime, and it was no trifling matter to be a working man in those days. The working-classes need not, however, thank any one but themselves for the alteration made. If they turned round and saw the fine houses now being built for the miners of Durham, and contrasted them with the old, horrible hovels, where the boys got out at the top instead of the door, they would note the progress that had been made. This was, however, only a bill at maturity, and nothing else, and sanitary reformers would not stop there.

We might suppose from the above that the filthy and disgraceful hovels of the North are about giving place to what pitmen term "fine houses." A visit, some weeks since, however, to some of these "fine houses" did not afford any reason to endorse the colliers' praise, further than that the furniture in some must have cost more than the "fine house" that covered it. The still great evils are bad drainage, want of space, water, and decent closet accommodation. Fevers are bound to be to hand.

MAHOGANY IN JAMAICA.

The gradual destruction of the mahogany forests in Jamaica has been a loss both to that island in particular and the world at large. The mahogany grown there is naturally of a superior quality, and the ill-advised demolition of the trees, without making any provision for future wants,—a policy which has unfortunately been prevalent everywhere,—has deprived the trade of a good supply of wood, and the colony of a handsome revenue. The Government of the island are now taking up the question of restoring the forests; and though it will, of course, be many years before any benefit will be derived from the measure, it is a very wise one. In 1753 more than 500,000 ft. of mahogany were exported from the island. The export at the present time is very small.

WILLESDEN.

The first quarterly report of the medical officer of the new sanitary district of Willesden, now scarcely a year old, illustrates the neglected state of a fast-increasing suburb of London, in parts only about two miles from the Marble Arch. Being outside the metropolitan area, it has been allowed to grow up, as it were, of its own accord,—hence its unsanitary condition. The new local board are doubtless doing their best to remedy the defects, but it is always some time before a new board can get into working order, and therefore they are still, we believe, without any legal building regulations. It is much to be regretted that steps are not taken to obtain an Act of Parliament, applicable to the whole kingdom, to regulate the proper construction of houses for securing stability, the prevention of fires, and the purposes of health generally. Such an Act, so far as fires are concerned, was, we believe, recommended by a Committee of the House of Commons in 1868, appointed to consider the means of preventing fires, and, as it seems to us, would be most useful in the extended form above suggested. The present permissive system of local regulations appears wanting in uniformity and completeness to make it work satisfactorily.

ORGANS IN CHURCHES.

ST. MARY'S WOOLNOTH, CITY.

Sir,—I am much obliged to your correspondent, H. H. Statham, for his valuable remarks on the position of church organs, and the detestable practice of placing such noble instruments in any hole or corner, instead of making them an architectural feature in the church.

In reference to the removal of organs, and their rebuilding, especially in reference to St. Mary's Woolnoth, and St. Paul's Cathedral, or any instrument after being built some years, he states, that its removal from a gallery or loft to the floor is not necessarily prejudicial to its power and tone. I must strongly dissent from such a doctrine. In reference to the case in point, St. Paul's Cathedral, I think he is not well acquainted with the choir of that cathedral. He says in his able remarks, the deterioration of effect or sound was not the result of removal to a lower level, but of the confined situation. Such was not the fact. The confined situation was nowhere. Oceans of space existed in all reason in Wren's majestic interior. It was erected under one of the lofty arches on the north side of the choir, on the marble floor. Any one acquainted with the spot knows what extent of space was on each side of it—some 70 ft. one side, and 40 ft. the other. But it lacked one essential condition, namely, it had no space under it. It was built upon the marble floor. If a low position was not detrimental to its properties and tone, but rather the contrary, as, says your correspondent, it derives increased power from its proximity to the floor, how was it that neither music nor tone could be got out of it? It was taken down and again built in the same position, and the most experienced organist consulted; but all to no purpose. It was no more its former self, and a third time it was taken to pieces and rebuilt, where it now stands out in such bold relief.

I will state one more instance, as a case in point, to prove my assertion. The Temple Church some years ago, as your readers know, was restored. The organ, instead of its being built on the floor-level of the nave, Mr. Hopkins very wisely raised the floor-level of the organ-chamber some considerable number of feet above the level of the floor of the nave, and consequently there exists considerable space underneath the instrument.

Finally, I thank you, Sir, and your correspondent. You have before now done good service to the church and the profession by denouncing the use of those abominations, confined organ-chambers,—burying the noble instruments out of sight. In the case of St. Mary's Woolnoth no convenient space exists on the ground floor of the said church. It is a square building, with no projection. To place it so would be to take up half the accommodation of the floor-surface of the church. No better position can be found than the west gallery, which ought, with the north and south, to remain as Hawksmoor left them.

An Architect.

Banks.—A temporary bank is being fitted up at Ripley by Mr. Geo. R. Isborn, architect, for Messrs. Samuel Smith & Co., for whom he is also erecting banking premises at Derby and Nottingham.

FILTERS.

With reference to the Brighton Sanitary Exhibition, the Silicated Carbon Filter Co. claim that they exhibited by far the largest stand in the building, devoted exclusively to filters, and that their filters are constructed upon a principle totally different from all others exhibited, being the only kind adapted for the removal of lead from drinking-water. They add:—"As you have so frequently referred to the poisonous qualities of water impregnated with lead, we are sure you will give due credit to an apparatus which will remove it by the mere process of filtration."

CONCRETE ROOFS.

Sir,—I read the notes of your remarks at Brighton with much interest. I beg to call your attention to concrete roofs. Slates have risen these last four years to a high price, which has induced me to try some experiments how thin and light, combined with strength and soundness, it was possible to form Portland cement roofs. This I have done, to the great astonishment of the district surveyor of Camberwell. You, sir, will well remember the strong controversy I had with that gentleman some years ago. He is of very different opinion now. It has been most singular that I have built the greatest masterpieces of concrete in the kingdom in his district. I may mention that the roofs are groined. The cost is not more than one-half of a timber and slated roof, with the advantage of a lofty room and a fireproof roof, and I venture to say everlasting duration. J. Tall.

BUILDER'S CHARGE FOR TENDERING.

At the Lynn County Court, on the 20th inst. (before Mr. E. P. Price, Q.C., judge), Mr. Beloe appeared for the defendant in the case of John William Beeton, builder, Hunstanton *v.* The Rev. George Seaman, Primitive Methodist minister, Lynn, which was brought to recover the sum of 1*l.* 1s. "for money paid and for work done." Mr. Beeton stated that he was one of a number of other tradesmen who tendered for the erection of a schoolroom for the use of the Primitive Methodists. His was the lowest tender; but, instead of its being accepted, it was handed to the next highest tenderer, who was told that if he took the work at his (plaintiff's) figure he should have the contract.

His Honour.—Was it given out that the lowest tender was to be accepted?

Mr. Beloe.—Quite the contrary.

His Honour.—Then the plaintiff has no cause of action.

Mr. Beloe.—Not the least.

His Honour asked the plaintiff what he meant by stating on the summons that his claim was "for money paid and work done"?

Mr. Beeton replied that he had incurred expenses in coming sixteen miles to make the necessary inquiries before tendering. He made no complaint that his tender was not accepted; but seeing that the Methodists had profited to the extent of between 30*l.* and 40*l.* in consequence of the successful contractor having the benefit of looking over his tender, he thought it only fair that he should be paid the guinea he now claimed.

Mr. Beloe said that not only were the facts not as represented by the plaintiff, but they were the very reverse, and it was only by allowing for a quantity of old materials that the plaintiff's became the lowest tender.

His Honour gave judgment for the defendant, with costs.

LIVERPOOL GIRLS' COLLEGE.

AN HONOURABLE SECRETARY.

Sir,—A few months ago there was an advertisement for a competition for a new Girls' College at Liverpool.

I have been trying my very best from the first meeting to persuade the building committee to have a professional adviser, but they will neither consent to this nor to be bound by any of the rules for judgment of competitions agreed upon at the conference of architects held at the Royal Institute of Architects in London.

I have in consequence resigned my position as one of the secretaries, and shall be very much obliged if you will let me say, that I deeply regret having told some intending competitors who wrote to me that I fully expected that a professional assessor would be appointed. They will forgive me when I assure them that it has not been my fault. It is the first competition on which I have been engaged, and I shall be very glad if it is the last.

T. B. Banner.

Dungannon Waterworks and Drainage. A Committee was appointed by the Dungannon Board of Guardians in December last, to consider the proper steps to be taken (in accordance with the Public Health Act), with regard to the supply of water, and the drainage of the town of Dungannon, both of which are at present defective. The plans and specifications of Mr. J. L. D. Meares, C.E., for water supply, and of Mr. J. A. Dickinson, county surveyor, south division, county Tyrone, for drainage, were forwarded to the Local Government Board, who approved them, subject to some slight amendments. The water is to be brought from Altmore, near the village of Cappagh, about seven or eight miles from Dungannon.

SCHOOL BOARD SCHOOLS.

Brighton.—At the meeting of the Brighton School Board on the 12th inst., tenders for the erection of the Pelham-street schools were submitted. That of Mr. John Bruton, amounting to 6,320*l.*, was accepted.

Bromsgrove.—At the meeting of the Bromsgrove School Board on the 13th inst., the amended plans of Mr. F. J. Yates for schools at Dodford were presented, and Mr. J. Cotton attended with his plans for Lickey End Schools. After the plans were discussed, it was ordered that tracings of the same be made, to be sent in with the specifications, &c., to the Education Department.

Newtyle.—On the 18th inst. new Board schools were opened at Newtyle, N.B. The accommodation comprises an infants' school, 40 ft. by 18 ft., with bench and desk accommodation for eighty scholars, and a mixed schoolroom, 60 ft. by 24 ft., with desk accommodation for 120 scholars. In connexion with each department are class-rooms, lavatories, and cloak-rooms. The benches are of pitch-pine, supported on cast-iron standards. The ceilings are 15 ft. from the floor, and each room contains more than double the quantity of space required by the Government regulations. Mr. John Davidson, of Belmont Castle, was the architect.

Wick.—At a meeting of the parish School Board, Wick, held on the 15th inst., the tenders for the West Bank school and teacher's house were opened. There were four competing masons, five joiners, two plasterers, five painters, and two plumbers. The lowest offers were:—Mason's work, Messrs. John & James Brims, Wick, 1,117*l.*; joiner's work, Mr. William Miller, Pulteneytown, 633*l.*; plasterer's work, Messrs. W. & James Smith, Pulteneytown, 123*l.*; painter's work, Mr. Donald Bain, Pulteneytown, 27*l.* 10s.; and plumber's work, Mr. Benjamin Dunbar, Pulteneytown, 130*l.*

South Milford.—The South Milford School Board has appointed Mr. W. Bakewell, of Leeds, as its architect, and selected his design out of five which were submitted for new schools and master's house.

Peterhead.—At a meeting of the Peterhead Parish School Board, on the 13th inst., the following tenders for the erection of additional school buildings at Boddam, being the lowest, were accepted:—Mason's work, 875*l.*, Wm. M'Donald; carpenter's work, 590*l.*, Wm. Barclay; plasterer's work, 90*l.* 10s. 5d., J. Gunn & Co.; slater's work, 117*l.* 7s., Wm. Simpson; and plumber's work, 70*l.* 10s., John Ferguson.

Books Received.

An Old Story: a Temperance Tale in Verse. By S. C. Hall, F.S.A. London: Virtue & Co., Ivy-lane.

Mr. Carter Hall is earnest in his efforts to lessen the evils of intemperance, and follows up "The Trial of Sir Jasper" with another book of wider scope and greater power. In this he has struck a good blow in a good fight. The poem is hung upon a well-known fable:—

> "The Devil bought a soul: so legends tell:
> The owner having nothing else to sell.
> The terms were easy; one of matters three
> He bound himself to do, and do it well.
> It *was* well done on his part: we shall see!"

The man is to do one of three things: to burn his father's house, or to kill his mother, or to get drunk. Of course he elects to get drunk, and, when he is so, he commits the other two sins. The author seeks to deal with every phase of the vice, and gives versified anecdotes in illustration; the main incident being a very common one in the history of temperance work,—a meeting of reclaimed drunkards, where each,—men and women,—relates his or her experience; contrasting their present with their past; their homes as they were and are.

To illustrate his verse he gives a most remarkable set of engravings from drawings by Miss Elizabeth Thompson, Birket Foster, James Sant, R.A., Marcus Stone, P. R. Morris, Erskine Nicol, A.R.A., N. Chevalier, L. J. Pott, Thomas Faed, R.A., E. Sherard Kennedy, Sir Noel Paton, R.S.A., Cave Thomas, M. Montbard, R. Lehmann, W. Macduff, John Tenniel, W. C. T. Dobson, R.A., W. Hemsley, Fred Pasmore, G. A. Storey, Harrison Weir, George Cruikshank, Alma Tadema, Gustave Doré, and J. E. Millais, R.A. The drawings have been engraved by J. D. Cooper, Dalziel Brothers, Nicolls Brothers, Butterworth and Heath, W. Ballingall, J. C. Griffiths, C. M. Grey, J. D. Watson, and M. Laurie. The page headings, which are remarkably clever, are designed by Mr. W. J. Allen. An engraving faces every leaf, and every one of the fifty-one pages, of which the poem consists, contains a prose note explanatory of the working of the vice,—as described by judges, doctors, gaolers, coroners; in reports from workhouses, asylums, and so forth.

The story which these notes tell must be astounding to those who have not already probed the depth of the cancer-vice which afflicts the country, and should have much effect. We transplant one suggestive episode from the poem:—

> "An old man rose: I do not name his name,
> Nor do I tell my readers whence he came.
> This was his tale:—A painter drew a child,
> And called the picture 'Innocence': a grace
> It was: the soul was pure and undefiled:
> And, therefore, lovely were the form and face.
> At his dear mother's knee, in earliest youth,
> He knelt and pray'd, in simple love and truth.
>
> After long years had pass'd, the painter tried
> A different theme—to picture Guilt—and found
> His model in the jail: one deeply dyed
> In evil thoughts and acts: low on the ground
> He lay, a mortal image of Despair,
> Nor love, nor faith, nor hope, existed there.
> If you count life by years, yet in his prime:
> But he had lived a century of crime.
>
> At length some faded clue of memory brought
> A ray of past, yet not forgotten, thought;
> 'Surely,' he said, 'those features I must know:'
> Yes, 'twas the boy he painted long ago.
> From the close scrutiny he did not shrink:
> That man of sin—for whom a Saviour died:
> 'What brought you to this pass?' he ask'd, and sigh'd.
> The answer was one word—that word was 'Drink.'"

Many of the cuts are admirable, but none excel in frightful power the drawing of Sir Noel Paton to illustrate

> "For he's a jolly good fellow,
> Which nobody can deny!"

A half-draped figure of death, with cap and bells, a pipe in one hand, a glass in the other, dice and cards on the table, and the whole surrounded by the smoke and flames from a blazing punch-bowl.

The book can scarcely fail to produce a considerable effect, and we earnestly wish it a large circulation. Mr. Hall says at the close:—

> "This is the moral,—solemn, awful, true,—
> The drunkard never knows what he may do!"

We would have that last line, in clear, bold letters, hung up in every one of the new Board Schools, and in many places besides:—

> "The Drunkard never knows what he may do!"

Having looked through "An Old Story" a second time, after writing the above, we record our deliberate opinion that it is the most powerful weapon that has yet been forged for the armoury of those who would fight against the dire evils of intemperance.

Miscellanea.

The Sheffield School Board and its Architect.—At a meeting of the Sheffield School Board, on the 14th inst., it was resolved that as fourteen out of the sixteen schools originally contemplated by the Board had been erected, a new agreement should be entered into with Mr. Innocent, the architect, by which he should receive 50*l.* per annum for his duties as architect to the Board, and a commission of 5 per cent. for certain other work. "Spectator in Hallamshire," writing in the *Sheffield Independent*, says: "I am not surprised that the School Board sought to amend its contract with Mr. Innocent, the architect, so far as his salary was concerned. When they engaged him at 100*l.* a year, there could have been little idea of the amount of commission that would fall into his hand for professional services in erecting the new schools. Most architects would have deemed the appointment a good one without any salary at all. But when the Board went further, and threw all future work open to competition, while, at the same time, the members expressed in the most ample terms their satisfaction with the manner in which Mr. Innocent had performed the duties of his office, they seemed to me to be inconsistent. Was it fair to a good servant to act thus? I suspect there was some design to secure a plum or two for other people."

Terra-Cotta.—An extensive deposit of terra-cotta clay, intersected with pipe clay, has just been discovered at Yatton, near Bristol. This discovery will probably lead to the establishment of a new industry in Somersetshire, similar to those which at present exist in Devonshire.

Watford Public Library.—The annual meeting of the Watford Public Library and School of Science and Art was held in the Agricultural Hall on the 13th inst. The chair was taken by Mr. W. H. Smith, M.P. The chairman, in the course of his address, said:—There were times when we were told that the English nation was a nation incapable of the art of design, almost incapable of originality; that when our manufacturers sought to produce something which should be attractive to the eye, which should please a cultivated taste, they were generally,—almost always,—compelled to go to France or Italy to find an artist who could give expression to those ideas and forms which would secure not only a ready sale for the articles of manufacture, but which please the eye of those who purchased them. We are all glad to know that that day is passing away, and that those who are instructed and those who teach in the art schools, the designers and the artists who are being turned out from those schools in different parts of the country, are rivalling in skill, taste, chasteness of design, and purity of expression, the most carefully-educated of the Continental designers and artists. Those ladies and gentlemen who have for themselves acquired and perfected a new industry, a new capacity for earning money, have a new claim upon the respect and confidence of their fellow-creatures. It is no light matter. I conceive, and venture to impress upon you, that a man is not doing his duty if he does not make the greatest use of those powers which nature and God have given to him. A considerable number of prizes were distributed. Dr. Puckett is the head master of the school of art.

The Widening of Chancery-lane.—The works in connexion with the widening of the Holborn end of Chancery-lane have been commenced. The materials of three houses in Chancery-lane, and six other houses and shops in Holborn, have been sold, by order of the trustees of St. Bartholomew's Hospital, to whom the property belongs. We mentioned some time ago the price obtained for the land. The ground upon which the three houses in Chancery-lane stands, extending from the boundary of the Chancery Registry offices to the corner of Holborn, about 18 ft. in depth, will be thrown into the street, thus nearly doubling the width of the roadway at this point. The line of frontage of the widened thoroughfare will be carried in a westerly direction from the Chancery Registry buildings to its junction with Holborn, and negotiations are in progress for setting back the dead wall immediately north of these buildings.

New Post Offices for Warrington and Shrewsbury.—Her Majesty's Office of Works has invited tenders from Messrs. Gibson & Sons, and other local builders, for the erection of the post-office at Warrington. The old Butter-market on Pride-hill, Shrewsbury, has, during the past few weeks, been in course of demolition, the site having been purchased some time ago by the Government for the erection of a new post-office; and the execution of the work has been entrusted to Messrs. Bull & Son, of Southampton, who are at present carrying out several other contracts with the Government, including that for the erection of the Law Courts. Mr. James Williams, of Her Majesty's Office of Works, is the architect of both offices.

The Drainage of Maidstone.—Three weeks ago (p. 917) we announced that the Maidstone Local Board had accepted the plans of Mr. Lewis Angell for the drainage of the town, the estimated cost being 30,000*l.* At a meeting of the Board on the 20th inst. a letter was read from Mr. Buckham, formerly borough surveyor, claiming the invention of the drainage plans accepted from Mr. Angell, and asking for some compensation. Mr. Buckham pointed out that in 1867 he submitted a scheme to the Board, the originality of which consisted in the proposal to construct an intercepting sewer, and conduct the sewage below Allington Lock. With very slight modifications, this plan had been adopted by Mr. Angell. The letter was referred to the Drainage Committee.

Death of Mr. James Danby.—Mr. James Francis Danby died of apoplexy on the 21st inst. He was the son of the late Francis Danby, A.R.A., and was born in Bristol in 1816. He was a constant exhibitor at the Academy, and at the Society of British Artists, of which latter body he had recently been elected a member.

Crown Lands.—The report of the Commissioners of her Majesty's Woods, Forests, and Land Revenues tells us that the total amount of revenue for the year ending March, 1875, was 327,278*l.*, viz.:—

Farms and lands let for farming purposes (20,093 acres)	£114,699	0	6
500 houses and other buildings	55,255	12	1
Land let for building purposes, including ground-rents of 4,574 houses, built by lessees	123,442	16	8
Royalties of mines, minerals, &c.	12,843	9	3
Tolls	10,317	1	6
Manors (quit-rents, &c.)	3,081	2	10
Plantations, &c.	2,634	5	7

The above is exclusive of 14,000 acres, comprising the Windsor Castle domain.

Water Rates in the Metropolis.—We recently alluded to the somewhat "sharp practice" of some, if not all, of the metropolitan water companies, in taking advantage of a manifest oversight in recent legislation. This oversight is likely to be remedied before long, for the Metropolitan Board of Works has taken up the question. At a recent meeting of that body, it was resolved, on the motion of Mr. Roche, "That it be referred to the Works and General Purposes Committee to consider and report upon the advisability of introducing into Parliament a Bill for amending the Acts relating to the supply of water to the metropolis." The Corporation of London will co-operate with the Metropolitan Board of Works in this matter.

The Slate Trade of North Wales.—The slate trade of North Wales is at the present time very flourishing. The demand appears to be greatly in excess of the supply, and notwithstanding the late rise in price, orders are very pressing. Notice has been given by all the quarry proprietors, both in Merionethshire and Carnarvonshire, of a further rise for November 1 of about 10 per cent., making a total rise within the last three years of about 33½ per cent. on some sizes, and 50 per cent. on others. Best slates, 20 by 10, which were formerly quoted at 135s., are now 180s., and 16 by 8, and 14 by 10, which were formerly 63s., are now in great demand at the advanced tariff price of 100s.

"Herne Bay Brick Fields Company."—This company, advertised in our last issue, has been formed for the purpose of acquiring and working a brickfield at Herne Bay, Kent, consisting of about sixty-three acres. The lease is for the term of twenty-one years, at a rental and royalty, and power is given to extend the term to ninety-nine years. Herne Bay is favourably situated for any demand from several important towns, being only seventeen miles from Margate, with its rising neighbour Westgate-on-Sea, twenty-two miles from Ramsgate, and ten miles from Faversham, whilst London is only fifty-five miles distant.

A Disputed Contract.—At the meeting of the St. Pancras Board of Guardians on the 21st inst., Mr. Bridgman, the architect, and Mr. Aitchison, the contractor for the new buildings, attended, and it appeared from the statements made by them that the contractor had made a mistake in his tender of 200*l.*, which the architect declined to sanction, and the contractor refused to give up possession of the building until the Board consented to pay the 200*l.*, and alleged that the keys of the building and possession were given up without his sanction. The matter consequently remains in abeyance.

Connell's Sure Water-Waste Preventer.—In the abstract we have no great love for water-waste preventers; but, under many circumstances now they must be used, and the arrangement patented by Mr. Connell seems a very ingenious and effective one. The principle of the article is explained in our advertising columns. It is simple in construction and is adjusted to run about two gallons, which quantity it delivers in two distinct operations each time the closet is used, the first when the closet-handle is pulled up,—this flushes and cleanses the pan; the second, when the handle is put down,—this flushes and seals the pan.

A Marine Residence in Ireland.—Classybawn House, Mullaghmore, within fifteen miles of Sligo, has just been completed, as a marine residence for the Right Hon. W. F. Cowper-Temple. The building, which is in the Domestic Gothic style, occupies a picturesque site. The masonry throughout is pitch-faced ashlar, the local stone being used, the dressings being from the Mountcharles quarries. Mr. J. R. Carroll, of Dublin, is the architect; Mr. Hollwey acted as clerk of the works; and Mr. Morris was the builder.

"Back-Passages" at Middlesbrough.—The Middlesbrough Town Council seems to have been for some time past contending with builders and property-owners as to the width to be observed for the back-passages or narrow lanes in the rear of the houses. The Town Council insists on these passages being 12 ft. wide; the building and land jobbing interests are agitating for 9 ft., and are doing their utmost to elevate the controversy into the region of an election test on the 1st of November. A local firm has sent in plans of houses which show neither back-passages nor back-doors. It is stated that there is nothing in the bye-laws to enforce a back-passage.

Birmingham Improvements.—The Birmingham Town Council have adopted the concluding portion of the great scheme of municipal extension by the approval of the report of the Water Committee, setting forth the terms arranged with the local Waterworks Company for the transfer of their business to the Corporation. The terms of purchase include a perpetual annuity of 541,491*l.*, a sum of about 3,000*l.* for winding-up purposes, and such a sum in cash as shall be equal to the dividend payable by the company for the current half-year. These payments are secured upon the waterworks and the borough rates.

Proposed Baths for Lowestoft.—On the 11th inst. a meeeting was held at the Royal Hotel, Lowestoft, to take into consideration a project for the establishment of public baths, reading, billiard, and assembly rooms. Mr. J. L. Clemence produced the plans of the contemplated building. The site is proposed to be the corner piece of ground between the bridge and pier-gate. A skating rink is included in the arrangements. The cost of the works will be about 10,000*l.*, and nearly one-fifth of the capital was subscribed in the room.

Death of Sir Charles Wheatstone.—The death is announced of Sir Charles Wheatstone, whose name has been for half a century before the world as the discoverer of that portion of electric science which, by the practical aid of Sir William Fothergill Cooke, resulted in the invention of the electric telegraph, with all its manifold applications to the purposes of daily life. He died at Paris on the 19th inst., at the age of seventy-three. He was born in Gloucester in the year 1802, and educated for the trade of a maker of musical instruments.

St. Alban's School of Art.—The *conversazioni* given by the committee of the St. Alban's School of Science and Art, have met with a very considerable amount of success. In connexion with the *conversazioni* is a loan exhibition of works of art, &c., which forms the chief attraction, and it even exceeds all the anticipations that had been entertained for the success of the efforts of the committee in this direction. Hope is expressed that the time is coming when this town, like Watford, will have a public building and public library of its own.

The Herts County Surveyorship.—At the Herts Quarter Sessions, on the 21st inst., the County Finance Committee reported that they had resolved that, until the appointment of a county surveyor in the room of the late Mr. Thos. Smith, the duties of the office should continue to be performed by his son, Mr. Urban A. Smith, of Hertford, on whom those duties had for some long time past devolved. Reference was made to the able and efficient manner in which the late Mr. T. Smith had for a period of forty years fulfilled the duties of county surveyor.

Memorial to Bishop Terrott.—A mural tablet has just been erected in St. Paul's Episcopal Church, Edinburgh, in memory of the late Bishop Terrott. The tablet, which stands about 12 ft. in height, was designed by Mr. David Bryce, R.S.A., in a style harmonising with the Gothic architecture of the church; and has been executed by Mr. John Rhind, sculptor, in Sicilian marble. Resting on a corbelled base, it is flanked with shafts and surmounted with Gothic arching, which, as well as the base, is enriched with ornamental detail.

New Lunatic Asylum for Surrey.—The Asylums at Wandsworth and Brookwood being found insufficient to accommodate the continually increasing number of lunatics in the county of Surrey, it was resolved, at the Surrey Quarter Sessions last week, to build a third asylum, and a committee was empowered to purchase a site at a cost not exceeding 12,000*l.*

The Strike of Plasterers at Dundee.—Three weeks ago the Dundee plasterers struck work in consequence of the masters refusing to abide by the rule of the society which enacts that only two apprentices and one message-boy shall be allowed to each shop. On the 23rd inst. the employers intimated their intention to stand by the society's rules. The men said the strike had cost the society 120*l.*, and that employment could not be resumed unless part of that outlay was refunded. The employers have agreed to give 55*l.*

Clock and Watch Makers' Asylum, Southgate.—On the 23rd inst., two memorial houses,—the "Workmen's Memorial House," and the "F. A. Taylor Memorial House," which have been added to the Clock and Watch Makers' Asylum, near Southgate, were opened. The "workmen's house" was built by the aid of shilling subscriptions from the journeymen watch and clock makers of Clerkenwell and elsewhere. Mr. Henry Carpenter, of Moorgate-street, was the architect, and Mr. Ely, of Colney Hatch, the builder.

Southwark Bridge.—At the meeting of the Court of Common Council, on the 21st inst., it was resolved, on the motion of Mr. G. J. Cockerell,—"That as the relief to the increasing traffic between the north and the south of the river Thames contemplated by the Corporation when it purchased and freed from toll Southwark Bridge has failed to be accomplished, it be referred to the Bridge House Estates Committee to obtain designs and estimates for improving the gradients of the bridge, and to report to the court forthwith."

Proposed Restoration of a Ruined Church.—It is proposed to restore the ruins of Steetly Church, near Worksop, in order to supply the church necessities of the neighbourhood. A service in furtherance of the proposal was held in the midst of the ruins on the 17th inst., and the trustees of the late Duke of Newcastle, in whom the property is vested, have intimated their approval, and promised their aid.

New Street in Shoreditch.—The Metropolitan Board of Works has agreed to contribute one-half the net cost (55,800*l.*) of the construction of a new street from Worship-street, Shoreditch, to Sun-street, Bishopsgate. This new street will greatly obviate the inconvenience caused by the permanent closing of Sun-street by the erection of the new terminus of the Great Eastern Railway.

A Proposed Recreation Ground for Chatham.—At a meeting of the Chatham Local Board of Health, on the 22nd inst., it was resolved to accept the offer of Colonel Stokes, C.B., Commanding Royal Engineer, to let a quantity of land, near the Martello Tower, Hamond-hill, for the purpose of a public recreation ground. The Local Board is to pay a rent of 5*l.* per acre per annum to the War Office.

Proposed Baths for the South Side of Glasgow.—Last week, a meeting of gentlemen interested in the formation of a company for the purpose of erecting swimming, Turkish, and other baths on the south side of Glasgow, was held in the Religious Institution Rooms. Councillor Wm. Wilson presided, and the meeting was well attended. Before the meeting separated no fewer than 400 shares were taken up by thirty-three subscribers.

Death of the Clerk of Works at Chester Cathedral.—The *Chester Chronicle* announces the death of Mr. James Frater, the clerk of the works at Chester Cathedral. For the past eighteen months he had been in bad health, and he died last week of congestion of the lungs. He had acted as clerk of the works under the direction of Sir Gilbert Scott for sixteen or seventeen years.

Trade Census in Germany.—The German Government has ordered a general census of trades, which is to show how many persons in every parish follow each several calling. The results will be compiled in the shape of tables for the various States and the entire empire. Preparations are now in progress for the census, which is to be taken on December 1st.

Proposed New Municipal Buildings for Nottingham.—The Nottingham Town Council has decided to advertise for plans and designs of proposed new town-hall, free library, sessions court, police court, judges' rooms, &c. The site selected is at the corner of Broad-street and St. John's-street.

Charing-cross Hotel.—It is rumoured that the already gigantic Charing-cross Hotel is to be extended, if Parliamentary powers can be obtained next session. The company is prepared to spend 20,000*l.* on the building of additional premises, and the services of a surveyor have already been engaged in "looking over" the property adjoining the hotel in Villiers-street.

Knightsbridge Barracks.—An evening paper has the following:—The question of removing, or rather rebuilding, Knightsbridge Barracks has been settled apparently. We hear that on Monday a considerable part of the barracks began to fall in. Some of the troops had immediately to be removed.

Proposed New Recreation Ground for Southampton.—The Southampton Town Council have decided to open negotiations with the authorities of Queen's College, Oxford, for the purchase of Porter's Meadow, near the Platform, in order to lay it out as a place for public recreation.

The Disney Professorship of Archæology, Cambridge.—The Rev. Churchill Babington, M.A., of St. John's College, Cambridge, was, on the 22nd inst., re-elected for five years to the Disney Professorship of Archæology.

Sudden Death of a Retired Builder.—Mr. William Parmenter, who for many years carried on business at Bocking, as a builder, died very suddenly on the 16th inst., in his seventy-fourth year.

Accidents at the New Law Courts.—Four men are now lying in King's College Hospital suffering from injuries sustained at the works of the New Law Courts, near Temple Bar.

TENDERS

For additions, &c., St. Mary's Priory, Stamford-hill, Mr. C. G. Wray, architect. Quantities supplied by Messrs. Linsdell & Giffard:—

Stamp & Bowtle, accepted.

For alterations and additions to St. Ann's Church, South Lambeth-road. Mr. R. Parkinson, architect. Mr. F. T. Mullett, surveyor:—

Jackson & Shaw	£3,913 0 0
Adamson & Son	3,590 0 0
Small	3,559 0 0
Morter	3,520 0 0
Fish	3,419 0 0
Hill, Higgs, & Hill	3,400 0 0
Deards	3,364 0 0

For the erection of Turkish, plunge, and other baths, at Barrow-in-Furness, for Mr. Daniel Routledge. Mr. Howard Evans, architect. Quantities supplied:—

Contract No. 1.

Ward	£1,320 0 0
Saddler Wood, & Andrews	1,289 10 0
Kelsall	1,240 0 0
Henderson	1,185 0 0
Gilchrist	1,153 0 0
Gradwell (accepted)	1,150 10 0

For the erection of saw-mills, stables, &c., for Messrs. Eldridge & Youngman, at Glengall-road, Old Kent-road. Mr. Charles Bell, architect:—

Wheeler	£1,718 18 0
W. & F. Croaker	1,679 0 0
Staines	1,674 0 0
Baguley	1,648 0 0
Nightingale	1,643 0 0
Greenwood & Son	1,600 0 0
Shepherd	1,593 0 0
Stephenson	1,515 0 0
Ball	1,506 0 0
Tarrant & Son	1,485 0 0

For the erection of new dining-halls, kitchen, bakery, &c., and alterations to laundry, including machinery and cooking apparatus, &c., at St. Pancras workhouse, for the Guardians of the Poor of St. Pancras. Mr. H. H. Bridgman, architect. Quantities supplied by Mr. W. Barnett and Messrs. Brown, Baker, & Furnis:—

Staines & Son	£13,580 0 0
Tarrant	13,203 0 0
Toms	12,975 0 0
Wilson, Brothers	12,933 0 0
Niblett	12,869 0 0
Oliver	12,760 0 0
Merritt & Ashby	12,590 0 0
Crockett	12,440 0 0
Elkington	12,440 0 0
Aitchison & Walker	12,393 0 0
Hunt	12,365 0 0
Moreland & Nixon	11,870 0 0
Bracher & Son	11,750 0 0
Manley & Rogers (accepted)	11,312 0 0

For Hebrew Library in St. James's-place, Aldgate. Messrs. N. S. Joseph & Pearson, architects. Quantities by Mr. Green:—

Rivett	£2,334 0 0
Killby	2,308 0 0
Bangs & Co.	2,234 0 0
Newman & Mann	2,243 0 0
Merritt & Ashby	2,240 0 0
Elkington	2,234 0 0
Lidstone	2,220 0 0
Brass	2,185 0 0
Langmead & Way	2,109 0 0
Browne & Robinson	2,090 0 0
Smith	1,977 0 0

For Portsmouth Lunatic Asylum. Mr. George Rake, architect. Quantities supplied by Messrs. H. P. Foster & C. M. Houghton:—

Langdon *	£101,200 0 0
Martin	87,600 0 0
Colls & Son	84,345 0 0
Kirk & Randall	81,479 0 0
Conder	80,550 0 0
Langley	80,069 0 0
Downs	79,550 0 0
Roberts	76,959 0 0
Sibley	76,779 0 0
Burbidge	76,271 0 0
Bramble, Brothers	76,250 0 0
Evans	76,100 0 0
Light	75,990 0 0
Ward	75,130 0 0
Hayter	75,000 0 0
Hill, Higgs, & Hill	74,783 0 0
Barns	71,900 0 0
Cooper	70,989 0 0
Quick (accepted)	68,898 0 0

* Error in casting.

For a shooting box, at Eastley Wootton, New Forest, Hants, for Capt. A. P. Beaumont. Mr. J. Turk Lacey, architect. Quantities by Mr. C. R. Griffiths:—

Dashwood (accepted)	£2,442 0 0

For dwelling-house, offices, and stabling, at High-street, Sutton, for Mr. A. Adds. Mr. J. Turk Lacey, architect. Quantities by Mr. C. R. Griffiths:—

Aviss & Co.	£2,060 0 0
Messom	1,948 0 0
Sparrow	1,900 0 0
Coff	1,860 0 0
Keal	1,749 0 0
Potter	1,540 0 0

For stabling and garden-walling, at Eastley Wootton, New Forest, Hants, for Capt. A. P. Beaumont. Mr. J. Turk Lacey, architect:—

Dashwood (accepted)	£1,104 8 10

For the erection of St. Giles's new Infants' School, Waterloo-street, Camberwell. Mr. J. Turk Lacey, architect. Quantities by Mr. C. R. Griffiths:—

Revised Tenders.

Minard	£1,714 0 0
Maxwell	1,667 0 0
Goad	1,623 0 0
Thompson	1,570 0 0
Oliver	1,500 0 0
Hayworth	1,477 0 0
Pritchard (accepted)	1,398 0 0

For reconstructing 3 and 4, Agnes Villas, Bayswater-road. Messrs. Joseph & Pearson, architects:—

Hill, Higgs, & Hill	£11,685 0 0
Killby	11,497 0 0
Scrivener & White	11,268 0 0
Nightingale	11,223 0 0
Newman & Mann	11,185 0 0
Downs & Co.	10,812 0 0
Browne & Robinson	10,781 0 0
Coleman	9,792 5 0
Elkington	9,774 0 0

For constructing about 550 feet of 12-in. pipe sewer, &c., Dorville-gardens, Hammersmith, for Mr. F. Biers, jun. Mr. A. C. Bean, engineer. Quantities by Mr. Alfred J. Bean:—

Thompson & Son	£320 0 0
Keeble (accepted)	295 0 0

For the erection of a school for 1,104 children, on the site in Wolverley-street, Bethnal-green, for the School Board for London. Mr. R. R. Robson, architect. Quantities by Mr. W. H. Barber:—

Williams & Son	£11,637 0 0
Dove, Brothers	11,603 0 0
Scrivener & White	11,595 0 0
Lawrance	11,470 0 0
Stimpson & Co.	11,320 0 0
Hobson	11,226 0 0
Boyce	11,194 0 0
Ennor	11,094 0 0
Pritchard	11,009 0 0
Brass	11,033 0 0
Sheffield (accepted)	10,879 0 0

For the erection of middle-class dwellings on the Crystal Palace-road estate, Peckham-rye, for the Temperance Artisans', Labourers', and General Dwellings Association, Limited:—

Newton (accepted)	£3,700 0 0

For finishings to one pair of semi-detached residences on the Mount Pleasant estate, Hastings. Messrs. Jeffrey & Skiller, architects:—

Eldridge	£1,555 10 0
Vidler	1,365 10 0
Russell	1,300 0 0
Harman	1,289 0 0
Womersley	1,281 11 6
Champion	1,268 14 0
Nowers	995 0 0

For alterations and additions to Rosaan House, Addison-road, Kensington, for Mr. John Lound. Mr. John Calder, architect. Quantities supplied by Mr. R. O. Harris:—

Merritt & Ashby	£3,145 0 0
Ashwell	3,105 0 0
Longmire & Burge	3,078 0 0
Curtis	3,000 0 0
Lascelles	2,999 0 0
Falkener	2,975 0 0
Colls & Son	2,965 0 0

For building the Rotherhithe Fire Brigade Station, for the Metropolitan Board of Works. Mr. George Vulliamy, architect:—

Shurmur (accepted)	£3,987 0 0

For alterations at The Crown, Hackney. Mr. E. Brown, architect:—

Stamp & Bowtle, accepted.

For house on Green Hill estate, Hampstead. Messrs. Spalding & Knight, architects. Quantities by Mr. G. Fleetwood:—

Dove, Brothers	£2,550	0	0
Downs & Co.	2,507	0	0
Burford	2,434	0	0
Roberts	2,415	0	0
Carter & Son	2,398	0	0
Lawrence	2,393	0	0
Bywaters	2,379	0	0
Boyce	2,344	0	0
Sharpington & Cole	2,297	0	0
Temple & Foster (accepted)	2,168	0	0

For the erection of a school, Rushmore-road, Clapton-park, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

Coleman	£8,575	0	0
Williams & Son	8,570	0	0
Oliver	8,499	0	0
Boyce	8,492	0	0
Grover	8,394	0	0
Newman & Mann	8,366	0	0
Ennor	8,348	0	0
Hobson	8,177	0	0
Wall, Brothers	7,989	0	0
Nightingale	7,983	0	0

For the erection of a school, Wellington-street, Hoxton, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. Nicholls:—

Boyce	£9,495	0	0
Williams & Son	9,495	0	0
Coleman	9,442	0	0
Newman & Mann	9,337	0	0
Hobson	9,339	0	0
Grover	9,267	0	0
Oliver	9,264	0	9
Ennor	9,127	0	0
Pritchard	9,045	0	0
Nightingale	8,873	0	0
Wall, Brothers	8,830	0	0

For first house at Roupell Park, for Mr. T. Kemp Welch. Mr. E. C. Robins, architect. Quantities by Mr. Austin:—

Salmon	£3,395	0	0
Taylor	3,250	0	0
Adamson	3,016	0	0
McLachlan	3,008	0	0
Lathey, Brothers	2,995	0	0
Pritchard	2,954	0	0
Kandler	2,950	0	0
Newman & Mann	2,928	0	0
Hill, Higgs, & Hill	2,916	0	0
Sharpington & Cole	2,766	0	0
Hobson	2,745	0	0
Garrett	2,703	0	0

For the erection of a building, No. 56, Old Broad-street, E.C., for Messrs. Macdonald & Hyde. Mr. E. A. Gruning, architect. Quantities supplied by Messrs. E. Biven & T. Nixon:—

Laird	£4,380	0	0
Lidstone & Son	4,228	0	0
Oliver	4,209	0	0
Ennor	4,111	0	0
Shurmur	3,780	0	0
Colls & Sons	3,730	0	0
Merritt & Ashby	3,597	0	0
Newman & Mann (accepted)	3,585	0	0

For finishing warehouses at London-wall, for Mr. Holland. Messrs. Curtis & Sons, architects:—

Ashby, Brothers	£5,934	0	0
Rivett	5,909	0	0
Tongue	5,830	0	0
Bracher	5,919	0	0
Sharpington & Cole	5,897	0	0
Foster	5,877	0	0
Greenwood	5,875	0	0
Cooke & Green	5,746	0	0
Browh	5,650	0	0
Carter	5,610	0	0
Bayes & Ramage	5,480	0	0
Merritt & Ashby	5,450	0	0
Crabb	5,290	0	0
Newman & Mann	5,282	0	0

For rebuilding the Mother Redcap, Camden-town, for Mr. J. O. Harris. Mr. H. H. Bridgman, architect. Quantities supplied by Mr. Walter Barnett and Mr. F. Thomson:—

Willson, Brothers	£6,165	0	0
Manley & Rogers	5,884	0	0
Kelly, Brothers	5,730	0	0
Hunt	5,674	0	0
Toms	5,585	0	0
Elkington	5,405	0	0
Crockett	5,353	0	0
Bracher & Son	5,297	0	0
Tarrant	5,292	0	0
Scrivener & White (accepted)	5,179	0	0
Aitchison & Walker	5,090	0	0

For offices, Deptford-green, for Messrs. Humphrys, Tennant, & Co. Mr. John Whichcord, architect. Quantities by Mr. W. Barrett:—

Macey	£1,530	0	0
Newman & Mann	1,516	0	0
Morter	1,431	0	0
Williams	1,377	0	0
Slade	1,300	0	0

For stabling, Redcross-square, Borough. Mr. E. B. Florence, architect. Quantities by Messrs. Batterbury & Huxley:—

Newman & Mann	£788	0	0
Downs	748	0	0
Cullum	742	0	0
Joslyn	738	0	0
Taylor	659	0	0

For additions to the Royal Normal College and Academy of Music for the Blind, at Upper Norwood. Mr. John Norton, architect. Quantities by Mr. S. J. Thacker:—

Braid, Jopling, & Co.	£7,071	0	0
Newman & Mann	6,961	0	0
Lawrence	6,812	0	0
Holland & Hannen	6,639	0	0

For alterations, additions, and repairs, to Baptist Chapel, Tottenham. Messrs. Charles G. Searle & Sons, architects. Quantities prepared by Mr. C. H. Searle:—

Newman & Mann	£1,609	0	0
Dove, Brothers	1,495	0	0
Linsell & Sons	1,400	0	0
Roberts	1,245	0	0

For alterations and additions to the Haberdashers' Arms, 114, Pitfield-street, Hoxton, for Mr. Berry. Messrs. Bird & Walters, architects. Quantities supplied:—

Ebbs & Son	£1,294	0	0
Nightingale	1,293	0	0
Newman & Mann	1,270	0	0
Lawrence	1,249	0	0
Williams	1,232	0	0
Anley	1,185	0	0
Ennor	1,092	0	0

TO CORRESPONDENTS.

"Light in London" (although advertised, we are compelled to postpone this article).—T. M.—H. G.—A. M.—J. P. R. T.—A. & C. H.—T. K. G.—J. T. L.—S. & R.—J. & P.—G. R. I. F. A. B.—M. A.—J. C. K.—R. L. B.—H. H.—W. W. Y.—T. M. R.—J. F.—S. & K.—H. R.—E. P.—J. T. S.—W. S.—E. E.—C.—W. C.—J. & S.—H. P. F.—P. S. (apply to an architect).—B. M. (apply to an architect; it is not our province to furnish designs for a reader's special purpose).—R. B. (under our mark).—W. G. B (next week).

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The Builder.

VOL. XXXIII. No. 1709. SATURDAY, NOVEMBER 6, 1875.

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Light in London.

WE now resume our estimate as to the aggregate cost of producing the imitation-sunlight with which the streets, the houses, and the shops of this Mammoth Metropolis are illumined every night after dusk.*

Light by day is so commonplace a commodity that few trouble their wits as to whence it comes, or what is the expenditure of Nature's resources required to maintain it. Who but an enthusiast astronomer bothers his brains as to how many tons of fuel are needed to keep up the combustion in the solar "photosphere," which, like a mighty aurora borealis, is said to encompass the great orb of day with a pellicle of fire,—to enfilm the dark globe of the sun, as it were, with a huge brilliant bubble of light and heat? Who, too, but a dreamy speculative chemist tries to crack with his "wisdom-teeth" the hard nut of the *cold flames* of "phosphorescence," or indulges in wool-gathering wonderment as to how it is that certain bodies, when exposed to the solar rays, seem to drink in the sunlight as if it were some luminous liquid, and they were merely so many luciferous sponges; and then to give it out again in the dark, divested of the caloric which originally accompanied it? Or who but some far-seeing genius, like the elder George Stephenson, would be able to detect in the light and heat given off by burning coal only an evolution of so much "bottled sunshine"; and that the ignited fossil timber was simply rendering up, during combustion, the glitter and the glow of the very solar rays which it had absorbed in the primeval forests,—long before any human being had left a footprint on the sands of Time.

But so it, assuredly, is. Our streets and our houses are lighted up at night with the self-same sunshine which the carbon of the antediluvian trees had imbibed ages upon ages ago. Nature had merely treasured the golden rays, and kept them locked in the subterranean coffers of the earth, until such time as man should discover the secret spring of the casket, and be able to claim as the reward of his cunning the glittering jewels of light and heat which had been so long and carefully stored for him in the recesses of the great geological cabinet.

But, if it be true that the modern invention of gaslight is merely the discovery of the means of liberating the pre-Adamite bottled sunshine, it is equally true that every artificial light,—even that of a farthing rushlight,—which is produced by the more or less rapid combustion of some combustible body cannot be other than a gaslight,—since no combustible can be inflamed without being first resolved into its constituent gases. Hence gaslight, instead of being an innovation of the present century, is as old as artificial light itself. For whether the light be derived from the combustion of a fixed or mineral oil, wax or tallow, it is merely the gas from the decomposed oleaginous or fatty matter which burns, and, therefore, the light is essentially a gaslight. But with this difference: that in the one case the carburetted hydrogen is generated, by the lamp or candle, on the premises to be illumined; whereas in the other the "inflammable air" is manufactured far away, and transmitted through tubes to the place where it is to be consumed.

Such are, briefly, some of the chemical curiosities of gaslight, which, we repeat, is simply emancipated fossil sunlight; while every kind of artificial light arising from rapid combustion is merely a more or less crude form of gaslight.

And now let us see what it costs to illumine the entire metropolis with this same fossil sunlight which man has, only within the last century, learned to extract from the destructive distillation of coal. Let us endeavour to form an estimate as to how many millions of pounds sterling have been sunk in the construction of the several gasworks throughout this giant capital; how many thousand miles of gas-mains lie buried beneath the London paving-stones; and what must have been the original expense of laying them down, as well as what amount of money is needed yearly to maintain them in a state of repair; what sum it must have taken to stud the 2,500 miles of streets in London, with almost as many lights as there are stars in the firmanent; what quantity of coal is annually required to keep them all burning for twelve hours on an average every night throughout the entire twelvemonth; how many million thousands of cubic feet of gas they collectively consume per annum; and, lastly, how much wealth the united ratepayers of the metropolis have to disburse every year, in order to meet this enormous aggregate expenditure.

The details, when thus massed into one vast consummate calculation, seem to be almost beyond the possibility of human ken; and yet it will be found that, by the aid of the Government returns in connexion with the subject, the task is by no means so difficult as at the first rough glance it would appear.

Imprimis, of the several gas companies distributed throughout London.

These, but a few years back, were some fourteen in number; at the present time, however, there are but eight in existence; four on either side of the river,—the "Chartered," or, as it is now styled, the "Gaslight and Coke Company," having absorbed no less than four of the previously-existing companies (to wit, the "City of London," the "Great Central," the "Equitable," and the "Western",—so that it is now not only the oldest but the largest of the metropolitan gasworks; while the "Commercial" has swallowed up the "British," and within the last month amalgamated with the "Ratcliff."

The districts supplied by the eight existing companies being severally regulated by what is termed the "Metropolis Gas Act" of August, 1860, it may be as well, before proceeding to define the localities appertaining to each particular company, to give a brief abstract of the Act in question (23rd & 24th Vict., cap. 125), which is entitled "An Act for the Better Regulating the Supply of Gas to the Metropolis."

The preamble to this Act runs nearly as follows:—

"Whereas the following Gas Companies (that is to say) the 'Gaslight and Coke Company,' the 'City of London Company,' the 'Commercial,' the 'Equitable,' the 'Great Central,' the 'Independent,' the 'London,' the 'Phœnix,' the 'Ratcliff,' the 'Surrey Consumers,' the 'South Metropolitan,' the 'Western,' and the 'Imperial' (thirteen in all) are for the most part incorporated by Parliament for supplying several districts of the metropolis with gas; and the said companies have agreed (instead of supplying gas by *different* mains in the *same district*) each to confine its supply to a *separate district*, in order to economise capital and avoid the too frequent opening of the public streets, it is, therefore, expedient that such *districting* should receive the sanction of Parliament; and whereas it is also expedient that provision should be made for the due regulation of all companies and persons supplying gas within the metropolis: May it therefore please your Majesty that it may be enacted," &c.

Then come the various sections, of which the subjoined is a brief epitome,—more particularly as regards the main clauses of the Act.

"The sanctioning of the assignment of different districts to the different gas companies is to be subject to triennial revision; the gas companies are to obey the orders of the Secretary of State, and bear the costs of altering the district; they are to light the streets when required by the authorities, but are not to be compelled to light any street where the lamps are at a greater distance apart than 75 yards; the local authorities may, if they think fit, provide the lamp-posts and lamps; the illuminating power and purity of the gas supplied is to be such as to produce, from an argand burner having 15 holes and a 7-inch chimney, and consuming 5 cubic feet an hour, a light equal to that produced by not less than 12 sperm candles of 6 to the pound, and each burning 120 grs. an hour. The limit of charge for the gas for the public lamps is to be not higher than the lowest rate charged to any private consumer; incoming tenants are not to be called upon to pay the arrears of outgoing ones; consumers are to have the right of appeal to the Home Secretary on any increase in the price of gas; the Home Secretary is to have power to issue forms of accounts to be filled up by the gas companies; each company is to cause to be made a map of its particular district, showing the mains or pipes laid down in it, and also the lines, sizes, and depths beneath the surface of all their existing mains, and before the end of December in every year is to make such alterations in the map as may be necessary; such map is to be deposited with the clerk of the county in which the district may be situate, and to be open to be inspected by any one on payment of 1s.; the pipes are to be laid so as not to be possible to contaminate the water by any escape of gas."

This Act may be regarded as the Magna Charta of the present system of Metropolitan Gas Supply,—assigning to each particular company its particular privileges; and, in accord-

* See p. 743, *ante*.

ance with the provisions of the statute, the metropolis has been parcelled out among the eight existing companies, with their districts of supply, in the undermentioned manner:—

I. *On the Northern Side of the Thames.*

1. *The Chartered or Gas Light and Coke Company.*—The whole of the City up to Whitechapel; the entire West-Central and Western divisions lying between Oxford-street and the river (formerly supplied by the "Equitable"); as well as the locality beyond Bayswater up to Shepherd's-bush (formerly supplied by the "Western"); with the exception of a small portion in the "heart" of the district which is supplied by the "London."

2. *The Imperial.*—The entire North of London up to Kingsland, except a small slice which appertains to the "Independent."

3. *The Independent.*—Part of Finsbury, and St. Luke's; as well as all Shoreditch and Kingsland; together with a small slice in the district supplied by the "Imperial."

4. *The Commercial.*—Spitalfields, Whitechapel, Mile-end, Stepney, and Bow Common; as well as (now) Wapping, Ratcliff, and Shadwell,—this company having recently amalgamated with the "Ratcliff," which formerly supplied those districts.

II. *On the Southern Side of the Thames.*

5. *The London.*—From Westminster Bridge to Vauxhall; as well as Kennington-road and Westminster Bridge-road; together with a small slice in the heart of the district supplied by the "Chartered."

6. *The Phœnix.*—From Vauxhall Bridge to Wandsworth; as well as all Clapham and Kennington, and stretching from Brixton, on the west, to Greenwich and Blackheath, on the east.

7. *South Metropolitan.*—Brixton, Streatham, and Camberwell, extending to Rotherhithe and Deptford.

8. *Surrey Consumers'.*—The whole of Rotherhithe and Deptford.

Having, then, set forth the number, as well as defined the districts, of the several metropolitan gas companies at present existing, the next problem to be solved is,—What is the amount of capital which has been invested in the whole of the above-mentioned gas-works? for that will tell us directly how much money it has taken to light London with gas. Thanks to the Government Returns, this can be easily arrived at.

Well, from the published "Accounts of the Metropolitan Gas Companies for the Year 1874," we gather, according to the several "Statements of 'Share Capital,' 'Loan Capital,' and 'Capital Account,'" forming the first three tables printed in the returns of each company, that,—

Up to the End of the Year 1874,

	Had Paid up.	Had Borrowed.	Had Expended.
	£	£	£ s. d.
The Chartered or Gas Light and Coke Company ...	3,150,000	813,500	3,830,914 14 10
Imperial	2,729,955	496,750	2,975,174 1 0
South Metropolitan	384,751	—	367,544 1 6
Commercial.....	450,000	—	416,558 6 0
Independent	228,000	25,000	234,245 11 1
London.....	732,580	142,792	840,239 13 0
Phœnix.....	852,000	175,000	989,054 10 3
Ratcliff.....	100,000	15,670	113,397 19 0
Surrey Consumers...	229,996	60,000	289,521 13 5
Total.....	8,857,281	1,828,712	10,018,580 10 1

Hence we perceive that up to the end of last year, there had been in the aggregate upwards of eight millions and three-quarters of money paid up in shares, and upwards of one million and three-quarters more borrowed, or very nearly ten millions and three quarters raised altogether by the metropolitan gas companies; while of this amount a fraction more than ten millions had been expended. So that we may say, in round numbers, that it has cost the enormous sum of ten millions of pounds sterling at least to light London with gas; for not only has more than that sum been expended by the above nine existing successful companies, but it is difficult to say how much extra has been lost by other non-existing, because non-successful, ones.*

Thus we land at the conclusion that it has taken as much as ten millions of money to develop the present machinery and appliances for the lighting of London with gas. Now, this sum includes, of course, the cost of buildings and apparatus required for the "works," the sums paid for the acquisition of land and for law charges, the expense incurred in laying down the mains and service-pipes, as well as in the manufacture of meters.

A glance at the gross expenditure of the collective metropolitan gas companies in the course of the year 1874 will readily teach us how the paid-up capital is generally disbursed, and thus enable us to determine,—approximately at least, if not definitely,—the next point in our inquiry, viz., what has been the cost of the collective "works," and what the expense of laying down the united "mains" throughout London. For instance: the gross expenditure of the nine metropolitan companies (including the "Ratcliff") amounted in the course of last year to a fraction more than 620,000*l.*, and of this sum, 470,000*l.*, or upwards of 75 per cent. of the whole, was paid for "new buildings and machinery," and 122,000*l.* odd, or very nearly 20 per cent., for "new and additional mains and service pipes"; while the remaining 27,000*l.* odd, or but 5 per cent. of the entire expenditure, went for sundries,—such as "new and additional meters, the acquisition of land, law charges, and the like.* So that at this rate three-fourths of the entire capital of the gas companies is required for the "works," and one-fifth for new and additional mains. Supposing, then, this proportion, or something near it, to hold good generally, it follows that of the ten million pounds capital expended altogether by the before-mentioned nine companies, the buildings and machinery must have swallowed up some six to seven and a half millions, whilst the mains and service pipes for the whole of London must have cost some two to three and a half millions sterling!

That the gas-works themselves should absorb by far the larger portion of the capital of the metropolitan companies will excite little or no wonder among those who are acquainted with the extent of the buildings and machinery required for the production of the enormous quantity of gas they are now called upon to manufacture. "Some of the large London works, indeed," said the writer of the article on "Gas-lighting" in the "Encyclopædia Britannica" (the 8th edition of 1856) "have to send out from a million to a million and a half of cubic feet of gas each night; whilst in the depth of winter, the Chartered Gas Works are required to supply not less than five million cubic feet nightly from their three stations!"

But this was written nearly twenty years ago, when the "Chartered" had not yet absorbed the "City of London," the "Equitable," the "Great Central," and the "Western" Companies, and when, indeed, London was not only much smaller (containing 50 per cent. less houses than at present), but lighted by as many as fourteen gas works, instead of only eight or nine as now. Consequently, the supply of gas which was thought prodigious but a quarter of a century ago may now be looked upon as comparatively insignificant; for, according to the Government Returns, the nine London companies produced altogether, in the course of the year 1874, the astounding volume of 14,000 millions of cubic feet!—which is at the rate of 38½ millions every day throughout the twelvemonth. Of this enormous supply the "Chartered" sent out daily, on an average, 12¾ millions, the "Imperial" very nearly 11 millions, while the other seven companies collectively furnished the remaining 14¾ millions, or more than two million cubic feet each, on an average, each day the year through. Hence, as the winter nights are twice as long as the summer ones, it follows that the "Chartered," instead of having to manufacture barely two millions of cubic feet per diem in the summer time, and five millions in midwinter, has now to produce as many as eight and a half millions for the short evenings, and not less than 17 millions of cubic feet for the longer ones!

Now, a pound of Newcastle coal, according to the best experiments, will yield from 4 to 5 cubic feet of gas; and this is the consumption of merely one standard burner every hour. We have but to think then how many jets there are blazing away at the same time every night throughout the metropolis, and how many hours these have to be kept alight, while many,—as with the street-lamps,—are left burning the livelong night through, to be able to form some faint idea (by multiplying the number of jets by the number of hours the gas is alight) how many pounds of coal must be required to furnish the necessary supply. A ton of Newcastle coal, according to Mr. Peckstone (*vide* Peckstone on Gas-lighting), will produce some ten thousand cubic feet of gas (this is at the rate of 4·5 cubic feet per lb.); and hence it follows that to produce 38½ million cubic feet, 3,850 tons of coal must be used nightly by the united metropolitan gas-works; while as much as 1,700 tons would be the consumption of the "Chartered" every night in mid-winter! * This will give us some notion of

* The following table shows the relative magnitude of the several metropolitan gaswords, estimated according to the relative amounts of their paid-up capital. Taking the share capital of the Chartered as 100·0, the following percentages will express the proportionate amount of money invested in the other establishments:—

Chartered.....	100·0	South Metropolitan ...	12·2
Imperial	86·6	Surrey Consumers.....	7·3
Phœnix	28·0	Independent	7·2
London.....	23·2	Ratcliff	3·2
Commercial.....	14·3		

* As an instance of the relative extent of business done by the several London gas companies we may state that, in 1874, the Chartered expended 230,000*l.* odd upon new buildings and machinery, and the Imperial nearly 192,000*l.*, whilst the remaining seven companies laid out altogether only a fraction more than 48,000*l.* upon their works. Moreover, for new and additional mains and service-pipes it cost the Chartered nearly 88,000*l.*, and the Imperial nearly 17,500*l.*; whereas, the whole of the other seven companies did not devote more than 17,000*l.* odd to the same purpose.

* In order to produce the enormous volume of 14,065,464,000 cubic feet of gas during the year, a correspondingly enormous bulk of coal had, of course, to be coked or "carbonised." In the gas accounts of the Metropolis for 1874 there is a table giving what is termed a "Statement of Coals used," and included in this is a column headed "Coals carbonised during the Year." In plain language, this portion of the accounts shows the quantities of coals which the several companies had to coke, in order to extract the several quantities of gas which they had to supply throughout the twelvemonth. Adding together, then, the whole of the particulars contained in these columns, we find that the total quantity of coals carbonised in the year 1874 amounted to not less than 1,445,016 tons. Of this amount the "Chartered" carbonised rather more than 470,000 tons; the "Imperial," not quite 424,000 tons; and the remaining seven companies the remaining 550,000 tons. Now, if we divide the total quantity of gas produced in the year by the total quantity of coal carbonised, we have $\frac{14,065,464,000}{1,445,016} = 9,810$ for the number of cubic feet of gas yielded by each ton of coal; and this agrees so nearly with the amount (10,000 cubic feet) given by Mr. Peckstone as the average yield of each ton of coal that the round number may be fairly taken as the mean product.

Moreover, 1 cwt. of coal is said to produce, when carbonised, 2 bushels (of 41½ lb. each) of coke. Every ton of coals carbonised, therefore, should yield 40 bushels, or rather more than a chaldron (36 bushels) of coke. Well, the aforesaid Returns tell us, under the head of "Coke made during the Year," that altogether the metropolitan gas companies produced 1,355,671 chaldrons, or 48,800,000 bushels. So that, dividing the bushels of coke produced by the number of hundredweights of coal carbonised in the year, we have $\frac{48,800,000}{18,900,000} = 2·5$ bushels for the average yield of coke per hundredweight of coal, which is at the rate of 50 bushels (not quite a chaldron and a half) per ton.

But if the united metropolitan companies coke very nearly 1,500,000 tons of coal during the twelve months, in the name of Plutus, how much must they collectively disburse for their "black diamonds" throughout the year? This the before-mentioned Gas Returns show very plainly in the form of "Revenue Account"; so that we have only to lump together all the sums there given under the head of "To Coals (including dues, carriage, unloading, and trimming)," in order to ascertain how much money is devoted annually to the purchase of the fuel required to "lighten the darkness" of this monster metropolis. Accordingly, we find that in 1874 the "Chartered" expended rather more than 800,000*l.* in this manner, the "Imperial" a little over half a million, and the whole of the other companies about 650,000*l.*; or altogether, as nearly as possible, one million and three-quarters of pounds sterling went to provide merely the fuel for the united gas-works of London,—the coal, "common," as well as "cannel" (of which latter commodity only about 6 per cent. is used), thus costing the companies on an average somewhere about 25*s.* per ton. Against this expense, however, we have to set off the income derived from the coke which remains after the coal has been "destructively distilled." As we have said, then, the gross quantity of coke made during the year 1874 by the collective metropolitan companies amounted to about 1¼ million chaldrons, and of this very nearly a million chaldrons were sold, and the remainder (or rather more than one-third, instead of one-fourth, as is generally said to be the proportion) used for heating the retorts. Now, by the accounts we find that from the sale of the million chaldrons of coke, not quite half a million of money was obtained (477,000*l.*); or, in other words, the coke realised within a fraction of ten shillings per chaldron (9*s.* 7¼*d.*). Add to this 136,000 chaldrons of breeze, which fetched nearly 10,000*l.*, and over 13½ million gallons of tar, which brought upwards of 100,000*l.*, besides nearly 300,000 butts (108 gallons each) of ammoniacal liquor, which produced another 100,000*l.*; and we have to set off an income of just about 710,000*l.*, derived from the sale of the residual products of the gas-factories against an expenditure of 1,750,000*l.* for the coal required for the gas itself. Every ton of Newcastle coal is said to produce 1 chaldron of coke (the yield, however, is about one-fourth more); 4 bushels of breeze; 12 gallons of tar (but the yield is hardly more than 9½ gallons on the large scale); 10 gallons of ammonia liquor (whereas the yield is really about double); and 10,000 cubic feet of gas.

We have now only to point out the gross sum derived by the collective companies from the sale of the 14,000 millions of cubic feet of gas produced in the course of the year, in order to arrive at what is called the aggregate "gas rental" of the metropolis. This is usually said to be two millions of pounds sterling. The gas accounts, however, tell a very different story. Let us see. On the creditor side of the "Revenue Accounts" before referred to, we have the items "sale by gas" given in connexion with the returns of the several companies; and putting these all altogether, we find that the aggregate amount which the entire nine London companies derived from this source, was within a fraction of three millions sterling; that is to say, very nearly 2,875,000*l.* was obtained from the sale of "gas per meter," and within a fraction of

the extent of the works,—the buildings and machinery, the retort-houses and retorts,—the furnaces, coal-sheds, &c.,—to say nothing of the gas-holders required for such a business. Why, only a few years back, a gasometer, capable of holding half a million cubic feet of gas, was looked upon as a monster. At present, however, the gas-holders have to be at least double their former dimensions, and are often, indeed, of more than a million cubic feet capacity,—being not less than 140 ft. in diameter and 70 ft. high (the diameter should be always double the height), or very nearly as large as a good-sized amphitheatre.

We must break off here for the present.

NEW ATTRACTIONS AT THE EASTERN MUSEUM.

On the occasion of the opening of what is now called the Eastern Museum, at Bethnal-green, the correspondents of more than one of our contemporaries prefaced the accounts which they gave of those magnificent collections of rare and precious objects with which the courtesy of Sir Richard Wallace enabled the officers of the department to give such *éclat* to their new field of display, with such descriptions of the locality and its inhabitants as might have been suitable in the case of a newly-discovered savage country. With that love of the sensational which has so much affected the lighter literature of the last score or so of years, was blended an entire forgetfulness of the fact that the inhabitants of a large section of the capital of the British Empire might dislike being held up to the world, as if it were a wonder that their habits were not anthropophagous. This oversight was very sharply resented in the district; and, in almost every public-house or place of refreshment, placards in the window soon declared, in very large letters, "The so-and-so newspapers not taken in here."

With the memory of this misadventure of more than one of our contemporaries fresh in our recollection, we are not likely to expose ourselves to the charge of coming forward as discoverers, or re-discoverers, of Bethnal-green. But whether the former mishap be the reason or not, a very inexplicable degree of neglect has befallen that admirable institution,—not neglect, we are happy to say, on the part of those for whom it was established. While Sir Richard Wallace's collections were there, as many as 12,000 visitors have entered the building in a single day, after the hours of six p.m. This was at the first blush, and under circumstances of extraordinary attraction. But the visitors during September, 1874, as we learned from the table by the door of the Museum, amounted to about 40,000, and those for last month show no signs of falling off. No doubt that Bethnal-green is a spot very unlikely to be visited, excepting by those who reside, or have business, in the vicinity. But that is only a vindication of the sagacity which selected the spot for a local centre of that teaching by the eye, which we are happy to believe is doing good work among our rising generation.

At the present moment, besides the gifts and purchases which form the permanent adornments of the Eastern Museum, and a collection of an industrial character to which we shall presently refer, no less than nine loan collections are displayed to the public in its galleries. All of these are of great merit and value, and as to at least three of them, each, in its own branch of art, possesses a several claim to the title of unique.

Of these collections, that which possesses the highest degree of importance, not only from an artistic, but also from a philosophical point of view, is the series of 1,247 objects lent by Colonel Lane Fox, and displayed under the very unfortunately chosen title of the Anthropological Collection. On the principle of not looking a gift horse in the mouth, we are aware that we must not challenge the right of the gallant officer to give any name that he chooses to a private museum,—for it is museum rather than collection,—which it is matter of wonder, as well as of admiration, to find amassed by one man, and that a man young enough to look forward to, we should hope, a good half of his work. Neither can we contend against the grammatical truth of the adjective in question. All that relates to man is, in a sense, anthropological. But persons in general are somewhat apt to associate that long and ugly word with fierce and angry disputes as to the possibility, or impossibility, of a lineal descent from some theoretic great-great-great-grandfather in the form of an ape. Ethnological is, perhaps, quite as hard a word as anthropological; but it is one that has, to some extent, if only by the aid of the British Museum, got hold of the public ear. Some people, indeed, have a dim idea of a sort of schism amongst the ethnologists, and of the erection of the anthropologists as a new heresy, more advanced, as the phrase is, than the old orthodoxy of that mysterious philosophy.

But if, instead of the long, hard word, Colonel Fox's catalogue had simply invited us to the examination of a series of weapons, as used among savage tribes, from the simplest and most ancient to the most complex,—if it had indicated that not only war and the chase, but canoe-building, boating, ornamentation, formation and use of tools, instruments, and weapons of all kinds, and all materials, and the customs and habits of various tribes of mankind, were all illustrated by a collection arranged in so comprehensive and masterly a plan as to deserve the character of unique,—how many distinct groups of visitors would have been attracted by the announcement? The soldier, the sailor, the boating-man, the mechanic, the tool-maker, the gunsmith, the sword-cutler, the cutler in general, the boat-builder, the carver, the decorator, the lover of tales of travel for their picturesque illustrations, the philologist, who takes interest in the localisation of distinct forms of speech,—each of these, and many other special workers and thinkers, will find much that is highly instructive in this admirable collection. We must not, for the moment, pause to enter into its details, which we hope to have a future opportunity of treating; but we hasten to bear tribute to its high and enduring value.

As connected with industrial art, perhaps the highest rank must be assigned to a collection which is now only in the course of formation. It is one intended to illustrate the use which is made, or which may be made, of articles formerly regarded as useless; or of the scraps and shreds produced in the process of manufacture.

Thus, one jar contains the dark and unsightly stems of the esparto grass, long regarded as much such a weed as the couch grass, which all good farmers exterminate. The next jar contains a sample of the pulp formed from this grass. (Alongside of this ought to be placed a wasps' nest, which is formed of a substance very closely resembling pulp,—the insect-made paper of these hymenopterous manufacturers.) Then comes the paper itself. On another shelf we have the bark of the cork oak, as stripped from the tree; then a sample of the finer cork used for champagne corks; then specimens of cut corks for bottles; then leaves of cork, which are used by one manufacturer for making hats, unrivalled in their lightness and comfort. These leaves may be cut so thin that 600 go to the inch. Then come chips of cork, for stuffing mattresses and life-buoys; and, finally, cork dust. Side by side with this, is boxwood dust, used by jewellers for cleaning gold articles. Then comes ordinary sawdust, from the saw-mills; and so again we come to paper. The brittle paper used by the cheap newspapers, which will neither take ink properly, resist the least pull, nor even burn, is made to a great extent out of wood.

It is obvious that if this collection be exhaustively carried out, and kept up to the level of the discoveries of the day, a boon of no trifling value will be given to the workman, the inventor, and the practical mechanic. The great barrier to the progress of invention amongst ourselves is the ignorance of the inventors of what has been done, and of what is required. Inventors, as a rule, are found amongst men who do not read. With all that has been done by the devoted assiduity of Mr. Bennett Woodcroft and his fellow workers to make the information of the Patent Office accessible to every one, this great stumbling-block to useful invention is still unremoved. Nothing would do so much to serve the man of real inventive genius as a good exhibition where he would see at a glance, without poring over books, all that had been done with a given material—and could thus satisfy his mind as to what yet remained to be done.

From the great philosophical collection of Colonel Lane Fox, and from the nascent industrial collection from which, under due care, so much may be gained for mechanical and manufacturing science, we turn to a third subject,—an art-collection, of a merit, in its special line, unparalleled in this country. We refer to the collection of between 200 and 300 oil paintings, water-colour drawings, crayon drawings, and pencil sketches, the property of Miss I. A. James, which have been lent to the Museum. We are not aware of any gallery in Europe, with the exception of the Louvre, where so valuable and instructive a series of designs can be examined without the trouble and inconvenience of referring to drawers and portfolios. The special value of original sketches is, that they show us the artist at work. People are accustomed to speak of the genius of the painter, the sculptor, the poet, the orator, or the great prose writer. They do well to acknowledge the special genius of each; but they do better when they also remember that this genius comprises, if it does not spring from, the power of taking infinite pains. Thus we see how Raffaelle,—the painter of genius, *par excellence*,—laboured before he attained the inimitable grace with which so many of his creations step or float upon the canvas. In many instances,—that, for example, of the cartoon of the Miraculous Draught of Fishes,—precious scraps of paper have been preserved on which the artist discussed, so to speak, the subject for his own satisfaction. We see the most important figures stretched first in the skeleton, then nude, lastly draped; we see how a position has been varied, at first slightly, then perhaps by being reversed; and how, from the careful and laboured study of every item of the detail, the perfect grace of each group has been wrought out. The work is not that of a melody played on an oaten pipe; it is the harmony of a whole orchestra of instruments, the separate part for each of which has been separately written by the *maestro*.

What we know to have been the method of the great Italian masters is shown, by the rare skill and good fortune that have accumulated the collection of Miss James, to have been also the method of Watteau. We are too much accustomed to think of his stately or sportive groups as the mere reflexions of the playful fancy of the graceful Frenchman. The drawings and sketches treasured by the present collector show how Watteau worked on paper before he threw the result of his work on canvas. The charming chalk sketch of two sisters shows how he could seize the happy expression or graceful grouping of a moment. The three Mulatto heads close by show how he would try, and try again, and yet again, which should be the most pictorial expression of a countenance not in accordance with our own taste for the beautiful. Again, in his studies of the masquerading figures, of the chiffonnier with his empty basket, and of what we cannot believe to be any other than the inimitable *Polichinello* of the little San Carlino theatre at Naples, the very genius of pantomime, we see a nerve and a grasp of the central features of an ideal character, that denote a very high order of art. There is a beautiful study of a woman dressing, with another close by, who seems about to dress her hair—in fact, who is drawn as so doing, though a little apart from her task, a separate study of attitude. Again, there is a study of girls at music. In fact there is not one of the numerous scraps from the hand of Watteau which does not repay study, and confer delight.

Watteau is more fully represented than any other artist. A series of sketches, of great variety of type, but almost all of only one degree of interest and merit, and that the highest, illustrates a whole gallery of Flemish and Dutch painters. In almost every instance we admire these artists more in their use of the lighter touch proper to pencil, crayon, or water-colour drawing, than in their better known works in oil. One reason for this may be that the sketches are as the artists left them; the paintings have undergone the additional touches of that great leveller,—Time. F. Hals is shown in a noble autographic sketch, black chalk on grey

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65,900*l.* from "public lighting and other contracts,"—the precise gas-rental of the entire metropolis thus coming to just upon *half as much again* as it is commonly computed to be, and being really 2,939,400*l.*, rather than the simple two millions it is generally taken at.

It would appear, then, that though the coal for the entire gas of London costs one million and three-quarters of pounds, the sums derived from the sale of the "residual products" reduces the net expense to one million of money; and that as much as three millions sterling are derived from the sale of the gas produced by the million's worth of coal. Still, it must, in all fairness, be borne in mind that the cost of the *manufacture* of the gas itself is not included in the above calculation; neither is the cost of laying down and repairing the mains; nor that of cleaning and lighting the public lamps; nor that of the salaries paid to superintendents and officers; nor the expenses of management, nor even the repairs and maintenance of works and plant; so that it is but right to warn the reader against jumping to a hasty conclusion that the rate of profit on the gas produced is the difference between the cost of the coal required to produce the gas and the rental obtained from the sale of it.

paper. Van de Velde makes his ships float in water-colour. Guardi contributes a striking bit of old Italian architecture, the Loggia del Lanzi at Florence. There is the original sketch of the picture of Abraham's dismissal of Hagar and Ishmael, by Claude Lorraine. There are dead cranes by Weenix,—not a group, but a series of studies; not the very life, but the very birds after the life has left them. A breeze seems to rustle over a scene drawn by Bakhuyzen. A river side subject by Jan Breughel, in water-colours, shows the careful, accurate, and delicate drawing of this artist; the unexcelled finish of whose work in oil worthily earned him the name of Velvet Breughel. The delicate drawing of this sketch very closely resembles the detailed workmanship of Meissonier. Of Jan Steen there is a very characteristic alehouse, in sepia. There is a battle-piece by Borgognone, full of life and "go," and in which, contrary to the almost universal custom of painters and sculptors who represent rearing or prancing horses, the ear or the nose of each animal is in advance of his fore-feet. This is invariably the case with the living horse, except, in one instance out of thousands, of artificially-trained and highly-curbed steppers in harness. There is a "Temptation of St. Anthony," by Salvator Rosa. The pigs are semi-diabolic, and so is the saint,—not worth, one would conclude, the trouble of tempting. It is a good instance of the brutalising influence of the ascetic spirit on the mind of a great artist. There is a very life-like face, which would not be a bad ideal for Sancho Panza, exquisitely sketched by Vandyck, and a powerful head by Van Eyck, which, if there were no such thing as anachronism, might be taken for a refined Luther. There is a merry dance by D. Vinkaboom, and two fine sketches by Ruysdael, one of a bridge over a torrent, and the other a riverside landscape. Although these are evidently drawn by the hand of a master of no ordinary power, as well as method, they do not give the promise of the exact style of the oil paintings of Ruysdael. A pair of Van Ostades are followed by a pair of Cuyps, the latter in pencil. There is a noble study of trees by Waterloo, and a sheet of paper on which Rubens has carefully drawn, from the life, a lion in four different attitudes—a study worthy of Landseer. Again, in the careful study of horses by Wouvermans we see how far the favourite animal of this painter is from being a conventional piece of filling in. These sketches are by a man who not only knew, but loved, that noblest dumb companion of man. Both, Wynants, Van Lass, Van Swanevelt, N. Bergheim, Van de Velde, Jordaens, Bakhuyzen, Van der Neer, are each represented, and charmingly and characteristically represented. There is an instructive study of foliage, by Claude Lorraine. Three capital and rather highly-coloured water-colour drawings by Van Ostade have more humour with less vulgarity than characterises most of that master's works in oil. The graceful elegance of a Europa, by N. Bergheim, contrasts with the Dutch Vrows, one of whom (in a sketch by an artist whose name is illegible in our note) is drinking from a long glass that would win the heart of any collector of *bric-a-brac*. Turning to the west end of the gallery are again numerous and very fine sketches by Watteau.

English scenery is depicted by Girtin, De Wint, Turner, D. Cox, Eldridge, Bonnington, W. A. Hunt, W. Collins, and Constable; English portraiture and *genre*, by Stothard, Sir T. Lawrence, Geddes, Wilkie, and W. H. Hunt; English painters of foreign scenes, and of architectural elevations and interiors, by Prout, Chambers, De Wint, and others, whose names we have given above. There is an admirable coloured portrait of Rowlandson, the caricaturist, by G. H. Harlow. The delicacy of taste indicated by the somewhat sensuous physiognomy, which sparkles with fun, would seem to promise something better than the style of depiction with which the collectors of Rowlandson's prints are familiar. The "Old Fisherman," by Hunt, is drawn in a full, bold, well-toned water-colour, that recalls the manner of Fortuny. A copy, by Geddes, of that head of Vandyck when young, of which the authorship has been disputed, recalls the original very vividly. Sir D. Wilkie's "Old Woman" is as carefully painted as, and far less ugly than, the most wrinkled hag admired by Dutch painters.

The bright *espiègle* face, so well known from the engraving, of Miss Manners Sutton as Phœbe, is far more attractive in the original sketch by Chalons, than in any reproduction.

The graceful pierced tower of St. Ouen, one of the finest ecclesiastical buildings in France, or in the world, has been drawn by Edridge, once alone, and once as it groups with the Hôtel de Ville at Rouen.

It is evident that an extraordinary combination of good judgment and good fortune has fallen to the lot of the collector of this noble series of original sketches. Their value as a whole it is not easy to exaggerate. A very large proportion of the best Dutch and Flemish painters are so illustrated, by their original sketches, that these well-known masterpieces will be far better understood by the careful student of this collection than can be the case otherwise. Rembrandt is almost the only first-class name in this group that struck us by its absence. We are unaware of any of the circumstances under which the collection has been formed or lent to the Museum; but no one anxious for the education of a school of artists in this country can fail to wish that so rare a treasure should be secured, unbroken, for the nation. The educational value of our Flemish and Dutch paintings at the National Gallery would be more than doubled by the juxtaposition of this very complete series of original designs, and careful as well as careless studies, many of them by artists as yet feebly or not at all represented at Trafalgar-square.

We have been led, by the extraordinary interest of its contents, to dwell so long on the subject of the collection lent to the Eastern Museum by Miss James that we have no space left us [in which to describe the splendid collections of Mr. Isaac Falke, Mr. A. W. Franks, Mr. J. Soden Smith, Consul Hutchinson, the late W. Cosier, and Mrs. Hamilton Gray. We the less regret having to defer some notice of these various groups of valuable and well-selected objects of art, from the hope that a catalogue will soon be in print, at least of the Franks collection, in which the potters' marks will be chronologically described. We shall have other opportunities of giving our country readers some account of the as yet undescribed treasures now lent to the public by their owners. And we strongly advise all those to whom it is possible to form their own judgment by a visit to the collections themselves.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

The opening meeting of this Institute for session 1875–76 was held on Monday evening last at Conduit-street, Sir G. G. Scott, president, in the chair.

The following members were balloted for and duly elected, viz.,—As Fellows:—Mr. W. O. Chambers, of Lowestoft, and Mr. H. N. Sheffield, of Whitehall. As Associates:—Mr. W. J. Ebbetts, of Essex-street; Mr. C. C. Petley, of Sevenoaks; and Mr. W. H. Syme, of Watford.

Mr. Eastlake, the secretary, announced the decease of the following members:—Mr. Edward Roberts, F.S.A., fellow; Mr. Richard Tress, fellow; and M. Labrouste, Hon. and Cor. Member. Professor Donaldson also announced the death of Mrs. Owen Jones.

The Secretary announced several additions to the library of the Institute, and some donations to the library fund, including 10*l.* 10*s.* given by Mr. Ebenezer Gregg. Professor Hayter Lewis, who filled the chair of the Hon. Sec. for Foreign Correspondence, in the absence of Mr. F. P. Cockerell (who was said to be in Ireland) announced several foreign contributions to the library; and Professor Donaldson, on behalf of Sir Digby Wyatt, presented one copy each of "An Architect's Notebook in Spain," and "Report on the Vienna Exhibition." The various donors were thanked by acclamation.

Mr. W. H. White called attention to several errors in the "revised" list of members just issued, and Mr. Eastlake explained that the errors were due to the fact that the printers had lost the corrected "proof" of the list before the corrections had been made. However, the list would be re-issued.

PRESENTATION OF MR. T. H. WYATT'S PORTRAIT.

The Chairman said he believed that Sir Digby Wyatt (whom he was very glad to see in restored health) had an interesting communication to make.

Sir M. Digby Wyatt said he was always glad to do anything to further the interests of the Institute, although he could no longer take any very active part in its proceedings. On the conclusion of his brother's term of office as president of the Institute, he (Sir Digby) had announced his intention of presenting his brother's portrait to the Institute, and now, after certain difficulties which appeared to be inseparable from the production of works of art of this kind Mr. Richmond, R.A., had succeeded in producing a portrait which, he thought, would be as entirely satisfactory to the members of the Institute as it was to Mr. Wyatt's family. He begged to ask the Institute's acceptance of the portrait, and, though it possessed comparatively little interest at present, while his brother was living, there would inevitably come a time when its value and interest would be enhanced, as affording the only means of looking upon the features of their past president.

Mr. Beresford Hope, M.P., in moving that the gift be received by acclamation, expressed his gratification that with the presentation of this portrait the Institute now possessed portraits of all its past presidents.

Professor Donaldson, in supporting the motion, said that Mr. Wyatt would live, not only in the very admirable and artistic portrait just presented to the Institute, but in the numerous important works which he had been called upon to execute, notably the new Exchange at Liverpool.

The President, on the part of the Institute, thanked Sir Digby Wyatt for the gift, expressing the hope that both Sir Digby and his brother would long be spared to be with them.

THE PRESIDENT'S ADDRESS.

Sir Gilbert Scott then proceeded to deliver his opening address. He said that at the present time there were not many interesting subjects upon which he could touch, and he did not intend to say much on the routine work of the Institute, for it was not necessary to recapitulate facts which were known to all the members, nor to descant upon reports which had been already discussed and thrown aside. He looked back with great satisfaction on the presentation of last session's Royal Gold Medal to their honoured and respected member, Mr. Edmund Sharpe. In his (Sir Gilbert's) last address, a year ago, he referred to the appointment, during the previous session, of a special committee to consider and report as to the condition of the Institute. He had reason to know that that committee had most sedulously devoted themselves to the duty allotted to them. They had held twenty-one meetings, often very protracted, and had placed themselves in communication with other cognate societies. Their report had only been presented to the Council that evening, and was as yet unopened, but a special meeting of the Council would be summoned for its consideration at an early date. Were he acquainted with the recommendations of the committee, he should necessarily be precluded from referring to them on that occasion; nevertheless, he might perhaps be excused for confessing his decided conviction that the Institute had not assumed that strong position which it ought to assume; that it did not to the fullest degree promote the cultivation of the art of architecture; and that there was a danger of paying too much attention to their interests as a profession to the exclusion of their demands as artists. He had no doubt, however, that the committee had given careful attention to these points, and he hoped they had suggested some means by which the proceedings of the Institute would be made less a matter of routine; and that some method would be devised to cause a larger number of the leading members of the profession to take a more active part in the work of the Institute. It was not to be desired that the Institute should go on from year to year like a mere piece of clockwork. He wished more of the leading men of the profession were emulous of office in the Institute, and of seats on the Council. He knew that professional engagements were great barriers to this, but he also knew how strong was the feeling outside, and among the younger members, that the Institute was too much like an automaton. He was not sure whether the self-elective character of the council was satisfactory, and it was fairly open to question whether a portion of the council should not be elected by the junior portion of the Institute, and whether there ought not to be elected by the general body year by year an honorary secretary in addition to the present secretary, the honorary secretary necessarily representing the current tone of the Institute in a greater degree than could be done by the permanent secretary, who would relieve the honorary secretary of the more arduous routine work, in the same manner as was carried out in some of the great Government departments, which had Parliamentary secretaries and under-secretaries as well as the permanent officials, thus preserving a certain continuity. It was also to be desired that

the Institute should place itself *en rapport*, not only with other architectural societies, but with all those societies which devoted themselves to matters of archæology and art generally. Some of those societies were of long standing; others were representatives of modern growth, and yet, while many of the members of the Institute took an active part in their proceedings, the Institute had never, to his knowledge, in its corporate capacity, taken any cognisance of the existence of such societies. Reverting to the financial position of the Institute, it was in a fairly cheering condition, and the number of members showed a reasonable increase, though he had to record an unusually large number of deaths. He could only briefly notice the careers of a few of their deceased members, leaving it to the Honorary Secretary for Foreign Correspondence and others to supply some notice of other members recently deceased. Firstly, he would mention the late Professor Willis, who (though his special subject was mechanical science, of which he was Jacksonian Professor at Cambridge) at an early period turned his special attention to the subject of architectural archæology. His published works, and especially his book on Canterbury Cathedral, evinced his complete mastery of his subject, and, indeed, this might be said of all his lectures and discourses, but, unhappily, the bulk of these were never committed to paper by him, and so would be permanently lost to the world. Professor Willis possessed in a surprising degree every quality requisite for the investigation of architectural history,—a thorough knowledge of architecture itself, and of construction, a facility of reading and interpreting ancient documents, an unequalled power of weighing evidence, and, moreover, a power of restraining himself from going ahead of his evidence. Such a mind as his had never before been brought to bear upon the subject, and probably never would be again. Mr. Billings, another deceased member of the Institute, was intimately acquainted with the ecclesiastical antiquities of Scotland, and his book on that subject was of the utmost value. In spite of all Mr. Billings had done, however, the ecclesiastical antiquities of Scotland constituted a comparatively unexplored field, but he hoped that some one would arise to give to the world Scotland's architecture by rule and line before it utterly perished. He had hoped that this would have been done by Mr. Anderson, but his increasing practice, he was afraid, would preclude the realisation of that hope. The late Mr. J. B. Waring, another deceased member of the Institute, was a very talented colourist, and it was to be hoped he would have many worthy successors. The late Mr. Edward Roberts was well known for his antiquarian tastes. The list of medals and prizes offered by the Institute this session contained two notable additions. Firstly, there was the prize of 40*l.* derived from the fund bequeathed by the late Sir William Tite for promoting the study of Italian architecture. A careful scheme for the appropriation of this prize had been drawn up some time ago, and this year the prize would be given for an architectural design, the subject of which had already been announced. The bequest was intended to promote the study of Italian architecture in the same manner as the study of Gothic architecture was promoted by the Pugin Fund. The second prize was derived from the late Mr. Grissell's bequest, and was of an entirely different character. Mr. Grissell had, as a builder, at one time of his life been in the habit of attending the meetings of the Institute, and although there were many prizes offered by or through the Institute, there were none which could be awarded for a good set of working drawings. For the foundation of such a prize Mr. Grissell had bequeathed a sum of money to the Institute, and the prize would be awarded for the first time this year. Among the prize drawings submitted during the past session, special mention should be made of Mr. Neale's admirable monograph of St. Alban's Abbey. The exhibition of the various prize drawings now required so much space that this session it would be necessary to appropriate one of the lower galleries for the purpose. Leaving this subject, Sir Gilbert said that as his term of office as president was now drawing to a close, he wished to say a few words on one or two topics of general professional interest. Seeing that we, as Englishmen, were favoured with such rich endowments in the shape of architectural monuments, it was clearly not only to our interest, but to the interest of succeeding generations, to preserve those monuments as perfect as possible; and it was just as clear that where the influence of time and the elements threatened to obliterate those monuments, it was imperative that they should be permanently recorded. It appeared to him that measures calculated to insure these two great objects, viz., first, the preservation, and, secondly, the perfect representation of such monuments, should be among the very first objects of such a body as the Institute, which should endeavour at the same time to associate with itself those other societies which were especially intended to promote the study of archæology; for it should be remembered that the favourite aphorism, that "Archæology is not architecture," ceased to be a truism when applied to the study of ancient works. In urging the conservation of old works, there was a marked distinction to be observed between those in ruins or wholly disused, and those which continued to be made use of. In the former class, simple conservation was all that should usually be aimed at, and there was the collateral advantage of freedom from all utilitarian influences or requirements. In the latter class, however, while we had, in the case of churches, the satisfaction of feeling that we were rendering them more fit for their great use, and more conducive to the glory of God, there were always practical requirements demanding due consideration, and the great aim should be to meet the claims of the present at the smallest possible sacrifice, if any, of those of the past. In regard to ruined buildings, the Institute had too great duties incumbent upon it. First, it should seek to influence the proprietors of ruins to take such measures as might be necessary to prevent, as far as possible, their further decay. The provision of coping-stones to prevent soakage of water into the walls was an instance of what he meant. In the second place the Institute should systematically promote the correct and exact delineation of architectural remains, even to the minutest detail. We spared, and our predecessors had spared, no pains in delineating the works of Rome and Greece; then why should we allow the equally beautiful remains of our own country—so far more interesting to us because they were our own—to perish without a record? The Institute was doing a little, by means of its competitive drawings for the Pugin studentship, to promote the delineation of old buildings, but it ought to devise some more systematic means, and that speedily. He could instance many remains, the details of which he found to be, every time he revisited them after the lapse of a few years, fainter and fainter. It need not be assumed that the admission that it was the duty of the Institute to promote the correct delineation of these old ruins would saddle the Institute with the large extra expense which Institute would necessarily have to be incurred. There would no doubt that if the Institute were to take the initiative in the matter, funds would be speedily supplied by the educated public. But if the Institute held its peace when it ought to be the first to speak, was it to be expected that others would take action? When we came to churches, we had melancholy and disgraceful record. Our churches, during the centuries between the extinction and the revival of Gothic, had for the most part been allowed to fall step by step into a state of sordid and contemptuous neglect, decay, and dilapidation, while they became encumbered with galleries, pews, and all manner of excrescences and interpolations, nothing being, in many cases, considered too mean in character for an old Gothic church. People became conscious of this before our architects became fitted to correct it, and, like Jack, in Swift's "Tale of a Tub," set about ridding their churches of disfigurements before they knew what to substitute for them, and, with every blemish removed, would tear off some fragment of the original fabric and mend the tear with work of their own, if not quite as incongruous, certainly far more nauseating. Soon, however, they got to think they knew all about the matter, and boldly set about restorations, as if the old art had been beyond question revived. They often disputed amongst themselves as to whether restorations should be conservative, destructive, or eclectic, great authorities not being wanting to defend even the destructive system. Meanwhile, even with those best disposed, knowledge was imperfect, and the difficulties of careful and well-considered treatment immense. The promoters of the work were more impressed, perhaps, with the axiom of the first church restorers, that "the houses of God ought not to be less carefully dealt with than our own houses," than with the equally indisputable fact that they had treasures of ancient art and of ancient church history to deal with which demanded the most earnest study for their conservation. Walls and roofs were found decayed, and their entire renewal was urged; changes in ritual, it was said, demanded corresponding changes in arrangement; clerks of the works, builders, and workmen vied with each other in opposing conservative measures, and vie as they would, all kinds of influences combined, in addition to their own shortcomings, to check or frustrate their efforts, so that the result was at the best a mixture of successes and failures, of right decision with compromise. But beyond this, there was another very different set of "restorers," so-called. There was a host of men, not always architects, though men highly respected in other walks, who had taken up Gothic architecture as being the style in vogue, and as a regular part of their stock-in-trade, into whose hands a large proportion of the Gothic churches of the country fell for restoration. The Institute from time to time received communications for its Committee on the Conservation of Ancient Monuments, and quite recently they had heard of a gentleman who had sold an old chained book from his church because it was out of harmony with the new work; and of another gentleman who had removed some valuable monumental brasses in order to secure an uninterrupted space for a new encaustic tile pavement; while a certain noble owner made the very restoration of the churches on his property a piece of patronage, and handed it over as a "perquisite" to one of his agents! Nor was a word of remonstrance often heard against these things; on the contrary, more objection was raised against those who laboured hard to do their duty carefully than against a whole host of those who had ruined our churches so as to make a church tour one of the most sickening of experiences. Happily, however, a remnant remained,—a few churches in each district were yet unrestored, and, as with the Sibylline books, it was worth any price to preserve them. Here and there they would be found to be in a dilapidated condition, but generally they only needed that gentle, loving handling to preserve all that time had spared, and to give them a new lease of existence. Would that all such remnants could be gleaned from the harvest of destruction, and preserved from the destroyers' hands. It would often be possible to preserve old buildings, he thought, if the Institute were, as he had already hinted, more perfectly *en rapport* with the various archæological societies; even when it was found to be impossible to preserve the building, there would be, by co-operation amongst the societies, increased means of securing permanent records and drawings of it. In concluding his address, Sir Gilbert said a great deal had been heard this year about workmen-architects, and it was stated in some quarters that in the abolition of all other architects lay the great hope of English architecture. He ventured, in his first address as president of the Institute, to suggest that a vast deal of what had been done by professed architects was by no means to the credit of the age or the profession; but he now wished to point out the still lower depth which was attained when the architect's aid was dispensed with altogether. There were miles upon miles of suburban buildings in the design of which architects had had no hand. The result was disgraceful, and at the risk of appearing to advocate a self-seeking policy, he ventured to commend the subject to the attention of the Institute.

Mr. J. H. Parker, C.B., having explained some drawing and photographs on the walls, illustrative of the most recent excavations at the Colosseum, Rome,—

Mr. Beresford Hope, in moving a vote of thanks to the president for his address, said he was glad Sir Gilbert had had the courage to speak out his mind. Every one deplored and regretted the mutilations which had been palmed upon the world as "restorations." He trusted that the time would come when all educated people would see that the best of all restoration was conservative preservation. He regretted that the president had passed so lightly over that craze of the day, the "workman-architect,"—the idea that Ignorance should be divinely and miraculously gifted with the power of producing more beautiful things than Education and Instruction. The hideous cheap houses and rows of villas which defaced the metropolis were speci-

mens of what the workman-architect could do when he had scraped together a little capital; and it would take a good many articles in the *Quarterly Review* to convince him (Mr. Beresford Hope) that the workman would become a heaven-born Phidias when he had no capital at all. He thanked Sir Gilbert for his tribute to the memory of Professor Willis, and trusted that Mr. Stuart, who was intimately acquainted with the Professor, would be prevailed upon to give to the world his literary remains. No one was more competent for the task than Mr. Stuart.

The meeting then terminated.

The second meeting of the session will take place on Monday, the 15th inst., when Mr. R. Popplewell Pullan is announced to read a paper "On the Decoration of Basilican and Byzantine Churches."

A BOOK ON WATER-COLOUR SKETCHING.

A GREAT deal of assistance to learners, even tolerably advanced, in water-colour, has been given by Mr. Aaron Penley's little book called "A System of Water-colour Painting"; one among the useful series of shilling books published by Messrs. Winsor & Newton. The book gave no "examples," but furnished the student with an idea of the effects of colours in combination, and gave "schedules," as they might be termed, of the colours which might be used, with most probability of a satisfactory result, in portraying different classes of natural objects and effects. The larger and handsomely got-up book by the same author now published * as a special instruction-book in sketching from Nature, is in great measure an amplification of the small former treatise referred to, but with the addition of chromo-lithograph illustrations, intended further to aid the reader and student, by presenting *fac-similes*, or what profess to be such, of the author's manner of dealing with the colours whose qualities and uses he describes. The value of such illustrations, we may say at once, appears to us very doubtful. Chromo-lithographs cannot really be made to represent the effect and the properties of a water-colour drawing, or to convey any idea of the tones and aërial perspective of Nature; and in the present instance they reduce still more to mannerism the work of an artist whose drawings partake somewhat too much of mannerism in the original medium. They may serve as illustrations to explain the author's meaning, and this will probably be their chief value; certainly we should not recommend students to take them as examples for imitation, a choice which must almost infallibly lead to a conventional style and a representation of Nature according to rule and receipt instead of following her own showing. We have certainly not been in the habit of seeing such tones in nature as are represented in some of these illustrations; though in regard to balance of tone and composition they are instructive enough.

The remarks accompanying each drawing are, of course, of considerable practical value, as the result of many years' experience in the use of water-colour, and the general principles laid down are beyond question. Mr. Penley is very emphatic on the value of a full and accurate pencil outline before commencing colouring, as leading both to the more proper understanding of the details of a scene in the first instance, and the more accurate use of colour subsequently. As far as students and learners are concerned, there can be no question as to the correctness of this view. At the same time it cannot but be admitted that admirable sketches have been made by those possessed of adequate power over the materials, without any assistance from a pencil sketch, and that the power of working altogether with the brush is by no means to be thought lightly of, realising as it does the use of water-colour sketching in its purest form, as a system of representation by washes only.

The remarks on the various colours used by the water-colour sketcher, and their nature and properties, are very useful for reference and guidance; and though there seems to us to be a little too much of the spirit of regarding nature as so much material to be "composed" by the artist, yet we like very much some of the author's remarks upon the influence and interest of the study of natural detail which is induced by the habit of sketching and looking at nature with this view. "I like much to linger," he observes, "before groups of trees, young or old, whether clothed or not clothed with foliage, and by change of position to see the many varieties of form they take, and which of the many would produce the most pleasing composition. There is real pleasure in this,—much to be learned and much to be put in practice. Lessons may be had in many localities whence lessons could hardly be expected to be gleaned, and our daily converse with a common-place scene may be thus fraught with increased interest and pleasure. The ability to draw naturally leads to observation of detail and generalisation, it being evident that this cannot be exercised without a corresponding reflection upon everything presented, as to construction, growth, character, and use. How far this is desirable every one must judge for himself. I can only say that to myself the enjoyment is beyond expression; and often, when walking over what would be considered a monotonous and dreary plain, with a canopy of dull leaden clouds, I am struck with beautiful undulating lines, varieties of tone and tint, with receding distances and aërial perspectives, that produce much to be admired, thought upon, and studied. . . . Something can be gathered from all we see, if the information conveyed be really sought for."

Heartily sympathising with these reflections, we hope they may have the effect which the writer wishes, of leading others to find and enjoy the same source of pleasure, and have no doubt Mr. Penley's book will be of great use in assisting them in making the most of their materials, provided they take the "chromo" examples as illustrations only, and not as "copies."

The author might have been a little more careful in his use of the English language. There are at least two doubtful or ambiguous constructions in the above quotation; but when we read in the table of descriptions of colours, that burnt sienna is so generally useful that "it were *invidious*" to mention its uses in detail, and that vermilion is "indispensable when required," it is evident the writer is using words without considering their meaning. We should scarcely notice such slips, which, of course, do not affect the value of the book for its own purpose, only that slipshod, ambiguous, and even ungrammatical English is unfortunately exceedingly common in the writing of artists of all denominations, who do not seem to reflect that an ill-constructed sentence is as objectionable and awkward in its way as a piece of faulty perspective.

* "Sketching from Nature in Water-Colours." By Aaron Penley. London and New York: Cassell, Petter, & Galpin.

CHURCH OF ST. JOHN THE BAPTIST, MOUNT BURES, ESSEX.

THIS church, after restoration and enlargement, was re-opened on Friday, the 22nd ult., by the Bishop of Rochester. The old church consisted of a massive tower, 12 ft. by 11 ft., standing between nave and chancel, the former 34 ft. by 19 ft., the latter 30 ft. by 19 ft., the communication between them being by small semicircular-headed openings in east and west walls of tower, only 7 ft. wide and 6 ft. high to the springing; thus the nave was practically dissevered from the chancel and the latter rendered unserviceable for the performance of Divine worship. The tower and nave are of Norman date, but the chancel and porch fifteenth century work. The nave is lighted by Perpendicular windows, probably inserted when the chancel was built; some of the narrow Norman lights, however, still remain. The tower had undergone considerable modification some time during the last century, when, after the removal of the shingle spire (which is stated by Morant in his History of Essex to have been in existence in his time, 1768), the upper part of the belfry had been cased with brick, and the walls raised and surmounted by an embattled parapet. The enlargement has been based on the plan of the old fabric, but the tower has been pulled down, as upon examination it was found to be in a dilapidated and dangerous state. The tower has therefore been rebuilt of larger dimensions, and two shallow transepts have been added. The materials of the old building have been worked in as far as was practicable, the old Roman tiles being re-used in the quoins. The new tower is carried to the same height as the original one, and is surmounted by a broached shingle spire. A small vestry has been added on the north side.

In pulling down the tower, arched recesses were found, one on either side of the tower archway, with indications of their continuation along the nave walls; the extent of the arcading cannot, however, be determined, as by the insertion of the later windows it had been partially destroyed, and was probably then built up. Traces of colour decoration of early date were discernible in all the arches, but which, owing to the rotten state of the plaster, it was impossible to preserve. The only decipherable portion was found at the east end of the nave on the south wall, and of this a copy has been made by the architect, which he intends to present to the Essex Archæological Society. It consisted of three draped figures; two, a male and a female in a standing position,—these were comparatively perfect,—and a female figure in a sitting posture,—the head being wanting. From the general character and treatment of the subject, it appears to represent the meeting of the Virgin Mary and her cousin, St. Elizabeth, the mother of the patron saint.

Of the four bells mentioned by Morant, two only remain; the larger (weighing about 13 cwt.) bears the inscription, "*Sit nomen Domini benedictum*"; the other, "*Sancte Nicoli ora pro nobis.*" It is concluded that the missing bells were sold to defray the expense of repairing the tower when the spire was taken down.

The quoins of the tower, which appeared to be old bricks, 2½ in. thick, were discovered to be tiles of irregular shapes and sizes, and varying in thickness from 1¼ in. to ⅞ in., with a lip on the edge, the inner surface being roughly scored with varied patterns. The original use of these tiles it is difficult to determine, but they are doubtless of Roman origin.

Other interesting relics have been found, among which may be mentioned a beautifully-worked piscina sill, in good preservation; a carved label termination; and some Roman ornamental paving tiles, all of which are now in the possession of the rector, the Rev. Nathaniel Davies, M.A.

The works have been carried out by Mr. W. Salmon, of London, contractor, from the designs and under the superintendence of Mr. Thomas Harris, of London, architect.

THE LONDON AND COUNTY BANK, LOMBARD-STREET.

THE chief establishment of the London and County Bank, in Lombard-street, is undergoing an extensive enlargement, and when the works now in progress are completed it will be almost double its present size. The property adjoining the bank at the corner of Lombard-street and Nicholas-lane has been purchased, and on the site an addition to the bank is in course of erection, which will increase the length of the Lombard-street frontage to the extent of about 20 ft., or nearly double the present frontage. This addition is also carried to a depth of about 20 ft. in Nicholas-lane, joining the existing frontage of the bank in that thoroughfare. Immediately to the south, again, the bank is still further being extended to a depth also of about 20 ft., with a frontage to the old churchyard of what was formerly the old church of St. Nicholas Acons, and carried the whole width of the enlarged structure, this elevation being 40 ft. in width. The several elevations of the enlarged building are entirely in Portland stone, elaborately carved and ornamented. The Lombard-street new frontage is about 60 ft. in height to the top of a bold cornice, and contains four stories above the ground-floor, which is lofty, and carried to the foot of the first floor with rusticated and carved piers. The upper floors contain a range of three windows each, those of the first floor being surmounted by pediments, with ornamental piers on each side, whilst the windows of the several floors above have circular heads. Above the first floor, at the corner of Lombard-street and Nicholas-lane, the building is carried up by an angular elevation, set several feet back from the frontage of the ground and first floors. A high-pitched roof, with lofty chimney-shafts, brings up the extreme height of the elevation to about 70 ft. A portion of the enlarged structure stands upon the site where formerly stood the parsonage-house of St. Nicholas Church, and it may be stated that in excavating for the basement of the new building the workmen came upon the rubble foundation-walls of the old church adjoining. The Nicholas-lane frontage is quite uniform in its architectural character and general treatment with the south elevation, and it may be added that all the several frontages are surmounted at the angles with vases.

Mr. Parnell is the architect, and Messrs. G. Smith & Co. are the builders, and the works are being carried out under the superintendence of Mr. G. French, as clerk of works.

WESTMINSTER ABBEY, AND THE STAGE.

KINGSLEY'S LECTURES IN AMERICA.

Of the five lectures delivered by the late Canon Kingsley during his visit to America in 1874, and now published,* with a dedication by Mrs. Kingsley to the American friends who welcomed her husband to their country, the first is occupied with the subject of "Westminster Abbey." It was characteristic of the author that he should have chosen this subject as the first on which to lecture to Americans, who have no such architectural monuments of the past to interest them; characteristic of that reverence for everything that is great and noble in the past, which he combined with so lively and, in the main, so enlightened an interest in the present and future. "Reverence for age," so he commences his first address to an American audience, "is a fair test of the vigour of youth; and conversely, insolence toward the old and the past, whether in individuals or in nations, is a sign rather of weakness than of strength." And he speaks in his own pleasant manner, a few sentences further on, of the gratification with which he had found, in Americans visiting England, this interest and reverence for things ancient; how he had been touched at finding so many of them, as soon as they landed in Liverpool, hurrying off "to our quaint old city of Chester," to gaze on its walls and overhanging houses; how, when repressing the enthusiasm of a lady visitor, telling her not to waste time there, but to go on at once to the British Museum, see its marbles and manuscripts, see the French cathedrals, the ruins of Provence and Italy, &c., he was met with the sufficient answer, "Ah! but you must remember, these are the first old things I ever saw!" For those who have lived under the shadow of these "old things" all their lives, it is difficult sometimes to realise the difference of living where all things are new; but not difficult to imagine how interesting, to those who live in such a new country, must be these time-worn relics of the Middle Ages, the tangible memorials and witnesses of a state of life and thought so distinct from that of the great modern republic.

And as it was at Chester, so, the late Canon says, he found it at Westminster. "He knew few greater enjoyments than showing a party of Americans round our own great Abbey;" and they, no doubt, must have equally appreciated the pleasure of having so genial and enthusiastic a guide. Referring to what has been written on the subject by Americans who have visited the Abbey, he quotes the remarks of Washington Irving, who, in some of his expressions, such as "dusty splendour," hints at a condition of things in the building which is considerably altered now. Indeed, the remark which *Punch* put into the mouth of the travelling American at a cathedral town,—"Stranger, how is it that your big churches in this country are all in such a state of disrepair?" can really be hardly applicable now, in the majority of cases. We may quote the reflections which the late Canon of Westminster made to his American audience in regard to this part of the subject:—

"If he" (Irving) "visited the great Abbey now, he would not have noticed that look of dilapidation at which he hints,—and perhaps had a right to hint,—some forty years ago. Dilapidation, dirt, and negligence are as hateful to us now as to the builder of the newest house outside. We, too, for more than a generation past, have felt, in common with the rest of England, and with all the nations of Northern Europe, that awakened reverence for Mediæval art and Mediæval history which is, for good and for evil, the special social phenomenon of our times; the natural, and on the whole, useful counter-check to that extreme of revolutionary feeling which issues,—as it did in Paris but three years ago,—in utter hatred and renunciation of the past, and destruction of its monuments. To preserve, to restore, and, if not, to copy, as a sort of filial duty, the buildings which our forefathers have left us, is now held to be the very mark of cultivation and good taste in Britain. It may be that we carry it too far; that by a servile and Chinese exactness of imitation we are crippling what originality of genius may exist among our draughtsmen, sculptors, and architects. But we at least confess thereby that we cannot invent and create as could our ancestors five hundred years ago; and as long as that is the case it is more wise in us,—as in any people,—to exhaust the signification and power of the past, and to learn all we can from older schools of art and thought, ere we attempt novelties of our own, which, I confess freely, usually issue in the ugly and the ludicrous."

That is a little too "free" a confession, perhaps; one to which some artists of the day may have a right to demur; but it is not a badly-put justification of the reproducing tendencies of modern architecture. We regret, however, to see that the old sentimental fallacy of the origin of Gothic architecture from natural scenery should have been retailed to an American audience by a speaker who would come, perhaps, to some extent, as a representative of the English education of the day. Canon Kingsley's information and study seem to have been in some respects rather varied than accurate, and he looked at everything more or less from a sentimental and picturesque point of view; hence this picturesque or scenic theory of Gothic architecture, so entirely untenable to those who have studied the constructive history of the style, seems to have had a particular attraction for him, and he several times took occasion to dwell upon it in public lectures, much to the annoyance of those who were better informed, and who have some right to complain that an utterly false theory of the subject should be maintained and repeated by a writer whose literary abilities had gained him the ear of the public. The paragraph in the lecture under notice, commencing on page 19, is not without a good deal of eloquence of language, but we fear it is, in effect, little better than nonsense, which it is vexatious to find stereotyped (to a certain extent) here.

The second lecture in the book touches on a subject which has considerable interest for us, and has more than once occupied our columns. "The Stage as it was once," is the title of an address the real object of which, while describing and commenting upon the characteristics of the Greek drama, is to suggest the idea of what the stage might again be were it more a matter of national interest and less under the sway of mere speculative managers anxious to catch the ear and the money of the more idle part of the population. Perhaps there is not really much in the tone and manner of the Greek drama that we could think of reviving or emulating now, our entire social and mental conditions are so different; but there is a passage in Kingsley's remarks which is suggestive of what we have before pointed out as the great want of the present day in drama.

"The Chorus was then, in Tragedy, and indeed in the higher Comedy, what Schlegel well calls 'the ideal spectator,'—a personified reflection on the action going on, the incorporation into the representation itself of the sentiments of the poet, as the spokesman of the whole human race. He goes on to say, and I think truly, 'that the Chorus always retained among the Greeks a peculiar national signification; publicity being, according to their republican notions, essential to the completeness of every important transaction.' Thus the Chorus represented idealised public opinion; not, of course, the shifting, hasty public opinion of the moment,—to that it was a conservative check, and it calmed to soberness and charity,—for it was the matured public opinion of centuries; the experience and usually the sad experience of many generations; the very spirit of the Greek race."

The modern fashion of drama does not permit, or admit, a Chorus on the stage to express public or national opinion; but if we could have a theatre in which really national opinion and feeling were represented by the auditory,—one in which pieces were brought forward, not merely to pay, but because of their presumed excellence and ability to meet and satisfy the tastes and feelings of the higher part of the English nation, something might be done to raise the drama to a somewhat similar position of national signification and interest. At present the audiences who fill our theatres do not represent the intellect or the mind of the nation at large. This, we should hope, is still above being roused or interested by such productions as form the staple of current theatrical attractions. We still are sanguine that we shall one day see the experiment tried of a national theatre, not solely dependent on profit and loss considerations, where what is produced shall be put forward on its own merits alone, not on its surmised capacity to attract the idlest and least thoughtful part of the population, and fill the pockets of the management. If a theatre were to be established on such a footing, a whole public would, in all probability, be found for it, quite distinct from the public which now throngs to burlesques and realistic light comedy.

Of the rest of the lectures we have been speaking of, the fifth and last, on "Ancient Civilisation," contains a good deal that is well put and suggestive; the whole are pervaded by that manly, sincere, and generous tone of feeling which, even more than his literary ability, gave their author so large a hold on the esteem and respect of contemporary English society.

* Lectures delivered in America in 1874. By Charles Kingsley. London: Longmans, Green, & Co.

WINTER EXHIBITION, PALL MALL GALLERY.

THE winter exhibitions at Mr. Wallis's gallery, the twenty-third of which opened this week, differ from the spring collections, in that they consist of the works of English as well as of Continental artists. In the present instance there can hardly be a question that the most important work exhibited is one by an English artist, and the admirers of Mr. Long's Babyloniun picture in the last Academy will look with interest and, we may add, without disappointment, at his "Thisbe" (153), in the Pall-mall room. A wall of finely-jointed marble masonry, covered with a decorative inlay, showing archaic figures, signs of the zodiac, &c. forms the background to the figure of Thisbe, who sits sideways on the sill of a recess in the masonry, applying her ear to the crevice where a stone has been loosened. A very pretty dusky maiden she is, with a fillet of gold in her black hair, handsome and expressive features, and a figure carefully studied in pose and proportion, perhaps a little deficient in modelling behind the shoulders, where the profile of the body seems rather rigid and straight-lined. The combination of colour in the whole is most harmonious, only there is nothing in the expression or type of face to suggest a heroine of remote prehistoric antiquity,—nothing but what one might expect to meet with in a Southern girl of to-day; nothing imaginative to associate the subject with the halo of poetry thrown round it from a remote past. That is where modern paintings illustrative of antique life and fable seem to us to fail almost always; painters rather reduce the legend to prose than add a fresh poetic interest to it; nor do they seem to realise in fancy the distinction of physiognomy and expression which must have divided human beings, so remote in time, and so utterly different in circumstances and associations, from their descendants in modern generations. Mr. Tadema is almost the only painter who has consciously endeavoured to revive antique human nature as it may really have existed, and to bridge over the gulf between the society of the ancient and the modern era; most remarkably, perhaps, in that little triple picture of a Roman dinner which hung at the Academy two or three years ago, nearly unnoticed except of the initiated. For the most part, classic names to pictures, now-a-days, are mainly an excuse for a pretty figure, or a pretty title to a figure; and Mr. Long's picture, good as it is in many respects, is no exception.

Next to "Thisbe," and a sufficiently strong contrast to it, is a small picture by Mr. J. Morgan, remarkable for simple and genuine pathos, under the title "Gone!" (157). A labouring man and his young wife bow their heads together in mournful sympathy, at the moment after witnessing the death of their infant child. The room is half-lighted by a candle, half by the morning light struggling from behind the window-curtains. The idea is no uncommon one, but there is a simplicity and directness in the artist's way of telling the story which is not so common, and a tenderness of feeling in it which makes it only partially mournful. It is significant to compare the work near it by Mr. F. Holl, "Doubtful Hope" (163), which, in spite of its title, is one of the most utterly hopeless pictures one could imagine,—a wretchedly sickly-looking woman with her child waiting in an equally wretched-looking druggist's shop for the making up of some prescription; there is a certain power in this, but it is an instance of studied "miserableness," even down to the cold, repelling tones of the colouring, which at once strikes one as manufactured pathos, without any redeeming or consolatory touch. A fortunate contrast to this is "The Happy Mother" (169), by J. Blommers, one of the best works we have seen by this somewhat unequal artist; it is a small picture, showing a peasant woman laughing over the baby which lies on her knee looking up at her. The painting is remarkably broad and full in style, and the expression and movements of the mother and child admirably rendered. Among other pictures of humble life may be noticed the "Dutch Interior" (136), by Huibers, where two

stout women, evidently mother and daughter, busy themselves over some culinary occupation. The texture of the painting is full and rich, and the artist has contrived to gain warmth and variety of colour while preserving the realism which he has aimed at. "A Little Bit of Scandal" (41), by A. Laupheimer, is a good study of figures in an old tumble-down corner of an old house; and elsewhere the artist shows us himself "in his studio" (75), *i.e.*, in the dwelling of a peasant, and engaged in conversation with a girl whom he is sketching, and who is not without considerable grace in her manner and pose. While on this class of subject, we may particularly notice two small pictures by Seignac, "Dressing the new Doll" and "Thirsty Souls" (60, 66), both child subjects in the style which was initiated by E. Frère, and remarkable for quiet genuine humour and artistic execution; the critical and interested look of the little boy who holds the glass to be filled with water, in the latter one, is excellent. If the visitor compare these with two pictures of just the same size and aim, "Playing at Marbles" and "The Young Cuisiniers" (20, 22), he will have an instructive contrast between the artistic and the merely commonplace way of treating a simple subject.

Mr. F. Goodall's large three-quarter figure of "The Seller of Doves" (64) is the same Eastern woman, with a long flowing robe open at the bosom, whom he has painted several times; his "Early Morning on the Borders of the Desert" (81) is an excellent little work, as real as possible, and full of atmosphere; and the small figures of the goats and their owners, and the blanket-like tents, combine to give a vivid idea of Old Testament life realised: we like the artist much better on this scale than on the over-extended canvases of Eastern landscapes, &c., which he has previously produced. Among other figure-pictures are two half-lengths by Schlesinger, a sort of contrast of high life and low life, of which the latter is the best. "Taking the Veil," by Czachorski (143), is a work of considerable feeling, though not remarkably powerful. Mr. Pettie is vexatious, as he often is, in spending a great deal of trouble and some good painting over a subject no one can take interest in; "The Joy of the House" (19),—to wit, a horrid little boy drumming to his grandfather,—is no "joy" to the spectator. Mr. Forbes Robertson sends a very expressive female head in an attitude of devotion, under the title "Paternoster" (1); Mr. Gow has tried to depict "Malvolio" (6) practising behaviour to his own shadow, and has only succeeded in portraying an ordinary serving-man, though there is excellent painting in the head; Miss Matilda Goodman has made a little "hit" in colour in her rather violent but clever composition of a very green girl tending some very big and flaring "Sun-flowers" (98); Mr. Erskine Nicol sends a couple of Irish figures, which seem to us quite inferior in humour and colour to his old productions of this class. Among the microscopic pictures which certain contributors to the gallery affect in emulation of Meissonier, "Bringing in a Prisoner," by H. Breling (61), is worth attention for the finish and character in the faces of the consequential-looking officers who constitute the principal figures.

We are always inclined to think the last of Manthe's winter scenes that we see to be the best, but we really believe "Winter" (26) in the present collection is the finest we have seen; nothing could be more wintry and more true to nature; the sky is painted with great power and truth of tone. Weber's "Fishing-boats going out, Normandy" (72) is a fine specimen of a windy picture with a swinging sea, drenching in spray the old wooden pier, where a group of fisher-women haul away at a hawser from one of the boats. Lindstrom's "Bavarian Forest" and "Edge of a Forest" (83, 147) are full of feeling and effect; and Stademan's "Scene in Bavaria" (107), J. L. Pickering's "Shadow of a Cloud" (148), and Windmaier's "Clearing up after a Storm" (18) should be looked at; in the latter the strong light on the bank on the right is not quite accounted for, and looks rather like stage effect. There is a good deal that is effective and true in Mr. Leader's large picture "Happy Summer Time" (55); but his "Silver Thames" (11) is not silver in any sense, but very poor tinsel.

"British Workman" for Colchester.—The architect of this building resides in Colchester, and not in Chelmsford, as stated.

THE MANUFACTURE OF HORSESHOES BY MACHINERY.

The making of horseshoes has not until comparatively recent times been carried on by means of machinery, nor have at any former period large manufactories for their production been in existence, each shoeing-smith making his own horseshoes. Up to the second half of the eighteenth century, the occupation of the shoeing-smith was a trade in which the different operations were acquired by constant routine, science never entering the smithy. It was only in 1756 that M. Lafosse somewhat modified the form of the horseshoe, until then very imperfect. Notwithstanding his efforts, however, and the influenced exercised, in France at least, on the craft of the shoeing-smith, by the establishment of veterinary colleges in 1762 and 1763 at Toulouse, Lyons, and Alfort, the shape and quality of the horseshoe have changed very little. It has been said that the horseshoe as it is commonly used might with advantage be so changed as to prevent at least slipping on the pavement of cities. It is true that for some years great attention has been bestowed by eminent makers upon the production of an improved horseshoe, and that especially since the introduction of asphalte pavements a great effort has been made in that direction. A horseshoe said to be specially designed to prevent the numerous accidents and delay caused by horses falling when the paving is damp or wet has lately been invented. This is an india-rubber shoe, said to be so contrived as to be easily put on the hoof or removed, as occasion requires, and asserted to possess the further advantage of protecting horses' feet in winter against the injurious effects of the practice of mixing salt with the snow and ice in streets. The cost of these shoes is stated to be about one-third more than that of iron ones, whilst they are reported to be light in weight and very durable. Whether the new shoe possesses all the good qualities claimed for it, experience alone will show, and judgment must therefore be suspended in the meantime.

But to return to our subject. It is only natural that in times like ours, when everything tends to the employment of mechanical means in all branches of industry, horseshoes should likewise become the subject of experiment. There are at the present time, in this country as well as abroad, several manufactories exclusively engaged in turning out horseshoes with the help of machinery, and the machines invented during the last twenty years—it is about that time since the first machine was brought out—are very numerous. Though they naturally differ much in form and application, in principle they are about the same, the chief attention of inventors being directed towards the production of a perfect bending machine.

At the Paris Exhibition of 1867, horseshoes made by machinery were shown, but not the machines. At that time there were two manufactories in France, one at Ivry, the other at Clichy. Notwithstanding that their articles were made of all sizes and shapes, and sold at the most reasonable prices, they did not find much favour with shoeing-smiths. Some years later establishments were opened at several other places, and their articles sell now readily in France.

The manufacture of horseshoes, whether by hand or power, may be said to comprise the three following operations:—(1.) The making of the iron bar, of a special shape and under special circumstances, called the bloom (*lopin*). To this bloom, although in its general features it resembles an ordinary iron bar, is given the shape required for its ultimate purpose, *i.e.*, the different cross sections and thicknesses of the finished horseshoe. (2.) The bending of the bloom to the required form. (3.) Punching the holes.

The blooms intended for horseshoes are generally made in a rolling-mill. The punching is done either by means of the ordinary smiths' tools, or with well-known machines, such as eccentric-presses, stamp-hammers, &c. The most difficult operation, and one requiring the greatest accuracy and the longest time, is the bending. This must be done by mechanical means, and all the efforts of inventors have been directed towards the construction of machines performing this operation successfully.

It would be beyond our scope and the space at our command to enumerate all the different machines which have been invented; we intend noticing only specimens of their respective types at present in operation. One of the first inventors was M. Mansoy, who brought out his machine in 1859. It is a kind of shears, with two cheeks, which bend the bloom round a model representing the inner shape of the horseshoe. The shears are worked by hand, by means of handles. M. Mansoy has also used power to work his apparatus, and thus obtained the machine in use at the present time. Another apparatus, at present in operation, is that of M. Victor Vezzoli, of Milan, who constructed and patented (1864) a machine which does all the work required. The stamping is performed by one of Thonnelier's stamping-presses. The bar is bent on an iron plate which also bears it while being stamped, the bending being effected by a set of rollers, two of which act directly upon the bar, and bend it round the model, while two others work a pair of cheeks; the latter holding the formed shoe fast while being stamped. Eight years later, in 1872, M. Vezzoli patented a bending-machine which is an improvement upon his first, and which was still further improved in 1874.

M. Mansoy's machine is in use at Grenelle in France. The whole internal arrangements of the establishment are said to be very practical, and favourable results are reported to have been obtained. Five machines are here employed, viz., Mansoy's horizontal and vertical-acting universal rolling-mill, a bending-machine, two vertical hammers, and a punching-machine. To work these machines without interruption, six men are required, one for each of the five machines, and one for attending to the shears and the re-heating furnace. The iron bar, after leaving the mill furnace, enters the rolling-mill constructed by M. Mansoy, and patented in 1866, where it is slightly bent. This mill consists of two rollers moved by cog-wheels in opposite directions, one of them being perfectly cylindrical, the other eccentric, which serves to give the iron bar the different dimensions required. The iron bar on leaving the rolling-mill, enters at once the bending-machine. This acts by means of two steel moulds closing round the iron bar and giving it the exact form of the horseshoe. The moulds are said to be complicated in their arrangements. They are connected by and provided with several pivots or tenons, which, in consequence of the rapid wear they undergo through the application of great power for bending, must be repaired or replaced about once in every fortnight. From the bending-machine the shoe passes under the first hammer, provided with a drift; the required holes are made by powerful strokes on the shoe. The latter now glides on an inclined plane to the bed of the second hammer, where it is cooled by a jet of water, at the same time that it is pressed flat by a single stroke of the hammer and the burr set the holes flattened down. By this latter operation the holes are somewhat reduced in size on one side. In order to give to the holes on this side of the shoe which touches the hoof a perfectly rectangular cross section, each hole is once more punched, after cooling, in a punching-machine. The whole of the process is said to be rather imperfect; it has this great drawback, that it cannot be carried on continuously, the construction of the bending-machine involving frequent repairs.

With regard to cost and pecuniary gain in this particular manufactory, we learn the following:—The manufacture is at the rate of 3,000 horseshoes per day (of ten hours), or five per minute. The weight of a horseshoe being generally more than 800 grammes, 125 horseshoes at most weigh 100 kilogrammes, and in order to produce 3,000 horseshoes, twenty-four times 100 kilogrammes of iron is required per day.

The cost of production of 100 kilogrammes of finished horseshoes is estimated as follows:—

	Francs
Price of the raw iron per 100 kilogr. ...	28
Waste	2
Coal	3
Labour	3
General expenses.....	1
Total.....	37

The selling price of horseshoes weighing more than 800 grammes being 48 francs per 100 kilogrammes, the daily profit arising on that weight is therefore 11 francs. As regards the lighter descriptions, they are sold at from 35 to 45 centimes each, according as the weight varies between 750 and 300 grammes. If we take the

an average 600 grammes and 40 centimes, we obtain in that case 150 horseshoes per 100 kilogrammes, at a selling price of 60 francs, and a profit of 23 francs per 100 kilogrammes. The daily production being at the rate of 3,000, the profit will be for the former (heavier) description of horseshoes 79,200 francs (3,168*l.*) per year, while for the lighter sorts it is at least 165,000 francs (6,600*l.*).

Another manufactory is that of the Compagnie des Petites Voitures. Here the work is performed in the following manner:—1. The rolling by which the iron bar is prepared is done by a very simple and ordinary rolling-mill; 2. The bending is performed by one of M. Vezzoli's machines, as patented in 1874. This machine is said to be more practical than that of M. Mansoy's. After leaving the bending-machine, the horseshoe passes into a punching-machine, which makes the holes. By means of Vezzoli's machine, 2,000 horseshoes may be made per day, of an average weight each of 600 grammes. Taking into account the waste, the total consumption of bar-iron is 1,400 kilogrammes per day. The iron bars, perfectly prepared for bending, cost 34 francs per 100 kilogrammes, or 476 francs for 1,400 kilogrammes. The daily expenses are as follows:—

	Francs.
Price of 1,400 kilogrammes of iron bars	476
Interest on capital sunk in raw material	20
General expenses and coal	28
Rent	2·80
Stoker	5
One man at bending-machine	5
Two men at punching-machine	10
Three labourers	7·50
Two punchers	8
One labourer	3·50
One hammerman	6·20
Total	572

As the 2,000 horseshoes of medium weight turned out daily have together an average weight of 600 grammes each, and a wholesale value of 40 centimes, or together of 800 francs, the manufactory yields a daily profit of 230 francs, which would amount to 69,000 francs (2,760*l.* a year). But as at present the shoes are not sold to the public by the company, they only making enough for their own horses, the gain in reality is much higher.

As in the manufactory first mentioned, the process and the machines employed are said to be capable of improvement. It may consequently be affirmed that this branch of industry, which is only just opening up, but which already yields a handsome profit, may in time be made more remunerative if the necessary improvements are introduced in the machinery.

We are indebted for some of the above particulars to our contemporary, the *Portefeuille économique des Machines*, to the pages of which we refer those of our readers wishing for further information.

THE OPENING CONVERSAZIONE OF THE ARCHITECTURAL ASSOCIATION.

The Architectural Association held its opening *conversazione* on Friday, the 29th ult., in Conduit-street. In addition to the lower galleries usually devoted to this gathering, by the courtesy of the Council of the Royal Institute of British Architects the meeting-room and library of the Institute were placed at the disposal of the Association for the evening. The hour at which the visitors were invited to assemble was eight p.m., and, notwithstanding that a want of courtesy on the part of the tenant precluded the Association from obtaining possession of the lower galleries until six p.m., the preparations for receiving the company were nearly completed by the time announced,—thanks to the industry of Mr. T. W. Cutler and the entertainments committee. In the short time which was available much had to be done, not only in the hanging of drawings, but in suitably disposing the various "exhibits" lent for the occasion, and which were kept for a long time waiting in vans and carts at the door. In the large gallery on the ground-floor were exhibited two very interesting series of water-colour sketches by Messrs. Phené Spiers and F. C. Penrose, illustrative of abbeys, churches, châteaux, and other buildings at La Couronne, La Palud, Lanville, Plassac, Aubeterre, Mouthiers, Cellefronin, Chalais, Chillac, Berneuil, La Rochefoucald, St. Quentin, Rouillac, Puyperoux, and other places visited in the course of the Association's recent visit, under the guidance of Mr. Edmund Sharpe, to the almost-entirely-unknown (to English architects) Angoulême district. In the smaller gallery, Messrs. Cox & Son exhibited a cabinet and some specimens of metal-work, in addition to a brass eagle lectern which they have just completed for Chester Cathedral. Mr. G. A. Rogers sent some specimens of carving; Messrs. Gregory & Co. a couple of cabinets; and Messrs. Morris & Co. some chintzes and carpets designed by them. Messrs. Gibbs & Moore exhibited a pair of folding-screens, and two or three specimens of their new material for ceiling decorations, as used in the grill-room and other portions of the new additions to St. James's Hall. Mr. Bentley lent some fine specimens of Japanese embroidery, and Mr. Cutler exhibited some cutlery in the shape of a case of Japanese swords. The prize drawings of the Association were exhibited on the walls of the Institute meeting-room. Refreshments were served in the Museum of Building Appliances, and Coote & Tinney's band performed a selection of music during the evening. The names of upwards of fifty candidates for membership in the Association were posted up.

At nine o'clock the President, Mr. J. S. Quilter, took the chair, and at once proceeded to present the prizes offered by or through the Association during the past session. The prizes, which all consist of books to the value stated, were awarded as follows:—

Class of Design prizes for the best and second-best series of sketches submitted in the class during the session:—First prize (3*l.* 3*s.*), Mr. L. A. Shuffrey; second prize (2*l.* 2*s.*), Mr. Vyvian Trubshawe.

Elementary Class of Design prizes for the best and second-best series of studies submitted in the class during the session:—First prize (2*l.* 2*s.*), Mr. S. Turner; second prize (1*l.* 1*s.*), Mr. C. L. Cadney.

Class of Construction prizes for the best and second-best series of papers submitted at the meetings of the class:—First prize (2*l.* 12*s.* 6*d.*), Mr. Sidney Vacher; second prize (1*l.* 11*s.* 6*d.*), Mr. A. H. Tiltman.

The Class of Colour Decoration prize, for the best series of sketches submitted in the class during the session, was awarded to Mr. Knight; honourable mention of Mr. Pratt's sketches.

For the Essay prize (2*l.* 12*s.* 6*d.*), for the best essay on either of the following subjects, viz.:—(1), "A Monograph of Andrea Palladio;" (2), "The Influence of Material on Gothic Architecture;" (3), "On the Comparative Advantages of Vaulting and Open Timber Roofs," there were only two competitors, neither of whose essays was, in the opinion of the judges, of sufficient merit to warrant the award of the prize.

The Architectural Union Company's prize (5*l.*) for the best series of measured drawings from existing buildings in England, or portions of the same, erected previously to the eighteenth century, was awarded to Mr. Gibbs. A second prize of 2*l.* 10*s.*, given by the Association in the same competition, was carried off by Mr. Burrows.

For the best design for dwellings for the middle classes, arranged in flats, Mr. Avern was awarded the prize given by the Association.

There were three competitors for a prize offered by the Association for the best design for a concrete villa, but although the designs submitted possessed great merits, neither of them was sufficiently in accordance with the conditions laid down, and therefore the judges could not recommend the award of the prize.

For the prize offered for the best design for a chapel for a middle-class college, there were four competitors, but the judges had not sent in their award.

The distribution of prizes concluded,

The President expressed his gratification at seeing so large an assemblage of members and visitors, remarking that if the success of any undertaking could be measured by its popularity, there was every reason to look upon the Architectural Association as a very successful institution, in spite of its numerous critics. The gratifying work in which he had just been engaged might be considered as a finishing-touch of the successful work of last session, of which the picture was now completed, and left to fill its place by the side of many previous sessions. As an earnest work, full of life, and vigorous in its energy, wanting perhaps in tone and mellowness, seeing that it was fresh from the workers' hands, he had no hesitation in saying that it would form a worthy companion of its predecessors. They had now before them the outline of another session, and starting with the advantage of so many examples, he trusted the work of the coming session would be found worthy of its position. The general features of the picture, with some of the tints and shadows, had been already sketched in, and the work was now placed in the hands of the working members, who would proceed to fill in the several details, to each of which was given an individual character; and from the most prominent down to the least conspicuous, all were equally aiming for the completion of the whole. Some mistakes might possibly be made, but working, as they did, in company, each anxious to do his best individually, and at the same time keeping in view the general interest, they hoped to succeed in raising a high standard for the future, so that the profession of architecture, which had long been struggling to assert itself against great opposition, might at length attain that rank among the arts and sciences which was its due. They had numerous difficulties to contend with, but none of them more disheartening than the doubtful position in which they were often placed in the practice of their profession by the uncertainty of public opinion as to the duties, responsibilities, and privileges of an architect. This difficulty, however, was greatly increased by the various opinions held by different members of the profession, from the ethereal irresponsible individual whose ideal was to build fancy free, and decorate all gorgeous in gold and colour, down to the grasping Five-per-cent., who was willing to perpetrate any atrocity, and submit to any authority, "for the usual commission." The cause was partly to be found in the extreme views which were advanced on both sides of the question, and architects could not hope for a better understanding between the public and the profession until the conditions of an architect's services were more clearly defined. Some public companies and committees appeared to look upon architects as so many machines, out of which any quantity of work might be obtained if a sufficient power were called into action, and with these views an advertisement was baited with a 10*l.* note, and it was hoped by casting a line into the stream to secure as willing captives some of the finest specimens, who would then submit to such handling as to make any finny inhabitant of the water struggle to release himself, or perish in the attempt. The bait, however, too often took, and the public-spirited committee for a time enjoyed the success of their enterprise, until, finding that "all that glitters is not gold," and wiser by the knowledge they had gained, they declined, politely or not, the professional skill of their captives, and left them to flounder in their helpless condition. Such, unfortunately, was the "fishy" result of by far the greater portion of the numerous competitions so often invited and so eagerly sought after, by which a great amount of disappointment and vexation was caused, and the profession of architecture brought into ridicule and disgrace. The opposite extreme, however, was equally prejudicial to the interests of the profession: when an architect occupying a prominent position, and having numerous friends, was invited to carry out a building of public importance, and, regardless of every one's opinions but his own, proceeded to dictate in an overbearing and wayward manner how the work was to be carried out. No recommendation or suggestion had any effect; you could "take it or leave it alone," was the only reply. The committee, in sheer despair, at last gave instructions to proceed, but the difficulty only increased, as the unfettered genius was always evolving new ideas, and his wanton ways were a terror to his friends, and a constant trouble to those who executed his designs. The works were carried up, and pulled down again, alteration followed alteration, until, in self-defence, the promoters were compelled to suspend the works, or call in some reliable person to help them out of the interminable maze into which they had been led. This was no fancy sketch, but one which it was to be feared had had very great weight in the formation of public opinion on the subject; and it was earnestly to be hoped that the day was not far distant when a more united action on the part of the profession, and a better *esprit de corps* among its members, would convince public opinion that architects were men who knew their work, and how to do it. But much would have to be done before that could be accomplished; and the Architectural Association, which had enrolled within its ranks nearly 700 of the younger members of the profession, could not feel too strongly the importance of devoting the whole of its energies to the study of those subjects which the architect required to know. Great as had been the success of the Association, its limit of usefulness had been by no means fully attained, and he called upon the members not to relax their efforts in promoting its welfare.

Mr. F. C. Penrose and Mr. Chatfeild Clarke expressed sympathy with the objects of the Association.

Mr. F. H. Fowler addressed a few words to the meeting, suggesting that the members of the profession would do well to look out for and

profit by the many opportunities for the improvement of our street architecture which must inevitably be afforded by the operation of the new Artisans' Dwellings Act. The designs for the workmen's dwellings which had to be erected under the Act ought to show a great improvement on the prison-like blocks of dwellings which had already been erected in some parts of the metropolis.

The company broke up shortly before midnight.

DISTRICT SURVEYORS AND BUILDERS.

A DECISION has just now been obtained at the Lambeth Police Court in favour of builders, which, if generally acted on, will cost builders or their employers very dearly. Mr. H. Jarvis, D.S. of St. Giles's, Camberwell, summoned Messrs. Adamson & Sons, builders, for alleged insufficient notice for the erection of St. Jude's Permanent Church, Meeting-house-lane, Peckham. Mr. Douglas Straight, barrister, appeared for the complainant, and contended that by the 38th section of the Building Act the District Surveyor was entitled to demand from the defendants that they should send him for examination a copy of the drawings and specification for his approval. Mr. T. H. Adamson, who represented the firm, denied that the Act made such a requirement, and said that it was only as an act of courtesy on the part of a builder that the drawings were even shown to the District Surveyor, whose duty it was to inspect the work only to see that the provisions of the Act were complied with; but that in this instance Mr. Jarvis had been offered to see the plans on the works at any time during working-hours.

Mr. Chance, the presiding magistrate, when he gave his decision, said that the question depended entirely upon the notice under the 38th section of the Act, and was whether, besides the particulars given, the District Surveyor was entitled to demand drawings and specification. There were two distinct things mentioned in the section, viz., buildings, and certain other work. In the case of "buildings," it was the duty to give certain particulars, which were specified; that was to say, the "situation, area, height, and intended use." And the Act went on to say, with reference to the "proposed work," the builder was to give "particulars of any such proposed work," but the section made a distinction between "buildings" and "proposed work." He was of opinion that in the case of "buildings," the only particulars required by the Act were the "situation, area, height, &c.," and that plans were not required. Even supposing that that view was not correct, he found that in a subsequent section, the 59th, which left power to the Metropolitan Board of Works to prepare or sanction forms of notices,—and notice upon those forms was to be sufficient in law,—nothing was said about drawings or plans. The Board of Works sanctioned the form of notice given by the defendants, and the section made that notice perfectly sufficient. Looking, therefore, at that fact, he was of opinion that the defendants had complied with the necessary requirements, and he should dismiss the summons. Being asked to postdate his decision, in order that the Building Act Committee of the Metropolitan Board might be asked to consider the matter, Mr. Chance declined to do so, as he felt perfectly clear upon the point. The summons was accordingly dismissed.

Sufficient stress, as it seems to us, was scarcely laid by the magistrate on Section XXX., which says,—"Notwithstanding anything herein contained, every Public Building, including the walls, roofs, floors, galleries, and staircases, shall be constructed in such manner as may be approved by the District Surveyor, or in the event of disagreement may be determined by the Metropolitan Board." It can scarcely be supposed that the Act contemplates the postponement of this approval till the work has been done, rightly or wrongly. And as the approval of the District Surveyor is to be obtained, proper means of forming an opinion must be afforded him. In a parenthesis, we may add that should he refuse to approve, the drawings not having been submitted to him, the disagreement would have to be determined by the Metropolitan Board, who would at once require copies of the plans and particulars, which, under Section LXI., they would, when approved or otherwise, forward to the District Surveyor that he might see the decision of the Board carried out.

What the District Surveyor required in Messrs. Adamson's case was the loan of the drawings for an hour or two at his own office for careful examination. The reponsibilities of a District Surveyor in respect of public buildings is very great, and he would be very unwise to give his approval if denied the means of quiet examination. During a long practice as a District Surveyor we never once found a builder unwilling to submit the drawings for examination.

It *must* be done, in fact. Nine times out of ten, in the case of public buildings, the footings, the thickness of walls as compared with height, the scantling in floors, the construction of the roof, and so forth, are entirely arbitrary, regulated only by the judgment of the architect, and equally open to be objected to by the judgment of the District Surveyor. The builder who refuses to send to the surveyor the drawings of a public building on which he is about to be engaged will find that he has not merely acted discourteously to a public officer, who is under heavy responsibilities, but has subjected either himself, his employer, or his architect, to much inconvenience and loss.

THE DUTY OF GOVERNMENTS AS TO EDUCATION, SCIENCE, AND ART.

SIR HENRY COLE, C.B., distributed the prizes of the Lancashire and Cheshire Union and Institute at Manchester, on the 25th ult., and in the course of his speech he said,—I accepted with pleasure the duty of distributing the prizes of the Lancashire and Cheshire Union which you have confided to me this evening, because it afforded me an opportunity of inviting your attention to a subject which is beginning to have a large national significance, I mean the duty which Governments owe towards education, science, and art. This duty is one of recent growth, not half a century old. It did not exist when the Peterloo massacre, as it was called, took place in Manchester sixty years ago. At that time Manchester had hundreds of houses and thousands of inhabitants, but it had no representatives in Parliament, to declare its wants; whilst Old Sarum, having no houses or inhabitants, had two representatives. Those were days of boroughs of one vote and no vote, satirised in Peacock's novel of "Melincourt," and were represented by Sir Oran Hautton, one of Darwin's prototypes of men. These very rotten boroughs were extinguished in 1830. Governments then knew no duty to education, science, and art; but in 1833 a little spark of duty to education was kindled by Lord John Russell, when Parliament first voted 30,000*l.* towards the promotion of it. In 1837, some 1,500*l.* was voted by Parliament to art; whilst in 1852 some 2,000*l.* was voted specially to science instruction. Now the sum which the people pay and receive back through Government to enable this country to hold its proper intellectual rank among the nations of the earth amounted in 1875-6, for education, science, and art applied to various services, to nearly 3,000,000*l.*, which is only one-tenth of the cost of the national insurance effected through the army and navy. So little has the idea of the duty of Government towards national culture at present entered into the minds of legislators, and so feebly are the relations between the Government and governed understood in this respect, that a Minister, and even an earnest promoter of education, expressed a dread in last session of Parliament that the people were losing their ancient and boasted independence in asking Government for assistance in founding museums of science and art. Even at the cost of a few minutes of time it seems to me worth while examining this view. What is Government now? It is not the Government as in days gone by, even only as far back as fifty years. Is it not the servant of the commonwealth rather than its despotic governor? If a Ministry misreads the wishes of the people now, it gives way to another Ministry. If a Ministry makes a mistake or commits a blunder, it has the grace to retract it instantly. Government is dependent on the general common sense of the people, and being thus dependent on its will, and being, as it were, its chosen trustee, the nation cannot sacrifice its own independence in expressing its own wants for the expenditure of its own funds which it has entrusted to the Government as its treasurer. If I put money into a bank,—and I call the country my bank,—I do not sacrifice my independence in asking for it back again. It seems to me that a demand for means to advance national culture rather shows a spirit of independence than the contrary. The demand for increased and better education, for more and general instruction in science and art, and for the teaching by objects in museums, shows wisdom and advancing independence of character in the nation, and is not at all the cringing of a suppliant for benevolence from a despot. You find the expression of sympathy with this growing demand for counsel and aid in education in the constant utterances of politicians both in and out of Government at the present time; you find it adorning the speeches of the Prime Minister as well as in those of Mr. Cross, the Home Secretary. Lord Derby has again and again told you his views in Manchester on the vital necessity of cultivating science. And I see with gladness that the Chancellor of the Exchequer never loses a public opportunity of declaring his goodwill towards the culture of the people, and intimating his intention to promote it through science and art and public museums when the state of the public revenues enables him to do so. Before the close of the last session of Parliament Sir Stafford Northcote said that we had not yet attained to a perfect system as regarded art education, and that there was a great deal of room for further assistance on the part of the State for the promotion of scientific education. Lately, at Middlesbrough, he said that it is part of the financial policy of the Government that we should aid local bodies in matters of local improvements; that a great deal had been done in London in the way of founding a great central museum and schools of art and science at South Kensington, and something had been done to awaken the desire for local museums throughout the country. He hoped the time would come when we should be able to organise a system by which in all large towns it would be possible to render help in connexion with the great central museums in London, and the local museums which were springing up in different directions. Lastly, much more was wanted in the direction of awakening interest in museums in this country. I have served under many Ministers, Ministers like Lord Granville and Mr. Forster, the late Lord Salisbury and Mr. Henley, good friends of national culture, but in all my experience I have known no united Ministry so desirous of responding to the universal public cry for the promotion of national culture and domestic improvement as the present. They have a House of Commons and the people at their back to enable them to stamp their mark throughout the country for all time. I wish them "God speed" and success.

MESSRS. PICKFORD'S NEW DEPÔT AND WAREHOUSES IN BERWICK-STREET.

AN extensive new merchandise depôt for Messrs. Pickford & Co., at the West End, which has for some time been in course of erection, is now almost completed, and will be opened for business in about a month. The new building is situated on the west side of Berwick-street, a short distance out of Oxford-street, and occupies an area of upwards of 10,000 ft. For the purposes of the building, Messrs. Pickford & Co. purchased a block of property which for many years past had been chiefly occupied as workshops for the manufacture of "antique" and other furniture. The site having been cleared, the ground was excavated to a depth of 16 ft. below the street level, involving the removal of upwards of 6,000 cubic yards of earthwork. In the basement so formed, thirty vaults have been formed, the arches springing from brick-piers from 2 ft. to 3 ft. square, built in Portland cement, and carried down in trenches to a depth of 7 ft. below the level of the basement-floor. The Berwick-street elevation of the superstructure is 80 ft. in height, and about 25 ft. in width. It has been designed, along with the rest of the building, by Mr. Chancellor, and is in what is called the Queen Anne style of architecture. It is built entirely in red moulded Braintree brick, manufactured expressly for the purposes of the building. Above the ground-floor there are three stories, and the elevation is surmounted by a gable. Above the window-heads there are projecting hoods, in moulded brick, with similar projections on each side of the windows and principal entrance. At the south side of the elevation there is an archway which leads to the storing space, and which extends to a depth of 140 ft. from the Berwick-street frontage, and is 72 ft. in width. The extreme rear is covered in with a wooden and glass roof, carried to a height of about 30 ft. from the ground-floor level, and in the central portion of the area large ware houses, carried to the height of the Berwick

street frontage, are intended to be erected. In the basement there are three hydraulic lifts, which will work up to a height of 70 ft. It should be stated that the floors of the vaults in the basement are formed of cement, and faced with asphalte.

The builder is Mr. C. N. Foster, of Whitefriars, and Mr. Treasure is clerk of works.

THE LATE MR. THOMAS SMITH, ARCHITECT.

We have already mentioned, with regret, the death of Mr. Thomas Smith, of Hertford.

Mr. Smith had a large private connexion, which extended over a wide field. He was the surveyor for the county of Herts, which appointment he held for over forty years, until his death, and he left the marks of his handywork in most of the public buildings and bridges in the county.

He held for several years the appointment of surveyor for the county of Bedfordshire, but his engagements would not allow him to continue the duties of both counties.

Mr. Smith reconstructed the gaol, lunatic asylum, and smaller buildings in that county. Among his private appointments were those of surveyor to the London estate of the Marquis of Salisbury and that of the Baron Dimsdale, on which latter he erected many private buildings. He executed work in Ireland for the late Lord Ranfurly and Sir Patrick Bellew, and among other buildings there erected the Hospital at Louth.

In conjunction with his son, Mr. Thomas Taylor Smith, he executed several works abroad; the English Hotel at Nice, the Protestant churches at Nice, Cannes, Stuttgard, and Naples, the latter being obtained in competition. Mr. Smith erected also at Cannes several mansions and villas for private owners, and had the credit of always keeping within his estimate.

LEWES WATERWORKS.

In the first week of February this year Messrs. Easton & Anderson, the well-known engineering contractors, commenced making the new well for the above company, and notwithstanding the difficulties they had to contend with, they succeeded in reaching a depth of 140 ft., and fixing cast-iron cylinders for the first 24 ft., in the short space of five months and a half. It will give an idea of some of the hindrances they had to overcome when we state that some days they could not bore more than 6 in. to 7 in.

For the first 24 ft. down, a shaft was sunk, 6 ft. 6 in. diameter (see annexed sketch), and lined with four lengths of cast-iron cylinders, being bolted together at the joints through the internal flanges with 20 bolts, 1 in. in diameter, square under heads to suit holes cast in flanges.

The bottom length of the cylinder, which has a cutting edge at the lower end, is carried down 4 ft. into the solid chalk, which was reached about 20 ft. from the ground surface.

From the bottom of the 6 ft. 6 in. shaft a ¾ in. wrought-iron pipe, 6 ft. long and 18 in. diameter, is built in with brickwork in cement, as shown, and the boring from this level is continued downwards 15 in. diameter, as will be fully understood by reference to sketch.

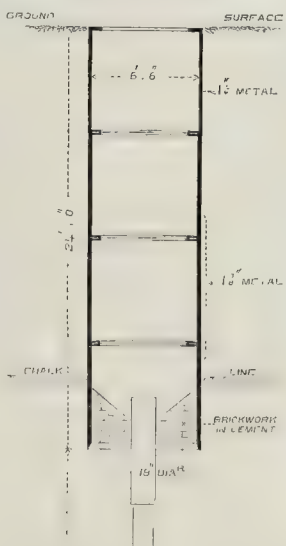
A suction tube, 7 in. diameter, is fixed into the well at the top, and connected with the pumping-engine, which propels the water into a 10-in. pipe running from the works to No. 2 reservoir, near the Black Horse Inn, Saint Ann's; from this point the pipe is reduced to 6 in., and is carried to No. 3 reservoir, on the hill above the County Gaol. In addition to these two reservoirs there is another on Kingston-hills, which is supplied from a pipe 8 in. in diameter, joining the 10 in. near the works.

The whole of the town of Lewes has been supplied from the new well for the last three months.

The engine used for pumping was erected in 1869, and is capable of being worked up to 50-horse-power when forcing into the highest reservoir. It has two cylinders, one high pressure, 16 in. diameter, and one low pressure, 28 in. diameter. The steam, in passing from the boiler, reaches first the high pressure, and passes thence to the low pressure; and, after being used, is condensed, and returns to the boiler, thereby saving much fuel, which to the shareholders means money saved. The stroke of the engine is 4 ft. 6 in.; the fly-wheel is 18 ft. in diameter, and weighs 8 tons 16 cwt. The beam is made of two wrought-iron plates, each 1¼ in. thick. Connected to the beam are two plungers, 13 in. in diameter, that nearest the centre of the beam throwing 350 gallons, and the one farthest from the centre 450 gallons per minute.

There is an older beam-engine in an adjoining room, of twenty-five horse-power, erected in 1863, which has a stroke of 3 ft., used in case of repairs being required to the more powerful engine. The cylinders of this engine are 12½ in. for high pressure, and 15 in. for low pressure, and in them the steam is utilised, as explained above. It has a fly-wheel, 16 ft. diameter, and is capable of pumping about 400 gallons per minute. In the same room with the smaller engine is a three-throw pump, also capable of pumping 250 gallons per minute.

To supply the steam-power, three boilers are



provided, but only one is used at a time, so that repairs can be made to each without stopping the engines.

Much care and foresight appears to have been used in planning this pumping-station, so that there is little fear of any breakdown occurring through accidents; for if one engine failed, others would be used while repairs were being made, and the same remarks apply to the boilers.

The supply of water is inexhaustible, for when pumping 1,050 gallons per minute, the water in the well stands at 12 ft. below ground level, and when pumping ceases, it rises until within 5 ft. of ground line, at which level it stops.

Great praise is due to the directors, the engineering contractors, and the obliging manager, for the care shown in all the working arrangements of these works.

A Fact for Local Authorities.—At the last meeting of the Newington Vestry, the Depôt Committee reported that during the last quarter the removal of dust and refuse by rail from the depôt into the country had been attended by a profit to the Vestry of 45*l.* 8*s.*

NEW PUBLIC BATHS AT PECKHAM.

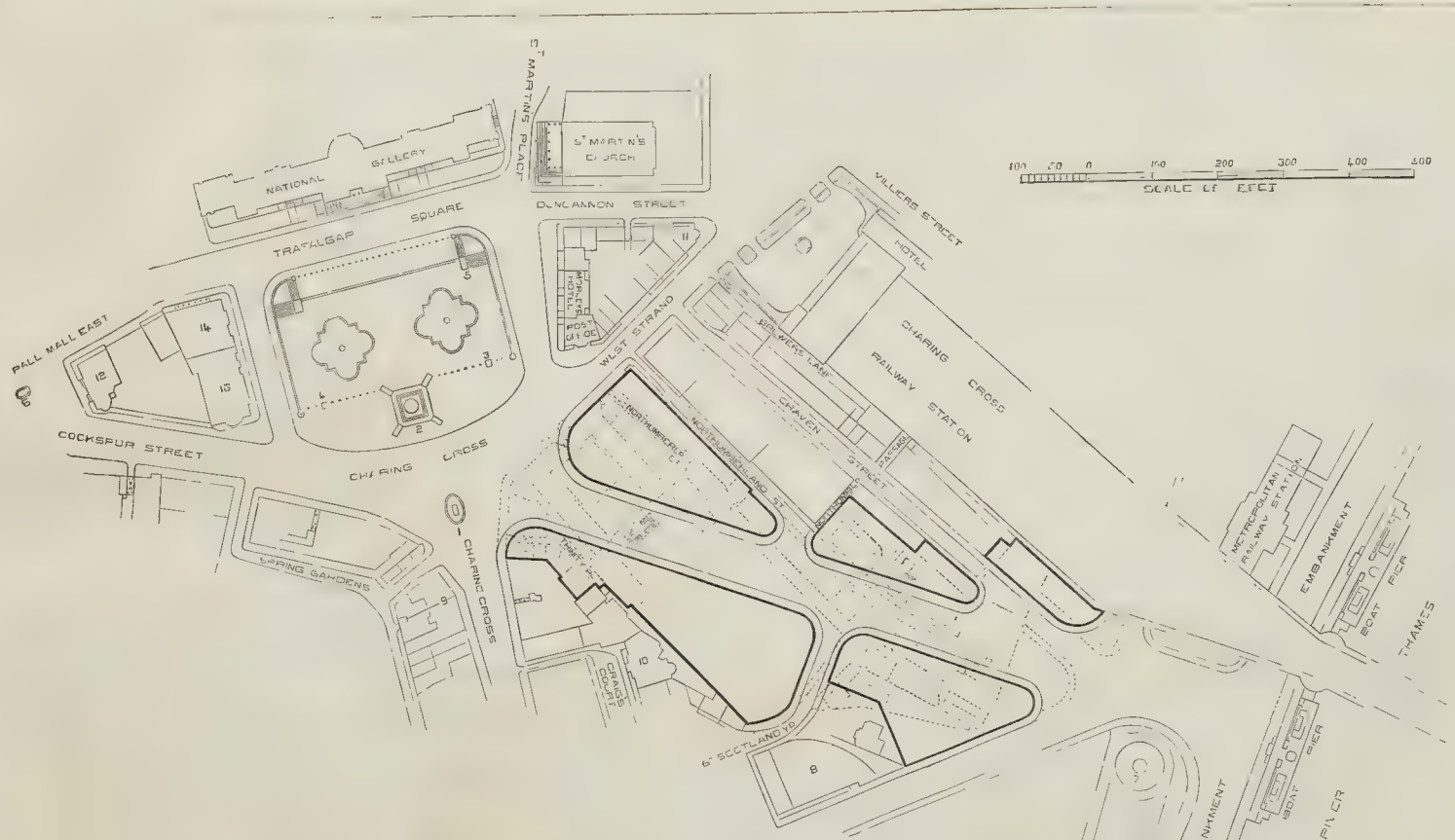
The Camberwell Vestry will, perhaps, be inclined to congratulate themselves at the improbability of their being called upon to undertake the erection of public baths, under the provisions of the Baths and Washhouses Act. These valuable aids to cleanliness and health, which several of the metropolitan vestries have declined to furnish, are about to be supplied in the parish of Camberwell at the cost of a spirited and enterprising capitalist. Mr. Higgs, sen. (formerly of the firm of Hill & Higgs, builders, but who has now retired from business), who recently erected the large swimming-bath at the Kennington Oval, has just purchased a plot of land, upwards of an acre in extent, in St. Martin's-road, Peckham, with the view of constructing upon it swimming and warm baths, upon a very extensive scale. The site, which is on the north side of High-street, and nearly opposite Rye-lane, is almost in the centre of the densely-populated districts of Camberwell and Peckham, and easily approachable. The preliminary works were commenced last week in the removal from the site,—which until now has been a market-garden,—of a large number of fruit-trees, and the excavations for the swimming-baths are now in progress. This will necessitate the removal of about 3,000 cubic yards of earthwork. The plans embrace the construction of two swimming-baths, running parallel with each other, to be designated first and second class baths respectively, and which will be divided from each other by a party-wall. The first-class bath will be 108 ft. long, and 37 ft. wide, with a depth at the shallowest end of 3 ft., the depth increasing to 6 ft. at the opposite end. A flight of concrete steps will run entirely round the bath, which will also have a concrete bottom. On the ground level on each side of the bath there will be an area of 11 ft. 6 in. in width, at the rear of which dressing-boxes for bathers, about 100 in number, will be erected. The second-class bath will be of larger dimensions than that above described, being 127 ft. in length, and 40 ft. in width. The space on either side will, however, only be 8 ft. in width, but it will be fitted with dressing-boxes uniform with those in the first-class bath. The bath will also be of the same depth, with approach steps and a bottom of concrete. At the west side, running immediately parallel with St. Martin's-road, there will be thirty warm baths, on each side of a spacious central corridor, altogether separate and distinct from the swimming-baths, with a separate entrance. At the south-west angle, having its frontage to St. Martin's-road, will be erected the manager's house, a portion of the ground-floor being set apart as the entrances to the swimming and warm baths respectively. On the area at the extreme north end of the site, 153 ft. long and 30 ft. wide, an artesian well for supplying the baths with water will be sunk, and immediately adjoining it will be the engine-house, with a laundry on the east side and a drying-ground on the west. Provision will also be made for supplying the baths with water, in case of a breakdown of the engine, by laying down pipes connecting the baths with the water mains.

At the south end of the site an area 160 ft. in length, and 60 ft. in width, will be laid out as a skating-rink, altogether distinct from the baths. The building will be covered in by an ornamental wooden and glass roof, with open lantern lights running along for ventilation purposes, and the baths will also be still further ventilated by circular side windows.

The baths and buildings in connexion with them have been designed by Mr. Higgs, the proprietor, and will be carried out under his immediate superintendence. They are intended to be completed and opened in the spring of next year.

THE NEW STREET FROM CHARING CROSS TO THE EMBANKMENT.

Inquiries having reached us from several quarters as to the exact line of the street which is now being opened from Charing Cross to the Thames Embankment, we judge that a copy of the plan, as laid down by Mr. George Vulliamy, will interest many of our readers, and therefore now publish it. With the aid of the annexed references, it tells its own tale. The works required for the formation of the road are being pushed forward, and in a short time tenders will be invited from persons who may desire to take the plots of land for building on, which, in the accompanying plan, are marked out with a strong line.

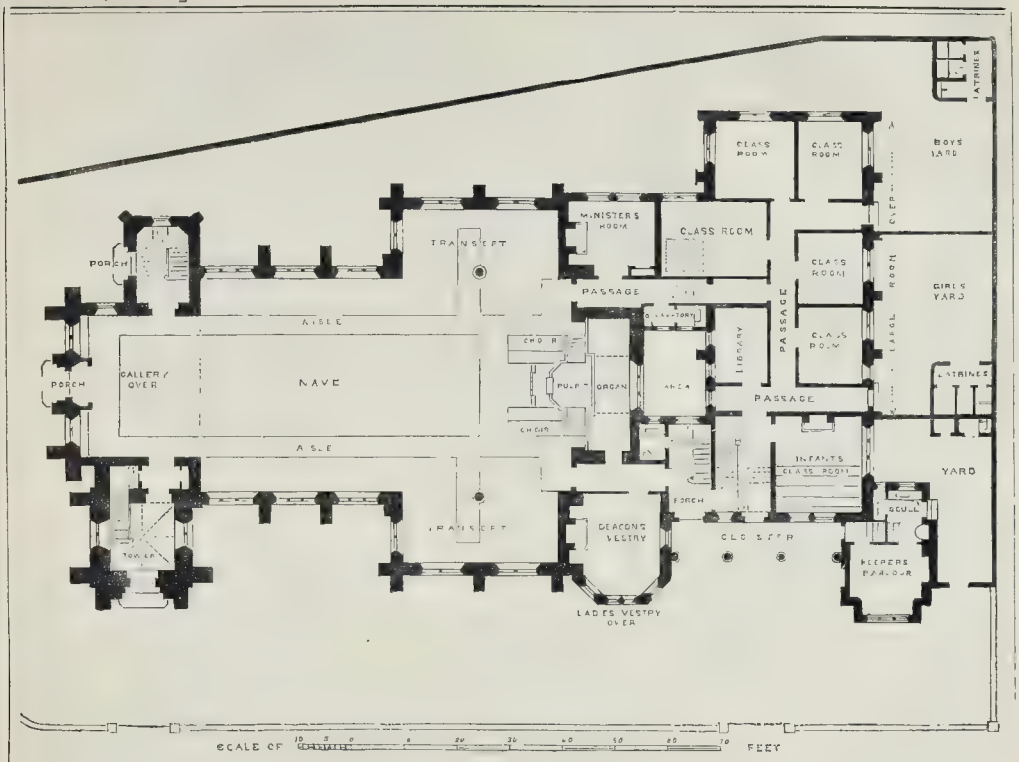


1. Charles I.'s Statue.
2. The Nelson Monument.
3. Havelock's Statue.
4. Napier's Statue.
5. George IV.'s Statue.
6. George III.'s Statue.
7. Outram's Statue.
8. Ecclesiastical Commissioners.
9. Drummond's Bank.
10. Cox & Co.'s Bank.
11. Bank.
12. The Cheque Bank.
13. Union Club.
14. Royal College of Physicians.

PLAN OF THE NEW STREET FROM CHARING CROSS TO THE EMBANKMENT.



CONGREGATIONAL CHURCH, BALLIOL ROAD, BOOTLE, NEAR LIVERPOOL.
MESSRS. F. & G. HOLME, ARCHITECTS.



CONGREGATIONAL CHURCH AND SCHOOLS, BOOTLE, NEAR LIVERPOOL.—*Plan.*

CONGREGATIONAL CHURCH, BALLIOL-ROAD, BOOTLE, NEAR LIVERPOOL.

We publish this week plan and perspective view of the above church, now in course of erection from designs by Messrs. Francis & George Holme, of Liverpool, architects, selected in limited competition.

The church consists of nave (with short chancel appropriated to the organ), 100 ft. long and 41 ft. wide; two transepts, each 30 ft. by 13 ft.; deacon's vestry, ladies' vestry, and lavatories, and will accommodate 711 worshippers,—611 on the ground-floor and 100 in the gallery over north entrance. The stone used is the local red sandstone; the tracery of windows out of Runcorn stone. The transept arches are carried on handsome granite shafts, the gift of a friend. Stourton stone finishings are freely used in the interior.

The roof of the church is panelled in pitch pine. The height from floor to apse is 50 ft. The hammer-beam and framing generally are boldly moulded. The benches and fittings are of pitch pine. The organ-screen inclosing the chancel, and the pulpit, are somewhat elaborate.

The contract for the building was taken by Mr. Samuel Webster, of Bootle, for the sum of 5,130*l.*; the schools, tower, and spire being omitted at present.

VENTILATION OF COLSTON HALL, BRISTOL.

At the meeting of the British Association at Bristol last August much complaint was circulated respecting the deficient ventilation of the Colston Hall, as experienced by the audience, in the excessive heat and closeness of the atmosphere during the first general meeting, and at the first *soirée*. Many people were obliged to leave altogether from fear of impending asphyxia or syncope, especially elderly ladies and gentlemen; and the odours of various scents, wafted about by the vigorous flickering of fans, conduced either to increased torpor of the faculties or nervous irritation of the system, according to individual temperament.

This inconvenience was, however, much ameliorated on the subsequent evening meetings by the managers, who caused to be removed some obstructions of brickwork from the passages to admit more fresh air. I have learned that during the winter months, audiences experienced, on the other hand, a disagreeable amount of cold in the air of the hall, so much so as to necessitate ladies wearing their cloaks, and gentlemen their overcoats during concerts held there. The sanitary state of the atmosphere of the Victoria Rooms at Clifton was excellent, the air fresh, and the ventilation good, during the time the great hall was used by the Association.

The system of ventilation adopted by these two buildings appeared to be of quite different character, and the superiority of that of the Victoria Rooms was most manifest to the feelings of strangers.

The Colston Hall has a semi-cylindrical ceiling, like St. James's Hall in London, and there are gratings at the apses or gables at each end, and there is a louvre outside the building on the roof on the top of each gable, and the side or clear-story windows are all closed or fixed ones.

Now the intention seemed to have been that the heated air in this semi-barrel of a ceiling should escape by these gratings in the louvres, but it could never effect this, unless there was free ingress of fresh air by the doors below, which, on the contrary, are generally all shut on public performances.

It would also be impossible that any current of air could enter a louvre from the outside, descend to the grating, and blow out the semi-cylindrical mass of heated air by the other grating and louvre unless by the aid of machinery.

The Victoria Hall has a flat ceiling, and large side-windows round three sides, and these have movable sashes to allow ingress or egress of air, so that a wind on either side of the building could easily influence the internal air of the room by blowing it in at one set of windows, and out by the other.

Here the currents were intended to be horizontal and not vertical, as in the Colston Hall, and they would therefore float along above the heads of the audience, and not up through between them.

In the Victoria Rooms, again, there would be probably no need to keep open the doors below at all, as the air for internal supply had already been allowed access by the windows from the outside.

Similar objections may be urged against the system of ventilation in the St. James's Hall, London, as against the Colston Hall one, and not all the louvres or cowls on the top of the building will make it a bit better, for the reason that they can only be used as means of exit for air at the top when the means of ingress of air at the bottom is equally abundant. It will, therefore, be absolutely necessary to keep all the doors on the floor area open during a public performance in order to keep up an adequate supply of fresh air to produce an ascending current to the ventilators on the top of the ceiling.

A great deal of the difficulty in hearing the president's address in the Colston Hall, therefore, arose from the fact that Sir John Hawkshaw was as much stupified and suffocated as the audience themselves, as was evident from the frequent use of his handkerchief to wipe his face, and to clear the mist off his gold spectacles, which were dimmed with condensed vapour. In order, therefore, to alleviate the condition of the ventilation in the Colston Hall, it would be advisable to put swinging sashes into all the clearstory windows, so as to admit a cross ventilation from side to side, and let the air in, without having to open the doors, and adopt means to cut off the use of the louvres and gratings in the ceiling when they were not required.

In order to illustrate the causes of the

disagreeable sensations experienced by the company present in the Colston Hall, it may be stated that the mass of heated air in the room became of a high degree of elastic tension, in consequence of its inability to ascend through the imprisonment of the external walls.

This may be estimated from the law of expansion of gases by heat, by which one volume of air at 32° Fahrenheit would be enlarged to 1·1222 volumes, at 92° Fahrenheit, and it would therefore exact greater pressure on the chests and circulating organs of the audience than the outside atmosphere at the time. This would be a nuisance quite independent of the extra quantity of heavy (sp. gr. 1·524) carbonic acid gas, formed by respiration in the hall, which, if it amounted to 1 cubic foot in 1,000 cubic feet of air inside, would cause the latter to be considered vitiated (Playfair). Dr. Reid further believes that it requires 10 cubic feet of fresh air per person per minute to pass through a room to make it habitable, and Dr. Playfair says that 2,000 to 3,000 cubic feet per hour would be necessary per person living or sleeping in an apartment to maintain a perfectly pure air.

It would appear that the breathing in and out tends to affect only equal bulks of air, as it is found that the cubic contents of inspiration and expiration are nearly alike in bulk.

If air inspired be represented by 8 volumes of oxygen, 32 volumes of nitrogen, it will be found, altered by expiration to 6 volumes of oxygen, 32 volumes of nitrogen, and 2 volumes of carbonic acid; or in another way it may be stated that 5 volumes of the 100 volumes of air inspired are replaced by 5 volumes of carbonic acid, and as these 100 volumes of air are irrespirable again, so they would have to be replaced by an equal quantity of fresh.

How long the fresh air of the hall would last might easily be ascertained by comparing its cubic contents with the rate of expiration of 12·5 cubic feet per hour per person, who would exhale about 20 cubic inches of irrespirable air fifteen times per minute.

But far worse effects on atmospheric air in a room are produced by the combustion of coal gas, and it will be found that 100 volumes of this will require from 528 to 655 volumes of air for its burning, so that this produces six times worse effects by exhausting six times the amount of air that respiration does.

The products of the combustion of 100 volumes of coal gas would replace further the atmospheric air inside by 67 volumes of nitrogen, 7 volumes of carbonic acid, 16 volumes of vapour, and 10 volumes of mixed gases, in the 100 volumes given out, which would cause one part by weight of coal gas to produce nearly three parts by weight of carbonic acid, or otherwise 1 volume of gas of sp. gr. of ·560 to produce 1 volume of carbonic acid of sp. gr. 1·524; or, again, the latter will be found in bulk to be over 7 per cent. of the mass of deteriorated air evolved by the above combustion.

An approximate estimate could easily be ascertained by getting the cubic feet of gas from the gas meters in the hall measured off for the service of the evening, and seeing what ratio the cubic contents of the room bore to the total quantity passed through.* Human existence in the above-complained of state of matters in the Colston Hall might be not inaptly compared to living inside a captive fire-balloon, which was crammed with heated and deoxygenated air, and was at the same time prevented from ascending to relieve itself.

The only air, therefore, that might be considered to have escaped from the ventilators in the gables was the surplus of expansion over the pressure of the atmosphere, and the lighter products of combustion equal to the volumes of gas burnt, which made use of these apertures in much the same way as steam above pressure makes use of the safety-valves of a steam boiler. The air that remained in the hall would, therefore, become denser and heavier by degrees, as the heavy carbonic acid gas replaced the lighter oxygen bulk for bulk, and the former would settle down to the lower levels, while the upper regions of the room would become filled gradually with the lighter nitrogen (sp. gr. ·973) and carbonic oxide (sp. gr. ·972) evolved from the combustion of the gas lights, so that the galleries would be found to have no better air than the sittings on the floor, which is generally experienced. Another effect injurious to the constitution should not be omitted to be stated, and that is the gradual saturation of the air of the room by aqueous vapour, which will be found to be about 16 volumes per 100 volumes of gas products, and 5,087 cubic inches or 3 cubic feet per hour per person.

This evolution of vapour will in the course of time cause the air of the room to become so thoroughly charged with moisture that it can absorb no more, which would cause the perspiration from the skin and the exhalation from the lungs to be checked, and thus tend to embarrass the breathing and the circulation.

W. J. Black.

* In consequence of the law of *diffusion of gases* this 5 per cent. of carb. acid in the volume of the breath, and the 7 per cent. in the gas products, would diffuse themselves in the room, and render vitiated 1,200 volumes more of the air, till the dilution would have reached the lowest stage of respirable air at 1 per cent. of carb. acid, after which it would still be far behind the healthy ratio of 04 per cent. in volumes of the external atmosphere.

A PLEA FOR THE TREE.

What time the panting world betrays
Responsive warmth beneath the rays
Of summer suns, whose lusty power
It owns throughout the noontide hour,
How pleasant 'tis when care invades,
Or harsh fatigue, to seek the shades
Luxuriously cool, which lie
Beneath the leafy canopy
Of some umbrageous elm or beech;
And there reclining, out of reach
Of galling sunbeams, while the time
Perusing a loved poet's rhyme,
Whose gentle accents can control
The perturbations of the soul,
Revive the mind, and peace impart
Unto the over-anxious heart.

* * * * *

Oh! it doth vex my soul to see
The downfall of a stately tree;
To view fair Nature's noblest charm
Assail'd by man's unsparing arm.
The strokes that rend its roots impart
Keen shocks of sorrow to my heart;
And as its sever'd vitals bleed
With humid sap, I mourn the greed
That oft, alas! compels the blow
Which lays the forest chieftain low.

Emblem of Britain's sturdy will,
Her high endeavours to fulfil;
Symbol of her protective power
When nation-scourging tempests lour,
The mighty oak in grandeur rears
Its head among its few compeers.
Though gnarled with age its furrow'd skin,
An iron heart survives within:
Like some huge giant cased in mail,
It stands defiant of the gale,
And sheltering spreads above its stem
That shieldlike, leafy diadem,
Which crowns it of the champaign wide
The glorious monarch and the pride.

Where yonder knoll confronts the glade,
Erect, like sentinels array'd,
A group of fir-trees lift on high
Their shaggy tops toward the sky;
And as, to brunt the windy shock,
An eagle's talons grasp the rock,
So do the sinewy roots avail
Each parent stem against the gale.
For them opposing whirlwinds lash,
And furious hailstorms rudely dash;
The lightning, too, with fierce attack,
Hath scorch'd them on its fiery rack;
And as the seasons come and go,
The burning sun, the frost, the snow,
In turn recurrent, scourge them oft;
Yet still they bear their heads aloft,
And stretch abroad their ruddy arms,
As if to thwart the angry storms:
Like grisly veterans stanch and bold,

Scarr'd warriors of the days of old.
Offspring of long-forgotten years,
How wierdly grand the cedar rears
Aloft its tall and lordly head,
Whose deep-dyed, sombrous leaflocks spread
With feathery grace, extending wide
In sober, patriarchal pride.
High priest of Nature, calm it stands,
And gently waves its hoary hands,
And softly sighs and murmurs low
Mysterious Runes of long ago;
Or else its whisper'd tributes throng
To bless the soil from which it sprung.

Ah me! how dull his soul must be,
Who loveth not the noble tree!
Who can no charm in Nature see!
Yet through the land the axe descends,
And through the land the woodman lends
His brawny arm to speed the blow
Which lays the leafy legions low.
Lopp'd and dissever'd limb from limb,
Arboreal victims, stark and grim,
Oppress the ground: both ash and oak
Lie flay'd and prostrate 'neath the stroke.
The chestnut with its friendly bower,
The silvery birch, the sycamore,
The poplar that salutes the clouds,
The yew, whose form the tomb enshrouds,
With other stricken brethren fall,
For Desolation marks them all;
And few in wisdom's kindly grace
Uprear the sapling in their place.

Soon will the land from sea to sea,
A dismal, branchless desert be,
With iron fenced,—one monstrous field,
Where steam triumphantly shall wield
Its desperate power; until, mayhap,
It wins for wondering Ceres' lap
A corn-sheaf more—unhallow'd spoil
Of such tree-sacrifice and toil.

Short-sighted ones, regard my moan,
Man doth not live by bread alone.

* * * * *

Alas! that there should need a plea
For Nature's chiefest charm,—the tree.

John Cotton.

BERKSHIRE ARCHITECTURAL AND ARCHÆOLOGICAL SOCIETY.

The annual meeting of this Society took place on the 27th ult. in St. Lawrence's Institute, Reading, Mr. F. W. Albury, the vice-president, in the chair. Several new members having been elected, the hon. secretary (Mr. C. C. Rolfe) read the annual report, which stated that the Society has been steadily increasing in numbers throughout the official year. When the last annual report was drawn up in October, 1874, it comprised forty-eight members, ten lady members, and five associates. At the present time there are seventy-five members (including seven life members), twenty-five lady members, and seven associates. Negotiations have been carried on with Mr. J. H. Blagrave, with a view to obtaining a long lease at an advantageous rent of the old premises adjoining St. Lawrence Churchyard, Reading, commonly called the Abbey Granary, for the purpose of restoring and adapting it for the uses of the Society. The committee regret to say these negotiations could not be carried out, for they were compelled to relinquish the scheme on account of the large sum required to place the premises in repair, and because of the feeble response made to the appeal for aid to carry out the proposed works in the event of the lease being taken up. The committee, however, hope that their meetings may continue to be held in this building. A scheme for establishing an archæological and art library for reference and circulation among the members, is at present under consideration. The committee hope during the ensuing year to organise and establish throughout the county of Berks a staff of local secretaries, to "report to the committee the contemplated injury or destruction of any ancient ecclesiastical, civil, or military work of art."

The report was unanimously adopted, and a long discussion followed upon the desirability of forming an art library in connexion with the Society took place. The following resolutions were adopted:—

(1.) "That an art and historical library in connexion with the Society be at once established."

(2.) "That an estimate be prepared by the hon. secretary, assisted by the committee, of the probable income and expenditure of the Society for the coming year, with a view to ascertaining the amount that could be afforded for the purchase of books, &c., for the library."

The annual dinner of the Society was held in the evening at the Queen's Hotel, Sir John Conroy, bart., in the chair.

Society of British Artists.—At a meeting of the Society of British Artists, last week, it was announced that Sir Francis Grant, president of the Royal Academy, Mr. Frederick Leighton, R.A., and Mr. E. W. Cooke, R.A., had joined the society as honorary members. The following gentlemen have also been elected members of the society:—Messrs. J. Burr, J. Clark, H. Dawson, sen., A. B. Donaldson, E. Ellis, A. F. Grace, A. Goodwin, J. W. B. Knight, J. H. S. Mann, J. Morgan, T. N. Maclean, and G. Sant.

ASSOCIATION OF MUNICIPAL ENGINEERS AND SURVEYORS.

At the seventh meeting of the district committee for the Midlands of the Association of Sanitary Engineers, held in the Town-hall, Cheltenham, on the 21st ult., Mr. E. Pritchard presided. After the routine business, Mr. D. J. Humphris read a paper on the "Sanitary Development of Cheltenham," with statistics; and the company afterwards visited the reservoirs, which were shown to them by Mr. W. M'Landsborough, the engineer to the Water-works Company. Owing to the very unfavourable weather, it was decided to hear Dr. Wright's paper on the "Geology of Cheltenham and the Cotswolds," in lieu of proceeding to the Sewage Irrigation Farm.

The weather showing signs of improvement, the company proceeded to visit one of the sewer outfalls, where the sewage is allowed to settle in a tank, and the solid matter being afterwards mixed with ashes, is sold to the neighbouring farmers at 2s. per cubic yard.

After the paper in the morning, a short discussion took place in reference to fever hospitals, in which Drs. Wright and Bond took part; after which the company dined together at the Queen's Hotel.

SUBJECTS FOR PAPERS, INSTITUTION OF CIVIL ENGINEERS.

Amongst the subjects for papers, for which, if approved, the council will be prepared to award premiums, are the following:—

On Portable Apparatus for Gauging the Materials, and for the expeditious Mixing of large Quantities, of Portland Cement Concrete.

On the Value and Strength of the different Materials used for making Concrete; with Experiments on the proper Proportions of the various Ingredients, and of the Water, whether salt or fresh, to produce the Strongest Mixture.

On the Application of Steam Machinery for Excavating, and the Cost as compared with Hand Labour.

On Stone-quarrying and Stone-working Machinery.

On the Construction of Warehouses and other Buildings for storing Goods, with the special View of resisting Fire, and on the relative Merits of Brickwork, Iron, and Timber for that object.

On Modern Methods of Constructing the Foundations of Bridges.

On the Design, generally, of Iron Bridges of very large span, for Railway Traffic.

On the Water Supply of Towns, including a description of the sources of supply, of the different modes of storing, collecting, and filtering water, of the various incidental works, of the distribution to the consumers, and of the general practical results.

On the Constant Service of Water Supply, with special reference to its Introduction into the Metropolis, in Substitution for the Intermittent System.

On the various Modes of Dealing with Sewage, either for its disposal or its utilisation.

On the Ventilation and Working of Railway Tunnels of great length.

THE LIVERPOOL TRAMWAYS AND THE CORPORATION.

The Liverpool Tramways Company have been called upon by the Corporation to incur a somewhat serious expenditure by taking up their present lines of rails, and laying down new lines on an entirely new principle, as designed by the borough engineer, and there is at the present time a difference between the company and the municipal authorities on the subject. The borough engineer desires that the new rails should be constructed on a pattern which is objected to by the Tramway Company's engineer as quite unworkable, and incompatible with the rest of the company's system. It appears that the rails proposed by the borough engineer are so formed that instead of the flange of the wheel being on the side it is in the centre, the borough engineer stating that according to this mode of construction the weight would be distributed on both sides of the rail, and more evenly over the wheel than it was when the flange was on the side. At a meeting of the Health Committee of the Council, which has just been held, the subject came under discussion, when some members appeared to be averse to the proposal of the borough engineer. One gentleman asked the engineer whether he could find in this or any other country a rail similar to the one he suggested. The speaker added that they had had experience of the tramways for six years, and he had yet to learn where the engineer got his idea of the new form of rail from. He said it was a serious matter for the company to be compelled to alter their rails and wheels. In answer to the question put to him, the engineer replied that they could not find in any place rails similar to the one he suggested, adding that he did not think they could find anywhere any rails that it would be desirable to lay down in Liverpool. The general feeling of the committee was in favour of the borough engineer's suggestion, and the discussion closed by the chairman stating that the condition of the streets, owing to the present tramways, was disgraceful, and if the company did not take action with regard to the reconstruction of the inner circle the committee must do so, and compel them to take up the rails.

A MODEL TRADESMAN.

In March last I had presented to me two statuettes,—the "Quarrel of the Card-players." My object then was to get a bracket on which to place them in my drawing-room. I was told that So-and-so was the man to go to, and as I had frequently seen his advertisements boasting of his skill and taste, I went to him. I told him I gave him the order with great hesitation, as from experience I had found that no one could do anything for me. He replied,—"Leave the matter to me, and you shall not have to say so in this instance." He took away the figures in order that the design might be correct and harmonious.

At the end of May, not having heard anything from him, I called and said I thought sufficient time had elapsed. "Dear me," replied he, "the matter must have been overlooked." At the end of a fortnight the bracket was sent home, the most prominent ornaments being the heads of three brass nails which supported it. I called again and said this abortion would not do. He sent for it again, and by the middle of June it was returned ornamented with grapes and gold knobs.

Here I would ask, is it because this great country is ruled by drink that grapes must always be used as the principal object of ornamentation? Look in any shop-window in confirmation of my statement. Where is the result of the art-schools? Grapes and grapes, and occasionally acorns. What is the good of teaching if such a simple thing as a bracket could not be produced under three months, and then void of art and taste? In the middle of June I went abroad. On my return in the middle of August I found two copies of the bill, 3*l.* 15*s.*, and half a dozen cards left at so many different times saying the amount would be called for. I questioned my servant very closely, whether he had said I was abroad, and he replied, "Oh! most certainly, and once in particular I remember doing so when the collector called in a brougham." I immediately called and paid the bill, and said that if he displayed the same zeal in executing an order that he did in collecting the money, his customers would be more satisfied, and that I considered the bracket was a disgrace to my room. Of course there was a mistake of the collector; a master can never take any blame to himself. He begged me to let him know when he could come and see the bracket, and it should be set right.

I was not in town again till October, when I wrote asking him to call on one of two mornings. He replied that the notice was too short. I wrote again about ten days ago, saying I would remain in from eleven to one for five days, but I have never seen anything of him.

Now, Mr. Editor, I have no doubt you will say, What has all this long story to do with me or the public? I answer, this:—I want to get up an exhibition of objects the offspring of bad taste,—the productions of men who delude the public by advertisements of their skill and ability. I want to teach the masters: reproaches enough have been showered on workmen, but the chief delinquent is too often lost sight of. Judging from my own experience and that of my friends, we should want a very large building; for the objects, if not interesting, would be very numerous.

I should like to give masters of all sorts a lesson by inviting the public to decline giving orders of any sort that were not absolutely necessary, but I am afraid the "fear of Mrs. Grundy" is so strong that all moral courage is burked. Is the suggestion of any service in establishing a practical school for the enlightenment of master tradesmen?

F. S. A.

HIGH SHAFTS.

Sir,—Will one of your readers kindly answer the following question, viz. — Which is the highest chimney or shaft in England, and what is the height from foundation to top?

C. L.

PROVISION OF TEACHERS.

Sir,—As a schoolmaster I was much interested in your article on training schools as part of a national system of elementary education. Will you allow me to make one slight correction, and to add a few words of comment from a teacher's point of view? Residence in a training college, though very desirable, is not, and never has been, a *sine quâ non* for the full certificate. Candidates must be either (1) students in training, or (2) acting teachers who are either ex-pupil teachers, assistants under certificated teachers, or teachers who have received a favourable report from her Majesty's inspector. At the last examination, 1,472 students and 1,326 acting teachers (1,013 of these female) obtained certificates; the proportion of acting teachers in this case is much beyond the average, as many schools hitherto uninspected are now being placed under Government inspection.

The colleges will accommodate about 3,000,—*i.e.*, 1,500 of each year; the number of pupil teachers is about 30,000, none of them being apprenticed for more than five years, so that there may be 6,000 applicants for the 1,500 vacancies. This is, as you say, an injustice to the pupil teachers. It does not end here; for where 1,400 additional teachers per annum would meet the demand, we are increasing at the rate of 2,800. You will meet this by saying,—"But still there is a deficiency of teachers." Granted; but "my Lords" are already beginning to fear that they have overstocked the market. Six years ago we had less than 11,000 apprentices, and now we have 30,000. In this way, though we are not acknowledged as civil servants, supply is regulated (!) by the Council Office,—now a "glut" and then a deficiency,—causing great injury to teachers, and detriment to elementary education.

Unless a "conscience clause" is introduced into denominational training colleges, I do not see how school-boards are to find training for their pupil teachers, except in the way you suggest,—provide it themselves, which at present they have no power to do.

A. K. C.

GLASGOW WORKING MEN'S INVESTMENT AND BUILDING SOCIETY (LIMITED).

The quarterly meeting of the above Society was held last week in the City Hall Saloon, Mr. Allan S. Edmiston, the president, in the chair. The report showed that since May last 432 new shares had been added to the register, making a total of 2,147 shares, representing a subscribed capital of 53,675*l.* Ground had been secured at Clyde Bank and Springfield for the purposes of the Society. The chairman remarked that by May next the Society will have finished property to the value of 30,000*l.* He further alluded to the difficulty the committee had experienced in obtaining suitable ground in the city at such a price as would warrant them in feuing or leasing it. The committee had ground in view suitable for Dr. Begg's model houses with good access to the city, and also ground suitable for cottages within a few minutes' ride of the city per rail. The manager had for some time been turning his attention to concrete, and had no difficulty in recommending the use of that material, which would cost considerably less than stone.

FLEXIBLE MANDRIL FOR BENDING METAL PIPES.

This has been recently introduced in America. The mandril consists of a coiled or spiral spring, made of square steel wire, and of such size as to be inserted freely into the pipe to be bent. Pressure may then be applied in any convenient way, but preferably it should be done with a block of wood shaped to the curve to which it is desired to bend the pipe, its edge being grooved to fit the outside of the pipe.

After the bend is made the mandril is withdrawn by turning it from one end in the direction in which it is wound, which slightly reduces its diameter, and it is screwed out very easily. The old method of bending copper or brass pipes by first filling them with rosin, lead, or sand, is tedious and uncertain, requiring much skill, especially for large pipes, and the crimping of the inner side and stretching of the outer sides were very unequal. By this method the pipe was always considerably flattened and required hammering and filing into shape. All these objections

ore obviated by the use of the new instrument, as it leaves the pipe so near perfectly round that the eye does not detect the variation. The surface is smooth, so that there is no loss of metal (and consequently of strength) by filing into shape. Moreover, much time is saved.

SOMETHING LIKE A HOUSE.

A Scottish paper lately contained an advertisement stating that a certain country residence, near Newcastle-upon-Tyne, was for sale. The advertisement is unique in its way, as may be seen from the following extract:—

"The Villa of Lucullus at Tusculum could not have surpassed the residential fascinations of ——. Built for all time upon a site which sanatorial science would pronounce faultless, and commanding from its turrets a landscape of picturesque diversity,—the Vale of Ravensworth, Dunston Hill, the romantic features of the Derwent, with glimpses of that main artery of the wealth of the muscular metropolis of the North—Coaly Tyne.

Internally complete in its several departments, from the lofty, spacious, and elegant saloons, through the unbroken vista of corridors,—the 'perfumed chambers under canopies of costly state,'—to the menial offices, models of domestic economy. The exterior appurtenances ample and in unison with a gentleman's establishment; gardens luxuriant in horticultural productions, refreshed by a spring of delicious water,—the *Pierian* spring,—

> 'Here quench your thirst, and mark me
> An emblem of true charity;
> Who, while my bounty to bestow,
> Am neither seen nor heard to flow';—

Flora supreme in her ornate beds and redolent conservatories; parks and pleasure-grounds serene in seclusion; ancestral trees, with their rookery imparting an air of antiquated dignity; the fish-pond ministering to aquatic proclivities."

It would certainly be worth a pilgrimage to the "Coaly Tyne" in order to see a modern mansion, "*built for all time*, upon a site which sanatorial science would pronounce faultless," especially if such very prosaic appliances as water-closets, sinks, and drains (as to which the advertisement is silent), entirely accord with the site as to sanitary excellence.

DRAINAGE OF MAIDSTONE.

Sir,—Under the above heading, in last week's *Builder*, it was stated that Mr. Buckham, late borough surveyor of Maidstone, had written, "claiming the invention of the drainage plans accepted from Mr. Angell, and asking for some compensation."

To prevent misunderstanding, will you allow me to state that I was called in by the corporation to report upon four different sets of plans submitted at various times, Mr. Buckham's among the number? I made my report, and gave Mr. Buckham due credit.

Afterwards, in accordance with instructions, I prepared an entirely new scheme, in which Mr. Buckham's views had no part, the only point in common being the outfall below Allington Locks, a point which, without any engineering knowledge, is obvious to every one as the only available gravitation outfall. Therefore, in adopting an outfall which was patent to any one, there was no "invention" on the part of Mr. Buckham, nor any piracy on my part. I should, however, be pleased to learn that Mr. Buckham has obtained "compensation" for any anxious hours he may have spent over the subject of the drainage of Maidstone.

Lewis Angell.

CHURCH BUILDING NEWS.

Cradley.—The parish church of Cradley was formally re-opened on the 13th ult., after having been closed a year for additions and improvements. A massive campanile has been built to carry a peal of bells presented to the church by the late Mrs. Wood-Aston. The tower is of dark red brick and Grinshill stone, and from the ground line to the top of the weathercock rises to a height of 106 ft. A new roof has been put to the nave, and a new east window. The church has been entirely re-seated at the expense of Messrs. Noah Hingley & Son. The cost amounts to nearly 4,000*l.*, and the works have been carried out by Mr. Nelson and Mr. I. P. Bloomer, from the designs of Mr. John Cotton, architect.

Aberdeen.—A special meeting of the Aberdeen Town Council was held on the 12th ult., to decide as to a design for the steeple to be erected on St. Nicholas Church. Two designs and corresponding models prepared by Mr. Smith, city architect, were exhibited in the Joint Hall of the County Buildings. At the meeting the Lord Provost moved that the design "No. 3 B" be adopted, and that it be remitted to the Churches Committee to get the necessary working plans and tenders for the work, it being understood that the architect, while adhering to the general design selected, shall be at liberty, in preparing the working plans, to make, with the concurrence of the commitee, any minor alterations which may appear to him to be improvements. The resolution was unanimously adopted.

Southampton.—It has been resolved to add a chancel to Pear Tree Green Church, near Southampton, to remove the south gallery, and to effect other alterations and additions. Mr. St. Aubyn is the architect engaged to prepare the plans.

Pipe and Lyde.—On the 8th ult. the parish church of Pipe and Lyde was reopened, after restoration, at a cost of about 1,500*l.* The nave and tower walls have been entirely rebuilt, and a south porch is in course of construction. The nave has also been refitted with spacious open seats of pitch-pine, and an oak pulpit and lectern have been given by Mr. Turner, treasurer of Guy's Hospital. Both have been carved by Mr. Robert Clarke. The floor throughout has been paved with Godwin's encaustic tiles. The nave is lighted on the north by six, and on the south by five, lancet windows. Those in the nave and tower have been glazed with cathedral-tinted glass, with borders of clear glass; but the centre light of the east window is filled with stained glass. There is a carved stone reredos with carved figures on the pinnacles, the gift of Mrs. Edward George. The length of the nave is 46 ft. by 22 ft. wide. About 180 persons can be comfortably accommodated in the building. The stone is a hard, coloured conglomerate. The greater portion of the stonework has been dressed and placed under the direction of Mr. W. Lewis, builder, of this city; the carpentry being by Mr. Clayton, and the glazing, staining, and colouring by Mr. W. Barber, of Hereford. The roof of the church is of massive oak, and it is covered with stone tiles. The architect has been Mr. F. R. Kempson.

Benniworth.—The church of St. Julian, Benniworth, was re-opened on the 5th ult., after restoration by Messrs. Walter & Hensman, of Horncastle, under the direction of Mr. James Fowler, architect, Louth. From traces discovered in the course of the restoration, the church appears to have been cruciform, the nave and chancel having been of uniform width and height throughout, and intersected by the transepts without any arches. The tower contains a Norman doorway with rich moulding. The chancel has been entirely rebuilt, and the south transept re-opened. The north and south transepts are separated by an arcade of two arches from the nave. The pulpit is of oak, carved, as are also the altar-rails and lectern.

Bere Regis.—The ancient parish church of Bere Regis, Dorsetshire, was re-opened on the 7th ult., after restoration under the direction of Mr. G. E. Street, R.A., at a cost of nearly 4,000*l.*, Messrs. Hale, of Salisbury, being the contractors. About forty years ago the floor of the nave, which was originally nearly 2 ft. below the level of the north aisle, was raised, by which the old Norman piers were dwarfed and the proportions of the whole church destroyed. These and other innovations it has been the object of the present restoration to remove. The endeavour has been to restore the original features of the building in their integrity. The windows in the south aisle are an exact copy of the tracery of former windows, the *débris* of which were found built up in the walls, where they have lain hidden for three centuries. Many of the old stones have been re-used. In the south aisle a portion of the ancient tiling was discovered undisturbed. The patterns have been copied, and the character of the ancient design will be as far as possible reproduced. Even the mouldings of the principals of the chancel roof are copied from an old fragment discovered in the wall. The roofs (with the exception of the carefully-restored nave roof) are new; the wall of the south arcade has been rebuilt, and the arches and pillars pushed by levers into a straight position; the north wall has been rebuilt from the foundations; the bells have been re-hung, and one that was broken has been re-cast, &c. Upon removing the whitewash it appeared that the entire walls of the church were highly coloured in ancient times. Mr. Redden was clerk of the works, and Messrs Abley & Ham were foremen to the contractors. The carving was done by Mr. Harry Hems.

Brighton.—The new Church of St. James, Brighton, was consecrated on the 5th ult. It occupies the site of the old chapel formerly ministered in by the Rev. John Purchas. The new church is built in the Early English style, and consists of a nave, two aisles, and short chancel. Its total length, north to south, is 89 ft., outside measurement, and total width, east to west, 66 ft., outside measurement; while the width of the nave is 24 ft.; height to springing of roof, 39 ft.; the roof rising above this about 23 ft. The width of the aisles internally is,—west, 17 ft. 10 in., and east 14 ft. The church is heated by Moule's hot-air apparatus. The main entrance to the church is from St. James's-street, but there is also an entrance in Chapel-street, and one for the clergy and choir in High-street. The materials of construction are, for outside walls, flint work, with kiln brick piers, lacing courses, eaves, and label moulds, and with Bath-stone window and door dressings, and Bath-stone mullions, &c. Messrs. Scott & Hyde are the architects, and the builders were Messrs. Patching & Webber. The cost was upwards of 4,000*l.*——On the 18th ult. the foundation-stone of St. Luke's School-Church, Albion-hill, Brighton, was laid, in the presence of a large number of persons. The builder's contract price is 1,885*l.* Mr. William White, of London, is the architect, and Messrs. Nash & Co., of Hove, are the contractors.

North Newbald.—The parish church of North Newbald, Yorkshire, was opened on the 8th ult., after being closed since the 11th of April last. Some ten years ago the chancel underwent a thorough renovation, at the cost of the late Mr. John Clough, lord of the manor. After an interval of a few years the extension of the repairs of the west nave was suggested by the late Canon Harcourt, and this has now been completed. The church is of Norman architecture. Over one of the principal doors is a statue of St. Nicholas, to whom the building is dedicated. The contractor for the alterations was Mr. Thomas Grant, builder, of Pocklington.

Malpas (Cheshire).—It is proposed to restore Malpas parish church, and to construct an organ chamber on the north side of the chancel, from plans by Mr. Sherlock, the diocesan architect.

Clerkenwell.—The new Church of St. Paul, Central-street, Goswell-road, will be consecrated by the Bishop of London to-day (Saturday). The building is intended to seat 550 persons, and has been erected from a design by Mr. Ewan Christian, architect. The principal material used externally is Kentish rag. The contract for the foundation was executed by Messrs. Brass, Old-street, and the remaining contract was, after competition, given to a builder in the south of London. The pulpit, font, communion-table, chairs, bells, Royal arms, and vestry clock have been removed from the lately-demolished church of St. Mildred, Poultry, opposite the Mansion House. The total cost, exclusive of site, will be about 9,500*l.*

Burton, near Christchurch (Hants).—This new church, dedicated to St. Luke, has recently been completed in so far as the work is intended at present. The nave, south porch, south transept, and a portion of the chancel and south chancel aisle have been finished, the east end being terminated by a temporary wall. Eventually the chancel and its aisle will be considerably elongated, and provision has been made for opening out an arch into a north transept when required. The cross plan was adopted in deference to the wishes of one of those most interested in the church. The walls are built of red bricks, banded with stone, of Bath Box-ground. The contract was for 2,537*l.*, but this sum will be somewhat exceeded. Mr. Joseph Landen, of Burton, was the builder; the architects were Messrs. Benjamin & Edmund B. Ferrey. The width of the nave is 24 ft. 6 in., and its length 71 ft. 9 in.

Newnham.—Newnham Church, Gloucestershire, was re-opened on the 4th ult., after restoration and enlargement under the direction of Messrs. Waller & Sons, architects, Gloucester. The whole of the interior fittings,—pews, staircases, and galleries,—have been removed, and the church has been fitted with new seats on wooden floors, tiles being laid in the passages, the whole surface of the church having been covered with a bed of concrete, 6 in. thick. The modern windows have been taken out and new ones substituted. The chancel has been entirely rebuilt and re-roofed, the old windows being again used, and the floors have been laid with encaustic tiles. The old vestry has been taken down, and a new one erected in its place. All the defective stonework of the walls, doorways, plinths, weather-courses, &c., has been reinstated. The nave roof has been stripped and the timbers strengthened where necessary, and it has been re-covered with red Broseley tiles. A new aisle, of larger dimensions than the nave and extending westward as far as the tower wall in that direction, has been erected, and an arcade of four arches carried on polished granite shafts now occupies the place of the former south wall of the nave. An organ-chamber has been erected on the north side adjoining the choir-seats, which have been so

arranged as to occupy the first bay of the nave, the chancel being too small to be used for this purpose.

Upton on-Severn.—Increased church accommodation at Upton-on-Severn is very much needed, and Mr. Blomfield has lately been commissioned to examine the fabric of the parish church, with a view to its adaptation and enlargement. Proposals have been made and donations promised for the erection of an entirely new church, leaving the present parish church intact.

THE LATE CLERK OF WORKS AT CHESTER CATHEDRAL.

SIR,—I saw with regret a paragraph in last week's *Builder*, announcing the death of Mr. Frater, who had been clerk of works at Chester cathedral since the commencement of the restoration. Having been at one time constantly in the neighbourhood, I frequently visited the cathedral, and should like to give a word of testimony to the accurate knowledge of his work, and enthusiastic interest in it, which Mr. Frater always exhibited. I spent an hour or two on several occasions with him, going over the building, and was struck with his knowledge of every part of it, and his thorough appreciation of the problems which he had to assist in working out. If Sir Gilbert Scott has been as well served on all his restoration works, he has been fortunate in his selection of assistants. Mr. Frater was, I believe, much esteemed and respected by those connected with the cathedral for his general high character and good sense, as well as for the ability he showed in carrying out the task intrusted to him. ARCHITECT.

A SUGGESTION FOR A NATIONAL COLLECTION OF PLANS OF UNRESTORED BUILDINGS.

SIR,—In his opening address at the Institute on Monday night, Sir Gilbert Scott dwelt upon the importance of placing on record the present state of our ancient buildings, which are becoming more and more dilapidated each succeeding year; and then, going on to the subject of church restoration, he deplored the loss of the evidences of their antiquity, which, however careful the restoration may have been, so many churches have suffered.

We must all feel this to be most true, and we can easily imagine that the archæologist of the twenty-first century will be somewhat puzzled to distinguish, in some of our cathedrals and churches, between the original work and its nineteenth-century repairs and additions executed, some with and some without sufficient authority (doubtless in many cases there will, alas! be no such difficulty). Up to the commencement of the Mediæval revival it will be easy enough, but after that there will be much confusion in making the distinction, simply because the work of that date is often so *good* an imitation of the old work. There will then be hardly any available and really reliable evidence of the exact state of buildings before the nineteenth-century restoration, for photographs by that time may have altogether faded away. Surely, then, it would be desirable for an arrangement to be made for the architects concerned in the several restorations to take careful drawings, stone for stone, of the buildings under their charge before setting to work, and to deposit these in some place which should be the recognised depository for the architectural records of all buildings, great or small. The archæologist of the future, such a one as the late Professor Willis, could then, by reference to the old nineteenth-century plans, trace out and distinguish the dates of each feature and each stone.

For an instance, to take the grand north front of the transept of Westminster Abbey, which is now to be restored and refaced (and that we may be sure in the most careful and conservative spirit), how very interesting it will be in the future to be able to refer to detailed plans, showing exactly the state in which we now see it. What a satisfaction it is to us now to refer to Dugdale's "Monasticon," and to see Lincoln Cathedral, with its three spires, the nave of St. Saviour's, Southwark, and the west front of Westminster Abbey before Wren's additions; and we ought to give the same satisfaction to posterity.

If such a depository could be established, I think there can be no doubt that all of us would gladly come forward and contribute each our share towards filling it with the plans and notes, before restoration, of those buildings which have been under our charge, much of which valuable information we must all admit is now scattered and destroyed in office waste-paper baskets, and in periodical clearing-out bonfires! The labour, divided amongst so many, would be but slight to each, and to this collection should be added the many carefully-measured drawings made for students' and other prizes.

This collection, or museum, should be considered national, and should be under the charge of the Royal Institute of British Architects. It should be in some specially-arranged building, and it would then be officially recognised as the depository of information of all kinds relating to the fabrics of our ancient buildings.

In the hope that something may be done towards this, I venture to throw out these few suggestions. R. HERBERT CARPENTER.

COMPLIMENTS AT THE INSTITUTE.

SIR,—I know nothing about architecture; so when I was decoyed by a professional friend into accompanying him to the opening meeting of the Institute, the other night, I was more taken up with noticing the general nature of the proceedings than desiring special architectural lessons, and I was certainly most struck with the affection that architects have for each other. "How sweet and joyful a thing it is for brethren to dwell together in unity," was the reflection that came uppermost when I had heard all the compliments which gushed forth, first set in motion by the presentation of a portrait of an ex-president of the Society. Only, is it not possible, in meetings which are practically public, to over-do this a little? And is there not a point where mutual compliment, fitting enough on certain occasions and within certain limits, degenerates into something not quite consistent with what is manly, sensible, and sincere? At any rate, I would suggest to the architects, next time an occasion occurs for complimenting each other, to "draw it mild,"—at least, if they will not despise a hint from

AN OUTSIDER.

MANAGEMENT OF THE INSTITUTE.

MR. W. H. WHITE, at the opening meeting of the Institute on Monday night, called attention to several gross blunders which had been allowed to appear in the list of members just issued. The secretary, Mr. Beatlake, explained—and apparently to the satisfaction of the president and a few others—that he and Mr. Cockerell had carefully revised the list, but that it had been mislaid by the printers. Now, Sir, as a rule (and no one knows it better than the secretary), accidents of this kind are generally prevented by the fact that corrected proofs are always expected to be sent back. I should be glad, in common with many others, to know, first, who gave the order to print off the list of members; secondly, why such order was given without the secretary seeing the last corrected proof; and thirdly, at whose expense the revised lists are to be printed. ARCHITECT.

ST. PANCRAS.

SIR,—A statement appears in the *Builder*, of the 30th of October, that the settlement of the St. Pancras account is delayed because the contractors made a mistake in their tender of 200*l.*, which we most emphatically contradict; our claim for 200*l.*, which is demurred to, being for extra works beyond the amount of tender, and not for any mistake therein.

AITCHISON & WALKER, Contractors.

THE SHEFFIELD SCHOOL BOARD AND ITS ARCHITECT.

SIR,—All the architectural world and its pupils (these latter are legion) outside the "City of Soot" were startled recently by an account that went forth concerning a somewhat unique competition of architects in Sheffield for a job. It was not the elevations, but the *figure*, that was to decide the fate of the combatants, and every one sent in even as he listed, not drawings, but quotations. Many of us remember that Messrs. Innocent & Brown (the School Board architects) stuck honourably to the traditions of the Institute, and handed in the ordinary schedule of 5 per cent.; we remember, too, that they, and they only, did this. Well-known architects offered to work at 3½, 2½, and 2 per cent., and gradually the scale decreased, until, lastly, one enterprising aspirant for architectural honours offered to "*do*" the job at a rate of pay equivalent to a fraction less than ½ per cent. We, who work at the banker and at the bench, looked on and wondered, exclaiming amongst ourselves, with surprised tones, in the words of Sankey and Moody, "What will the end be?"

In the paragraph in your "Miscellanea" last week, under the same heading as this letter, a sequel to the professional competition is quoted. Every one who knows Sheffield knows but too well how utterly barren the place has ever been in an architectural point of view. Beautifully situated in the valley of the Don, Dame Nature has done her part well with its surroundings, but the busy enterprise of its princely merchants has been very little devoted to making presentable those places where men most do congregate in the battle of life. If we look at the churches, save only and of course "t'ow'd church" of early days, those which have sprung up in Sheffield, as everywhere, within recent times, are, on the whole, disappointing. The best undoubtedly is the Roman Catholic one of St. Marie, in Norfolk-row, a finely-conceived building in the Decorated style, built some twenty or thirty years ago, from the design, if I mistake not, of the dissolved firm of Messrs. Weightman, Hatfield, & Goldie. Next comes St. Mark's, in Glossop-road, by Mr. Crossland, a church in the same style; and, save only that it possesses a not altogether happy spire, is otherwise a fairly good church. An erection known locally as "John Brown's Church," is, when it can be seen, and this is seldom, for it generally stands "under a cloud," anything but a fortunate illustration of a modern church; and the churches in Hanover-street and at Cherry-tree received at the time of their erection such severe strictures from at least one architectural paper, that it is unnecessary for me to refer more particularly to them. Of public buildings, Sheffield may almost be said to possess none. A few banks, of stereotyped classical design, are to be found here and there by those who care to look for them, and waterworks offices of similar conception also exist. The new post-office, of "Williamsorum" style, might possibly lay a claim to dignity were it carried up a story higher; and next to it the new offices of the Gas Company are really an imposing and well-considered pile. In Barker Pool is the new Albert Hall, a box-like building, which, after recently costing its proprietors almost as much as an ironclad, is so utterly ugly and unsightly from every point of view, that when the Prince of Wales's visit was recently anticipated, it was seriously proposed in the Town Council to *cover it up with flags!*

Almost the only redeeming point, then, that Sheffield has about it, in an architectural sense, are its noble series of School-Board schools, fourteen of which have been built in as many different parts of the town, during the last five years, by Messrs. Innocent & Brown. The success which has attended those architects in their work has been universally acknowledged; and whether we look upon the series as regards design, individuality of treatment, interior arrangement, or moderate cost combined with elegance and all modern requirements, it must in candour be acknowledged that what they have accomplished has been thoroughly well done in every respect.

And yet, in acquiescing with all this, the Sheffield School Board has just come to the conclusion that it will be better to throw open the remaining two schools to competition. Fourteen schools are built, and found in every respect the sort of thing required. They are all, save one, already opened and work well: they are, too, as it were, the only things of beauty that exist,—oases, indeed,—amidst the masses of dreary-looking houses and smuttier manufactories by which they are, without exception, surrounded. Should this mooted idea of the Board's be carried out we can scarcely hope that the remaining two schools will, in an architectural sense, be part and parcel of the grand work which Sheffield has, acting under the advice of its School Board, so nearly carried out with such noble and capital results.

In choosing for their architects young and before then almost inexperienced men, like Messrs. Innocent & Brown, the School Board showed a wisdom for which they have been singularly and most thoroughly rewarded. "Much will have more," we know, but "let well alone" is a better proverb; and if the School Board of Sheffield take the step they now meditate, and by that step other local architects are introduced upon the scene, they will not only place themselves open to the charge of acting shabbily to faithful and talented servants, after having more than their highest anticipations realised; but they cannot in reason hope to be better served by any other resident members of the profession in Sheffield.

AN OLD SHEFFIELDER.

VARIORUM.

Fraser's Magazine for November includes, under the title, "A Ride through Bosnia" (with a map), an interesting account of a tour recently accomplished by the writer and two professional friends through a district of European Turkey very little if at all known. It included nineteen days on horseback, and was made under instructions from the Government of the Sublime Porte, to whom the formal and technical report has been sent. The writer is understood to be Mr. Henry Vignoles, C.E.——The current *Quarterly* has a powerful article on "Drink: the Vice and the Disease," in which the need of legal control over habitual drunkards is forcibly urged.——We take a paragraph from "Old and New London" for November on the death-place of Chaucer and Jonson:—"In the year 1300, Geoffrey Chaucer, 'the first illuminer of the English language,' entered into an agreement for the lease of a house adjoining the 'White Rose' Tavern, which abutted on the old Lady Chapel of the Abbey. Chaucer held the office of Clerk of the King's Works, and was robbed (more than once) by Richard Brerelay and others, probably as he was going to or returning from Eltham. Brerelay, though he escaped punishment on this occasion, was afterwards tried for another highway robbery, pleaded 'Not guilty,' and 'declared that he was ready to defend himself by his body against the approver (Clerk), as Mr. W. Selby tells us in the introduction to his 'Life Records of Chaucer,' thus demanding, 'the wager of battle.' A duel was accordingly fought between Brerelay and Clerk (the said 'approver') at Tothill on the 21st of April, 1391, the result being that the 'approver' was vanquished, and forthwith received judgment to be hanged. It is probable that it was in his house at Westminster that Chaucer ended his days. . . . . His house, the tavern, and St. Mary's Chapel were demolished in 1502, to give

place to the gorgeous mausoleum of Henry VII. In a house which stood between the churchyard and the Old Palace, lived in his later years 'rare Ben Jonson,' and here he died; so that two of the greatest of England's poets breathed their last almost upon the same spot."——Two interesting stories, "The Manchester Man" and "Pretty Miss Bellew," are concluded in the November part of *Cassell's Family Magazine*, which is altogether a good number.——The *Quiver* gives the first part of a new story, "The Pennant Family."——Mr. Herbert Fry's little book of large charities ("The Royal Guide to London Charities") has appeared as usual for the coming year. It shows in alphabetical order the name of each institution, date of foundation, objects, chief officials, and so on.

Miscellanea.

Improvements at Douglas, Isle of Man.—At a meeting of the Douglas Improvement Board, held on the 19th ult., it was stated that the great shore improvement and land reclamation scheme, designed by and carried out under the superintendence of Mr. C. O. Ellison, of Liverpool, architect, was on the eve of completion. Mr. Powell, the engineer to the Board, said that the sea-wall had been completed to its full length, 2,477 ft., and was finished with the exception of the final block. Five retaining walls, which altogether measured 2,900 lineal feet, were also completed. With respect to the rubble embankment, he reported that this was not quite finished, but there only remained about one-sixteenth of the whole to be completed. The recent gales have severely tested the work, and although a considerable portion of it was only newly finished, it remains perfectly safe and uninjured. The total expenditure upon the work to the present time has been 18,049*l.* 8s. 10d. The board expressed great gratification at this result, as the work had been estimated to cost 22,000*l.*

Can this be True?—The London correspondent of the *Liverpool Journal* says:—"Passengers to and from London may have noticed lately a great change in the little town of Watford. Formerly studded with villas, and having a suburban sort of appearance, it has become overrun with small court property. One might suppose that some great immigration of workmen had taken place here. Nothing of the kind is the case, however. The real reason is as follows:—A certain well-known nobleman—not the Earl of Clarendon, whose very attractive mansion and park are near Watford—has large estates in the neighbourhood. Now, this 'noble scion of an ancient race' witnessed with increasing disgust the gradual growth of the 'snowy villas' around his domains. . . . . He hastily erected all over his property rows upon rows of workmen's dwellings, whose inhabitants he knew would be as odious to the 'wealthy upstarts' as they themselves were to his lordship. And as the result the villas are now closed, and 'desolation reigns where once was mirth.'"

Curious Names.—"C. B.," in *Notes and Queries*, has the following paragraph, which will not be without interest to some of our readers:—"Although not a student of nomenclature, I have been struck by some names of families in the neighbourhood of Swanage, in the island of Purbeck, and thinking that they are unusual, and that some of your readers may be interested, I venture to communicate them:—Chinchen, Dessallioud, Docwra, Horlock (pronounced Harleck), Melmoth, Mowlem. In a little book on Swanage and its neighbourhood, by the Rev. E. D. Burrowes, vicar of Kimmeridge, it is stated that Durandus, the king's carpenter, and architect of the great or king's tower at Corfe Castle, had bestowed upon him, by William the Conqueror, the manor of Moleham in Swanwic, and that his descendants are, without doubt, represented by the family now called Mowlem." We need scarcely say that Docwra and Mowlem are well-known names in the contracting world.

St. James's Park.—Complaints have been made in our pages, and, doubtless, elsewhere, as to the state of the pathways in St. James's Park. We are glad to say that workmen have commenced laying down a very broad walk of asphalte pavement from Buckingham Gate to St. James's Palace and Clarence and Marlborough Houses.

Is a Tombstone an Article of Manufacture?—On the 27th ult., at the Sheffield Town-hall, before Messrs. H. Harrison and T. A. Sorby, the Sheffield General Cemetery Company were summoned by Messrs. E. & T. Smith, of the Marble Works, Cemetery-road, Sheffield, for pirating a registered design of a tombstone. A preliminary objection raised was that the case did not come within the 5th & 6th Vict., c. 100, inasmuch as the tombstone was not an article of manufacture composed wholly or chiefly of earthenware, and that the design has been registered as a whole, nothing being said of the ornamental portions of it. In reply, it was argued that the summons might be amended so as to include the subsequent Act under which it ought to have been taken out; and that even if the design had been merely registered as a whole the prosecutors had the sole right of applying its ornamental details to other tombstones. The summons was ultimately rejected on the technical point raised, the merits of the case not being gone into.

New Mansion at Glack, N.B.—A new mansion for Mr. Mackenzie has just been completed at Glack, in the parish of Dairot, commanding a view of a great portion of the fertile valley of the Garioch. It has been designed by Mr. Matthews, architect, Aberdeen, and is in the Old Scottish Baronial style. The walling is wholly of block granite, a great portion of the work being faced with dressed stones from Kemnay. The central feature consists of a tower rising to a height of 80 ft. The erection of the mansion was entrusted to local tradesmen. Mr. Mackenzie, Inverurie, did the mason work; Messrs. Warrack & Daniel, Aberdeen, the carpenter work; Mr. Mitchell, Inverurie, the slater work; and Messrs. Farquhar & Gill, Aberdeen, the painter work. The cost was 10,000*l.*

The North Bridge, Edinburgh.—The works connected with the widening of the North Bridge, Edinburgh, have been completed, and the bridge was re-opened for traffic on the 20th ult. The level of the bridge has been raised, on an average, about 18 in., and this was accomplished by putting down a layer of concrete, upon which the new 3-in. paving-blocks have been set. The channels are of dressed granite, and are laid about 3 in. below the kerb of the foot pavement on each side. In accordance with the recent Act of Parliament, a double line of tramway-rails has been laid on the bridge proper. The crossings are placed at the south end of the bridge and at the Tron Church. Mr. Mellon had the contract for the re-causewaying of the street and bridge, the cost being 1,525*l.*

Archæological Discoveries.—It is stated that workmen, whilst digging for the foundation of a building at Kertch, on the Straits of Yenikale, encountered a crypt or tomb-vault, containing a number of valuables of gold and gems. The following items were brought to light:—A golden helm in *à-jour* and *relievo*, which is quite a jewel of Greek goldsmith's work of the best period. The total weight of the gold articles is 3½ lb., and the whole will be sent to the Ermitage Museum at St. Petersburg. In addition to the above a Greek vase had been dug out at Kertch some time previously, belonging to the second century B.C., which gives, if report be true, a long wished-for representation of the missing western frieze of the Parthenon at Athens.

Enlargement of Durham County Gaol.—Captain Powell, the Government inspector of prisons, lately inspected (before occupation by prisoners) the additions recently made to the south and east wings, providing accommodation for 167 prisoners (in separate cells), spacious worksheds, baths, lavatories, &c. He was well satisfied with all the arrangements. The work has been designed and carried out under the superintendence of Mr. Crozier, the county engineer and architect, and his clerk of works, C. Turnbull. The contractors were Messrs. Johnson & Fletcher, West Hartlepool, with the sub-contractors,—Mr. Laidler, plumber, Durham; Mr. Seal, West Hartlepool, smith; and Messrs. Shepherd & Sons, Durham, slaters.

New Mission Room at Northampton.—A new mission-room, in connexion with St. Katherine's Church, Northampton, has just been erected in Scarletwell-street. Accommodation is provided for 150 persons, at a cost of 600*l.* The front of the building is of Duston stone, with sandstone dressings. Mr. Ingman was the architect, and Mr. Branson the builder.

New Street-Sweeper and Lifter.—On the 21st ult. trial was made in the Ward-road, Dundee, of a new street-sweeper and lifter. The lifter is simply composed of a box, open in front, and 3 ft. square, into which the mud is swept by a brush, and the box is emptied at intervals as it becomes filled. One difficulty experienced before was that the machines swept from the middle of the street towards the water channel, and the mud had then to be swept into heaps by scavengers, and in wet weather it frequently happened that much of the mud was carried into the sewers. Now, however, the sweeping machines have been made to sweep from the water channel, and the mud is thus brushed into the middle of the street, where it is lifted and formed in heaps by the lifter. The plan of the lifter has been conceived by Bailie Brownlee.

Mellison's Skating Rink, Brighton.—This rink, after being closed for some time, is about to be re-opened. On entering the hall a material and important change will be noticed. Instead of the rough boards—particularly uncomfortable when crossing the room—there is now an asphalte surface, as smooth as skaters can bear it, laid after the most approved style, with the latest improvements embodied in it, and by the best workmen which Claridge's Patent Asphalte Company can send out. This change is a good one, and there are several others. There are the roof and wall decorations, which are handsome and tasteful. The prevailing colour of the walls is French grey, panelled in pale green, with scroll-work in dark violet and vermilion.

Unhealthy Dwellings in St. Martin's-in-the-Fields.—Mr. John J. Skegg, the medical officer to the Vestry of St. Martin's-in-the-Fields, has reported to that body the result of his inspection of the houses and courts which in his opinion should, under the provisions of the Artisans' Dwellings Act, be demolished. He commences with Bedfordbury and the courts contiguous. In 1871 the population numbered 2,163. Bedfordbury is a long narrow street of forty-seven houses, with courts leading out of it on either side. Some of these courts are "blind" (*culs de sac*), and very narrow, thus rendering light and air difficult of access. These forty-seven houses are, with very few exceptions, so old and dilapidated that it is quite impossible to make them fit habitations.

Recently deceased Scottish Antiquaries.—The Scottish papers announce the death, on the 19th ult., of Mr. George Petrie, of Kirkwall. Mr. Petrie was a fellow of the Royal Society of Antiquaries, Copenhagen; honorary member and local secretary of the Archæological Institute of Great Britain and Ireland; corresponding member of the Society of Antiquaries of Scotland, and corresponding member of the Anthropological Society of London. His contributions to the *Orcadian* on the antiquities of the county in days gone by were varied and extensive. On the 22nd ult. died Mr. D. Black, F.A.S., Brechin, aged 80. For about forty years he was town clerk of Brechin, and was the author of a "History of Brechin."

Geological Maps at the Jermyn-street Museum.—During the recess, several useful additions have been made to the Museum of Practical Geology in Jermyn-street. Among the most important are the geological maps hung on spring-rollers around the hall. They are copies of the published maps of her Majesty's Geological Survey, and they show the progress of the work done by this branch of the civil service. The number of people who take an interest in knowing the results attained by geologists increases every year, but up till now there has been no public place except the British Museum where the maps produced by the Survey could be inspected.

Tyler's-green, Penn, Bucks.—On Thursday, the 14th ult., the foundation-stone of new schools and residence here was laid by Sir Philip Rose, bart., whose seat is at Rayners, close by. The buildings are for the School Board of Chepping Wycombe Parish, and will accommodate, when finished, about 250 children. The style is Early English; the materials are red brick and axed flintwork, with a few quain touches in roofing and walls, illustrative of some interesting old local features. The contract has been taken by Mr. Woodbridge, builder, Maidenhead, at 1,850*l.*, and the drawings have been prepared by Mr. Arthur Vernon, architect, High Wycombe.

Trees for Portland-place.—At a meeting of the Marylebone Vestry on the 28th ult., it was unanimously resolved, on the motion of Mr. Harlowe,—"That it be referred to a special committee to consider and report as to the practicability and advisability of planting a row of suitable trees throughout its entire length on each side of Portland-place." Mr. Harlowe, in moving his resolution, referred to the pleasant aspect which the planting of trees gave to the Boulevards of Paris, Brussels, and other Continental cities, and to the adaptability of Portland-place (almost the only thoroughfare in the metropolis that is so) to similar treatment.

Proposed Public Baths for Gloucester.—At a meeting of the Gloucester Town Council, on the 27th ult., it was stated that the winners of the second premium in this competition (Messrs. Pettingell & Thompson) had been granted the loan of the plans for a short time, and that in reply to a letter sent by the winner of the first premium (Mr. A. P. Bell) it had been stated that it did not follow that the approved plan would be carried out, or that the architect who had prepared it would be employed. We may here state that, as already announced in the *Builder* (p. 914), the first and second premiums are respectively 15*l.* and 10*l.*

The Royal Engineer Institute, Chatham. Parliament having granted 21,000*l.* for building this Institute, the foundation-stone was laid in May, 1872, by the Duke of Cambridge, and the building, of which we gave illustrations some time ago, is now nearly in full working order. Lieutenant Ommanney, R.E., was the author of the design, which is Italian in style. The building stands upon a foundation of concrete composed of blue lias lime and Thames ballast. The main front is decorated with details in terra-cotta, by Messrs. Doulton, of Lambeth, with the exception of the upper cornices and columns at the entrance.

New Lunatic Asylum near Lenzie, N.B. A new lunatic asylum at Woodilee, near Lenzie, was formally opened on the 22nd ult. The buildings, which are in the Elizabethan style, are about 700 ft. long, 450 ft. broad, and occupy an area of about six acres of ground. The principal front is towards the North British Railway. Two towers rise from either side of the recreation halls, their height being 150 ft. Above the main entrance a clock-tower rises to a height of 88 ft. The building, which is constructed from plans prepared by Messrs. Salmon & Son, architects, will accommodate 400 patients.

A New Paint-Solvent.—It is stated in a Suffolk paper that Mr. H. P. Hayhoe, painter, of Bury St. Edmunds, has invented a new paint-solvent. It is said that the solution is simply applied to the paint with a brush, and is then left for a short time, after which the paint may be scraped off with facility. The number of coats of solution depends upon the number of coats of paint; four, which may be applied within a quarter of an hour or so of each other, will probably be sufficient in the most hardened case. The solution, which it is alleged causes no injury whatever to the hands or to the brushes, is inexpensive, and produces no smell.

A Stockton Builder has been prosecuted at the police-court for having permitted houses to be occupied before they have been finished and certified. A writer in a local journal satirically observes that "it is too bad to make a single example in a district where houses are occupied before the floors are down, and sometimes before even the windows and doors are in. If builders are to be harassed in this way, we may some day expect to see mortar substituted for sea-sand, bricks for crumbling blocks of mud, woodwork a little more substantial than matchwood, and later on the extinction of 'jerry building.'"

Enormous Blast with Dynamite. — A few days ago (says the *Mining Journal*) a large blast with No. 1 Dynamite took place at Cauldon Lowe Limestone Quarry, near Frogall. To test the strength of the dynamite, it was decided to charge a chamber with 11 cwt. The fuse was then fired, and in the space of eleven minutes the charge exploded with immense effect, bringing down the face of the quarry 34 ft. back for a long distance, the quantity of stone dropped being roughly estimated at 30,000 tons. This shot illustrated the great saving of labour in using dynamite.

Glasgow Institute of Architects.—At the annual general meeting of the above, Mr. Robert Goodwin, architect, Glasgow, was admitted a member.

Studio for Ladies.—A lady-correspondent from the North of London inquires where her daughter can draw from the costumed living model in that neighbourhood. A week ago we should have been unable to answer the question, but it happens we can now say, and we are glad of the opportunity of doing so, that Mrs. Croudace, whose works both at the Royal Academy and in Suffolk-street may have been noticed, has made an arrangement for the meeting of ladies for the purpose in question at 34, High-street, Hampstead.

Discovery of another Deposit of Fire-Clay.—A deposit of what is said to be specially fine clay has recently been found at Draycot, in the neighbourhood of Wells. The clay is reported to be equal in quality to that obtained at Watcombe, near Torquay. Professor Etheridge, in his report, says of the bed at Draycott, that it is interstratified with or in the dolomitic conglomerate, in places of considerable thickness. It is a silicate of alumina of the richest quality, and contains about 10·50 per cent. peroxide of iron.

New Farm Buildings for the Duke of Roxburghe.—Extensive additions have recently been made at Floors Home Farm, Muserig, for the Duke of Roxburghe. The plans and working drawings were all furnished from his Grace's office at Broomlands, by Mr. W. C. Carnegie, the Duke's architect, and the following were the contractors:—Mason work, Mr. Bruce, Kelso; joiner work, Mr. Gray, Stitchel; plumber and slater work, Messrs. Common & Son, St. Boswells; plaster work, Mr. Johnston, Kelso; painter work, Mr. Hogarth, Kelso.

New Railway Offices at Inverness.—The Highland Railway Company has just completed a new wing of offices in Academy-street, Inverness, in close proximity to the railway-station. The total cost of the new structure, which is in the Italian style of architecture, from plans by Mr. Lawrie, will be about 12,000*l.* The new building forms one side of a square, the frontage to Academy-street presenting a recessed portion in the centre, with two slightly-projecting wings. On the ground-floor are three handsome shops.

A Colonial Surveyorship. — The appointment of colonial surveyor and foreman of works at St. Vincent, West Indies, at a salary of 500*l.* per annum, has been conferred on Sergeant-Major David Osment, Royal Engineers, who has been for some time past employed at Chatham as first-class military foreman of works in the corps. This is another of the numerous instances in which military foremen of works belonging to the Royal Engineers have had their abilities recognised by receiving valuable appointments.

Rome.—The *Voce della Verità* states that an archæological discovery has just been made at the Villa Barberini, near Castel Gandolfo, on the spot where stood the magnificent palace of the Emperor Domitian. Two fragments have been exposed of an entablature in white marble, having together a length of 16 ft., a width of 3 ft. 3 in., and a height of 1 ft. 8 in. They are in an excellent state of preservation; and the design and the sculpture are good.

Churwell Drainage.—At a recent meeting of the Churwell Local Board, plans, involving a considerable outlay for works of drainage and water supply, prepared by Mr. Filliter, C.E., Leeds, were sanctioned and approved, and an application was made to the Local Government Board for powers to borrow 7,000*l.* to complete the same. The Local Government Board have now directed that an inquiry into the subject-matter of such application shall be made.

Dinner of the Builders' Benevolent Institution.—Although we have already invited our readers' attention to this festival, we must be permitted to repeat that it is fixed to take place on Thursday next, the 11th. Mr. John Aird, jun., will preside, and there is a good list of stewards. The Institution has recently lost by death several of its early supporters, but new friends arise to take their place and maintain its efficiency.

Improvements in Kiln Firing.—Mr. C. Malpas, of Woore, has patented a system of firing pottery, bricks, lime, &c. There is claimed for the system that by an arrangement of the kilns or ovens having a continuous connexion with each other and with one chimney, and by an improved method of firing, the work can be done more efficiently, expeditiously, and economically than by the general system of firing now in use.

The Dundee Waterworks.—It is stated in a Dundee paper that Mr. Hawksley, C.E., has agreed, on the request of the Dundee Water Commissioners, to consider the present state of the new water-works, and to give his opinion in regard to them, and for this purpose he has ordered all the necessary plans to be forwarded to him. Mr. Harrison, C.E., whom the Commissioners also resolved to consult, has declined to act.

New Episcopal Residence for Brechin.—At a meeting held at Dundee on the 23rd ult., it was resolved to erect as a memorial of the late Bishop of Brechin, a new episcopal residence in connexion with the diocese, with a chapel attached, together with a monument over the grave of the deceased in St. Paul's Church, Dundee. The cost of the memorial is estimated at 10,000*l.*

Enlargement of Birmingham Gaol.—At the annual meeting of the Birmingham borough magistrates, on the 26th ult., it was resolved to make several alterations and additions at the borough gaol, so as to provide ninety-one additional cells. The work will be carried out from plans prepared by Messrs. Martin & Chamberlain, architects, at a cost of 5,500*l.*

Butler's Ball Valves and Cocks.—These ball-valves gave satisfaction to those who examined them in the Brighton Sanitary Exhibition. The valve being over the seating, instead of under, as in other ball-valves, the pressure aids the valve, and it is not likely to get out of order. The patentee claims, too, and we believe correctly, that it is cheaper than any other patent ball-valve or cock.

New Cathedral for Scotland.—Arrangements are in progress for converting the collegiate church of Cumbrae into a cathedral for the diocese of Argyll and the Isles, and it will be consecrated by the bishop early in the next summer. Attached to it will be the theological college which has been established by the Earl of Glasgow.

Removal of another of Wren's Churches. The Royal assent has been obtained, in spite of considerable local opposition, to the scheme proposed by the Ecclesiastical Commissioners for the demolition of the church of St. Michael, Queenhithe, and the affiliation of the parish to that of St. James, Garlickhithe.

Society of Engineers.—At a meeting of the Society of Engineers, held on Monday, 1st November, in the Society's Hall, Westminster-chambers, Victoria-street, Mr. J. H. Adams, president, in the chair, a paper on "Screw-propellers, their Shafts and Fittings," by Mr. W. Pendred, was read.

Royal Architectural Museum.—We would draw attention to the advertisement in our pages that on November 6th a Saturday afternoon Life Class will be opened at the Museum, at a fee of 3*s.* per month. Applications should be made by letter to the Instructor, at the Museum.

The Institution of Civil Engineers.—The weekly meetings here are to be resumed on Tuesday, the 9th instant, when a paper is to be read and a discussion invited on "The Manora Breakwater at Kurrachee," by Mr. W. H. Price.

Maidenhead. — The committee for the enlargement of St. Mary's Church have instructed Mr. A. W. Blomfield to prepare drawings and estimates, which will be before the public shortly.

Norfolk and Norwich Hospital.—Extensive additions, for laundry purposes, are about to be made to the Norfolk and Norwich Hospital. Mr. Boardman is the architect, and Mr. Lacy is the builder. The cost will be about 2,500*l.*

Institution of Surveyors.—The first ordinary general meeting of the session will be held on Monday, November 8, when the president, Mr. Thomas Huskinson, will open the session with an address.

Sir Gardner Wilkinson, F.R.S.—We hear with regret of the death of this distinguished archæologist and author. It took place at Llandovery, on the 29th ult. Sir Gardner was in the 79th year of his age.

Warrington District Highway Board.—At a meeting of the Warrington District Highway Board, on the 27th ult., the salary of the surveyor, Mr. John Thompson, was increased from 200*l.* to 250*l.* per annum.

The Worcester Music-hall has just been re-opened, after re-decoration by Messrs. Goodwin & Shakespeare, of Lowesmoor, under the direction of Mr. Henry Rowe, architect.

TENDERS

For the erection of the first portion of a fireproof Pantechnicon at Victoria Station, Pimlico, for Mr. William Hudson, of Brighton, London, and elsewhere. Messrs. Fain & Clark, surveyors:—

Chappell	£7,065	0	0
Adcock	6,976	0	0
Cooke & Green	6,696	0	0
Tarrant & Sons	6,492	0	0
Kirk & Randall	6,431	0	0
Mitchell	6,400	0	0
Howard	6,350	0	0
Peto, Brothers	6,088	0	0
Mauley & Rogers	5,995	0	0
Deards	5,969	0	0
Trevens	5,854	0	0
Oliver (accepted)	5,761	0	0

For rebuilding warehouse and factory, Bunhill-row, Finsbury, for Mr. W. Walker:—

Allen & Son	£8,900	0	0
Ashby, Brothers	6,817	0	0
Killby	6,800	0	0
Ranor	6,720	0	0
Browne & Robinson	6,706	0	0
M'Lachlan & Co.	6,665	0	0
Pritchard	6,547	0	0
Scrivener & White	6,527	0	0
Cooke & Green	6,387	0	0
Perry & Co.	6,380	0	0

For house and school, at Junction-road, Romford, for Mr. J. P. Woodrow. Mr. E. C. Allam, architect. Quantities supplied:—

Black	£980	0	0
Potter	970	0	0
White	945	0	0
Barwell	890	0	0
Crisp (accepted)	868	0	0

For new billiard-room, &c., at Wey-gate, Guildown, Guildford. Messrs. E. W. Lower & Son, architects. Quantities by Mr. H. Moon, jun.:—

Mitchell	£650	0	0
Colls & Sons	620	0	0
Nye	596	0	0
Horn (accepted)	595	0	0

For the erection of a block of school buildings for 1,000 children, in the parish of Clee, Great Grimsby. Mr. Chas. Bell, architect:—

Jagger & Chapman	£9,118	0	0
S. & W. Pattinson	9,100	0	0
Smith	8,987	0	0
Haywood	8,977	0	0
Topham & Waddingham	8,875	0	0
Willows & Roebuck	8,800	0	0
Hobson & Taylor	8,692	0	0
Drew	8,3 0	0	0
Thompson (accepted)	8,080	0	0
Young	7,880	0	0

For the erection of thirty seven-roomed houses at Stratford, for Mr. H. O. Martin:—

Cocks	£10,890	0	0
Norris	10,727	0	0
Unwin	9,897	0	0
Dover, Son, & Co.	9,869	0	0
Rhodes & Co.	9,489	0	0
Gooding	8,430	0	0
Shaw	7,6 0	0	0
Johnson	6,450	0	0
King	6,150	0	0
Clements & Co.	5,900	0	0

For alterations to the White Horse, Hare-street, Bethnal-green, for Mr. John Elves. Mr. Edward Brown, architect:—

Stamp & Bowtle	£485	0	0
Loaring	472	0	0
Man (accepted)	437	0	0

For new keeper's lodge and outbuildings at Norbury Bootles, Knutsford, Cheshire. Mr. Arthur Vernon, architect:—

Messrs. Beswick (accepted)	£450	0	0

For new schools on the Glebe Estate, Chiswick. Mr. G. Saunders, architect:—

Bartlett	£1,988	0	0

For new schools, master's house, &c., at Tydee, Monmouthshire, for the Rogerstone and Henlliss School Board. Mr. E. A. Lansdowne, architect. Quantities supplied:—

Pearce	£3,104	0	0
Love	2,895	0	0
Stephens & Bastow	2,819	0	0
Linton	2,772	0	0
Jones & Co.	2,643	0	0
Williams & Sons	2,499	0	0
Miles	2,450	0	0
Jenkins	2,388	0	0
Jones & Son (accepted)	2,287	0	0
Davis	2,186	18	8

For alterations to shop-front, &c., and repairs, at No. 2, Crooms-hill, Greenwich, for Mr. W. Agate. Mr. Henry Roberts, architect:—

Heeps	£262	0	0
Hollis	195	0	0
Sanderson	178	0	0
Todd	157	10	0
Syer	150	0	0
Murrin	146	13	0
Williams (accepted)	115	0	0

For pair of villa residences at Orford-road, Walthamstow. Messrs. Eastman & Son, architects:—

Perry & Co.	£2,450	0	0
Marks	2,400	0	0
Crabb	2,310	0	0
Bayes & Ramage	2,300	0	0
Conder	2,295	0	0
Reed	2,212	0	0
Morter	1,987	0	0

TO CORRESPONDENTS.

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The Builder.

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The Æsthetics of House Building.

OUR last observations upon house-planning regarded from an artistic point of view* we concluded with an observation, suggested by the remarks of a German architect, on the stereotyped nature of plan and requirements in English houses. The charge would apply not less, and perhaps more, to the finishing and fitting, the decorative part of the interior. Fashions vary in this respect, but each fashion rules for the time almost despotically, the ornamental treatment of habitations being mainly in the hands of tradesmen or employers of skilled workmen, who, of course, find it most convenient and economical to pursue exclusively the style which seems to take public fancy at the moment.

We are not, however, here speaking so much of furnishing, and furniture design, which is a separate subject in itself, as of the general question of the internal treatment of a house, which has to be considered when its architectural exterior and its plan and arrangement are completed. Having got the strictly architectural qualities of our house as they should be, or as we wish them to be, on what principle shall we finish the interior so as to keep up that sense of æsthetic propriety, of architectural interest combined with fitness, which we will suppose to have been attained in the plan and in its external architectural expression?

Speaking generally, this involves, in the first instance, the question, how far can architectural treatment, in the severer sense, be extended to the internal finishing of a house? Civilisation is rather at variance with the architect in regard to this point. In ruder ages than the present, the monumental aspect which marked the exterior of the castle, with its surfaces of solid and massive masonry, was equally predominant in the interior. With greater refinement of manners and modes came the desire for a somewhat more luxurious and comfortable *entourage*, and the bare necessities of stone walls became draped with hangings and tapestries, the weaving of which was an important form of art-manufacture during the period of their prevalence. As the demand for such adornments increased and extended to lower grades in the scale of society, came the cheaper substitutes for hangings, such as stamped leather, painted cloth, and finally wall-papers; for the real origin of such decorations, there can be little doubt, is from the reminiscence of the figured tapestry pieces which they supplanted. Only there is the important distinction, that whereas the tapestry showed itself as a hanging separate from the wall, and the latter was left in pristine truthfulness behind it, the modern custom has almost invariably interposed layers of plaster or other lining, which form a permanent mask to the actual constructive material, and completely transform the inner character of our houses, by adding linings of a permanent and unremovable kind.

It is in great measure this plastering practice which has, in the eyes of some architects, removed house-building from the category of high-class architecture, or led to efforts to oppose to this taste a severer and more strictly architectural internal finish. During the earlier years of the Gothic revival this re-action was carried by some enthusiasts to the extent of returning to bare walls in the interior, sometimes in buildings bearing the ordinary character of domestic architecture externally, sometimes in revivals of the feudal castle. This can scarcely be considered a practicable, or even a truthful solution of the problem of internal architectural effect in dwelling-houses. Not practicable, because our less hardy habitudes of life demand more warmth and comfort in interiors than would have satisfied our ancestors; and therefore not truthful, as contradicting and ignoring the requirements of the day. But there is certainly a medium between this and the wholesale incrustation of the interior of our houses with so objectionable a material in many ways as plaster; dirty in putting on, damp and unwholesome when new, friable and perishable when old. And there is also the question to be considered, what portions of an interior do admit of really architectural treatment, and where it is in place and where not.

The porch and entrance-hall of a house, whether large or small, are the proper artistic connecting-links between the exterior and the living-rooms, between the architecture and the upholstery. This is commonly recognised in large mansions, seldom in ordinary-sized or small houses, town houses especially. But the architectural treatment of the hall, even where the house is on a small scale, is the most natural and fitting. People do not *live* in their halls and staircases, or make sitting-rooms of them; they are places of passage, and of an only semi-private character. So far, therefore, it is perfectly fitting that architectural character, in its masonic form, should invade the interior of the house, and connect it with the exterior. Even where a small scale and small means make architectural splendour impossible, the treatment of the hall and staircase with the same solid and permanent materials that are used in the external design at once gives an architectural importance to the house, an impression of unity between exterior and interior, and furnishes a contrast to the more luxurious and artificial finish of the rooms, as well as a reminder that, in spite of any decorative deception in the latter, the inhabitant really is in a structure built of solid and lasting materials. The difficulty of warming a hall and staircase architecturally built is no greater than if it were plastered and upholstered from top to bottom,—if anything, rather less. So that here we can indulge in our wall of stone, or brick, or marble, ornamented with inlay or otherwise, and our architecturally constructed marble or stone staircase, and stained windows, our timber or vaulted ceiling, and tiled floor, and not feel that architecture is altogether left out in the cold, or that we are dwelling in a place all constructed of shams and cradling and plaster disguises.

When we come really into the sitting-rooms, however, architecture must, to a certain extent, concede to comfort, luxury, and to ornament of a more delicate and finished description than what would be suitable in connexion with architecture proper. But whether this generally is and has been attained in the best manner is another question. We have ceilings and walls to consider mainly; floors offer less matter for taste, since no material can displace wood very well for general suitableness; and carpets, which seem to be a *sine quâ non* mostly in the scheme, both for decorative effect and comfort, scarcely come under the head of architectural treatment. The question of carpets, it is true, has come up a good deal in recent lectures and other publications in regard to ornamental treatment of dwellings. There is now a taste, among a certain set of critics and dilettanti, for tolerating carpets only in the form of coverings loosely laid over a polished or otherwise beautified wooden floor; the stated reason being that the carpet laid down in the old fashion, cut to fit the shape of the room, is a "sham"; that the real wooden floor ought to show as the basis, and the carpets only be laid on where wanted for warmth to the feet; the cutting is condemned, too, as a needless waste, as unsuiting a valuable carpet for any other room in the case of a change of residence within a short period. There is practical sense in this, and there is something also in the æsthetic motive named for showing the floor; let it be admitted, moreover, that a room with a dark polished floor, and a richly-tinted carpet in the centre, is very happily treated for artistic effect. But that it is as comfortable to walk about in as a room with a homogeneous carpet, strained and fixed down, we fear can only be maintained by æsthetic enthusiasts. To rise to the ceiling, however: if the hiding of the upper surface of the floor by a carpet is a sham, much more must be the hiding of the whole construction of it, the bearing timbers, by a plaster ceiling. Viollet-le-Duc, in his little story showing "How to build a House," is sarcastic on this point, and introduces Master Paul, who is evidently the type of ordinary non-professional perception, as having never considered that there was any distinction "between a sheet of paper stretched on a board, and a ceiling." Both were white expanses, and that was all. It becomes a difficult question, however, what you

* See p. 879, *ante*.

are to do with the top of a room, if plaster, or something analogous, is to be excluded entirely. The French architect just quoted gives his own sketch of the way to do it, by covering the room with ceiling joists square in section, but placed diamond-wise, corners down, and showing half of each side, meeting that of the next joist at an angle of 45°. That is an honest and a solid construction, no doubt, but a somewhat wasteful one, for it uses the wood in a section by no means economical of strength; and, after all, what about the appearance when it is done? The ceiling-joists are proposed to be decorated on each of the under-sides; but it must have rather a ridge-and-furrow effect,—not neat or finished looking, though satisfying the judgment more than the white expanse with the absurd "cornice" which forms its usual arrangement. Then there is the question of light, which a purely timber ceiling stands a good deal in the way of, unless painted in light colours, and then the artistic value of the wood as a material is gone. A compromise between the two perhaps promises the best result. The main joists and ceiling joists (if both are employed) to be left half-visible, and the spaces between ceiled and lightly decorated, not by any means necessarily with plaster. If wall-paper can be laid on a thin backing of wood, supported by wall-stiles,—a far better lining to a room than plaster,—why not treat the interspaces of the ceiling the same way, and paper them? We are speaking of cases where a certain decorative effect is desired, without the costliness of elaborate painting. The desire to obtain this is the real origin of wall-paper; and there seems no reason why what is applicable as a decoration to the surface of the wall should not be applicable to that of the ceiling, especially when treated as suggested, in compartments divided by the visible constructive carpentry; or if plaster were used in the interspaces (in which case it is certainly far less objectionable than when spread over the whole surface, hanging from a rickety cradling of laths), the lately-revived form of *sgraffito* decoration might be used in such a situation with very good effect. A method of treating the surface of plaster ornamentally while in a fresh state, by impressing a slightly-sunk design on the soft surface, was suggested in these columns some years ago;* *sgraffito*, however, would be more economical to execute than the impressed ornament, probably, though a little more *prononcé* for a ceiling, and not affording, as the impressed ornament would, suggestions and opportunities for a delicate relief in colour.

Our choice of treatment is less limited when we come to the walls of our rooms, than perhaps either on floor or ceiling. But here in the main the end should be, what it generally is not, to approach as near to a solid and architectural character as possible. The use of woodwork in the lining of rooms,—of course an expensive method, but an eminently satisfactory one as combining comfort and architectural effect,—has undergone curious fluctuations of taste. From the entirely wainscoted room not uncommon in interiors of our Debased Classic period, we come to the wainscot waist-high or thereabouts, and then down to the mere skirting-board; and now the wainscot is rising again, and in designs for rooms which make pretension to artistic treatment it is common to find it carried three-fourths up the wall, leaving only the comparatively narrow strip at the top to be turned over to the paper-hanger. We confess to a wish to limit the field of operations of this functionary as far as may be; and still more to limit that of his forerunner and sworn brother the plasterer. The latter, indeed, may be entirely dispensed with, even where a wall is completely papered, by the substitution of a thin veneer of wood on grounds for the traditional "four-coat work." But the resuscitation of the high wainscot suggests the absolute avoidance of all these covering expedients in such rooms as dining-rooms, libraries, &c., where lightness and gaiety of appearance are not principal objects. No dining-room could be more satisfactorily, more suitably finished than one wainscoted with rather dark wood to a considerable height, and then the wall left a warm-tinted compressed red brick above, with a stone cornice or corbels, or (better still perhaps) a cornice of moulded and ornamented brick, receiving the ends of the floor timbers or the ceiling joists above. Of course where a higher artistic result was aimed at the upper space or frieze might be filled with stone carving; equally also with fresco painting, or with "tarsia de marbre" after the manner invented by Baron Triqueti, and as to which we have before expressed surprise that the process should not have been further used, if only in the way of experiment: or if we are kept to our brick wall above the wainscot, we may combine terra-cotta ornament with it with very good effect.

When we come to the apartment which,—except the lady's boudoir,—demands most of all lightness and luxury in its style of treatment, the drawing-room, we must probably, in ordinary cases, be driven back upon paper for making beautiful our walls. A well-known architect has observed, in the preface to a book on Gothic furniture, that while the hall, dining-room, and library lend themselves admirably to this heavy and massive style of furnishing, he is obliged to confess a difficulty in approaching the drawing-room with his Gothic furniture, which is at variance with the lightness and airiness looked for in a modern drawing-room. This is true, and natural enough, since the drawing-room,—the *salon*,—is an invention of the modern era, and had scarcely any real counterpart in the Mediæval life at all. And the same writer suggests that, as the drawing-room must be in keeping with the style of the other rooms, greater dependence must be placed on "textile fabrics" to give the requisite effect, and carry off the otherwise too weighty and angular appearance of the furniture. In the same spirit, in approaching the drawing-room, we must leave some of our architectural sympathies behind us, and be content to coquet with the upholsterer and paper-hanger a little. As what is allowable in stage decoration would be tawdry in any other place; so what would be shocking to the architecturally constituted taste in any other part of the house must be considered in place in the drawing-room. Such seems to be the verdict of public taste at least; and certainly we can hardly hope to make a background for evening costumes out of any, save the very costliest, of architectural materials. In the matter of these important and much-used paper wall-coverings, however, public taste has had its fluctuations, many and great. The history of the subject may be studied in a full though compact form in Mr. Crace's admirable paper read before the Institute of Architects at two successive meetings a good many years since, and which, for some reason, is still in its MS. form in their library, not having received the usual consecration of print. People scarcely know, now-a-days, to what heights paperhanging design has soared. A quotation given by Mr. Crace from the prospectus of an ambitious "artist" of Battersea, in 1754, is so curious, and, from our present point of view, so amusing, that it may be reproduced here. The advertiser (hight Jackson) had invented a system of what he called "printing papers in chiaroscuro" so successfully, that, in his own words:—

"The person who cannot purchase the [antique] statues themselves may have these prints in their places, and thus effectually show his taste: it is the choice, and not the price, which discovers the true taste of the possessor; and thus the Apollo of the Belvidere Palace, the Medicean Venus, or the Dying Gladiator, may be disposed in niches, or surrounded with a mossic work in imitation of frames, or with festoons and garlands of flowers, with great elegance and taste; or, if preferred, landscapes after the most famous masters may be introduced into the paper; in short, every bird that flies, every figure that moves upon the surface of the earth, from the insect to the human, and every vegetable that springs from the ground,—whatever is of art or nature,—may be introduced into this style of fitting up rooms. It need not be mentioned to any person of taste how much this way of finishing, with colours softening into one another with harmony and repose, excels every other kind of paper-hanging hitherto known, though it has none of the gay, glaring colours in patches of red, green, yellow, or blue, which are to pass for flowers and other objects in the common papers; nor are there lions leaping from bough to bough like cats, houses in the air, clouds and sky upon the ground,—a thorough confusion of all the elements; nor men and women, with every other animal, turned monsters (like the figures on the Chinese papers) ever to be seen in this work. Persons who would prefer the gaudy and unmeaning papers (so generally to be met with) to those done by the inventor of this, would prefer a fan to a picture of Raffaelle."

That Mr. Jackson, of Battersea, had faith in himself is at least evident; he makes a "point," however, in his remark about the "choice and not the price" being the criterion of taste; and, after all, is his notion of the representation of the great designs of the antique, for instance, on wall-paper, in every sense so contemptible as all modern criticism would judge it to be? If we come to the question of household art for the poor, how much of grace and brightness might not some of those undying forms impart to the home of an artisan, even though only represented by a mechanical process on paper? The forms are the same, at least, however delineated. The concluding sentence of the quotation is odd prophetic in a way. If Mr. Jackson were alive now, he might meet plenty of people who "prefer a fan (Japanese) to a picture by Raffaelle," and get credit for the preference, too, with themselves and others. As to the main question, we have arrived now at the opposite extreme from the Battersea taste; descending or ascending (the reader will) from landscape to natural foliage, thence to conventional foliage, to diaper, and to spots. Mr. Eastlake's sensible and suggestive little treatise, "Hints on Household Taste," which has found a public, represents pretty correctly the average of good taste among the minority at the present moment. It has, at least, the great merit of inculcating moderation and reticence in the decoration of houses. One may get to be too moderate, however; one could imagine, at any rate, getting a little tired of the style of wall-papers of which Mr. Eastlake gives specimens; one may strive to put too much thought into such modes of decoration, no doubt; it is possible also, to have too little.

The coincidence of design between the interior and the external ornamental features of a dwelling is a point which mostly receives little consideration, though it is one which should certainly go a great way towards giving unity of character to a house. Generally, when the external stonework is chamfered the internal woodwork is chamfered; we do not seem on the average to go much further than that. A good many forms of work, habitually used in house finishing internally, are stereotyped, and are used with little thought of their origin or fitness; though many of them really originated in this very attempt to make the internal and external design correspond. The usual form of door and window architraves and mouldings, for instance, is derived from the period when the predominance of Italian detail was universal, and has survived in a majority of cases where the external architecture has changed. It has become, in fact, the vernacular of the house joiner; and this very fact is adduced by advocates of the Queen Anne revival as a favour of the adoption of that style, with which these details, familiar to every workman, harmonise sufficiently to ensure unity of result. But there is absolutely no reason, except precedent and habit, for the forms which these and other internal details commonly assume even in good houses, and which are often at variance with the external detail of the building.

Probably no style among the various modern revivals has been so successful in the way of securing artistic effect of colour and general effect in interior fittings, combined with suitability and convenience of forms, as the Queen Anne, the revival of which architecturally has in fact almost entirely arisen from the predilection of certain artists and architects for the furniture style of that period; so that in this case the external design has been fitted to and made to follow the internal, which seems the reverse of the proper order of things. The "Queen Anne" is a furniture style, in fact, and its forms are cabinet-making much better than building. The Gothic, on the other hand, is pre-eminently a masonic style, and there is the converse difficulty in this case, of treating the furniture and fittings so as to correspond with the architectural design without rendering them heavy and unsuitable in form. Amongst the many clever and picturesque designs for Gothic furniture that have been turned out, it is seldom that this difficulty has been altogether got over, and in turning over such a collection as Mr. Talbert's book of designs for Gothic furniture, and others of the kind, one cannot but be struck not only with the ingenuity and the effectiveness certainly of many of the designs, but also with their predominant heaviness, which in fact we suspect has been a practical bar to their acceptance in many cases. It is curious to compare with recent furniture designs some of the works which were authorities with the generation or two previous. When the admiration for Greek architecture was at its height, Mr. Thos. Hope published his book of designs for furniture and decoration, engraved in the severe style of the day, in line only, without either shading or colour. These, in fact (so far as the furniture designs are concerned) chiefly aim at the correct reproduction of Greek form, or forms in complete coincidence with pure Greek taste. In many of them the direct imitation of architectural detail where the subject does not suit it (sideboards with elongated classic columns for legs, &c.) results in a thin, starved and stiff effect; but many objects, in particu-

* See an article on "The Use of Plaster in Decoration," in *Builder* of June 26, 1869.

he chairs represented, are far superior, in combination of artistic form with convenience, to anything that the more recent revivals have turned out. They are free from the heaviness and stiffness of line which characterise furniture and decoration in the neo-Gothic taste, and at the same time from that "wanton curvature" which Mr. Talbert, in the work above referred to, justly describes as opposed to true taste, and from which some of the Queen Anne furniture (later manner) is by no means free.

The mention of Mr. Hope's book, now (according to the usual course of things) forgotten by the adherents of a more recent taste, suggests some of the higher flights to which the æsthetic treatment of the habitation may aspire, when circumstances permit their indulgence. In an ordinary-sized house there can be no doubt that good taste demands a general keeping in the style of the different apartments in relation to each other. A house small enough to be readily grasped, so to speak, as a whole, must be treated so. But in a larger mansion there may be scope for the exercise of much artistic skill, taste, and feeling, in rendering different apartments the opportunities for the development of various styles of design, or, at all events, of various effects, gay or sombre. Mr. Hope's book had for its primary object the suggestion for this kind of treatment, chiefly derived from what he had himself carried out; and we may quote one account which he gives of the decorative treatment of a room, the key to which was the Cephalus and Aurora of Flaxman; comparatively recent as the work is, the kind of effect aimed at, and the phase of taste exhibited, are so diverse from what architects trouble themselves with now, as to seem almost like the work of another age. He gives an outline perspective of the apartment,—in the days before colour-printing authors had to content themselves with merely describing the colour:—

"The central object in this room is a fine marble group executed by Mr. Flaxman, and representing Aurora visiting Cephalus on Mount Ida. The whole surrounding decoration has been rendered in some degree analogous to these personages and to the face of nature at the moment when the former of the two, the goddess of the morn, is supposed to announce approaching day. Round the bottom of the room still reign the emblems of night. In the supports of the black marble table are introduced medallions of the god of sleep and the goddess of night. The bird consecrated to the latter deity perches on the pillars of a black marble chimney-piece, whose broad frieze is studded with golden stars. The sides of the room display, in satin curtains, draped in ample folds over panels of looking-glass (which reflect the group), and edged with black velvet, the fiery hue which fringes the clouds just before rise; and in a ceiling of cooler sky are sown, amidst now still unextinguished luminaries of the night, the roses which the harbinger of day, in her course, sprinkles on every side around her."

Well, we will not say that is quite in pure taste; it cannot be denied that there is something a little too prosaic and material in such a way of treating the emblems of night and morning. But the suggestion of thus decorating a room with a definite meaning, and especially of making the fine work of art, such as a statue of an ideal subject (now-a-days, we suppose, a *cloissonnée* enamel jar would be substituted), the keynote of the whole, is one susceptible of almost endless complification, and might afford occasion for the realisation of very beautiful results for those who may have the opportunity for cultivating in this higher development the æsthetics of house-building.

LIGHT IN LONDON.

From the necessary extent of such works as those mentioned in our last,* the reader may derive some notion as to the necessary cost of them; and it will, therefore, be readily understood that the sum we have set down,—six to seven and a half millions sterling,—as the amount expended in the erection and fitting of them, is not very far from the truth. We shall accordingly proceed to show now the extent and cost of the gas mains; for as nineteen-twentieths of the whole of the capital sunk in the London gas companies are usually expended in buildings and machinery, as well as mains and service-pipes, it follows that the cost of the one will necessarily give us that of the other.

The extent of the gas mains throughout London must of course be determined, first, by the total length of the streets and roads; and, secondly, by the average number of mains laid down in each of them. Now, as to the length of the London streets, we find by a return of the metropolitan police in 1850, that the streets, roads, &c., included in the "*Inner*" police-district, were 1,700 miles long, while those in the City measured 50 miles, or 1,750 miles together. Since that date, however, we are informed by Colonel Henderson no return has been made, nor any record as to the Inner district kept. The Inner police district coincides very nearly with the limits of what is termed "Registration London," or London as at present defined by Act of Parliament; but what may be the exact length of the streets within the same boundary at the present time, there are, for the reason above given, no means of ascertaining with any positive accuracy. Still, since the gross number of houses in the Inner police-district and Registration-London increased between 1850 and 1871 at the rate of very nearly 50 per cent., it is but fair to assume that the length of the streets and roads increased at that rate also; so that as $1{,}750 + \frac{1{,}750}{2} = 2{,}625$, it is plain that the total length of the streets and roads of London proper cannot now be less than 2,500 miles in round numbers.

The average number of mains extending along each of these streets is very difficult to arrive at. Where a "junction" occurs there will be sometimes as many as fifteen to twenty different mains beneath the one thoroughfare, many of which would be now what are termed "dead mains,"—that is to say, unused at the present time. Along the Strand again there are five mains, in some portions of Oxford-street three, and in Piccadilly two in one part and three in another. Hence it is by no means easy to come at anything like an average, and, consequently, the united length of the London gas-mains has been variously estimated. Mr. Barlow, a good authority, writing on the subject last year, said "unfortunately there is not at this moment a return of the total number of miles of mains laid down by the metropolitan gas companies. The Paris gas company has only 960 miles of mains, but Paris is a compact city, and the gas-works are so arranged as to avoid unnecessary extensions of mains. The Alliance Dublin Company, on the other hand, has as many as 3,000 miles. We can, therefore, at present hazard only a conjecture as to the length of the mains laid down in the metropolitan district; but between Beckton on the one side and Fulham or Wormwood Scrubs on the other, and between Lewisham on the south and Hampstead-heath on the north, there must be many thousands (probably ten thousand) miles of pipes." Nevertheless, with all due deference to one so qualified to speak on the matter, we are satisfied that this is by far too extensive an estimate, seeing that the number of miles of streets included within these limits is not more than 2,500, and the above calculation would give an average of *four mains* to each street throughout the metropolis. This, however, as we have shown, is nearly double the number of mains there are in parts of Piccadilly, and one-fourth more even than those in all Oxford-street.

On the other hand, Mr. Fry, the Surveyor to the Board of Works for the Strand District, is of opinion that the total length of the gas-mains throughout London is somewhere about 6,000 miles; still this gives rather *more than two* mains to each thoroughfare, and as there are some hundreds of miles in the small suburban districts in which there is only *one*, we are inclined to believe that (even allowing for those localities like the Strand, in which, as we have said, there are five mains; and taking into consideration the "junctions" before referred to, where as many as fifteen or twenty occasionally meet together), the average of two mains to each of the London thoroughfares would appear to us to be nearer the truth than that which would give four mains to every one of the streets throughout the metropolis.

Well, then, assuming the united length of the London gas-mains to be 5,000 miles (the entire sewers of London, according to Sir Joseph Bazalgette, are only 1,300 miles long; and the collective water-mains, according to a return made by the several water companies to the Commissioners appointed by the Board of Trade in 1872, but 2,800 and odd miles in length), the next question to be settled is,—What would be the *gross cost* of them? The mains are generally made of cast iron, joined together with socket joints, and in lengths of three yards. The sockets are usually from 3 in. to 6 in. deep, according to the different sizes of the pipes. Through these mains the gas of some large establishments has to be conveyed several miles. The diameter of the pipes varies from about 2 ft. (which is the size of the Oxford-street main) to 6 in. or even less, which is the calibre of the branch pipes used for the lighting of the small streets in the suburbs. The size of the main has of course to be in proportion to the quantity of gas to be transmitted through it; for if the pipe be too large there is useless expense incurred, and if on the other hand it be too small the supply is correspondingly deficient,—the rule being that the sum of the areas of the sections of the mains proceeding immediately from the gasholders should be equal to the sum of all the areas of the sections of the various branch pipes which they have to supply. The average diameter of the mains is generally assumed to be from 12 in. to 15 in.; but this estimate again we are convinced is too large; for though the mains in some of the principal thoroughfares may be of even greater calibre, it should be borne in mind that the branch pipes supplying the many miles of small streets and lanes in the suburbs are not half that size. Hence it appears to us that, taking one with another, 9 in. diameter would be nearer the average mark. Now the cost of such a cast-iron pipe, including the laying down and making good, may be taken at from 7*s.* 6*d.* to 10*s.* the yard run or from 660*l.* to 800*l.* per mile. Let us however take the mean or 770*l.* per mile run as the average cost of the London gas mains, and then multiplying this by 5,000 for the total number of miles of such mains throughout London, we come to the conclusion that the entire gas mains distributed throughout the metropolis must have cost the large sum of three millions and a half of money.

This estimate has been framed, it will be seen, with all due caution, and with every desire to underrate rather than overrate the expense. It differs largely, therefore, from the calculations of most gas-engineers, who generally assume the gross length of the London mains to be not less than 10,000 miles—the average diameter of the pipes to be 15 in.—and the average expense of them to be as much as 25*s.* to 30*s.* the yard run, or from 2,000*l.* to 2,500*l.* per mile; so that at this rate the gross cost of the London mains would amount to between *twenty and twenty-five millions of money!*—which is utterly absurd, seeing that the whole of the capital sunk in the metropolitan gas companies does not exceed, as we have shown, *ten millions sterling*.

But if the entire gas mains of London must have cost at the very least three and a half millions of pounds to lay them down, how much money does it require yearly to keep them in a state of continual repair? This point we are enabled to settle by means of the same accounts to which we have made such repeated reference. For we find by turning once more to the "Revenue Account," given in the official Returns, that the "repair, maintenance, and renewal of mains and service pipes" costs the Chartered Company 28,564*l.* a year, the Imperial 9,433*l.*, and the whole of the other seven companies 25,282*l.*; so that the entire sum required to be expended by the united metropolitan gas companies for this purpose amounted in the year 1874 to not less than 63,280*l.* Now 63,280*l.* for 2,500 miles of streets gives an average expense of rather more than 25*l.* per mile for the repair and renewal of the several gas conduit-pipes throughout London.

The next point in the inquiry is,—What is the number of public lamps in London? This luckily the Government returns enable us to determine with all due statistical accuracy. Under the head of "Statement of Gas made and sold," there is a table printed in connexion with the accounts of the several London Gas Companies, and one of the columns in this gives the number of public lamps supplied by each company. These at the end of the year 1874 were as follow:—The Chartered supplied gas to a few more than 15,000 such lamps; the Imperial to very nearly 17,000; and the remaining seven companies to 22,000 odd; so that altogether there were 54,109 public lamps in London lighted by the united metropolitan gas companies.* (Mr. Barlow estimated the number of public lamps throughout London at the prodigious number of 360,000,—but upon what *data* other than guess-work it is impossible to imagine.) There are then 54,000 and odd public lamps distributed throughout the 2,500 miles of street in London. Now this is in the proportion

* See p. 985, *ante*.

* The number of public lamps supplied by the other companies were: the Phœnix, 5,497; the London, 4,821; the Commercial, 3,796; the South Metropolitan, 3,616; the Surrey Consumers, 1,949; the Independent, 1,507; and the Ratcliff, 870.

of one lamp to about every 80 yards of roadway. In Tottenham-court-road the distance between the street-lamps is in some parts 70 yards; in Great Russell-street, 60 yards; in New Oxford-street, 55 yards; whilst in Bedford-square, the lamps are but little more than 30 yards apart. Hence there appears to be no uniform rule as to the proportion of lamps to a given length of thoroughfare; and consequently if there be but 54,000 public lamps in all London, and the average distance between them is 80 odd yards, those in the suburbs must be considerably wider than that apart, seeing that the lamps in the more populous parts of the metropolis are not half that distance from each other. And yet by the Metropolis Gas Act of 1860 it is specially ordained that the gas companies are not to be *compelled* to light any district where the lamps are at a greater distance apart than 75 yards!

The public lamps of London being then some 54,000 in number, we have now, in order to carry out our present inquiry in all due order, to ascertain the expense of setting them up. An ordinary street lamp-post with the lamp and fittings complete, we are credibly informed, will cost about 2*l.* 10*s.*, including the fixing of it. Hence it follows that the outlay required for erecting the entire number of street-lamps in London would amount, in round numbers, to 135,000*l.*

So far we have progressed satisfactorily enough in our investigation: we have ascertained what it has cost to establish the several London gas-works; what is the length, as near as can be, of the several gas-mains throughout the metropolis; and what has been the probable expense of laying them down; what is the number of public lamps distributed through the streets and along the roadways of the capital; what has been the amount of money devoted to the erection of the 54,000 and odd lamp-posts required for the lighting of the public thoroughfares; and accordingly, in regular sequence, we come now to consider what quantity of gas these half a hundred thousand street-lamps are wont to consume annually while keeping our thoroughfares duly illumined all the summer and winter nights through.

This, again, is a point readily determined; for, by the "statement of gas made, sold, &c.," given with each of the London gas companies' accounts, we find that the quantity of "common" as well as "cannel" gas sold for public lights, by the nine metropolitan gasworks collectively, amounted to rather more than one million of thousands of cubic feet (1,074,595,000 cubic feet precisely). Of this the "Imperial," having the greatest number of public lamps to light, supplied over one-third, or more than 347½ million cubic feet; the "Chartered" not quite a fourth, or upwards of 237 million feet; and the remaining seven companies collectively not quite half, or within a fraction of 490 million cubic feet.*

Now, according to Mr. Peckstone, we repeat, the average yield of gas from a ton of Newcastle coal is 10,000 cubic feet; hence, to produce the thousand millions of cubic feet of gas which were consumed in the course of the year 1874 by the 54,000 public lamps in London, no less than a hundred thousand tons of coal would have been required.†

But, if the public lamps consume collectively 1,074½ millions of cubic feet in the course of the year, what amount of gas does it take to light the streets of London every night, on the average, throughout the twelvemonth? This is readily arrived at; for $\frac{1,071,595,000}{365} = 2,971,493$,—say three million cubic feet. Now this amount of gas represents, at the normal rate of 10,000 cubic feet per ton of coal, an average consumption of 300 tons of Newcastle carbonised nightly, in order to maintain the streets of London in such a state of luminosity as will render life and property secure from the aggressions of the burglar and the footpad. Now 300 tons of coal at the average cost of 25*s.* per ton represent a gross outlay for the fuel of 375*l.*; so that for less than 400*l.* a night sufficient coal can be provided to allow four million people to pace the streets in safety and to sleep fearlessly in their beds—which is less than the tenth of a farthing per head.

After this the next step in the due order of logical exposition is to settle, first, what is the average consumption of each of these public gaslights in the course of each night throughout the year; and, secondly, what is the gross cost of them to the metropolitan ratepayers. In the mid-winter the street-lamps are lighted at four in the evening, and not extinguished until eight the next morning, so that they are kept burning for sixteen hours; whilst in midsummer the average term of the gaslight is from eight p.m. to four a.m., or only eight hours' duration. Hence, it follows that, lamping the long nights with the short, the public lamps may be said to be kept alight for twelve hours nightly throughout the year. Now, fifty-four thousand lamps burning a thousand million cubic feet of gas in the course of the twelvemonth, give an average consumption of 18,500 cubic feet of gas to each public lamp per annum. Then, as 365 nights × 12 hours, or 4,380, would represent the number of hours they are kept burning through the year, it follows that $\frac{18,500}{4,380} = 4{\cdot}2$ cubic feet would indicate the average hourly, and 50·4 cubic feet the average nightly, consumption of gas by each of the lamps in question. And that this is not very far from the truth is proved by the fact that 5 cubic feet of gas per hour is taken as the average consumption of the standard Parliamentary argand burner. Now, 5 cubic feet of gas is, as we have said, the quantity yielded by one pound of Newcastle coal; hence each of our street-lamps may be said to carbonise rather more than 15 oz., or just upon one pound of coal hourly; and this is very nearly at the rate of two tons in the course of the year.

It now only remains for us to set forth what is the gross cost of these 54,000 street lamps, burning collectively just upon one thousand million cubic feet of gas per annum, as well as to show what is the price paid for the gas "per thousand," and then we shall put the extinguisher on our "Light in London." Now, under the head of "Revenue Account," given in the printed Returns of the Metropolitan Gas Companies, we have a statement of the sums paid to each of the different companies for the public lighting of London; and according to this it appears that in the year 1874 the Chartered Company received very nearly 74,000*l.* for the gas as well as the lighting and repairing of the public lamps; the Imperial not quite 94,500*l.*; and the other seven companies altogether a fraction more than 100,000*l.* altogether;* so that the gross cost for the gas, as well as the lighting and repairing of the 54,000 street-lamps, amounted in round numbers to 268,000*l.*

Now, $\frac{268,000l.}{54,000}$ gives 4*l.* 19*s.* 3*d.* for the yearly cost of each public lamp. But this amount includes not only the expense of the gas, but that also of lighting and repairing the lamps. Consequently, the latter item must be deducted from the gross sum paid for the public lights in order to arrive at the amount charged for the supply of the gas. By the same "Revenue Account," then, we find that the cost to the gas companies of lighting and repairing the street-lamps amounted in the aggregate to rather more than 42,500; the "Chartered" having to pay for this 13,348*l.* in the course of the year; the "Imperial," 13,353*l.*; and the remaining companies just upon 16,000*l.*† Now dividing this 42,500*l.* among the 54,000 street-lights we have a quotient of just upon 15*s.* 9*d.* for the yearly expense of lighting, cleaning, and repairing each of the public lamps throughout London. Then, again, deducting the same amount (42,500*l.*) from the gross sum of 268,000*l.* odd, paid for the contracts by the several parishes, we have 268,000*l.* − 42,500*l.* = 225,500*l.* for the nett sum paid for the gas; and 225,500*l.*, or 4,510,000*s.*, divided by 983,600 (the number of thousands of cubic feet consumed b the public lights in the course of the year 1874 gives 4*s.* 7*d.* per thousand cubic feet for th average cost of the gas supplied to the publi lights.

And this appears to be about the averag price, being very nearly the mean of the amount returned by the companies as the cost of thei gas; for whilst the "Chartered" charges 5*s.* an 3*s.* 9*d.* per thousand for common gas by mete the "Imperial" asks only 4*s.* 6*d.* and 3*s.* 9*d* and the "South Metropolitan" requires but 3 The "Commercial," on the other hand, demand 4*s.*, whereas the "Independent" wants onl 3*s.* 6*d.*, while not less than 3*s.* 9*d.* and 4*s.* 6 will satisfy the "London." Moreover, the "Su rey Consumers'" *will* have 4*s.* 6*d.*, though th "Ratcliff" is willing to accept 3*s.* 9*d.*

Such, then, is a just gleam of some of th glories of "light in London." And here our tal ends; but before laying down the pen, let u briefly recapitulate the conclusions at whic we have arrived in the course of our invest gations:—

The total amount of capital invested in th eight metropolitan gas companies is ten millio sterling.

The gross expenditure of the gas compani in the year 1874 amounted to 620,000*l.*, of whic 75 per cent., or 470,000*l.*, was paid for ne buildings and machinery; 20 per cent., 122,000*l.*, for new and additional mains; an the remaining 5 per cent., or 27,000*l.* for ne and additional meters, fresh land, and la charges. The collective gas-works of Lond would appear to have cost for "building machinery, and plant," as well as "land between six and seven millions sterling. (M Barlow estimated the amount of capital sunk the several "works" at between only three a four millions.)

In mid-winter some of the largest gas-wor have to send out as much as 17 million cub feet of gas in the course of the night.

Some of the gasometers are now 140 diameter and 70 ft. high, or as large as a goo sized amphitheatre, and have a capacity of u wards of a million cubic feet.

The gross quantity of gas supplied to t entire metropolis now is as much as 14,0 millions of cubic of feet per annum, which is the rate of 38½ millions of cubic feet per dien

To produce this enormous volume of g about 1½ million tons of coal require to be c bonised, or "coked," in the course of the year

Each ton of Newcastle coal produces on average 10,000 cubic feet of gas, and 1 cwt. coal about 2½ bushels of coke.

The cost of the coal alone for lighting Lond with gas amounts to 1¾ million of money p annum.

The value of the "residual products," such the coke, the breeze, the tar, and the ammo liquor, arising from the destructive distillati of the 1½ million tons of coal, is as much 700,000*l.* per annum.

The "gas rental" of the entire metropolis is ju upon three millions of pounds sterling, includi rather more than a quarter of a million paid the public lamps; so that not quite 2¾ millio are paid for the gas supplied "per meter."

The total length of the streets of "Lond according to Act of Parliament," is 2,500 mile

The total length of the gas-mains through London is more probably 5,000 than 10,000 mil as is generally supposed.

The total length of the Paris mains is o 960 miles, and those of Dublin 3,000.

The average expense of laying down th mains is about 770*l.* per mile, and the gr cost of the entire mains of London, therefore, less than 3¾ millions sterling.

The cost of the repairs and renewals of street-mains comes to 63,000*l.* odd in the cours the year, which is at the rate of just upon 2 per mile.

The number of street-lamps throughout Lond is 54,000 odd (instead of 360,000! as assum by Mr. Barlow), or 1 lamp to about every yards of roadway.

The gross cost of erecting the 54,000 stre lamps could not have been less than 135,000*l.*

The street-lamps consume just upon thousand million cubic feet of gas per annum

The gross cost of the gas consumed by street-lamps is upwards of a quarter of a mill pounds yearly.

The entire street-lamps of London consu as nearly as possible three millions of cubic f of gas nightly, which represents an average 300 tons of Newcastle coal carbonised per die

* Of these 490 million cubic feet, the Phœnix supplied not quite 121 millions; the London, 82½ millions; the Commercial, very nearly 85 millions; the South Metropolitan, within a fraction of 75½ millions; the Surrey Consumers', 67½ millions; the Independent, 29½ millions; and the Ratcliff but little more than 19 millions.

† The Cannel gas sold for the public lamps, of which only 11½ million cubic feet were used (or not quite 9 per cent. of the entire quantity), has, for the sake of simplification, been excluded from the above calculation. The yield of gas, however, from a ton of "Parrot" or "Cannel" coal, is from 12½ to 20 per cent. more than from a ton of Newcastle.

* Of the 100,000*l.* received by the remaining seven metropolitan companies, the Phœnix received 25,000*l.* odd; the London nearly 22,000*l.*; the Commercial not quite 16,000*l.*; the Surrey Consumers', 13,500*l.* within a fraction; the Independent, rather more than 6,250*l.*; and the Ratcliff, not quite 3,800*l.*

† The 16,000*l.* was thus divided among the other companies:—For the lighting and repairing of the public lamps, the Phœnix had to disburse very nearly 3,800*l.*; the London, a little over 3,000*l.*; the South Metropolitan, rather *more* than 2,800*l.*, and the Commercial rather *less*; the Surrey Consumers', 1,500*l.* odd; the Independent, just upon 1,300*l.*; and the Ratcliff, 600*l.* and upwards.

and though the coal alone required to light the streets of London every night costs 375*l.*, the expense of the public lamps is less than the tenth of a farthing per night to *each* of the four million inhabitants.

The cost of lighting, cleaning, and repairing the whole of the public lamps amounts to 42,500*l.* a year.

The average contract price per lamp is 1*l.* 19*s.* 3*d.* per annum; of which sum about 15*s.* 3*d.* is the average cost of lighting, cleaning, and repairing, and the remaining 4*l.* 4*s.* the yearly expense of the gas for *each* of the lamps.

A NOTE ON THE PRESIDENTIAL ADDRESS AT THE INSTITUTE.

In the course of the opening address at the first meeting of the Institute this session, Sir Gilbert Scott made a "point," which was evidently appreciated by a certain proportion at least of his audience, in the remark that the Institution which he at present presides over has not of late years acted up to its professed ends in furthering the art of architecture; at all events, that it has been open to the charge of being more concerned "with the profession of architecture as it is than with the art of architecture as it might be"—of looking too much at the present and too little to the future.

The promotion of the knowledge of the profession as it is, is certainly one object of such a society as the Institute; in this way especially, that by its means members of the profession engaged chiefly in one particular branch of practice (and most architects have their own special line of subject, more or less) may hear from others what are the latest experiences and ideas in buildings of other descriptions. There is scarcely enough of this kind of interchange of ideas; and the President probably thought of this when he incidentally expressed a hope that they would in future "know a little more of the inner life" of some of their leading members; which expression we presume referred to the idea, often and often expressed by well-wishers of the Institute, that members of the profession engaged on buildings of any interest, large or small, should bring their drawings and details before the meetings for general inspection and for the dissemination of ideas, and the interchange of friendly criticism. There is very little of this element at the meetings generally; but nothing could tend more to give to them that practical value which it is so desirable they should possess, than to render them opportunities for professional "brethren" (if we may hope the term is still applicable amid the unfortunate party spirit and cliqueism of which we hear far too much) to study each other's work, and to gain hints from each other for mutual instruction, and for general advancement in the practice of the building art. If there are those, perhaps, who would be narrow-minded enough to draw back from any such practice from motives of (imaginary) self-interest, we should hope this spirit, the real prevalence of which would render the existence of the Institute of Architects little better than a mockery, can only be very partially operative, and that it is mere want of thought which leads members of the profession to ignore or forget one of the most certain ways of rendering the Institute of practical value to those who regularly attend its meetings.

This, however, is a question which concerns the position of the Institute chiefly as it is viewed by members of the architectural profession, a consideration not unimportant as bearing upon its future prosperity, either; for we have heard refusals to join its ranks based on the opinion that there was no practical good to be gained from it; an opinion which it is at least desirable that those who do actively take part in its proceedings should give as little ground for as possible. But, reverting to the presidential observation before quoted, that the Institute seems rather concerned with what is present and "professional" than with what is future and "architectural," that is an important consideration in reference to the standing of the society in the estimation of the outside world. We know that the theory has been put forward by professional members of the Institute that its real office is to afford an opportunity for protecting the professional interests of architects; a theory which at once reduces it, in fact, to the level of a "Trade Union,"—a sort of institution not necessarily reprehensible, of course, but which is, to say the least, not the professed object for which the *imprimatur* of a royal charter was given to the Institute, nor one which can have any possible interest for the public. But without contemplating the *bathos* implied by the acceptance of such a theory, and which certainly is not practically accepted by those who are foremost in the present management of the Institute, there seems to be reason for the complaint that its papers and proceedings are too little occupied with what would tend to an extension of the field of architectural possibilities, practical and artistic, in the future. Of the list of papers for the Session, which we commented upon a fortnight since, one only, that by Mr. Sharpe on "The Application of Terra-cotta to Modern Church Building," seems to tend towards enlarging the field of future practice, unless Mr. Payne, in his paper on "Concrete," means to sketch the future of that material under the hand of the architect. Now, this is a point for consideration not only for those who are members of the Institute and of the profession of architecture, but one which may, and does to some extent, enter into the consideration of outsiders in estimating the value of the Institute of British Architects to the country at large. New problems in the formation of habitations for a population increasing in numbers, and at the same time advancing in all that is implied in the word "civilisation," are constantly presenting themselves, either definitely or vaguely. It may not be unnatural for the public of this country to look to the central and representative body of architects to attack these problems by anticipation, to put into definite shape those which are yet vague, to suggest the best methods of meeting those which have become definite and palpable to every one, in such a spirit as to fulfil the conditions demanded of architecture, the combination of the useful with the beautiful, the necessary with the appropriate.

There was another point in regard to the possible work of the Institute touched upon by Sir Gilbert Scott, which, though in one sense it refers to the past rather than the future of architecture, yet has a direct connexion with his observations on the too exclusively "professional" tendency of the Institute, as well as with our own remark on the need of a closer connexion of its proceedings with public, or rather national, interests. We refer to his observations upon the past architectural monuments of the country, of all dates and styles (and considering his professed Gothic principles, the President was sufficiently impartial on this head), and the important work which remained to be done, and might be done, in drawing and illustrating these monuments before they succumbed to the hand of Time (or of the restorer, perhaps we may be allowed to add). This is really a subject which ought not to be allowed to fall to the ground, whether we consider it from the point of view of an archæologist or of that of a member of the Institute. If we look at the splendid work which has been done and is being done by French architects in measuring and illustrating old remains by the most elaborate and perfect drawings possible, in connexion with the "Commission des Monuments Historiques," we must feel that this country is miserably behindhand in making reliable drawings and records of buildings which by one or other of the two destructive agents named above must before long perish. It may be replied that the "Commission" in France is a Government project, undertaken on public grounds, and paid for out of the public purse; and that if our Government once made a similar step, it would find no lack of architectural and drawing talent at its disposal. That is probably true; but Governments differ, and it is not in the nature and habit of English Governments to initiate undertakings of that kind. As French critics have observed several times, the Government is the first mover in nearly every work of any public interest in France; whereas, in England, it is nearly the last. In England, Government waits for companies or for individuals to start an undertaking, and then countenances and subsidises it or not, as the case may appear. This may be good or bad, right or wrong; but it is "the custom of the country," and there seems no immediate probability of its being altered; and that being the case, surely the body which is bound by all general considerations to make a movement for the adequate illustration of the architectural remains of the country is the one which formally represents the art of architecture. It is neither unsuitable nor paradoxical, that the president of such a body should call upon its members to take active part in endeavouring to secure as complete a record as possible of the architectural beauties which are among our national and historic possessions. When we say it is not paradoxical, we mean that such a movement does not (as the President, indeed, observed) necessarily mean the incurring of all the expense connected with it by those who labour in the cause. Both Government and private individuals in this country have been found not unwilling to find funds for assisting any enterprise that recommends itself to the common sense of society and to public feeling; and even if each member of the Institute undertook to illustrate one building, a very important step would be made at no more expenditure of time and cost than our leading architects often do incur for mere indulgence of their own enthusiasm as sketchers and students of ancient architecture in other countries. If a definite step of this kind were made by the members of the Institute, they would not only, in all probability, receive substantial support from Government, if the claim were properly laid before it, for carrying the idea further, but they would also, in giving their united talent and some of their time to a work of really national interest, gain more of that sympathy and recognition on the part of the educated public of the country, which is one of the things most to be desired, and at present most needed, in the interests both of architecture and of the society which constitutes its recognised representative.

THE LESSONS OF THE FLOODS.

Some weeks ago we alluded to the disastrous floods which had occurred in the South of France and in other parts of Europe. We have now ourselves been visited with a second series of floods hardly less destructive in their aggregate effects than the more isolated cases to which we then alluded as having happened on the Continent.

Villages swamped, streets rendered impassable, bridges carried away, railway embankments washed down, houses robbed of a portion of their furniture, thousands of acres of land submerged, hayricks and trees floated away on the swollen tide, horses and cattle drowned,—such is a catalogue of the destruction wrought throughout these islands; and, worse than all, men, women, and children suddenly plunged into a watery grave. No part of the kingdom has been exempt from such disasters. In this case, it is no question of the sudden melting of snows on mountain sides; it has been merely a steady downpour of rain, such as we are periodically liable to, and which, though perhaps in a less exaggerated form, we are accustomed to witness at certain seasons, bringing with it the necessary consequence of swollen rivers and banks overflowed.

Every autumn, at least, and almost every spring, we hear of floods very general in extent, and only differing from those which we have just been experiencing in the fact of their being less severe and disastrous in their effects. The plague of water which has just burst over the country is no new disease,—it is an annually-recurring one, though it appears pretty certain that each year gives increased force to the evil.

It cannot be denied that fifty years ago it was far less common for whole miles of country to be suddenly inundated, for the peaceful English streams to be turned into raging torrents, than it is nowadays; and, on the other hand, it was much more unusual for the opposite complaints of drought during the summer months, of parched fields and burnt-up crops, to be registered than is now the case. And these two facts are closely, inseparably, connected. The same agencies which are at work to cause the one are at work to produce the other effect.

Setting aside the, so to speak, exaggerated aspect of the late floods, in their ruinous effect on buildings and other property, and in the loss of life which they have proved the cause of, agriculture is the main sufferer in the flooding of the land. Unlike the Nile, whose annual rising is a cause of general rejoicing throughout its course, by reason of the rich deposit of fertile alluvial soil which it distributes on its course, and of the facilities which its overflow gives for supplying the irrigating canals which are prepared to receive and store its superabundant waters, our rivers are rather agents of evil omen than of good import when they rise above the level of the channel which Nature has marked out for them and which man has helped to define. Too many of our streams are polluted with all manner of

abominations, and the deposits which the waters bring down, instead of fertilising, rather destroy the producing power of the earth over which they pass. It is no exaggeration to say that an overflow in the case of many of our streams, particularly in South Wales, in Lancashire and Yorkshire, and in Devon and Cornwall, is destructive to all living things, vegetable or animal, over which it extends. But in the case of rivers whose waters are pure, or, at least, in this respect, harmless, the submergence of the land is disastrous, especially when it is of long duration, in the effect it has on the crops, and in the stoppage of all farming operations.

Equally does agriculture suffer in the reverse of the picture,—the yearly summer droughts which now almost invariably occur. The land is parched up, the crops are burnt before they have time to swell and grow, and either this evil must be submitted to, or measures for artificial irrigation resorted to at great expense, under the pressure of the emergency. Indeed, there is little to choose between a long summer drought and a protracted period of autumn and winter floods.

We have said that these two subjects are closely allied; so closely, indeed, are they connected, that agriculture, which is the greatest sufferer from these two opposite conditions, is to a very great extent the author of both. It cannot, indeed, be said that agriculture is the cause of a heavy rainfall, or of the absence of rain; but the system of high farming, which the present generation has seen introduced, is the principal cause of the serious effects which follow a period of heavy storms, or of lengthened dry weather. The drainage of farm lands is now so complete, that a fall of rain which, fifty years ago, would have taken days to find its way through the soil to the river, is now carried off at once, and suddenly swells the volume of the stream. When several successive storms occur, the water falls rapidly into the river, which is thereby heightened to an extent beyond its capabilities, and a flood is the result, rotting the crops, and destroying its producing power. Even to so small a matter as this, the worms are drowned, and the soil loses the benefit of their services in perforating the earth, and fertilising it with their "worm balls." On the other hand, the drains so rapidly carry off the water, that in summer the land seldom or never (except when actually submerged) becomes thoroughly soaked, and a few days' hot sun will completely parch its surface, and then the summer effect of severe drought is produced.

If a system of storing water were adopted, both these evils would be reduced to a minimum. The superabundant rainfall of the autumn and winter would be stored in suitable localities, instead of rushing headlong into the sea, while it would be available for use in the summer months, instead of being beyond our reach. If high farming demands deep and complete drainage, the results of the system should be taken into account, and its evils, as far as possible, averted. It is hardly policy to say that a certain portion of the country shall have the benefits of good drainage (not always a benefit, in consequence of the evil result of serious drought), and that another portion shall, consequently, be periodically submerged, and its value thereby indefinitely depreciated.

But it is not merely the farmer that suffers, or who can read a lesson, from the floods. Householders and owners of property generally lose much in a time of such floods as we have just been experiencing. For one building actually washed away in the flood, hundreds are seriously injured by the water which enters their lower floors, if they are situated within its reach. A remedy for this evil lies in the prohibition of any building being erected below the probable flood level of a river, or at least in the enforcement of some means which will render its foundations waterproof, and in the prohibition of any dwelling-rooms below the flood level. The system of underground rooms is in itself open to great objections; but it becomes a positive danger when there is the likelihood of the floors being at any time below the level of an adjoining stream. Localities at all subject to the overflow of streams should be religiously guarded against as building ground, or at least their level shou'd be so raised as to prevent all danger of an inundation.

The Tower and Spire of St. Antholin's Church, City.—The destruction of this handsome steeple, Wren's work, is imminent. Can nothing be done to save it?

THE LATE MR. RICHARD TRESS, ARCHITECT.

Mr. Tress, whose death took place at his residence in the Albert-road, Regent's Park, on the 29th ult., at the age of 65, had been prevented by failing health, for nearly two years previously to his decease, from engaging in the duties of his profession. It is believed he was another instance of the effects of that excessive application to business which seems to have now become so common in successful professional men.

Mr. Tress commenced practice as an architect and surveyor in the City of London some forty years since, in George-street, Mansion House, and subsequently continued it in Little St. Thomas Apostle, after which his offices were at 27, Queen-street. For many years Mr. Francis Chambers was in partnership with him, and some time after its termination Mr. Tress was joined by Mr. Charles Innes, a former pupil of his, and who still carries on the practice.

Mr. Tress was long a member of the Court of Common Council, to the duties of which he gave much time, and took a very great interest in many of the improvements which have done so much within the last thirty years to make the City what it now is. He was also connected with several of the City charities, and took great interest in their welfare. He was the oldest trustee to the Finsbury Savings Bank, or "father" of that institution."

Mr. Tress's practice was a very varied one, and comprised almost every kind of business belonging to his profession. He was, in addition to his reputation as an architect, known to be a skilful negotiator, valuer, and well versed in the subject of ancient lights, compensation cases, and dilapidations. He was surveyor to several of the City parishes, and for many years was surveyor to the Worshipful Company of Cutlers, which latter appointment he resigned upon his election to the Court. He became Master of the Company in 1873. He was a candidate for the office of City architect previously to Mr. Horace Jones's appointment, but a standing order which precluded any member or late member of the Corporation from being appointed to any post in their charge disqualified him. He was, we believe, over twenty years a fellow of the Royal Institute of British Architects, and he was also a member of the Society of Arts.

Mr. Tress was architect to the City of London Union Workhouse in the Bow-road, and to the Saffron Walden Corn Exchange, and in conjunction with his partners designed and superintended the erection of the Central London District Schools at Hanwell, Messrs. Copestake's large warehouses in Bow Churchyard and Bread-street, the premises of Messrs. Jenks and other large buildings on the Holborn Viaduct, and other warehouses and buildings in the City and its vicinity; he also erected a large mansion at Huddersfield, and several residences in different parts of England.

His pretty little cottage at Taplow (which he lately sold on account of his ill-health), surrounded by ornamental grounds and waters, and to which he gave much care, was in the summer time the pleasant resort of many friends, by whom he was greatly respected and esteemed. He was buried on the 5th inst. at Highgate.

BRONZE DOORS.

The real bronze-metal door just completed by Messrs. Bunnett & Co. is the last of four pairs, and is for the Hypothecary Bank of Buenos Ayres, illustrated some time ago in our pages. They are all double-leafed, the upper portion being fixed. The size of the largest is 18 ft. 8 in. by 8 ft. 7 in., and the weight of each five tons, the whole of which has been executed by Messrs. Bunnett's workmen.

The design is rich and massive, the thickness of the meeting stile being 10¼ in. The method adopted was to cast each leaf in one plate, only $\frac{5}{16}$ in. thick, the ornamental panels being afterwards secured thereto in such a manner that neither screw nor rivet head can be seen from the front, and having the appearance of one casting, enabling the various mouldings to be undercut, and giving to each a clear and sharp outline. The casting of these bronze-metal plates, each about 14 ft. 6 in. long, 4 ft. 6 in. wide, and $\frac{5}{16}$ in. thick, was accomplished in the new foundry each time successfully,—an operation, considering the large size and extreme thinness, necessitating great care and ability.

The doors are hung to the frames by six pairs of hinges to each leaf, with steel washers and pin and, to prevent any deflection, a gun-metal rolle with steel axle, is fixed under the bottom of t meeting stile, working on a fixed quadrant, an notwithstanding the immense weight, they can opened and shut easily by a boy. There are s bolts to each door, which are secured thereto means of a combination lock from the inside onl the end of each bolt is fitted internally with a ste roller, so that any attempt to cut the bolt wou be defeated.

The whole of the enrichment is highly chase relieved, and burnished, giving a rich antique a pearance, and such as, we believe, has not hithe been accomplished in this country or elsewhe

It is scarcely necessary for us to say that t cost of patterns, models, and enrichment w very considerable, the whole being made fr brass patterns.

EXCAVATIONS IN OLYMPIA.

Some time ago the German Government quested that of Greece for permission to ca excavations to be made in the district of Olymp which was granted, and the Germans soon to work energetically. No difficulties were countered in acquiring the ground necessary the excavations, and great assistance has b rendered by the Greek Commissary, M. Der triades, who has charge of the antiquities rou Thebes, a gentleman who has studied in Germa and is full of zeal for the cause. Altogether, advices received respecting the excavations very favourable. All necessary preliminar being made, ground was broken on the 4th October. The number of workmen was at fi small, the peasants of the neighbouring villa being just then busily engaged in the vint and with sowing. But at the present time fi workmen are employed, and the work is in progress. It is intended to dig two deep trenc from the site of the temple to Alpheios, passing the east the other the west front of temple. They are to serve for the removal the *débris*, for draining off the water, and at same time for laying bare the most import spaces near the sanctuary. At a depth of o 5 ft., pieces of entablature of the east front h appeared. At the same time, two smaller ex vations are in progress, one along the margin the Alpheios (where it is intended to deposit *débris*), to make sure that no old foundations in existence; and the second on the bank of Kladeos, to follow up the traces of wall here covered, and to determine the limits of temple district on the eastern side.

A small German colony has been formed Druva, overlooking the busy scene of the exca tions, the Germans being well received by authorities as well as by the population. So good has already been effected by the works carriage-road having been constructed to Pyrg a want long felt, which will serve, in the fi place, the purposes of the excavations, but v also be of great advantage to the fertile tr along the Alpheios. The work has thus been commenced under favourable auspices; it should be borne in mind that, on account the great height of the overlying strata of ea in some places, important finds must not be pected for the next few months.

COMPETITIONS.

The New Lunatic Asylum for Nottingham.—The Corporation of Nottingham some time advertised for designs for the proposed new lun asylum for the borough. Though the comp tion was an open one, only seven took part it, and the result became known on the inst., when the committee appointed by the C poration to consider the plans gave their f The first premium of 100*l.* for the best des was awarded to Mr. George Hine, jun., of Notti ham, whilst Messrs. Evans & Jolly, of Notti ham, came second for a premium of 50*l.* The asylum will be built on the Mapperly Plai and will in all probability cost in its comple state about 30,000*l.* About 30 acres of l have been taken for the purpose, whilst 20 m acres have been reserved in the event of Corporation wishing to extend the asylum.

Proposed New Municipal Buildings for Notti ham.—The Nottingham Town Council has decid to advertise for plans and designs of propo new Town-hall, Free Library, Sessions-co Police-court, Judges' rooms, &c. The selected is at the corner of Broad-street and John's-street.

TRADE MARKS.

The subject of trade-marks has vexed considerable sections of the commercial community for years. Everybody is agreed that the integrity of a trade-mark is of as much importance to manufacturers as the preservation of copyright is to authors and publishers, yet no sooner does any one article attain a reputation than the trade-mark is imitated, and the false and inferior production is circulated through obscure channels at home, and boldly exposed in foreign markets. The entire law of the subject is of modern origin, for it is only in quite recent times that these marks have come to be very valuable, and frequently pirated. But experience hitherto has shown that the law does not provide every protection against infringement. We have only to look at the numerous cases that have come before the Courts from time to time. No uniform principle pervades the decisions arrived at by the judges, who have not adhered to any clear conception of the nature of trade-marks. Lord Westbury, it is true, authoritatively laid down the principle that a trade-mark is a form of property; that anybody might be restrained from using it; and that the test whether it had been violated was, Had anybody been deceived? This principle, excellent so far as it goes, does not carry us very far, since no two judges may agree at one as to what is a trade-mark. Each exercises his common sense, and hence the very strange lines of liberty drawn in this department of the law. Then the process of proving an infringement is both cumbrous and costly, and many an original manufacturer has been well-nigh ruined in defending his rights. Parliament has at length listened to the claims of manufacturers, and, as our readers are aware, one of the last Acts passed in the recent session was to establish a Register of Trade-marks, under the superintendence of the Commissioners of Patents. There can be no doubt that this measure, which will come into force on the 1st July, 1876, will afford a real remedy for the present anomalous state of things, inasmuch as it will allow an appeal to official records in the case of trade-marks being granted. The new arrangement will exclude all trumped-up claims, the method of proof will discourage litigation, and manufacturers will possess a security they do not now possess. There are eleven provisions in the Act, which may be briefly summarised as follows:—From and after the 1st of July next no person shall be entitled to institute proceedings for infringement of any trade-mark unless the same has been registered. It must be registered as belonging to a particular class of goods, and when registered is to be assigned and transmitted only in connexion with the goodwill of the business concerned in such particular goods or classes of goods, and be determinable with such goodwill. The registration of a trade-mark is to be deemed to be equivalent to the public use of such mark, and the registration of a person as first proprietor of a mark will be *primâ facie* evidence of his right to the exclusive use thereof; and after the expiration of five years from the date of registration, be exclusive evidence of his right thereto. A certificate of the register is to be evidence, but any person aggrieved may apply for an order of the Court that the register be rectified. A trade-mark may consist of the name of an individual or firm, printed, impressed, or woven in some particular and distinctive manner, or a written signature or copy of an individual or firm; or a distinctive device, mark, heading, label, or ticket; and manufacturers are allowed to add any special letters, words, or figures used as a trade-mark before the passing of the Act.

In America the law on the subject differs in several respects from our own. The only American legislation upon these marks, Dr. Hazeltine says, is contained in the Patent Act of July 8th, 1870, sections 77 to 84 inclusive, prior to which date this subject was regulated by common law, and there was no registration. Though the mode of obtaining redress for infringement is described by the Act, the common law remedies are preserved, and may be enforced, even in the absence of registration. The applicant for a registration must, according to law, be a person, firm, or corporation, domiciled in the United States, or in a foreign country where similar privileges are granted, by treaty or convention, to American citizens. But the office has decided that Englishmen may register trade-marks, the supposition that English laws afford similar privileges to foreigners, in the absence of treaty or convention, which supposition is erroneous, and, strange to say, no treaty or convention exists between the two countries on this subject. The application for a protection is made by filing in the Patent Office the applicant's name, residence, and place of business, a particular description of the goods, and the class of merchandise to which the trade-mark is to be applied, a description of the mark itself, with *facsimiles*, the duration of prior use, declaration under oath as to ownership, and correctness of the description and illustrations filed. When the applicant is a firm or corporation, some member or officer must make the declaration. The duration of the registration is for thirty years, subject to a renewal for a like term if application is made six months before the expiration of the original term. No provision is made for extension beyond sixty years, when the proprietors must resort to their common-law rights and remedies. The registered trade-mark used on articles manufactured abroad is not effective unless protected by registration at the place of production. The official fee for the original or renewal term is twenty-five dollars, or about five pounds. The law provides for a remedy in the courts of law and equity for infringement, and the marks may be transferred the same as copyrights.

In France English trade-marks are protected by virtue of the Treaty of Commerce. The French law, which took effect from the 27th of December, 1857, requires that the deposit of trade-marks shall be renewed at the end of fifteen years. For example, all those who deposited a mark before the above date, were obliged to renew it before the 27th of December, 1872, and the protection from the deposit will last for fifteen years, or until the 27th of December, 1887, when it will again have to be renewed. It may be remarked that the French law on this subject is exceedingly stringent. Here is a recent case in point. A prosecution for the forgery of a trade-mark took place at Bordeaux. A merchant of Paris, named Robin, learned a short time back that a lithographer of the first-named town had just printed 5,000 labels similar to his own. He at once instituted proceedings, and discovered that the order had been given by a merchant of Bordeaux, who had received the commission from a firm at Valparaiso, to which the labels had been already sent. A telegraphic message was despatched to the authorities in that port, and the parcel was seized on its arrival. As the parties who had instigated the forgery were beyond the reach of French justice, M. Robin attacked the merchant and the lithographer, who were condemned each to three months' imprisonment, and jointly to 3,000 francs fine, and the insertion of the judgment in a certain number of public journals. Similar protection is granted to English manufacturers in Germany under the law passed by the German Parliament on the 14th of November, 1874, and we may direct the attention of all persons interested to Article IX. of that law:—"With respect to trade-marks which are protected by the law of the State, likewise with respect to such marks as up to the commencement of the year 1875 have been accepted universally in trade as the known mark of a certain tradesman, no one, except the proprietors protected by law, or universally acknowledged in trade, can acquire a right to such by an application for registration, on condition that the proprietors shall have made the application before the 1st of October, 1875." So that any English firm which may have neglected to make application (accompanied by a fac-simile of the work), previously to that date, will have reason to regret the omission, since any one can use in Germany any English trade-mark which he has registered. The present or any subsequent registration in Germany holds good for only ten years, subject to any alteration before the end of that period of or in the firm, of which due notice has been given to the Court, and after the expiration of the said period the application has to be renewed, though no charge is made for registration.

The entire subject of merchants' and tradesmen's marks is curious and interesting. Some twenty years ago Mr. W. C. Ewing published a valuable work, entitled "Notices of the Merchants' Marks in the City of Norwich," which contains eleven engraved plates, illustrating 308 different marks, with an account of their use and origin. And as early as 1825 Mr. Woodward wrote a paper on this subject, which was read to the Society of Antiquaries, accompanied by very accurate drawings. These marks appear to have been in general use for about three centuries, namely, from 1300 to 1600. If merchants gave money towards the building or restoration of churches, their marks, as our readers know, frequently a very ingenious amalgamation of threaded forms and tracery, were placed in the windows in honour of their liberality. This practice is thus noticed in "Piers Plowman's Creed":—

> "Wyde wyndowes y-wrought,
> Y-wryten ful thikke,
> Shynen with shapen sheldes,
> To shewen aboute,
> With merkes of merchauntes
> Y-medeled betwene.
> Mo than twentie and two
> Twyse ynoumbred."

Coat armour in early times not being allowed to men in trade, many merchant families, in spite of Garter, Clarencieux, and Norroy, adopted their trade-marks in a shield (see an example in Boyne's "Tokens," plate iii., No. 5), and these were continued by their descendants as an hereditary distinction. The arms of the borough of Southwark are only a trade-mark. In the seventeenth century these signs were falling into disuse, and were not confined to wealthy merchants and shipowners, but adopted also by shopkeepers. They are partially used by shipbrokers at the present day, and being purely arbitrary, cannot well be systematically classified.

A VISIT TO THE BRIGHTON RAILWAY WORKS.

The Brightonians have great cause to respect the railway men who first decided to establish the locomotive works in the town, for it has brought an inestimable amount of life and activity to the place, and benefits it immensely. Unlike the people of Nottingham, who are said to have opposed the establishment of the Midland works in their town, and which led the directors to place them in Derby, the Brighton people displayed an amount of foresight which redounds to their credit, and for which future generations will have cause to bless them.

Thanks to our letter of introduction, we obtained in Mr. Jeffrey, the general foreman, the most courteous and intelligent guide that could possibly be secured.

We commenced our round of inspection by visiting the carriage department, where we saw "bodies" and "underframes" being constructed in all their various stages, and the roofs of old carriages being raised about 10 in., so as to allow of an increased height or head-room. In the construction of their carriages the Brighton Company use teak-wood for the underframes, with the exception of the sides or sole-plates, which are pitch-pine, with a 10-in. by ¼-in. wrought-iron plate or flitch all along the outsides; and to keep all bolts uniform, two lines are marked from end to end of the side-plates, and bolt-holes are drilled so that their centres are on one or the other of these lines, showing with what nicety and exactness all the minor details are carried out. We could here see how the buffing arrangement is made, viz., by two laminated springs, with eighteen plates each, extending nearly the whole width of the underframe, and resting upon longitudinal bearers framed into cross transoms, the ends of the buffing springs being fitted into shoes connected to ends of buffer rods. The bodies of all carriages are of mahogany, and some of the side panels are of exquisite beauty, showing that great care is exercised in selecting the logs of timber, as also in the cutting of it up, so as to bring out the grain or flower in all its beauty. The doors are fitted with "Wheatley's" spring-lock, which enables the passengers to close the door without turning the handle. It reminded us of the "Campling" lock, as tried on the Great Northern and Metropolitan Railways. The roofs of the carriages we saw were made double, the inner lining being ⅛-in. mahogany. The shop in which the carriage-work is carried on is well provided with light, two-thirds of the roof-covering being glass, and it has both a cleanly and airy aspect.

All springs are made here, both for carriages and locomotives, unless the men are too busy to get them out fast enough, when they are let by contract to spring-makers.

We could not help but admire the way in which the "general joiner" did its work. This machine saws, planes, moulds, rebates, and tenons, and the man in charge seems to have nothing to do but look on and admire, as we did ourselves.

The Company divide their locomotives into five classes,—A, B, C, D, and E,—each having

its own special work to do; for instance, B class represents express engines.

In the "loco" repairing shops, two overhead hydraulic travelling cranes render great assistance in moving about the engines, which vary in weight from 30 to 40 tons each. The "Bordeaux" engine weighs 40 tons, the average number undergoing repairs being always from twenty to twenty-five engines in all conditions, some without the outer covering or "lagging," others without wheels, some with tubes removed. To any one of an engineering turn of mind this department is one of the most interesting.

In the boiler-shops we saw plates varying from 12 ft. to 18 ft. long, and weighing from 10 to 18 cwt. In boiler-work all holes are $\frac{3}{4}$ in. diameter, and drilled with such accuracy that the plates fit exactly over each other, thereby requiring neither "rimering" nor "drifting," which is not on any account allowed. After completion all boilers are tested by hydraulic pressure up to 200 lb. per square inch, and registered in a book kept for the purpose, and signed by two responsible foremen and a witness.

We were struck with the cleanliness of the running shed, which contains sixteen roads taking three engines each, covered by a timber and iron roof, with a smoke flue to each standing for carrying away smoke when the fires are lighted. The building is lime-whited and has a bright appearance, contrasting greatly with the soot and smoke-begrimed engine sheds of a few years back.

The company make all their own "keys" used in keying up the rails. They are of oak, and are compressed. It is not usual on all railways to use oak keys, but the London and Brighton Railway like them best.

As far as it is possible everything required is made on the spot, without seeking extraneous help from railway plant contractors, so that those in charge are able to keep a constant and strict supervision over the various details in the several departments, and can thereby warrant each part of the work to be the best of its kind. To this end, they use in making boilers only the very best Yorkshire iron plates, best Yorkshire scrap-iron axles, cast steel cranks, and the leading, driving, and trailing wheels, are all of Krupp's steel.

There are upwards of 1,000 men and boys employed in the various departments of smithing, fitting, erecting, turning and boring, pattern-making, carriage and wagon building; and at these works they are able to turn out nine or ten wagons and two carriages per week. Last year about twenty locomotives were here made.

For the conveyance of passenger and goods traffic, the rolling stock of the London, Brighton, and South Coast Railway must always be numerous, and we found upon inquiry that they had about 300 engines, 2,000 carriages, and 5,000 wagons.

We were informed that from the first day of the present month the new express train, consisting of first-class carriages, and including a Pullman's drawing-room car, runs every week-day between Victoria and Brighton. The train does not stop at any intermediate station, and accomplishes the journey each way in one hour and ten minutes. The express leaves Victoria, on the down journey, at 10.45 a.m., and Brighton for Victoria at 5.45 p.m.

Our visit closed with a look into the drawing office, where we had the pleasure of inspecting some elaborate drawings of locomotives and steamboats used for the Continental traffic, and we bade farewell to Mr. Jeffrey, who certainly is one of the best guides it has been our good fortune to meet with.

ARCHITECTURE AND FINE ART OF INDIA.

Attention more than usual is now likely to be called to our possessions in India. It may, therefore, be useful to jot down a few thoughts on some little-considered phases of our occupation there,—looked at artistically, and, may be, architecturally. There are, of course, aspects of a wide field of view in so vast a country as India not as yet caught sight of;—peculiar styles and phases of fine art, and certainly of architecture, and even of "construction," to be found nowhere else. The climate, the soil, the character of the natural productions, animal and vegetable life, are all more or less peculiar to that great country, while the humanity of it, it need hardly be said, is wide enough apart from anything the northern nations of the earth have ever produced. Its history, again, is not only unique, and its beginnings lost in the night of ages gone by, but is of very singular interest to a northern race such as the English; for not a few of the primitive thoughts which now lead and govern men here came originally from this far east. Of the ancient and all but perfect language, the Sanscrit, it need only be said that our own owes not a little to it, and that, looking at its extreme antiquity, it seems strange enough that it should be what it is, and so copious and complete. Mysteries enough there are here for the curious, it is certain. We must need confine ourselves to art and architectural matters, and here, in fact, there is matter enough for thought and new inquiry, and he, indeed, must be dull who cannot get a something out of it useful in more ways than one.

In the first place, and the fact should be borne in mind, the beginnings of the art of the Hindoo are absolutely lost in the past. This alone would make it a thing all but unique. Of the Gothic we see the very commencement, how and out of what it grew up; and the same of the Romanesque and of the Roman. We can trace all these more or less distinctly to their commencement. Again, there exist throughout this vast country, as in no other country in the world, a far greater number of temples and buildings devoted to religious purposes. Every grove and out-of-the-way valley and mountain-top shows some ancient chapel or temple, ruinous or not. No opportunity would seem to have been missed, so that the skill and perseverance of the old inhabitants of India found ample scope for exercise. But very little indeed of all this multitude of objects has been as yet even roughly sketched, much less measured and carefully drawn and described. There is an almost infinite field for future effort here, notwithstanding many photographs; and if this were but even partially done, how very much more should we know of the people of India! These things cannot deceive; they are permanent records to be read.

It is difficult to select what is most notable first without going into details. An art and architecture dating from a forgotten and unrecorded antiquity cannot be alike everywhere, and through so many successive ages. It must needs have changed more or less, as the Gothic here is found to have done. What took here a hundred years to do may have taken with the patient Hindoo a thousand years. But of this we know little or nothing beyond the evidence furnished by the few sketches and drawings found in books, and from the few fragments to be seen in the British Museum, the Indian Museum, South Kensington, and in the Architectural Museum, and here and there, may be, in other places. It seems a pity that casts, at least, of all the architectural fragments of Indian or Hindoo art existing in London cannot be got together and arranged in some sort of order, so that these differences might be seen at a glance. What opportunities might not the illustrious Prince himself now visiting that vast country have of adding to such means of knowledge, probably unique, and certainly beyond the reach of any less powerful influence? We need not take from the native races what is so clearly their own, but we may make records of it. It may be added here that, as Colonel Forbes ("Oriental Memoirs") emphatically tells us, the most primitive and original temple-work is to be found in the most out-of-the-way and in the wildest spots, where seclusion, beauty, and sublimity are alone to be found. Many details of infinite interest might here be added, and one thought, certainly not the least, should be kept in mind, viz., that in these secluded temples the ruling idea which built them is always symbolically to be found,—a primeval thought in the old world,—that of the creative power. No material, again, would appear to have been too costly for the Hindoo's idea of his temple. His object was to "realise his ideal" as far as that could be done. We find temples built entirely of white marble, of vast extent, containing a whole multitude of chambers, with interior apartments inlaid with mosaics, of cornelian and agate,—all hand-work, be it observed, a fact not a little noteworthy and indicative of much.

It is not to be forgotten, too, that these temples have their walls and roofs, and supporting columns, covered, not only with the most elaborate ornamental details,—foliage, conventional and natural, and designed ornaments; but the animal life and the human life of the country are to be found represented in abundance, so that the then actual life of the time in whi the temple was built might, by sufficient pai taking, be reproduced, as the late Sir G. Wilki son and others have done so well for Egypt. is indeed surprising to find, as we see into t matter, that no attempt has been made at adequately to do this. Looking to our inter in the country, and at our relations with t races which inhabit it, this ought to be amend Is it not a *public* duty? It is utterly beyo any private means. We have been referring the built temples; but there are all over In *cavern* temples, of a strange and peculiar intere as those of Gaya, Salsette, Elephanta, Ello &c. *Conjecture* has failed here; the strang and most out-of-the-way origins have be ascribed to these cave temples; so wild and i probable, indeed, that the Egyptians, the Ma donians, and even the Jews have been at div times credited with the authorship and executi of these wonderful "caves." Of course, th are indigenous to the country and the people it; and could we but get at the date of them, might help much to unravel their mystery. I a land of wonderful things, hardly at all as y explored.

We can, in thus glancing at the cavern-tem construction of the Hindoo, hardly miss spec mention of those at Ellora, situated near t ancient Hindoo capital of Deogher, in the p vince of Aurungabad. We can but just touch it, as without drawings, and carefully-measur drawings too, it must convey but little. Nothi on this earth can well be more striking and a inspiring than the sight of the ruins of an ab doned city, — without inhabitant, and w nought but ruins and silence,—with but now a then, may be, a wild animal crossing an emp street. Such is this forgotten capital. It full of cave-temples, containing a whole mine architectural and archæological lore. T temples are full of an almost endless divers of sculpture, of curious carvings, and trace and mythological designs. There is no clue all these, say the travellers, to guide us t trace of the hands by which they were design or even to the names of the populous and pow ful nations by which they were executed. Th empire has passed away without a record a without a name. But these colossal caverns theirs remain, and may one day or another tell secret. The religion, by the way,—and it is n worthy,—which gave incentive to their constr tion, yet exists. No natural accident, we m here learn, was ever missed by the older of world's architects. We may have ingenuities abundance in our railways,—the material poe of modernism, by the way,—a purely mechani one; but in one of these temples advantage h been taken of the mere fall of a river, and cascade from it falls down in front of the r archway-entrance to it, and so forms a wind or door, we might say, of pure blue water. clever bit of "architecture" enough, it must allowed.

We might go on to well-nigh any length, the subject is right full of inventive wond both in the way of architecture and stone-cutti but must forbear, noticing only the fact t most, though not all, of these cave temples dedicated to the worship of the god Siva s his consort Bhavani, a primæval creed.

The architecture of India, throughout whole extent of the country, is not, of cou confined to temples, whether cave temples built temples, but there are domestic buildi and dwelling-houses, as there must need everywhere. These are singular enough, their own way, when we get to examine the that is, as far as we can by the light which at present have, which is scanty enough. Th constructions, though not so solid as the tem work, are not all of wood, as many might s pose; they are not all mere log huts. Th are ancient houses of red sandstone, with st roofs, supported by slender and delicately-car columns. These are at times garden surround and advantage is taken of the nearness of a ri This house-building, be it noticed, is not the sa all over the country, but differs in each provi so that opportunities will offer in the prin journey for comparison of different kinds human habitation, and may be comparison w our own more "civilised" house-building. M that is peculiar to the country, and which c not be transplanted, there is, but many thi too there are, and must be, which may aff hints for a something better here. There tainly is in India, as in England, house-build from the very highest to the very humblest.

We hope to return to the general ques

of the peculiar fine art generally of the Hindoo, but cannot end this glance at its architecture without a word as to the power of colour possessed by the native races of India. Common it would seem to be to the whole country, even if not to the whole East. It is impossible to invent anything more harmonious, and eye-satisfying than the coloured decorative art of the Hindoo, wherever and on whatever it may be found. The woven fabrics are at times well nigh perfection; for not only are all the colours, so many in number, good and full in themselves and taken separately, but when together they harmonise and blend together in the most perfect and beautiful way, and a soft and pleasing effect is got beyond imitation. We say nothing at present of the effect of the hand-work in this work. May it not here do much to assist the eye, and even educate it? All our work is the result—and we are proud of it—of the perfect, may be, but still unconscious, machine. All the coloured decorative work of India we have ever studied has been hand-work, whether fragments from a building or in woven fabrics and dresses. Here, then, we have the material first as ground-work for the colour,—not a thing to be missed, for the very same colour on a different material would widely differ,—would be, perhaps, lost. It may be that the architecture of the Hindoos is away from us, can in nowise be practically applied anywhere here; but this is not the case with the coloured fabrics. Here something is to be got; and would we could see but a little of the *genuine* stuff of the Hindoo in our shop-windows. Such would indeed be lessons in colour!

THE DUTIES, RESPONSIBILITIES, AND PRIVILEGES OF THE ARCHITECT.

ARCHITECTURAL ASSOCIATION.

The first ordinary general meeting of this Association for session 1875-76 was held on Friday, the 5th inst., when the president (Mr. John S. Quilter, A.R.I.B.A.) delivered an opening address.

In his preliminary remarks, Mr. Quilter said he entered upon his duties as President of the Association with the determination of fulfilling them to the utmost of his power. He was thankful, however, that the success of the Association did not depend upon his management, for he was supported by so many earnest and able fellow-workers that he felt every assurance in accepting the responsibilities of his office. He continued as follows:—The duties of the committee and officers of the Architectural Association have become increasingly onerous year by year, owing to its extent, growth, and prospective influence upon the profession. It now numbers nearly 700 members, although duly claiming to be the junior society, having for its sole object the education and advancement of the students of the profession. This increasing influence is the natural consequence of the rapid development of the architectural profession. The Association has hitherto supplied the means of instruction which the colleges and schools have done for other professions; and when we consider that the whole of this work has been voluntary, it must be admitted that the success has been very great, especially as the requirements which it has been called upon to meet are of quite modern invention. A century ago scarcely five-and-twenty architects could be found in the United Kingdom; now, London alone contains nearly a thousand, and more than twice that number are spread over the numerous provincial towns. One of the consequences of this enormous increase has been a demand for increased skill, with the consequent division and subdivision of the duties of the architect. In former times the employment of an architect was exceptional; his office was ordinarily supplied by the builder, unless in the case of a building of great importance and considerable expense. The architect is then compelled to embrace within his practice the varied works of an engineer, surveyor, instructor, and decorator; but now the whole of the engineering work is undertaken by several separate professions. Surveying is not only a distinct division, but is also subdivided into quantity and measuring surveyors, land surveyors, and valuers, and further divisions of the profession are now rapidly taking place. Constructive, decorative, ecclesiastical, domestic, and municipal works have their special architects, who are prepared to meet the demand for special skill in each of the numerous branches. Nor is this remarkable a matter to be wondered at. So great is the competition in every branch of our profession that nothing short of the most persistent application can ensure success in any one of them, and the practice of special study, which has hitherto only been submitted to as a necessity, must before long be accepted as a rational and desirable object to be attained. "Know what you have to do, and do it," was the advice given to the talented author of the "Seven Lamps," and it well expresses the great principle of success in the practice of architecture as well as of every other art. We are all students, either entering, or about to enter, upon the practice of our profession; and nothing can be more important than that we should have a definite understanding as to what we have to do in order that we may be able to do it. With this view I purpose devoting a short time to the consideration of "the duties, responsibilities, and privileges of the architect." Before, however, entering upon these three divisions of the subject, it may not be out of place to offer a few remarks upon what is meant by an "architect." The name, which signifies the "chief workman," more clearly expresses what he was in former times than what he now is; for the various trades connected with building have become so divided, and have consequently caused a want of general interest on the part of those employed in carrying out the works, that it has taken from the architect his position of chief workman, and he has now become the general director of the whole: he is the mind controlling and giving intention to the movement of the body, his knowledge must include every work necessary to complete his idea, and he calls them into action in the same manner as an artist selects the various colours on his palette to form an harmonious picture. The architect is no longer a leader of a band of independent artistic workmen, each having his individual skill and taste upon which he can rely without any particular instruction or direction from the architect, who has now to prepare every detail, to work out every problem of construction, and to take into consideration every accessory, before giving his instructions; and even then he has to keep a sharp oversight of the whole, in order to see that his instructions are accurately followed. Many and fallacious are the opinions of the public as to what an architect is. Some imagine him to be an ideal personation of artistic ability, whose word or sketch is sufficient to create "a thing of beauty" which shall be a "joy for ever"; whilst others look upon him simply as a mechanical individual who is required to provide so much brains in consideration of so much per-centage. These errors are not to be wondered at, seeing that so undecided an opinion is held on this subject by the profession itself. It cannot be expected that the public will ever place the architect in that position which he has a right to claim until his duties, responsibilities, and privileges are more clearly defined; and if architects themselves cannot agree, the public will suit its varying fancies, and architects will be tossed from pillar to post, the abused of all, and trusted of none. A sober unprejudiced consideration of the duties of an architect will readily supply sufficient material to form a fair opinion upon the subject. In general terms, the architect may be described as the artistic and constructive adviser of his client, and the less he has to do with the business transactions (as a party to them) between his client and those employed to execute the work, the better for his position, for the only way in which he should be associated with any contract or agreement is in the position of an independent adviser. This will free him from any supposed bias in favour of the employer, and remove any possibility of a doubt as to his acting with perfect impartiality between both parties. A general impression prevails that the architect is the agent of his client, bound to stand by his interests whether just or not; but nothing can be more prejudicial, as by accepting such a principle he lays himself open to suspicion, and unless he is a very keen man of business, he becomes fair game for every unprincipled workman to dupe, on the ground that it is business to look after his client's interest, and the workman's to do all he can to over-reach it. Such is the result of this vicious principle, and nothing but a rigid stand on the honour of the profession could remove the impression. The employer or originator of any work in which an architect's skill is required does not seek the aid of an architect in the same way in which an aggrieved person seeks that of an attorney, but, having explained to him the general character of the work he wishes carried out, he then asks his advice as to the best means of obtaining the execution of his wishes. From this it is evident that the first duty of the architect is to ascertain with great care and definiteness the views of his client; many of them may be mistaken, but the mistake will generally be found to arise from a want of technical knowledge, and this may be set right. But every attention must be paid to the object which the promoter has in view, and it will be necessary that the architect should divest himself of every preconceived idea, and ascertain by patient investigation and tentative suggestions upon what his client's views are based. Much labour may be saved, and many misunderstandings prevented, by a careful attention to these points. In short, the architect must not forget that it is his duty to give the best effect he can to his client's views. Possibly they may not at first commend themselves to his taste, but no architect has any right to insist upon his client adopting his own theories in matters of taste, and if it is found impossible for both to agree, it would be far more discreet, and show a nobler spirit, for the architect to suggest that his client should seek the assistance of some one more likely to comply with his wishes, than to force upon the client a work which will always be a source of vexation and annoyance. This is a hard doctrine, especially to a young architect anxious to do his best, and make his mark while he wishes to retain his client, but I commend the practice to all who wish to maintain the standard of the profession. It is also the duty of the architect to keep in mind that he is a member of an honourable profession, and he is bound to do everything in his power to raise a high standard of honour in all his transactions, by refusing to take any part in actions, whether suggested by clients or others, that would be derogatory to the dignity of the profession. The temptation is often very strong, and the worldly advantage, or fear of offending one whose interests you are anxious to secure, are great inducements to yield; but, apart from higher motives, the sense of honour towards our fellow-members should be sufficient to prevent our engaging in any undertaking which we should not like others to know. I regret very much that it should be necessary to urge such warnings as these, but it is to be feared that the race for wealth which has caused so much moral dishonesty among many classes of society, has also given rise to actions on the part of members of our profession which are not likely to bring credit upon those who have engaged in them. The next duty of the architect, after clearly ascertaining the wishes of his client, is to bring his own knowledge and experience to bear upon the subject, in order that he may advise as to the best means of carrying out the work. And here his ability and character find their greatest development. It will be necessary for him to bring every faculty which he possesses to bear upon his work, and at no point is any weakness or ignorance of his duties more likely to be evident, for not only will he be compelled to show that he has grasped the wishes and intentions of his client, but he must also be able to suggest the best means to be adopted in executing every part of the work; and lastly, he must have a sound judgment as to the probable cost of the whole, in order that his client may decide before he has gone too far as to the advisability of proceeding or modifying his ideas. This latter requirement is the great bugbear of the young architect, who is always sanguine that he can get the work done much cheaper than any one else, and is fearful of naming too high an amount lest his client should abandon his intention; but a diligent study of this duty will well repay the labour, and save many a dispute afterwards, for it is undoubtedly one of the duties of an architect to give his client a reliable estimate of the cost of works that he is asked to design, and any attempt to delegate this duty to the surveyor is an injury to the position of the architect. This does not, however, imply that he should be either a quantity surveyor or a valuer; their duties are quite distinct, and are in no way interfered with by this duty of the architect. Having completed these preliminary duties, his next duty is to prepare such instructions and details as will enable those employed to execute the works. The particulars of this part of the work of an architect are too well known to require any description; nor need I stay to refer to the duties of the surveyor in preparing the quantities; but we next come to the duties of the architect in superintending the execution of the works, and I would refer to these particularly, because great laxity and want of carefulness is often shown here; and it is to

be feared that it generally arises from a want of practical knowledge on the part of the architect, and this arises from the imperfect education on practical subjects which the present system of pupilage gives rise to; and it does not relieve the architect from his duty because he has a clerk of the works who attends to such matters. But it is not only the architect's duty to prepare his design, but also to know how the design is to be executed in every particular. It is, I believe, a general impression among clerks of works that it is their business to make any alterations that may be necessary to enable the architect's design to be executed; but no more mischievous theory could exist, as it implies that the design and the construction are quite distinct matters, and that it is not necessary for the design of any work to be dependent on its construction. I cannot but refer here to the great advantages which are afforded to the young architect by the classes of the Association, and especially the class of construction, in which the detailed work of every trade is described and illustrated, and I have been astonished, in looking through the papers of last session, at the amount of really useful information that has been collected; in fact, it has struck me that, notwithstanding our already over-crowded literature, we are sadly in want of an architect's technical handbook. This completes the duties of the architect, for since the introduction of the separate profession of measuring and quantity surveyors, the measuring-up and adjustment of the accounts, as well as the preparation of quantities, falls into their hands, and we may hope that the rapid rate at which the profession is increasing will result in a more uniform and satisfactory method of measuring builders' work; for it is a great drawback to the system, which is otherwise so desirable, that the various ways in which works are measured up will often make a difference of 10 or 15 per cent. in the builder's account. Much more might be said upon this, but it is not within our province. Before I leave this portion of our subject I take the opportunity of directing attention to the other branches of the Association, and of pointing out the manner in which they are intended to assist the student in obtaining that knowledge which is necessary to prepare him for the practice of his profession. I have already referred to the Class of Construction, which has for its object the study of the science of building, with especial reference to a knowledge of the details of the various trades; and in addition to this a class has recently been formed to study the theories of construction, in order to afford the student an opportunity of learning the higher branches of the science. The artistic part of an architect's duties are well provided for by the two Classes of Design and the Class of Colour Decoration. The elementary Class of Design gives the younger student instruction in the general principles of design, and a definition of the various styles that have been employed during the different periods of English history. The senior class prepares the members for carrying this knowledge into practice, and by designs for special subjects under certain restrictions, affords opportunities for overcoming obstacles which are sure to present themselves in the ordinary practice of an architect. The Class for Colour Decoration provides the means of studying one of the special branches which are taken up by some architects, and other classes could readily be formed in a similar manner for the practice of design in furniture, stained glass, and many similar subjects, if a sufficient number of members were willing to unite for that purpose. There is, however, a want of unity of purpose in all these classes, and I can only suggest one means by which they can all be brought to work together, and that would be by making it the object of each to prepare the students for the various divisions of the Architectural Examination. There are also classes for the study of land surveying on the one part, and water-colour drawing on the other,—subjects associated, although not intimately connected, with architecture; but we must now pass on to consider some of the responsibilities of architects. This is a difficult matter to deal with, and requires extremely careful consideration, for unfortunately there are many points of great importance to the profession that have not been legally decided, or as to which the decisions given have as often been upon the one side as upon the other. But I cannot believe that this is a good and sufficient reason for avoiding the question, as was suggested at the Conference a short time ago. Surely it is one of the chief duties of any society that claims to have the interest of the profession at stake, to devote its energy to the removal of these doubtful points, and, if necessary, to get the sanction of the legislature to a general code of laws affecting the profession. It has frequently been supposed that an architect is responsible for every matter that goes wrong in a building erected according to his designs, whether the error arise from careless workmanship or unforeseen contingencies; in fact, some two or three years ago the *British Medical Journal* and the *Pall Mall Gazette* seriously discussed the liability of architects for murder, owing to the faulty construction of some drains; and many cases have occurred in which architects have been held responsible for the faults and delinquencies of the workmen employed in carrying out works from their designs. The chief cause of the error arises from a mistaken view of the duties of the architect; for if he is supposed to be the agent of the employer, and his duty to consist in seeing that the interests of the employed are protected, such may naturally be the consequence; but if the architect takes the position I have advocated, as the professional adviser of his client, and as an impartial umpire between all parties in the matter, he will be free from any such liability, and the only ground upon which he can be held responsible would be the most reasonable one of want of knowledge or ability in the practice of his profession,—a responsibility which no architect having any claim to the title would for a moment hesitate to assume; and it should be the duty of the profession to give to all qualified architects such evidence of their qualification as would enable the public to know that they were incurring a risk in employing any one in the capacity of an architect who did not possess the necessary evidence of his fitness. This has been attempted partially by means of the Architectural Examination; but until the matter is taken up by the whole profession, and no one allowed to practise without first giving proof of his ability to perform the duties of an architect, it is vain to expect the public to take the trouble to ascertain an architect's qualifications, and any tyro who has a sufficient number of friends can commence to practise as an architect, and, trusting to his good luck, with the assistance of a few clever draughtsmen, may delude his clients into a belief that he is a duly-qualified architect, until some irreparable blunder dispels the vain delusion. This brings us to consider, lastly, the privileges which belong to the architect, and I fear their enumeration will not occupy much time, for so long as we are content to scramble among the common herd for the chance of picking up a few guineas, it would be well to say little about privileges; these can only be claimed by those who are willing to uphold the dignity of the profession, both by a careful study and preparation for its duties, as well as by a strong determination to withstand any attempt at lowering its standard. The architect's privileges are: confidence and reliance on the part of those for whom he acts; a submission to his opinion on all subjects connected with his art; and a ready acknowledgment of his services. The attainment of all these may appear Utopian, but if so it is the result of the unstable condition of the profession; and the architect who is the best qualified for his duties is compelled to submit to treatment which is ungenerous and disgraceful, because there are others in the profession who find such submission the only way of covering their failings. It must not be supposed that I am crying down the profession, or attempting to make out the evils to be worse than they really are; a careful perusal of our periodical publications will reveal a state of affairs quite as bad as I have described, and my only object in drawing attention to them is to urge the adoption of some remedy for the evil, which is not likely to be removed if it is passed over as a matter not calling for attention. I have a very strong objection to anything like a radical reform, as it often cures one evil by substituting three others for it; but I hold that the cure is to be gained by an increase of conservative principles, and the avoidance of any cliques or party-spirit. To conclude, I would ask your attention whilst I endeavour to apply this matter to the object of our gathering this evening. It may be said, and justly, that I have said a great many things which everybody knows, and it may possibly be thought that the subject is of very little practical use; but if I can succeed in impressing upon the younger members of the Association the necessity of a high standard of attainments for an architect who wishes to stand well in the profession, I shall feel have done something towards raising the pro fession of architecture to that position which i should occupy; and, judging from the man evidences I have seen of ability among th numerous members of the Association, I am con vinced that we have within our ranks sufficien power, if rightly developed, to accomplish fo the profession all the objects which I hav endeavoured to recommend. I have, therefor thought it desirable in my remarks to ai rather at the result than the means, and to la before you some reason for an earnest, persisten unanimous effort to do our utmost as member of an honourable profession to raise and mai tain the highest possible standard.

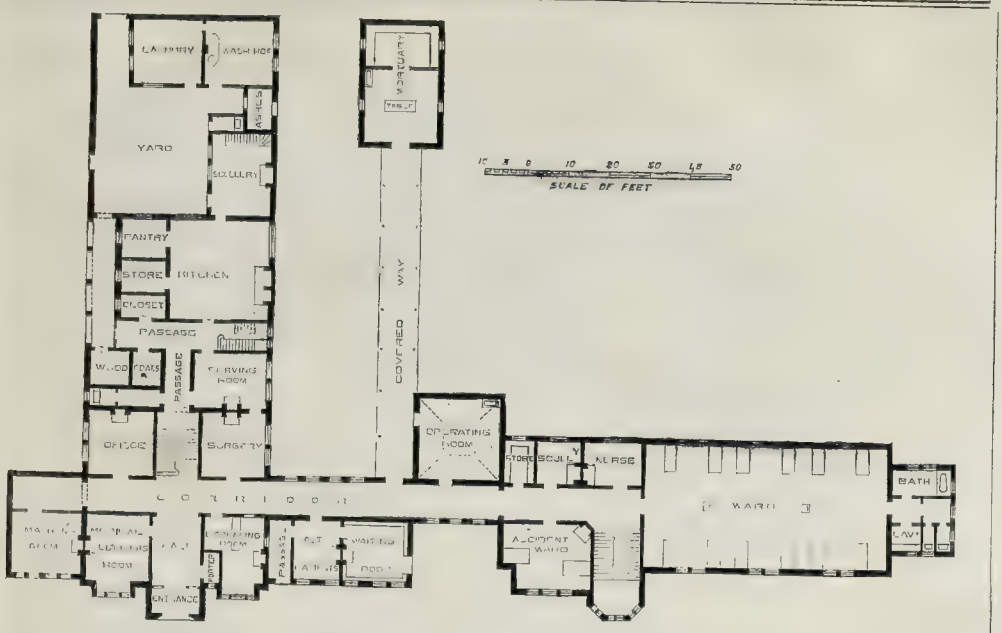
Mr. W. H. White proposed a vote of thanks t Mr. Quilter for his address.

Mr. R. Phené Spiers, in seconding the motio said that Mr. Quilter's address, following upon th reports of the various classes of the Associatio had very appropriately dwelt upon the subje of education. One point worthy of special no was that the Association had increased in num bers because it was really educating the profe sion. Now although, as a very old member the Association, he (Mr. Spiers) was natural only too proud to see it occupying its prese position, yet, as a member of the profession, h would rather see the Institute occupying t position of usefulness now held by the Associ tion. He thought that the Institute, as th senior and chartered body of the professio ought to have long ago undertaken the work education carried on by the Association. Whe forty years ago, the Institute was establishe there were very few architects in London, a the number of Fellows did not amount to mo than forty. At that time, when the term articles was seven years, it was not so necessa to provide for any system of education suppl mentary to that of the office, and it was the fore not surprising that the Charter of t Institute said nothing as to providing for t education of the young architect. But no circumstances were greatly changed; the pr fession had greatly increased, but the term pupilage had decreased to three years. T number of subjects with which the young arc tect was now expected to acquaint himself w so greatly augmented that it was futile to ho that he could master them all in three years. was, therefore, necessary that he should be al to avail himself of such supplementary means professional education as were afforded by t Association. Everybody would admire the spi of "self-help" which had characterised t efforts of the younger men of the profession carrying on the work of the Association, but maintained that this work of professional edu tion ought to be taken up by the Institute, a he believed that until the Institute did take up it would never thoroughly command t respect of the profession. Curiously enou the strongest opponent to the Institute's becom an educational body was Professor Donalds who was deservedly respected as the instruc of probably half of the living architects eminence. Unfortunately, he did not see t the Institute was losing ground because it p sistently neglected the subject of education. the Institute would become the recogni school of instruction for the profession, influence would increase, not only with the p fession, but with the public. This would soo or later be generally admitted, and the ti would come when the Association would h a portion at least of its work transferred to Institute.

SOME OLD HOUSES AND THEIR STORIES.

The first Opera-house in England and the Theatre to which the People went in Boat

THE rude old theatres in which Shakspe and his fellows played had long stood amor the narrow lanes and mean alleys which frin the Surrey side of the Thames, flagless, neglec and desolate, when the bells of St. M Overy pealed out their merry welcome to king who had come to claim his own. The l old actors, who had fought and bled in the r cause, were wild with joy at the prospec resuming their old dominion over the thou and feelings of delighted audiences. The shabby playwrights who had been starvin their dingy garrets once more wreathed in sm their thin white faces, and came forth hopef into the light of day, cheering frantio Rhodes, the old prompter at the Blackfr



HOSPITAL, STOCKTON-ON-TEES.—*Ground Plan of Part.* [See p. 1019.

Theatre, who had turned bookseller in the village at Charing, deserted his little shop, and in company possibly with young Kynaston, the draper, shouted a welcome to the king. Sir William Davenant, who had won his knighthood on the battle-field, and been appointed poet laureate by Charles I., for whom he had fought and suffered, he who,—if a tradition in which there is nothing improbable may be believed,—was Shakspeare's godson, hurried from Charterhouse-square, where he had established some kind of musical entertainment, to shout, and shake hands, and laugh, and clap shoulders, and cheer, and congratulate, with as much energy and heartiness as the best of them. It was a wild, merry time for London, but the change was in no place so brightly hopeful and joyous as it was in the hearts of the old actors and playwrights.

The theatres were soon once more in the full flow of their popularity, one was opened in Drury-lane,—the Cockpit,—by Rhodes; Davenant opened the old Bull Theatre in Clerkenwell, but from thence went to a larger building in Salisbury-court, Fleet-street, which had formerly been the granary of old Salisbury House, to the great annoyance of pious citizens. Afterwards he migrated to a more pretentious theatre outside London, on the south side of Lincoln's-inn-fields. Great changes were then beginning to be made in connexion with theatrical entertainments. In the place of the boys and young men who, in the reign of Charles and James I., had played the female parts, women began to appear, to the great disgust and indignation of the Puritans, and of many others, who were so far justified in their abuse of these women actors, that with all their charms and talents they made the name of actress shameful, and the term "Miss," by which they were first designated, an insult to every virtuous woman.

At last arose, in the year 1671, a wonderful new theatre, far outshining in its size, conveniences, appliances, and architectural pretensions, all that had been before. This was the Duke's Theatre, in Whitefriars, designed, it is said, by Wren, and decorated by Grinling Gibbons, which Dryden afterwards described as "the gaudy house," and "like Nero's palace, shining all with gold." It faced the river, and had a landing-place for the convenience of the crowds who still came to the theatres, as they did in Shakspeare's time, by water, carriages being few, public conveyances scarce or not yet known, and the streets and suburban roads and villages very dangerous after dark. These things were referred to by Dryden, who, when advocating the advantages of the provincial theatre in Drury-lane for the aristocratic residents in the Strand and Westminster over this City Theatre in Dorset-gardens, which he stigmatised as the resort of "cits," said:—

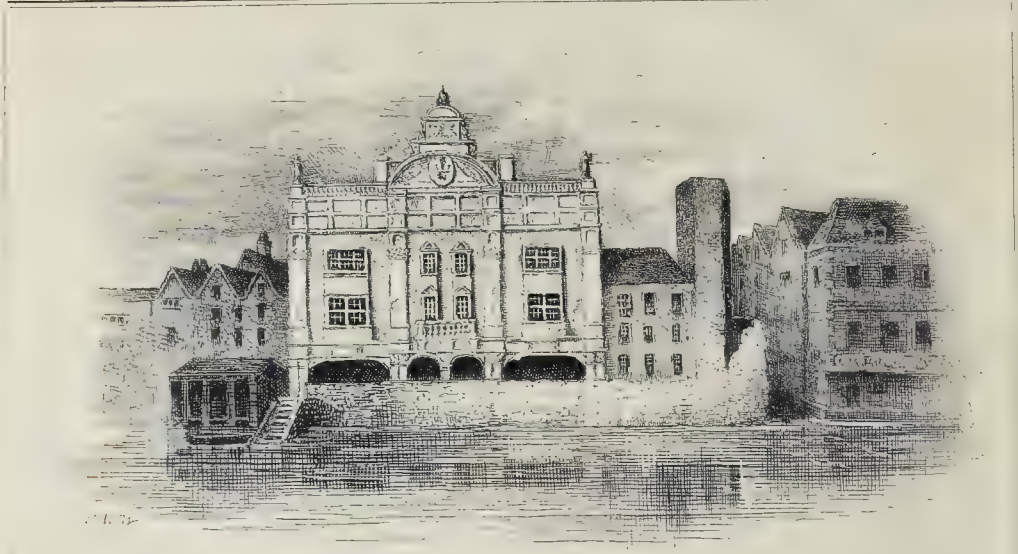
"*Our* house relieves the ladies from the frights
Of ill-paved streets and long dark winter nights."

Of the other house, the Duke's Theatre, and first English Opera-house, in the latter stage of its existence, when deserted and ruinous, after patchwork alterations to increase its height, with other additions and mutilations of successive years and varied uses, it was awaiting its final removal, we give a sketch from a print published shortly after its final destruction. Of what it was like in the reign of Charles II., when gilded barges, with silken awnings, and crowds of small boats brought gaily-attired and eager thousands to feast their eyes and ears within its walls, we may obtain some idea from the rude copper-plate engraving which the old dramatist who held the now obsolete post of City poet or deviser of Lord Mayors' Shows, Mr. Elkanah Settle, appended to his published play of "The Empress of Morocco." This play Sir William Davenant first performed, and for it the author contrived some remarkable mechanical effects in connexion with some famous new scenery. A copy of this plate was recently given in Cassell's "Old and New London," a work of great interest and value, now in the course of publication. The theatre was one of the great London lions in the year of its opening, and the citizens were very proud of it, although some in authority desperately opposed it. The river brought it ribboned, belaced and beplumed gallants, with broad-brimmed hats worn over huge curling flaxen wigs, costly silks, satins, and velvets, gleaming and flashing jewelry, and coarse, indecent jokes, to make the masked beauties smile or blush, or the pretty orange-wenches leer and laugh, and Fleet-street was filled with the great swaying gilt coaches, drawn by strong Flemish horses, conveying stately dames and other noble personages to it by land. Picture them, and fancy you hear the cries of the coachmen and the running footmen, squabbling for precedence or room in the smoky red light of flaming torches, in which light also the noisy boatmen and bargemen are shouting, swearing, and quarrelling. Listen with your mind's ear to the shrieks of timid women, afraid of drowning; to the oaths of angry citizens and stout apprentice youths, crowding into a compact mass, struggling and fighting for admission at each of the three front entrances; and add such other incidents and things as your imagination will readily enough furnish, when "if you only fancy hard enough," you may declare that you paid a visit,—of course, by water,—to the first English opera-house on the banks of the Thames.

Sir William Davenant probably witnessed, when in France, the advent in Paris of a travelling itinerant player, whom all the world now knows as Molière, and who, in the year 1653, produced his first famous comedy of "L'Étourde," which the Duke of Newcastle, author of a well-known work on horsemanship, under whom Davenant fought as a lieutenant-general of ordnance, translated into English. With this comedy, prepared and adapted for the stage by Dryden, the new theatre in Dorset-gardens opened, the piece being called "Sir Martin Marplot"; but Sir William did not live to witness that event, and the company was consequently managed by his widow, aided, probably, by the ingenious Settle. She was one of the first ladies who trod the stage in England, and was also almost the only one who retained her reputation as a respectable woman after doing so.

Prior to the year 1600, musical art was in this country at a very low ebb, being confined to sacred chants and hymns in the Latin language, and the rude simple ballads of the people, with, in polite society, more elaborate productions in the way of madrigals and love-songs. Towards the close of Cromwell's life Sir William Davenant had introduced a species of dramatic music, which the Puritans allowed to be performed, as not partaking of the supreme wickedness of stage-plays. These were introduced in, or at the back of, a house in which the Earls of Rutland had formerly resided, near the Charter-house, by Smithfield,—where the last of the City poets, poor Elkanah Settle, died in 1724,—and appears to have been so popular that something of the same kind was projected for the new theatre. The result of this idea was the production of the first opera deserving the name, based on Shakspeare's "Tempest," with Dryden's modifications, in 1673, and with "expensive scenery," such as was first seen at this house.

Lady Davenant was assisted in the management of her theatrical property by the famous actors, Betterton and Harris, and by her eldest



The Duke's Theatre, and First English Opera-house, Whitefriars. 1674.

son, Dr. Charles Davenant, who afterwards grew eminent as a lawyer and politician. And, by-the-bye, if we are to give the palm "where merit points 'tis due," it is hardly fair to award the whole credit of introducing regular scenery on the stage so exclusively to Sir William Davenant, seeing that when he wrote masques for the Court of Charles I., in which royal and noble personages were the actors and actresses, he must have been familiar with the scenes and pieces of trick machinery prepared for these performances by Inigo Jones, and that it was his widow and her son, who, assisted probably by the well-known mechanical ability of Settle, devised such things for the Dorset-garden, or, as it was sometimes called, the Salisbury Court Theatre.

The dramatic opera of the "Tempest, or the Enchanted Island," with such tricks as we now see in pantomimes, was followed by that of "Macbeth," similarly treated, and by "Psyche," probably an operatic adaptation from the Court spectacle of Molière, and other musical pieces, in some of which singers and dancers from France were introduced, making the performances at the City house constantly increasingly attractive, so that the king's company of players in the provincial or suburban house in Drury-lane began to suffer severely from empty benches, and a vacant exchequer. For this reason, on the burning down of the old Cockpit Theatre, Sir Christopher Wren was also employed to devise and erect for his Majesty's servants a new theatre, in which all the appliances and means for lighting, scenery, and machinery, enjoyed at the City house by the Duke's servants, should be obtainable. The new theatre was completed and opened in 1674, and glorious but immoral John Dryden's services were secured for its inauguration, just as they had been for the opening of the Fleet-street playhouse, in which also several of his best known plays were originally produced. It was in the opening address spoken on this occasion that Dryden admitted that the new theatre was inferior in points of decoration and attractiveness to that which he had deserted, saying:—

> "A plain-built house, after so long a stay
> Will send you half unsatisfied away,
> When fallen from your expected pomp, you find
> A bare convenience only is design'd.
> You, who, each day, can theatres behold,
> Like Nero's palace, shining all with gold,
> Our mean ungilded stage will scorn, we fear,
> And for the homely room disdain the cheer.
> They who are by your favours wealthy made
> With mighty sums may carry on the trade:
> We broken bankers, half-destroyed by fire,
> With our small stock to humble roofs retire,—
> Pity our loss, while you their pomp admire!
> For fame and honour we no longer strive:
> We yield in both, and only beg to live,
> Unable to support the vast expense,—
> Who build and treat with such magnificence
> That, like ambitious monarch of the age,
> They give the law to our provincial stage.
> Yet, if some pride with want may be allow'd,
> We, in our plainness, may be justly proud.
> 'Twere folly now a stately pile to raise,
> To build a play-house while you throw down plays,
> While scenes, machines, and empty operas reign,
> And for the pencil you the pen disdain."

It will be remembered that the old play-goer, whose immortal diary will ever be popular, Pepys, was one of the most frequent admirers of the performances at the Duke's Theatre. There he saw "The Changeling" played, after a long withdrawal of twenty years, to appreciative audiences. There he pronounced "'The Bondman' an excellent play and well done," Betterton being thought peculiarly excellent. There he went, when disappointed by the empty condition of the King's Play-house, to see a new play called "The Queen's Maske," in which one of the greatest parts, that of *Cupid*, was played by a little boy. There, on other occasions, as he tells us, he saw several other new and old plays, and there it was once his good fortune "to sit by a most pretty and most ingenuous lady," who, he adds, "pleased me much." At another time, while in the same theatre witnessing Sir William Davenant's opera of the "Siege of Rhodes," he tells how, "by the breaking of a board over our heads, we had a great deal of dust fell into the ladies' necks and the men's haire, which made good sporte." He also notes that on this occasion the king was present. On another occasion, when visiting the rival house, he says,—"But strange to see this house, that used to be so thronged, now empty since the Opera began; and so will continue for a while, I believe."

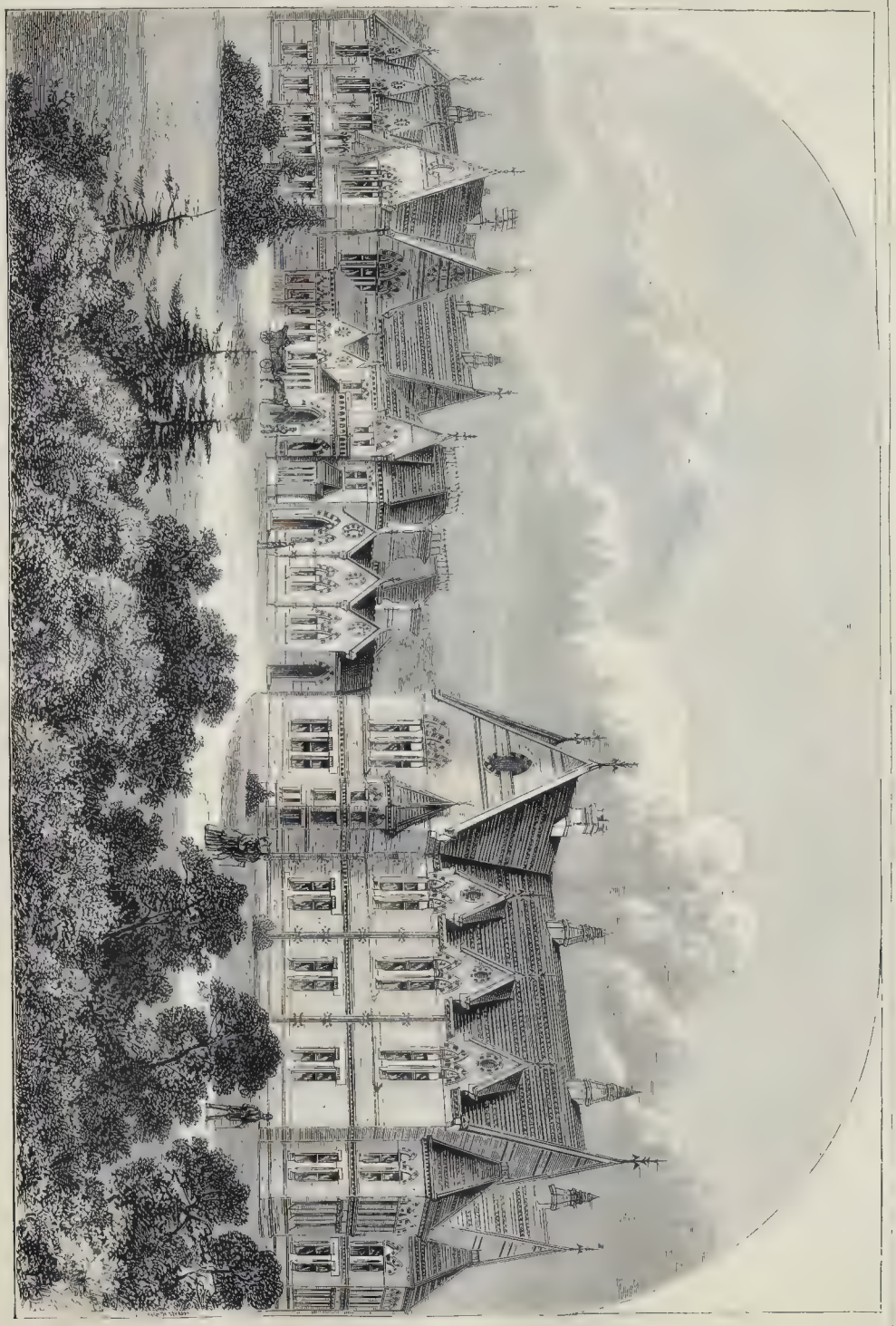
It was at the theatre in Dorset-gardens, during the representation of "Macbeth," as mutilated and murdered by Sir William Davenant, that the wealthy young rake, Mr. Scroop, had the sword of Sir Thomas Armstrong run through his body in one of those play-house quarrels which do not appear to have been at all uncommon.

At length, only eleven years after its opening, the glory and grandeur of Sir William Davenant's new theatre suddenly collapsed. The King's and the Duke's company amalgamated, and in 1682, London having so changed its aspect that the City was no longer fashionable, removed to the theatre in Drury-lane. The house in Dorset-gardens was let for concerts, and to wrestlers, swordsmen, and prize-fighters, rope-dancers, tumblers, conjurors, and other performers, whose announcements figure prominently amongst the advertisements of the time. In one of April 24th, 1700, for instance, we read of a curiously combined entertainment, consisting of a concert and a prize-fight between one Joseph Thomas and a Mr. Jones, from North Wales. A year or two before, the place was used for the drawing of a penny lottery, and a scheme was afloat to revive its former glories in 1703, when Queen Anne, who did much for the reform and purification of the stage, legally ended its chance of restoration, so that it was perforce abandoned by the arts of amusement, and turned into a woodyard and saw-pit, for which purpose it appears to have been partially pulled down. Thus degraded, it remained until 1720, in the reign of George I., when Strype mentions it in his continuation of Stow. Remains of it were still in existence when the New River Company established their offices in Dorset-gardens, and when gas was introduced by Winsor, the German, whose first experiment therewith was tried at the then new Adelphi Theatre. The first great gas-works were erected on the site of the first great playhouse, in which King Charles the merry, with all his gay ladies and dissipated courtiers, had seen the first scenery, listened to the first attempt at anything like a concert of instrumental music, heard the first opera, seen the first ballet, witnessed the first mechanical stage-tricks, and, for the first time, been introduced to a stage lighted with innumerable concealed lamps and candles arranged somewhat after the fashion of those jets of gas which now fringe the "wings" and "sky-borders" of the modern theatre.

When the great gas-works are removed from the river's bank at Whitefriars, we wonder what new thing will arise there. It will be odd if some other new idea there finds expression and development, as from rumour's lips we learn it may.

NEW SURGICAL HOSPITAL AT STOCKTON-ON-TEES.

THE foundation-stone of this building was laid on the 30th ult. by Mr. Marshall Fowler. The elevation is being carried out in red pressed brick with stone dressings, relieved with black bricks and ornamental string-courses. The portion now in course of erection consists of two blocks, viz.:—The administrative department and the south-east (Marshall Fowler) wing. The former contains, on the ground-floor, medical officer's room, matron's room, surgery office, operating ward, with kitchen, scullery, washhouse, and other accommodation. On the first floor of the block is a large convalescent ward to contain three beds, six beds for special cases, and bedrooms for the various officials, servants, &c. In the basement are three large store-closets. The other block forming the south-east wing contains on the ground-floor an accident ward, two beds, and a main ward with ten beds. This ward has



PROPOSED HOSPITAL, STOCKTON-ON-TEES.—Mr. Eugene E. Clephan, Architect.

also a bath-room and water-closets attached in addition to a nurse's room and a store-room. On the first floor the arrangement is precisely the same as on the ground-floor. The building is so arranged that three extra wings can be erected on the same plan as the south-east wing. The administrative department is also so combined that four wings can be worked in it. The hospital will now contain thirty beds for patients, and when the other wings are erected it will accommodate 102 beds. The estimated cost of the present building is 4,500*l.* exclusive of land and furnishings. Mr. E. E. Clephan is the architect; Mr. J. Gibb, builder; and Mr. C. Gibson, clerk of works. The complete hospital is arranged for 120 beds.

NEW ASYLUM NEAR GLASGOW.

The new and commodious Lunatic Asylum connected with the Barony Parish, Glasgow, and situate at Woodlie, near Lenzie, was formally opened the other day, by Mr. Maxtone, Chairman of the Parochial Board, several members of Parliament, and a number of influential citizens of Glasgow, assisting at the ceremony. The new building is in the Elizabethan style of architecture, and has been built from plans by Messrs. James Salmon & Son. The whole range of buildings is over 700 ft. long and 450 ft. broad, and occupies about six acres of ground. The most imposing features, perhaps, in the exterior view are the two towers rising from the centre of the structure, and which are of combined elegance and strength. There is also an appropriate *flèche* surmounting the chapel. All the details of the exterior are in keeping with each other, and the whole structure is in harmony with its natural surroundings. In the interior the arrangements are on the requisite scale of completeness. The chapel is seated to accommodate 400 persons; it is appropriately ornamented; the principal window being fitted with three divisions of stained glass, representing "Faith, Hope, and Charity." This part of the work was executed by Mr. Ballantine, of Edinburgh. Close to the dining-hall, in which 400 persons can partake of their meal at one sitting, but on the other side of the corridor, is the kitchen, 60 ft. long by 35 ft. broad, and having a spandrel roof about 30 ft. in height. The provision made for culinary operations in the kitchen is of approved kind, and will allow of the preparation of food for no fewer than 1,000 persons, this number including servants and attendants, being the maximum ever expected to reside on the premises at one time. The arrangements in the block of buildings to be used for laundry purposes are also on a correspondingly extensive scale, the motive power being provided by a 12-horse power horizontal engine, connected with a large well by direct-acting pumps. In a separate range of buildings are the workshops, to accommodate the inmates in carrying on various useful trades. The necessary accompaniment of recreation, too, has not been neglected, the hall devoted to this purpose being on the second flat of the building. Its dimensions are about 90 ft. long by 60 ft. at the widest part, and being fitted with a platform which can be made available for musical or dramatic entertainments. A similar plan has been adopted in the arrangement of the male and female departments of the asylum, each class of patients being provided with a comfortable day-room, furnished with tables, couches, chairs, and bookcases. In the dormitories considerably more space has been allowed for each patient than is required by law. The sanitary arrangements, also, have received attention, every apartment, large and small, being well lighted and ventilated, while lavatory and bath accommodation has been externally provided throughout the whole premises. In all there are 110 single rooms for patients, or at the rate of 25 per cent. of the whole accommodation, as compared with the proportion of 2 per cent. usually provided in Continental lunatic asylums. As a further instance of the care which has been exercised to meet all the requirements of such an institution, it may be mentioned that a handsome corridor, with glass roof and sides, leads to the chapel. Along this corridor flowers and plants have been tastefully disposed, so that in case of inclement weather it shall form an agreeable promenade indoors. The Barony Parochial Board bought the estate on which the asylum is situated, extending to 167 acres, in 1852, the price paid being 56*l.* per acre. Originally it was intended that the asylum should cost 58,000*l.*, but the plans were afterwards modified with a view to provide larger dormitories and day-rooms. The accommodation of the administrative department, which at present is for 400, can be readily extended, so as to provide for 800 or 1,000 patients. The alterations in the plans, increased cost of wages, and other additional expenses not anticipated, raised the original estimate to 139,446*l.* 14s. 10d., of which 127,779*l.* 3s. 3d. have been paid. A suitable residence for Dr. Rutherford, the medical superintendent, stands to the north of the asylum, and a large porter's lodge at the entrance-gate. There are only thirty patients in the asylum at the present time, but the necessary arrangements will soon be complete for the accommodation of the remaining portion of such afflicted persons as come within the jurisdiction of the Board. After the formal opening there was a religious service, a luncheon, and a *conversazione*.

ORGANS IN CHURCHES.

IN RE ST. MARY'S WOOLNOTH.

Sir,—Your correspondent, "An Architect," is somewhat positive in his reply to my remarks as to the effect of the ground-floor position on an organ. I did not write by any means so much at random as he supposes.

I am quite acquainted with the choir of St. Paul's (and do not understand why I should be supposed not to be), and know exactly where the organ stood. "An Architect" thinks the deterioration of its effect could not be the want of space, because there were "oceans of space" before and behind, &c. But does he not see that placing an organ under an arch at one side of the avenue of the choir is a totally different thing from placing it in the centre, so as to speak, straight down the centre aisle, and not against the side wall? That is surely enough in itself to account for the deterioration of the effect; and it would have been just the same, I believe, if it had been raised to the same level as before, or perhaps worse, as the sound would then have been driven down by the soffit of the arch immediately over the instrument. But it is the side position that does the mischief, and the placing of an organ so as to destroy its unity of effect. There is a move now for getting organs out of the centre of cathedrals, for the sake of a "vista," and then architects seem to think they may pack the pipes away anywhere. I noticed an instance in Worcester Cathedral the other day, where the organ has been placed in a side arch of the choir; but as it will not all go in, the pedal reed-pipes, the most powerful in the organ, are to be seen standing along the floor in the choir-aisle behind the piers, like naughty boys put in a corner, where they must make a sufficiently astounding noise in the ears of casual passers-by, and enjoy a completely separate existence from that of the instrument of which they are supposed to form a part.

As to the general question of placing organs on the floor, "An Architect" quotes Mr. Hopkins as against it. I have not his book at hand; but I read and made copious notes from it a long time since, and am strongly under the impression that Mr. Hopkins himself somewhere makes a remark as to the increased resonance derivable from the floor under certain circumstances. At any rate, I have heard the verbal opinion, in favour of placing organs *low*, of one of the first,—probably the first,—of living organ-players; and having been for nearly twenty years in the constant habit of playing on organs in all kinds of positions, have had some opportunity of forming an opinion on the point. Of course, material is to be taken into consideration. A marble or stone floor is not resonant; and an advantage may be derived from the use of a wooden gallery in that case, by bringing a greater quantity of resonant material in direct connexion with the pipes. But the raising of the instrument from the floor has nothing to do with it, that I can see. And even if it were admitted to be an advantage in a cathedral, where there is ample height, it is quite a different thing in an ordinary-sized church, where the exaltation of the organ to a gallery brings the larger pipes close to the roof. Even if it were admitted that it is desirable to have space *under* an organ, there can be no question that it is much more important to have space *over* it. I have frequently played on organs in high galleries, and have always considered them most disadvantageously situated for effect, and (what is more to the purpose) have heard the lamentations of organ-builders who have been compelled against their will to build instruments in that position. I remember hearing a well-known builder, after listening to one of his own organs in a gallery, observe, that if he had not known what was in the instrument, he should have said it was a very bad one; that it did not matter what you put in an organ when it was in such a position, for it could never sound well; that if it were in the body of the church it would be a totally different thing; and so on. Depend on it, the "organ-loft" is only a shade better (if at all) than the "organ-chamber." On the other hand, it fell to my lot once to accompany 300 voices at a choir festival on a small and incomplete organ, situated in what I regard as, musically speaking, the ideal position for a church organ, viz., on the floor at the west end of the nave. The instrument seemed at first sight to be very inadequate to the occasion, but it turned out quite otherwise, and formed an ample support to the large body of voices, in a way in which it would never have done had it been mounted in a gallery and sounding over their heads into the roof. The combination of the instrument with the singers is another consideration not to be overlooked now that it is universally admitted that the proper place for those who lead the singing is on the ground-floor with the congregation.

Before writing this letter I visited St. Mary's Woolnoth, and saw how the organ stood, and where it is to stand. It must have had nearly all the disadvantage that could arise from position in a gallery; the gallery having been high up, and with a flat ceiling over it, while the majority of the congregation sat in a "well" beneath, shut in by galleries. The organ could have been properly heard nowhere but in the galleries, as I have had opportunity of noticing in more than one church of exactly similar construction. It is now to be placed in the angle of the ground floor to the north of the chancel. The best place by far would be the centre of the north side (as the church is square there is no choice as to sides), but probably seat-room is wanted here. In the place chosen it will be partially obscured by the columns supporting the roof at the angles, but there will be height enough, and I would unhesitatingly prefer such a position to that of the original gallery. As to the danger of removing the organ, it appears there is nothing of Schmidt in it after all but four or five stops, which perhaps in any case would not last very much longer; with care, no harm ought to happen. The complaint about "the removal of Hawksmoor's galleries" is incomprehensible to me. *Are* they Hawksmoor's? If so, he must have wilfully spoiled a fine interior. As to the superiority of the architectural effect when they are removed, there surely can be no two opinions.

Finally, as an exact case in point, I may mention the organ by Harris, in All-hallows Church, Lombard-street, which has been removed from its position on the screen, and replaced, with modern additions, on the floor at the south side of the chancel arch. It would be difficult to find a church organ that is better placed for effect; so much so that on first hearing it from the other end of the church I was impressed with the idea of its being a much more important instrument in scale and power than it really is. The organ at St. Mary's Woolnoth will not be so advantageously placed, since it will, as before observed, be partially obscured by the columns, and it is a great pity that it cannot be placed in the centre of one of the sides; but I believe any organ-builder would prefer placing a new organ in the position proposed, to building it in the original organ-gallery.

H. H. Statham.

TRAINING *versus* CRAMMING.

Sir,—It scarcely needs apology for addressing the editor of any public journal upon the subject of education, for in that subject every section of the community should be deeply interested, much less need I apologise to you, sir, who have always had views beyond the mere bricks and mortar,—nay, views beyond even the very architecture of the *Builder's* sphere,—of that far greater work, the building-up of the State in moral symmetry and grandeur. For no one knows better than you that no State can be stable, nor its influence on civilisation lasting, whose superstructure is not raised upon the solid foundations of a right system of education.

We have in this country, unfortunately, accepted, without sufficient questioning, a system of education which has been handed down to us from remote ages, and are now entreating the men raised in the chief seminaries of the old system to become, *par excellence*, the examiners of the country. And thus our educa-

tional examinations are becoming more and more the tests of memory instead of mental power.

The fallacy of our modern educational system lies in the supposition that a man who commits to memory, let us say, the theories of mechanics, hydrostatics, and pneumatics, &c., is getting a scientific mind. Now, he is doing nothing of the kind, but is, in reality, debilitating his intellect for true scientific study, unless he previously had the right kind of mental constitution, or this had been induced in him by judicious training. The chief business of the modern student would appear to be that of accepting stores of knowledge on trust, and of committing them to memory, in total forgetfulness that all such stores of knowledge were collected and ordered by a very different kind of mental exertion. The modern student's memory, not his mental powers, is alone taxed. It must indeed be evident, on the least reflection, that the feat of committing a science to memory, and the power of either creating or of adding to a science, are two very different and distinct things. Our present education contents itself with making men mere intellectual granaries, the result of which is that we are blinded with a great deal of chaff. To make a nation great, we must till the mental soil, and so qualify it that it may itself be productive, and contribute to the great storehouse of knowledge, till it be itself fruitful in thought, word, and deed.

The present system of education for the most part consists, as we have said, in committing printed matter to memory; it is a mere transfer of book to brain, which does in no way train or educe the native powers and self-helpfulness of the mind,—we must either make the people think, or be content to drift, as a nation, to perdition.

The mind itself may be compared to a machine, to a mill, and the stores of knowledge which have been accumulated as so much "grist." At present no thought is given as to whether the mill be in perfect gearing or not, the cry is ever, "More grist upon the mill!" and there it is heaped, whether the mill be in gear or not, and is never ground; for in the one case the mind is incapable, and in the other it is overburdened and choked. The only signification which we can attach to the modern term "higher education" is, therefore, that of a "taller heap" of information.

All subjects of study require precisely the same faculties of mind to conduct them to their best issues. It may possibly be some undue bias of one or another of the faculties, or other accident, which predisposes the mind to a particular pursuit; but, whatever that accident may be, the pursuit when once adopted must be prosecuted by the whole and balanced powers of the mind. All pursuits equally require that we should be trained to correctly Observe, to firmly Retain, to rightly Reason. To a mind thus constituted book-learning will have its value, but to other men books will be more or less pearls before swine.

Before we can consistently gabble about a higher education, teaching must mean training, not "cramming," the intellect.

W. C. T.

IS AN ARCHITECT A JEWELLER?

Sir,—As a man who is on the house-top can see better what is going on in a crowd than one in the midst of it, so we in the Colonies may, perhaps, be better able to detect the tendencies of architecture in England than an Englishman himself would be. So much so is this the case that we have been tempted to ask the question which heads this letter from an observation of several engravings which have appeared lately in the *Builder* and other professional papers.

In these we have observed a hankering after costliness of material and an attention to minute ornamentation which appears to us to exhibit a deterioration of taste in the profession, for nobility of design and beauty of form have been almost completely ignored in a vulgar desire for precious stones, mosaic, and gilding.

It is the business of a jeweller to manufacture articles of *virtu* with costly materials, but to make a monument or a church an article of *virtu* is a perfect absurdity.

This communication has been more particularly called forth by seeing Sir G. G. Scott's design for a monument to Bishop Wilberforce,* and a slavish imitation of it which appeared lately as a presumed restoration of St. Edward's Shrine, Westminster Abbey. In both it seemed as if the some of architectural extravagance had been reached. The worst feature in each is the ribbon or twisted columns. A ribbon is generally used to hang something on, but here it is made to *support* a heavy weight. (It may be urged that precedent can be had for the feature, but because a man 600 years ago was foolish enough to design a ribbon column, it is no reason why a sane architect of the present day should copy him.) The weak-kneed looking appearance given to these monuments by these pillars is sufficient to condemn them in the eyes of any unbiassed architect.

Attention has before been called to architects departing from their legitimate business, as in declaring that being able to draw the human figure was the chief end of the architect, while any one who could design stained-glass windows, or draw subjects for fresco painting, had reached the top of the profession. We are now beginning to see the end of all this, for it is a significant fact that, while we have such uncalled-for exuberance of design in small things, whenever a great work for the architect is called for, such as the New Courts of Law, the Berlin Parliament buildings, or the Cathedral for Edinburgh, the meagreness of architectural ability displayed is striking.

Let it not be understood that I object to the highest art being introduced to the shops of the jeweller or the glass-stainer,—by no means; but I do not think it is the business of an architect, as an architect, to furnish their designs. An architect may have what hobby he pleases, but the hobby should not take the place of the business.

In conclusion, it may be all well enough for Americans to sacrifice beauty of form for richness of material, but it ill becomes the British architect to do so: a Venus de Medici in marble is, after all, more valuable in every way than a nude pug-nosed Irishwoman in gold would be.

Halifax, Nova Scotia. And. Dewar.

* See p. 416, *ante*.

RESTORATION.

"Behold! I will make all things new."

Why this rage for "restoration"?
Let art crumble to its doom:
All is yet but adumbration,
A mere gleam of things to come.

All true men the Spirit cherish,
Fools but dying embers crave;
Outward forms are doomed to perish,
Smoulder in this ruthless grave.

Phidian work itself must crumble,
Phidian work yclept "divine,"
Art awhile in effort humble
Patient wait till genius shine.

Art at best's a short-lived treasure,
Fading but to bloom anew,
Burst forth in some fairer measure,
Made in resurrection true.

He who rules can wield His power,
Far surpass what man hath done;
Fairer spring-time, fairer flower,
Wakes to kiss the genial sun.

Worlds and suns are not for ever,
There must be a starless night,
Till once more the clouds shall sever,
Chaos be transform'd with light.

Meter.

THE REMAINS OF STEETLY CHURCH.

Sir,—My heart fairly sank within me when I read in the *Builder* that a scheme is on foot for *restoring* (?) the ruins of Steetly Church, near Worksop, and that the trustees of the late Duke of Newcastle, in whom the property is vested, have intimated their approval of the project, and promised their aid.

Do, for the love of art, and in the interests of thousands of admirers of the picturesque and beautiful, lend your powerful aid to stop this monstrous piece of vandalism: such things are almost enough to make one despair for the future of art in this country.

Some time ago a similar proposal was made with respect to Kirkstall Abbey. You raised your voice loudly and effectually, and, for the present at any rate, that folly is abandoned; for I saw that most charming ruin still standing in all its picturesque beauty only a few days ago.

Steetly Church—or, as it is usually called, Steetly Chapel—is very little known to tourists; it stands quite out of their track, approached only by a country lane in the midst of the lovely sylvan scenery of the Dukeries, about two miles and a half from Worksop. It is a perfect gem of the Early Norman or Romanesque period. It is very small, a little over 50 ft. long; simply a nave, with apsidal eastern termination. The outer walls are quite plain, with the exception of some small round-headed windows and a most charmingly-worked string-course, that peeps out here and there through the ivy, which otherwise entirely clothes the exterior walls. There is also a small round-headed, once richly-carved, doorway at the south-western extremity of the nave. It is roofless, with the exception of the apse, which is still covered with stone vaulting; but the interior is most beautiful, the carvings of the capitals of the pillars, especially those of the apse, are fully up to the standard of the best work of the time,—exceedingly rich and graceful, although, of course, quaint in style; made up of a profusion of intricate foliage, figures, and grotesque animals intertwined.

The date of the church is the end of the eleventh century, and it is referred to in Parker's Glossary. The neighbourhood is very thinly populated, a few farm-houses and labourers' cottages scattered at wide intervals. For all practical purposes, a small preaching-room would do as well, and this charming Mediæval relic might be rescued from the tender mercies of the restorer, and spared to the artist, archæologist, and lover of the beautiful. G. W.

LLANFON CHURCH, NEAR BALA, NORTH WALES.

The old parish church having been in such a dilapidated condition as to be incapable of repair, has been pulled down, and a new church erected on the same site. The present building is not quite so long as the ancient one, but is more than sufficient for the requirements of the parishioners (several district churches in the neighbourhood having been built within the last few years). The total accommodation is for 154 worshippers. In plan, the building consists of a nave, 42 ft. long, and a chancel, 26 ft. 3 in. in length, both being 21 ft. 3 in. wide, and under the same unbroken roof. At the west end is a tower, 10 ft. 6 in. by 9 ft. 6 in. internally. On the north side of the chancel is a vestry, 13 ft. 6 in. by 8 ft. It has been the aim of the architect in designing the present church to recall to some extent the old building, improving the design by such means as were possible: hence the nave and chancel under a continuous roof, and the saddleback tower,—of loftier proportions, however, than the old one. A comparatively modern screen formerly divided the chancel from the nave; but during the recent works a most interesting discovery was made of the lower portion of the ancient rood-screen,—a charming work of probably late sixteenth century, boldly and beautifully carved and moulded. It was determined to construct a new upper portion to it, designed so as to harmonise with the old part. The walls are built of rough local limestone, with dressings of Wrexham freestone. As far as possible, the former has been used for quoins also to the outer arches of the nave windows, and for some of the plinths. Externally the roofs are covered with Portmadoc slates, with Wrexham stone ridges. Internally are barrel panelled wooden ceilings. The floor of the nave and tower is paved with adamantine clinker bricks (procured near Stamford) banded and bordered with Festiniog slate. The pulpit and font are of Box-ground stone. The nave windows are glazed with cathedral glass of different shades, intermixed with clear white glass. All the chancel windows are filled with painted glass, by Messrs. Lavers, Barraud, & Westlake. The church is heated by one of Porritt's underground stoves. The reredos is of Corsham Down Bath stone. The builder was Mr. David Roberts, of Bala; the architect, Mr. Edmund B. Ferrey; and the cost of the work will be rather over 2,000*l*.

Monument to John Wesley in Westminster Abbey.—The London correspondent of the *Scotsman* gives some particulars of the proposed monument to Wesley in Westminster Abbey. He says that the figures embrace portraits of all the presidents of the Wesleyan Conference from the time of Wesley downwards. The cast was completed a long time ago, but the further progress of the work has been interrupted by the departure of Mr. Adams, the sculptor, for India.

MILTON CONGREGATIONAL CHURCH, GRAVESEND.

This building, erected from designs and under instructions of Mr. J. Sulman, has lately been completed by the treatment of the interior in colour, under the same superintendence. The ground of the ceiling is a pale silver grey, each panel ornamented with bands and lines in a deeper self-hue, the upper panels having a disconnected border running through; the lower panels are treated with a continuous and foliated border running from end to end of the church in self colourings. The walls are of a pale umber grey, with a frieze running from end to end, the ground of the latter being a pale chrome hue, and the ornamentation being in an Etruscan brown. The gallery line of the nave is marked by a band of colour the width of the recess; and the gallery fronts are of the same colour ground as the frieze. This is decorated with a patera form, enclosed in lines connecting each patera, the colours being brown and sage green. The underspace of the wall colour is lined out in a tiled form, with a deep brown dado beneath, shoulder high, and finished in varnish.

The work was executed by Messrs. Phillips & Son, from the designs of the architect.

THE SOCIETY OF ARTS.

The following arrangements for the Wednesday evenings before Christmas have been made:—

November 17th.—Opening Address, by Lord Alfred S. Churchill, chairman of the Council.

November 24th.—On the Registration of Trade Marks, by Mr. H. T. Wood, B.A.

December 1st.—On the Legislative Enactments requisite for Safe Conduct of Sewage Grounds, by Mr. Alfred Smee, F.R.S.

December 8th.—On the Mode of Levying the Sugar Duties in France, and its Influence on the Sugar Industries of Great Britain, by Professor Leone Levi.

December 15th.—Health, Comfort, and Cleanliness in the House, by Mr. Thomas Blashill, A.R.I.B.A.

December 22nd.—On a Method of Producing Pure Charcoal Steel directly from the Ore, by Mr. Henry Larkin.

A series of lectures will be delivered on Friday evenings in December, January, and February, on the subject of "Unhealthy Trades," by Dr. Richardson.

METROPOLITAN DRAINAGE ACT.

At the Greenwich Police-court, Mr. W. J. Humphreys, of Rotherhithe, appeared to a summons taken out at the instance of the Vestry of that parish, charging him with neglecting to comply with an order made upon him, in April last, to connect drains of certain premises with the main sewer, by which he had incurred a penalty of 5*l.*, or 40s. a day during the continuance of such neglect.

In September, 1873, the consent of the Vestry had been given to the defendant to construct temporary drains for premises about being erected, the plan submitted containing proposal for a cesspool, and in the following month a fee of 1*l.* 4s. 6d. was paid to the Vestry for a 6-in. junction with an old existing sewer. A new main sewer had been constructed within 60 ft. of the property in question, and it was now sought to make the defendant remove the drains he had laid down, and to replace them with others of larger dimensions.

Mr. Webb, for the defendant, said that it was contended that the drains already laid down were sufficient for permanent sewer, and that they were not only of 6 in. diameter, as allowed for temporary drainage, but that pipes of 9 in. and 12 in. diameter had been laid, and a junction of 9 in. diameter made in an old parish sewer, which was said to have its outlet in ground now forming part of Southwark Park. It was also denied that any cesspool or an excavation as "a receiver" had been in existence on the property.

Mr. Balguy held that the defendant had acted wrongly in putting in permanent drainage instead of temporary drainage, for which alone he had received the sanction of the Vestry, in contemplation of a main sewer not existing at the time, and it was then arranged that the proceedings should be adjourned for a month to allow of the present drainage to be diverted into the new main sewer, at the expense of the defendant.

CEMETERY COMPETITION, TAUNTON.

In answer to advertisements, 127 applications were received, and 63 sets of designs were sent in by 49 gentlemen, for the St. James's Cemetery.

The Board have awarded to Mr. Bevan, of Bristol, the first premium; to Mr. Spencer, of Taunton, the second; and to Messrs. Hay & Oliver, of London, the third.

THE ROSOMAN MEMORIAL.

ITCHEN FERRY, NEAR SOUTHAMPTON.

This memorial, just erected in Pear-tree Green Churchyard, is Gothic in character, hexagonal on plan, and stands on a York stone base, about 8 ft. square, and rises to a total height of about 19 ft. The general material is Portland stone. At each angle of the hexagon are piers carried up as buttresses from the base, and having in the upper part carvings in square panels, and terminating in moulded and carved caps. Between the angle piers are arranged, on each side of the hexagon, Sicilian marble panels for inscriptions, having polished granite columns at the sides, with carved caps and moulded bases. Over each panel is a cusped moulded arch under gablets, with carved copings, finials, and crockets. Above the lower portion the sides are carried up sloping inwards till they reach the elaborately worked upper portion, being enriched half way up with carvings in moulded circular panels, two on each face, with horizontal mouldings at the top and bottom of the same. The upper part rises perpendicularly from a moulding running round, and corbels springing from each face of the sloping portion of the memorial. This upper part has panels on each side, with shields in the same, and arches and gablets over. The top is finished with a circular spirelet, surmounted by a carved finial. On the west side of the plinth is the following inscription:—"This monument was erected by the wish of R. H. Rosoman, to the memory of his dear wife, father, mother, and other relatives." Three of the panels contain the name, date of death, and age of the various members of the family, who are interred in the vault beneath. The monument is one of the largest and most elaborate in this part of the country. The work has been executed by Messrs. Dacombe, of the New-road, Southampton, from the design of Mr. Chas. A. Monday, full-size drawings having been given for every part. The cost of the memorial was nearly 250*l.*

THE SOUTH METROPOLITAN TEMPERANCE HALL.

The new building in Blackfriars-road bearing the above-named designation, which has been in course of erection for some months past, is fast advancing towards completion. It is situated between the Peabody-buildings and the Surrey Theatre, and has a conspicuous frontage to Blackfriars-road of about 70 ft. in length. It is in the Italian Pointed style, with red brick and Portland stone facings, and a free introduction of Mansfield stone in the ground floor portion of the elevation. The great hall is estimated to accommodate an audience of about 1,500 persons. Owing to the peculiar formation of the site upon which the building has been erected, the hall is oval in shape, founded upon a hexagon, with a horseshoe balcony and a spacious platform.

The owners of the building are the London and Provincial Temperance Halls Company, and the architect is Mr. J. H. Swan. Mr. Alfred Deards is the builder. The estimated cost is about 7,000*l.*

CAMBERWELL PUBLIC HALL.

The Public Hall, situated in Camberwell New-road, near Camberwell-green, which has for some months past been in course of erection, is now nearly completed, and will be ready for opening in a few weeks for meetings, lectures, and musical and other entertainments, in anticipation of the approaching winter season. The hall is situated at the rear of the New Surrey Masonic Hall, which was recently opened, and is, in fact, a continuation of that building, although in its internal arrangements altogether distinct from it, with the exception of there being a principal entrance in Camberwell New-road common to both. The Public Hall is 70 ft. in length, in addition to a stage platform at the north end, 30 ft. in depth, making the entire length of the building 100 ft. It is 40 ft. in width, and the height to the lower part of a coved cornice and ceiling, is 25 ft.

In addition to the principal hall on the street level, there is also a lower hall of similar dimensions in the basement, which is intended, when necessary, to be utilised for public meetings and other general purposes. Simultaneously with the erection of the Public Hall, the principal architectural feature in the Masonic Hall is also in progress. This consists of an octagonal tower and a dome, over the main entrance, 50 ft. in height. With the exception of the zinc covering over the dome, this portion of the structure has been completed during the present week. The capacity of the hall is equal to an audience of 1,500.

The architects are Messrs. Pain & Clark, and Mr. Oliver, of Camberwell, is the contractor.

BUILDING IN CAMBERWELL.

The third and last portion of the building estate lying to the east of the Herne-hill-road, Cold Harbour-lane, and immediately adjoining St. Saviour's Church, consisting of about ten acres, has recently been handed over to the builders, and building operations are now in active progress upon it.

It may be recollected that the whole estate of about eighteen acres, divided by the South London Railway and the Herne-hill-road into three portions, was purchased some few years ago, by the Government, as a site for the erection of a convict prison, but a strong opposition caused the scheme to be abandoned, and the land was again disposed of, and eventually devoted to building purposes.

The designs from which the estate was laid out, were furnished by Mr. J. William Stevens, of Camberwell, and included the formation of eight new roads, and the extension of three existing ones, and provided space for the erection of 380 houses, a large number of which are now being rapidly proceeded with, some being already occupied.

The drainage and road-making works have been executed by Mr. Mayo, of Brixton.

VARNISH.

Sir,—I have just noticed your correspondent's ("Quercus") inquiry about varnish for out-door work, in which he states (18th September) that he has "tried several on doors and window-frames, but none of them will stand." Now "Quercus" has either employed bad varnish or unsuitable varnish; of the former there is a great deal in the market which is sold cheap to persons who make price the first and durability the second consideration. In this case his remedy is to go to a respectable varnish-maker and pay a fair price for a good article. It would seem invidious to mention names, but I would recommend the two largest houses, say Mander's or Nobles & Hoare's. But possibly "Quercus" has made the not unusual mistake of employing a hard varnish intended for inside work, instead of an elastic varnish suitable for withstanding the effects of the weather out of doors.

One thing is certain, that varnish may be obtained which will last for years exposed to all weathers.

"Quercus" is not very explicit whether the work alluded to is grained oak or varnished on the bare wood. I have assumed the former, but if he means the latter kind of work, I recommend Mander's "Liquid Filling-up" to be used before applying the varnish, and then put on at least two coats of good out-door varnish.

Pro Bono Publico.

CASES UNDER THE METROPOLITAN BUILDING ACT.

Mr. F. W. Serff, of Star-lane, North-end, Fulham, was summoned before Mr. Ingham, by Mr. Moseley, district surveyor, for neglecting to comply with an order of the Court to pull down a certain building which he had erected contrary to the Act.

The district surveyor described the building as having been built of wood instead of incombustible materials, and said the defendant had actually erected two other wooden buildings, thereby aggravating the matter.

Mr. Claydon, who appeared for the defendant, said it was only a temporary building for the use of workmen.

Mr. Ingham said the defendant should have applied to the Metropolitan Board at the time for their consent. He fined the defendant 5*l.* and 2s. costs.

The defendant was also summoned with respect to a carpenter's shop.

Mr. Claydon said it was only a temporary building.

Mr. Ingham pointed out it was temporary now, but it might become permanent. It was the duty of the district surveyor to interfere. He adjourned the summons to give the defendant an opportunity of applying to the Board of Works for their consent.

The Portsmouth Dockyard Extension.—It is reported from Portsmouth that a serious mishap has occurred on the dockyard extension works. It has been found that No. 12 dock, which cost a very large sum, leaks a good deal, and that considerable time and expense will be necessary to repair the damage.

CHURCH-BUILDING NEWS.

Leinthall Starkes.—On the 15th ult. the old Norman church of St. Mary Magdalene, Leinthall Starkes, was re-opened, after restoration. It is now about twelve months since the work was taken in hand, the building being then in a very dilapidated state. The cost of the restoration is estimated at 500*l.* The architect was Mr. Nicholson, of London; and the builders were Messrs. Ingram & Son, Lentwardine.

Elmham St. Margaret (*Suffolk*).—The church of Elmham St. Margaret has been restored under the direction of Mr. Phipson, F.S.A. The church consists simply of a nave and chancel, west tower, and south porch. The chancel is of the Decorated period, whilst the nave, tower, and porch are of later date. The nave was pewed with high and most uncomfortable pews, and a large west gallery blocked up the tower arch. These have been all removed, the tower arch restored, and the west window opened out. The church has been benched with oak benching, with poppy-head ends. The chancel roof, which is of the wagon-headed type, and had been plastered over, has had the plastering stripped off, and has been boarded and divided into panels by ribs, with bosses at the intersections, and an embattled cornice placed at its springing. An elaborate three-light east window has been inserted. On the north side, an organ-chamber and vestry, in the Decorated style, has been thrown out, and the south porch has been carefully restored. The tower has also been restored, and a small single-light west window, to light the new belfry, inserted. The whole of the works have been carried out by Mr. Grimwood, of Weybread.

Tideswell.—The chancel of Tideswell Church, Derbyshire, was lately re-opened by the Bishop of Lichfield, after restoration under the direction of Mr. John D. Sedding, architect. The church, a remarkably fine one, has long been named the cathedral of the Peak. The south transept has been restored at the cost (2,500*l.*) of Mr. Bower Brown. The roof of the chancel has been completely renewed, and a new bell-turret erected at the junction of the nave and chancel. The windows have been reglazed, and a new pavement laid down composed of Hopton stone and Ashford black marble, with a sparing admixture of green border tiles and red Mansfield stone. The new stall-work is the gift of Mr. Harrop, of Manchester, and the carving of this work is by Mr. Toole, of Bury St. Edmund's, except that some of the figures have been carved by Mr. Wm. Green, of Manchester. There are twenty-six upper stalls, and about twenty sub-stalls. There is also a new carved stone pulpit.

Aberlour.—The foundation-stone of a new Episcopal Church has just been laid at Aberlour. The style is Gothic, and the total length of the building when completed, including the chancel, will be nearly 100 ft., with a width of 39 ft. The height to the eaves of the roof will be 30 ft., and from the base to the top of the roof 50 ft. The plan comprises a nave, aisles, and chancel, with a porch and tower at the south-west angle. The tower, which is square, and battlemented at the top, rises to a height of 60 ft., while the spire springs to a height above the tower of 25 ft., making the total height 85 ft. The nave is divided into five bays by arches supported on columns of polished Peterhead granite. The aisles are comparatively narrow, and will be lighted on each side by four coupled lancets, while the clearstory will be lighted by a series of triple lancets. In the west gable will be a four-light traceried window, 20 ft. in height. The chancel will be lighted by three large lancet windows, with rose-window over. The greater part of the building, including the tower and spire, will be of the red native granite, with freestone dressings, principally from Covesea. No lath or plaster will be used interiorly, the walls both inside and out being of the same red granite. The roof, which is an open one, and the other fittings, will be of red varnished pine. The nave is the only portion of the building yet contracted for. The cost of the nave will be about 2,000*l.*, and the total cost will be 5,000*l.* Mr. Ross, Inverness, is the architect.

Canford (*Dorset*).—Canford parish church was re-opened on the 3rd ult., after restoration from plans by Mr. David Brandon, of London, the sole cost being borne by Sir Ivor B. Guest, bart. Formerly the chancel walls were plastered, as those of the nave now are, and in that condition they had anything but a pleasing effect. The plaster has been removed, and the native red sandstone, of which the walls are composed, is now revealed. The substantial character of the structure is a striking feature, the walls being several feet in thickness. The Norman arches in the walls of the chancel have been carefully preserved. In the south aisle of the chancel there are evidences of the former existence of an armoury; and there is a hagioscope.

Bix (*Henley-on-Thames*).—The recently-erected parish church at Bix, Henley-on-Thames, has been consecrated by the bishop of the diocese, and dedicated to St. James. The old parish church had become very dilapidated, and unfit for public worship. The new church, which is built in a more central part of the parish, is in the Early English style, and was designed by Mr. J. Gibson, of Westminster, and built by Mr. J. Willis, of Nettlebed; it consists of nave, chancel, and north aisle, a vestry being formed by screening off part of the aisle. The patron of the living, the Earl of Macclesfield, has defrayed the whole cost of the erection.

Grahamston (*Falkirk*).—The memorial stone of a new church at Grahamston was laid, with Masonic honours, on the 7th ult., by Sir J. E. Alexander. The church, which was commenced eighteen months ago, is nearing completion. It is in the Early French style of Gothic architecture, and is designed to accommodate 800 persons,—530 on the ground floor, and 270 in the galleries. In the centre of the west or principal elevation is a high-pitched main gable, flanked on either side by a tower and spire. The main tower is on the south side, and rises to the height of 120 ft., the tower on the south side being only 63 ft. high. The main entrances to the church are through these towers. On the east side of the church is the session-house, capable of seating 100 persons. The architect is Mr. T. B. M'Fadyen, Edinburgh, and the contractors for the various departments of the work were:—Mason work,—Mr. J. Gardiner, Falkirk; joiner work,—Messrs. Grieve & Lamb, Edinburgh; plumber work, slater work, and gas-fitting,—Mr. D. Draper, jun., Falkirk; plaster work,—Mr. G. Brownlee, Falkirk, and latterly Mr. J. Miller, Falkirk; smith work,—Mr. T. Tait, Edinburgh; glazier work,—Mr. R. Graham, Castle-street, Edinburgh; stained glass,—Mr. Small, Leith-walk, Edinburgh.

Shawbury.—The parish church of Shawbury was reopened on the 10th ult., after restoration, at a total cost of about 1,000*l.* The chancel was restored at the cost of Sir. V. B. Corbet and Mr. T. Charlton Meyrick, and the work was carried out by Mr. Oliver Jones, of Shrewsbury, the work involved in the restoration of the other portions of the church being executed by Mr. John Powell, of Shawbury, and Messrs. Smith, of Grinshill. The works include the conversion of the old pews into open benches, the restoration of existing windows, and the opening out of others, and the throwing of the area under the tower into the body of the church. The window has been glazed by Mr. John Davies, of Shrewsbury, and the heating apparatus is by Messrs. Rimington, of Skipton. The floors are paved with Maw's & Peake's tiles.

Campsall.—Campsall Church, near Doncaster, was re-opened on the 12th ult., after restoration under the direction of Sir Gilbert Scott. The western doorway has been unearthed and renewed, and its original proportions have been carefully preserved. A new stone figure has been built above the doorway. Both the door fixed here and that in the old porch doorway have been made in imitation of the original Norman doors. The ironwork on the old doors was described by Sir G. Gilbert Scott as "of a very curious and remarkable character." The iron was interlaced in circles, and these, as well as supporting the door, make a neat but unique ornamentation. It is supposed that the ancient doors, which were past repair, were the only couple of their kind existing in England. The western tower has been restored, and the chancel has been thoroughly renewed, the southern wall, which was 20 in. out of the perpendicular, having been reinstated. All the roofs have been newly constructed. The interior walls have been stripped of their whitewash. The whole of the passages have been relaid with red and black Staffordshire quarry tiles, and a new apparatus has been built for heating the church with air. A new font has been added, the gift of the contractors, Messrs. Shillitoe & Morgan; and two stained-glass windows have been placed in the chancel. The total cost of the restoration, exclusive of the chancel, has been 4,330*l.*

Coppenhall.—At a meeting held at Coppenhall on the 19th ult., it was resolved to re-seat the church by substituting open benches for the uncomfortable pews now existing. Mr. Bower, of Nantwich, architect, has been consulted in the matter.

Kimbolton.—The parish church of St. James, Kimbolton, near Leominster, was re-opened on the 13th ult., after restoration. The chancel has been restored at the cost of the Ecclesiastical Commissioners, under the direction of their own architect, Mr. Ewan Christian. The nave and only transept (the south) have been restored under the direction of Messrs. Haddon, Bros., architects, Hereford. The cost of restoring the chancel was about 350*l.*, the remaining works costing about 1,200*l.* The contractor for the whole of the work was Mr. Charles Edwards, of Leominster.

Harkstead.—The church of St. Mary at Harkstead was re-opened on the 14th ult., after restoration. The church consists of a nave, with south aisle, and chancel with a small chantry chapel on the south side, in continuation of the aisle. Amongst other things revealed in the course of the restoration have been two Norman windows, which, along with a door of the same style, were discovered in the north wall of the nave. The chancel was restored eight years ago, and the present restoration, which has been carried out by Mr. Grimes, of Colchester, at a cost of 887*l.*, has been confined to the nave and other portions of the fabric. The font, which is stated to be Norman in date, was restored by Messrs. Chinnock & Co., of Ipswich.

Knighton.—At a meeting of the Hereford Diocesan Church-Building Society, at Ludlow, on the 17th ult., the plans of Mr. S. Pountney Smith for the restoration of Knighton parish church were approved, and a grant made in aid of the work. The cost will be about 1,100*l.*

Havant.—Havant parish church was re-opened on the 13th ult., after restoration under the direction of Mr. Richard Drew, architect, Westminster, Mr. Ellis being the contractor. The cost has been about 4,000*l.* The church, a fine Norman building, has been very extensively renovated, almost the entire tower and the stone roof of the chancel having been absolutely pulled down and rebuilt, and parts of the aisle and transepts having been restored where necessary. The western part remains untouched, the funds not permitting its renovation.

Milton Lilbourne.—St. Peter's Church, Milton Lilbourne, Wilts, has just been re-opened, after restoration. The south wall has been taken down and rebuilt, the tower-arch and west window thrown open, and the old-fashioned pews replaced by open oak benches. The aisle passages have been paved with brick in two colours. The heating is effected by Porrit's apparatus. During the progress of the works there were several discoveries, the most remarkable of which was a "Founder's Tomb," covered up with the north wall. This is now exposed, and paved with encaustic tiles of singular and varied design found in the soil. The restoration was carried out under the direction of Mr. Pearson, A.R.A., by Mr. Randall, contractor, Devizes.

Aldershott.—The foundation-stone of a new church, to be dedicated to the Holy Trinity, was laid at Aldershott on the 16th ult. The church will be in the Early English style, from a design by Mr. Sidney Stapley, the builders being Messrs. Martin, Wells, & Co. It is intended to accommodate about 700 persons. The cost will be about 4,000*l.*

Grosmont.—St. Nicholas parish church, Grosmont, Herefordshire, was reopened on the 19th ult., after partial restoration under the direction of Mr. J. P. Seddon. Built by Eleanor of Provence, Queen of Henry III., under the direction of a French architect, the church partakes largely of the style of that country and period. It is a cruciform structure, consisting of a spacious nave and side aisles, chancel, transepts with parallel aisles, side chapel, and central octagonal tower on massive piers supporting an elegant octagonal spire. The restoration was commenced by the late rector (Rev. W. H. Twyning) and mainly through the munificence of the late Mr. John E. W. Rolls, the chancel, Queen Eleanor's Chapel, and the north transept arch, have been restored, and an approach made to the belfry. The architect estimated the cost at about 3,854*l.* to complete the restoration; and of that sum 1,345*l.* was needed to rebuild the three arches shored up to prevent the fall of the tower and spire, and to restore the transepts. Mr. Clark, of Hereford, carried out the work.

BIRMINGHAM MASTER BUILDERS' ASSOCIATION.

THE annual meeting of the above Association was held on the 2nd inst., at the Midland Hotel, New-street, Mr. J. Moffat presiding. There was a large attendance of members. The report of the committee for the past year was read, and, together with the balance-sheet, was unanimously adopted.

Mr. E. Davies was unanimously elected president for the ensuing year; Mr. J. Moffat, vice-president; Mr. J. Hardwick, treasurer; Messrs. T. Barnsley and W. J. Whittall, auditors; and the following gentlemen were appointed on the committee:—Messrs. W. B. Briggs, J. Webb, J. Horsley, J. Jeffery, J. Garlick, W. Bloore, W. H. Parton, T. Surman, W. Brooks, C. Baker, W. J. Whittall, Andrew, Heal, Stevens, King, Sapcote.

The Secretary (Mr. G. E. Jeffery) informed the meeting that notices for increased wages and certain alterations in the working rules had been received from every branch of the trade. The increase asked for was 1d. per hour by masons, bricklayers, carpenters, plasterers, and seven-eighths of a penny by the labourers. The bricklayers and labourers also demanded that walking time should be allowed to all jobs more than one mile and a half from Stephenson-place, instead of two miles as heretofore, and that such walking time should count from the first mile; also that their wages should be paid at such a time on Saturday as would enable them to get back to the one-mile distance by one o'clock. The masons asked that work should terminate at twelve o'clock on Saturdays. There were other minor alterations.

After some discussion the matter was referred to the committee. Cordial votes of thanks were given to the late president, Mr. J. Moffat, for his two years' valuable services; to the vice-president, officers, and the secretary. After the meeting the members of the Association and their friends, numbering ninety, dined together at the Midland Hotel.

LEGAL.

Alleged Negligence by a Contractor.—In the Queen's Bench Division of the High Court of Judicature, on the 4th inst., before the Lord Chief Justice and Justices Mellor and Quain, an application was made by Mr. Powell, Q.C., in the case of Purnell v. The Great Western Railway Company and Harris. Mr. Powell described the case as unique of its kind. The action was for personal injuries, tried before Mr. Baron Pollock, at Monmouth, when the jury returned a verdict against the railway company, damages 250*l.*, and in favour of the defendant Harris. He now moved for a new trial, on the grounds of misdirection, the improper rejection of evidence, and against evidence. Purnell was the foreman of a person named Murphy, who had some saw-mills at Usk, and Harris was a contractor at Gloucester. He had finished a contract for the repairs of a bridge and viaduct at Usk, but the viaduct requiring strengthening, it was arranged that he should do it, the company finding the timber. The negligence complained of was that in throwing the timbers over the viaduct one fell on the plaintiff's foot and seriously injured it. At the end of the plaintiff's case he (Mr. Powell) submitted, on behalf of the railway company, that no case had been made out against them, in which the learned baron at the time concurred, but did not dismiss them from the suit; but when Harris and his servants were called they threw all the blame on the company's servants, and the result was a verdict for 250*l.* against them. Rule granted.

Wages Disputes.—At the Wakefield Court-house, on the 29th ult., Mr. William Sykes, builder, Rothwell, was summoned by a bricklayer, named George Mason, who had been in his employ for about seven months, for 7s. 7d., which he alleged was due to him for fourteen hours' work at 6½d. per hour. Thomas Ward, another bricklayer, late in Mr. Sykes's employ, summoned him for 1s. 1½d., for fourteen hours' work at 8½d. per hour. The men said that as they could not have regular work with Mr. Sykes they left his service and got work elsewhere. They gave their master no notice, as there was no agreement between them to that effect. The defence was, that the men ought to have given a week's notice, but finding that they could get a farthing more per hour elsewhere, they left a job standing, and persuaded their labourers to go with them. The Bench told the two men they ought to have given a week's notice before they left Mr. Sykes's employ, and they dismissed the summonses, and ordered the men to return to their work.

Breaches of Building Regulations at Newcastle.—At the Newcastle Police-court, on the 2nd inst., Robert Harrison, of Jesmond, was charged, under section 68 of the Town Improvement Act, with unlawfully beginning to erect a brick manufactory at Byker, without giving notice to the corporation of his intention to do so, and also with continuing the offence for two days after the expiration of twenty-four hours from the service on him of a written notice in that behalf by the corporation. The magistrates fined the defendant 1*l.*, and 10s. for each of the two days he neglected to comply with the order.——Thomas Wilson Harrison, of the firm of Messrs. Harrison & Horn, was also similarly fined for proceeding with two houses at the junction of Tynemouth and Addison roads, before the plans were approved of.——John Atkinson, charged with not putting proper drains in some new houses belonging to him at Byker, was only ordered to pay costs, he having complied with the order of the corporation at once.

Hardinge v. Southborough Local Board.—In the Chancery Division of the High Court of Judicature, on the 6th inst., application was made for an injunction to restrain the Local Board of Southborough from continuing to allow the sewage issuing from certain tanks erected by them to flow past the plaintiff's farm so as to create a nuisance. Vice-chancellor Hall granted the injunction.

The Daresbury Reredos Case.—The Chancellor of the Diocese of Chester has given judgment in this case (to which we recently referred). The petitioner was Mr. William Charles Jones, of Daresbury, and the defendants the Rev. W. H. Spencer, incumbent of Daresbury, and Mr. Joseph Priestley, churchwarden. The Chancellor found that the emblems of Christ's Passion in the reredos, consisting of the scourge, the hammer, the pincers, the crown of thorns, the ladder, the reed and sponge, and lamb and flag in the centre, were not unlawful, idolatrous, or inconsistent with the doctrines of the Reformed Church of England. It might, he said, be far more plausibly argued that the cross was a far more dangerous article than any of these, as it was the chief and central emblem of the Passion. Had the incumbent and warden applied at first for a faculty to put up such a reredos it would never have occurred to him (the Chancellor) to refuse them on the ground that the figures on the reredos were open to abuse; and, indeed, the objection of the petitioner himself seemed to have been an afterthought. He must reject the prayer of the petitioner for the removal of the reredos, and decree a confirmatory faculty in terms of the prayer of the defendants on act of petition. With regard to costs he said that defendants must pay all costs up to the 29th of April, when they applied for the confirmatory faculty.

CONCRETE.

SIR,—I fear that Mr. Tall in his letter to you, inserted in your issue of the 30th ult., will convey a wrong impression as to my opinion of concrete.

I have always thought it to be a good material for building purposes. I objected to it solely on the ground that, as district surveyor, I had no power, under the Building Act, to allow it to be used in the construction of walls. That I was not far wrong may be proved by the fact that no concrete walls can be built without a licence from the Metropolitan Board of Works. HENRY JARVIS, D. S.

DISTRICT SURVEYORS AND PUBLIC BUILDINGS.

SIR,—In your impression of last week is an article upon "District Surveyors and Builders," from a district surveyor's point of view, and as my name is brought prominently forward, I am sure, with your usual courtesy, you will allow me space to give a builder's view of the situation.

In the case of the district surveyor of Camberwell against my firm, I consider that I fully recognised the duty which I owe to any public officer with whom I may be brought into contact, viz., to render him all the assistance which he can fairly claim from me. In this instance I offered the district surveyor every facility for examining the drawings upon the site. I had no authority to allow the drawings to go out of our possession, or even off the site, as I informed Mr. Jarvis in writing, and referred him to the architect, Mr. A. W. Blomfield, who would, I have no doubt, upon application, have given Mr. Jarvis the necessary permission to examine the drawings at his own office.

No such application was made, and I am quite willing to leave to the judgment of your readers the policy of Mr. Jarvis, to use the mildest term I can, in applying to a magistrate for power to compel us to send him plans which he might have obtained by writing for.

Surely, sir, common-sense points out that the proper mode of constructing a public building should be settled before the contract is entered into with the builder, and he ought not to find out, after having entered into arrangements to carry out the work, and probably getting expensive plant and materials on the site, that the works he contracted to do are not allowed to be executed.

As to whether a district surveyor should have the power to disapprove the mode of construction adopted by a properly qualified architect, I will leave the profession to decide. It seems to me that the mode of constructing every public building should be settled by some properly constituted authority competent to decide the matter, but I submit that it ought not to be left to builders to find out whether architects or district surveyors are right or wrong in matters of construction.

In conclusion, I must demur to your application of section LXI. of the Building Act to the present case, or, in fact, to any building to which the rules of the Act apply. This section should be read with its context, section LVI., which applies to iron buildings or any other building to which the rules of the Act are inapplicable, and it is a question whether even the Metropolitan Board of Works itself has any powers under the Act to demand plans of any building to which the rules of the Act do apply.

T. H. ADAMSON.

GRAPES IN DECORATION.

YOUR correspondent "F. S. A." asks this question:—"Is it because this great country is ruled by drink that grapes must always be used as the principal object of ornamentation"?

An appropriate answer I think would be—No! but because in the Holy Scripture the grape and the vine have unusual prominence, as one of the most beautiful and beneficial gifts (properly used) of our Creator, as also as being in their form and growth, in fruit and foliage, one of the most graceful and elegant of Nature's works. SENEX.

New Breakwater at Fraserburgh.—The foundation stone of the new breakwater at Fraserburgh was laid on the 23rd ult. by Lord Saltoun. The improvements in the harbour mainly consist in the lengthening of the present breakwater to over 3,000 ft. A serious accident occurred to mar the festivities of the day. The lorry upon which the king of the carters was seated, while being driven up Cross-street at a rapid rate, capsized, precipitating those on it to the street. Four men were injured.

STAINED GLASS.

Kimbolton.—The south transept window of Kimbolton Church, near Leominster, has just been filled with stained glass by Messrs. Heaton, Butler, & Bayne. The subject is, "Christ Blessing little Children."

Edinburgh.—Another of the series of stained-glass windows for St. Giles's Cathedral has just been completed. It is the gift of Mr. William Law, who was Lord Provost of Edinburgh from November, 1869, to November, 1872. The three upright lights are divided by transoms, and terminate with flowing tracery. In the upper lights is represented "The Last Supper of Our Lord"; and in the three lower lights are, "Our Lord's Agony in the Garden," "His Betrayal," and "Bearing the Cross"; while in the tracery are angels bearing scrolls containing the text, "As often as ye eat this bread and drink this cup, ye do show the Lord's death till He come." The glass is by Messrs. James Ballantine & Son, and has been executed under the direction of Mr. Herdman, R.S.A.

Downham.—A stained-glass window has just been completed in the north aisle of the parish church, Downham, in memory of the late Mrs. G. W. Mills. The window consists of three lights, with traceried head, containing six angels in adoration. The centre light represents the centurion entreating our Lord to heal his servant. He is in the uniform of a Roman soldier, and in the attitude of earnest supplication. The subject of the left-hand light is "The Raising of Jairus's Daughter"; that of the right-hand light, "The Cure of Peter's Wife's Mother." The window was supplied by Messrs. Cox & Son, Strand. The masonry and execution of the work were entrusted to Mr. W. Laurie.

Bradfield.—Two of the windows in Bradfield Church have just been filled with stained glass. The west window has two lights, and contains figures of St. Nicholas (the patron saint of the church) and St. Cuthbert. The east aisle window contains three lights, depicting "The Adoration of the Magi." The windows have been designed and executed by Mr. W. F. Dixon, of London.

Newnham.—A benefactor has presented a painted glass window for the east end of the chancel of Newnham Church, Gloucestershire. It is by Messrs. Bell & Son, of Bristol, and consists of three lights with geometrical tracery; in the centre is the figure of Our Lord as the Good Shepherd, and in the sides those of St. Peter and St. John, in panels of canopy work with grisaille basements. In the larger tracery-pieces are angels with scrolls.

Tideswell.—The east window of Tideswell Church, Derbyshire, has just been filled with stained glass, by Messrs. Heaton, Butler, & Bayne. The subjects are, the Kings of the line of David, the Annunciation, our Blessed Lord in Glory, and, in the outer lights, the History of St. John the Baptist, after whose name the church is dedicated. The tracery lights, very numerous, are also full of subjects.

Bere Regis.—Messrs. Hardman & Co. have in hand several stained-glass windows for the parish church of Bere Regis. Seven windows in the chancel and the three easternmost windows in the south aisles, are the munificent gift of Mrs. Egginton. The windows in the chancel will represent the history of the Passion of our Blessed Lord; those in the south aisle His Life in Glory. The subject of the east window in the aisle is taken from Rev. v. The armorial window, which is *sui generis*, will be an heraldic history of the possessors of Bere Regis from the earliest time, including among the number King John, Simon de Montfort, the Tuberville family, and the family of Erle-Drax, down to the present possessor of the manor.

SCHOOL-BUILDING NEWS.

Beaminster.—New elementary schools have just been built in High-street, Beaminster, the contractors being Messrs. D. Hann & George Gale, and Mr. J. M. Allen, of Crewkerne, the architect.

Low Moor.—On the 16th ult. was opened a new school, built by the Low Moor Iron Company, to accommodate the children living near the new works. The new building is erected in finely-pressed brick, with stone dressings, and was designed by Mr. J. M. Woodcock, architect and manager at the works. It is intended to supersede a smaller erection near at hand, and has cost about 400*l.*

Sowerby.—The corner-stones of new schools in connexion with Providence United Methodist Free Church, Sowerby, were laid on the 2nd ult. The cost will be 1,300*l.*

Halifax.—The Hanover new schools were opened on the 17th ult. Mr. H. J. Paull, of Manchester, is the architect, and the cost has been about 4,500*l.*

Lockerbie.—On the 18th ult. new schools were opened at the Townhead of Lockerbie. The buildings, which are Gothic in style, are intended to accommodate 600 pupils, and cost about 4,500*l.*, exclusive of site. Mr. Barbour, of Dumfries, was the architect.

Books Received.

The Young Lady's Book: a Manual of Amusements, Exercises, Studies, and Pursuits. By Mrs. Henry Mackarness. London: Geo. Routledge & Sons.

In a handsome volume, of close upon 500 pages, Mrs. Henry Mackarness has industriously piled up such a mass of instructive, suggestive, and withal entertaining matter, that the "young lady," whatever her age, must be very hard to please, very dense, or very highly-cultivated indeed, if she do not find something to please her and more to be thankful for. "What to do and how to do it," heads the first section, and gives the key-note, including chapters on Nursing the Sick, Teaching, Working for the Poor, Cooking, Domestic Economy, and so forth. Home Studies, another section, comprises Thoughts on Reading, Music, Drawing, Costume, Architecture (a very interesting chapter, but insufficiently illustrated), Seaweeds, and Conversation. In-door occupations, Section iii., includes Making Collections, Illumination, Wood Engraving, Wood Carving, Cameo Cutting (which, we hope, will set a number of young ladies to work), Mosaics, Needlework of all kinds, Knitting, Netting, Crochet, Lace, and Embroidery. Then come sections on out-door occupations, in-door amusements for the little ones, fun for Christmas, and such heaps of games, riddles, quotations, charades, and receipts as will last the most ravenous little group many a long night. The section on "Work," *par excellence*, is, of course, a long one, and in it the authoress has been materially helped by Miss Austin and Miss Ingelow, as she has been in other departments by equally kind and able hands; while 270 engravings and a few coloured plates enliven and illustrate the text.

Mrs. Mackarness says in conclusion,—"Many things in this book are suggested by which a living may be obtained, but that has not been its object: it has been to give hints and instructions to the young for a wise occupation of their time, a sensible alternation of useful work and healthful play; and earnestly trusting this aim has been secured I take my leave, closing the book with a list of works which are connected with the subjects contained in it, which may be found useful for those who desire further information; and I have added to the list the names and publishers of some little volumes which have been found favourites among the little ones, and which would answer for reading aloud or giving as prizes."

The tone of the book, we need hardly say to those who know Mrs. Mackarness's other works, is genial and good, full of evidence of that sympathy with the young which the young quickly discover and appreciate. We shall be greatly surprised if there are not many editions of "The Young Lady's Book."

Book-keeping for the Class-room and the Counting-house by Double and Single Entry. By John Dalziel Maclean. London and Glasgow: Collins, Son, & Co.

The fact that this little book has reached a sixth edition gives evidence that it meets a want. The first three parts treat of double entry. Part IV. gives a modification of single entry, applicable to a retail business; and Parts V. and VI. consist of questions for solution and information on commercial forms.

VARIORUM.

Messrs. Chapman & Hall have just now issued a work to which circumstances give more than ordinary interest,—"India and its Native Princes: Travels in Central India and in the Presidencies of Bombay and Bengal." By Louis Rousselet. Revised and edited by Lieutenant-Colonel C. Buckle, and containing 316 beautifully executed illustrations and six maps. It is a very fine volume apart from accidental interest, and we will take an early opportunity to give an account of it; as we shall also of a beautiful book by M. Paul Lacroix, published by the same firm (Chapman & Hall), "The Eighteenth Century: its Institutions, Customs, and Costumes. France, 1700—1789." By Paul Lacroix. Translated from the French by Mr. C. B. Pitman. This is illustrated by twenty-one chromo-lithographs and 351 wood engravings, and forms a volume interesting as well as elegant;—so interesting, indeed, that when we began to read it we found it difficult to leave off.——"Masters and Men: their Duties and Responsibilities," is the title of a paper read by Mr. H. J. Snell, at the Artisans' Institute, St. Martin's-lane, and now published by the author at 4, Grafton-street, Tottenham-court-road. It is a sensible production, and may be read by both classes with advantage.

Miscellanea.

Mr. Ruskin on Himself and his Critics. Writing in *Fors Clavigera*, Mr. Ruskin says:—"It is quite possible for the simplest workman or labourer for whom I write to understand what the feelings of a gentleman are, and share them if he will, but the crisis and horror of this present time are that its desire of money, and the fulness of luxury dishonestly attainable by common persons, are gradually making churls of all men; and the nobler passions are not merely disbelieved, but even the conception of them seems ludicrous to the ordinary churl mind; so that, to take only so poor an instance of them as my own life—because I have passed it in almsgiving, not in fortune-hunting; because I have laboured always for the honour of others, not my own, and have chosen rather to make men look to Turner and Luigi than to form or exhibit the skill of my own hand; because I have lowered my rents, and assured the comfortable lives of my poor tenants, instead of taking from them all I could force for the roofs they needed; because I love a wood walk better than a London street, and would rather watch a sea-gull fly than shoot it, and rather hear a thrush sing than eat it; finally, because I never disobeyed my mother, because I have honoured all women with solemn worship, and have been kind even to the unthankful and the evil; therefore, the hacks of English art and literature wag their heads at me, and the poor wretch who pawns the dirty linen of his soul daily for a bottle of sour wine and a cigar talks of the 'effeminate sentimentality of Ruskin.'"

A Waterloo Monument for Berlin.—In the Belle Alliance Platz, at Berlin, are to be erected, in the spring, four marble groups, representing the victors in the battle of Waterloo, which in Prussia goes by the name of Belle Alliance. Those victors are England, Prussia, the Netherlands, and Hanover. The four groups were designed thirty-five years ago; but, partly through the death of the artist charged with their execution, Herr Fischer, partly through other causes, the erection has been delayed. The four pedestals, measuring each 6 ft. in height, and executed in grey Silesia granite, have been lying ready for thirty-five years unpolished. They are now to be polished. Two of the groups, those representing England and the Netherlands, were modelled in gypsum, by Herr Fischer, a long time ago, after which he died. They measure 7 ft. in height. England is represented with a panther as her guardian beast, the lion being in this instance allotted to the Netherlands. The remaining two groups were modelled by Herr Walger. All are now being executed in marble by Herr Franz.

Indian Memorials of the Prince's Visit. The Rajah of Vencatagherry intends to celebrate the visit of the Prince of Wales to India, not only by a series of festivities, but also by opening a poor-house in his town and a building where the lame, the blind, and the aged will be fed. The institution will be endowed and an inscription on the front of the edifice will announce the fact that it was opened, and will be continued for ever, in honour of the Prince. There is also a talk among the Hindoos of erecting a temple in the holy city of Benares to commemorate this tour of the future Emperor of Hindostan through the land over which it is expected that he will one day rule.

The Proposed Thames Tunnel.—Mr. Barlow, C.E., has just had an interview with the Works Committee of the Limehouse District Board of Works with reference to the question of the communication between the north and south of the Thames, by means of a tunnel under the river. Mr. Barlow, in explaining the nature of the proposal, said the tunnel would commence in the East India-road, and, by way of Robin Hood-lane, reach the river in the vicinity of Blackwall-stairs. The tunnel would terminate on the southern side of the Thames, below Greenwich Hospital. As to the gradients, they would be only at the very moderate rate of 1 in 40. Having heard Mr. Barlow, the Committee of Works passed the following resolution:—"That this committee are of opinion that the proposed tunnel would be a great benefit to the public, particularly to the eastern part of the metropolis, and the scheme therefore deserves the support of the Board." The Board endorsed the resolution of the committee, and agreed to memorialise the Metropolitan Board of Works in support of the scheme.

Asphalte Paving.—The Brunswick Rock Asphalte Paving Company have, during the last three months, been engaged in paving, under the direction of Mr. J. F. Thorne, the surveyor to the Plumstead Board of Works, the following streets, viz.,—Leyland-road, East Down Park-road, St. Stephen's-road, Belmont-road, Granville-road, St. Stephen's-terrace, and Brunswick-place, Blackheath village. They are now paving the whole of Lawn-terrace, from end to end, in all about 44,914 superficial feet. In addition to this they have laid on the outskirts about 9,090 ft., making a total of 53,923 superficial feet. Most of this pavement has been laid with 1-in. thick Brunswick Rock asphalte, and 3 in. of concrete, made from Thames ballast and the Burham cement. The work has been carried out under the direction of Mr. W. Hirst, the company's manager; G. J. Boultwood, and his assistant, W. Coomber, the foreman. The company have the engagement for laying their asphalte in the London and St. Katharine Docks.

A New Reservoir.—The Rev. Andrew A. W. Drew, M.A., incumbent of St. Antholin's, Nunhead, writes:—"We who are residents in the neighbourhood of Nunhead are at the present time suffering under a species of panic in consequence of the action of the Southwark and Vauxhall Water Company with regard to the vast new reservoirs which have lately been built on the top of a hill overlooking our houses. We in the first instance protested against these reservoirs being built at all in the midst of a densely populated district, but our protest was of no use. The reservoirs have been building for the last three years, and are now almost ready for the water to be let in, while a very uneasy feeling prevails in the neighbourhood as to the safety of these structures. Early in the history of the main reservoir it became known that a serious landslip had occurred under one corner of it, which rendered it necessary to underpin the foundation, and to erect a massive wall, while the existence of springs of water beneath made the operation of doubtful value."

Birmingham House Painters' Protection Association.—On the 4th inst. a public meeting, convened by this Association, was held at the Public Office, Moor-street. Mr. H. Vaughan, who presided, said there was a large number of house-painters in the town who were not trade-unionists. The meeting was called with the view of trying to persuade those men to join the Society, which would materially benefit them. When the Society was formed, ten years ago, the wages of house-painters were from 22*s.* to 24*s.* per week. The Society had succeeded in raising the wages to 33*s.* per week, and considerably shortening the hours. Recently Cheltenham had formed a Society, and Gloucester was about to do likewise, and in the spring they would most assuredly get an advance of wages. The societies were not only formed to raise their wages, but to elevate their social position. A resolution in support of the object of the meeting was unanimously adopted.

The Middle Level Commissioners.—At a meeting, on the 4th inst., of the Middle-level Commissioners, held at March, the contract of Mr. Webster, to build a new sluice for 59,807*l.* was accepted, and it was decided to borrow 55,500*l.* The meeting considered that the manner in which the grounds had been drained during the recent floods was a matter of congratulation.

The Flooding of a Workhouse Basement. At the meeting of the Lambeth Board of Guardians, on the 3rd inst., the clerk read the following letter from Sir J. W. Bazalgette, engineer to the Metropolitan Board of Works:—"With reference to your letter of the 25th of October, I beg to inform you that upon investigation it is found that the basement-floor of the new Lambeth Workhouse has been constructed at a considerable depth below the level of the water which is in the sewer on occasion of heavy rainfall, and hence result the floodings of which the guardians complain. As a remedy I would suggest that the guardians should have self-acting tide-flaps fixed at the mouths of their drains, so as to keep out the flood waters." We may add that the workhouse has only been built about four years. It will be advisable to obviate this flooding in the basement of the new infirmary about to be erected on land adjoining the workhouse.

The Chapel, Charterhouse.—The oak panelling at the Communion end of this church has received attention in the shape of an alteration and addition. The old panels over the communion-table have been removed, and in their stead a decorative frame is introduced, to enclose a picture in water-colour, a copy of "The Entombment," by Franchia, now in the National Gallery. The old panels on each side of the picture have been removed, and large ones substituted, with carved details of supporting pilasters, with decorative heads. The details are of corresponding character to the rest of the old work in the chapel. Horizontal panels are introduced above and below the picture, the upper one having the text "I am the Resurrection and the Life," and the lower one being enriched with an inlay and suitable carved details. The work was executed by Messrs. Phillips & Son, under the instructions of Mr. E. Blore, architect.

A New Cement.—A French chemist is said to have succeeded in preparing a mineral compound, which is stated to be superior to hydraulic lime for uniting stone and resisting the action of water. It becomes as hard as stone, is unchangeable by the air, and is proof against the action of acids. According to the *American Gas-Light Journal*, it is made by mixing together 19 lb. sulphur and 42 lb. pulverised stoneware and glass; this mixture is exposed to a gentle heat, which melts the sulphur, and then the mass is stirred until it becomes thoroughly homogeneous, when it is run into moulds and allowed to cool. It melts at about 248° F. and may be re-employed without loss of any of its qualities, whenever it is desirable to change the form of an apparatus, by melting at a gentle heat, and operating as with asphalte. At 230° F. it becomes as hard as stone, and preserves its solidity in boiling water.

Jedburgh Abbey.—The Jedburgh Town Council have unanimously resolved to have the three trees at the south-west side of the churchyard cut down, so as to show the nave of the Abbey with proper effect. Over the great western doorway there was formerly a passage running between the spiral stairs at the corners of the gable, but this was built up probably about a hundred years ago, when considerable alterations were made in the old parish church, which occupied the west end of the nave until April last. This passage has again been opened. In removing the modern masonry connected with the old church, many beautiful carved and moulded stones have been discovered. The rubble building between the arches of the triforium on the south side of the nave is at present being removed, and when finished the view from this side will be greatly improved.

Chester Cathedral Eagle Lectern.—The lectern just completed for Chester Cathedral is of a large size, executed in polished brass. The eagle is represented with a dragon beneath its feet, suggesting the idea of the Gospel triumphant over Satan. The lectern has been executed under the surveillance of Sir Gilbert Scott, and is in the style of the fourteenth century. The platform is cruciform in shape, upon which rest four lions supporting the buttresses, which are surmounted with figures of the four evangelists. Upon the base is engraved the following inscription:—"To the glory of God in this Cathedral Church, the gift of Eliza Potts, late of this city, who died December, 1873." The lectern is now on view at the show-rooms of the manufacturers, Messrs. Cox & Sons, of Southampton-street.

Baltimore, the *Times* says, has dedicated its new City-hall, an imposing edifice of white marble, which has been eight years building, and cost two and a quarter millions of dollars. It covers a square of ground in the heart of the city 238 ft. by 147 ft., bounded by Fayette, North, Lexington, and Holliday streets. The plan is a main building four stories high, with wings on each of the four streets three stories high. The architecture is modern Renaissance, the fronts being highly ornamented. Each wing is surmounted by a high Mansard roof, while in the centre of the main building there is an imposing dome which rises 240 ft. above the pavement, and contains a large clock and bell. The narrowness of the streets in the immediate neighbourhood, however, causes much of the architectural effect to be lost.

New Projects at Cardiff.—A large meeting of shareholders of the Glamorganshire Canal Company was held at Cardiff, on the 3rd inst., presided over by Mr. R. T. Crawshay, Cyfarthfa Ironworks. It was resolved to form a new company, with a capital of 100,000*l.*, to widen and deepen the entrance to the canal at Cardiff, to admit vessels of 1,200 tons register at neap tides, and to form a dock and to erect on it coal staithes for shipping coal, application to be made to Parliament next session for the necessary powers. Another company is about to be formed for constructing a railway from Cardiff to Barry, where a floating-basin is to be formed for shipping coal. The Penarth Dock and Railway Company are about to increase their accommodation for shipping coal.

Sanitation in Melbourne.—A society has just been formed in Melbourne called the "Australian Health Society," the objects of which are:—"(1) To create an educated public opinion with regard to sanitary matters in general by aid of the platform, the press, and other suitable measures; (2) to induce and assist people by personal influence, example, and encouragement to live in accordance with recognised laws whereby health is maintained and disease prevented; and (3) to seek the removal of all noxious influences deleterious to the public health, and to influence and facilitate legislation in that direction."

Reduction of Masons' Wages in Edinburgh.—The master builders of Edinburgh and Leith, at a numerously-attended meeting of their Association, have resolved, after a careful consideration of the state of trade and the supply of workmen, that the time had arrived when they should endeavour to bring down the operative masons' wages to the rate formerly agreed upon, viz., 8½*d.* per hour. It was further resolved that in the meantime notice should be given to the operatives that on and after the 5th inst. the wages for first-class workmen would be reduced to 9*d.* per hour. Their recent rate of pay was 10*d.* per hour.

Depositing Docks.—Messrs. Latimer Clark, Stanfield, & Co. have received orders from the Russian Government to construct one of their depositing docks at Nicolaeff, in the Black Sea. The dock is primarily intended for lifting the new circular ironclads recently built there, which are much too large to pass through any dock gates, being 100 ft. and 120 ft. in diameter, but it is equally adapted for raising ordinary ironclads and merchant vessels. This dock is intended not only to raise vessels of either form, but to lift them bodily out of the water, and deposit them high and dry on platforms along the shore.

The Liverpool Landing Stage.—At the last Liverpool Assizes a verdict was found against the Liverpool Gas Company for the destruction of the Liverpool landing-stage, in the month of July, 1874, through the carelessness of the company's workmen. The amount of the damage, which was roughly estimated at 100,000*l.*, was to be referred. The Gas Company gave notice of appeal, but subsequent negotiations have resulted in their agreeing to pay in instalments two-thirds of the net damage, and the Mersey Dock Board's legal expenses arising out of the late trial.

Burton-on-Trent.—The Town Commissioners of Burton-on-Trent have decided to call in the assistance of Mr. Thomas Hawksley, C.E., of Nottingham, with the view of adopting the best means of preventing the flooding of the town in future. Sir John Hawkshaw was nominated, but Mr. Hawksley had a large majority of votes.

The Lock Trade at Willenhall.—At Willenhall the lock trade continues remarkably buoyant and the greatest difficulty with which manufacturers have to contend is that of inducing their workpeople to do something like regular work. Many new factories have been erected and old ones extended during the last twelve months, and the use of machinery in lock construction has of late considerably increased. For bolts and latches a very steady demand continues to be experienced.

Burning of Glenalmond College.—At the disastrous fire which occurred at Trinity College, Glenalmond, Perthshire, on the 26th ult., the damage done is estimated at 20,000*l.* The buildings were erected in 1841, from plans by Sir G. G. Scott, and cost 90,000*l.* It is said that the fire originated through a plumber, who was making some repairs upon the roof, allowing his "chaffer" or hand fire-grate to fall and thus ignite the building.

Kensington Campden Charity Trust.—The trustees have lately come into possession of a considerable sum by the sale of freehold land, and they have decided to appropriate 50,000*l.* to the creation of a central school in Kensington, for promoting the higher general and especially the technical education of boys and girls. The trustees propose to hold an educational conference to discuss the details of the scheme before submitting any scheme to the Charity Commissioners.

Assyrian Exploration.—Mr. George Smith, of the British Museum, left London on the 5th inst. for the East, to resume his researches in Assyria. He will be absent six months, returning to this country in May. It is not unlikely he will leave England again in August to continue the explorations, which cannot be conducted during the rainy season.

Redditch Sewerage and Water Supply.—At a meeting of the Redditch Local Board, on the 1st inst., a report was submitted by the Public Works Committee recommending that Messrs. Gotto & Beasley, who had already in 1869 reported upon the subject, should be asked to give an amended plan and estimate for works for the extended boundary of the borough.

A Builder Fined.—Mr. W. Donn, who had obtained from the Vestry of Mile-end New-town a licence to hoard in a site for a new church in Jamaica-street, and to form a footpath, with handrail, for the convenience of the public, was fined 5*l.* and costs, by Mr. Paget, at the Thames Police Court, for neglecting to carry out this arrangement.

Presentation to an Art Master.—On the 26th ult. Mr. Anderson, headmaster of the Coventry School of Art, was presented with a "davenport," bearing the following inscription:—"To John Anderson, esq., from the students of the Coventry School of Art, in grateful recognition of his kindness and attention as headmaster. October, 1875."

Lectures on Sanitary Science.—On the 1st., at the Town-hall, Tamworth, the first of four lectures on "Simple Sanitary Science" was delivered by Miss Kenwick Miller. The lectures are given at the instigation of the Rev. Brooke Lambert, vicar of Tamworth, for the social improvement of the health of the working classes.

Asphalte.—The question between the Vestry of St. George's, Hanover-square, and the parishioners as to the responsibility of repaving the footpaths in Eaton-square, having been satisfactorily settled, it was decided to lay asphalte. This has been done by the Société Française des Asphaltes, we understand, with perfect success.

Co-operation in Cleveland.—Co-operation appears to be taking firm root in the principal mining districts of Cleveland. New stores at Guisbrough were opened on the 25th ult., the cost being 1,200*l.* Mr. Macara, of Darlington, is the architect, and Mr. Brown, of Guisbrough, the builder.

The New Poultry Market.—The London Central Poultry and Provision Market having been completed, it is decided to open the same on Wednesday, the 1st prox. We recently gave an illustration of the building.

A New Company.—A company has been formed to acquire the property of the "Purbeck Cement and Stone Company, Limited." The particulars will be found in our advertising columns.

The Keighley Surveyorship.—At a special meeting of the Keighley Local Board, on the 2nd inst., Mr. Robert Watson, Dewsbury, was appointed surveyor and nuisance inspector for the board, at a salary of 160*l.* a year.

Brannon's Patent Fireproof, Sanitary, and Permanent Works Company. — The Master of the Rolls, on the 6th inst., made an order for the winding up of this company.

Fine Art Lectures at Cambridge.—Mr. Sidney Colvin, Slade Professor of Fine Art at Cambridge, commenced his lectures for the present term on the 9th inst.

TENDERS

For alterations at the Myddelton Arms, Canonbury-road, Islington, for Mr. F. C. Garrett. Mr. John Viney, architect:—

General Work.

Shurmur	£297 0 0
Godden	275 0 0
Hawkes (accepted)	245 0 0

Fittings, &c.

Godden	£180 0 0
Hill	148 0 0
Shurmur (accepted)	135 0 0

Heath (pewtering), 65*l.*

For alterations at the Merry Monarch, Herbert-street, New North-road, for Mr. Young. Mr. John Viney, architect:—

Godden	£376 0 0
Shurmur	288 0 0
Steed (accepted)	269 0 0
Hill	267 0 0

Heath (pewtering), 71*l.*

For alterations at the Mitre Tavern, Edgware-road, for Mr. R. Webb. Mr. John Viney, architect:—

General Work.

Hind	£389 0 0
Henderson	339 0 0
Hoare	295 0 0
Shurmur	295 0 0
Godden	275 0 0

Fittings.

Hill	186 0 0
Godden	179 0 0
Shurmur	109 0 0

For villa, Upperton, Eastbourne. Messrs. Blessley & Spurrell, architects:—

	If commenced at once.	Deduct if left till May.
Peerless	£3,655 0 0	£217 0 0
Steer	3,650 0 0	50 0 0
Longley	3,599 0 0	150 0 0
Perigoe	3,300 0 0	—
Vidler (accepted)	3,294 0 0	127 0 0
Skinner	3,250 0 0	—
Vaughan	3,050 0 0	—
Kempling	2,988 0 0	10 0 0

For a house on Oakfield Estate, Hornsey-lane, for Mr. Must. Mr. George Truefitt, architect:—

Payne & Belding	£1,800 0 0
Carter	1,740 0 0
Ball & Wickes	1,695 0 0
Sale (accepted)	1,647 0 0

For a cottage in Tufnell Park, N. Mr. George Truefitt, architect:—

Carter (accepted)	£500 0 0

For erecting the brickwork for a new steam laundry at Camberwell House, for Messrs. Paul & Richards:—

Brown, accepted.

For additions &c., to the Gospel Oak Congregational Chapel, Kentish-town. Messrs. Satchell & Edwards, architects. Quantities by Mr. C. A. Jaques:—

	New Work.	Decorations to Chapel.
Mann	£1,410 0 0	£99 0 0
Scrivener & White	1,380 0 0	89 0 0
Thompson	1,370 0 0	93 0 0
Grover	1,362 0 0	36 0 0
Chessum	1,350 0 0	70 0 0
Manley & Rogers	1,297 0 0	79 0 0
Sanders	1,300 0 0	47 0 0

For the erection of a Baptist Chapel in the Highgate-road. Messrs. Satchell & Edwards, architects. Quantities by Mr. C. W. Brooks:—

Thompson	£11,950 0 0
Scrivener & White	11,824 0 0
Williams & Son	11,650 0 0
Manley & Rogers	11,559 0 0
Chessum	10,941 0 0
Southcott & Co.	9,841 0 0
Sanders	9,150 0 0
Tarrant & Sons	9,008 0 0

For the erection of a school-house at Crowborough Cross, Sussex. Messrs. Satchell & Edwards, architects:—

Paine	£450 0 0

For the construction of new sewers in Duke-street, Great Russell-street, Bloomsbury-square, Vernon-place, and Great Queen-street, for the Board of Works for the St. Giles's District. Mr. G. Wallace, surveyor:—

Dove & Co.	£5,413 0 0 !
Mowlem & Co.	3,771 0 0
Keeble	3,468 0 0
Crockett	3,389 0 0
Waddingham	3,351 0 0
Hoare & Co.	3,319 0 0
Culverhouse	3,300 0 0
Carey	3,250 0 0
Killingback	2,998 0 0
Waldram & Co. (accepted)	2,439 0 0 !

For constructing about 830 feet run of 12-inch pipe sewer, Walham-grove, Fulham, for the Fulham District Board of Works Mr. Bean, engineer. Quantities supplied by Mr. A. J. Bean:—

Keeble	£505 0 0
Nowell & Robson	467 0 0
Thompson & Son (accepted)	445 0 0
Serff	394 10 0

For alterations and additions at No. 2, Craven-hill, Bayswater. Messrs. N. S. Joseph & Pearson, architects. No quantities supplied:—

Dowsing	£2,548 0 0
Hearn	1,940 0 0
Vernal	1,920 0 0

For new steam laundries and other works, at the Shoreditch Workhouse. Mr. J. Wallace Pegg, engineer:—

		Old Material.
Crockett	£9,999 0 0	£109 0 0
Timewell	9,956 0 0	200 0 0
Downs & Co.	9,899 0 0	100 0 0
Staines & Son	9,773 0 0	110 0 0
Prout	9,668 0 0	100 0 0
Waldram & Co.	9,529 0 0	150 0 0
Aitchison & Walker (accpt.)	9,427 0 0	250 0 0
Hunt	9,358 0 0	140 0 0

The tender of Messrs. Niblett & Son, Hornsey-rise, was accepted on the 20th inst. by the War Office for building the new barracks, &c., at Hounslow.

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House Decoration —(Cancelled, having appeared elsewhere) F. L. (forwarded).—B. & Co. (we have already given particulars of the building named) —H. C.—H. J. B.—G. W.—T. W. H.—E. P. L. B.—W. E.—C. A.—F. C. H.—Mr. T.—J. V.—J. F.—C. E. F.—H. St. J.—H. S.—T. H. A.—C. R.—J. G. P.—W.—N. W.—M. E. Hadfield—R. S.—E. B. (next week)—R. M. B. (next week.—H. S. C. (next week)—C. B.—P. & Co.—E. L.—F. K. S.—G. S—R. Y.—E. W. H.—C. O—G. G. J.—N. & Son.—H. P. H.

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VOL. XXXIII. No. 1711. SATURDAY, NOVEMBER 20, 1875.

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Art and Industry: Mr. Gladstone's Address at Greenwich.

MOST of our readers will have noticed the interesting and thoughtful address delivered by Mr. Gladstone last week at Greenwich, on the occasion of distributing the prizes to the successful students in the Science and Art classes in that borough. The address has been fully reported in the daily papers, but we propose here to reproduce some of its salient points; not so much in the way of reporting, as on account of comments and considerations which they suggest, both in the way of enforcement, and also perhaps, to some extent, of criticism.

The fact that the prizes were given for attainments of two kinds,—that the classes are grouped as "Science and Art" classes,—seems to have furnished the keynote of Mr. Gladstone's address, which turns not so much on "Art" in its more imaginative and distinctly intellectual range, as on the union of beauty with other qualities in work of an industrial nature. On the whole, we welcome such a tone and tendency in an address of this kind, as touching upon a view of art which has not received sufficient thought, and as being certainly of more practical value than the very vague generalities constantly indulged in by speakers on such occasions. Perhaps we must not, however, charge this entirely to the critical choice so much as to the general recent tendencies of the speaker in question, who has certainly shown a leaning during the latter part of his career towards considering everything from an economical point of view. It is a little too much in keeping with this that one of his first remarks was upon the commercial value of art. Beauty, he urged, as (in one sense) we have often done, so far from being opposed to utility, was a great element in it, "not according to the laws of any particular or abstract thought, but according to that law which is of all others, perhaps, the most generally understood,—the law, as it is sometimes called, of £. s. D." This was exemplified in the case of one great country, France, the trade of which was mainly founded on the beauty of what it produces. Not that the French are not a most ingenious and economical people in the application of means to ends; "still, upon the whole," says Mr. Gladstone, "I venture to give a confident opinion that the high position which France holds in the markets of the world is mainly and essentially due to the fact that from long culture and traditional application of the national mind they combine beauty with utility in the production of such objects as result from the industry of man." Now, we regret to find that remark nearly at the outset of the address, because it is, in a double sense, fallacious. In the first place, a great deal of the French art work, in *bijouterie* and other ornamental productions, which is so much sought after, is by no means in good taste, and can only be called beautiful in a somewhat vulgar sense; and secondly (and more seriously) it is a false view to hold up that the value of artistic work done by a nation is to be judged by the fact that other nations are willing to buy it of them: although, of course, the fact may be used as an inducement to the pursuit of art. The value of such things is independent of commerce altogether,—it is part of the infusion of beauty, and consequently happiness or interest, into men's lives; and the real value of it is the same, to those who can produce it, as if there were no sale for it; and a people who have taken to producing such works mainly with a commercial object have probably already parted with, or have not found, the secret of real beauty.

Passing to the subject more immediately in hand, and after dragging in certain religious reflections, somewhat inconsequentially, if we may be pardoned for saying so,—certainly their relation to the context was incomprehensible,—Mr. Gladstone remarked on the proportion in the number of students in the Science and Art Classes of the Education Department, respectively. It appears that the number of science students is exactly double that of the art students; 48,000 and 24,000 are the figures though an 8,000 may be added to the latter number by counting in the students in evening classes where drawing is taught. It is useful to consider statistics of this kind, as they afford about the best gauge of the amount of interest in the two classes of subject. This is no doubt in reality a scientific age, though the interest in art has much extended among the middle classes lately, in great measure owing to the institution of the Government schools. Still the remark which the speaker founded upon this, that beauty of production is regarded in this country as little allied to usefulness of production, and rather as a luxury reserved for the rich alone, is unquestionably true in the main. Some further remarks which Mr. Gladstone based upon this reflection we have pleasure in quoting *in extenso*:—

"Let me remind you that there have been nations in the world who have made artistic and beautiful forms part of their everyday thought and life. The ancient Greeks offer a grand example of culture and of skill to us, as they have to every nation for the last 2,000 years and more. No matter what it is, you find nothing of Greek production which is not beautiful. It is not merely the *alto relievos* or the *bas relievos*, but common things, many of which must have been produced, not by artists, but by common workmen; and upon every one of these, though with great difference of degree, there is a seal and stamp of beauty, showing that the Greeks endeavoured to work all things into beautiful forms, so that artistic skill and love of the beautiful became an inheritance to them, formed part of their nature, accompanied their daily life, and entered into every kind of production. The ideal of beauty has never been so completely realised in more modern days, though the Italians undoubtedly afforded a very near approximation to it. When I refer to these examples, remarkable and rare as they are in the history of the human race, I expect to be met with the objection that we must not aspire to follow such elevated precedents. On the contrary, I believe the simple truth to be that we must be always aspiring to the highest and the best. If you do so, you may not be able to attain the summit, but you will get nearer to it than if in the first instance, with clipped wings, you are content with moderate aims. I do not wish to use the language of exaggeration, and, on the other hand, I do not desire to fall into the error of depreciating the time in which we live. I do not think a more interesting time than the present has been given to mankind for many generations. Still it is best to be truthful with ourselves, and, if we err, to err on the side of depreciation rather than of inflated conceit and presumption. Now, I may be wrong, but I fear that, owing to whatever cause, there has been a great decline in the genuine sense and appreciation of beauty among us. Those who study the ancient work of Englishmen in various branches of industry will find that a more deep and real and lively conception of form and beauty, and a more ardent and disinterested pursuit of it, as well as of knowledge, characterised the men upon whom we sometimes look back with unwarrantable contempt, than we can flatter ourselves as belonging to us. I hold in my hand a print which few of you can see well, but it represents a work some 25 ft. or 30 ft. in breadth, and is full of beautiful details, which seem to rival the hand of the jeweller. What is this work? It is a screen in a church—not a metropolitan cathedral, not a handsome edifice, upon the erection of which has been lavished the wealth of kings, of nobles, or of the great prelates of the Middle Ages. It is a screen in a church at a place called Llangwm, an obscure church in an obscure town in Monmouthshire, between Usk and Chepstow. I never heard of the church until I heard of it in connexion with this work, nor, I dare say, did any of you. But my point is that this work, in this obscure church, beautiful in its details, its execution, its conception, must evidently have been the work of some village artist at a period when there were no appliances, no Government schools, when there was no notoriety, no excitement when a man did anything—nothing but a love of beauty in the minds and hearts of our countrymen to lead them to execute such work."

We must be pardoned if we are sceptical as to the "village carpenter," whom we meet with very frequently, it is true, in contemporary writing about Mediæval art, but whom we suspect to be nearly as mythical a personage as the "inspired working man" of the present era. Works of the kind referred to, found in obscure places, may have been brought from or originally made for some less humble site; or skilled workmen may have been specially brought to make them; or what is now an out-of-the-way village may have been under very different conditions three or four centuries ago. All of these hypotheses are possible, and any one of them is more probable than that a work of the best class should have been produced by such a person as would in the present day be

spoken of as a "village carpenter." The patent fact, however, that good and beautiful architectural work was the rule, perhaps with scarcely an exception, at the time referred to, is made more of a phenomenon than it really need be considered, by the utter forgetfulness of the fact that in the Mediæval period the gates of beauty and of knowledge were open in hardly any other direction, and the best æsthetic feeling and ability of the day was concentrated on work of this class. We quite concur with Mr. Gladstone in not depreciating the present day; in thinking it, as he says, a "most interesting time." But the best mind of the day is not at present turned in the direction of art, and it is hardly possible to compel it in that direction in any artificial manner. All that is really possible is to give greater opportunity and encouragement for the production of work which aims at being the very highest and best of its kind—that is to say, at combining beauty with utility. And how is this to be done? There has been no lack of receipts and recommendations for the encouragement of art already; some of these have borne fruit to a certain extent. Mr. Gladstone offers another suggestion, which our readers will know we think certainly worth consideration. We will give his own words:—

"We may assume that this is a time when all who feel concerned in the welfare of the country feel it to be desirable that efforts should be made to give instruction in science so as to improve the knowledge of the British artist and workman, and enable him to hold his position in the markets of the world. I beg those who hear me to beware of imagining for a moment that this result can be attained through any other agency in the main than that of the individual mind and will. All that others can do is to offer assistance, and who should offer that assistance? I do not know what you will think of what I am about to say. It may be a foolish fancy of mine, and often those fancies which one thinks one's best are foolish. I confess, however, that I should like to see a great deal of this work done by the London Companies. I hope that opinion does not shock any one. I have not been consulted by the London Companies, but, if so, I would have besought and entreated them to consider whether it was not in their power to make themselves that which certainly they are not now,—illustrious in the country, by endeavouring resolutely and boldly to fulfil the purpose for which they were founded. What was the object for which those Companies are founded? Do you suppose they were founded for the purpose of having dinners once a year, once a quarter, or once a month? Do you suppose they were founded for the purpose of dealing out little sums of money to certain applicants and then having it recorded of them how much good they had done? Nothing of the kind. Eleemosynary works are noble works,—among the noblest, indeed, given to men. But to be an eleemosynary work it must be the work of an individual, and not of a company. These companies were founded for the purpose of developing the crafts, trades, or 'mysteries,' as they were called. They were founded for the purpose of doing the very thing which the Government of the country, out of the taxes of the country, is now called upon to do,—namely, applying their energies and intelligence to secure the great object which I described at the outset to be the application of human labour to all the purposes of industry in the most economical, effective, and beautiful manner."

The London Companies seem to be invited to the front just at present. It is but a few days since the Astronomer Royal, on a public occasion, credited his first formal honour to one of these bodies, and now the *rôle* of "patrons of art" is proposed to them. Will they accept it? The position would really be a perfectly suitable one, and bear some analogy to that assumed by the trade guilds of the Mediæval time. That such a part would be more in accordance with the objects for which they were originally instituted than the conventional dinner-giving is absolutely true. And if each of these companies (of those at least which represent art or manufactures, which all do not) were to make it a primary object to promote the best possible way of carrying out, both practically and artistically, the class of manufacture which it represents, we believe, as we have said again and again, that such an attempt would be likely to tell to an appreciable extent on the standard of art-work in the country. It would afford opportunities and stimulants which do not now exist, and which we entirely concur with Mr. Gladstone in saying that it is not exclusively or mainly the province of a Central State agency to afford. On the contrary, grateful as we are to the Science and Art Department for standing in the gap, and conscious as we must be of a considerable extent of good which it has done, we cannot shut our eyes to the fact that there is in the nature of the influence it exercises too large an infusion of mechanical and routine spirit, and that we have very little chance of seeing any great and imaginative artist emerge from the Government Art-Schools of the country. Nor is it to be expected that the further co-operation of such bodies as the London Companies, as suggested above, would necessarily or probably find a direct result in the way of evolving unknown artists or awaking new genius. In a small way, some of the companies have done this very thing. The Goldsmiths' Company offered prizes recently for the best designs for objects in gold and silver, but nothing very valuable in an art point of view was obtained. The effect of any such influences must be very gradual, and will in general hardly be traceable in a distinct and definite way; but it may be a real influence, in process of time, nevertheless. Mr. Gladstone illustrated this happily by the instance of music. We were now coming, he said, to a belief that music is a general inheritance,—that the faculty of music is a common faculty of people forming an intelligent community. "Was that so fifty years ago? I remember the time when you were laughed at in this city if you contended, as I was stoutly contending, that the human being, as such, was musical; you were considered a fool, a dreamer, an enthusiast. People used to say, 'I can't tell one note from another; I don't care a bit about music'; and I replied by saying, 'If the nurse who carried you when you were three or six months old had continued to carry you till you were forty, you would not be able to walk.'" That is a very fair illustration; and this advanced interest in the particular art referred to is not traceable to the efforts of any propagandism, either governmental or individual, but to a general movement of society arising, we can scarcely say how, from an increased value attached to the art, leading to a desire for its cultivation as a part of liberal education. That is the feeling which we want to see in regard to the arts of design. In the Middle Ages architecture and decorative design, in the Renaissance period painting, were universally recognised as things of great interest, and which it was, to apply a line of Pope,—

"Quite a scandal not to know"

something about; and accordingly the best intellect of the day was applied to them. That is not the case now; and Mr. Gladstone touched accidentally on an illustration of this in his reference to the hereditary taste for what is beautiful often found among those who are "well born," and his quotation of the remark of an artist to him, that a certain lady, "if she only had a proper amount of technical instruction, would be unquestionably the first painter in this country." Yet, as a matter of fact, most modern artists arise from the middle or lower classes. This is not because there is not an equal average of natural talent among those who are called the upper classes, but because they seldom make the same use of it, having no inducement to seek for fame, and having the still un-eradicated idea of social unsuitability (to put it mildly) attached to the calling of an artist. Accordingly, a majority of our art productions are the work of men with technical skill, but devoid of high refinement or associations. It is the same in other arts: no thinking person, for instance, can suppose that the stage as it is represents the amount of histrionic genius in the nation. There is no inducement for the best class of minds to turn to it. Let any art be recognised, by the general feeling of the nation, as a great occupation, worthy of persons of the best abilities and the highest position, and we should have the first condition towards the renewal of a great period of art,—a condition which the Government Schools of Art certainly have tended towards, though the progress is scarcely perceptible as yet.

We must not, however, lose sight of our subject of art as connected with industry, and with the industrial classes; and here Mr. Gladstone furnishes us with a very interesting text for some concluding remarks on this head, in a quotation from a letter of a working joiner, which he read to the Greenwich audience. We add (with a hearty concurrence), the words with which the speaker introduced the quotation:—

"In my belief—I speak it frankly—there is far too much eagerness on the part of the working-classes—I do not say for themselves, but at any rate for their children—to get out of the working-class into another, which is not the working-class; and I have a consideration to urge in support of that which I say, and of the advice I would presume to give, that advice being, Be not eager to raise your children out of the working-class, but be desirous that they shall remain in that class and elevate the work of it. Not long ago, in a town near which I live, it was my duty to say something upon this subject, to make a rough division between head work and hand work, and I made this division probably in a manner not sufficiently accurate and careful. Two or three days after, I received a letter from a working man, who thought I had treated society as if it were a pyramid you might cut across at a particular point, and say, 'Above that all is head work; underneath, all is hand work; where there is head work there is no hand work; where there is hand work there is no head work.' That was the language he understood me to hold, and he writes to me in words which are original and worth reading. He describes himself as a young carpenter who works ten hours a day, and says 'If the carpenter is a thoroughly skilful workman a selection of the best work is given him, and I assert with the most complete truth that during the progress of his work a constant communication must be kept up between his brain and his hands, not merely passive in character, but active, concentrated, and almost uninterrmittent. It is necessary for him to consider economy of time and labour, and I might add material; ready methods of mechanical resource must suggest themselves to his mind, his eye is being educated with new forms of design and finish; and in proportion as machinery supplants in heavy work the manual labour of the artisan, are fresh demands made upon the intellectual resources of the craftsman.' That is an excellent passage; it shows you better than any words of mine can do how the operations of the mind enter into the labour of the hands."

The letter of Mr. Francis Moore (we agree with Mr. Gladstone that his name deserves mention) is amongst the most significant and suggestive paragraphs in the Greenwich address upon art. It suggests the direction in which a higher class of workmanship, rising to the title of "art-workmanship," is to be sought for. It is not so much by seeking to add on to it something new and separate in its essence which we call "beauty," as by refining and finishing work to the utmost point of excellence, which includes excellence of form as well as excellence of construction, that we are likely to arrive at anything like that characteristic of Greek art referred to in the early part of the address,—the uniform beauty of treatment in the smallest as well as the greatest things. The attainment of this needs also, of course, the training of the eye and of the perception by drawing, and by the study of good and artistic forms of work; and perhaps even a more important step towards it is a higher standard of general cultivation and education among working men. And this consideration the more emphasises what Mr. Gladstone remarked immediately afterwards, that "if a man is a carpenter or a stonemason, it is a poor and vulgar thing if his great object is to get his children out of his vocation. The first thing is to elevate the vocation and to see that better products come from the labour; that is the walk which is opened to him by Providence and by his calling in life. That is the special work to which he ought to address his energies, and for it there is unbounded scope." Earnestly do we wish to see this idea more acted upon; to see it practically illustrated that a man may attain to being in every important sense an educated man and a gentleman, without thinking it necessary to such a claim that he should lay down or be ashamed of a noble and useful manual craft of whatever kind, in order to swell the already over-crowded ranks of those who are on the look-out to sell their brain-labour without the contamination, as it seems to be considered, of mechanical handiwork; though, except in the very lowest occupations, the two cannot really or advantageously be separated. "Every honest occupation," says Mr. Froude, in the address delivered when he was Rector of St. Andrew's University, "to which a man sets his hand, would raise him into a philosopher if he mastered all the knowledge that belonged to his craft. Every productive occupation which adds anything to the capital of mankind, if followed assiduously with a desire to understand everything connected with it, is an ascending stair

whose summit is nowhere, and from the successive steps of which the horizon of knowledge perpetually enlarges."

We made a note a little while since of a letter which caught our eye, addressed by "A Bedford Artisan" to one of our daily papers, in repudiation of the idea that foreign, especially German workmanship, was better than English; in which the writer named as the three main attributes of a good workman "energy, deftness, conscientiousness"; and added, "I believe the superiority of English work lies chiefly in this, that with all our faults we put more conscience into our work than workmen of most other countries do." We should be very willing to give credence to this view, at any rate; and entirely accept the theory as a very good reason for superiority of workmanship, whether it be considered to be specially true of the English workman or not. Well, then, let the workman who has contrived to educate himself beyond his fellows, to arrive at a knowledge of design, at a power of distinguishing good form from bad, and of understanding the relation between the practical utility of an object and its form and finish, instead of taking his higher knowledge and perception away from his own trade, apply them rather to raise the character and quality of its productions, and he will be likely to get very near to "Art" as it has been defined by one of the clearest intellects of this century. "If I were to define art," says John Stuart Mill, "I should be inclined to call it *the endeavour after perfection of execution*. If we meet with even a piece of mechanical work which bears the marks of being done in this spirit,—which is done as if the workman loved it, and tried to make it as good as possible, though something less good would have answered the purpose for which it was ostensibly made,—we say that he has worked like an artist." If the educated workman, who has acquired a perception of artistic beauty, will, besides "putting his conscience into his work" in regard to its practical execution, carry the operation of conscience a step higher, and aim also at the best and most perfect form in his work, he will have done something to establish a real and fruitful relation between Art and Industry.

ROUND NEWGATE.

The late excavations in the immediate neighbourhood of Newgate, which have brought to light certain portions of the old city wall, have attracted much attention in archæological circles, and Mr. Alfred White has maintained, in opposition to received opinion, that the Romans never occupied this portion of London, and that there are not the least remains of Roman work in the neighbourhood of Newgate-street. We do not propose to discuss this point now; but we may note here that Mr. Roach Smith, well known as an authority on Roman London, threw out, some years ago, the very ingenious suggestion that Green Arbour-lane, which led into the Old Bailey, was the site of a Roman theatre. He presumed that the precipitous descent of Green Arbour-lane into Seacoal-lane was caused by an ancient excavation in the side of Snow-hill, and having noticed in his travels that much smaller towns than London were invariably supplied with a theatre, which was usually built into a hill or rising ground, he naturally fixed upon this remarkable position just outside the city walls as a likely place for one.

The ancient walls, doubtless, enclosed much waste space, and it was not until Norman times that the north-west corner of the City was sufficiently built upon for an opening in the wall to be required. The name New-gate points to the fact that it was the last built of the City gates, and its construction in the reign of Henry I. was necessitated by the closure of an important thoroughfare by the power of the Church. When the old metropolitan church of St. Paul, founded A.D. 610 by Ethelbert, king of Kent, was partially destroyed by fire in the reign of William the Conqueror, Mauritius, then Bishop of London, instead of repairing it commenced the erection of a new one upon a greatly extended plan. The succeeding bishop, Richard de Beaumain, carried on his predecessor's scheme, and bought up "the large streets and lanes round about, wherein were wont to dwell many lay people," in order to form a large cemetery or churchyard. The present road was then occupied by buildings attached to the cathedral, and the consequence was that the highway from Aldgate through Cheap to Ludgate was stopped up by the churchyard wall, and passengers were forced to go round by Paternoster-row in order to get to Ludgate. This evil was so strongly felt by the laity that it became necessary to open up a new thoroughfare, which was done by the erection of Newgate. By this means not only was a convenient outlet to the west through Holborn obtained, but also easy access to Smithfield, the place of public sports.* The New-gate originally opened into a large open space, and not as now into a street of houses. Near the east end of this space, by St. Martin's-le-Grand, was the church dedicated to the Italian St. Nicholas, who was Bishop of Mira in the fourth century, and from this the row of butchers' shambles which stood in the middle of the space took the name of St. Nicholas' Shambles. Stow writes:—"Stall-boards were of old time set up by the butchers to show and sell their flesh meat upon; over the which stall-boards they first builded sheds, to keep off the weather, but since that, encroaching little by little, they have made their stall-boards and sheds fair houses." Behind these, on the south, was a narrow passage, called Mountgoddard-street, consisting principally of low drinking-houses, with slaughtering-places in their rear. Goddard was the old word for a cup or tankard, and Stow hints that the contents of the cups often confused the heads of the frequenters of the places. The butchers had this district pretty much to themselves,† and the filth that accumulated about their slaughter-houses soon became a public nuisance. The thoroughfare now known as King Edward-street, from its neighbourhood to Christ's Hospital, was originally named Stinking-lane, from this cause; but the name became corrupted, and in the curious plan of the district, preserved among the archives at St. Bartholomew's Hospital, it is marked as "Fowl or Chicking-lane." The name was afterwards changed to Blowbladder-street, then to Butcher Hall-lane, and, in 1843, to King Edward-street. Stow informs us that, "in the third year of King Richard II. motion was made that no butcher should kill flesh within London, but at Knightsbridge, or at such other distant place from the walls of the city"; still the nuisance remained, and nothing was done until a special Act was passed in the reign of Henry VII. (4 Hen. VII., cap. 3) for the purpose. The Act, after reciting a petition of the parishioners of St. Faith and St. Gregory's, complaining that great concourse of people at St. Paul's were annoyed, &c., "by the slaughter of beasts and scalding of swine in the butchery of St. Nicholas' Shambles, whose corruption and foul ordure compasseth two parts of the palace where the kyng was wont to abide when he came to the Cathedral, to the jeopardous abydynge of his most royal persoun," enacted certain penalties against any butcher or his servant slaying any beast there. After the Great Fire, a market-house was provided in place of the open stalls, and, in spite of all complaints and attempted remedies, Newgate Market remained the chief meat market for London until the erection of the new building at Smithfield.

The unoccupied plot of ground between Newgate-street and the northern wall was built upon in the thirteenth century, when the Grey Friars took possession of it. No friars of the Franciscan order had settled in England before the eighth year of the reign of Henry III., but then a small body came over to this country from Italy. Some of these men stopped at Canterbury, and the others proceeded to London. At first they lodged with the Dominicans, in Holborn, and afterwards were domiciled in a house on Cornhill, which belonged to John Travers, one of the sheriffs, in the year 1215; but no long time elapsed before a handsome building was commenced for their reception near St. Nicholas' Shambles. The friars obtained a high reputation for piety, and money flowed in upon them. John Iwyn, mercer, being their principal benefactor. About the year 1239 a church and other buildings being required for a complete conventual establishment were commenced. "William Joyner, afterwards mayor, builded their quire; Henry Wallis, the body of the church; Walter Porter, alderman, the chapter-house; Gregory Rokesly, their chambers; Bartholomew of the Castle, made the refectory; Peter de Helyland made the infirmary; Bevis Bond, king of Heralds, made the study, &c." Either some of these worthies did their work ill, or the establishment must have suffered by fire, for about the year 1306 a new church was commenced with the erection of a choir by Queen Margaret, second wife of Edward I. John de Dreux, Duke of Britaine and Earl of Richmond, built the body of the church at an expense of three hundred pounds, and he moreover gave jewels and ornaments to be used in the religious ceremonies of the church. The friars were highly popular, and obtained large benefactions from all classes, from members of the Royal family down to plain citizens. Robert Lord Lisle, joined himself to the order; and the celebrated Sir Richard Whittington erected at his own expense a library for the use of the friary, and filled it with books, at a further cost of four hundred pounds. The church was noted for its beauty, the pillars and pavement being of marble, and the windows marvels of art, but its chief glory lay in the large number of monuments to the memory of distinguished people which it contained. Four queens, four duchesses, four countesses, one duke, two earls, eight barons, and thirty-five knights were buried in the precincts of the convent. The evil day, however, came at last, and when Henry VIII. suppressed the religious houses, the Grey Friars were forced to agree to their own extinction. On the 12th of November, 1539, Thomas Chapman, the warden, and twenty-five of the brethren, signed and sealed the deed of surrender, and the church was shut up. The ornaments and goods were taken for the king's use, and the building was converted into a receptacle for the prizes taken at sea from the French. Christ Church, Newgate-street, the last-formed parish in the City of London, was now founded by the union of St. Nicholas' Shambles and St. Ewins, with a portion of St. Sepulchre's added, and much of the property of the Grey Friars was given for the purpose of endowing it. The two old churches of St. Nicholas and St. Ewin were sold at this time for 1,200*l*. In the last days of Henry's life he presented the site of the friary, and the priory of St. Bartholomew, to the City, for the relief of the poor, and on the 3rd of January, 1546, Bishop Ridley announced to his audience at Paul's Cross what the king had done. The citizens were left to dispose of the property as they thought fit, and in 1552 they prepared the Grey Friars' house to receive 400 destitute children. Thus was founded Christ's Hospital, and the opinion that Edward VI. was the originator of the institution appears to have grown up in later times. He recognised the work the citizens had done, but Ridley himself attributes the whole credit of the foundation to the City magistrates,—to Sir Richard Dobbs (the first treasurer) and Sir George Barnes, the two lord mayors in whose civic reigns the restoration was effected. Very little of Christ's Hospital escaped the Great Fire, and most of the present buildings have been erected at different times since then. The town ditch, which ran through the property, was built over about 150 years ago, but the square which occupies part of the site is still called "the Ditch." Another square, which was the garden or burial-place of the old convent, is still called "the Garden." Outside the ditch was formerly the burial-ground of criminals, but about one hundred years ago the Corporation gave the Hospital a lease for 800 years. The handsome swimming-bath which has lately been made for the boys, is partly over the ditch, and in some places the foundation had to be sought 15 ft. below the level. The great hall was built half over the ditch and half over the wall. The site of the Blue-Coat school, owing to its central position, is so valuable that 500,000*l*. have been offered and refused for it. Most of the City gates were used as prisons, and the New-gate was no exception to this general rule. It was probably so used from the time of its first erection, as Henry III., in the year 1218, commanded the sheriffs of London to repair the jail of Newgate for the safe keeping of the prisoners. The same king, in the year 1255, kept the sheriffs prisoners here for a month or more as a punishment for having let a prisoner escape. The gate and jail were "re-edified" in the reign of Henry VI., and being partially destroyed in the Great Fire were again rebuilt in the year 1672. Old Newgate remained with little alteration until 1780, when an enraged mob, during the Gordon riots, burnt it to the ground and set the prisoners free. There is a curious answer to the question, "What became of the prison keys?" in *Notes and Queries* (5th Series, III. 167), where it is stated that they were thrust into a footman's hands by one of the ringleaders of the mob. The unwilling receiver threw them into the water in

* Some writers have affirmed that the name Newgate was only given to the gate when it was rebuilt, and that there had been an entrance into the city here ever since the first building of the wall, the old name being Chamberlain's-gate.

† There was originally a meal market here, as well as the more famous meat market.

St. James's Park on the advice of his mistress, and there they were found some years ago when the lake was cleared out.

As early as the reign of Henry V. the jail was too small to properly accommodate the prisoners who were sent to it, and the consequence was an outbreak of fever, which killed sixty-four persons, besides the keeper and turnkeys. About two centuries and a half after this calamity occurred, Thomas Ellwood, Milton's amanuensis, was confined in Newgate with some other Quakers, and in his autobiography he gives the following full description of his quarters:—"We had the liberty of the hall (which is on the first story over the gate, and which, in the day time is common to all the prisoners on that side, felons as well as others, to walk in, and to beg out of), and we had also the liberty of some other rooms over that hall to walk or work in a-days. But in the night we all lodged in one room, which was large and round, having in the middle of it a great pillar of oaken timber, which bore up the chapel that is over it. To this pillar we fastened our hammocks at the one end, and to the opposite wall on the other end, quite round the room, and in three degrees or three stories high, one over the other; so that they who lay in the upper and middle row of hammocks were obliged to go to bed first, because they were to climb up to the higher by getting into the lower. And under the lower rank of hammocks, by the wall sides, were laid beds upon the floor, in which the sick, and such weak persons as could not get into the hammocks lay; and, indeed, though the room was large and pretty airy, yet the breath and steam that came from so many bodies, of different ages, conditions, and constitutions, packed up so close together, was enough to cause sickness amongst us, and I believe did so, for there were many sick, and some very weak; and though we were not long there, yet in that time one of our fellow-prisoners, who lay in one of those pallet-beds, died." It was necessary to hold a coroner's inquest upon the body of this poor man, and the usual practice in such cases was for the turnkeys to run out into the street under the gate, and seize upon the passers-by, until they had a sufficient number for the purpose. On this occasion they laid hold of a grave citizen, who "pleaded hard, begged and besought them to let him go, assuring them he was going on very urgent business, and that the stopping of him would be greatly to his prejudice. But they were deaf to all entreaties, and hurried him in, the poor man chafing without a remedy." They soon, however, wished that they had not meddled with him, for he insisted on seeing the place where the man died. On entering the room he exclaimed,—"Lord bless me, what a sight is here! I did not think there had been so much cruelty in the hearts of Englishmen, to use Englishmen in this manner! We need not now question how this man came by his death; we may rather wonder that they are not all dead, for this place is enough to breed an infection among them. Well," added he, "if it please God to lengthen my life till to-morrow, I will find means to let the king know how his subjects are dealt with."

Although all this should have been well known, the prison was allowed to continue in its crowded and ill-ventilated state until a popular outcry arose in the year 1770, when Mr. Akerman, one of the keepers, stated in his evidence before the House of Commons that, independently of the mortality among the prisoners, nearly two sets of servants had died of the jail distemper since he had been in office, and added that he remembered "when two of the judges, the lord mayor, and several of the jury and others, to the number of sixty persons and upwards" died in the spring of 1750 of the disease, which was communicated from the prison to the Sessions House adjoining. On May 31, 1770, the first stone of the present prison was laid by Alderman Beckford, but little spirit was put into the work, and ten years afterwards, when the old prison was destroyed, the new one by its side was still incomplete. In the autumn of last year, when the houses at the west end of the north side of Newgate-street were pulled down, a considerable portion of the foundations of old New-gate was brought to light, and its position was then seen to be within the parish boundary-mark on the wall of the present Newgate prison. Next to the gate which crossed the present street was the conduit, situated within the Conduit-yard, next Swan-yard. When the new prison was built it had to follow the tortuous line of the old houses in Warwick-lane, and the walls of these houses helped to enclose a lane outside the main building which was used as a burial-place for the criminals, and also as a passage for the prisoners to walk along from the prison to the Central Criminal Court. At the period of the Fenian riots this was enclosed and made more secure.

The Old Bailey, outside the gate was originally the ballium or vallum, which was under the charge of the Bailiff or Bayle reeve. Here stood Sidney House, once the residence of the noble family of Sidney, before they removed to Leicester House, in the fields beyond St. Giles's. In later times the inhabitants were not so aristocratic, and the near proximity of the place to the prison caused it to be frequented by some very indifferent characters. Thus, Jonathan Wild, the notorious thief and thief-taker, lived at the second door south of Ship-court.

The Old Surgeon's Theatre was in the Old Bailey, and Goldsmith was living at Green Arbour-court, opposite, when he was rejected there.

Warwick-lane was originally called Eldenese-lane, but obtained its present name from Warwick House, the mansion of Richard Nevill, Earl of Warwick, the king-maker, who kept here an open table for his numerous retainers. The lane is not over wide now, but it was formerly particularly narrow. After the fire it was widened, and the Court of Judicature* gave compensation to St. Bartholomew's Hospital for the piece of ground taken in.

The position of Warwick House was a favourable one for so meddlesome a man as the great Earl, as there was a tower at the end of his garden from which he could telegraph to Westminster, and also a private way through the wall, which he could use without letting the warders at Newgate know of his movements. The neighbourhood must have borne a gay appearance when his 600 men dressed in red jackets, embroidered with ragged staves, were moving about it. The Hall of the College of Physicians occupied the site of Warwick House for many years, and here the body of Dryden was brought by Sir Samuel Garth, to whom the remains of the poet are indebted for a suitable interment. He proposed and encouraged a subscription for the expense of the funeral, pronounced an oration over the body, and attended it from Warwick-lane to Westminster Abbey, where it was conveyed on May 13th, 1700, followed by more than a hundred coaches. The first meetings of the College after its establishment in 1518 were held in Linacre's house, in Knightrider-street, but in course of time, this not being found large enough, a house was taken of the Dean and Chapter of St. Paul's, at the bottom of Amen-corner. In the hall of this mansion the fellows placed the statue of Harvey, which was destroyed in the Great Fire. Behind was a garden in which Harvey built, at his own expense, an elegant convocation-room and a museum, which was filled with choice books and surgical instruments. On February 2, 1653, he invited the members to an entertainment, and presented the college with a deed of gift of the buildings. After the Fire the meetings of the Fellows were generally held at the house of the president until the new building in Warwick-lane was finished. The ground was purchased, and the house commenced by Wren in 1670. In four years it was completed, and on February 25, 1674, was opened with very little ceremony under the presidency of Sir George Ent. The dome was taken down about seven years ago,—

> "A golden globe, placed high with artful skill,
> Seems to the distant sight a gilded pill."

The workshops of Messrs. Tylor, the eminent engineers, now occupy the site of the college, and during the excavations that have lately been made for the purpose of enlarging them, as we mentioned at the time, portions of the City wall have been disclosed. With considerable public spirit Messrs. Tylor have decided to preserve these bits, and they have so built round them that the brickwork may remain as a witness to the thoroughness of the old builder. The Oxford Arms, on the west side of Warwick-lane, is one of the very few old-fashioned galleried inns that is left, and it will soon be cleared away. At the end of Warwick-lane is Amen-corner, where the houses of the Canons Residentiary of St. Paul's are situated. One of these was occupied by Barham, the author of the "Ingoldsby Legends," and the nearness of his house to Newgate will account for the frequent introduction of references to executions in his verses. The great and good Archbishop Leighton wished to die at an inn like a pilgrim going home, and he had his desire, for in 1684 his life went from him while he was stopping at the Bell, on the east side of Warwick-lane.

The streets and houses in this quarter of London are full of interest, but day by day the old buildings pass away, and the new ones, being devoted to business alone, will not have the same hold upon our sympathies that the former possessed.

* A Court of Judicature was erected and revived by several Acts of Parliament for the determination of differences touching the houses which were burned or demolished by reason of the Fire of London. It sat from 1666 to 1675.

SIR JOHN RENNIE'S AUTOBIOGRAPHY.*

During the spring of 1814, Mr. John Rennie, junior, was sent by his father, under the direction of Mr. Francis Giles, to make a survey of the channel between Scotland and Ireland; which led to the ultimate selection, by the Trinity Board, of Port Patrick on the Scotch, and Donaghadee on the Irish side, for both of which harbours Mr. Rennie was directed to prepare designs. Great interest attaches to this survey, from the adoption by Mr. Giles and Mr. Rennie of that scientific mode of triangulation which is now almost entirely resigned to the officers of the Royal Engineers. A base line of six miles in length was carefully measured on a sandy flat at the head of the Bay of Luce, as the foundation of the general survey, to which all the detailed hydrographic charts were referred. A detailed description of these and the other harbour works of the Rennies is given in a work entitled "The Theory and Formation of British and Foreign Harbours," which was published in parts by Weale between 1845 and 1854. It forms in all two volumes, folio, and was dedicated by Sir John, by permission, to her Majesty. Sir John received tokens of honour from the sovereigns both of Russia and of Austria in reference to this publication.

On the death of Mr. Rennie, which occurred in October, 1821, his business was divided between his two elder sons, who remained in partnership as to the works in Holland-street. The principal part of the mechanical business fell to the late Mr. George Rennie, M.I.C.E., while the completion of the engineering works devolved chiefly on Sir John. Thus the latter succeeded his father as engineer to the Admiralty at the early age of twenty-seven. His next appointment was that of engineer to the East Brink Commissioners; that of engineer to Ramsgate harbour followed; then the charge of Sunderland, Donaghadee, Port Patrick, and Kingston harbours, the West India Docks, the new dock-yard at Sheerness, a dry dock at Chatham, the Plymouth breakwater, the Devonport Victualling Office, and the great metropolitan bridge, of which we have already given some account. A monograph of Plymouth breakwater, a third folio volume, has been published by Mr. Weale.

The works, however, of Sir John Rennie to which, in the actual state of professional knowledge, it seems to us most important to direct attention, are those which relate to the drainage of the fens, the provision of river outfalls, and the protection of low-lying lands and of coasts exposed to strong tidal currents from abrasion by the sea. In works of this kind a century ago, we had to look to the Dutch for examples. There is very little doubt that Sir John Rennie taught the Dutch engineers to look up to him.

That we are not unreasonable in attaching great importance to a more thorough study of hydraulic engineering will appear from the following facts. The last few years have made us acquainted with the existence of hydraulic phenomena entirely unsuspected, the discovery of which vitiates the *formulæ* hitherto relied on for ascertaining river discharge. In the great South American rivers of the Parana and La Plata it has been found, by actual observation, that a strong undercurrent co-exists with a placid and motionless surface. In the Bosphorus and the Dardanelles the co-existence of inward and outward currents, interpenetrating one another, has been detected by the officers of the Admiralty. The same is the case in the Straits of Gibraltar. The advice given, on hydraulic matters, by the Admiralty engineers, on occasions mentioned by Sir John Rennie, turned out to be remarkably ill-judged. In India, where drainage, reclamation, and irrigation assume an importance far greater than in any other portion

* See p. 965, *ante*.

the British Empire, disasters arising from defective engineering have not been so rare as could be wished.

When we reflect on the vital importance to our Indian Empire of the services of the hydraulic engineer, and when we observe, in accounts by no means likely to make the worst of matters, how great a want of professional ability has been displayed, we feel that it is difficult to insist too strongly on the importance of study of the works of so successful a man as Rennie. The river basins of India cover an area of more than two millions of English square miles; that of the Ganges alone containing 391,000 square miles. Throughout this immense territory there are only two regions which are not dependent, either in whole or in part, on irrigation. In the rainless and arid districts, vegetation depends entirely on the water supply brought by canals from higher levels. In all parts of the Indian empire constant supervision is needed. The rivers burst their own banks, choke up their own mouths, dig new channels for themselves, and spread desolation, instead of fertility, over the country, when neglected by man. By the aid of hydraulic engineering, arid or pestilential districts are converted into luxuriant gardens. Not only so, but the recurrence of those terrible droughts, from which no tropical country seems to be altogether exempt, sweep off the population by hundreds of thousands. If the droughts cannot be prevented, at all events their evil influences can be reduced to manageable dimensions by the foresight of the engineer. Sir J. Rennie only claims to have applied, in those cases in which he was consulted, the system of his father. That system is that of common sense. It aims at aiding the processes of nature by working in accordance with natural law. The same principle that was adopted by the elder Mr. Rennie in his report on the improvement of the Nene, was applied by his son in the cases of the Eau Brink Cut and of the improvement of the Witham and the Ancholme. Not only so, but in his tour through Italy in 1819-1821, Sir John Rennie pointed out how thoroughly the same principles controlled the two great hydraulic phenomena of Italy, the lagoons of Venice and the Pontine Marshes. It is very remarkable that in the very week in which Sir John Rennie's autobiography was published, accounts should have reached us, founded on reports from Signor Romano, of the rapid change that is menacing the very existence of Venice. It is due to the fame of the English engineer to cite what Sir John wrote on the subject, and to compare it with subsequent events:—

"There was a long-continued discussion amongst the numerous distinguished mathematicians, engineers, and others who have written upon this subject, as to the best way of preventing the filling up of the harbour. Some contended that the only method of effecting this was to admit all the rivers into the lagoons freely; for although they might deposit a certain amount of alluvial matter, nevertheless the great quantity of water discharged would alone be sufficient to carry away this deposit. But they forgot that when the rivers met the sea the current would necessarily be checked, and rendered powerless to carry forward any matter which might be held in suspension, and that, consequently, the detritus would be deposited, and form banks and shoals which the waters could not remove; thus in time the lagoons would be filled up, grass marshes would be formed, the city of Venice would be united to the mainland, and the harbour would be destroyed. On the other hand, it was argued, for the reasons above mentioned, that the only way to preserve the lagoons and the port of Venice was to exclude the rivers when densely charged with alluvial matter, and only to admit their waters at certain times, when they were comparatively clear: thus all the advantage would be obtained from the scour of these rivers, without the disadvantage arising from their deposits. Ultimately the arguments of the latter prevailed, the rivers were excluded from the lagoons by making a capacious canal all around them, with sluices at their mouths, by means of which the waters were discharged into the lagoons when they were tolerably clear of alluvial matter; the surplus waters were discharged into the adjacent sea clear of the lagoons, and any alluvial matter which was brought in from the sea was removed by dredging from the main channels of the lagoons, so that they were in a fit state to admit the tidal waters, and thus to keep the lagoons open.

But there was another important agent to be provided against, namely, the alluvial matter brought in by the winds, waves, and currents from the scouring of the adjacent shores of the Adriatic: this is done to a certain extent by dredging. Originally these banks contributed materially to the formation of the outer banks, which protect the lagoon on the sea side. If these banks were broken through, or completely swept away, which the storms of the Adriatic frequently threatened to do, the lagoon, and with it the port, would be seriously injured or totally destroyed. This was remedied by defending this outer barrier bank of the lagoon by facing it with stone, and, where the sea was most violent, by constructing a solid breakwater of stone, and protecting it further by stone filters carried out a sufficient distance into the sea, in order to divert the current, and to enable the alluvial matter to be deposited between them, so as to form an additional protection to the main breakwater. This was accordingly done, and thus an extraordinary work, at great expense, has been constructed between Lido and Malamocco, the principal entrances from the sea to the lagoon, for a length of four miles, where the effects of the sea are greatest."

The preceding extract gives the opinion formed by Rennie in 1819. Twenty-one years later the floods of the Brenta caused so much damage to its banks, that the Austrian engineers rearranged the system of the discharge of this river, and did the very thing condemned by the theory of the Rennies, namely, turned the current of the river into the lagoon. The consequence has been that, in the thirty-four years which have followed this alteration, the bottom of the lagoon, which has an area of upwards of 120,000 acres, has been raised by ·75 mètre, or more than three-quarters of a yard, in depth; while the delta of the Brenta has actually advanced 7 kilomètres, or to within 3 kilomètres of Chioggia, menacing the city of Venice with speedy destruction, at least as far as relates to its peculiar character of a water city.

The chief drainage and reclamation works executed by Sir John Rennie were in the great eastern fen districts of England. In 1822 he completed the Eau Brink cut, near King's Lynn, by which a lowering of 7 ft. was gained for the waters of the Ouse. In 1831, in conjunction with Mr. Telford, he completed the outfall of the Nene, below Wisbeach, which had the effect of lowering the water-level by 10 ft. 6 in., and which would have been still more efficacious had the improvements designed by Sir John in the neighbourhood of Peterborough been carried out. In 1827-28 he restored the harbour of Boston, by forming a new channel for the course of the Witham below that town. The navigation was so improved by this work, at an expense not exceeding 33,000*l.*, that instead of the town being inaccessible, even for fishing-boats, on the neap tides in the summer and dry season, vessels drawing from 15 ft. to 16 ft. could ascend at spring tides, and those drawing from 12 ft. to 13 ft. at neaps. Sir John Rennie further executed various improvements on the Welland. The effect of these works, combined, was to facilitate the drainage of 800,000 acres, and to reclaim 6,000 acres which were before absolutely useless.

A still more complete scheme for the improvement of all the rivers falling into the Wash, was proposed by Sir John Rennie, after a careful personal survey of the entire district. By this plan the navigation of the Nene, Ouse, Welland, and Witham would have been facilitated; the water permanently lowered; and from 150,000 to 200,000 acres of land would have been reclaimed from the sea. The boldness of the plan was in advance of the enterprise of the day. Only certain portions of the scheme have as yet been carried out; but the result has been such as amply to justify the prevision of Sir John Rennie.

It is the more important to insist on the success that has attended the execution of works based on sound hydraulic science, and the failure of those which have been otherwise conducted, from the fact that the entire sanitary engineering of the country is intimately connected with this branch of professional study. The great principle grasped by Mr. Rennie was this. If flood and torrent water be thrown into a still or a slow water system, the outfall is strangled, and the entire system is disarranged. A catch-water for hill torrents, in one form or another, is the great preservation of all low-level drainage. The same principle applies to the question of the admixture of storm waters with sewage. As matter of cost, this admixture is highly wasteful. In the recent storms, from 4 in. to 5 in. of rainfall has been registered, in certain localities, within twenty-four hours. This is a three-months' ordinary rainfall for the driest parts of the country, and about a seventh part of the annual rainfall in other districts. By turning this into the sewers, the necessity for so increasing the capacity of the entire system of drainage, pumping, and outlet, as to meet the sudden strain of a double, triple, or manifold increase of duty, is gratuitously created. Had Sir John Rennie been engineer to the Metropolitan Board of Works, those ugly questions as to the metropolitan sewerage which loom in the future would have been anticipated and solved.

The well-earned fame of Sir John Rennie was by no means confined to his native country. In 1852 he laid out a system of railways for Sweden. In 1855 he designed a series of railways and five harbours for Portugal, including a harbour of refuge at Oporto. His services to that country were not limited to his scientific advice. He gave valuable counsel to the Government of his Most Faithful Majesty as to the proper steps to be taken to remove that ban of the English Stock Exchange, in face of which it was useless to attempt any sound and extensive enterprise in Portugal. He designed a breakwater at Ponte Delgada, at the island of St. Michael, one of the Azores. He reported to the municipality of Vienna as to the water-supply of that capital. Almost his last public service was to act as chairman to the Civil Engineering section of the International Exhibition of 1862.

On the introduction of the railway system into this country, Sir John Rennie designed a line of communication between London, Liverpool, and Manchester, the adoption of which would have saved very much subsequent expense in the construction of duplicate lines. The same thing may be said with regard to his designs for the South-Eastern district. Every railway scheme in those days, however, was fiercely contested in both Houses of Parliament, and was ultimately decided on grounds of which the scientific excellence of the project formed the least prominent portion. Sir John had reason to think that he was hardly used on more occasions than one. But the perfect good temper with which he speaks of his opponents, and the high tribute which he bears to the talent of the Stephensons, both father and son, is one of the most noble characteristics of a singularly manly and upright character.

The sketches of life and manners, and the personal portraits which are scattered through the autobiography, possess extraordinary interest for the general reader. Names once well known, if now somewhat forgotten, come out as living entities in his pages. The glee of Sir Thomas Maitland in foreseeing the arbitrary measures into which one of the most radical of his lieutenants was likely to glide, and in witnessing the fulfilment of his anticipations, is extremely characteristic. So is the old-fashioned obstinacy of old Telford, when, at upwards of seventy years of age, he had been, in company with his junior fellow engineer, Rennie, thoroughly drenched in an Eastern Counties survey. Sir John went at once to bed, while his clothes were dried. Telford called for the newspaper, had a great fire made up, and sat himself down to dry. When the younger man, after a refreshing nap of two hours, came down dry and comfortable, he found the elder *nearly dry*, and the room so full of steam as to render Telford all but invisible. He reproached his companion for his effeminacy in going to bed, but very nearly paid the cost of his hardihood with his life.

We hope that we have said enough to show to our readers the merit, both professional and literary, of this charming volume. Its pages will well repay more than a cursory perusal. We hope that its reception by the public will be such as to ensure the prompt publication of the remainder of the literary remains of Sir John Rennie. These include the Life of his Father, to which reference is made in the autobiography. We believe that this contains a history of all the works of Mr. Rennie, with abstracts of his most important reports. There are also several volumes of Essays on Engineering subjects, chiefly those of a hydraulic nature, and a History of Engineering, which, even if not complete, cannot fail to prove a valuable addition to our professional libraries. We can ill afford to lose any work of the matured experience of Sir John Rennie.

ON THE DECORATION OF BASILICAS AND BYZANTINE CHURCHES.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.*

As there is no single example of a Basilica remaining in which all the decorative features exist, it is difficult, said Mr. Pullan, to realise what the primitive church was in its pristine splendour. The two churches which best help us to imagine what old St. Peter's at Rome and old St. Paul's in London originally were like, are St. Paul's without the walls at Rome, and St. Apollinaire il Nuovo at Ravenna. It is true that in the restored San Paolo the decoration has been only in part revived, but what has been done, has been executed in good taste in mosaic and coloured marble, and therefore we are able to form a better idea of what the effect of a decorated basilica was from this than from any other building in Rome. In the other basilicas late frescoes have for the most part usurped the places of mosaic, and small cinque-cento mouldings have concealed the severe simplicity of the early architecture. A short description of San Paolo, as it

* See p. 1047.

stood before the fire, may therefore be interesting to those who have not yet visited Rome. The church was entered through a *quadriporticus* or *atrium*,—like those which we see at St. Ambrogio at Milan, San Clemente, and the Cathedral of Salerno,—the walls of which were adorned with mosaic or fresco, as we may now conclude from the analogy of St. Ambrogio. The whole of what would be in England the western façade (in Rome the churches are not orientated) was covered with mosaics of saints on a gold ground, such as those we still see at Sta. Maria in Trastevere, Sta. Maria Maggiore, San Frediano at Lucca, and in the restored fronts of San Lorenzo and Sta. Pudentiana; in the two latter cases the restorers have unfortunately been content with painted imitations of the original mosaics. It would tend to illuminate the gloom of London if the exteriors of our churches and other public buildings were decorated with colour. Frescoes might be blackened by the smoke, but the mosaics or painted tiles would only require occasional washing, and they might be protected from the frost by a vitreous coating, or even covered with plate glass. Our climate is not so severe as that of central Germany, yet there we find, at Munich and elsewhere, external polychromatic decoration extensively practised. Some years ago the exterior of the portico of St. Vincent de Paul, Paris, was partly adorned with paintings on lava; these were removed shortly after their execution, not on account of the unsatisfactory effect of the colouring, but because the character of the drawing was such that it offended the susceptibilities of the Parisians. Let us hope that the time may come when not only public buildings, but private houses, shops, and warehouses, may be beautified by polychromatic ornament, and pictures referring to the history, destination, or the occupation of the inhabitants of each edifice. Think how much more interesting and cheerful Queen Victoria-street and Cheapside would be if adorned with acres of pictures, in the place of tons of tasteless stone and compo ornaments, in the nondescript styles which characterise most of the city warehouses. A walk through London, instead of being a melancholy peregrination between blocks of blackened brickwork, would become an enlivening and instructive promenade. Our houses would resemble a parterre of many-coloured flowers; and should they be dimmed by the smoke, the occasional use of a mop would restore their original brilliancy. To return to St. Paolo, the nave was entered through bronze gates cast at Constantinople. Similar gates exist at San Zeno, at Verona, Ravello, the baptistery at Florence, the cathedral of Pisa, and elsewhere. On entering, the spectator had before him a splendid vista, 400 ft. in length by 80 ft. in breadth, interrupted only by the baldachino, and terminating in an apse covered with rich mosaics. There were, and are still, double aisles separated from the nave, and from one another by columns and arches, making the full width of nave and aisles, 250 ft. The columns were of the richest marbles from Phrygia and Africa. Those of the restored church are monoliths from the quarries of Baveno, on the Lago Maggiore, so that one precious element in the internal colouring is lost. Above the arcades ran a series of portraits of the Popes in medallions; these are restored in mosaic by the workmen in the manufactory in the Vatican. Above them were two series of pictures from Scripture history, divided by pilasters, not yet reproduced. These pictures are represented in the works of Ciampini and Gally Knight. The triumphal arch, which separates the nave from the transept, is ornamented by a mosaic of Our Lord, surrounded by the twenty-four elders of the Apocalypse, presented to the church by Galla Placidia, the daughter of Honorius, at the time of the completion of the basilica by her father, A.D. 395; this mosaic and those of the apse, partly injured by the fire, have been accurately repaired. The vast transept was 290 ft. long by 90 ft. in width. The pavement of *opus Alexandrinum* has been replaced by one of polished marble. Such was the basilica erected over the tomb of St. Paul, and such were the old St. Peter's and the old St. Paul's, more noble in effect, more gorgeous in decoration, and altogether more church-like than the new St. Peter's and the new St. Paul's on Ludgate-hill.

After describing the decorations of St. Apollinare il Nuovo, the ancient cathedral of Ravenna, built by Theodoric, and of Sta. Maria Maggiore, at Rome, Mr. Pullan went on to say that the Byzantine church, with the curved surfaces of its domes, pendentives, apses, and soffits, was more favourable for the exhibition of mosaics with gold grounds than was the basilica with its flat wall spaces. Side by side with the church on the basilican plan, which was employed by Constantine at Constantinople and Bethlehem, and which was retained to the time of Justinian, sprang up numerous circular and polygonal edifices, in imitation of the Holy Sepulchre at Jerusalem, till finally the cross with equal arms inscribed in a square (as in the churches of Sta. Sophia and St. Mark), became the typical Byzantine plan. In these later buildings the cross lights and curved surfaces affording innumerable reflections were particularly favourable for exhibiting the gold grounds. Hence mosaic was generally adopted by the Byzantines, and the best examples of it in Italy were due to the Greek artists. Even in the time of Constantine, while the vaults of the church erected in memory of his daughter Sta. Constanza were covered with a poor mosaic, consisting of a pattern of trellis work, grapes and small figures, in black and dark green on a white ground, the dome of the church of St. George at Salonica was adorned with a series of mosaics—the finest of the Byzantine period, as regards design, execution, and arrangement of colours. This latter church is circular in plan, with a projecting apse and radiating chapels in the thickness of the wall. The dome is 70 ft. in diameter, and the whole surface of it is covered with pictures. These are in eight divisions, each filled with a grand architectonic composition, in which columns, arches, entablatures, and apses are the chief features. In the centre of the picture there is generally a baldachino, on either side of which stands a saint or priest in dark robes, with his hands extended in the primitive attitude of prayer. The influence of classical traditions can be traced in these architectural backgrounds, which, to a certain extent, resemble those on the walls of the houses of Pompeii. Blue and red, of light and dark hues, are the colours chiefly employed in the cornices and entablatures. The backgrounds are all of gold. The edifices represented are of two stories, lavishly adorned with pediments, (angular and curved), loggias, porches, and apses, hung with lamps and draperies, surmounted by birds of varied forms and colours, and supported by spiral, fluted, and jewelled columns, forming altogether a most interesting study for the architect and archæologist. The mosaics on the vaults of the chapels are not less worthy of attention. They consist of geometrical patterns, interlacing circles, squares, and lozenges, inclosing fruits, flowers, and birds. The outlines are generally of a dark reddish brown; blue is the predominating colour; green and white are more sparingly used. In the mosaics of St. George we see the advantage of employing architectonic backgrounds; they relieve the blank space of gold ground without interfering with the effect of the figures. Similar backgrounds are to be seen in some of the Roman basilicas. There they generally symbolise the holy cities of Jerusalem and Bethlehem. We find them on the internal face of the chancel arch at St. Lorenzo (this before the restoration by Honorius, who reversed the position of the basilica, was the external face) and in other places. Giotto was particularly partial to them. Most of the compartments of the frescoes in the Arena have buildings or canopies behind the figures—valuable illustrations of the architecture of his time. We see them in the pictures by Taddeo Gaddi at Santa Croce; but the most pleasing example of the use of canopies is in the background of the frescoes in the chapter-house of Sta. Maria Novella, where they give extreme richness to the whole composition. In all these instances the architectural forms are indicated by bold lines with but little shading, and not much attempt at perspective. This manner of treating them is infinitely preferable to that in which chiaroscuro and foreshortening were introduced, and which culminated in the extravagant colonnades and balconies with which the ceilings of some of the seventeenth-century churches in Italy are decorated. In modern practice, these architectural backgrounds should always be designed by the architect, in accordance with the prevailing style of the building, and not left to the free fancy of the painter. Salonica, which may be called, from the number of its churches and mosaics, the Ravenna of the East, abounds with fine Byzantine remains. All the churches were at the time of the Mahometan conquest converted into mosques, and to that circumstance we may attribute their preservation. The mosaics have in many cases been whitewashed; the figures in the apse of St. George have been so treated, but that has been a preservative process. The Church of Sta. Sophia resembles, in many respects, its prototype at Constantinople. It was probably built in the time of Justinian, and by Anthemius. High up in a recess of the mountains which form the backbone of the Island of Scio, lies the small monastery of Aghia Neamone, consisting of a quadrangle of rude cells, in the centre of which stands a fine church of the tenth century, decorated throughout with mosaics. The plan of the church is rather intricate. It has an octagonal nave, with semi-circular recesses in the thickness of the walls; a central apse, two apsidal chapels, a narthex and exo-narthex. The walls are lined throughout, up to the springing of the domes and semi-domes, with slabs of purple and sienna marble, separated into panels by billet moulds. The semi-domes over the semi-circular recesses of the nave are filled with pictures on gold ground, containing two or three figures each; the subjects are from the life of our Lord, the Annunciation, the Nativity, the Presentation in the Temple, &c. The principal dome was unfortunately destroyed in the Greek Revolution, and has been restored in the modern Greek style. The decorations of Sta. Sophia have been so thoroughly described by Sir Digby Wyatt that nothing more remains to be said about them. There are probably many other mosaics in remote spots in the East awaiting discovery by some chance traveller. Ravenna, the metropolis of the Greek exarchs, is more Byzantine than Byzantium itself. It certainly possesses a finer series of ecclesiastical edifices than the capital of the Eastern Empire, and as regards internal decoration, more interesting than those of Rome. The earliest of these is the Tomb of Galla Placidia, A.D. 441. To the same century belongs a beautiful little chapel in the Archbishop's Palace. The ancient baptistery of the cathedral is octagonal, and is surmounted by a dome. Here there is no regular wall-lining of marble as in the two former buildings, but in its place there are two series of arcades. The lower of these is occupied alternately by semicircular recesses and inlays of marble. In the spandrels there are figures in oval compartments, surrounded by foliage. The upper arcade has three unequal divisions in each bay, the centre being occupied by the window. The spandrels of these are also filled with foliage of a rather coarse character. Above, there are architectural decorations with columns and entablatures, rather like those of St. George, at Salonica. In the centre of the dome is a representation of the Baptism, with figures of the Apostles around. San Vitale, built in the time of Justinian, retains its original polygonal plan, but none of its original decorations, except those of the chancel, on the walls of which are the celebrated mosaics of Justinian and Theodora attended by courtiers. St. Mark's at Venice possesses the only complete series of purely Byzantine mosaics existing in Italy. These from description and illustration have become familiar to all; but the mosaics of Palermo and Monreale have so much Byzantine character about them that they call for more than a passing notice, as they afford the most complete specimens of perfect decoration. The admixture of Saracenic form in the detail gives them a peculiar *cachet* which no other churches possess. In neither of them has restoration been carried out as far as in St. Mark's. The Capella Reale of Palermo so closely resembles the cathedral of Monreale in style that a short account of the latter will suffice.*

The Rochdale Workmen's Club.—Under the auspices of this club, which appears to possess a vigorous organisation, and to be doing much useful work, arrangements have been made by which prizes are offered for encouragement in the cultivation of skilled labour. For instance, the club offers a silver and a bronze medal to journeymen in any branch of the building trades, not necessarily members of the club, but members of a science and art class in the town, who can design the best and second-best plans for a pair of cottages suitable for working men. They further offer silver and bronze medals to apprentices in the building trades who can design plans—neatness of drawing being a necessary qualification—of a timber roof, of an iron roof, of a doorway, and of a window. These competitions are to take place next autumn.

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* To be continued.

DRY-ROT IN TIMBER.

The publication of Mr. Britton's book on Dry-Rot* has given a new fillip to the consideration of the causes of the decay of timber, and the means of its prevention.

In order to use the right kind of timber for each purpose and in each situation, we should understand the various causes of its decay,—dry rot being one form of it, and the chief one in buildings.

Dampness of the air in which the piece is situated is the chief cause of dry-rot, and stagnation of the air is the condition of its dampness. As to the temperature, it will always be more or less in different situations, and cannot in general be much altered; but it has an effect upon the rapidity of the process of decay. When the temperature is such as to allow the air to remain moist and warm, the process of decay goes on most rapidly. If the moisture is present, but the temperature low, the process goes on less rapidly; and again, if the temperature is so high as to drive off the moisture, the decay goes on less rapidly also; all these states having reference to stagnant air. But if we give motion to the air about a piece of wood liable to dry-rot,—that is, when it is either not thoroughly seasoned, or is in a damp situation,—we shall lessen the liability to decay, for the motion of the air has of itself an evaporative effect, and tends to dry the wood, and prevent the progress of decay. Hence the ends of beams in walls should not be "built in," but should be laid with a clear air-space all round. There is nothing new in this, of course; it has been known this long time; but it is often neglected without any necessity, from mere oversight or thoughtlessness.

Movement of the air is of great importance in preventing dry rot, and one of the objects in the design should be so to arrange openings amongst the timbers that the movement may take place by the action of natural forces; for, as Mr. Britton shows, a merely small admission of air, without means of producing a current, may act injuriously; for the presence of air is one of the necessary conditions of the process of decay. On this point, however, there seems to be some uncertainty, and probably the cases in which air is admitted in so small a quantity that it hastens decay, are those in which the air admitted has been the means of conveying spores of disease to the wood from some other part of the building. The author says,—"The admission of air has long been considered the only means of destroying the fungus; but as it has frequently proved ineffectual, it must not be always taken as a certain remedy. If dry air be properly admitted, in a quantity adequate to absorb the moisture, it will necessarily exhaust and destroy the fungus; but care should be taken lest the air should be conveyed into other parts of the building, for after disengaging itself from the fungus over which it has passed, it carries with it innumerable seeds of the disease, and destroys everything which offers a bar to its progress. Air, in passing through damps, will partake of their humidity; it, therefore, soon becomes inadequate to the task for which it is designed. Owing to this circumstance, air has been frequently admitted into the affected parts of a building without any ultimate success; too often, instead of injuring the fungus, it has considerably assisted its vegetation, and infected with the disease other parts of the building. The timber, which is in a state of decomposition by an intestinal decay, is little affected by the application of air, as this cannot penetrate the surrounding spongeous rottenness which generally forms the exterior of such timber, and protects the action which the humid particles have acquired in the exterior. As the extent and progress of the disease are therefore necessarily concealed, it is difficult to ascertain correctly the effect produced by the admission of dry air. Under these circumstances of necessity and danger, it will require considerable skill to effect the purpose without increasing the disease, and, as each case has its own peculiar characteristics, it is necessary, before we attempt to admit air as a remedy, to previously estimate the destructive consequences which may result from so doing, and ascertain whether it will be injurious or beneficial to the building. The joists of the houses built by our ancestors last almost for ever, because they are in contact with an air which is continually changing. Now, on the contrary, we foolishly enclose them between a ceiling of plaster (always very damp to begin with) and a floor; they frequently decay, and then cause the most serious disasters, of which it is impossible to be forewarned."

If we understand how the tree grows, we shall the more readily discover the causes of its decay when cut down and converted. The trees we have to do with grow from within, outwards, adding on a layer of wood each year. The sap rises from the ground through the stem to the leaves, where it is digested, and is returned as proper sap between the last layer of wood and the bark, and the residue passes into the ground as noxious matter, the virtues of the sap having been retained in the tree.

The wood is made up of cellular tissues, or hollow cells, and of intercellular spaces, and these latter contain air. After the sap has been deposited in the outer part of the stem it becomes perfected and deposited in the woody fibre towards the centre, "and when age has matured the tree, it is probable that the woody fibre so employed is no longer fitted for the circulation of the sap; and, also, that the perfected sap, when once deposited, does not again join in the general circulation." The heart-wood contains little fluid, and no vegetable life; the sap-wood abounds in fermentable elements. Dry-rot differs from wet-rot in this respect, that the former takes place only after the tree has been cut down, whereas the latter may begin when the tree is standing.

If dry rot shows itself in a damp closet or pantry, the inside of the china or delph lying there will be coated with a mould, or a fine powder like brick dust. This excessively-fine powder is no other than uncountable myriads of the reproductive spores or seeds of the fungus. If these excessively-minute bodies be allowed to fall on wet flannel, damp blotting-paper, or wet wood, they immediately germinate and proceed to reproduce the parent fungus. The red skin of the spores cracks at both ends, and fine mycelial filaments are sent out: this is the mould, spawn, or mycellium from which the new fungus (under favourable conditions of continued moisture) appears.

"It matters little," the author says, "whether wet is applied to timber before or after the erection of the building. Timber cannot resist the effect of what must arise in either case, viz.: heat and moisture, producing putrid fermentation; for instance, in basement stories with damp under them, dry timber is but little better than wet, for if it is dry it will soon be wet; decay will only be delayed so long as the timbers are absorbing sufficient moisture, therefore every situation that admits moisture is the destruction of the timber."

The decay of timber in contact with stone is obviated by placing a thin piece of iron between the wood and stone. It is said that a hard crust is formed on the timbers in contact with the iron, which seems effectually to preserve it.

Fungi, it is said, will arise in mortar, if made with road-drift and water from stagnant ponds, &c., and that they may be traced through the mortar-joints, and will appear on both sides of a wall. Posts set in the ground in the direction in which they stood when growing are not so durable as when the position is reversed, and this is accounted for in the valves of the sap-vessels of the growing timber opening upwards; but when that position is inverted the valves of the sap-vessels become reversed in their action, and prevent the ascent of moisture from the ground. The author enters at length into the question of the proper time for felling timber, about which there is a difference of opinion, but "all investigations tend to prove that the only proper time for felling timber is that at which the tree contains the least sap. There are two seasons in each year when the vessels are filled. One is in spring, when the fluid is in motion to supply nutriment to the leaves, and deposit material for new wood; the other is in the early part of autumn, when, after the stagnation which gives the new wood time to dry and harden, it again flows, to make the vegetable deposits in the vessels of the wood. At neither of these times should trees be felled; for, if the pores be full of vegetable juices, which, being acted upon by heat and moisture, may ferment, the wood will decay."

This being an outline of the causes of decay, we come to the means of preventing it, or *seasoning*, which may be effected either by the natural methods of hot or cold air, fresh or salt water, vapour, smoke, steam, boiling, charring, or scorching; or by one of the patent processes, as Kyan's, Bethell's, Burnett's, Payne's, &c. Until wood has been properly seasoned it should not be painted, or coated in any way, for the paint prevents all evaporation, depriving the wood at the same time of the influence of the air, and the result of this is that the centre of the wood is transformed into touchwood. Logs should be seasoned before they are cut into planks and deals, otherwise they warp; on drying, more water escapes in one part than in another, and the contraction is unequal throughout the piece, causing twist; whereas the log being square it has no more tendency to warp in one direction than in any other.

"When a tree is felled, it encloses in its fibres, as well as in capillary channels, a considerable quantity of sap, which is nothing else but water charged with gummy, saccharine, saline, mucilaginous, and albuminous matters. In this state, the latter are very liable to ferment, but they lose their liability when, by the evaporation of the sap, they pass to a dry and solid state; so that the first suggestion which naturally presents itself to the mind is to subject the timber to a lengthened seasoning." But time will not always admit of this, and therefore artificial and speedy methods are resorted to.

When there is time for drying it gradually it should be piled up for two years for carpentry, and double that time for joinery. The sticks should be separated by blocks of wood, and each piece laid directly over the one under it, so that air may freely pass through the whole pile, and it is well to turn it now and then, as the evaporation is greatest on the upper side. The loss of weight, the author says, should be about one-fifth for carpentry purposes and one-third for joinery. But, however dry a stick of timber may be, it will be less dry in the centre than at the surface, and therefore the scantlings into which it is cut require further seasoning.

The plans of different Baltic modes of cutting deals for English and French markets are shown, and some useful information given about the qualities and properties of "strong" deals, best deals, "bests," "seconds," and "thirds."

Many houses in the suburbs of London, says the author, are erected by speculating builders. "Speculating builder" is the proper term, not "speculative," which is often used for the proper word. There is a difference. A speculative builder is he who intends to sell or let on lease a portion of his land to be built upon. A speculating builder is he who takes one or more lots of land for the purpose of running up houses and getting them off his hands as quickly as possible, before the woodwork begins to shrink, the plaster or stucco to fall off in patches, the foundation to settle unequally after a wet season, and such-like ugly signs of bad work. "Timber that has been lying for months in ponds or docks is sometimes cut up, and in six or seven days fixed in a building; consequently the usual result takes place, viz., dry-rot. After having been swelled by soaking much beyond its former bulk, the baulk of timber is put on the sawpit, and cut into scantlings, and framed while in this wet state." Timber should never be kept floating in ponds, partly under water and partly out, but it should be stacked, as at Liverpool and Gloucester.

We quite think with the author that "When there is not time for gradual drying, the best method, perhaps, that can be adopted, especially for sappy timber, and if strength is not principally required, is immediately on felling to immerse it in running water," but "it should be altogether under water (chained down beneath its surface), as partial immersion is very destructive;" and, "supposing in submerged timber the surrounding water to be flowing, or at least changing, this water will conclude by occupying, if not altogether, at least in a great degree, the place of the sap, which will have issued forth, carrying with it the fermenting principle with which it is charged."

But may there not be another reason for submerging timber? It has already been said that the intercellular spaces of the wood contain air. When it is placed wholly under water the air escapes from the intercellular spaces, and water takes its place—drives it out by the force of gravity, and this the more rapidly the deeper the submergence.

When the timber is taken out into the air the water evaporates, and if the air be dry the intercellular spaces will become filled with dry air; the original saturated air is replaced by dry air, which abstracts the remaining moisture from the woody fibre, and preserves it. If the scantlings into which the logs may be cut remain unpainted,

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* A Treatise on the Dry-Rot in Timber. By Thomas Allen Britton. London and New York: E. & F. N. Spon. 1875.

this moisture will also evaporate, and leave the wood thoroughly dry, and, presumably, not liable to decay if it be then painted to preserve it from external influences.

We recommend Mr. Britton's book to our readers.

THE ORIENTATION OF ANCIENT TEMPLES.

Captain Warren, R.E., has sent us a reprint of a paper read by him before the Royal Historical Society with this title. The subject, as appears from former papers published in the *Quarterly Statement* of the Palestine Exploration Fund, first attracted his attention while he was planning and sketching the temples in the Lebanon and Cœle Syria. The pamphlet embodies a good deal of subsequent research with his latest conclusions. He finds that worship, in early days, was generally towards the east, in groves and high places. This usage existed long before the prevalence of even the older forms of sun-worship. The source of light, the part of the heavens where daily rises the sun, became naturally the first *kibleh* of worshipping man. There every morning appeared a new Shekinah,—"the glory of the God of Israel came from the way of the East." The custom obtained among the faithful long after it had degenerated with the heathen into the worship of the sun and stars. But when the Israelites return from Egypt they abandon the practice of Abraham, and no longer turn to the east. The tabernacle first, and the temple afterwards, are placed with the doors of the Holy Place full upon the rising sun, so that the faces of the worshippers are turned away from it. It was not till 800 years later, viz., about B.C. 600, that the first signs of the heathen following this custom in like manner are observed. By the time of the destruction of Jerusalem, the worship had generally changed towards the west; in the development of Christianity the early members of the Church turned again to the east, and the ancient *kibleh*, with a new meaning, was re-established.

It is a pity that the argument of the pamphlet was not stated in the form of a preface, or pointed out by marginal notes. In so wide a field as Captain Warren's pages cover, it is difficult to avoid a feeling of vagueness unless the reader understands the author's drift. From Adam to our own time is a long road to travel.

The prominence of the figure of Abraham, not only in the Bible, but also in the Arabic literature, in Josephus, and the traditions of the people, is very striking. To him are attributed the altars, groves, and high places, in which he worshipped, face turned eastwards, where, according to Mohammedan story, he finally, after passing in review the sun, the planets, and the stars, chose their Creator for his Lord. He is said to have been the founder of the Kaaba at Mecca; he is said to have first consecrated the sacred stone of Mount Moriah, round which the world was built, by his readiness to sacrifice his son. His high places became the scene of idolatrous sacrifices, and his orientation degenerated into nature and sun worship. On the return of the Israelites they were told to pull down the high places. It is remarked by Captain Warren that they were not told to pull down the temples of Syria, *because there were none*. It is *after* the dedication of the Temple of Solomon that we hear of temples to Baal. It is not certain that the house pulled down by Samson was a temple at all. The ark, however, was placed in the house of Dagon, and Micah made a house for his gods. The story of Bel and the Dragon (about B.C. 600) contains an account of a temple which it is common to find corresponding, Captain Warren says, with those of later date examined by him in the Lebanon and about Hermon, especially as regards the secret chamber for the priests. "The account," he says, "is the more interesting because the earliest temples whose ruins are now extant are of about this date, and though they are unfortunately much ruined and altered, yet it is apparent, from what still remains, that they had their entrances to the west." The Parthenon, for instance, and the Temple of Jupiter Olympius at Athens, were so built. Captain Warren concludes that the building of temples in Syria grew up after the return from Egypt, and that no instance can be found of any temple with its entrance to the east earlier than 600 B.C., that is, about 400 years after the construction of Solomon's Temple. Vitruvius says (B.C. 25) that the entrances of temples should be towards the west, although in his time most temples must have had their entrances changed to the east. Certainly, in the existing remains of Syria, Greece, Italy, and Sicily, most entrances are turned toward the east. The temples round Hermon which had been thought to turn towards the mountain as to a kibleh, prove to be built in a direction a few degrees north or south of east, according, probably to the position of the sun at dawa on the day of dedication.

The synagogues of Galilee are different; their entrances face south, or towards Jerusalem. If, however, the Jewish use superseded the more ancient custom of orientation, how is it that the Christian returned to it at an early period?

"Some say it was a protest against the general worship of Jew and Gentile in their temples to the west, but here it is forgotten that the Christian religion did not overturn that of the Jews, but simply amplified and fulfilled it. Others say that the sun-worship having disappeared, with a few isolated exceptions, there was no reason why the Christians should not return to that kibleh from which the Jews had departed by way of protest, having, in its stead, the revealed glory in their temples. There is much reason in this argument, for the Shekinah had now left the Jewish temple. Others, again, say that it was simply to Jerusalem that Western Christians turn; and again, others that it was to the Garden of Eden, the Paradise in the East. It appears to me that a custom may obtain without any one very distinct or strong influence, if an infinite number of minor influences are brought to bear in one direction. For example: all early Christians, being Orientals, would, as we are aware, require a kibleh, but, being Jews, Gentiles, and Samaritans, they would all have had various opinions on the subject; is it not, then, possible that the kibleh to the east may have been that most agreeable or least disagreeable to the feelings of each individual of the congregation, while each would have a different reason for the choice; thus the custom may have arisen fortuitously? While putting forward this supposition, I do not, however, myself think that our kibleh arose in this manner. I am inclined to think that it sprang from the sentiments on the subject which seemed to pervade the human race when not ousted out by some enforced rite, and that it was particularly induced by the prophetic allusions to the Saviour of the World in the Old Testament, wherein the references to the east are most remarkable.

We have allusion to the glory of God coming by way of the east, and also the Prince by the east gate of the temple. He is called the Sun of Righteousness, the Morning Star, the Day-Spring from on high. How is it possible to examine these passages without instinctively feeling that the east has to us a charm over other quarters of the heavens, to which, even in our daily talk, we are ever unconsciously alluding? From the time when Elijah went eastward across Jordan to be caught up, until Our Saviour departed eastward past Olivet, we have continual reference to that as the special quarter of the heavens, and it should not therefore be surprising that we find the sentiment deeply engrained in the minds of all people.

Without this clue it would be most baffling and unsatisfactory to attempt to comprehend how the Christian writers could have got hold of the very sentiments common to the Egyptian and Greek heathen. We are told that, at Christian baptism in early times, the catechumens were obliged to stand facing the west and renounce Satan with gestures and outstretched hand, as though he were present—the west being the place of darkness and strength of Satan—and then to turn about to the east and make a covenant to the Sun of Righteousness, and promise to be His servant."

It is not apparent, from the appearance of this paper, that it is published for general circulation. We hope that Captain Warren will issue it for general reading, with such alterations in its arrangement as may seem fit to him. We have, for instance, noticed that perhaps his most important point, that in which he gives his reasons against Mr. Fergusson's restoration of the tabernacle, has nothing, or little, to do with his argument. Would it not have been well to make a special paper on this subject? We give Captain Warren's objections in full.

"In modern atlases and school-books we are accustomed to find the tabernacle represented as a modern European tent, of the description called marquee, such as is seen at a flower-show in this country.

This idea was first brought forward and developed about twenty years ago by Mr. Fergusson, and it has rapidly been taken up by the public, though I do not think that this representation to the eye of an Arab or Jew brought up in the East would call up any idea but that of the travelling tent of a rich Frank tourist. The oblong box-like structure shown in the works of Calmet, Bähr, and Newman is in all probability the real representation of the tabernacle, for it exactly corresponds to the description given in the Bible. Mr. Fergusson, however, ridicules this shape, appealing to our English prejudices, by suggesting its likeness to a coffin with a pall thrown over it; but he does not explain how the likeness to the modern coffin should be any objection to its use among a people living three thousand years ago, who used neither coffin nor pall, and whose eyes were entirely accustomed to a building of the general shape of our modern coffins.

As a matter of fact, the oblong box (call it coffin shape if it is preferred) was and is the shape of all the buildings in Egypt and the East generally, as far as India, of which proof can be found in the Biblical accounts, in Fergusson's 'Principles of Architecture,' and in modern photographs; and I ask Mr. Fergusson to produce a specimen of any early building from those countries, dating before our era, with a high-pitched roof, similar to that which he ascribes to the tabernacle,—even the Pyramids were built in a series of steps.

The tabernacle was reproduced in stone in the construction of the temple; but Mr. Fergusson does not attribute a high-pitched roof to that edifice. It is evident, however, that if there had been such a roof to the tabernacle we should have some trace of it in the form of the temple or in the architecture of the country. Instead of this there is only reference to flat roofs.

It may be said that the tabernacle was only a tent, but I contend that it was not a tent in our sense of the word. It was a wooden box-like building, with a leathern roof,—a wooden portable temple.

Admitting for one instant that it was a tent, I ask why it is necessary to give it a high-pitched roof, when Arab tents of the same size at the present day are nothing like a marquee. I have passed the night in Bedouin tents during heavy rains, whose roofs, of one thickness of camel hair, had a slope of not more than one in six, and they were comparatively dry inside; and I do not see any reason for supposing that the roof of the tabernacle was more than 1 ft. higher at the centre than at the sides.

Mr. Fergusson suggests that, with the box-like structure, the roof would sag in; but, in his construction, he is obliged to introduce a great many ridge-poles and uprights not mentioned in the Bible, with the use of half of which the box tabernacle would have its roof so held up as not to sag.

The high-pitched roof introduces a grave difficulty; the upper part is open from east to west, and the wind would have raised the roof and blown the tent down with facility. Again, the Holy of Holies is left without any roof except the angular one of the tent; it thus ceases to be a *cube*, and it is open to the light and air to the west, so that any person on an elevation to the west could see into it. Such a construction is entirely contrary to the Biblical account, where the entire seclusion of the sanctum is enlarged upon, and the interior spoken of as 'thick darkness.'"

SUBURBAN BUILDINGS.

HACKNEY.

Hackney has been alluded to before now in these pages in some of its social and sanitary aspects, and with, we hope, some good effect; but the abuses are manifold which still need to be combated, and the necessary reforms are not a few.

On the surface, from a health-giving point of view, the Eastern or North-Eastern district can, perhaps, justly boast of more "open spaces" than any other district in the metropolis; and lucky indeed for Hackney is the circumstance, as will be seen hereafter. These open spaces comprise Victoria Park, Hackney Common alongside, the Downs, acting as a useful lung for Kingsland, Dalston, and Clapton; "London Fields," a smaller open space, but still existing, with a salutary effect for portions of Hackney and Shoreditch; and, further off, the Hackney Marshes, through which runs the River Lea. The latter open space, notwithstanding its low position, is of an incalculable benefit to the parish, from either a recreative, sanitary, or other aspect. The Marshes, once distant, have their borders now encroached upon by bricks and mortar. The Marshes proper still exist almost intact, but acres of the original Marsh land, forming the boundary or approaches on one side, have been filched by degrees and built upon. Through a portion of this border-land, a parish sewer, extending from Hackney Wick to Lea Bridge, the want of which we pointed out some years ago, was lately constructed. The sewer absorbs a former open sewer, or foul stream, which had been for several years a great nuisance. Its covering in and connexion now with the main outfall affords relief, and gives an opportunity for house-drainage where none previously existed, except in make-believe. The great defect of the new sewer, which has cost several thousands, is, that its fall is insufficient, and in times of flood the houses in the low-lying district in the vicinity are in danger of being inundated. The workmanship of this sewer is on a par with other parish contracts: it alternates bad and good in forma-

tion and materials. We more particularly allude to the last and largest executed portion, which runs through a very soft bottom, and which needed a uniform adherence to the same materials and finish, and not a change in the nature of the bricks, and the absence of a backing of concrete on the outside in places. If the specifications were followed, the contractor has nothing to answer for; our object in taking note of the matter, among others that will follow, is purely a sanitary one.

It is an easy transition in subject from public sewers to house-drains, and in the matter of the latter and that of "shoots" this large parish is veritably sepulchred. Suburban and semi-suburban parishes in the London metropolis have fared ill during the last quarter of a century; but Hackney, from the fact of having possessed a rich sandy and gravelly soil, has been "sat upon" for years by a tribe of building locusts. We say from positive knowledge and careful personal examination of hundreds of houses and places throughout the district, that the house drainage of two-thirds of them is improperly executed. It would be an oft-repeated tale to say that the houses were "built to sell," but we could prove to a letter that their building and sale were in many cases little better than a swindle. Nearly the whole of the recently-erected streets of houses in the district of Homerton were "run up," as the phrase goes, by speculative builders, with the aid of money advances, money borrowed, or by the aid of a little profit in hand from previous building speculations, supplemented by credit on the part of those supplying materials, who were content to await payment from the speculator according as he sold his genteel dwellings. The materials of these dwellings are of the cheapest and worst possible kind. The bearing timbers, such as the roof rafters, joists, partitions, all that constitutes the hidden timber of the structure, are green, sappy, and so thin and weak in scantling as to be unfitted for the purpose. The bricks are of the most inferior quality, and, save only those which constitute the front or exposed parts, are utterly bad and worthless. The interior walls are mostly of the bricks of old houses bought at sales in the City, where fever "rookeries" have been tumbled to make way for some of our doubtful City improvements. Throughout portions of Hackney, South and West, similar materials are duly worked up as those we have described in relation to the poorer districts of Homerton and Hackney Wick. Streets of houses have been erected in several places on veritable "shoots" freshly formed, and in the same neighbourhood scores of other dwellings had the ground between their walls dug out to depths ranging from 8 ft. to 10 ft. or more, the solid sand and gravel removed, and the parish ashes and road-sweepings, with other vile rubbish, animal and vegetable, shot down. At one particular spot here, a row of houses was commenced on a fresh steaming "shoot," while the remainder of the shoot land intended to be built upon was in process of filling-up. So fast, indeed, were the houses run up here, that the dustmen and scavengers were scarcely able to keep in advance of the speculative builder in filling up the foundations. On this soft and yielding bottom dozens of houses were erected, and the process of putting in the footings might be compared to that of a hen scratching a slight hollow or nest in the road to lay in. The houses of course exist now in their supposed finished condition, with a mutual dependence on one another,—"together they stand and together they'll fall." What a harvest of illness and mortality will not these dwellings produce, with floors over and upon from 6 ft. to 8 ft. or more of scavenge, old rotten timber, in some instances, as joisting, and, where new, scarcely 3 in. deep, supported in the centre here and there by loose bricks, instead of dwarf walls, or, perhaps, as occasion offered, a sole-piece of old timber laid down, that could not be utilised for other purposes. The drainage, like the brickwork, and other work of these houses, was scamped, and the small number of drain-pipes we saw used were laid in in the most indifferent manner. Little attention was paid to their joints, connexions, or whether they drained backward or forward, had their outfall into a regular sewer, or pleased themselves by allowing their matter to be absorbed by mother earth.

In South Hackney, on the borders of Victoria Park, we visited recently a few rows of ambitious three-story genteel houses, intended for a more well-to-do class of tenants than those previously described. We paid frequent visits here from the time the first houses were commenced, and what we describe we witnessed. The ground of the houses here, facing both divisions of the Park, was dug out from 6 ft. to 8 ft., and in some places to 12 ft., and the natural soil, sand and gravel, removed. A large quantity of this sand and the heavier shingle was sold and carted away to other parts of the parish and City, and the excavation between the walls of the houses was filled up with loose ashes and rubbish. The space forming the roadway without was also excavated to a great depth, and the most filthy and composite matter was shot down in this space, and was continued, with slight exceptions, "all along the line" in front of these "most respectable and genteel houses." We witnessed here something novel in the matter thrown into the shoots. Besides the dregs of every refuse that can be well thought of, we saw here human as well as animal bones shot down, supposed to be carted from some of the dug-out yards of the condemned City churches. To place all matter beyond dispute as to the identity of human bones, let us state that we looked upon a human skull resting with other bones among the *débris*. This object soon attracted the attention of a few passers-by, and some of the workmen took speedy means for covering it from further public view.

If building scandals are to be put a stop to, the best way to pave the way for the action of the law, is to state plain and undeniable facts. This we are doing, and we do not challenge contradiction, but we challenge substantial disproof. In a recently-erected street of houses, not far from High-street, Homerton, we witnessed the whole length of the row of houses excavated from depths varying from 12 ft. to 16 ft., and the elongated quarry from which the sand and shingle were dug to be sold, filled up with all sorts of reeking and abominable rubbish. The local authorities knew of it, but never seemed to move in the matter. The foundation, construction, and materials of these houses were similar to those in the case first described, and the speculation was almost identical. Off the main thoroughfare of Hackney proper, within the throw of a stone of the Town-hall, a similar street of dwellings was erected. The sand was dug out, and the ashes and parish rubbish were thrown in for the foundations of the houses and pretty back gardens. At Graham-road the sand was dug out, and is still being dug out, and the pits were filled up in contemplation of future building operations. At Defoe-road, Stoke Newington, and other places between Kingsland, Dalston, and Hackney proper, eligible sites are being prepared for, and similar buildings are in course of erection. This system of building has been rife for several years past, and we might point out more instances as bad as those named, within sight of the head quarters of the parochial rulers, some of whom had a direct or indirect interest, in one form or another, in the prosecution of these building projects. During the present year has been erected, and a few weeks ago opened, a new School Board School, built on a monster shoot of some acres in extent, alongside of which runs a foul open sewer. This "shoot" is the property of the District Board of Works, and is utilised by them. Every Sunday morning this "shoot," at a spot immediately under the walls of the schools, has been and is still used for the purpose of an "Aunt Sally" exhibition; and here the Sabbath is desecrated by hundreds of roughs and rowdies, shying with clubs at cocoa-nuts perched upon sticks. The noise and language of the rabble may be imagined. The erection of a new School Board School on this "eligible site" has been a signal to recommence operations, and accordingly the usual class of flimsy structures are being run up alongside the school, to be continued, most likely, till the entire available space on this monster shoot is absorbed. We were asked a few days since to examine the condition of some houses in the South Hackney district, not far from the church. The houses, externally and internally, in design and finish are, to use a common phrase, "one sack, one sample," in fact, several roads and streets of houses are of the speculative class, and are not owned by the original builders or owners. Of those we examined we found the drainage generally bad, and smells offensively apparent. In fact, bad house-drainage is a characteristic of the district. Under the ground-floors we could run down the handle of a sweeping-brush with facility to any length to its complete disappearance. The sand here, of course, had been dug out, and the bottoms answered for the purpose of a shoot. The joists of the ground-floors (there were no under-kitchens) were scarcely 3 in. deep, and less than half that in thickness. There were no dwarf walls in the centre, with sleepers for the joists to bear upon, but loosely-piled blocks of bricks were raised at intervals in the centre, on which, in some instances rested transversely a piece of scantling, to give support to the flooring. The hearth-stones were 1 in. thick, of some soft freestone, and they rested on a bed of rubbishy mortar, having no cohesion, the said bed of mortar, of course, resting on the aforesaid deep body of made-up rubbish. In several instances we found offensive smells, and in other instances dampness and dry-rot, the fungi actually making its appearance in the fireless parlours, between the hearth-stones and the ends of the abutting flooring-boards. We found carpets damp and rotting away on the said parlour-floors, and the landlord of some of these houses is, if we are informed aright, a member of one of the local boards which grace the Parliamentary borough of Hackney. The doors and window-sashes of these genteel houses are of the poorest description, and nearly all the door-frames have sunk on one side, exhibiting the usual gaping results between the doors and their rebates on sides and top. These houses, where they are not owned by the tenants, are let on repairing leases by their landlords, and where owned by the tenants there are smart ground-rents to pay, in addition to keeping them in in repair,—a never-ending task.

We examined some more houses in a road approaching the last-named church,—a road accounted the most respectable and aristocratic one in the district. The houses here have been longer built, are externally more pretentious, and letting at higher rents. The basement rooms here in front are the breakfast parlours, and on raising the flooring-boards we found similar filling stuff underneath, as described elsewhere. The drains run under the houses from rear to front, the sewer gas is always escaping, and the rats have regular galleries in the loose rubbish under the floors. In fact, the bottoms are regularly honey-combed, and colonies of rats, young and old, hold day and night grand carnival beneath the floors of these locally aristocratic residences.

A few remarks about the parish itself and its rulers may not be amiss as a wind up to our brief survey. In the matter of parochial or local government Hackney occupies a most anomalous position. The spirit and letter of the Municipal Corporation Reform Act seem to have left Hackney unbreathed upon. Exclusive of a Poor-law Guardian Board, Hackney is mal-administered by a tripartite system of ruling bodies. These comprise a Vestry, a Trustee Board, and a District Board of Works, the members in many instances being common to each. The District Board of Works, which is the administrative body, is elected by the Vestry, the only real business it transacts; but even the Board is not constitutionally representative, as some defects in the elective system show. The Vestry is the only body of the three elected by the ratepayers, and yet, strange to say, it has not the power of paying its own bills under the tripartite system in vogue. What are we to think of a vestry or local board elected by the ratepayers having to pass over its accounts or bills to another body? Again, while the valuation of the district is in the hands of the District Board, the Assessment Committee is chosen from the guardians, a body which every one believes is elected solely for poor-law purposes. This arrangement, of course, causes the greatest confusion, shifts responsibility, and gives rise to numerous abuses. The Trustee Board is an absolute sham in its constitution, "a mockery, a delusion, and a snare," and the marvel is that the Local Government Board has not taken some steps long since, acting under instructions from the Home Office, and snuffed out at once and for ever such a self-constituted body as is the Trustee Board. It is not in any sense a representative board or body, but under conditions it may be stated to be a life and self-elected body. It is not our purpose here to give a picture or pictures of the fencing and financing antics of the three boards that constitute the tripartite system of parochial misrule in the borough of Hackney. We incidentally point to the indefensible anomalies existing in the local government of the parish, as it will afford a side-light to the pictures we have already drawn. Under such a system, dirt, disease, and a heavy death-rate must continue to exist in this unfortunate parish.

There is an ecclesiastical vestry in Hackney,

we should have added, as well as the civil vestry, and through it the numerous charities belonging to the parish are administered. These trusts for long years have been managed and administered in a hugger-mugger manner, and call for a Government inquiry. For years past the charities have largely increased in value, but the local public are afforded no satisfactory account of their management. A new scheme for their proper control and distribution is imperatively needed, and, indeed, is demanded by the parishioners. Hackney has two able Parliamentary representatives, and, apart from the special political questions they are respectively noted for advocating, they will find ample scope for their talents for years to come in moving in the parochial reforms needed to lift the local and administrative rule of this borough from a region of eclipse into a region of light.

INSTITUTION OF SURVEYORS.

The opening meeting of this Institution for Session 1875–76 was held at the Hall, 11, Great George-street, on Monday evening, the 8th inst., the President, Mr. Thomas Huskinson, in the chair. The following candidates were passed for ballot: as Member, Mr. W. D. Harding, 16, St. Paul's-churchyard. As Associates: Mr. John E. Kay, 25, Gresham street; Mr. H. Nevill, 6, Queen Anne's-gate; the Hon. E. G. Strutt, Witham, Essex; Mr. J. L. Bolden, Camborne, Cornwall; Mr. J. W. Batten, 3, Harcourt-buildings, Temple; Mr. W. H. Higgin, Q.C., Manchester; and Mr. C. M. Lanyon, Tanfield-court, Temple. The Secretary (Mr. J. W. Penfold) announced that the Council had passed Mr. E. W. Rushworth, of 22, Savile-row, from the class of Associates to that of Members. Several donations to the library were announced, including a series of sketches of some old houses in Lime-street (lately demolished) presented by Mr. T. Chatfeild Clarke.

The President then proceeded to deliver his opening address. He said he was glad to be able to state that at no past period of the existence of the Institution could a more satisfactory account be given than at the present time. The past year might be described as one full of activity and gratifying prosperity. There was a considerable increase in the number of members; important additions had been made to the contents of the library; there was an increased prosperity in the finances of the Institute; and the new and commodious meeting-room had been completed. The published volume of the Transactions of the past year contained a vast mass of practical information in the papers and discussions thereon. Looking back to the objects which the founders of the Institution had in view, it was matter for congratulation that a great part of the programme had been accomplished, and if the members continued to be as true to the Institution in future as they had been in the past, a great and useful career was before them. The duties which devolved upon surveyors were growing every year in number, variety, and importance. The tendency of the times was to increase the already large class of business which was settled by arbitration, and to the body of arbitrators the Institute furnished some experienced members. Even the decision of that time-honoured institution, the jury, was less valued, in many cases, than the judgment of a skilled and impartial arbitrator; and in the fusion of the courts of law and equity we might observe the same tendency to prefer the settlement of disputes on the principles of equity rather than on technical principles of law. The progress of science, increase of wealth, the development of material resources, and the spirit of improvement, were every day making larger demands on the skill of the surveyor. A man fitted effectively to discharge the duties of the surveyor should be one of wide experience, large and cultivated knowledge, skilful in the conduct of business, and ready for every emergency. He should in negotiations be flexible and accommodating in small things, but very rigid and inflexible in great matters; and, as arbitrator, he should be one whom nobody could dismay, and whom the whole world could not bribe. Above all, he should be possessed of that moral power which gave to every other a double power above its function and office: one who, in the words of the Roman poet,

> "Keeps intact
> Each law, each right, each statute, and each act;
> Whose arbitration terminates dispute,
> Whose word's a bond, whose witness ends a suit."

It was one of the objects of the Institution of Surveyors to be instrumental in training a body of men to whom the public could commit the most important interests with the utmost confidence. Passing in review the legislation of last session, which more immediately affected the profession, Mr. Huskinson first noticed the Agricultural Holdings Act: viewing the Act as a whole, it appeared to him to have dealt with the relations of landlord and tenant in a spirit of justice, without any unfair leaning towards the special interests of either. There was one point in connexion with the passing of the Land Act of 1875 which was a source of gratification, viz., the manner in which the legislature, when the question came before it to be practically dealt with, entirely ignored the theorists, doctrinaires, and philosophers. Referring to the characteristics of British agriculture, as compared with those of the agriculture of the Continent, he said that during the past year he had again visited France, Germany, and the Tyrol, and was more than ever convinced of the superiority of the English as agriculturists. Looked at from a purely economical point of view, Continental farming seemed to reproduce and even to exaggerate the evils with which all who remembered the old open field parishes in England were familiar. He saw the same congregation of the buildings in villages; the same small farms composed of widely-dispersed parcels, the parcels themselves being so small as scarcely to justify the application of horse-power for their cultivation. But looked at from another point of view, and for a moment neglecting economical considerations, there was ample evidence to show that the personal condition of the small proprietor, his wife and children, was far inferior to that of the English labourer and his family. To say nothing on the question of food, clothing, and house accommodation (though upon these points, as was well known, the position of the English labourer need fear no comparison with that of the cultivators of a large part of the Continent), there were two facts which would serve to establish the inferiority of foreign agriculture. Firstly, there was the great amount of female and juvenile labour employed on the land; and secondly, there was the character of the work which they had to perform. The general employment of female labour in agriculture showed a great want of outlet for females in occupations more suited to their sex; and the necessities of the small peasant-farmer required women to perform such work as in England no woman would undertake, and which would, indeed, be done by horses. The hardships and labours which they underwent would scarcely be credited by the English labouring population, and it was only by incredible exertions, and by employing women in work utterly unsuited to them, that peasant-farming could show the results it did. In England, horse-power and machinery tended to supplant manual labour, and man, ceasing to be a mere machine, was becoming every day more and more a director of work. This, surely, was progress for humanity. No doubt the independence of the peasant-proprietor was a very pleasant idea; but did not the progress of society in all other arts imply to some extent a loss of independence? Then why should it not be so in agriculture? The Act next in importance to the public, as well as to the profession, was the Public Health Act, which was a very comprehensive and useful measure, and was in great part a consolidation of the many Acts passed since 1848 to improve the sanitary condition of the country. Previously to the passing of the Public Health Act of 1875 it was true that, in rural districts, it would have been difficult to have pointed out a single nuisance that could not be removed, or a defect in the sanitary condition of a village which could not be remedied, under the provisions of the several Acts passed from 1848 and 1875. Ample powers were given to remove nuisances, to give efficient drainage, to dispose of sewage, and to supply water; but he (Mr. Huskinson) did not know any village where any of these advantages had been attained under those powers. The state of things in many rural districts could not well have been worse than it was before the passing of the Public Health Act. In some villages owned by large proprietors, attention was given to sanitary matters, and care was taken to avoid nuisances and conditions hurtful to health; but this applied to only a small proportion of the whole. For the most part our agricultural villages were (and are now) without house drainage or street sewers; they had open cesspools, ill-built privies, pigs in close proximity to the dwellings, offensive and uncovered ditches, and were very badly supplied with water. The causes of the failure of existing legislation to remedy these evils appeared to be two. Firstly, there was no authority,—no person or public body,—upon whom it was imperative to put the law in force: the Acts were all more or less permissive. Secondly, when there were persons who wished to put the law in force, there was so much doubt and confusion arising from the language of the Acts that no one could tell who was the proper authority to enforce them, or what was the scope of their power. Considering how imperfectly people appreciate the benefit of good sanitary arrangements, it was no wonder that they declined to act where there was no legal obligation. Passing on to another topic, Mr. Huskinson said that the supply of water to rural districts was a most pressing question. It would be comparatively easy, by the co-operation of parishes, and without any great cost, to store up our surplus rainfall of one season for use at a future period. No doubt the members had read the letters on the subject which had appeared in the *Times* from the pens of Mr. Bailey Denton and Mr. Grantham. In this matter of supplying agricultural villages with water we were immeasurably behind Continental nations. Referring to the Artisans' Dwellings Act, Mr. Huskinson said it gave very extensive powers for the purchase of private property, and its operation would, he had no doubt, receive the careful attention of those members of the Institution who would be called upon to carry it out. Passing from the legislation of the past session, he suggested, for the consideration of the members, whether some legislation in the future was not desirable in the direction of really local self-government, for he believed that it was the want of this in rural districts which had been the cause of the failure of sanitary legislation during the past twenty years. He could not but think that it would be feasible to have a local authority constituted in each parish, and capable of dealing with the affairs of the parish. At present much of the so-called local self-government was a delusion. In matters relating to the poor, highways, and the public health, the local authority was in no sense local. The Public Health Act of 1875 appointed the Board of Guardians as the local authority under the Act, the officers under them being a medical officer and an inspector of nuisances. These officers were theoretically supposed to be acquainted with the nuisances and requirements of perhaps twenty or thirty, or more parishes. It appeared to him (Mr. Huskinson) that the rural authority for sanitary purposes should be really local, *i.e.*, it should consist of men residing in the parish. A thorough reorganisation of rural sanitary authorities was greatly to be desired, and a writer in the *Times* for August 25 last, reviewing the Public Health Act, stated it as his opinion that without such reorganisation no sanitary law would ever be effectually administered. In that opinion Mr. Huskinson said he entirely concurred. Without committing himself in any way to approval of the general tendency of Mr. Goschen's Local Government Bill, there was one point in it which appeared to him to be of great value, and which, he hoped, would be incorporated in any future Local Government Act. He alluded to the proposed reconstruction of the parish or township as the unit for all administrative purposes. In conclusion, Mr. Huskinson urged upon the members the necessity of their keeping a watchful eye upon the working of existing legislation, and also upon all measures introduced into Parliament.

On the motion of Mr. Vigers, seconded by Mr. Squarey, the thanks of the meeting were tendered to the president for his address.

The following are among the subjects announced for papers during the session just inaugurated: "Fruit Lands"; "Rural Water Supply"; "The Management and Maintenance of Fences and Hedgerows"; "Riparian Rights"; "Light and Air"; "Sanitary Laws"; "The Construction and Rearrangement of Farm Buildings"; and "Warping and Reclamation of Waste Lands."

The next meeting will be held on Monday, the 22nd inst. when a paper on "Fruit Cultivation and Management" will be read by Mr. George Webb.

Registration of Trade Marks.—A paper on this subject will be read before the Society of Arts, by Mr. H. Trueman Wood, on Nov. 24. Mr. A. J. Mundella, M.P., will take the chair.

ARCHITECTURAL ASSOCIATION.

At the first ordinary general meeting of this Association for session 1875-76, held on the 5th inst., as already mentioned, the following new members were elected, viz.:—

Messrs. A. Frampton, J. C. Dear, R. G. Davis, F. Buckler, M. H. Pocock, L. V. Reich, W. T. L. Tomlinson, R. E. Crossland, L. A. Stokes, H. W. Phillips, E. A. Boissier, C. Dark, J. C. Moncrieff, J. M. Maclaren, G. H. F. Prigune, C. E. Sayer, L. B. Brown, H. H. Law, H. J. Burnett, H. H. Freeman, F. Howse, E. Avern, B. Everest, B. C. Capell, R. Wood, H. Branch, H. M. Gardner, T. Newell, W. B. Tomlinson, S. F. Williams, J. Clifton, W. W. K. Clarke, G. Ealce, G. E. Grayson, C. King, E. Hewetson, F. Y. Robinson, L. F. Dove, A. Hill, H. M. Robinson, F. A. Smith, P. Currey, E. J. Drew, C. W. Harvey, H. W. Townsend, J. Robbins, J. B. Hind, W. Goldsmith, S. Wyborn, and W. G. Flint.

The meeting proceeded to consider the various reports of the Association and its classes.

The annual report, after enumerating the papers read during the past session, acknowledged the receipt of donations to the prize fund from Messrs. S. E. Barnes, G. H. Birch, J. H. Good, J. D. Mathews, and H. S. Snell. The classes had flourished during the past session, and the work submitted by the members showed their desire to avail themselves of the opportunities afforded for increasing their artistic and practical knowledge. The two Classes of Design and the Class of Construction commenced with large numbers of members, and the average attendance was good. The Colour Decoration class was also well attended, and a very high average of sketches submitted. The new class for the study of Architectural Science was very successful: this class was formed last session to enable members to study the more advanced problems in construction, together with such subjects as acoustics, heating, ventilation, &c. The class for the study of Surveying and Levelling was held last session with a larger number of members than usual. Interesting old buildings and buildings in progress were visited on alternate Saturday afternoons from January until the end of the session. The arrangements recently made to enable country members to participate in the advantages offered by the Association have been in active and satisfactory operation during the past session. The report, which closes by calling attention to the work of the session, was unanimously adopted.

Mr. J. Douglass Mathews, treasurer, next submitted his balance-sheet for the past session, audited by Messrs. Charles G. Maylard and Alfred Conder. It showed the total receipts to have been 482*l.* 0s. 6d., including 324*l.* 8s. for members' subscriptions, and 50*l.* 18s. 6d. for entrance-fees of new members. The total expenditure amounted to 471*l.* 7s. 3d., two principal items being rent 93*l.*, and grant to library 30*l.*, there being a balance in the treasurer's hands of 10*l.* 13s. 3d. The assets (including arrears of members' subscriptions, estimated at 140*l.*, and estimated value of library, furniture, &c., 410*l.*) are put down at 578*l.* 7s. 6d., with liabilities of only 47*l.* On the motion of Mr. Mathews, the report was unanimously adopted, and a vote of thanks accorded to the auditors.

The report of the Library Sub-Committee, read by Mr. W. L. Spiers, librarian for the past session, showed that the number of books exchanged was 1,360, as against 1,200 in the previous session.

The reports of the various classes were next received and adopted, and all, as stated in the report of the Association, indicated much useful work, although we have not space for the statistics of each class. The report of the class for the study of colour-decoration expressed its indebtedness for many useful hints given by Mr. Walter Crane; and also to the Royal Institute of British Architects for kindly permitting the members of the class to have access to the Library every evening when open.

A vote of thanks was accorded by acclamation to Mr. Edmund Sharpe for his services in connexion with the Association's excursion, and the President then proceeded to deliver his opening address, the substance of which we have already published.

Liverpool Art Club.—The exhibition of works of David Cox is now open. A *conversazione* was held in the rooms on Monday evening last.

THE MANORA BREAKWATER AT KURRACHEE.

THE INSTITUTION OF CIVIL ENGINEERS.

At the first meeting of the session, held on the 9th of November, Mr. Thomas E. Harrison, the president, in the chair, the paper read was on "The Manora Breakwater, Kurrachee," by Mr. William Henry Price, C.E.

It was stated that the Manora Breakwater was the most important feature of the Kurrachee Harbour Works, which were commenced in 1860, from the designs of the late Mr. James Walker, assisted by Mr. William Parkes. The breakwater projected from Manora Point for a length of 1,503 feet into a depth of 5 fathoms of water, in order to shelter the entrance from the south-west monsoon seas, and to prevent their tearing up sand from the bottom, and depositing it as a bar. The characteristics of the sea, wind, and tides, as bearing on the design, were alluded to, and it was stated that the bottom was irregular near the shore. The structure consisted of a base of rubble stone levelled off generally to 15 ft. under low water, and on this base, concrete blocks, each weighing 27 tons, were set on edge, leaning back at a slope of 3 in. to 1 ft., and without bond, two blocks forming the width and three the height, and together making a square of 24 ft. in cross sections, the top being about the level of high water. The rubble base was deposited from native boats, and was levelled for the superstructure by helmet-divers. Two European mason-divers were employed, and six native divers trained on the work, the latter chiefly for shifting the rubble. No accident occurred, and the party generally did not suffer in health. After mentioning circumstances which determined the use of concrete blocks and of Portland cement, particulars were given of the composition of a 27-ton block, the materials being cement, river-sand, shingle, and quarry-lumps, with salt water. The ratio of the bulk of the cement to that of the finished block was nearly 1-11th. About 3,500 tons of cement were used, costing from 3*l.* 17s. to 4*l.* 10s. per ton. The mixing-station, block-ground, and moulding of the 1,972 blocks, including 325 of special smaller sizes, were then described; and it was remarked that the "Messent" mixers had been found very efficient. The blocks were sometimes used one month after being made, and once, as an experiment, a 27-ton block was safely lifted in seven days. When the work was fairly established, the blocks cost for current expenses 15s. per cubic yard, though the average total rate was raised beyond this by extra expenses in the earlier stages. The blocks were lifted on to the trucks by a steam hydraulic travelling-crane of 50-ft. span; each truck carried one block, and was taken separately by a tank locomotive to the breakwater. The blocks were set by a steam travelling-crane, called the "Titan," which ran on rails laid on the finished work, and overhung the end, so as to carry the blocks of three tiers in advance to their places, thus dispensing with staging.

The cost of the breakwater had been 93,565*l.*, or 62*l.* 5s. per lineal foot, but this amount included preliminary charges, the current expenses during the last season being only 34*l.* per foot. This sum included the repair of damages during the progress of the work, and during the two monsoons since its completion, but not the expense of engineering and office establishment. The work had been carried on in the Bombay Public Works Department by the author and his assistants, advised by Mr. William Parkes, C.E., as consulting engineer, and without the employment of any general contractor. The completion of the work was favourably noticed by all the Government authorities concerned.

BEAUTY NOT INCOMPATIBLE WITH ENGINEERING CONSTRUCTION.

In delivering his introductory lecture to the Engineering Class of the University of Edinburgh, on the 1st inst., Professor Fleeming Jenkin took occasion, after first noticing that it was only the theory, and not the practical knowledge of engineering that could be acquired in classes, to warn young engineers against trying to design some great work all out of their own heads. The Greek and Roman builders had, he remarked, been content each to take the level of his predecessor's attainments, and to improve upon it, and the same thing had been done in the case of the locomotive engine and other machines; while, on the other hand, if every inventor had endeavoured to design an engine of a new sort all out of his own head, machines would probably have been as great failures as buildings now were. Passing next to touch upon the assumption which, he said, was at present popular, that it was inevitable that a viaduct or bridge of any kind must be a disfigurement to a landscape, the Professor pointed out that such erections as the viaducts of the Campagna and the bridge of the Rialto might be cited to prove the very opposite, although he, at the same time, admitted that in some respects the assumption was too well founded, it being a common thing now to see their Highland valleys defiled by sky-blue girders, only rendered more offensive when any attempt was made to plaster them with ornament. Alluding to the churches built after the Disruption,—buildings of such ugliness that the power to produce them could only have been found in some very gifted age,—as the kind of erections which engineers would have been expected to produce had they dealt with churches, he urged those among the class who had any artistic taste to cultivate it to the utmost. One result of their total neglect of beauty in the past was that the public had ceased to think of a pleasing form as a necessary quality of an engineer's design.

NEW SECRETARIAT, BOMBAY.

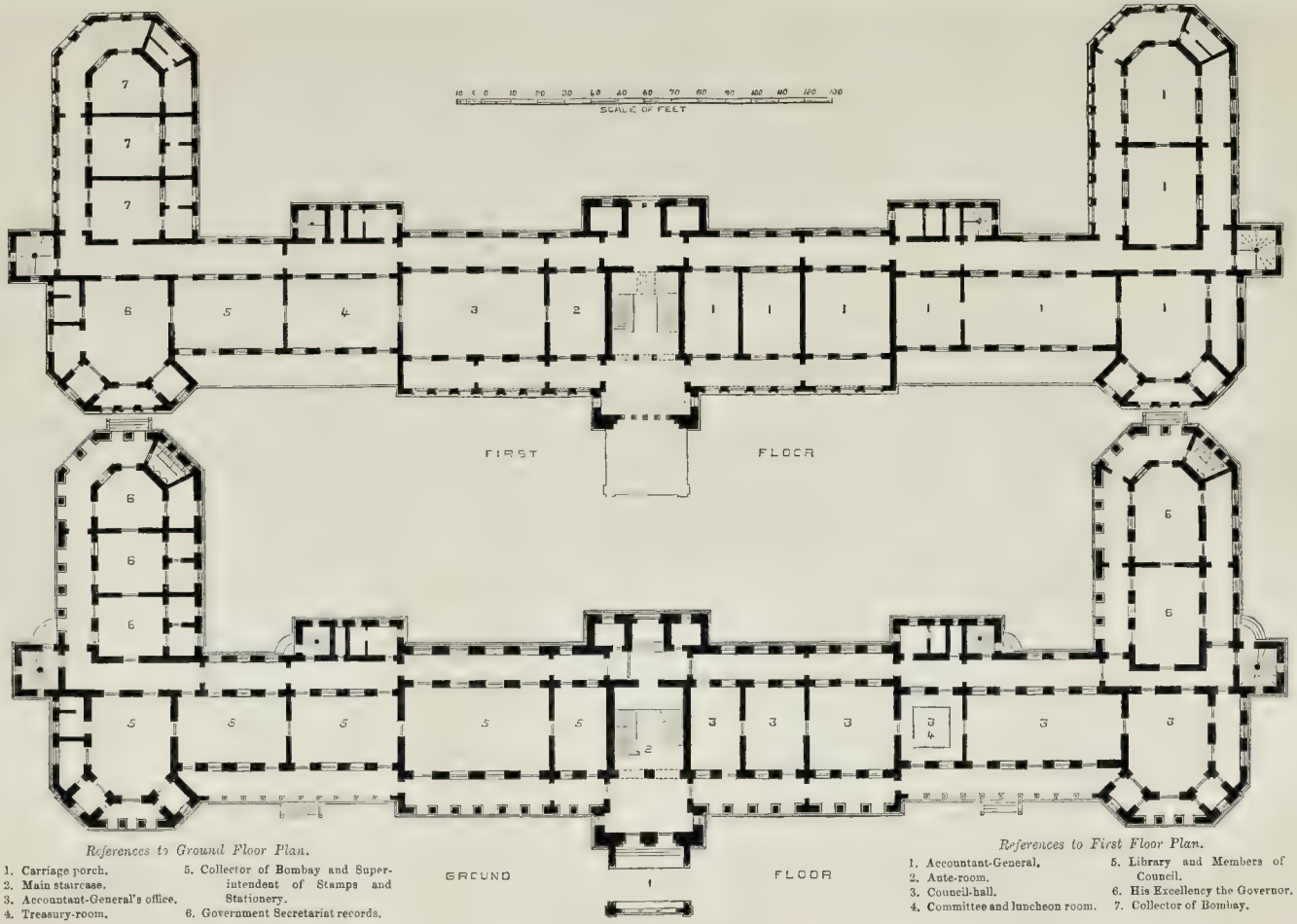
The visit paid by H.R.H. the Prince of Wales to Bombay has naturally directed public attention to that typical Indian city, and our readers may be glad to know something of the public buildings recently erected there. We illustrate, therefore, in our present Number, with the sanction of the Government, the New Secretariat. This building, situated on the Esplanade facing Back's Bay, was designed by Colonel St. Clair Wilkins, Royal (late Bombay) Engineers. The walls are built of blue basalt rubble masonry, faced with roughly-dressed Coorla (buff colour) basalt, in about 7 in. to 8 in. courses, no stone being less in length than twice its depth. The dressings are in calcareous sandstone, obtained from Porebunder, in Kattiawar, in Coorla buff basalt, local blue basalt, and Poona red basalt. The corridor columns are in either Coorla buff basalt, blue basalt, or a silicious sandstone from Hemmygur, in Kattiawar. The corridor and window arches are composed of Porebunder stone and blue basalt, or red basalt from Poona, set alternately. The grand staircase, 8 ft. clear in width, is of blue basalt, obtained in the Island of Bombay, each step being in a single stone, let 18 in. to 2 ft. into the wall, and from the nature of its construction self-supporting. The roof is covered with the Broomhall Tile and Brick Company's patent roofing tiles, over teak, 1½ in. planking, and teak framing. The ground-floor is paved with fine-cut basalt, except the staircase vestibule, which, together with all the other floors, are paved with Minton's tiles. The floors, in matter of construction, consist of iron girders, teak joists, with short planks, on fillets between the latter, to receive concrete sounding under the tiles, and in some rooms Porebunder slabs are placed over joists to receive the concrete.

The building was erected Departmentally, on the petty contract system, under the immediate superintendence of Mr. Wassoodeo Bappoojee, assistant engineer, and has cost 11d. per cubic foot (cubical contents above ground being alone taken). The council-hall and suite of rooms in connexion therewith are furnished with Gothic teak furniture, inlaid with blackwood, from designs by Mr. J. Adams, assistant engineer, and locally manufactured.

The plans we give show the accommodation on the ground floor and first floor. Beyond this, the second floor contains military, marine, and ecclesiastical departments of the Secretariat; Secretariat printing-office; Sanitary Commissioner; and revenue, finance, and general department of the Secretariat. The third floor, resident under-secretary's quarters; those for the collector of salt revenue; political, judicial, legislative, and educational departments of the Secretariat; and office for the Oriental translator to Government.

Appointment of Architects to School Boards.—At a meeting of the Rochester School Board on the 4th inst., Mr. Walker was appointed architect to the Board; and at the first meeting of the Worsbro' School Board, held on the same date, Messrs. Taylor & Senior were unanimously elected architects to that Board.

NEW SECRETARIAT, BOMBAY.

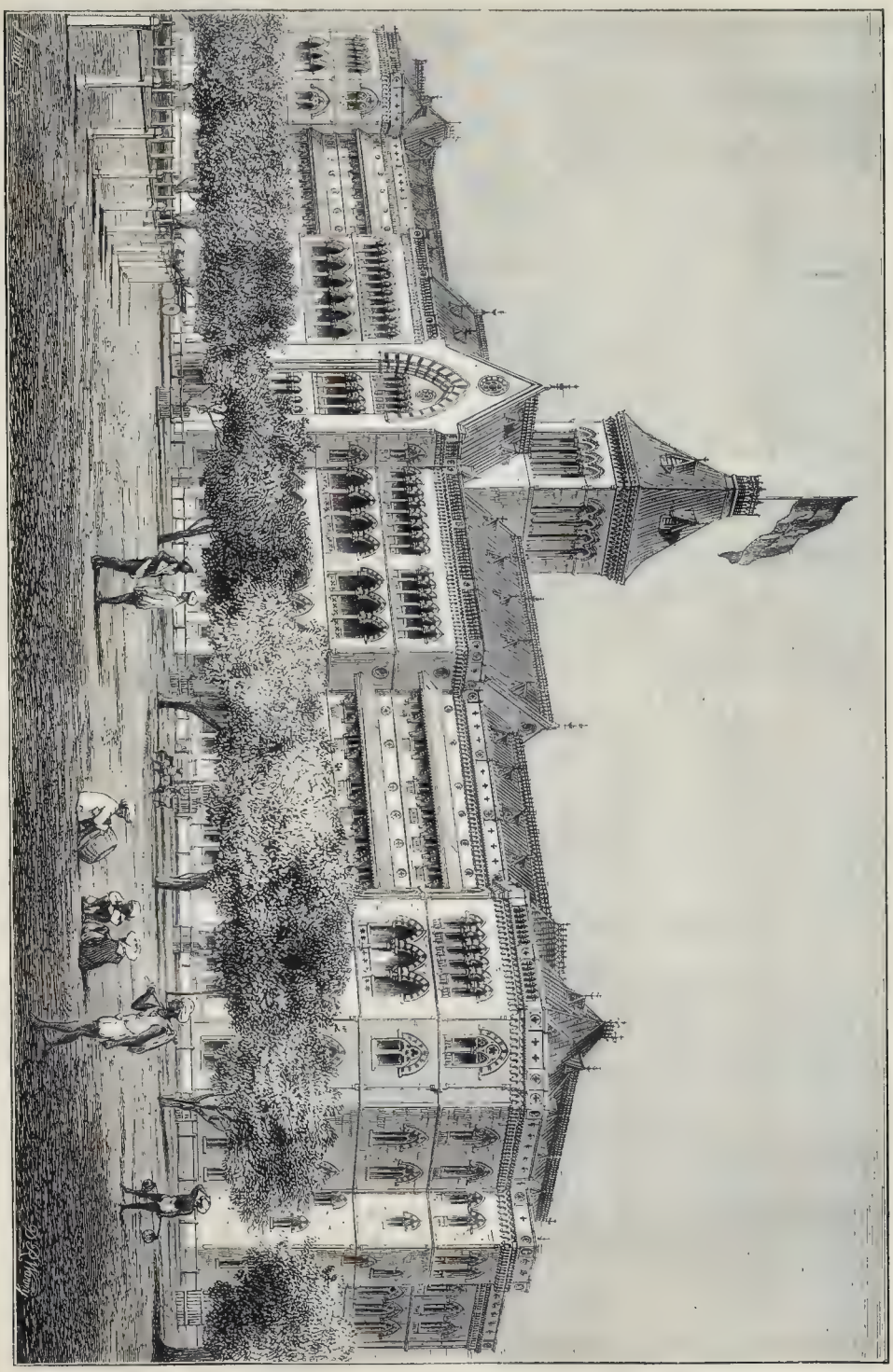


References to Ground Floor Plan.

1. Carriage porch.
2. Main staircase.
3. Accountant-General's office.
4. Treasury-room.
5. Collector of Bombay and Superintendent of Stamps and Stationery.
6. Government Secretariat records.

References to First Floor Plan.

1. Accountant-General.
2. Ante-room.
3. Council-hall.
4. Committee and luncheon room.
5. Library and Members of Council.
6. His Excellency the Governor.
7. Collector of Bombay.



NEW SECRETARIAT, BOMBAY.—Designed by Col. St. Clair Wilkins, R.E.: Erection superintended by Mr. Wassoodeo Baffoojee.

THE ARCHITECTURAL ASSOCIATION OF IRELAND.

The opening meeting of the Session 1875–6 held be held on Thursday, the 25th inst., when the president, Mr. Thomas Drew, R.H.A., will deliver the inaugural address.

General meetings will be held each month during the session. The classes of Design and Construction (which heretofore met on alternate Thursdays) will now meet on the same evenings twice a month, the business of one class to be taken up after the other.

The following is a list of papers to be read at the ordinary general meetings:—

Nov. 25.—President's Address.
Dec. 30.—Working Drawings. By J. J. O'Callaghan.
Jan. 27, 1876.—Hints from American Practice. By W. Fogerty.
Feb. 24.—Paper by Sandham Symes.
March 30.—Earth-closet System. By J. H. Owen.
April 27.—Two Cathedrals: Canterbury and Amiens. By C. H. Brien.
May 25.—Paper by F. Morley.

The prizes for last session have been awarded as follows:—The prize in Class of Design, to W. J. Fennell. For best set of measured drawings of any building in the United Kingdom up to the eighteenth century, to Benjamin P. Shires, Leeds. For the best design for a town church, to J. H. Martindale, Kendal.

The officers for this session are:—

President.—Thomas Drew, R.H.A., F.R.I.B.A. Vice-President.—Wm. M. Mitchell, F.R.I.A.I. Committee.—C. J. Allen, Henry C. Brett, Daniel J. Freeman, G. C. Henderson, Thos. H. Longfield, J. J. O'Callaghan, W. P. O'Neill, A.W. Robinson, John L. Robinson. Treasurer.—T. H. Longfield. Librarian.—C. J. Allen. Auditors.—H. Oldham, J. C. Wilmot. Hon. Secretaries.—Henry C. Brett, A. W. Robinson.

HIGHEST SHAFTS.

In reply to your correspondent, "C. L.," the highest chimney-shaft that I know of in England is on the Kay-street Machine Works at Bolton, in Lancashire. The proprietors, Messrs. Dobson & Barlow, have kindly given me the following information respecting it:—

The large chimney-stack connected with seven boilers, ventilating flues, furnaces, &c., at these works was completed in November, 1842.

Total height from ground level, 367 ft. 6 in. Octagonal on plan, 14 ft. on every side, or 112 ft. in girth, at bottom; 5 ft. 6 in. on every side, or 44 ft. girth, at top. Thickness of brickwork at bottom, 8 ft.; thickness of brickwork at top, 1 ft. 6 in. 800,000 bricks and 120 tons of stone-work were used.

The top, with cornice and mouldings, required 30 tons of stone and cement.

R. M. Bancroft.

Sir,—I believe the highest shaft in the world is at Port Dundas, Glasgow, and was built by Mr. R. Corbett, of Duke-street, Glasgow, for Mr. J. Townsend, Crawford-street Chemical Works.

The total height from foundation to top of coping is 468 ft., and from ground line to summit, 454 ft.; the outside diameter at foundation being 50 ft, and at ground surface 32 ft., and at top of coping, 12 ft. 8 in. The number of bricks is as follows:—

Common bricks in shaft	1,142,532
Composition and fire bricks for inside cone	157,468
Common bricks for flues	100,000
Total number of bricks	1,400,000

Weight of bricks about 5,000 tons.

E. C. T.

BLOTS AT THE GREAT EASTERN STATION, LIVERPOOL-STREET.

Sir,—I am not an architect, and have very little reason to write on architectural subjects, but I have, along with a hearty contempt for those who pretend to be architects and muddle and spend money, a most sincere respect and admiration for masters of the craft—for the skill which enables a man to prepare his designs, and sit down and draw a modern contract with every detail thought out before the work begins,—and when I see a great work lacking this foresight and skill, and find, as appearances would lead one to infer, that no architect has been employed,—only an engineer,—I cannot forbear bringing it under the notice of one who, like you, is charged with the public duty of rebuking great defects in building, as much as of encouraging merit.

The building to which I am now referring is the Great Eastern Station, Liverpool-street, and I send you a note of some of the defects there which have struck me.

1. The northernmost approach is by a wide carriage-way which, about half way between the street and the station is suddenly contracted, the path jutting out into the road. Some night there will be an accident with a cab coming in hastily.

2. In the north wall there are two openings with double iron gates. These gates are each 5 in., together 10 in.,—too narrow for the opening, so that when shut there is to each an opening of 5 in., apparently for a dog to jump through between the pier and the gate. Further, when open and thrown back flat against the wall on either side, the heels of the gates project into the opening 5 in. on each side, to the detriment of hasty or incautious passengers, or ladies with full skirts.

3. The sides of the station have roofs running in bays, from the columns that sustain the central roof to the outer walls; and they have an opening at the top for ventilation, various ribs being used. When you stand in the centre of any one bay the two iron angles and the centre of the curve all range true to the eye; but if you look sideways to the other, right and left, or do not stand just in the centre of any one, the confusion is exactly what an architect would have foreseen and provided against, and what a civil engineer does not see even when the work is finished. Pleased with lines sketched on paper for one bay, he evidently just ordered repeats without considering how his lines would look viewed obliquely.

4. When laying out his station, he must have forgotten the urinals, otherwise he surely would not have placed them obtrusively at the foot of each staircase leading to the trains, and of conspicuous, rather fantastic, brickwork, the doors opening right upon the ladies as they go down to the trains.

No doubt the station will answer its purpose very well, but it would have answered equally well if the forethought of a skilled architect had been used; and I very much question whether all his fees would not have been saved by the forethought which would have obviated the frequent alterations that have put one in mind of old Horace,—

"Dirait, ædificat, mutat quadrata rotundis."

If what one sees at this station is indicative of what one does not see in the management of the company, no wonder the shares are at a discount.

Common Sense.

THE PROPOSED CHANNEL AND SUBMARINE TUBULAR BRIDGE.

With reference to connecting England and France by railway communication, Mr. Peter W. Barlow, F.R.S., the author of the Tower Subway project, in connexion with which he has made a long tunnel under the Thames from Tower-hill to Horselydown without letting in, as expected, a drop of the water of the Thames, now puts forward a modification of the suggestion originally made by Mr. John de la Haye for a tubular communication, which in its modified form becomes a submarine tubular bridge. Mr. Barlow believes tunnelling under the sea to be a mistake. The submerged tube has the advantage over all the tunnelling projects that the construction of fifty or more sections of the tube can be going on simultaneously, whilst but two pairs of men could work at the same time in the tunnel; and it is this, Mr. Barlow thinks, that renders the completion of the tube within a year possible.

The plan proposed is to make the tube of elastic iron, or steel plates riveted together, surrounded and protected by 2 ft. 3 in. of brickwork (which, as the required deflection is but ½ in. in 100 ft. could be conveniently used) laid in asphalte, and beyond this by 6-in. timber planking, well caulked and secured by rings of copper, or by a copper cylinder. Such a tube, he remarks, would float in the water, and would require some further loading to cause it to sink and lie on the bottom. Thus, it might be constructed at shipbuilders' yards in lengths of about 300 ft., and towed to the proposed line of railway. These lengths may be joined together by a floating iron cofferdam or dry dock. The whole tunnel may be laid in a few weeks when the requisite lengths are complete, and the time required to execute a double tunnel from France to England will depend upon the rate at which the steel and other materials can be supplied; and Mr. Barlow is informed that such a supply of steel and other materials can be obtained, with Continental assistance, in one year. He has, therefore, assumed one year as the time necessary to complete this work. He points out that the tunnel, being constructed of steel, is so elastic that the portion completed may be loaded and laid on the bottom of the sea while the upper part is being fitted together on the surface of the sea, but it is not necessary that it should be laid on the bottom of the sea, as it may be suspended and anchored out of reach of shipping at 25 ft. below the water, in which case the deflection of the tube will be a matter of still less difficulty.

Writing to us on the subject, Mr. Barlow says:—"As the author of the Tower Subway, where I have made a tunnel under the Thames within 15 ft. of the river, without, as expected, letting in a quart of water, I hope you will consider these suggestions worthy of investigation. I have no patent or company, and it is only in the cause of science I ask your attention. I believe that tunnelling under the bed of the sea is a mistake. A tube will be much more convenient to the public when made, because the entrances of a tunnel must be some miles inland. It is safer to execute, and much more rapidly executed. It will have better gradients and higher speed. There is less length of tunnel, and the cost will be greatly reduced."

We are unable to convince ourselves of the practicability of the scheme.

CHRIST CHURCH, DOUGLAS.

This church, which was consecrated on the 26th ult. by the Bishop of Manchester, is the munificent gift of Miss Morris, of Fairhurst Hall, the cost being about 7,600*l*. The plan consists of a nave, with aisle separated therefrom by four pointed arches supported on granite shafts, with stone caps and bases. The caps are beautifully carved with natural and conventional foliage. The chancel, organ-chamber, and vestry, are on the north side, and the spire on the east side. The lower portion of the tower is set apart for the children's gallery and the entrance to the belfry. There are three entrances to the church, the main one being through a large projecting porch at the south-west end of the nave, one at the side of the tower, to the children's gallery and chancel; the other between the vestry and organ-chamber on the north side. The whole of the aisles are flagged with polished Bradford flags, and the chancel laid with encaustic tiles of ornamental patterns, by Ludwig Oppenheimer, of Manchester. The large chancel inner arch is supported on four small marble columns having the caps and bases richly carved. Accommodation is provided for 420 adults in open benches in the nave, constructed of pitch pine, of somewhat novel design, and most convenient in arrangement. The choir stalls, for twenty-four, in the chancel, are moulded, panelled, and carved.

All the roofs are open-timbered, boarded diagonally, strongly arranged, and are of pitch pine. The chancel has a "wagon" roof, divided into panels. Prominent stands a graceful tower and spire, 115 ft. high to the top of the vane at the south-east corner of the nave. In it is provided a belfry for six bells, with bell-ringers' room under.

The dimensions of the church are,—nave, 57 ft. long by 23 ft. wide, and 42 ft. high to the top of the ridge; chancel, 29 ft. by 20 ft.; organ-chamber, 16 ft. by 12 ft.; vestry, 12 ft. by 10 ft.; tower and spire, used as a children's gallery, 12 ft. by 10 ft. The nave is lighted at the west end by three lancet windows, with a large Catherine-wheel window over; the south side by two two-light and one three-light windows; the north aisle by two three-light and two two-light windows, the upper portions of which are all filled in with tracery.

The whole of the inside is lined with stone ashlar from Ormskirk and Peansbrick quarries. The exterior is built entirely of coursed stone, obtained from Parbold and Longridge quarries. The whole of the windows are filled in with cathedral glass of light green tint. The site is the gift of the late Sir T. G. F. Hesketh, bart., M.P., and commands a most extensive and beautiful view of the Fylde district.

The style of the building is Early English, and takes the place of the old Douglas Chapel, erected over 300 years ago.

The architect for the church is Mr. T. H. Myres (Myres, Veevers, & Myres), of Preston; Mr. J. Pownall, of Preston, acted as clerk of works; Mr. J. Preston, of Wigan, being the builder.

OXFORD AND ITS WATER SUPPLY.

Professor Prestwich delivered a lecture in the Museum, Oxford, on the 25th ult., "On the Geological Conditions affecting the Water Supply to Houses and Towns, with special reference to the Modes of Supplying Oxford." Professor Prestwich prefaced his lecture with the statement that the subject of his remarks on the present occasion was purely practical. It was one of those practical applications of the wide-ranging science of geology which brought them in relation with the engineer and the physician, as some branches brought them in relation with the miner and the architect, while others brought them in relation with the biologist and physicist and anthropologist. However practical it might be in one aspect,—one which it were well if more generally understood,— the principle of the underground distribution of water was in its other bearings not less essential to the theoretical geologist. He had been prompted to make that subject the text of a special lecture with respect to Oxford, in consequence of the question more than once addressed to him, the interest of which required a carefully-considered answer, viz.,—Whether geology could not indicate a source of water supply for the city free of those risks of organic contamination to which a surface supply is too often liable. The subject was one which bore upon the health and comfort of every town and village in the kingdom, and, therefore, he should, as far as the limited time would allow, more especially show its bearings to Oxford. The Professor, although especially referring to Oxford, treated his subject in a sufficiently general manner to apply to any other locality where the strata was not of sedimentary origin such as prevails over the greater part of Great Britain. The Professor having sketched the aspects under which the water-supply of Oxford presented itself, wound up his address by saying that the importance of a large and good supply of water could not be overrated. This as a general proposition was now fully understood, and in all our large and populous towns able engineers had constructed works to secure such supplies, and to do away with the abuses that were inevitable, where, as formerly, each house was the centre of its own water-supply and drainage. But although the flagrant sources of contamination were generally removed from large towns, they still too often lurked in hidden or forgotten corners, while in hundreds of smaller towns and villages, and in thousands of country houses, the plague spot still remained in almost all its foulness and intensity. The air might be pure, the country might be smiling, the water might be bright, the people might be cleanly, ease and luxury might prevail on the surface, but below the surface a poison was, by a delicacy which was not unnatural, hidden out of sight, unknown to most, often kept in subjection for years, or working so insidiously as to raise no suspicion. But there it was, ready when the opportunity offered to fix on the prey and to spread disease and death around. The blow, in fact, was so covertly given that neither the sufferer nor his friends suspected from whence it came. They unavoidably attracted attention, but it was a question with him whether the sum of minor resultant evils did not outbalance the more prominent cases. Against those many risks it seemed nobody's business to guard.

THE VENTILATION OF MINES.

At the annual meeting of the Institution of Mechanical Engineers, held at Manchester on the 5th inst., Mr. W. P. Marshall read a paper on mechanical ventilators for mines, in which he said that in a paper on mining machinery read before the Institution sixteen years ago, by the late Mr. T. J. Taylor, the ventilation of mines by furnaces placed at the bottom of upcast shafts, as compared with the mechanical appliances then in use, was for valid reasons considered the best and safest method. But, notwithstanding its admitted simplicity, the rarefaction of the outgoing air by heat to produce the ventilating current had proved troublesome, expensive, and dangerous. Under these circumstances it was not surprising that, since the subject of mechanical ventilation was last brought before the Institution six years ago, the adoption of the greatly improved mechanical appliances then described for the ventilation of mines should have been so extensive, that in this country there at present were about 250 mechanical ventilators in actual use or in course of construction. In the matter of fuel consumption, the best existing appliances would be about on an equality with furnaces when the latter were employed at a depth of about 700 yards, and the less the depth the greater did the economy of the machine become; but it might certainly be asserted that the furnace ought never to be employed excepting in small mines, where the duration of working and physical conditions were such as not to justify the additional outlay required for a fan. Most, if not all, of the mechanical ventilators at present in use exhaust from the top of the upcast shaft in the case of pits, or at the end of the return air-course, where they were employed for day working. He submitted a statement of the results of experiments on some of the different systems for the mechanical ventilation of mines, and in conclusion called attention to the fact that, in the majority of ventilators now working, low pressures, very little expansion, and consequently wasteful types of engines, were usually employed, where, owing to the almost constant work, a more economical type of engine might be advantageously adopted.

SCOTIA MUSIC HALL, GLASGOW.

The Scotia Music-hall, one of the largest and most popular places of amusement in Glasgow, was, it will be remembered, destroyed by fire in May, 1874, a portion of the outer walls only escaping the violence of the flames. The work of rebuilding is now all but complete, and the hall will soon be re-opened for performance. The work of reconstruction has been carried out from designs by Mr. Sellars (Campbell Douglas, & Sellars), architect, of Glasgow, the contractor for the mason's work being Mr. Adam. The total cost of rebuilding, including fittings, is estimated at 15,000*l*. The new hall will accommodate between 4,000 and 5,000 persons. The large hall proper has been altered from its former oblong shape, and is now semicircular. The dimensions are 120 ft. in length, 78 ft. broad, and 60 ft. in height from pit-floor to ceiling. The stage fittings and arrangements are far superior to those usually found in music-halls, even of the better class, the sum of about 1,000*l*. being estimated for this department alone. The stage is 76 ft. wide and 35 ft. in length, with a cellar sinking to a depth of 15 ft. The proscenium opening is 30 ft. by 27 ft. There are two sets of flies, and extensive carpenters' shops over the ceiling of the hall. All the most approved modern appliances have been made available in connexion with the stage, and commodious suites of dressing-rooms for the artistes are close at hand. The system of ventilation adopted is that of Mr. Potts, of Manchester, which has been fitted at a cost of 300*l*.

PICTURES AND THEIR SURROUNDINGS.

The writer of the sensible article under this heading in the *Builder* of October 30th deserves the thanks of painters for directing their attention to matters of more importance than they may at first sight appear.

The proper relation of the frame to the picture was better understood in the last century than at present. The demand for easel pictures succeeded the grand epoch of mural painting, and instead of a picture now being a part of a series, framed by the architecture, it has become an isolated and independent work, to be considered only for itself. Of late there has been a growing tendency to mix up frame and picture, to introduce ornaments into the frame which have some reference to the subject matter of the painting. This has found favour outside the pre-Raffaellite circle; but it would appear to be a mistake. The frame, when it fulfils its proper function, as a boundary or opening through which the subject is supposed to be seen, should isolate the painting, and not be mixed up with and an integral part of it. A Rubens is better seen when the mouldings of the frame are massive and straight; whereas a picture with meagre forms and contours, or of architecture, will look better in a frame in which there is more of scroll ornament. Another very important consideration is the width which should be given to a frame in proportion to the superficies of the picture. A fine picture may be very materially injured by being placed in too narrow a frame, or in a too broad and flat one.

There are several references in the "Revised Theory of Light" to the lighting of pictures, and there is not one picture in a thousand which gets properly lighted after it has left the studio. A picture is only properly seen in the light for which it was painted. The relative value of all its tones is changed in either a higher or a lower light; for if four gradations are intended to be, in the light for which the picture was painted, as 1 : 2 : 3 : 4, then if we either add or subtract the same quantity of light from each, their proportional relations are changed. If we add 1 to each, the gradation becomes 2 : 3 : 4 : 5; if we subtract one from each term, the gradation is changed to 0 : 1 : 2 : 3. The relation in the first instance of 1 : 2 thus becomes either 2 : 3, or 0 : 1. If picture-collectors were to show any judgment in collecting and arranging their pictures, it would be, in some degree, a return to a better state of things,—a state of things somewhat approaching the ancient decorative adjustment of mural pictures. But in most collections there will, probably, not be two pictures which have been painted in the same kind of light. Landscape-painters make a great mistake if they paint their pictures in the open daylight, when they are afterwards to be hung in low lights, and often wonder what makes their pictures, when hung, look so different. When painters will listen to science, they have much to learn about lighting their models and their pictures.

In one point I have to differ from your article. A picture should doubtless be a fine thought, a "brain thought," as the writer has it. But, unfortunately, easel painting does not keep your painter so close to thinking as mural painting. A large proportion of easel pictures are, therefore, merely *pièces d'occasion*, "bits," with very little evidence of thought. W. C. T.

GRAPES AS AN ORNAMENT.

Sir,—I have read the reply of "Senex," who says, "that grapes are used as ornaments because in the Holy Scriptures the grape and the vine have unusual prominence."

It is my humble opinion that "the model tradesman" who made my bracket had the Holy Scriptures very little in his mind at the time he gave his directions to his workmen. The model and the mould were before him, and always at hand, and therefore cheaper and less troublesome than any new invention, and more easy for a workman whose art-education ends with being able to execute a bunch of grapes.

It has been so for generations. The indifference of the public has not stimulated a change from, and the laziness of the executant has prevented him getting out of, the groove of grapes.

I have stayed at a house of which, Mr. Editor, you furnished the design. The caps and other parts there are ornamented with copies of the ferns that grow on the estate. Here you were very wrong. Ferns are not mentioned in Scripture; you should therefore have used grapes, which you might have found already carved and moulded, and, doubtless, much cheaper than any new object; but then there would have been no room for gracefulness of fancy on your part, or for skill or feeling on the part of the artisan.

Thistles are mentioned in Holy Scripture; but, then, none but a Scotsman is alive to their æsthetic beauty. "Senex" adds,—"as also in being in their form and growth, in fruit and foliage, one of the most graceful and elegant of Nature's works." I admit the "one," but I cannot admit that this should ride over the illimitable objects in Nature that are graceful and elegant. If "Senex" has a doubt about the beauty of other forms, I would suggest that he should pay a visit to Kew Gardens; and, as a favour, I would ask that he should read the article on "Religious Art," in the present number of the *British Quarterly Review*.

F. S. A.

STATE OF ST. LEONARD'S PRIORY, STAMFORD.

On a casual visit to Stamford recently, I observed with regret indications that the interesting Priory of St. Leonard, near that town, will soon be in ruins if some remonstance, more powerful than mine, be not raised against the neglect which is causing its decay.

The west front, which with its cluster of detached shafts and its ornamental mouldings gives me the impression of Early Norman work altered in the twelfth century, is apparently sound; but the north face of the building has, within the last few months, become seriously impaired: two large portions of the ashlar have yielded to the weather, and exposed the inner

part of the wall. I fancy a few pounds expended now would preserve it: some months hence a few hundreds would not restore it.

Those who live on the spot are apt to disregard their own treasures of antiquity, and no one seems to care much about this building.

You will do a service to archæology if you can promote the restoration of the damage, or the preservation of the building from further decay; and if the owner objects to expense, and will accept a subscription, I will show my interest by giving, through you, 1*l.* towards it. B. S.

BARNSTAPLE.

The new Bridge Hall is, after much delay, at length being finished. The carving, which is being executed by Mr. Harry Hems, of Exeter, and his assistants, from the designs of Messrs. Gould & Sons, architects, Barnstaple, is somewhat extensive, embracing, on the exterior, the ornament of the capitals upon the upper story of the façade facing Bridge-street,—as well as the corbels underneath. The central tympanum of the higher story will have the Bridge Arms cut upon it, and these will be supported by heraldic mantelling upon diapered ground. The segmental corner of the building,—picturesque as it is in its tower and grouping from every point of view,—has had the busts of King Edward II., the famous Bishop Stapleton, good old Major Penrose, in the costume of the time, and a baron of the period, cut upon the cornice in bold relief.

The new Fish-market is nearly completed. Messrs. Gould & Son are the architects, and the octagonal plan which they have adopted is said to give good promise.

THE WARMING OF WORKMEN'S DWELLINGS.

Without doubt fuel is capable of being greatly economised for warming purposes, if the present system of open fireplaces be abandoned, especially in the large blocks of dwellings for the industrial classes which are now becoming prominent features in London and most of our large towns; and the increasingly high price of coal will of necessity tend to reconcile the poorer classes to the loss of that appearance of homeliness and cheerfulness which the open grate presents, if the warmth which is so vital a necessity can be provided cheaply and without injury to health by other means. Mr. F. Eiloart, of Chancery-lane, offers a suggestion to architects and others whose duty it will be to deal with the plans of the new buildings erected under the Artisans' Dwellings Act. He says,—"Having for some years had the management of the property of the Society for Improving the Dwellings of the Industrious Classes, presided over by the Earl of Shaftsbury, I had constant opportunities of observing the great difficulties the labouring classes had to contend with in keeping their rooms clean, and I found that the chief difficulty arose from the necessity of their having to store their coals and fuel in their dwelling-rooms, and in the subsequent disposal of the refuse from the grate. Now, I wish to suggest that the grate should be entirely abolished, and that the new buildings should be warmed throughout upon some such principle as that employed in most large factories, mills, printing-offices, &c., and I feel sure that practical architects would find no difficulty in applying that system, and in designing some method by which the fire to be used for heating the apparatus would not only furnish a constant supply of hot water for the tenants, but could be made available under proper regulations for cooking purposes. The saving of fuel to each individual tenant would more than compensate them for any slight addition it might be found necessary to make to the rent for the purpose of defraying the expense of the arrangement, the rooms would always be warm, clean, and comfortable, and a great element of danger from so many open fire-places would be removed."

The Centennial Exhibition, Philadelphia. An American paper says that the buildings designed for the use of the Commission of Great Britain are located north-west of Machinery Hall, a short distance from George's-hill. There are two structures, both of which exteriorly are nearly finished, while the interior work is being pushed forward with all possible despatch. It is said that no building upon the ground will be so well appointed.

HEALTH AND SEWAGE OF TOWNS.

The Council of the Society of Arts have resolved to appoint a standing Committee for the purpose of collecting facts and holding a conference yearly, at which the experience gained and the progress made in the past year will be reported and discussed, such Conferences to be continued as long as necessary.

Corporations and Local Boards of Health are invited to communicate with the secretary, and forward to him any suggestions they may think proper.

BELFAST ARCHITECTURAL ASSOCIATION.

At the opening meeting of the session, Mr. William R. Jackson presided, and there was a large audience, which included a good many ladies.

Mr. Robert M. Young read a list of prizes offered.

The committee have arranged the following subjects for the evening class of design:—First evening, font; second evening, design for bank in small country town, plans and elevations; third evening, completion of same by sections and details; fourth evening, hall chimney-piece; fifth evening, open-timbered roof for an octagonal apse, 25 ft. span; sixth evening, newel and balustrade; seventh evening, competition for Mr. Lynn's prize, subject to be announced.

The chairman said it was most gratifying that the Association, in its fourth year, was in such a flourishing condition. During three years of its existence which had passed it had been favoured with a large amount of success. The Association had a bright future before it. The members saw the style of the architecture of Belfast and the North of Ireland improving year after year.

Mr. Hevey, architect, read a paper on "Church Architecture." He said the subject was one in which every member of the community necessarily felt an interest, the best and truest proof of which was afforded by the number of new churches erected by the several denominations which they had seen springing up around them. As the subject of church building has been treated of from almost every point of view by as many distinguished professors of the art, his better course would be to touch lightly on some cognate matters, and to take a few features which might be locally recognisable, and some of which he should venture to criticise, even at the great risk of being criticised himself. The first thing they must recognise in church building was the importance of the substantial character of the fabric, for, unfortunately, many people had seen the church they helped to build, and around which their most hallowed recollections were centred, gone to utter wreck and ruin before they themselves have gone to that "bourne whence no travellers return," and certainly this must needs excite melancholy reflections and feelings of indignation against the unfortunate architect whose no doubt well-meant efforts were the primary cause of such a dire result. It was only necessary to refer to such a deplorable state of things as having been, and to express a hope that it would not occur again. Another aspect of this question was that churches which did not come under the foregoing observations had generally, through the advancement of art education, been depreciated in public esteem, so as to render them considered as unworthy of being preserved. Like people who have lived sufficiently long to be out of fashion. Their existence is tolerated for the reason that it cannot be helped. Architects were every day becoming more and more familiar with the peculiarities of church architecture, and to consider the practice of it as something more than a mere method of obtaining an existence; and the general public have at length discovered that, after all, there is something in church building to be considered more than the mere security and substantiality of the fabric—something due to that glorious inheritance of art which has been transmitted to us, and which it is the duty of the architect to preserve and foster so far as in him lies. While they were striving to foster and develop that idea in the public mind, some of them committed many vagaries, especially in matters of detail, for generally it will be found that those who are not perfectly up in Gothic and kindred styles of art, and who are simply copyists, reduced to the necessity of taking a door from here and a window from there, do not and cannot know how to harmonise and assimilate their borrowed or stolen materials; and the result was a visible discrepancy in all portions of the building. They could see in Belfast churches of various kinds where the front is adorned by doors and windows over, and otherwise decorated with buttresses, carving, &c., while the remainder of the building, flanks and rear, although exposed to view, is plain, even to positive rudeness. With some the system seemed to be to spend on the front every available shilling beyond what is absolutely required for the mere construction of the work. The sooner this state of things was altered the better.

DRAINAGE OF MAIDSTONE.

Sir,—In reply to Mr. Angell's letter on this subject in your issue of the 6th inst., permit me to say that I did *not*, in my letter to the Maidstone corporation, claim the invention of the drainage plans accepted from Mr. Angell. What I did was to point out to them that, by the scheme they were about to carry out, they were practically adopting the same plan of outfall sewer and sewage disposal as I proposed in 1867, notwithstanding that the sewer might be on the opposite side of the river, and other modifications made in the details of construction; and this is admitted in Mr. Angell's letter, for he states "the only point in common being the outfall below Allington Lock, a point that, without any engineering knowledge, is obvious to any one." This may be; but if there is any engineering knowledge at all required, it is in the construction of the outfall-sewer to the tidal water below Allington Lock.

There may not have been any invention in selecting the point of outfall; but if there was any, it was no more patent to any one in the case of Maidstone than it would be in the case of many other towns.

My plan was abandoned in favour of one recommended by Mr. E. Latham; and if the proposition to construct the outfall sewer along the side of the Medway, to discharge the sewage below Allington Lock had not been revived, I should not have written the Maidstone Board on the subject; but inasmuch as what I then recommended (whatever the defects may have been) is about to be carried out in principle, I thought it was the proper time to point out to the Board that it would only be fair to make me some allowance for the extra work I had in connexion with my own plan, as well as for the assistance rendered to other engineers who had been consulted on the subject.

This is a matter really between me and the Maidstone Local Board, and I am sorry that either Mr. Angell or myself should have had occasion to have addressed you in the matter.

Judging from the very valuable assistance Mr. Angell has given to municipal engineers and surveyors in connexion with their association, I feel sure he would be glad (as he states) to hear that I had been compensated for work done. Edward Buckham.

Town-hall, Ipswich.

BUILDING BYE-LAWS.

DEPOSIT OF NOTICE AND PLANS.

At the Bromley Petty Sessions, held on the 1st inst., Mr. Benjamin Jones, a local builder, was summoned at the instance of the Local Board for the district of Bromley, in the county of Kent, for an infringement of the 29th bye-law of the said Board, the defendant having commenced to build a house without having first deposited at the office of the Board's surveyor such notice, plans, and sections, as is and are required by the said bye-law to be deposited. Defendant pleaded not guilty.

Mr. Hugh S. Cregeen, surveyor, proved that the defendant had wilfully refused to deposit the requisite plans, although little progress had lately been made with the building. Owing to the latter fact, the justices took a lenient view of the case, and convicted the defendant of the offence against the bye-laws, and ordered him to pay the mitigated penalty of 3*l.* and costs.

[N.B. The decision in the above case is consistent with the ruling of the Court of Queen's Bench on the 20th of January last, in the appeal case of Hall *v.* Nixon, 39 J.P., page 69.]

THE TEMPLE GARDENS FLOWER SHOW.

Sir,—It may, perhaps, be a matter of interest to some of the number of visitors to the chrysanthemum show in the gardens of the Inner Temple, who are not already aware of the fact, to know that there stands in them the trunk of an old sycamore, or yew tree (I forget which), that is of ancient date. Tradition tells us that under the shade of this tree Dr. Samuel Johnson, as well as his attached friend, Oliver Goldsmith, not unfrequently sat. It is close to the spot where formerly stood the old City wall, and the site is, I think, introduced in one of the acts of Shakspeare's play of "King Henry IV." The visitor to the Temple Gardens may easily find out this old tree trunk. It stands on the left-hand side of the lawn of the Inner Temple Garden, looking towards the Thames and the Embankment. It has an iron fence round it, with a good many supports, being in a very broken condition. I have on a former occasion remarked that it seems a pity that there is no notice-board fixed to the tree, calling the attention of passers-by to this interesting relic of bygone days.

The autumnal floral beauty (the chrysanthemum) is very fine this year, both in the gardens of the Inner and Middle Temple, and will well repay a visit.

Nathaniel Waterall.

The New Mint.—It is now rumoured that the Government has decided to build the new Mint on the vacant ground lying between the Savoy and the Adelphi-terrace, belonging to the Duchy of Lancaster and the Metropolitan Board of Works.

IS AN ARCHITECT A JEWELLER?

SIR,—Is an architect a jeweller? O happy thought! Yes! Or, at least, that is what he should be, but which, unfortunately, is precisely what he is not. Painting and sculpture are the jewels which the architect should be taught to set. But falling, as the architect has, upon evil times, when painting and sculpture are not appreciated as the jewels, the gems, of civilisation, architecture, except in the shape of penthouses to protect us from the weather, has no *raison d'être*. There is something about the architect of the present day which would appear to confirm the Platonic doctrine of "reminiscence," for he appears to have some dim adumbration of what has been, and that he ought properly to be the setter of something; he, therefore, sets nothingness with tawdry. Not having the higher arts to assist him, to help him to something new, he is content with the time-honoured dolphin, the festoon, and the scroll as ornaments, and to do his little best after *a* fashion of things that have gone before.

Our friend in Nova Scotia seems to think that our architects have become Michelangelos and Raffaelles, and that they are now able to design frescoes and glass windows. Bless his innocent heart! Whatever our architects may have accomplished in this way is as yet unknown to fame. Nevertheless, it is just possible that they may have been restrained from exhibiting what they may have accomplished in this way by being straight-jacketed by their friends.

Our Nova Scotian has, I fear, hit upon his most happy analogy by a fluke; for does he not know that Angelo and Raffaelle were able both to design and execute frescoes, and yet that they were not, on this account, in the least incapacitated from designing architectural works which, by far, eclipse the best attempts of the present day? BRISTLE.

ASSAULT ON A DISTRICT SURVEYOR'S CLERK.

At the Hammersmith Police Court, Richard Whaler, a sculptor, of Shepherd's-bush, has been brought before Mr. Ingham, on a charge of violently assaulting Mr. Wm. Holditch Stevens, managing clerk to Mr. Knightley, district surveyor of Hammersmith, by beating him about the head with a mallet. It was alleged that the prisoner was annoyed at the action taken by the district surveyor and his clerk with respect to some wooden buildings belonging to the prisoner.

Mr. Charles W. Chapman, a surgeon, of Goldhawk-road, proved that the injured man would not be able to attend for another week.

Mr. Waring hoped the magistrate would grant bail.

Mr. Kisch, who prosecuted, objected, and read an anonymous letter which Mr. Knightley had received through the post, telling him to be careful, as he would be a corpse, and that he ought to be poleaxed and dipped in tar. He (Mr. Kisch) believed it was in the prisoner's handwriting.

Mr. Ingham said it was a most serious assault, and he should refuse bail.

The prisoner was then remanded for eight days.

SCHOOL BOARD SCHOOLS.

Grimsby.—At a meeting of the Grimsby School Board, on the 28th ult., ten tenders for the erection of the new school were opened, but all being found much above the estimate of the architect, Mr. C. Bell, London, it was agreed to defer the consideration of the offers to a future meeting.

Troqueer.—At a recent meeting of the Troqueer School Board, held in the Court House, Maxwelltown, Mr. Barbour submitted plans for the erection of a new school near Maxwelltown parish church. The plans provide for 300 pupils, and allow ten superficial feet for each child. The estimated cost is 2,200*l.* The plans were approved.

Loftus-in-Cleveland.—On the 27th ult., memorial stones of new schools at Carlton and Robin Hood were laid, under the auspices of the Loftus-in-Cleveland School Board. The schools are identical in design, being Gothic in style, and constructed of brick with stone dressings, and having open roofs. They are designed to accommodate 250 children each, having a boys' and girls' mixed school and class-room, and infants' school and master's house. The area covered by the premises is about 2,600 yards in each case; the total cost, with land, being estimated at 6,500*l.* The architect is Mr. William Watson, of Wakefield. The contractors for Carlton School are,—brick and stone work, Chapman & Son; joiners, J. Gill & Son; slating, E. J. Rawling; plastering, W. Walsh & Son; plumbing and ironwork, Mr. Brook; painting, C. Barker. The contractors for Robin Hood School are,—brick and stone, Illingworth & Verity; joiner, W. Calam; slating, Pycock & Son; plastering, Walsh & Son; plumbing and ironwork, Mr. Brook; painting, C. Barker.

SCHOOL-BUILDING NEWS.

Hartley Wintney.—The plans and specifications of the proposed school and masters' house, Hartley Witney, prepared for the vicar and churchwardens by Mr. Harry Pool, of Hartley Wintney, have been approved by the Education Department.

Battersea.—The Green-lane Parochial Schools, High-street, Battersea, were re-opened on the 19th ult., after enlargement. The additions include a large room, 100 ft. by 24 ft., built over the old schools, with cloak-rooms and lavatories; also two large class-rooms on the ground floor. The works have been carried out under the superintendence of Mr. Wm. White, F.S.A., at a cost of about 2,000*l.*, by Mr. Thomas Gregory, of Station Works, Clapham Junction. Mr. W. H. Williams was clerk of works.

Upholland.—The foundation-stone of new National Schools at Upholland was laid on the 23rd ult. The buildings are intended to accommodate 120 children, and will comprise a mixed school for boys and girls, with a large class-room attached; an infants' school-room; with cloak-room, lavatory, and entrance-porch for the girls and infants, and a separate cap-room, lavatory, and entrance-porch for the boys. The style will be Gothic, and the material local rubble stone, faced with shoddies, and relieved with red stone bands and dressings. Large playgrounds, with the necessary outbuildings, will be provided. The cost will be about 3,000*l.* Mr. Peter Balmer is the architect, and Mr. Templeman, of Upholland, is the builder.

DISSENTING CHURCH-BUILDING NEWS.

Otley.—A new Wesleyan Chapel in Boroughgate, Otley, was opened on the 13th ult. The building, which will seat 1,000 persons, is in the Italian style, and has been erected from a design by Mr. E. Taylor, architect, York. The gallery extends on all sides around the pulpit, and is semicircular at the ends. The tie-beams of the roof are visible, and form moulded panels at the sides, with pendants at the intersections; the centre of the ceiling is arched, and forms a raised vault the full length of the chapel. The woodwork is of red and yellow pine, stained and varnished. The heating is by Grundy's hot-air apparatus. The building is built of stone which has been brought from Messrs. Whitaker's quarries at Horsforth. The contractors for the works are:—For the brick and stonework, Messrs. Whitaker & Sons, Horsforth; for the joiner's work, Mr. Henry Creaser, of York; for the plasterer's work, Messrs. Chaffer, Otley; for the plumbing, glazing, and gasfitting, Messrs. Suttle & Waddington, Otley; for the painter's work, Mr. E. Bennett, Otley; for the smith's work, Messrs. Exley & Son, Otley; and for the slater's work, Mr. Joseph Thornton, Eccleshill. The cost of the building, inclusive of the site, is about 6,800*l.*

Middlesbrough.—Trinity Presbyterian Church, Middlesbrough, was opened on the 13th ult. The new church consists of a nave and aisles, transepts and apse, the apse being separated from the nave by a boldly-moulded arch in Caen stone, springing from carved corbels of the same material. Communicating with the church are a minister's vestry, session-house, and lecture-room. The style adopted is Early Decorated. The seats are open benches, with sloping backs and moulded ends. The windows are glazed with cathedral-tinted glass set in leadwork. The church will at present seat about 550 people, which number can be increased to 700 by the addition of side galleries. The heating is effected by means of apparatus supplied by Haden & Son. The total cost has been about 3,700*l.* The architects are Messrs. Ross & Lamb, Darlington.——On the 5th ult. the foundation-stone of a new United Methodist Free Church was laid at Middlesbrough. Mr. E. Potts, of Oldham, is the architect of the structure which will be in the Classic style, and built of bricks, the front being faced with pressed bricks, and relieved with stone dressings. The chapel will afford accommodation on the ground floor for 530 adults. Galleries will run round three sides of the edifice, capable of seating 470 more, making the total sitting accommodation sufficient for 1,000 persons. The schools at the rear of the chapel will be sufficient for 350 scholars. The total cost of site, chapel, and schools, with boundary walls and other expenses, is estimated at 7,800*l.*

Winsford.—Foundation-stones of a new United Methodist Free Church at Winsford, Cheshire, were laid on the 5th ult. The total cost of the new building will be about 2,000*l.* The brickwork and joinery have been entrusted to Mr. James Fowles, and the masonry to Mr. Fletcher.

Matching.—A Congregational chapel was opened a few days ago at Matching Tye, Essex. It will seat 120 persons. Mr. George Perry, of Bishop Stortford, was the architect; and Mr. Burton, of Sawbridgeworth, was the builder.

Hammersmith.—A new Wesleyan Methodist chapel has just been erected at the junction of the Hammersmith and River-court-roads. It consists of nave, aisles, and transepts, and is in the Decorated Gothic style, the principal material used being Kentish rag, with Bath-stone dressings. Sittings are provided on the ground floor for 650 persons, and for 410 in the galleries, making a total of 1,060. Messrs. Adamson & Sons, of Turnham-green, were the general contractors. The heating apparatus has been supplied by Mr. Grundy; the gas-fittings are by Messrs. Brawn & Downing; the chancel decorations were executed by Mr. Cox, of Southampton-row; and the stained windows by Mr. Jackson, Hammersmith.

Chattisham.—A new Wesleyan chapel was opened at Chattisham on the 14th ult. It will accommodate about 200 persons. The contract for the work was taken by Mr. James Welham, of Hintlesham, at 450*l.* The architects were Messrs. Cattermole & Eade, Ipswich.

Wickford.—A new Congregational chapel at Wickford, Essex, was opened on the 19th ult. Mr. Charles Pertwee, of Chelmsford, is the architect.

Rockley.—A new Wesleyan chapel at Rockley, near Retford, was opened on the 8th ult. The structure has been designed and erected by Mr. Theophilus Wilson, East Markham, at a cost of about 300*l.*

Greig.—A new Primitive Methodist chapel was opened at Greig, near Grosmont, on the 10th ult. Mr. T. Davies, of Hereford, is the architect, and Mr. J. Price was the general contractor.

Halifax.—The foundation-stone of a Methodist New Connexion Chapel in Queen's-road, Halifax, was laid on the 2nd ult. Mr. William Hills, of Leeds, is the architect, and the various works required in the erection of the structure have been let to the following firms, viz.:—Mason's and excavating work, Mr. Henry Jenkinson; joiner's work, Mr. Anthony Sutcliffe; plumbing work, Messrs. Akroyd & Mills; slater's work, Messrs. Wm. Pycock & Son, Leeds; plaster work, Mr. John Franks, Leeds; and painter's work, Mr. Joseph Dell.

Little Horton.—A new Congregational Chapel at Little Horton, near Bradford, was opened on the 17th ult. The chapel, beneath which are schoolrooms, is 72 ft. by 32 ft., with a north aisle 46 ft. by 13 ft. It is seated with open benches of red deal, stained and varnished, and will accommodate 440 persons. The roof is open-timbered, ceiled at the level of the collar-beam, and the spandrels are enriched with pierced woodwork. Externally the tower at the north-west angle is the most prominent feature. It is 60 ft. in height, and is built of freestone. The front towards Thornton-lane is also built of freestone, and has a cornice with a pediment over the centre portion. The style is Italian. The whole of the rooms are warmed by hot air, from an apparatus by Messrs. Taylor & Parsons. The contractors for the building are:—Messrs. F. Barraclough & Son, masons; John Moulson & Son, joiners; W. H. Hargreaves, plasterer; Sutcliffe & Wilkinson, plumbers and glaziers; James Smithies, slater; and Boyes & Dawson, painters. The building has been erected from the designs of Messrs. T. H. & F. Healey, architects.

Newcastle-on-Tyne.—The new Danish Lutheran Church of St. Johanne, Maple-street, Newcastle-on-Tyne, was consecrated on the 19th ult. The site is a commanding one at the corner of Maple-street and Waverley-terrace. The church, which

is built of stone, consists of a nave and short chancel, with a tower at the north-east corner, surmounted by a lantern and a slated spire. The style is Early English. The contracts for building have been carried out by Mr. Walter Scott, for mason's work; Mr. Jas. Miller for joiner's work; Mr. Place, of Shields, for slating; Mr. Wallace, for plastering; Mr. Manderson, for plumbing; Messrs. J. & G. Laidler, for painting and glazing; and Mr. Falconer, for ironfounder's work. The architect is Mr. F. R. N. Haswell, of North Shields. Mr. Welford acted as clerk of the works.

Ipswich.—The memorial-stone of a new Baptist Chapel at Ipswich was laid by Sir Morton Peto on the 21st ult. The new building, which will replace the old Burlington Chapel, will occupy a site fronting the London-road, and will cost about 5,000*l.*, the accommodation to be provided being for 1,000 persons. Mr. Brightwen Binyon is the architect, the contractors being Messrs. E. & E. C. Gibbons.

Kilmuir Easter.—The foundation-stone of a new Free Church in the parish of Kilmuir Easter, Inverness, was laid on the 27th ult. The old church, which had become unsafe, has been pulled down. Messrs. Munro, Alness, are contractors for the mason work.

Banff.—Messrs. Ellis & Wilson, architects, Aberdeen, have submitted plans for the enlargement of the Free Church, Banff; 108 additional sittings are to be provided, at a cost of 1,200*l.*

Sketty.—The first stone of a new Wesleyan Chapel at Sketty was laid on the 21st ult. by Mr. H. H. Vivian, M.P. The style of the chapel will be Gothic, the architect being Mr. Joseph Totton, of Swansea, and the builder, Mr. J. Gwyn, Sketty.

Bromley.—The foundation-stone of a new Wesleyan Chapel was laid at Bromley (Kent), on the 19th ult. The style is Early English, and the material used is Kentish rag, with facings of Bath stone. The architect is Mr. W. W. Pocock. The building is to be erected at a cost of 3,180*l.*, by Mr. W. A. Grubb, of Bromley, and will accommodate 600 persons.

Worksop.—The foundation-stone of a new Congregational Church and Schools has been laid at Worksop. The building is in the Early Gothic style, the church being divided into a nave and aisles by stone columns and arches. The cost will be about 3,000*l.* The architect is Mr. Tait, of Leicester, and the contractors Messrs. Redfern & Son, of Worksop.

Great Malvern.—The foundation-stone of a new Congregational Church at Great Malvern has been laid. It is planned to seat 500 persons, and is in the Middle Pointed style of architecture. The cost will be 4,500*l.* The architect is Mr. Tait, of Leicester, and the builder Mr. Meredith, of Gloucester.

ROMAN CATHOLIC CHURCH BUILDING NEWS.

West Cornforth.—A new Roman Catholic Church, dedicated to St. Patrick, was opened on the 18th ult., at West Cornforth, near Ferry-hill. The north gable abuts on the high road, and, rising to a height of 70 ft. from the ground, is the gilded stone cross on the apex of the bell-turret. A porch or narthex, near the width of the edifice, occupies the lower portion of the north façade. Divided from the church by a moulded arch, 32 ft. high, is the large apsidal sanctuary, and adjoining are the sacristy and presbytery for the priests. The walls of the church are boarded to the height of 5 ft., and the seats consist of open benches of pitch pine. The length of the church is 100 ft. by 36 ft. wide. The style adopted is Thirteenth-century Gothic. The whole has been designed and superintended by Mr. Richard Robinson, architect, Darlington, and carried out by the following contractors:—Joiner's work, Messrs. Bridges & Robson, of Hartlepool; slating, Mr. Atkinson, of Darlington; plumber's work, Mr. Lishman, of Darlington; brick and stone work, Mr. H. Hogarth, West Cornforth; and plaster work, Mr. Macnamara, West Cornforth.

Oxford.—The new Roman Catholic church, which has been built by the Jesuit Order at Oxford, is to be consecrated on the 23rd inst. The new church stands about 40 ft. back from the Woodstock-road, and is designed in the simplest and severest style of Early English architecture. It consists of a nave with shallow side-aisles, and a dwarf chancel. It is about 130 ft. in length, and from 35 ft. to 40 ft. broad. It is lofty, with an open wooden roof, and is lighted by a series of large windows in the clearstory. There are two side-chapels. The church is to be dedicated to St. Aloysius, and its architect is Mr. Charles Hanson.

Brighton.—The Roman Catholic church of St. John the Baptist, Bristol-road, Brighton, was reopened on the 31st ult., after considerable alteration and extension. The extension of the church has been effected by lengthening it 60 ft. northward, so that it has now a total length of 116 ft., and will seat about 500 worshippers on the floor space. The alterations have been carried out from designs by Mr. Gilbert Robert Blount, of London; the clerk of the works being Mr. J. T. Carew. The builders were Messrs. Patching & Webber, of Portland-street, the contract sum amounting to about 2,000*l.*, the fittings involving an expenditure of some 500*l.* in addition.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary general meeting of this Institute, held on Monday evening last, at 9, Conduit-street, Sir G. G. Scott, president, in the chair, the decease of the following members was announced:—D. A. Cobbett and H. H. Vale (Fellows), and J. H. Stevens (Associate). Several donations of books, &c., for the library were announced, and the following new members were elected:—Mr. Lloyd Taylor, of Melbourne, Australia, and Mr. William Pain, of 3, Whitehall, as Fellows; and Mr. E. H. Horne, of 47, Old Broad-street, as Associate.

The Secretary called attention to some specimens of Mexican onyx marble, which were exhibited. One peculiarity of the material was that, owing to its laminated structure, it could be split into very thin slabs. Mr. McVicar Anderson remarked that it was a very beautiful material, and one capable of being used for interior decoration with very great effect. Being a new material, however, he could not speak as to its durability.

Mr. Boulnois then proceeded to read a short description of the building proposed to be erected for the "Exposition Universal" at Madrid, from designs furnished by M. Colibert, a pupil of M. Viollet-le-Duc. The building was specially designed with the view of ultimately costing the Spanish Government nothing for its erection. The building consists on plan of a vast parallelogram, terminating at one in a hemicycle, and occupying an area of nearly 400,000 superficial feet. The extent of the building could be increased indefinitely by prolonging the hemicycle. The interior consisted of five parallel galleries of different dimensions. Each of these parallel strips would be allotted to different countries, the same classes of objects exhibited by each country being brought together for comparison by a transverse arrangement. The materials of the building would be cast and wrought iron, roofed partly with glass, and partly with the light tiles of the country. Each compartment of the building would be insulated in its construction, one or more of such compartments being suitable for railway stations, covered markets, rotundas, locomotive sheds, &c.,—buildings which were at present very much wanted in Spain. When the Exhibition terminated, these compartments would be taken down and sold, the purchase-money recouping the Government for the cost of erection.

Mr. Edward Hall remarked that the arrangement proposed for the exhibits was not new; it was substantially the same as that which had been tried in the Paris Exhibition of 1867, and which, in his opinion, was a conspicuous failure.

Mr. Boulnois replied that the method of arrangement was only a collateral advantage of the building he had described, and for this no merit was claimed; it was the method of building so that the structure might be entirely utilised for other purposes when the exhibition was concluded which was claimed as worthy of attention.

Mr. R. Popplewell Pullan then read a paper "On the Decoration of Basilicas and Byzantine Churches," of which we give the substance on a previous page.

In the discussion which followed,—

Mr. C. T. Newton, of the British Museum, said there was a mosque at Constantinople which was not generally known to have been a Byzantine church; it was very near to the building sometimes called the Palace of Belisarius. It was full of mossics, not quite covered with whitewash, and was well worth a visit, even at the risk of incurring the displeasure of the populace. Mr. Pullan had alluded to the facing of coarser materials with a finer material such as stucco. It might not, perhaps, be generally known that the ancients adopted this practice very largely and very successfully. In the course of his investigations at Halicarnassus he had come across specimens of the ancient stucco, which was made of fine white marble, pounded, and painted on the surface. He had picked specimens of it out of the watercourses of the street with the ancient patterns in colour still upon them; and he believed there was no doubt that Rhodes, which was so celebrated for its symmetry, was built with coarse stone faced with white stucco. He had also, in the course of his investigations, discovered many imitations of marble, somewhat resembling scagliola. In the Græco-Roman basement of the British Museum (which, he was sorry to say, was very little better than a cellar), there was a large collection of pavements taken up at Carthage and Halicarnassus. They were probably of about the third century of the Christian era in date, and, though rude in drawing, yet as specimens of combination of colour they were not unworthy of attention.

Mr. Cockerell said that the use of stucco as a decorative material in ancient times, was not confined to the East; it was to be seen in Italy, as in the columns of the Temple of Vesta at Tivoli. There was also a very remarkable specimen in Sicily at Girgenti. It consisted of a small temple, which was probably pulled down by the iconoclasts, and remained in ruins until about thirty years ago, when a German artist got permission to put some of the columns up again, after being thrown down for perhaps 1,800 years. The stucco on the columns remained so perfect that when the columns were pieced together the joints were scarcely visible, and there was a fine polish on the surface.

Mr. Phené Spiers suggested that probably the chief reason for employing stucco on the temples of Sicily was that the stone of the locality did not permit of fine mouldings being obtained, as in the temples of Greece.

Sir Gilbert Scott said the same thing was to be seen in Rome in the temple of Fortuna Virilis, but it was doubtful whether these were examples to be imitated.

Mr. William White, F.S.A., in proposing a vote of thanks to Mr. Pullan for his paper, said that the principle of using positive colours, relieved by black and white, was a most valuable one to the colourist, and one that ought to be more generally followed than at present. Mr. Pullan had spoken disparagingly of red and buff brick for interior church walls, but such materials, it should be remembered, afforded a very good groundwork for decoration, especially in this country, where there had been so many disastrous failures with every description of plaster.

Mr. Penrose, in seconding the vote of thanks, said he was glad to hear that it was the feeling of the last speaker that the brickwork so often seen in our churches should be intended only as a groundwork for decoration, although some of it, he was afraid, never would be decorated, and seemed as if it was never intended to be decorated.

Mr. Boulnois described Mr. Pullan's church at Baveno as being very successful in its treatment. On the subject of stucco, he remembered a discussion in the rooms of the Institute between Mr. Benjamin Ferrey and Mr. Talbot Bury as to how far the stucco had originally extended in the ancient church of Little Maplestead.

Mr. Crace having said a few words,

Sir Gilbert Scott, in putting the motion, which was afterwards carried, said he corroborated Mr. Pullan's remarks as to the extreme beauty and interest of the decorated buildings he had described. As to the use of stucco, he thought that it was only to be objected to when it was treated in the speculating builder's manner; he did not think any one was such a purist as to object to stucco in the abstract. That stucco was anciently used there was ample evidence. Some years ago he was making a survey of the churches on the Duke of Newcastle's estate in Nottinghamshire, and he found invariably that the earliest parts of the church had stucco, or traces of stucco, upon them. As to the use of veneers or slabs of marble, they were perfectly legitimate, so long as they were placed vertically, and not made to look as if they were solid blocks.

BUILDERS' BENEVOLENT INSTITUTION.

The twenty-eighth anniversary festival in aid of the funds of this Institution took place on Thursday, 11th inst., at Willis's Rooms, St. James's, Mr. John Aird, jun., president of the Institution, in the chair, supported by Colonel Beresford, M.P., Mr. George Plucknett (Cubitt & Co.), Mr. Charles Lucas, Mr. Thomas Lucas, and other friends of the Institution to the number of about 280. The usual loyal and patriotic toasts having been duly honoured,

The Chairman, in proposing the toast of the evening, "The Builders' Benevolent Institution," remarked that the object which they were met to promote was one worthy of the utmost support of all who were connected with building and the associated trades. The Institution was certainly entitled to greater support than it received. There were at the present time forty-three pensioners on the funds of the Institution, twenty-three women and twenty men, the men receiving 24*l.*, and the women 20*l.* per annum. Many of the pensioners were once prosperous, if not affluent, but such were the vicissitudes and risks of the building trade that they had become reduced in circumstances. He could vouch for it, from personal acquaintance, that the Institution was most economically and judiciously managed, and no candidates' names were submitted to the subscribers until the cases were thoroughly sifted and inquired into. There were at the present time five applicants for admission on the funds of the Institution, but he regretted to say that with the present resources of the charity there were only vacancies for two. In conclusion, the Chairman alluded, in terms of deep regret, to the great loss which had been sustained by the death, a short time ago, of Mr. Cozens, the founder of the Institution. Mr. Cozens was a most benevolent man, the founding of the Institution being only one of his many philanthropic labours. The Institution had sustained another great loss by the death of Mr. Harris, who for so many years had been the active and zealous secretary to the Institution. This was a loss which, for a time at any rate, seemed to be well-nigh irreparable, and the Institution could not be sufficiently grateful to Mr. Thomas Stirling for the disinterested manner in which he had acted as secretary *pro tem.* since the death of Mr. Harris. Now that they had elected a new secretary in the person of Major Brutton, they might soon hope to be going on smoothly again. It was greatly to be regretted that the workmen engaged in the building trades did not devote their spare capital and energy to the establishment and maintenance of similar societies for themselves: their money would be far more profitably invested than in promoting strikes.

The toast was received enthusiastically.

Mr. Charles Lucas next proposed "The Chairman and President," alluding to him as "Honest John Aird," the name by which he was familiar to all who knew him best. Mr. Lucas also alluded to the decease of Mr. Cozens and Mr. Harris, and expressed his sense of Mr. Stirling's great services to the Institution. He considered, however, that the Institution was very inadequately supported. Considering the vastness of the industries connected with building, a single firm sometimes employing as many as 10,000 men, it was not creditable that they should have, election after election, to send away two or three applicants for 20*l.* a year.

The chairman having replied, Mr. Dines proposed "The Vice-Presidents and Trustees," coupled with the name of Mr. J. Russell Freeman, who briefly responded.

Mr. Thomas Lucas next proposed "The Treasurer" (Mr. Geo. Plucknett), who, in reply, said that the Institution had, at the time he was speaking, funded property to the amount of 18,400*l.*, and he hoped that when the subscriptions had been announced there would be upwards of 19,000*l.* It was greatly to be desired that they should not have to turn away eligible and deserving candidates for the bounty of the Institution, and it was no less desirable that the amount of the pensions awarded should be slightly increased.

Several long lists of subscriptions were next read, including 52*l.* 10*s.* by Messrs. John Aird & Sons, 52*l.* 10*s.* by Sir John Kelk, and 50*l.* by Messrs. Clayton & Shuttleworth, the total amount subscribed being 869*l.* 5*s.* 6*d.*, the chairman's list alone amounting to 491*l.* 9*s.* The total amount subscribed was unusually large.

Mr. Rogers proposed "The Architects and Surveyors," coupled with the name of Mr. Arding, who briefly responded; and Mr. J. M. Macey proposed "The Directors and Stewards," coupled with the name of Mr. Wilfrid Nicholson, who, in responding, proposed a special vote of thanks to Mr. Thomas Stirling for his services to the Institution. Mr. Stirling acknowledged the compliment.

Mr. Charles Lucas said that with the amount just subscribed the Institution had now funded property to the extent of 19,300*l.* He should very much like to see it made up to 20,000*l.* at once, and therefore he, on behalf of his firm, would volunteer to be good for 100*l.* towards the 700*l.* required, if six other gentlemen would give 100*l.* each.

Mr. Plucknett said that his firm (Cubitt & Co.) would promise another 100*l.*

There were no further responses to Mr. Lucas's suggestion, but it was stated that efforts would be made to get the remaining 500*l.* within the next few weeks.

ANOTHER DIFFICULTY AT HASTINGS.

The question of building a new town-hall at Hastings has not yet passed out of the stage of public discussion. The blundering of the past year has just reached further development. A few days ago the town council received tenders for the erection of public offices in accordance with plans selected out of two competitions. Two sites had been chosen: the last on a swamp, with 40 ft. depth of soft wet clay-mud above the rock. Instead of the foundations costing 2,000*l.*, as allowed by the council, the lowest tender for that portion of the work is 4,480*l.*, and increasing in amount up to 7,000*l.* The idea of putting such a sum out of sight, in concrete, has aroused a feeling in favour of purchasing a large piece of ground in a more eligible position, and now occupied by the Castle Hotel and its adjuncts. The proposal having been received very warmly, at a recent public dinner a requisition was got up, and after obtaining a number of influential signatures, was presented to the mayor. His worship immediately called a town meeting, which was both largely and influentially attended. A motion in favour of the Castle Hotel site was met by an amendment, approving of the selection made by the council. This was negatived by a majority of about 250, and the original motion was carried with cheers. During the meeting it was stated that the lowest tender for the superstructure was a little over 19,000*l.*, the council having allotted 18,000*l.* for that purpose. It was also stated that the lowest tender, taking building and foundation jointly, was 26,780*l.* There were seven tenders sent in, but the figures have not been made known,—except to a chosen few,—because the building committee have asked the council to give further time for consideration of the report.

A BIG THING IN TRADE-BOOKS.

Securely packed in a deal box, comes to us from the other side of the wide Atlantic, certainly the most extravagant trade-book we have ever seen. It is issued by Messrs. Mallory, Wheeler, & Co., of New Haven, Connecticut, and illustrates on about 300 pp. of fine thick paper, royal folio, the door locks, knobs, padlocks, and other fastenings manufactured by them, in exact *fac simile*, and full size. The iron, steel, nickel, brass, copper, bell-metal, lacquered and japanned work, silver plate and porcelain, that enter into the combination of locks, handles, and escutcheons, are set forth in their proper colours. Each kind of polished metal is represented by a different coloured bronze. The management of this bronze work is excellent, and the extent to which it is employed may be inferred from the fact that more than twenty pounds of pure silver bronze, costing 50 dols. per pound, have been used on the book. We are told that the printing of the book occupied three of R. Hoe & Co.'s new stop-cylinder presses for about one year. There were 2,000 copies printed, and we understand that the value of the work, completed, is about 80,000 dols.; or 8*l.* each copy. To make the book American throughout, the leather used for binding is made from Yankee cowhide. The firm has been established forty years, and Messrs. Mallory claim that brass and wrought and malleable iron are mostly used in the interior construction of their locks. Common cast iron is in no case relied upon, except where the part is so heavy that there is no possibility of failure. The keys mostly fold in two. The prices are not filled in, so that we are unable to judge how they stand in that respect as compared with English manufactures. The book before us can scarcely fail to make Messrs. Mallory, Wheeler, & Co. talked about, and that, we apprehend, is one of the main objects they have in view.

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Sir,—A question having been raised in more than one of the professional journals respecting the course adopted by the secretary of this Institute in reference to the publication of our president's opening address on the 1st inst., I am requested to inform you that the Council, before whom the matter has been laid, having heard the secretary's explanation on the subject referred to, express their entire concurrence with the course taken by him in carrying out the instructions contained in the following resolution passed by the Council on the 22nd January, 1872:—

"Resolved,—That for the future the rules as to the copyright of Sessional Papers, laid down in Bye-law 45, Section XI., be maintained, and that it be left to the secretary to arrange how and when abstracts from such papers shall be furnished to the professional journals."

The Council request me to furnish you with a copy of this resolution, to prevent any further misunderstanding on the subject.

Fred. P. Cockerell, Hon. Sec.

THE TIMBER TRADE.

The official returns from the Board of Trade of the importations of timber at the principal ports of the United Kingdom during the years 1874 and 1873 have just been issued. One point worthy of notice is the vast trade of London in comparison with other emporiums of the timber traffic.

The stream of prosperity which set in towards the fall of 1872 seems to have attained its highest level in the autumn of 1873. It is true the imports of the following year rose still higher, just as when a river overflows its banks on a high spring tide it continues to deluge the land for some time after the ebb has begun. The surplus and breakwater of the previous year, represented by an unusual number of floating cargoes detained abroad, completely bore down all opposition when they came upon the market in the following spring; and prices gave way in all directions, carrying with them many a bulwark and buttress in the trade, which had been previously believed capable of bearing any amount of strain that was likely to be put upon them.

ENGLAND.

	Hewn Timber		Sawn or Split Timber		Total Imports of Timber	
	1874	1873.	1874	1873.	1874	1873.
	Loads	Loads	Loads	Loads	Loads	Loads.
London....	317,778	229,332	1,028,[illegible]	1,[illegible]83	1,[illegible]87	1,184,221
Liverpool .	76,345	2[illegible],467	4[illegible]6,[illegible]48	[illegible]23,[illegible]5		676,355
Hull	107,181	123,687	[illegible]8,[illegible]3	291,[illegible]1	[illegible]7,[illegible]4	414,918
Newcastle .	1[illegible],480	[illegible]3,[illegible]01	11,[illegible]79	104,280	[illegible]3,[illegible]58	204,182
Grimsby ..	67,431	100,334	107,[illegible]71	111,[illegible]45	[illegible]4,[illegible]2	212,[illegible]79
Hartlepool.	163,433	161,776	213,324	171,792	381,[illegible]7	333,[illegible]62
			SCOTLAND.			
Leith	22,674	14,315	71,876	60,776	94,550	75,091
Greenock..	178,925	74,[illegible]0	21,[illegible]0	25,[illegible]9	2[illegible],689	100,[illegible]8
Dundee	29,212	24,567	9[illegible],[illegible]0	32,[illegible]8	48,[illegible]2	56,[illegible]5
Grange mouth ..	69,238	59,771	99,864	111,643	168,[illegible]2	171,414
			IRELAND.			
Dublin	17,633	24,985	49,474	56,972	67,[illegible]7	81,957
Belfast	23,447	14,699	54,[illegible]0	41,[illegible]4	77,[illegible]7	56,[illegible]3

TOTAL FOR THE UNITED KINGDOM.

	1874.	1873.
Hewn timber (loads).....	2,446,525	2,077,982
Sawn or split timber (loads) ...	3,841,011	3,434,160
Total	6,287,536	5,512,142

"Payment in Kind" for "Lending a Hand."—The case of Winter *v.* Carter, heard at the Brompton County Court on the 12th inst., before Mr. Serjeant Wheeler, was a claim for 1*l.* 18*s.*, for work done. Plaintiff said he was employed as a plumber for the defendant, who, after he had done the work, refused to pay him, because he said he had been giving the labourers the lead chippings. He admitted that he had given one of the labourers about 2 lb. of lead for "lending him a hand," but that was in the interest of defendant. His Honour observed that that admission put an end to the case. He had disposed of his master's property, and his verdict was for the defendant.

Miscellanea.

The Denbigh Reredos Case.—The awards of Dr. Stephens, Q.C., and Dr. Deane, Q.C., arbitrators respectively for the Bishop of St. Asaph and the Building Committee of Denbigh New Church, in the long-pending reredos dispute, were announced on the 12th inst. Both arbitrators pronounced the reredos illegal. The awards set forth that a cross by itself, or the Saviour's image by itself, is not illegal; but joined together, and if the Saviour is represented as extended upon the Cross, it becomes illegal, because such representation is liable to lead to superstition, and teach pious worshippers to adopt an image. The Denbigh reredos they consider especially open to this objection because at the foot of the cross are women adoring the dying Saviour. The arbitrators, therefore, agree in pronouncing the central compartment of the reredos illegal. The committee will accept this decision, and either remove the whole reredos, which cost 500*l.*, and is richly sculptured, or the central compartment.

"Building" on Rubbish-Shoots at Stoke Newington.—In a recent number of the *Builder* (p. 937) we referred to some houses in course of erection in Defoe-road, Stoke Newington, as likely to prove hotbeds of fever. At the meeting of the Hackney District Board of Works, on the 12th inst., Dr. Tripe, medical officer of health, reported that he had visited the houses in question, and he found that in accordance with his promise the builder was laying down a bed of concrete over the entire area, with a view to preventing injury to the health of the occupiers of the buildings. At the same time he discovered that more dust was being shot into large holes in vacant land in the same thoroughfare, but on the opposite side of the way. He had written to the Metropolitan Board, directing their attention to the fact that fine siftings of house refuse were being mixed with the mortar employed in the construction of buildings in this district, and he had received a reply to the effect that the Board were desirous of preventing the continuance of this objectionable practice.

The Rivers Pollution Commission.—The commissioners appointed in 1868 to inquire into the best means of preventing the pollution of rivers, having concluded their labours, have now published their sixth and final report. The first part explains the mode of investigation which the commissioners have followed in the chemical examination of the various samples of water, and the meaning of the terms used in the analytical tables. The second part relates to the classification and chemical composition of drinking-water. The third part discusses several considerations of special importance in connexion with the wholesomeness of certain kinds of water. The fourth part describes the condition of the water supplied to the metropolis, to a large number of cities, towns, and villages, and rural districts of Great Britain, and to the residences of her Majesty and his Royal Highness the Prince of Wales.

The West Front of Lincoln Minster.—The *Lincoln Gazette* states that the report of Mr. W. H. Barlow, F.R.S., C.E., who was deputed by the Dean and Chapter of Lincoln to report on the actual condition of the west front of the Minster, entirely confirms the view taken by Mr. Pearson, R.A., the Cathedral architect. Mr. Barlow does not agree in the desirability of an attempt to force the western front back into its original vertical position, but represents in the strongest way the importance of putting the great staircase of the south-western tower and the whole of the western front into a better state of security with as little loss of time as circumstances will permit. Neither gentleman considers that the foundations are in the least insecure.

The Drainage of Dublin.—On the 15th inst., in the Vice-Chancellor's Court, counsel for the Solicitor-General, at the instance of John M'Evoy and John M'Inglis, applied for an injunction to restrain the Lord Mayor and Corporation of Dublin from making an application to Parliament for a Bill for extending the borrowing powers and continuing the compulsory provision of the Dublin Main Drainage Act. The solicitor for the Corporation applied for an adjournment, and the opposing counsel consented, on condition that the defendants should not incur any further expenses in relation to the Bill pending the adjournment.

The Ramsgate Surveyorship.—No fewer than sixty-five candidates have applied for the appointment (rendered vacant by the resignation of Mr. Ellice-Clark, who has been appointed town surveyor of Derby) of surveyor to the Ramsgate Local Board of Health. The committee appointed to investigate the testimonials reduced the number, first of all to thirteen, and then, by the exhaustive system of voting, to the following six:—A.W. Conquest, Clapham; G.W. Dixon, Beccles, Suffolk; B. M. Hiscocks, Wandsworth; R. H. Inch, Croydon; C. McCallum, Dover; and A. W. Mulling, Manchester. This number was reduced to four by the Board at its meeting on the 9th inst., viz., Messrs. Conquest, Hiscocks, Inch, and McCallum.

School Board Offices.—Sir Andrew Fairbairn, chairman of the Leeds School Board, recently had an interview with Sir F. R. Sandford, secretary to the Education Department, with the view of ascertaining how far the Government would be disposed to assist in carrying a Bill for obtaining the powers which the Leeds and other Boards are anxious to have in providing permanent offices. The secretary said their lordships would not wish to stand in the way of the Leeds Board being in a position to move in the matter by a private Bill, if it should be thought advisable to give notice of one. The Board has resolved to introduce a private Bill in the coming session.

The Studio of the late J. Birnie Philip. We have pleasure in mentioning that Mrs. J. B. Philip has arranged to carry on the studio of her late husband, Mr. John Birnie Philip, under the management of Signor Fucigna, for many years Mr. J. B. Philip's chief assistant modeller. Sir Gilbert Scott, Mr. W. Calder Marshall, and Mr. John R. Clayton, having inspected several original models executed by Signor Fucigna, comprising colossal heads, a sketch for a bas-relief for the reredos of Lightcliffe Church, Halifax, and a classical figure, have testified as to his ability as a sculptor, and to complete the commissions left unfinished by the late Mr. J. Birnie Philip at the time of his death.

Chimney Construction.—Lord Shaftesbury's recent appeal on behalf of climbing boys has already borne fruit. A master builder was summoned before the Huddersfield magistrates, a few days since, for not having built a chimney in accordance with the 6th section of the Act of 1840. It was contended for defendant that there was no penalty attached to the offence, but only a forfeiture; and further that the public Acts had been overridden by the Local Act. However, the builder was formally convicted, but a case was granted for the Supreme Court.

Dunfermline Water Supply.—Messrs. J. & A. Leslie, civil engineers, of Edinburgh, were recently instructed by the Town Council of Dunfermline to make surveys with the view of ascertaining the best source of water supply for the town. They have now submitted a report in which they express their decided opinion that the only adequate source of supply is the district of Glendevon. To obtain a supply of one million gallons per day from Glendevon to Craiglascar they propose at present to construct a reservoir in Glenquey, capable of holding 21,000,000 cubic feet of water. The cost is estimated at 42,650*l.*

Industrial Dwellings.—It is stated that the Government have agreed to lease the Improved Industrial Dwellings Company a large site adjoining the Chelsea Barracks, at Pimlico. Among other sites recently acquired by this company is one containing more than an acre of land, between Upper-street and Liverpool-road, Islington, which has been purchased from the North London Railway, and will enable the company to supply a want greatly felt in that neighbourhood.

Paisley Abbey Church.—Prince Leopold, after visiting the ancient abbey of Paisley, called attention to the fact that the building contains no monument to Robert II. and the other members of the Stuart family who are buried in the abbey, and it has been stated that the Queen on being informed of this, has graciously signified her willingness to erect a suitable memorial.

Royal Engineer Masons and Bricklayers for Gibraltar.—Two detachments of masons and bricklayers have been selected from the 1st and second companies of Royal Engineers at Shorncliffe, to proceed with the detachments of Royal Engineers leaving the School of Military Engineering, Brompton, on the 29th inst., for Gibraltar and Malta.

Castleford and Whitwood Drainage.—At a meeting of the joint Boards of Castleford and Whitwood, held on the 10th inst., Messrs. M. Paterson, of Dewsbury, and Wm. Wheaten, of Leeds, were appointed engineers to carry out the combined drainage scheme for the two districts, and also to prepare the plans, &c., necessary in the application for provisional orders for the compulsory purchase of lands and easements connected therewith. The Castleford Local Board are also about to apply for a great extension of their district.

Alleged Nuisance from Cement Works in the Isle of Wight.—At a meeting of the Rural Sanitary Authority for the Isle of Wight, held at Newport the other day, an inspector from the Local Government Board attended with reference to a complaint preferred by the Queen, through Sir Thomas Biddulph, as to an alleged nuisance stated to be experienced at Osborne from the smoke of the cement works at Dodner, belonging to Messrs. Francis. The local inspector was ordered to report on the subject at the next meeting of the Authority.

Crystal Palace Company's School of Practical Engineering.—A colonial section has been arranged for, to commence operations on January 5, 1876. This section is designed particularly for gentlemen who intend to proceed to the colonies or abroad, as explorers or settlers. The object proposed is to afford them so much practical knowledge of scientific and mechanical work and expedients, as shall enable them best to utilise the means with which they may have to deal, especially when entirely dependent on their own resources.

New Police Station at Brighton.—The north-west Police and Fire-Escape Station, ordered by the Brighton Town Council to be erected in West Hill-road, and begun in May last, is now completed and fit for occupation. It is in the Italian style, and will be heated by a new process, viz., that of heat generated by gas, and conveyed through pipes, the suggestion of Mr. Philip C. Lockwood, the Borough Surveyor, under whose supervision the building has been erected.

Kew Gardens.—A short time ago a deputation, headed by Sir Henry Peek and other influential gentlemen, waited upon the First Commissioner of Woods and Forests to request him to sanction a new entrance to Kew Gardens by a path across the Old Deer Park. The Lords of the Treasury have just intimated by letter to the Richmond Select Vestry that they must decline to sanction the opening of a footpath across any part of the Old Deer Park.

The Iron and Steel Institute.—It is stated that a supplementary meeting of the Iron and Steel Institute will shortly be held in London to dispose of the papers left over from the Manchester meeting in September. The meeting will be held in the rooms of the Institution of Civil Engineers, Great George-street. There will be an adjourned discussion on several papers, including that by Mr. Snellus, "On Fireclay and other Refractory Materials." Several modifications in the rules will be considered.

The Albert Memorial Chapel.—The First Commissioner of Works notifies that by the permission of the Queen the public will, on and after December 1st, be admitted to view the Albert Memorial Chapel, Windsor, three days a week,—Wednesdays, Thursdays, and Fridays,—from twelve till three o'clock. Admission will be by ticket only, limited in number, which can be obtained at the office of the clerk of the works at Windsor Castle.

A New Bridge in Aberdeenshire.—The contracts for the new bridge across the Ythan, near Waterside of Slains, have now all been entered upon, the following being the contractors:—Bisset & Sons, Aberdeen, for the concrete work and foundations; Abernethy & Co., Aberdeen, for the iron work; and Hugh M'Kay, Fraserburgh, for the earthwork and embankments. Mr. Willet, of Aberdeen, is the engineer. The cost will be about 4,000*l.*

New Public Offices.—An evening paper announces that the Government have directed notices to be given for a Bill to acquire as a site for public offices the ground extending from the new public offices and the India Office to Great George-street and the Park, including Charles-street, King-street, Delahay-street, Duke-street, the remainder of the west side of Parliament-street, and the north side of Great George-street.

A Church destroyed by Fire.—The old and interesting Norman Church at Churcham, situated about five miles from Gloucester, was on the 26th ult. destroyed by fire. The spire, peal of six bells, the roof of the nave, and the pews were burned, but the chancel and its fittings were saved. The fire is supposed to have been caused by the bell-ringers (who were at practice on the previous night) flinging a lighted match carelessly into some sawdust used for spitting. The church was restored in 1868 at a cost of 900*l*.

Value of City Property.—The lease of the site, with the houses 65 and 67, Ludgate-hill, has just been sold by Messrs. E. & H. Lumley. The price paid, added to the capitalised ground-rent, represents 1,316*l*. per foot frontage for the freehold.

The Broughty Ferry Building Operatives.—At a meeting of the master builders of Broughty Ferry, held on the 5th inst., it was unanimously resolved, on and after Saturday last, to reduce the wages from 9d. per hour to 8½d. per hour for efficient workmen.

New Bank at Watton.—New bank premises at Watton have just been erected for Messrs. Gurney & Co. The work was entrusted to Mr. J. Frost, of Watton, Mr. Boardman, of Norwich, being the architect.

Competition.—The plans of Mr. R. G. Thomas, architect, of Menai Bridge, have been selected, in a limited competition, for a new Welsh Presbyterian Chapel at Seacombe, near Birkenhead.

A Reredos for Bath Abbey.—The *Bath Chronicle* states that, through the munificence of Mrs. Kemble, the Abbey Church is to be provided with a suitable stone reredos. Sir Gilbert Scott has been consulted, and is preparing the design.

Loan Exhibition of Scientific Apparatus, 1876.—During the past week meetings of the sub-committees of the various sections of this exhibition have been held at the South Kensington Museum.

The Worshipful Company of Carpenters have voted the sum of twenty-five guineas for the promotion of technical education in the Artisans' Institute, Castle-street, St. Martin's-lane.

TENDERS

For the erection of shops, Church-street, Liverpool, for Mr. Alderman Bernard Hall. Mr. Cornelius Sherlock, architect. Quantities by Mr. W. J. Wood :—

Tomkinson & Sons	£30,987	0	0
Rome	29,769	0	0
Howe & Nicol	29,438	0	0
Gabbutt	29,260	0	0
Urmson	29,208	0	0
Jones & Sons	28,995	0	0
Haigh & Co. (accepted)	28,296	0	0

For the erection of shop, show-rooms, and residence, at Croydon :—

Ridge & Kingsland (accepted).

For alterations at Copped Hall, near Totteridge. Mr. Sextus Dyball, architect. Quantities by Mr. W. E. Stoner :—

Greenwood & Son	£3,913	0	0
Wall, Brothers	3,886	0	0
Morter	3,823	0	0
Killby	3,771	0	0
Lascelles (accepted)	3,760	0	0

For finishing a shop in Hackney, for Mr. J. R. Palmer. Messrs. Lee & Smith, architects :—

Waldram & Co.	£680	0	0
Heyworth	645	0	0
Forrest	537	0	0

For the conversion of a block of warehouses in Commercial-street, Spitalfields, into a temporary hospital for the Committee of the Metropolitan Free Hospital, Devonshire-square, City :—

Waldram & Co. (accepted).

For alterations and repairs at the Freemasons' Arms Tavern, Downshire-hill, Hampstead. Mr. J. Pennington, architect. Quantities supplied by Mr. H. Tovey :—

Burford	£745	0	0
Cook	579	0	0
Mildwater	573	0	0
Lunn & Roff (accepted)	495	0	0

For the erection of schools for seventy children, for the School Board of Penmynydd, Anglesey. Mr. R. G. Thomas, architect :—

Jones	£590	0	0
Williams	565	0	0
Owens	555	10	0
Humphreys	487	12	0
Pritchard & Jones (accepted)	462	10	0

For erecting a residence, with lodge and stabling, at Brightling, Sussex, for Mr. J. T. Bailey. Mr. Joseph S. Moye, architect :—

Punnett & Sons	£3,797	2	4
Adcock	3,653	0	0
Grover	3,380	0	0

For proposed additions and alterations to Highfield House, Ravensbourne Park, Catford Bridge, for Mr. James Whitehead. Mr. Josiah Houle, architect. Quantities supplied by Mr. Chas. F. Selby :—

Mitchell	£3,650	0	0
Crossley	3,534	0	0
Sewell & Son	3,458	0	0
Burchell	3,236	0	0
Langmead & Way	3,200	0	0
Amer	3,185	0	0

The War Department have accepted the tender of Mr. J. W. Martin, of Manbey Works, Stratford, for painting, &c., internally the Royal Clothing Depôt, Pimlico.

TO CORRESPONDENTS.

Reader Abroad (Laxton's, 51, Great Queen-street).—E. T. (through Mr. Webster)—L (the question has been asked)—An Inventor (not yet arranged).—H. J. K.—L. R.—F.—S. B. M.—H. M.—D.—F. C.—T. W.—H. St. J.—T. P.—W. K.—E. M.—L. W.—Dr. D.—R. T.—E. Y. C.—W. G. S.—Bayswater.—Dr. C.—R. G. T.—Quercus.—J. W. M.—G. F. S.

We are compelled to decline pointing out books and giving addresses.

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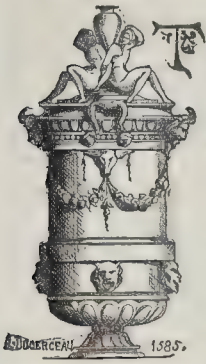
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The Late Mr. Charles B. Vignoles.



THE death of this eminent gentleman has severed one of the few remaining links which united the present generation of civil engineers with that which, some fifty years since, obtained for England the honour of the first invention and introduction of the railway system. Mr. Vignoles was prominent amongst this early band of engineers, of which George and Robert Stephenson were the chiefs, and which comprised, besides his own, the honoured names of Brunel, Locke, Bidder, Hawkshaw, and others of high repute in railway history. We feel assured, therefore, that the following brief memoir will be perused with no ordinary interest.

Mr. Vignoles was born in 1792, and had, accordingly, attained the age of eighty-three at his death, on the 17th instant. The family of Mr. Vignoles is of very ancient origin, from Languedoc, and their founder, Étienne des Vignolles, proved four generations of "*noblesse*," when his titles were granted, in the old French chronicles, in the fourteenth or fifteenth century. The senior branch, the De Vignolls, of Prades, embraced the Protestant faith, and emigrated, some to Holland, and afterwards to Ireland, and settled at Portarlington, and many appear serving in the English army as officers. His father, a young captain in the 43rd regiment of Infantry, married Camilla Hutton, daughter of Dr. Hutton, the Professor of Mathematics at Woolwich, and afterwards they went to Ireland, where the subject of our notice was born. The regiment was then ordered out to the West Indies, the young wife and infant going also. Captain Vignoles was taken prisoner by the French, when they retook the island of Guadaloupe, and he and his wife both died of yellow fever within a few hours of each other, leaving the infant a little prisoner of war. His uncle, General Hutton, then Major Hutton, regained the infant when exchange of prisoners was made, and he had been kindly cared for by the family of a French officer of position, by name Courtois, and Major Hutton brought the infant and his nurse safely to England, where he was brought up by his grandfather, Dr. Hutton. General Hutton was the father of the Rev. Henry Hutton, the much-esteemed and greatly-beloved late Rector of St. Paul's, Covent Garden; and the only male representative of that family now is Major Hutton, of the 23rd Fusiliers, which regiment distinguished itself in the late Ashantee war.

Mr. Vignoles frequently related, as a curious characteristic of those times, that he received at that early age a commission in the army as a provision; and that his commission was probably of earlier date than that of any other British officer living.

Mr. Vignoles joining the Duke of Kent's own regiment, was engaged for a short period on active service in the Peninsular War and in France before the conclusion of our wars with the first Napoleon. He displayed, even at this early age, the ability and energy by which he became subsequently so much distinguished. Leaving the army after the close of the war in 1815, he visited the United States, and made topographical surveys of portions of Florida and South Carolina; and subsequently surveyed for the English Government a considerable portion of the Isle of Man. His railway career commenced in 1825, when he was engaged on the survey of the then projected Liverpool and Manchester Railway, and the following extract from his presidential address to the Institution of Civil Engineers in 1870 contains some interesting reminiscences of that period:—

"It happened," says Mr. Vignoles, "that I had returned, some two years previously, from occupations on the Continent and in North America, both civil and military, all connected with engineering, occasioning repeated absences from this country. Having watched the few railways then made or making, I was fortunate in being selected by Messrs. Rennie to take charge of the new surveys, which the Liverpool committee immediately ordered under the direction of those eminent engineers. But the opposition of canal owners and land proprietors had become redoubled; and it was in the course of carrying out this duty that I was brought into contact with the celebrated Mr. Bradshaw, the devoted trustee under the remarkable will of that Duke of Bridgwater who employed Brindley to make his canals, and had charged Mr. Bradshaw, for the benefit of his future heirs, with the sole and absolute control of them, and of his large estates, which he exercised for nearly half a century.

I was brought up before Mr. Bradshaw, at Worsley Hall, on a pretended charge of night poaching and trespassing; for I was often obliged to make surveys and take levels by moonlight and torchlight, so strict was the watch kept by day, by order of many landowners, to prevent engineers from completing the necessary plans and sections. Mr. Bradshaw had contrived to earn himself a terrible name for severity; but I found him a gentleman. My only reason for recurring to such a mere personal adventure is, that some not unfriendly discourse passed between us on that occasion, which I communicated to the Liverpool committee. This led, I have good reasons for believing, to communications which, before the close of 1825, ended in those arrangements by which the then Marquis of Stafford, for himself and those of his family who were ultimately to benefit in the profits of the Duke of Bridgwater's canal, took 1,000 shares in the Liverpool and Manchester Railway Company, with the privilege of nominating three of the directors,—arrangements confirmed by the company's first Act of Parliament."

The early appreciation by Mr. Vignoles of the effects of the railway system was remarkably shown by the following further extracts from his presidential address, in relation to the same early period, which we cannot refrain from quoting:—

"A great gathering of engineers from all parts was, of course, in Liverpool; and as Englishmen are said not to get on well on important business without dinner demonstrations, the engineers gave on this occasion a grand banquet to the directors and officers of the railway, and to the competing locomotive engine-builders. Of course speeches were made and healths drunk, and we toasted each other and everybody, except the waiters. Will you excuse me if I read from a newspaper report of our feast (in the *Liverpool Albion* of the 12th of October, 1829), two short predictions of mine about railways? I had had the honour assigned to me of returning thanks for the toast of 'The President and Institution of Civil Engineers,' and what I said is thus reported:—'Mr. Vignoles, as a member of the Institution, returned thanks for Mr. Telford, to whom, as the constructor of many of our most important public works, the toast was due. His (Mr. Vignoles's) first step in life was as a military rather than a civil engineer; and as he was deputed to propose a military toast, perhaps he might preface it by some anticipation of what steam would do in a military point of view. Supposing such a general as Napoleon were to effect a landing on our coast with a large and powerful army, and that he even were to be victorious upon his landing; armed as this country is shortly to be with railroads and locomotive engines, brief would be his triumph, *for by return of post, as it were, parks of artillery and the whole military force of the country could be poured upon him, without even the fatigue of a march.* Mr. Vignoles concluded by giving 'The Master-General of the Ordnance and Corps of Royal Engineers.'" And a little later in the evening, having had to propose "The Health of the Three Judges of the Locomotive Competition," he said,—"Being engaged in laying out a railway between Goole and Barnsley, he (Mr. Vignoles) hoped to see that accomplished and made part of the union between the two sides of the kingdom, and that it might put it into the power of that part of the country to supply the metropolis with the article coal, at present furnished through sea transport by the great Northern proprietors, whose monopoly he trusted would then soon be put down."

It is needless to comment on the manner in which railways have since, throughout the world, both subserved military purposes, and been made available for the transport of coal.

Mr. Vignoles subsequently took part in the famous Rainhill locomotive competition in 1829, when the "Rocket" engine of George Stephenson

obtained the prize of 500*l.*, and became the model upon which all railway locomotives were subsequently constructed. From this period his reputation was established, and he filled a leading position in the engineering profession. He was engaged as engineer-in-chief to the North Union, the Midland Counties, and the Dublin and Kingstown railways, the latter being the first railway constructed in Ireland; and he was connected, more or less intimately, with numerous other lines, both at home and abroad. His foreign works comprised, amongst many others of minor character, the great suspension bridge at Kieff, in Russia, comprising six spans of 440 ft. each; the Bahia and San Francisco Railway in Brazil; the Frankfort and Wiesbaden Railway; the Warsaw Teresbol Railway; and the Bilboa and Tudela Railway in Spain, the latter being over the ground upon which, many years before, he had commenced his military life during Wellington's campaigns in the Peninsula. He was elected a member of the Institution of Civil Engineers in 1827, nine years after its establishment, and a year before its incorportion; and he became its president in 1870. He was a fellow of the Royal Society and a fellow of the Royal Astronomical Society, and he is honourably recorded for useful services to the latter Association.

Mr. Vignoles was a man of unwearied energy, ardent temperament, and great constitutional power. His work was ever performed with remarkable conscientiousness and care, and his minute attention to laying out railways on the most advantageous ground available, and so economising the funds entrusted to his disposal, was remarkable from the commencement of his career. He first adopted, with this object, the system of marking the levels of the ground in figures on his railway plans (as is done, for instance, on the Ordnance maps of London), thus obtaining in effect the advantage of possessing a model of the ground in the office. He was the inventor of the flat-bottomed rail, which is known throughout the world by his name, and is coming every year into more extended use. He was, as already stated, remarkably far-sighted in matters connected with his profession. He strongly advocated economy of construction; and even in the early days of railways, when the most eminent engineers believed generally in the necessity of easy gradients and flat curves, he constantly maintained, as well in his practice as in discourse, the advisability of economising construction by the adoption of more severe curves and gradients, and of overcoming their resistance to traction by increasing the powers of the locomotive, as the true principle of railway construction. He died full of years and honours, and is universally regretted by his profession and by all who knew him.

Mr. Vignoles has left a widow, now very seriously ill, one daughter (Mrs. Croudace), and three sons,—Mr. Hutton Vignoles, Mr. Henry Vignoles, just now returned from Bosnia, and the Rev. Olinthus Vignoles. His eldest grandson, and pupil, Charles Hutton Croudace, is now Executive Engineer on the State Railways in Rajpootana, at Ajmere.

THE EIGHTEENTH CENTURY IN FRANCE.

A few months since we noticed at some length* the comprehensive summary by M. Lacroix of the religious and military life of the Middle Ages, reproducing some of the illustrations which seemed to be of special interest or curiosity. We have now before us, in a large and handsome volume, the same author's last contribution† to the series of works which he is carrying out in elucidation of the history of France from a social rather than a political stand-point. His former histories of the Life of the Renaissance and of the Middle-Age periods having met with acceptance, the object of the present volume on the eighteenth century is, as pointed out in the preface, to complete the picture of French society from its origin, and that of the monarchy, down to the date of 1789, which ushered in a new order of things. Without following a strict chronological order, which might have given rise to difficulties in compilation, and omitting general facts of history and incidents of war and politics, which would have required a larger scope, "the author has confined his labours to the consideration of manners, customs public and private, costume, arts, sciences, and literature; and this picturesque and descriptive kind of history seems of a nature to satisfy that justifiable curiosity which characterises the present epoch, bringing before us as it does a past, the study of which, in all its varied phases, will help us to form a judgment of the present."

Intensely interesting as is the eighteenth century in France, in view of its peculiarly brilliant social and intellectual development,—the former the over-wrought luxury, mental and physical, of a system of society on the high road to its fall, the latter almost unconsciously preparing the way for the demolition of that very order of society which it dazzled and delighted,—it affords less opportunity for touching on matters of artistic interest, or which directly concern a journal mainly artistic in its scope, than the former works of M. Lacroix, which we noticed. The arts and constructions of the Middle Ages, the art of the Renaissance, are excellent in themselves, and present abundant scope for illustration with the pencil as well as with the pen; the art of the eighteenth century is of far inferior value *per se*, and, moreover, is much less intimately bound up with the subject than is the case in regard to the other periods alluded to; the intellectual achievements of the eighteenth century being literary rather than artistic, and what art there was being more a matter of ornament and luxury than of serious interest to the society of the period. The incongruity and false taste of the time in regard to art are well enough symbolised in the "cartouche frontispiece, after Meissonnier," a curious instance how the very force of bad taste can be combined with real cleverness and sparkle of design. But the decorative art at least of the period can hardly interest even in an illustrative sense; it is the result mostly of merely mechanical tricks of design, accepted as the correct thing by the society of the day without criticism or questioning; and has none of that vital interest of style and feeling which attaches often to even the smallest bit of Mediæval workmanship or of Renaissance draughtsmanship. In another way, however, the author has pressed the pictorial art of the period into his service to some purpose; illustrating costumes and social manners and character to a great extent by engravings from scenes and figures by the leading painters of the epoch, who, if not a very imaginative or elevated school of artists, painted faithfully and with no little insight and spirit the life which they saw around them, and among whose ranks are included one or two names at least of men of unquestionable genius.

We open at the commencement of the eighteenth century on a period in which gaiety and splendour were matters of outer form rather than of reality; when in the latter years of Louis le Grand king and kingdom alike had lost much of their prestige, and the tone of the Court was all the more gloomy in reality for the perpetual effort to ward off *ennui* by *fêtes* and splendours which had lost their zest. The old *éclat* and animation was regained under Louis XV., and two records of the enjoyments of the period are given us; one in the engraving of the representation of Voltaire's comedy-ballad, "The Princesse of Navarre," in the riding-school at Versailles,—the room decorated with the lavish and gaudy splendour of the period, and the majority of the Court audience sitting sideways to the stage facing each other, so as to leave a centre space for the uninterrupted view of the king and queen; the other the card inviting to a "Bal-paré" at Versailles on the same occasion, the marriage of the Dauphin. It is curious to look at this *fac simile* of the ball-card, the only relic of the festivity of "Le Mercredi, 24 Février, 1745," with its daintily-devised border of knops and scrolls, Cupids and fiddles, in the manner we know so well. A very pretty chromo-lithograph (p. 76) gives the precise appearance of an interior in the time of Louis XVI., much as it may be seen "in the round," though on a smaller scale, in the corner of one of the South Kensington Courts. Artificial and mannered as the style is, with its gilt garlands over the doors and arches, and its Cupids kicking about with more gilt garlands in a ceiling of clouds, there is a unity of effect about the whole which one must recognise; and as an expression of a highly-artificial life such an artificial style becomes almost natural, if one may speak in paradox. As a significant set-off to this pretty and finical interior, with its delicate grey and pink tints and gold pickings, and the refined-looking occupant sitting among her books and music, we may refer to the illustration of "The Ramponeaux Tavern" (p. 88), kept by Jean Ramponeaux (apparently a fac-simile of an old print), where the people found their enjoyment; a long bare room, filled with deal tables and crowded with a motley and evidently very noisy set of revellers; the walls scrawled over with misshapen or ludicrous figures by way of decoration. The meanness and squalor of the place, a principal public resort of the day, is an instructive and telling contrast to the contemporary boudoir style. Some remarks of Voltaire, quoted in conjunction with the subject (in the chapter on "The People"), are curious, as a view of the popular education question at that period by the keenest intellect of the day. In a letter written in 1766, he says:—"I think we are not quite agreed upon the meaning of the word *people*, whom you think worthy of receiving an education. I mean by *people* the populace which has only manual labour for their support. I question whether this order of citizens can ever have the time or the capacity for instruction; they would die of hunger before they are educated. Thus it seems to me essential that there should be some ignorant clowns. . . . . When the people take to reasoning, there will be an end of everything." If Voltaire could use this language in the eighteenth century, there is some excuse for the English squirearchy who used it in the beginning of the nineteenth century, and who could hardly be expected to see straighter in their day than a Voltaire in his. Apparently rather in contradiction to this last judgment, and certainly with more insight, we find the great wit remarking, in another quotation,—"All is not lost so long as the people are in a condition to see that they have a mind. But the worst may be looked for when they are treated like a herd of oxen, for sooner or later they will goad you with their horns." Nothing could be more comprehensive,—the whole French Revolution in a nutshell.

The chapters on the army and navy contain a great variety of information, and are largely illustrated; among the naval illustrations is one of the poop of the *Invincible*, a seventy-four which was captured by the English in the Revolution war, and which, we are informed in a note, they admired so much as to construct thirty-six new vessels on the same model. This, we should say, "wants confirmation." The illustration, which is intended merely to give a notion of the sumptuous decoration of the poop, reminds us of the dry sarcasm in an old naval dictionary of the war time, where, under the heading "Stern," it was ingenuously confessed that the French shipbuilders had much surpassed the English in the decoration of this portion of the vessel, which was only to be expected, as it was the part of their ships which was most prominently exhibited to the enemy. However, we must pass over this and several other chapters, and say a word about the "aspect of Paris." In 1720 it was still the noisy, dirty, populous town which Boileau had described sixty years before in his satire "Les Embarras de Paris." The general aspect of the people and character of its inhabitants had not changed for more than a century; and though Louis XIV. made some important public *places*, he did little to alter the character of the city normally. It was considered remarkable in that day for the height of its houses, running up to six or seven stories, and inhabited in flats in the manner which is still extensively adhered to. The Paris of this period, indeed, must have been in the character of its structures rather akin to the older parts of Edinburgh, as far as one can judge from contemporary description. But about the end of the first quarter of the century it was perceptible that Paris was undergoing a change, and was gradually putting off its Mediæval character and beginning to lend itself to the modifications required by the altered customs of its inhabitants. The centralisation in Paris seems to have been very marked at this time, to such an extent that "economists" apprehended the depopulation of the provinces. "Knock at all the doors from the highest to the lowest," wrote the Marquis de Mirabeau, "and you will hear people talking in every language and every idiom. I will be bound that you will not find more than three per cent. of the population natives of Paris." People could not understand what became of the native inhabitants of Paris, and wondered whether they in turn did not leave their homes to seek their fortune elsewhere; and the Marquis de Mirabeau, in re-

* See p. 161, *ante*.

† The Eighteenth Century: its Institutions, Customs, and Costumes. France, 1700-1789. By Paul Lacroix, Curator of the Imperial Library of the Arsenal, Paris. Illustrated with twenty-one chromo-lithographs and 351 wood-engravings after Watteau, Vanloo, Rigaud, &c. London: Chapman & Hall.

ference to this point, says: "Everybody marries, but what becomes of their children?" and he arrived at the conclusion that "the offspring of the great cities is a pure loss to humanity, and that they die off without its being possible to say what becomes of them." It is something for the progress of sanitary science and the art of living generally that we need no longer hold quite so unfortunate a creed as this; yet the question of the influence of crowded cities on human life is one continually before us, and in regard to which much has yet to be answered. Of some of the more incidental *désagrémens* of life in Paris at the period we are speaking of, the following passage may give an idea:—

"The highway was not kept in better order than the houses adjoining it, being only repaired at rare intervals; it was, indeed, difficult to ascertain when the roadway wanted repair, concealed, as it nearly always was, beneath a layer of dung, rubbish, or thick mud. The drain in the middle of the streets to carry off the water from the houses formed a stagnant pool, which was stirred up by the carriage-wheels and horses' hoofs. Mercier (*Tableau de Paris*) says:—'When it rains there is a wide stream, swollen by the outflow from the shoots, and over this a moveable bridge is laid. The man in charge of this construction lifts it up to let carriages pass, and expects to be paid a *liard* for his trouble. You will see this at the corner of the Rue Triquetonne any day after a heavy storm. If the plank which forms the bridge happens to break, foot-passengers must be carried across if they do not want to get their feet wet.' There were high stone pillars, some of them hooped with iron to prevent the wheels from grating against the walls of the houses; and behind these the luckless pedestrians were often glad to take refuge."

These friendly posts were, in their day, the counterparts apparently of our safety lamps and posts in the centres of the thoroughfare. But the very graphic illustration, after Garnier, of "Crossing the Gutter after a Thunderstorm,"—a hatted and feathered young lady getting carried across the turbid stream, pick-a-back fashion, by a bare-legged man,—says more than pages of description. In the matter of noise, the Paris streets must have been as undesirable as in that of drainage, to judge from the descriptions of the number and intensity of the street-cries of the period; nuisances which, though more varied, could hardly have been more uncouth, unmeaning, and discordant than those which are still to be heard in many parts of our own capital, which seems to admit and even cherish nuisances that no third-rate country-town would tolerate. The Paris cries are presented or symbolised to our eyes, at least, by the author, in the number of curious and characteristic representations he has collected, occupying several pages, of the different types of street tradespeople of the period. The only bit of decoration from the Paris streets of the period is a hotel lamp in "ornamental wrought-iron," where the lamp is pendent from the end of a curling, cabbagy-looking scroll, which seems too flabby even to bear its own weight; the detail is significant enough of the taste of the time in such species of workmanship.

The chapter on "Fête-days and Amusements" includes some spirited illustrations of popular festivities, among others a representation, a little bordering on caricature, but spirited enough, of the gay crowd in the Palais-Royal Gardens, when it was the favourite and fashionable lounge before the opera. Among the spectacular inventions of the day are figured two masquerade state chariots, the "chariot of Mars," and the "chariot of Hymen," which seem almost too extravagant in design and construction to be true. The intense popular interest excited by the invention and trials of balloons, towards the close of the century, is worth noticing. It was believed that a new way of travelling had been discovered, and crowds came to see Montgolfier's and other balloons started, and indulged the greatest enthusiasm on the subject. It is somewhat curious, certainly, that in all this time we have scarcely got a step further in rendering these air-ships manageable. In the chapter on "The Kitchen and the Table" (a subject which has more historical and social interest than it sometimes gets credit for), we come upon the change from the abundant to the *recherché* style of dinner-service. An immense place was filled by the dinner, both in regard to time and space, in the earlier half of the century; indeed, it was said by one contemporary writer that during "the Regency" eating was the chief occupation of the time. The dinner-service included immense dishes of whole animals, or nearly so, which were called *dormants*, as being stationary, and not handed round. When a more refined taste began to take exception to these masses of meat, their place was taken by smaller dishes, and the table-service was quite transformed, the large dishes formerly used being replaced by a permanent ornament, called also *dormant* or *surtout*, consisting as a rule of "a glass stand in a frame of silver and gold." These *surtouts* became more and more important in size and design, till they occupied a great part of the table; and as it was impossible to change them at each repast, and people got tired of seeing always the same piece, it became usual to vary them by floral decoration. This looks as if the origin of *dîner à la Russe* were further back than it is currently supposed to be.

"Statuaries, designers, and painters were also employed to decorate the table, the centre of which was often covered with statues and emblematical groups, with temples, amphitheatres, bridges, and columns made of paste. In some cases the artist would represent a landscape, the ground being covered with snow. A man called Carada invented artificial frost, which melted in the heat of the room, and during that process the guests saw the thawing of the river, the budding of the trees and flowers, as spring succeeded to winter. There were also *Sablieurs*, who, by means of coloured sand, designed very ingenious figures upon the tablecloth, some of them representing Persian carpets, powdered marble, ground-glass, bread-crumbs, and other objects, beautifully coloured. Delorme, Pan, and Richard, who were the most celebrated of these *Sablieurs*, executed their work with wonderful rapidity, and half an hour sufficed them for the production of these charming designs, which, however, were so fragile that a breath or a drop of water would spoil them."

At what Mansion House dinner, in what City hall, shall we see these artistic ravishments of the dinner-table revived?

Some remarks in regard to the interesting chapters on the theatres and the costumes of the period we must defer.

THE USE OF THE SUPERNATURAL IN ART.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association, held on the 20th inst., at Conduit-street, Mr. John S. Quilter, president, in the chair, the following new members were elected, viz.:—Messrs. John Adams, Russell E. Scholefield, Albert Cowley, C. Howard Marryatt, John Norton, J. Reginald Naylar, A. Emherst Chancellor, Gustave D. Edmund Grüneberg, and W. J. H. Leverton. Sixteen nominations for membership were read. Mr. E. G. Hayes, one of the honorary secretaries, read the reports of the judges on the drawings submitted in competition for the prizes offered by or through the Association. It is not necessary to devote any space to these reports, seeing that they are only of interest to the competitors themselves, and that the names of the successful competitors were published in our report of the opening *conversazione* of the Association. The president having impressed upon the members, and especially the younger ones, the advisability of not attempting too much in one session, but rather to take up one, or at most two, subjects at a time, and work at them thoroughly,

Mr. Wyke Bayliss, F.S.A., read a long and interesting paper on "The Use of the Supernatural in Art." Mr. Bayliss first proceeded to show that it was the essential nature of art to deal with both the material and the spiritual worlds. Like the great angel of the Apocalypse, art stands with one foot upon the earth, one foot upon the sea, its head encircled with a rainbow, and in its hand a book, in which are words written. Art becomes a record of the human mind, a witness of the evil and the good we have done. Art is more than a record; it is a camera, looking into which we can see the workings of the soul, its aspirations after good and evil, its mighty passions, its agony when hurled back into darkness, its tremulous return to light. Like the tree of life, we stand in the midst of the garden. Around us are the lesser trees, also of the Lord's planting. Their boughs stretch out and mingle with our own, while among them gleam the white garments of the celestial visitants. Thus the world around is for ever reaching up to us, the world above is ever bending over us, but the central theme of art is life,—the life of man,—and the supernatural is only incidental to it. If there is one amongst the myths of Greece and Rome that can touch our hearts, it is because it tells the story of some human life. If with Milton or Dante we stand amidst the hierarchy of heaven, and are not satisfied, it is because this story of human life is missing. If we strike back the hand that would violate the sanctuary of the grave, it is because the dead have lived, and the living have yet to die. If in art we dare to approach the Divine Being, it is only because He was himself pleased to partake with us of this same human life, and in so doing gave us the right to look upon His face. But of all who in art have told this story of life, who does not tell us that it is twofold? If our faith in the spiritual life shall perish, art must perish also. Let the church and the laboratory answer for themselves; but there is no place for the materialist in the studio of the artist, neither can he put his thesis into the poet's verse. There is a passion in art that can be kindled only by the divine flame of love,—a passion that gives to the inanimate world life, that lifts the brute creation to our side, that raises us to God; and this not by confounding things that differ, but by binding the creation into one, and giving it and the glory of it to the Creator. There can be no doubt that the representation of celestial agency is legitimate in art. There is scarcely an artist or a poet who has not made the gods his theme. If the supernatural in art finds its truest expression in our daily life, it is in the rich gardens of religious symbolism that it finds its highest expression. But the moment that art ceases to reflect, and assumes to partake of the divine nature, it dies; arrayed in royal robes, it may be, but it dies; sitting upon the throne, it may be, but it dies. How could it be otherwise? It is impossible at the same time to recognise the true glory of a work of art and to attribute to it a supernatural origin. That which is a representation cannot be also the thing itself. The antique statues which we so highly prize as works of art were made to adorn the temples of gods; but they were not worshipped. It is not in a state of high art that men become idolators. It was just when Greek art culminated in its beautiful statues that Socrates was leading his disciples to think. It was just when Correggio and Da Vinci were filling the world once more with beauty that the Reformation burst forth in Europe. In the days of Phidias men knew very well where their statues came from,—from the studios of their artists. What is of vital moment to the lovers of art is this: that superstition and art cannot exist together. Either art must become so debased that there shall be no glory in it for the artist to inherit, or the people must become so brutish that they cannot recognise a work of genius. Where is the image of the great goddess Diana with the ten breasts, for which Demetrius made silver shrines? Such statues as these are those which men worship. In conclusion, Mr. Bayliss gave a *resumé* of the whole subject of his paper, in which he said: Art, which will touch all things, must lay its hands on Christ too, and nail Him to the cross once more, even though itself should die in the act. For art is a living thing, and can suffer and die, and see corruption, in its miraculous virgins and black Christs as surely as in the great goddess Diana with the ten breasts, or in its Juggernauts and pashts of the still Pagan world. And we have seen also the serener splendour of landscape art, the trees of the Lord which are full of sap, and the cedars of Lebanon which He hath planted,—are they not a living background to the rest? And does not the mighty roar of the waters blend its cadence with the cry that has gone up for our race since first man went forth to his labour? "Seeing the invisible," faith in the unseen world? What is life without it? And Art: can Art so much as exist without it? It is to the poet what light is to the painter, what ideal beauty is to the sculptor; it grows upon us as the stars grow in the evening sky. We see it in the fairy tales told to us when children, that made our hearts beat faster, and our tiny hands clasp our mother's the more closely as at night we climbed the broad stairs to our beds. We see it in the tales of romance and chivalry that we read on summer holidays, beneath the trees by the river's side, or stealthily from books hidden under our *delectus*. We see it in the Christmas carols we have read by our own fireside with the happy faces of our children gathered round us. We turn to our library, and the same thing meets us there. Chaucer and Spenser amongst the earlier writers; Coleridge and Wordsworth, of the Lake school; Keats and Shelley amongst the idealists; Campbell and Scott, who sing of it in ballads; Byron and Moore, whose verses are of love; and Shakspeare, whose name must stand alone, because it comprehends the splendour of them all. Then in our own time are there not Tennyson and Browning, and from the far West Longfellow and Lowell? And from the East come the records of the Crusades, from the sunny South the song of the troubadour, from the North the legends of the Minnesingers. These are not mystics or religionists, but, for the most part, they simply tell the story of human life. But amongst them all there is not one who, in telling this story, does not tell us that this life is twofold. There is no effect without a cause. Why is it that all

men, everywhere, always have seen the same words written upon our life,—in different characters, it may be; blurred it may be, at times, but still the same words? Seeing the invisible; faith in the unseen world. Let theology and science answer for themselves; but it is a matter of life and death to art. If all this life, of which art speaks so passionately, is only the same as that of black Auster, if our prayers are only like the cry of the hunted hare as she feels the dogs upon her, let us have done with all this tremor about the past, this looking for the future. But I am speaking only about art. Well, then, if our faith in the spiritual life shall perish, art shall perish also. What can Materialism do for art? There is a passion in art that can be kindled only by the divine flame of love. But does matter love? There is a passion in art that gives to the inanimate world life, that lifts the brute creation to our side, that raises us to God; and this, not by confounding together things that differ, but by linking into one the whole creation, and giving it and the glory of it to the Creator. With how mighty a flame this passion burns, flashing into light all the strange elements of life, material and spiritual. Again, I say, let the laboratory and the church answer for themselves; but there is no place for the Materialist in the studio of the artist, neither can he put his thesis into the poet's verse. One, indeed, has essayed to do so, but before the pen fell from his hand, the sceptic had become a believer. It is Shelley who wrote,—

"Through wood, and stream, and field, and hill, and ocean,
A quickening life from the earth's heart hath burst,
As it hath ever done, with change and motion,
From the great morning of the world, when first
God dawn'd on chaos."

Who shall say that Shelley wrote this in mockery, or not, rather, that it is the language of one who had seen, dimly it may be, but had seen, the invisible? Said I not rightly that art stands like the great angel of the Apocalypse, with one foot on the earth, one foot on the sea, its head encircled with a rainbow, and in its hand a book, in which are words written?

In the discussion which ensued, Mr. Boyes, in moving a vote of thanks to Mr. Bayliss for his paper, said it was a good thing for them to have placed before them occasionally such a high ideal view of art as that taken by Mr. Bayliss; for architects were only too apt to lose sight of an ideal standard of excellence in the course of the ordinary work of the profession. He thought, however, that it was possible to adopt too high a standard of criticism. With reference to the grotesques of our Mediæval cathedrals, for instance, they were merely the play of the artists, and were useful only in so far as they showed the intense fancy of the artist when unfettered.

Mr. H. H. Statham, in seconding the vote of thanks, said Mr. Bayliss had drawn an inference from the fact that the rise of the Italian school of painters was coincident with the dawn of the Reformation, but he (Mr. Statham) did not think there was any connexion between the Reformation and the Italian Renaissance. He thought that a very interesting paper might be made upon the way in which what we called the supernatural had been attempted to be defined and differentiated in various times and countries. The Greeks did it by getting the finest man or ideal of man. In the Middle Ages the characteristics or attributes of a being represented by a statue or painting were depicted by means of arbitrary signs, such as the nimbus. He agreed with Mr. Bayliss that the art which was worshipped for its own sake was always bad. He considered that much of the ecclesiastical decorative art of the present day was retrogressive in character, and this was seen especially in Mr. Burges's scheme for the decoration of St. Paul's, in which the author proposed to depict a number of saints with their names and symbols under them. The true principle was to let the figures speak for themselves.

Mr. Aston Webb supported the vote of thanks, which was carried by acclamation, and the meeting terminated, after a few words of acknowledgment from Mr. Bayliss.

The next meeting will be held on the 3rd prox., when Mr. W. H. White will describe "How the Parisians build a House in Flats."

Wesleyan Chapel, Hammersmith.—The architect of this building, mentioned in our last, was Mr. Charles Bell.

AUSTRIAN AND FRENCH JOINERS.

Among the various pamphlets published for the purpose of increasing the technical knowledge and the material prosperity of French workmen engaged in the building trades, we note some observations made by M. Thévenet, a joiner from Lyons. He visited Vienna during the time of the Exhibition, and forthwith instituted an elaborate comparison between the house-joiners of Austria and his fellow workmen of Lyons. After examining various window-frames and street-doors, M. Thévenet can find no fault with the Austrian work of hand. The artistic beauty of the carving is further greatly enhanced by the commendable and liberal use of the very best wood, but in many cases the thwart beams or transoms are poised in an inelegant manner. On the other hand the double windows used in Vienna exclude draughts most effectively, and the Austrian awnings are preferable to the French shutters. After inspecting the public monuments of the capital, M. Thévenet still retains the conviction that his countrymen possess better taste, but Austrian wood is cheaper, more easy to work upon, and altogether of a better quality than the wood employed in France for the construction of houses, doors, gates, and windows. Nevertheless, the Austrians surpass in taste most of their neighbours. The Russian window-frames, for instance, are very commonplace, though the handy-work is tolerably good. The Prussian workmen certainly display considerable skill, but are distinguished chiefly for the artistic grouping together of various woods and colours. Norway boasts rather of its wood than its workmanship, and Spain failed to display anything at all calculated to satisfy its national vanity.

With regard to the social condition of the Austrian artisans, M. Thévenet visited several workshops and collected much information. In making these inquiries it became at once evident that the use of machinery in the trade had helped to reduce the hours of labour, which are now fixed at ten per day. The Vienna joiners receive on an average two florins or two and a half per day, and are paid regularly every Saturday. This, it appears, is not always the case in France, and particularly at Lyons, where a number of employers pay the wages but once a fortnight. Piecework in Austria is better remunerated than work by the day, and the necessities of life can be obtained for about the same price. Austrian workmen are well dressed, and rarely indulge in the noisy Monday holiday so prevalent in France. This good result is attributed to the regular weekly payments, which save the workmen from debt on the one hand, and, on the other, prevent extravagance by never allowing them to possess a large sum in hand. At Lyons the joiners only receive on an average 4fr. 50cent. per day; that is to say, 10d. or 1s. less than at Vienna. M. Thévenet calculates, deducting the Sundays, 313 days' work in the year; but, during four winter months, or 100 days, joiners only work eight hours, and this equals a reduction in labour done of twenty days. Adding to this about thirty days lost through illness, want of employment, slack seasons, or the time lost in obtaining new engagements, and there remain but 263 days at ten hours per day. The workmen at Lyons on an average scarcely do more than this in the course of an ordinary year. At 4f. 50c. per day, this amounts to an annual income of 1,180fr. 30c. (47l. 4s. 5d.). M. Thévenet then proceeds to calculate, in all its chief details, the probable expenditure of a family consisting of a joiner, his wife, and two children. Including washing, clothes, and a rent of 8l. per annum, the total sum required is put down at 2,281f. 25c. This leaves a deficit of 1,037f. 75c., and proves, therefore, that to support a small family comfortably the joiners of Lyons ought to earn nearly double the wages they now receive. As the natural result of this inadequate income a great number of skilled artisans are reduced to mendicity, and the offices of the State charities are besieged by solicitations for help from persons who ought to be able to earn sufficient at least to protect them against want.

Of course, it will be understood that these are statements emanating from a workman, and are therefore open to at least some slight suspicion of partiality; but nevertheless M. Thévenet ends well when he insists that the real cure for the evils he exposes is the spread of education. It is the educated and intellectual workmen who produce the best articles, who learn rapidly to alter the character or style of their work according to circumstances, and can be relied upon to do what is wanted, instead of following blindly some old and unsuitable routine.

THREATENED DESTRUCTION OF ST. ANTHOLIN'S STEEPLE, QUEEN VICTORIA-STREET.

On Thursday, the 25th inst., a large deputation of the British Archæological Association waited upon the Ecclesiastical Commissioners, Whitehall-place, to present a memorial on this subject.

Mr. Godwin said he had been asked, as a vice-president of the British Archæological Association, to introduce a deputation from that body, with a view to the preservation of the steeple of St. Antholin's. The Association was founded especially for the protection of ancient monuments, and to that end has laboured with some success throughout the country. It would have been wanting in its duty if it made no endeavour when a fine work by Sir Christopher Wren, an ornament of the City of London, is threatened. When the body of the church was pulled down it was clearly understood abroad that the steeple would be preserved, and it would be something like a fraud if it were now taken down, and would lead the public to be suspicious of any similar promise. The process now going on tends to leave ancient London, full as it is of historic memories, as barren of tangible evidences of the past as a city of to-day in the American wilderness. It is no answer to say that 200 years give this steeple no antiquity: the same observation would have justified the men of the sixteenth century in destroying the monuments of the fourteenth, which we now prize so much. Nor is the money value of the site sufficient reason; or the steeple of Bow Church, which occupies a most valuable frontage, would also be in danger. This old steeple (the speaker continued), in the midst of a new street, is of the utmost value as regards the adornment of the City, and moreover might be utilised either as a public clock-tower, or as forming part of any new building that might be erected on the adjoining vacant site. Surely, however, money is not to override everything in London: the landmarks of history, objects calculated to induce wholesome sentiment, are scarcely to be valued in pounds sterling. We have formulated in the shape of a brief memorial some of the reasons for the preservation of this steeple which should weigh with you, and I will request one of the hon. secs., Mr. Loftus Brock, to read it to you.

Mr. Brock then read the following

MEMORIAL.

The British Archæological Association having for one of its objects the preservation of our national monuments, has learned with considerable regret the intention of the Ecclesiastical Commission to remove the steeple of St. Antholin's Church, Watling-street.

Your memorialists have all respect for the important work of providing spiritual aid for the overgrown districts of the metropolis, and are not disposed to object to this being done with judgment, by the displacement of other endowments where they are not required. No objection was, therefore, expressed either by your memorialists or the public to the removal of the interesting and historical church of St. Antholin, it being then clearly understood that the steeple would be retained.

The preservation of the steeple is urged for the following considerations:—

1. *Its great Beauty.*—It is one of the best works of Sir Christopher Wren, and has been the admiration of many men of taste. It is a great ornament to the City, not only from the new Queen Victoria-street, but also, on account of its height, in the general view of London.

2. *The Smallness of its Site.*—This is but about 44 square yards of the site belonging to the church. Its position does not cause it to obstruct the footways, and its demolition is not necessary for any purpose of public convenience.

3. *The Public Interest taken in its Preservation.*—This is not confined to the parish, and your memorialists may urge the great desire of the parish for the retention, as was evinced by the first scheme, and also by the designs for its restoration. Notwithstanding the second and adverse scheme, your memorialists venture to state that repugnance is felt in the parish against the demolition by many of the parishioners; while of those who voted for the removal, many did so only by reason of the desire to increase the fund for St. Mary Aldermary. The public generally has evinced, and continues to express, anxiety in the fate of the steeple. Its preservation by your instrumentality will be accepted as a public boon; while its removal may seem as a reversal of the wish of the original builders, who aided in its erection for the permanent beauty of the metropolis.

4. *The Possibility of its being Retained with but Little or no Loss to your Fund.*—Your memorialists are aware that a large sum has been offered for the site apart from the steeple, and a much larger sum for the site including that of the steeple after its demolition. We venture to indicate that, to retain the steeple, it could be sold with the site, subject only to a stipulation that it should not be removed.

We believe that were this done, but little, if any, loss would result; for the steeple, which is sound and well built, would give to purchasers a building capable of being readily adapted to many useful purposes, either as a secondary and fireproof staircase above the ground-floor to the buildings to be erected, or as a space for a lift, &c.

The ground-floor is capable of being formed into a capital porch, without injury to the superstructure. The steeple could thus be made a portion of the new buildings, and would appear somewhat similar to such structures as the Coal Exchange, London, where an entrance tower was purposely erected in a similar position. This course is suggested on account of the obstacle which the question of cost raises to its retention as a separate monument.

Your memorialists beg for favourable consideration of these reasons, and can truly state that the preservation of the Steeple of St. Antholin's will be received not merely by the members of the Archæological Association, but by the public, as a graceful concession to public opinion, and no real hindering of your important work.

Several members of the deputation addressed the Commissioners, including Mr. Blashill, Mr. Morgan, Mr. Tucker (Rouge Croix), Dr. Phené, Mr. Matthews, and others.

The difficulty with the Commissioners appeared to be this, that an Order in Council has been made directing that the tower is to be taken down, and the materials and the site sold. It was urged that it might not be difficult to obtain the removal of the words "taken down," so that the steeple might be sold with the site as a whole.

The Commissioners promised consideration.

THE MANUFACTURE OF CEMENT IN THE SALZKAMMERGUT.

Two kinds of cement have been in use from an early time, viz., artificial Portland cement as made in England and Germany, and natural hydraulic lime. A product nearly equal to Portland cement was obtained somewhat later on the northern slopes of the Bavarian and Tyrolese Alps, which is by degrees superseding artificial Portland cement, its manufacture being carried on under especially favourable circumstances, comprising cheap raw material, direct burning, and easy means of transport. In the neighbourhood of Kuffstein, cement is manufactured from extensive beds of marl, belonging to the Lower Tertiary formation, of which some strata show a composition nearly akin to Portland cement. In that locality the marl is obtained from open workings, and brought direct by tramways and shoots to the kilns. The latter resemble iron smelting-furnaces, and are constructed to burn small coal. They have usually a height of from 25 ft. to 30 ft., and a breadth of about 9 ft. Several of them (from 3 ft. to 6 ft.) stand generally in a row, close to each other, and have a common lining-wall. They are served by one stoker, who charges alternately with marl and small coal. The kilns narrow at their basis to about 7 ft., and have a vault in front, through which another workman withdraws the burnt product. This is done by simply shaking the fire bars, which are 3 in. thick, and of which there are five or six. The production per day per kiln is about 400 cwt. The kilns are tapped every half-hour. The firing zone is about in the middle of the kiln. The proportion of small coal to marl is as one to four.

The burnt lime is brought by tramways direct to the cement-mills. These are of different construction, most of them having three stories. On the second-floor is a crushing-mill, consisting of two long fluted steel rollers, which receive the material through a gutter from the third floor, as it comes from the kilns. By this preliminary crushing the lime is reduced to particles of the size of a bean. The crushed material is raised again by lifts to the third story, for better and more uniform separation, and drops through a separator on the runs in the first floor. There are two of them; the ground cement pouring from the millstones direct into barrels placed underneath, where it is shaken into as compact a mass as possible, by means of a lever-like tossing-apparatus. The millstones are imported from Belgium, and are cut out once a week, for the production of Portland cement every second day. In the basement is the turbine, the vertical shaft of which supplies the motion to the millstones; motion is also transmitted by suitable gear up to the second and third floors.

Sometimes the process of manufacture is somewhat more simple. A horizontal shaft, round which three pairs of standing rollers rotate, is set in motion by a turbine. The ground cement drops from the perforated cast-iron roller-trays into a common gutter, is raised by elevators, and arrives at sorting sieves, whence the coarse drops back into the trays, or is ground on runs.

Connected with each manufactory of hydraulic lime is a shop for making the barrels. Its plant consists of a saw for cutting the headings, and a circular saw for the staves, a planing-machine for squaring, and a circular saw for clipping them. The headings are joined out of three pieces before being cut round by the saw. The barrels are bound with hazel hoops.

Hydraulic lime being sold in barrels only increases the expense for packing, which comes to 13 kreuzers = 3d. English, per cwt. The cost of production of the lime, including expenses for packing, is 45 kreuzers (10·8d.) per cwt. if steam power is used, 40 kreuzers (9·6d.) if water power is applied.

The marl from which the hydraulic lime is produced near Ischl is worked in the slope of the neighbouring salt-mine, where it occurs intermixed with bituminous clay, gypsum, and salt veins. It belongs to the Neocomian formation, and contains, according to Patera:—

Deposit insoluble in hydrochloric acid (Al_2O_3, SiO_2)	37·00
Protocarbonate of iron	10·51
Limestone	43·50
Carbonate of magnesia	2·42
	93·43

The marl is burnt in common lime-kilns, the burning is intermittent, the firing wood, and the cost 47 kreuzers (11·3d.) per cwt.

The material obtained is partly used on the spot in the manufacture of the conduit-pipes for bringing the brine from the reservoirs in the mountain to the saltworks. It is mixed in a tossing apparatus with equal parts of washed sand, which has been previously well cleaned in a washing apparatus, the required quantity of water being added. The mixture is poured into the pipe-mould, which is first cleaned in all its parts, and rubbed smooth with dry graphite powder and linen balls before its use. After running in the mass, it is firmly pressed down with a wooden pestle. It takes about twenty-four to twenty-eight hours for perfect setting. The pipes are joined together by cement being poured on to the joints.

It is self-evident that the manufacture of the pipes can only be profitable if it is carried on on a large scale, as is the case at Ischl, where the motor of the sand-washing and tossing apparatus is a water-wheel. With the use of suitable plant, the cost of production of a pipe 3½ feet long is 71 kreuzers (1s. 5d.), or 20 kreuzers (4·8d.) per foot, which bears very favourable comparison with the cost of pipes made of other materials; 4-in. cast-iron pipes costing 2 fl. 25 kr. (4s. 6d.) per foot, cement pipes from other manufactories being 83 kreuzers (1s. 7·9d.) per foot, and wooden pipes 11 kreuzers (2·64d.) per foot; the latter, however, increasing in price in proportion as wood gets scarcer.

The durability of cement pipes in all places where no shifting of the ground takes place is almost illimitable. Cement is in this respect superior to all the other materials mentioned. But it is stated that the durability of hydraulic lime may be still further increased by layers of soluble glass on the insides of the pipes. Two thin coatings of the latter substance are put on with a sponge. This increases the cost per foot by only ¼ kreuzer. Essential conditions for the safe laying down and preservation of the pipes are, however, firm ground and prevention of vibration.

SUBURBAN BUILDINGS.—HACKNEY.

Sir,—In your issue of the 20th inst., there is an article headed as above, referring to several defects in the Metropolis Buildings Act, which have for some time past occupied the attention of sanitary reformers. In common with many others, I consider that an Act of Parliament should be immediately obtained for the metropolis, so as to give the necessary powers to the respective authorities to remedy the defects which are so complained of.

The works referred to in your article which are more immediately under the control of the Hackney Board are those of the new Marsh Sewer and the house-drains. In relation to the new sewer, its fall, adaptation for drainage, its formation, and materials are evidently not fully known to the writer of that article, and I therefore take this opportunity of stating that the invert and side walls of the sewer throughout its entire length have been constructed in a solid bed of Portland cement concrete, 1 ft. in depth at the bottom, and 6 in. backing to the side walls, also that the whole of the arch from Hackney-wick to Homerton-road has been covered with concrete, as well as a portion of the smaller sewer where it passes through a market-garden, but it was not considered necessary to cover the arch in the same manner in other parts of the line, because of its greater depth in the ground and narrower span. The last and longest portion of the work has been constructed not on a very soft bottom, as described in the article, but on a good solid natural bed of gravel.

In order to exhibit the construction and line of the sewer previously to turning the sewage from the old course along the ditch into the new sewer, lights were fixed along the whole line in three separate lengths, showing very clearly the proper form of the sewer. It was then examined by the General Purposes Committee of this Board, and unanimously approved. The sewage was then turned in, when the regular and uniform flow of the stream proved the sufficiency of the fall.

I will conclude this part of my letter by stating that the sewer is of ample depth to admit of the drainage of all existing houses, and also of any houses that may hereafter be erected, without risk of flooding. In confirmation of this opinion I may remark that no houses draining into this sewer have been flooded during the recent heavy rains.

With regard to the remarks about the condition of house-drains, I would suggest that the writer of the article would do some good by stating where the defective drains are to be found, so that proper action may be taken by the Board to remedy the alleged defects.

I cannot understand that defects can exist as alleged, because it has been for many years a custom in this district not to allow the newly-constructed house-drains to be covered over until they have been examined and approved.

James Lovegrove,
Chief Surveyor to the Board.

Town-hall.

*** In respect to Mr. Lovegrove's letter, we have simply to reiterate that our statements are substantially correct. The materials and construction of the new sewer are fully known to the writer, for he paid frequent visits while the first and second contracts were being carried out. Mr. Lovegrove himself, in reply to a question of a member at a recent meeting of the Local Board, acknowledged that there was a change in the bricks, and that concrete backing was only used in places. Portions only of the line of the new sewer run through a bed of gravel, the larger part, as we have stated, passing through a soft and yielding bottom. The defects of the drains are as we pointed out, and, in all matters touched upon, nothing is exaggerated. Next week we may return to the subject with a few short facts which will place our statements beyond dispute.

MR. RUSKIN'S MUSEUM AT SHEFFIELD.

The *Sheffield Independent* says that the house just purchased by Mr. Ruskin for a museum,—the first of his "St. George's schools for the workmen and labourers of England,"—is situated in the Crescent, Walkley. It is now undergoing repairs prior to its being opened to the public. Overlooking the Rivelin Valley, it was doubtless chosen in accordance with Mr. Ruskin's dislike of factory chimney smoke, of which that of Sheffield is by no means a pleasant sample; and also because smoke has been found destructive to fine engravings. It is generally supposed, amongst local lovers of art, that Mr. Ruskin deputed some one to select the building in which the museum is placed; but this is a mistake. He came to Sheffield in his usually quiet and undemonstrative manner, and not only approved of the building now being fitted up, but addressed some twenty-five working men of Sheffield, chatting with them quite familiarly. The interview, which was quite of a private character, took place at the house of Mr. Swann, at Walkley, one of his old friends, and afforded Mr. Ruskin a favourable opportunity of "drawing out" his *protégés*, the working men present, so as to form his own opinion upon the material he had to deal with. He, indeed, is said to have pleased them very much by the remark that he had "come to learn and not to teach"; and altogether the evening's entertainment, for such it is regarded, was much appreciated for its instruction. It is expected that Mr. Ruskin will pay them another visit ere long, when he will superintend the arrangement of the contents of the museum. They will, at all events for the present, be confined to one room, it being an accepted principle with Mr. Ruskin and the St. George's Company that a museum should, above all, be a place of education, and that everything it contains should have for its object the promotion of the highest moral and intellectual culture. "Of

such science, art, and literature as are properly connected with husbandry, St. George primarily acknowledges the art which provides him with a ploughshare, and, if need still be for those more savage instruments, with spear, sword, and armour." This is one of the reasons inducing Mr. Ruskin to place the first of these museums at Sheffield. It is evident that where the best specimens of art are selected the collection, as to its size, will be one of very gradual growth. Some of the first objects to be deposited are some of Turner's engravings, and some prints from Albert Dürer's original plates. These include his "Knight and Death," "St. George on Horseback," "St. George on Foot," "Pilate," and "Caiaphas." Mr. Ruskin supplements the company's gifts by some of his own.

COMPETITION.

COWPEN (BLYTH), NORTHUMBERLAND.

At a recent meeting of the Burial Board of this township the designs of Mr. John Gibson, of Newcastle-upon-Tyne, architect, were selected from the number sent in an open competition for laying out the proposed new cemetery and the erections required therein, consisting of two mortuary chapels, porter's lodge, entrance gateway, fencing, &c. The style adopted is Gothic; the material used in construction being hammered blocking, with chiselled stone dressings. The two chapels are designed on the semi-detached plan, with separate entrances for Churchmen and Nonconformists, a lofty spire rising in a central position between them.

ANOTHER SKATING RINK.

This new mode of exercise has become so much the fashion that every town will soon have its "rink." A fortnight ago a lady friend of ours broke her ankle at a rink, and last Friday another dislocated her arm. But a few casualties of this sort will not stop the game.

London has several such places, and yet, by the board fixed in front of the houses 316 and 317, Oxford-street, near the Oxford-circus, the public are informed that the stable-yard at the rear, formerly occupied by Mr. Wimbush, is now being transformed into a skating-rink, and we learn that 10,000 superficial feet is the area devoted to skaters. There will be a wide gallery round the building.

The whole site is to be covered in with an ornamental roof, having a large lantern-light in the centre, additional light being gained by a clearstory over the galleries.

The front buildings will be altered and adapted to the purposes of a *café* and *restaurant*.

The works are being carried out by Messrs. Green & King, of Old Bond-street, and Mr. Edward L. Paraire is the architect.

DECORATION OF CITIES.

There has been some talk about transforming Portland-place into a so-called Boulevard, and probably nothing will come of it. In Paris they proceed differently as to such matters. The Municipal Committee of the Fine Arts has appointed three members,—M. de Longpérier, of the Institute; M. Guillaume, Director of the École des Beaux-Arts; and M. Duc, architect, to study and organise the embellishment of the promenades and parks of the capital, including not only the Avenue of the Champs Elysées and Buttes-Chaumont, but even the smallest squares. The general features of the project will comprise, it is supposed, a series of busts, giving the features of all the historians, chroniclers, &c., who, like Félibien, Sauval, Dom Lobineau, Lebœuf, Germain Brice, Corrozet, &c., have left studies on the manners and customs of Paris; likewise, statues will be erected of all individuals, mayors of the capital, magistrates, soldiers, &c., of all periods having shed lustre on the city; and, finally, in the larger thoroughfares and parks, groups of statuary will represent all the great historical events which have occurred in Paris from the earliest period to the present day. We should be glad to see a similar step taken in London and some of our large towns.

Manchester Architectural Association.—The first meeting of the newly-formed Manchester Architectural Association was held on Wednesday, the 17th inst., when a committee was appointed to frame regulations.

SOCIETY OF FRENCH ARTISTS.

The eleventh winter exhibition at the rooms in Old Bond-street, which has just been opened, is certainly the most interesting of our winter exhibitions of the year so far; which perhaps was to be expected, though one or two of the recent collections here have not quite kept up the former standard of the gallery. Special interest attaches, now, to the large work by Corot, "The Lake of Némi" (57), painted about ten years ago, and in his finest style; for this, it is to be feared, is the last that will be seen of the large Corots, whose annual appearance made these rooms a sort of shrine for the lovers of ideal and poetic landscape-painting. Since the death of their gifted painter, who came to such a true and noble, though late-earned fame, his most important works have become more and more difficult to procure for exhibitions, having been bought up and dispersed among owners in various countries. There is probably no landscape-painter of recent date (of course we except Turner) whose fame rests on so secure a basis as that of Corot; the very originality of his style and feeling contributed to his long comparative neglect, as his art-language had to be learned before he could find admirers. One or two other smaller things, especially "A Windy Day" (35), are full of the artist's peculiar feeling and poetry in dealing with nature on canvas.

Another landscape-painter in a great style, whose works are also becoming scarcer on this side of the Channel, is Dupré, who fairly startled visitors to this gallery by the tremendous power of his "Southampton Meadows" three or four years ago, but who has never been represented on that scale since. His small works to be found in this gallery from time to time are always, however, marked by a breadth and power of style, and a complete absence of mere "painting" or picture-making, which gives them an interest beyond what their mere scale or subject would claim for them. The catalogue makes a confusion, in the list of artists, between this painter and Dupray; but the signature of the former is unmistakable in the "Environs of Caen" (96). Mdme. Cazin, by whom we have never seen a commonplace painting, has temporarily returned to her native country, and instead of confining herself to painting Sussex farms and villages, sends this year a scene from the French coast, "A Storm" (117), on a larger scale and more ambitious in every way than any work we have previously had from her. The picture is in every sense a very bold one, and the effect of the mass of rolling reddish brown cloud driven almost down on the landscape is so extraordinary as to invite some scepticism on the part of spectators, which we will not however positively say that we share,—we have considerable faith in the statement of a true artist. This work is not so entirely successful as some we have before seen from the same hand, but it is a distinct attempt at grasping a larger class of subject, and may be followed, we hope, by others of still greater power in the same direction. In a smaller work, "Low Tide" (53) Mdme. Cazin is quite at her best; beyond a foreground, formed by a steep road and a cottage, stretches an expanse of sand glittering white in the hot sun, with the boats drawn up, looking like so many black blots on the surface. We should almost have questioned whether the latter were not too strongly delineated for "keeping their place" in the distance; but intensity is at least a fault on the right side in such a subject. Another artist who is naturalising himself with us, M. Lhermitte, sends a small work, "The Cathedral, Morlaix," which all architects who visit the exhibition should look at; as a specimen of entirely truthful and realistic painting of architecture, both in regard to detail, tone, and texture, without hardness and without sacrificing atmospheric effect, we have rarely seen this equalled.

Among other works in landscape may be mentioned Muncaksey's "Fallen Leaves" (115); "The Old Road" (61), by Montbard, a fine solidly-painted picture evidently inspired by the style of Michel; and Bellenger's "Après le Plui le Beau Temps" (36), which is a little heavy in tone, but worth attention nevertheless. The same artist's smaller work, "Thrashing Corn in Brittany" (39), is admirable, both in the action of the figures and the general tone. Roybet's figure, "Le Buveur," scarcely escapes vulgarity, brilliantly painted as it is; nor is it apparent why the drinker should have such a sinister expression of countenance. There is originality and a delicate humour in Duez's little interior, "Visit to a Sculptor" (55), the intrusion of a gaily-dressed conventional lady into the "sanctum" of the *spirituel*-looking artist, who is working at his model; the painting is very bright and effective in the treatment of the accessories of the studio.

The upper room contains a work of some importance by Lhermitte, on a much larger scale than most of his pictures we have noticed lately; "A Pilgrimage" (93), the interior of a church with Pilgrims, chiefly women, in various attitudes of reverence before a shrine. There is pathos in some of the countenances, but the work does not strike us as possessing that individuality and directness of aim which characterise a good many of the artist's smaller productions; is rather a good than a fine picture.

On the screen are to be seen a small collection of Mr. Whistler's studies of figures (chiefly); little sketches in pencil or crayon on rough brown paper, comprising nude studies, and original sketches for portraits which have been executed in oil. These are "caviare to the general," certainly, but to the initiated they have that interest which always attaches to the studies, however slight, of an artist of really an original turn, even though he move in a somewhat eccentric orbit.

THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND-STREET, LONDON.

This charitable institution is intended for the reception and medical treatment of poor children, without distinction of race, sex, or creed, whose parents are unable, from poverty, to supply their needs. It is supported by voluntary contributions of the public, and has been already illustrated in our pages.

Her Majesty the Queen is patron of the hospital, and has ever evinced the warmest interest in its welfare. H.R.H. the Princess of Wales and H.R.H. the Princess Christian are vice-patrons. The Princess of Wales recently conferred a special mark of favour on the institution, by consenting to lay the first stone of the new building which is now in course of construction.

The new hospital, a view and plans of which we have already given,* is intended ultimately to provide accommodation for about 200 in-patients. The portion of the building now in progress will contain 109 in-patients.

In addition to the general wards, there are in the new building separate wards for quarantine and whooping-cough patients, with small, separate wards for surgical and separate cases. The plan also provides an operating theatre, a chapel, museum, mortuary, and rooms for the medical and nursing staff, with the necessary domestic offices.

The out-patients' department is extensive and complete, as is very necessary in a hospital for children, because the patients require the presence of grown persons to take charge of them needing, in consequence, considerable space. This renders necessary special arrangements, to avoid crowding and confusion.

The contracted and costly nature of the site in the midst of London has made it obligatory to economise space as far as possible. The out-patients' rooms are consequently placed in a half-sunk basement-story. There are separate stairs for ingress and egress. A patient awaits his turn in the large waiting-room; he then passes into the consulting-room, where the doctor prescribes for him. He remains in a second and inner waiting-room while the medicine ordered by the doctor is being prepared by the dispensers in the dispensary; and having received his medicine at the dispensary counter, he ultimately leaves the hospital by a route distinct from that of patients entering. The large central dispensary is available for the whole hospital, and small lifts convey the medicines from it to the upper floors. The whole of these arrangements, and the details generally, have been carried out by the architect, in connexion with Dr. West, the well-known physician who has always devoted himself heartily to the interests of the Children's Hospital. Dr. West's attention, during the progress of the building, has been unceasing and invaluable.

The front portion of the basement floor is occupied by the domestic offices, such as kitchen, scullery, larders, servants' rooms, and heating-apparatus. It also contains a special waiting-room for new patients. In this room a patient coming to the hospital for the first time is seen

* See vol. XXX., pp. 66, 67.

by the medical officer, who decides on the propriety of the case for admission or otherwise. This constitutes a safeguard against the introduction of contagious illness among the patients generally, and gives the opportunity for separation in all such cases. The new patients' waiting-room is, as regards access and egress, completely isolated.

The general wards of the hospital are five in number, and are placed in the upper part of the building, on three floors. This arrangement was prescribed by the peculiarity of the site before adverted to.

The central block is occupied by the staircase, chapel, operating-theatre, and room for administrative purposes.

At the back of the central block the chapel is placed. This is about 26 ft. square, with a semi-circular apse, or chancel, and is fitted up in accordance with the custom and ritual of the Established Church of England. The hospital is, however, available for all, without reference to their religious belief. The chapel has been finished and fitted up at considerable expense, at the sole cost of an anonymous donor, as a memorial to a deceased relative.

The architecture of the chapel is of the Byzantine type, and the plan is divided by four marble columns, which has enabled the architect to obtain considerable variety of effect. The central portion is domed, and there are also smaller domes at the four angles. The apse is separated from the body of the chapel by a low screen of alabaster, with panels of brass-work, and brazen gates in the centre. The flooring is of mosaic and coloured marbles, and the reredos is of alabaster. The ceiling and walls are richly decorated, and the windows filled with stained glass by Messrs. Clayton & Bell, the whole of the decorations having reference to the childhood of our Lord, and to child saints, such as St. Timothy.

Each ward is complete in itself, being about 70 ft. long and 23 ft. wide, and 13 ft. high. There are eighteen beds in the ward, and the allowance of cubic space exceeds 1,000 ft. per patient.

There are two minor apartments in connexion with each ward, in addition to special bath-rooms and water-closets. One of these apartments is termed a vestiary, and in it the children's clothes are kept in lockers to secure neatness and order. The other room is used as a ward kitchen. There is here a gas-stove for keeping food hot, and for providing tea, milk, broth, and the various articles of food so much needed by children, without the necessity of sending for them to the ground kitchen. The ward kitchen is provided with a sink for washing China and utensils, a dresser, closets for China and glass, and a safe for provisions.

There is a lift from the basement floor by which the regular meals are transmitted to the ward-kitchens. There is also a shoot for dust. This is in the form of a glazed earthenware pipe, built into the wall, and by it all dust and refuse may be at once removed to a receptacle in the basement, which is cleared from time to time. A coal-lift, available also for the conveyance of patients, is placed in the central block. In connexion with the lifts there are bells and speaking tubes, arranged so as to economise, as much as possible, manual labour in working the hospital.

The hospital is lighted throughout with gas. In the wards and other parts occupied by the patients, care is taken to connect the gaslights with up-cast ventilating flues, so as to remove the products of combustion and assist the general ventilation.

On the upper floor there are five special wards, also separate rooms for quarantine and whooping-cough patients. All these are completely isolated from the rest of the building. The quarantine ward is intended for the reception of doubtful cases, until their nature can be discovered, and their treatment decided upon.

In the construction of the wards, abundance of window space has been thought essential for light, air, cheerfulness, and ventilation. The windows are opposite to each other, and are planned to come between the beds. In order to secure dryness and warmth, the external walls of the wards are built double, with an air space of about 1 in. between the inner and outer walls. The material adopted for the inner surfaces of the wall is glazed brick. Each brick is coated in the manufacture, with a glazed surface of pottery, hard, and quite impervious to moisture. The walls lined with these bricks can, therefore, be washed and thoroughly cleansed at any time, and it is hoped that this mode of construction will secure immunity from pyæmia, and other evils sometimes incidental to hospitals. The glazed surfaces of the bricks are made of different colours, such as red, brown, and light-green, and are disposed ornamentally, so as to give the walls a pleasing and bright appearance. The floors are of concrete, by Messrs. Dennett, supported by iron beams and joists. The construction is therefore incombustible, and forms an effectual separation of the stories. The upper surface of the floors in the wards is covered with teak 2 in. thick. This wood was selected as the hardest and most impervious to moisture available, and a wooden floor was considered more healthy and comfortable for the patients than any other material. The water-closets, bath-room, and ward kitchens are floored with hard asphalte, laid on the concrete, to admit of constant washing and cleansing.

The wards are warmed by means of stoves placed in the centre of the room. The stove has two faces with visible grates so as to secure the cheerfulness of an open fire. The smoke passes away by a descending flue, which is constructed in the thickness of the floor. Fresh air is admitted to the wards from the external atmosphere by a similar flue. The air passes through warming-chambers in the stove, which can be regulated so that it may enter the wards in winter heated to any temperature that may be desired.

The smoke-flues from the stoves are carried into a general shaft, and are formed of iron pipes. These pipes becoming heated by the smoke, cause an upward draught in the shaft. Advantage is taken of this circumstance, and the shaft is connected by separate inlets with the ceilings of the wards so as to draw off the vitiated air from them. In summer time, when the stoves are not in use, the up-cast draught in the shaft can be assisted if necessary by a small furnace in the basement, specially constructed for this purpose, and placed in the bottom of the shaft. Hot-water pipes are also placed at the ends of the wards, as an auxiliary means of warming them in severe weather.

The operating-theatre is at the back of the central block, over the chapel, and is about 25 ft. square. It is on the upper floor, and in easy communication with the separate wards. It is lighted by a skylight as well as by windows, and is fitted with raised seats for the use of students.

The water-closets, baths, and other necessary accommodation, are placed in the angle towers of the building. Each tower is used as a ventilating shaft for these adjuncts. Openings are contrived at the tops of the pyramidal roofs, and a coil of hot-water pipes is placed in each roof, to assist the upward draught. Flues for the discharge of vitiated air, communicate with the several floors beneath, which are thus entirely cut off from the rest of the building.

The mortuary is to be constructed outside the building, and cut off from all direct connexion with it. Attached to the mortuary will be a room for post-mortem dissections, a microscope-room, and also a museum for anatomical preparations.

The drainage of the hospital is effected by glazed earthenware pipes. The drains are carried round the exterior of the building, and communicate with the main sewer by means of a specially designed iron-pipe connexion. Precautions have been taken against the risk of a rush of bad air from the main sewer. The iron connecting pipe is furnished with two traps, one at each end of it. From the intervening space between the two traps there is an up-cast air-flue, which is carried up to the top of the building. If at any time there should be a draught from the sewer strong enough to force the first trap, it would be intercepted and carried off innocuously by the air-flue, and the protective operation of the second trap would not be affected. All the drain-pipes from the closets, &c., are ventilated, and all waste-pipes from cisterns, &c., have separate outlets, and are cut off from the main drains.

The high roofs of the building are utilised for the sleeping-apartments of the nurses and servants. There are no nurses' rooms in communication with the wards, as is often the case with hospitals for adults. In children's wards, nurses, when present, are always on duty, while they take their meals in a common room, and sleep away from the wards.

The building is heated throughout by hot-water pipes, in addition to open fireplaces in most of the rooms. The water in the pipes is heated by steam from two steam boilers placed in the basement. Hot water is also supplied from the apparatus to the baths, sinks, and lavatories throughout the building.

The kitchen is fitted with a cooking apparatus by Messrs. Benham, and contrived on a principle used by the Government in barracks, workhouses, and other large establishments. From a single fire the operations of boiling, roasting, steaming, and so forth, can be carried on at the same time, it is stated, with great economy of heat and fuel.

For the exterior of the building bricks are used. They are of two colours, red and yellow, and are moulded so as to present the architectural forms called for by the design. The roofs are covered with boarding, felt, and red tiles. The balconies, which form a prominent feature in the elevation, are not for ornament alone. They are designed to protect the external surface of the walls from sun, rain, and snow, and are also available for the exercise and recreation of the children. The turret-like chimneys are used for smoke-flues, vitiated air-shafts, and lifts, and the object of the architect, Mr. Edward M. Barry, R.A., has been to introduce no feature in the design which was not warranted by the purpose of the building, namely, the medical treatment and restoration to health of the sick and suffering children of the poor.

Messrs. Perry are the contractors for the building, and Messrs. Benham for the heating arrangements. Mr. House is the clerk of works. The hospital is now open for the reception of patients, and appeals earnestly for assistance in its beneficent work.

ON THE DECORATION OF BASILICAS AND BYZANTINE CHURCHES.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.*

Resuming our notice of Mr. Pullan's paper,—the reader said the cathedral of Monreale is transeptal in plan. The columns and wall-linings are of a grey streaked marble resembling cipolino. Rich strips of mosaic divide the marble slabs of the wall-linings into panels, and separate them from the pictures on the walls. Bands of floriated ornament run round the arches and divide the pictures on the walls of the nave. The subjects of these pictures are from Old Testament history up to the time of Jacob. Those in the aisles and transept from the New Testament. Above all there is a rich frieze of medallions filled with half-length figures of angels. In the central apse there is a colossal figure of our Lord, with four majestic archangels at the sides. On the side walls of the chancel there are two rows of figures, apostles above and bishops below. The whole is crowned by an open roof resplendent with rich diapers. The prevailing colours of these mosaics are dark blue, light green, dark red, and brown, all heightened with white on a gold ground. In the cathedral of Messina the roof is even richer in colour than that of Monreale. The other decorations have disappeared, with the exception of the colossal figure of the apse. The system of decoration adopted in the Basilican and Byzantine churches was somewhat similar. Ornamental pavement was ever a conspicuous feature in the ancient basilica. This is evident from the name Gabbatha—the pavement—given to the apse of the basilica in Pilate's house, in which our Lord was condemned. *Opus Alexandrinum* was almost universally employed both in the Christian basilica and Byzantine church. It afforded a dark rich body of colour, as it was composed of circles and other figures of porphyry or serpentine, surrounded by inlays of similar marble, together with a dove-coloured marble called *palombara*. Of this description are the pavements of SS. Giovanni and Paolo, Sta. Croce in Gerusalemme, and that of San Lorenzo. Mr. Pullan found, upon making inquiry of the master-workman who restored the pavement of Sta. Maria in Trastevere, that this sort of pavement is at present very expensive, chiefly on account of the difficulty of procuring the *palombara*, which can only be obtained from the excavation of ancient buildings, as there is no quarry of it open, and the small quantity used would not repay the search for a quarry. On account of its great cost, therefore, they are generally content with an imitation of it, and the best imitation is by the use of the mosaic called Veneziano, which is formed with small pieces of rich marble placed in patterns in a hard cement, and then ground down and polished. Mr. Pullan had employed this in a church at Baveno, and he thought that

* See p. 1133, *ante*.

with some modification it might be used for wall-lining, in cases where the great cost of large slabs of marble could not be incurred. The walls were lined to a certain height with slabs of marble, with moulded cornice and string course, forming a dado, either plain, as in St. Mark's; in panels, separated by mosaics, as at Monreale; or divided by stiles of a lighter colour and enriched mouldings, as at Aghia Neamone. These wall-linings were generally simple veneers. The practice of veneering was common in Roman times. When excavating the year before last in a vineyard adjoining the Baths of Caracalla, Mr. Pullan came upon a water conduit in which there were many fragments of Africano and Giallo antico, varying from one-eighth to an inch in thickness;—pieces of the veneer with which the whole surface of the bath had been covered. Of this description were the wall-linings of churches. Objection had been made to the use of veneers in modern work, but surely it was carrying our natural abhorrence of shams too far to refuse to make use of veneers because we could not afford to use marble in blocks. This objection was as puerile as the declining to hide the face of honest but ugly red brick with a coat of plaster. He thought it perfectly justifiable to use either veneer of marble, variegated scagliola, or coloured stucco for the purpose of obtaining colour, in cases where funds did not allow of the purchase of blocks of marble. Stucco is used with considerable effect in the church of St. Vincent de Paul, and other churches in Paris. There would be less sham in these methods of decoration than in the imitation of marble used by Giotto at Padua and Assisi, and by other Mediæval artists and architects, upon whose practice the opponents of so-called shams profess to base their principles. Above the dado there were mosaic pictures, as at Monreale and the Capella Reale; frescoes, as at San Clemente; or inlaid patterns, as at St. Demetrius, Salonica. It is most probable that frescoes were generally used in both nave and aisles, and that in the restoration which almost every] basilica has undergone they have disappeared, while the mosaics of the apse have been preserved. The soffits of the nave arches in the basilicas were enriched with coffers, as at St. Apollinare il Nuovo; in the Byzantine churches with rich interlacing patterns, as at Monreale and St. Mark's. The roofs were either open, the timbers being covered with elaborate diapers, or they were flat ceilings, adorned with coffers and painted panels. It cannot be positively asserted that a single example of the original flat ceiling exists either at Rome or Ravenna. The apse, the chief feature of the basilica, is preserved intact in many churches at Rome and Ravenna. The conch was invariably covered with mosaics. At Rome, we have those of St. Pudentiana, probably of the fourth century; SS. Cosmo and Damian, of the sixth; St. Agnes, of the seventh; SS. Nereo and Achilleo, of the eighth; St. Prassede and Sta. Cecilia, of the ninth; St. Maria, in Trastevere, and San Clemente, of the tenth and eleventh; and Sta. Maria Maggiore and San Giovanni Laterano, of the thirteenth century. In general there is a figure of our Lord (replaced in later times by the Virgin and Child), attended by the Saint to whom the church is dedicated, in the centre of the apse. We do not see the colossal Majesty except in Byzantine churches and basilicas of a late date, as at Pisa, Messina, and Trieste. The finest and earliest apse is that of St. Pudentiana. It is often attributed to the time of Adrian III., A.D. 884, but the strictly classical togas, and the character of the houses in the background, which closely resemble those in the sculpture of the fifth century, afford sufficient evidence that the mosaic is of that period, though probably restored in the sixteenth century. After the apse, the Triumphal Arch, so called, because on it was represented the Triumph of our Lord, was most conspicuous in the basilica. The subjects on it were of Apocalyptic character. The best examples remaining are those of Sta. Prassede, St. Paul's without the walls, and St. Lorenzo. In the Byzantine church the central dome absorbed the artist's highest powers. The subjects depicted on it are various, at least in early times. Later, when fresco superseded mosaic, the iconographic arrangement throughout the whole edifice became fixed by rules, which are to be found in the "Manual of the Painter," discovered at Mount Athos by M. Didron, and translated by his companion, M. Durand. Although written in the fifteenth or sixteenth century, this book contains a collection of formulas and receipts which had been handed down by tradition from the painters of the tenth and eleventh centuries. In consequence of the observance of these precepts, the Byzantine decorations became of such a stereotyped character that it is now very difficult to decide upon the date of any Greek painting, either from its forms or colours. We find the same saints at Venice, Mount Athos, and Megaspelion, whether of the tenth or fourteenth centuries. On account of the vicissitudes which churches in the East have undergone, it is difficult to trace the progress of church decoration there. As early as the twelfth century, mosaic gave place to fresco in the churches of Trebizonde, while in Italy it was revived by a school of Greek artists, and flourished there until the thirteenth century, being employed by them in the baptistery of Florence, the Lateran, and Sta. Maria Maggiore. The Arabs were quick to perceive the beauties of mosaic, and they employed it in the decoration of the Mosque of Omar at Jerusalem, a building very rich in colour. The few Byzantine churches which existed in Asia Minor were converted into mosques, and the mosaics either whitewashed or destroyed; but in Turkey in Europe, and Greece proper, there are still many monasteries and churches which retain their original polychrome; such as those of Daphne and Megaspelion. Although mosaic, as a means of decoration on a large scale, was superseded by fresco at the period mentioned, it was retained by the Cosmatis and others for the decoration of furniture, particularly the ambones and baldachini of the Roman churches. Even in the works of Giotto and his school we see a lingering love of it in the imitation of it in the borders which separate their pictures. The term "basilica" has been frequently applied to churches of large dimensions, built on a basilican plan in any style, and to churches that have been rebuilt on the sites of ancient basilicas,—in which sense Santa Croce at Florence and St. Paul's of London may be included under their denomination. A few buildings of the former class, which exist in Northern Italy, deserve note as affording good models of decoration: these are San Maurizio at Milan, painted by Borgognone and Luini; the church at Serrano by Gaudenzio Ferrari and Luini, and St. Andrea at Vercelli by Ferrari. In all of these the decoration (chiefly consisting of figures) is of that refined and quiet style which prevailed before the style adopted by Michelangelo became general, and which is so suitable for imitation in the decoration of our Renaissance churches; for it is to be hoped that before long many of the dismal-looking churches erected in London during the last two centuries may be enlivened by polychrome. There is no city church, however ugly, that cannot be made beautiful by proper colouring. If gloomy, it may be illumined; if low, heightened in effect; if too lofty, lowered; even the necessary gallery fronts might be made ornamental, though this is perhaps a questionable advantage. In such buildings as these the severe mosaics of San Vitale would be out of place, but the frescoes of Luini and his contemporaries would be very suitable. In concluding, Mr. Pullan described briefly the manner in which he has attempted to revive Byzantine decoration in what may be called a semi-Byzantine Church at Baveno. As he perceived that in all the earlier buildings bright positive colours were employed almost exclusively, and that tone or brilliancy was imparted to them by the use of lines of white or black, he adopted this practice as the principle of the colouring throughout. The walls are grounded with yellow ochre, upon which there are foliated patterns in reddish brown. Bands of a blueish hue, relieved by pateræ, divide the foliage at regular intervals. Borders of foliage on blue and green grounds run round the windows and doors. The tympana of the doors are filled with mosaics by Dr. Salviati, on gold grounds. The soffits of the arches are of geometrical patterns, in blue and green. The roofs are painted with arabesques in strong brown lines, with bright foliage, on the natural ground of the wood, which is Baltic timber, oiled and varnished. The columns are of granite; the pavement of Veneziano; the windows filled with stained glass by Clayton & Bell; and the pulpit, dado, and steps of rosso di Levanto, Porta venere, and grey Carrara marble; so that there is no part of the church without colour. This universal prevalence of colour was common to the Byzantine churches, of which the building at Baveno is an imitation, though, on account of the substitution of tempera for mosaic, it is vastly inferior to them in effect.

"INDIA."

We have already mentioned the beauty of the Book on "India," by M. Rousselet, revised and issued in England, and which appears at a moment when the people of this country are feeling more interest than usual in the East.* It has a value, however, far beyond what a passing incident may give to it. The author has presented to the reader, as the preface correctly states, the result of a six years' study of the architectural monuments, religious beliefs and symbols dating back to earliest history, works of art, systems of civilisation, and progress, in an easy style calculated to fix the attention of the lightest as well as the more serious reader. The circumstance of the traveller having but very slight national connexion with the country explored is of itself an advantage, as he brings a fresh mind and independent ideas to bear upon the subject, free from any preconceived bias or prejudice. He describes his impressions exactly as he experienced them, and we cannot wonder that his prevailing sentiment was one of enthusiastic admiration of what he saw. "The title of the work indicates the chief object of the author. He was comparatively indifferent to the India of railways, hotels, and telegraphs. He was bent on visiting the courts and countries ruled by native princes, great and small, of all ranks and all creeds, and to see for himself what are the modes of life and conditions of civilisation among the stately chieftains of native India. With this view he visited the kingdoms of the principal Mahrattah and Mahommedan sovereigns,—Scindia, Holkar, the Guicowar, the late Queen of Bhopal, and of the Nizam, and has graphically recorded his experiences, while some of his most vivid descriptions are devoted to the romantic history and achievements of the ancestors of the Rajahs of Central India." He makes his reader acquainted with the heroic traditions as well as the daily lives of the representatives of those ancient Rajpoot houses at the present day.

Various and many have been the efforts of European travellers and artists to create, in Europe, an appreciation of those works, at once mighty and beautiful, "designed by Titans, and wrought by jewellers," which the Moguls bequeathed, after their long, though unhappy reign, over the principal parts of India. The Prince of Wales will not, it is true, see these alone; he has visited, amid a fictitious firework blazonry, utterly unbecoming to the thought and spirit of the scene, the Caves of Elephanta, and those solemn temples of the South, wherein, if Art ever expressed Religion, it was deified, however grotesquely. But the monuments most open to his view must be the trophies of the Mohammedan architects in the north-west, along the banks of the Ganges, and in the great interior, made splendid by "the magnificent son of Akbar." There is a too common tendency in Europe to represent India as a country of gauze and gold; of palanquins and bearers; of equipage, jewelry, and glitter. But the Arabian conquerors, ruthless though they were, planted monuments in that soil, which are perfect beyond the power of imitation; and their works are not less imperishable in the history of art than are those of the Abencerrages in Spain. It is not for us, of course, to adopt this style; we can be no more Saracenic in architecture than we can be Saracenic in manners; but the comprehension of either signifies not a little; and it is utterly futile, in these days, to fall back upon Doric, Corinthian, and Ionian types, as the only possible forms of strength and beauty. The new lesson is to be learned in India. No doubt, it ought to have been taught long ago, though the teaching might have been of slender use, except to the purely intellectual mind of the West. Climate governs architecture all over the world, whether the edifice be a Tartar tent or a Buddhist temple; and yet, while we cannot hope, or wish, for instructions from the dim Indian south, or the more joyous and splendid north-west, already made familiar in the photographic galleries at Kensington, we may look to a more special interest in them, after they have been illustrated by a visit from the Prince of Wales. Concerning few buildings on this earth has so much been heard as of the tomb which contains the dust and ashes of Shah Jehan and his wife. Colonel Sleeman confesses that, for five-and-twenty years of his life, he had looked forward

* "India and its Native Princes. Travels in Central India, and in the Presidencies of Bombay and Bengal." By Louis Rousselet. Carefully Revised and Edited by Lieut.-Col. Buckle. Containing 317 Illustrations and six Maps. London: Chapman & Hall, 193, Piccadilly. 1876.

to a glimpse of that unequalled mausoleum. When seen, it surpassed his every expectation; it went, indeed, beyond his fancy,—from the gateway to the dome, from the dome to the minaret, all appeared perfect to his eye; the Taj Mahal, indeed, satisfied the mind of a critical man who had been longing, through a period of twenty-five years, to see it, "from the first *coup d'œil* of the dome in the distance, to the minute inspection of the last flower upon the screen round the tomb." It was what, in his memory, he said, he should never cease to see, and yet what he could never describe. That sculptured vault; those inscribed slabs of marble; the mosaic flowers embroidering the walls; that tomb, costing three millions sterling, and more; what must have been its effect upon the Asiatic imagination? Colonel Sleeman asked his wife this question, and she answered,—"I cannot tell you what I think; but I can tell you what I feel: I would die to-morrow to have such another over me!" The edifice, though foreign ideas are blended in it, is a perfect example of Mogul architecture. It stands on the north side of a large quadrangle, looking down into the clear blue stream of the river Jumna, while the other three sides are enclosed within a lofty wall of red sandstone. The entrance is through a magnificent gateway, between two beautiful mosques, corresponding exactly with each other in design, proportion, and execution. The vacant area is laid out in square parterres, planted with flowers, shrubs, and cypress; the pathways are paved with slabs of freestone; the gardens cooled by intermittent fountains.

We are enabled, by the courtesy of Messrs. Chapman & Hall, to reproduce the view of the gateway given in Mr. Rousselet's book.

But the mausoleum itself is the pride of the whole place, with the terrace upon which it stands, the minarets of white marble, inlaid with precious stones, the cupolas and columns around, and the pavements polished to the smoothness of ivory. We must not, however, concede the credit of these wonderful works entirely to the artists of the East. The Prince of England will meet more of the genius of Europe than that of Asia in these Oriental cities. The superb structures which make of Agra and Delhi shrines for the artist are due to the genius of a Frenchman, Austin de Bordeaux, who built the Mausoleum and Palace of Delhi, the Mausoleum and Palace at Agra, and was modelling the silver ceilings for both when a jealous contractor poisoned him. They could not, however, take away from his fame the incomparable fret works of the Pearl Mosque, erected at the cost of Shah Jehan; possibly the most exquisite structure in the whole Indian region. It is built entirely of white marble, without a bit of mosaic upon pillar or panel, richly flowered in relief, yet pure, simple, and majestic throughout. The sumptuously-coloured tomb of Akbar, in red, blue, and green, though more splendid in its reflection of that kaleidoscopic climate, is far less imposing, exteriorly, though the interior is as one vast gem, and one which, unhappily, successive generations seem beat upon desecrating and destroying. It is thus with the tomb of Akbar himself, at Secundra, reared over his remains by his son, the Emperor Jehangeer. His body lies deposited in a deep vault under the centre, and is covered by a plain slab of marble, without fretwork or mosaic. On the top of the building, which is three or four stories high, is another marble slab, corresponding with the one in the vault below. This is beautifully carved, with the ninety-nine names, or attributes, of the Deity, from the Koran; but, within, there is no mortal splendour that can be compared with it. One truth, however, always occurs to the European mind. The Mogul emperors, when they took up a residence at any particular place, always covered the neighbouring hills with luxurious and handsome buildings. Thus, at Secree, which the Prince will visit, is the mausoleum of a famous saint, the very porchway of which would eclipse in grandeur any similar structure, or a thousand similar structures, in Christendom. The quadrangle containing the mosque on the west side, and the grave of the old hermit in the centre, was completed in the year 1578, six years before his death, and is, perhaps, one of the finest in the world. It is 575 ft. square, and surrounded by cloisters of imposing height and space. The gate-entrance surmounts a flight of steps, 24 ft. high, and is, itself, of five times that altitude, being the same in breadth, and presenting beyond the wall five sides of an octagon, of which the front face is 80 ft. wide. In presence of this grandeur, can we have patience with those utilitarian Anglo-Indians who complain that these noble arches are worthless, because they can be made available neither by elephants nor by bullocks? "In all these cases," says one of the discontented, "the staircases are as disproportionately small; they look as if they were made for rats to crawl through, while the gateways seem as though they were made for ships to sail under."

But what strikes a European most in going over the palaces and monuments of the Mogul Emperors is the deficiency of what a gentleman of fortune, in his own country, would consider as merely comfortable accommodation. "Five hundred pounds a year," writes a somewhat cynical Anglo-Indian, "would, at the present day, secure him more of this, in any civilised country of Europe or America, than the greatest of those Emperors could command." Still, they have left their monuments, and the present and future centuries, which will never produce the equals of them, are bound to be grateful. They have a noble quadrangular garden at Deeg, one of the Prince's halting-places, encircled by an ornamental parapet. In the centre of each of the four faces is an exquisite pavilion, built of a peculiar sandstone, brought from a distance of about fifty miles. The flags, representing the natural strata, are about 16 ft. long, 3 ft. wide, and 1 ft. thick, and, without any use of the chisel, smooth as glass. With such materials at hand, a beautiful pavement shone beneath the feet of the wayfarer. And yet the modern aspect of these cities, brilliant though their monuments are, is saddening. Delhi is a ruin, Agra only the *succursale* of its renowned Taj, Benares a beautiful fragment, and they are preserved as wonders of the world, by the works of the Moguls alone. Thus, old Delhi is still a place of art pilgrimage, on account of the stately Khootub Meener, and its Palace of Deewan Khan, built without cement, the former, however, being the one cynosure of its kind in the peninsula. Strangely enough, there is no other tower in this Indian Empire of ours. Large pillars have been cut out of single stones, to commemorate the conquests of Hindu princes, whose names no one was able to discover for several centuries; but they are rather evidences of mechanical skill than of artistic genius; while the Meener, grand in outline, chaste in embellishment, exquisite in finish, suggests not a critical thought. It is not very lofty,—only 242 ft., tapering from a circumference of 106 ft. It is circular, and fluted vertically into twenty-seven semicircular and angular divisions. There are four balconies, supported upon large stone brackets, and surrounded by battlements of richly-sculptured stone, the whole having been originally white, though reddened now by the action of the atmosphere upon a ferruginous material. Archæologists have attributed this structure to the Hindus; yet it abounds in inscriptions from the Koran, and we know that the Mohammedans, except in the exultation of their triumph over St. Sophia, rarely adopted the temples of a hostile religion. Besides, the inscriptions are all in bold relief, which disposes of the question peremptorily. All these edifices, however, are slowly, but surely, subsiding into decay, and the pretence of restoration now exhibited is no more than a revival of the fitful fancies which were prevalent a few years ago. In what condition is the slab of Mouzzim, the son and successor of Aurungzebe, the greatest among the crowned descendants of Akbar? It is mutilated, and covered with grass. The domes of the tomb of Altmush have fallen in, and heaped the interior with fractured masses of white marble. That of the celebrated Imaum Mushudee, Akbar's religious counsellor and friend, was converted into a dwelling-house by an English civilian, who removed the sacred slab to make room for his billiard-table,—an insult to the people which they avenged by an assassination. The traveller can pass nowhere through this land of monumental magnificence without being reminded of that pride and that imagination which have left so many illustrations of themselves in Spain. The Prince will see, of course, the extraordinary tomb of Nizamoodeen, which Bishop Heber compared to a pile of potted meat, so grotesquely varied are the tints of its architecture; but, in addition to these grander memorials, there may be seen hundreds of lonely minarets, seemingly fragile, yet wearing the complexion of age, pretty white domes, better adapted, one thinks, to be pavilions of pleasure than the shelters of graves, and a thousand other substantial reminiscences of a power, a glory, and a wealth long vanished from the land. It is the mausoleum of Humayun, with all its vastness and sumptuousness, that most truly tells the tale of the Mogul conquest and dominion. Not the mosque known as Jumna Musjid, the *chef d'œuvre* of Shah Jehan, and the cheapest building of its class ever erected. It cost, simply, 100,000*l*. In England, supposing the materials equally cheap, it must have cost half a million. But the Emperor, if he economised with his mosque, made up for it in his palace, "the architectural garden," as it has been termed, though civilisation has whitewashed its pink colours, dilapidated its throne, shattered its lovely jewelled mosaics, for the sake of plunder, and left it a scene of picturesque desolation.

M. Rousselet illustrates and describes this remarkable structure, and we are enabled to give one of the smaller views of it. "After taking possession," he says, "of the room which was allotted to us by the rules at the rate of one rupee per day, I left the bungalow, and, accompanied by Schaumburg, proceeded towards the mosque, the sacred Jumna Musjid, one of the monuments which the Mussulmans of Central Asia and of India most venerate and admire. This edifice, entirely composed of red sandstone, is raised upon an immense terrace, to the summit of which three magnificent pyramidal staircases lead, each terminating in a monumental doorway. We then found ourselves in a fine marble-paved court, surrounded with cloisters of singular lightness and elegance, and ornamented in the centre with a fountain of a winding shape, designed for the ablutions of the faithful. At the end of this court, the broad façade of the mosque extends. It is composed of a long row of low narrow arches, on each side of a lofty doorway, in the form of a pointed-arched niche; and three white marble domes, with black mouldings, much too large in proportion to the moderate height of the façades, crown the edifice, which is flanked by two superb minarets, striped longitudinally with white and pink, and elevating a delicate cupola of white marble in the air to a great height. The whole effect is grand and imposing; and, notwithstanding some defects, we may agree with Fergusson that the great mosque of Delhi is the masterpiece of Indo-Mussulman religious architecture: but what no description can do justice to,—and even engraving itself is powerless to assist it,—is the incomparable effect produced by the vivid though severe colours which clothe every part of the building when they are illuminated by the glorious sun of India. The dark red of the galleries, the black and white marble of the façade, the whiteness of the domes crowned by glittering golden pinnacles, and the rose-coloured stripings of the minarets, stand out against the blue background of the sky without any crudeness, but rather with a severe harmony, proving the care with which the architect had combined and matched the varied shades, and skilfully calculated their effects, according to the different parts of the edifice they were connected with."

The interior of the mosque is very simple. Its roof, pillars, and pavement, of white marble, are embroidered with delicate arabesques carved in the stone; and on the walls slabs of black marble bear short inscriptions in praise of God, and in memory of Shah Jehan, the founder of the mosque.

At the southern extremity of the Plain of Delhi,—an immense field of ruins,—stands the remarkable triumphal column, or, rather, tower, known as the Kootub. We give a view of the fine gateway in the inclosure. "Alla-deen's Gate" (as it is called), "erected by the Sultan Ala-ood-deen, might have inspired the celebrated author of the Wonderful Lamp; the genie of the Roc could have created nothing more fairy-like. The work of the Moors of Spain in the Alhambra of Granada is not to be compared to this perfect gem of architecture. Here it is the stone itself, a red sandstone relieved by stripes of white marble, which gives the colouring; and the delicate arabesques which cover it on all its sides are carved and inlaid; while, at Granada, the whole effect is obtained by a combination of bright colours and gildings, simply spread on ordinary brickwork. Moreover, there is no part of the Moorish Alhambra in which we can find the same purity of outline, and grandeur of proportions, that characterise in so high a degree the Gate of Alladeen." It forms a sort of square pavilion, perforated on each of its four sides by an indentated arch, and surmounted by a beautiful cupola; and the inner hall is as richly decorated as the façades. Having passed through this gate, visitors find themselves



PRINCIPAL ENTRANCE OF THE TAJ GARDENS, AT AGRA.

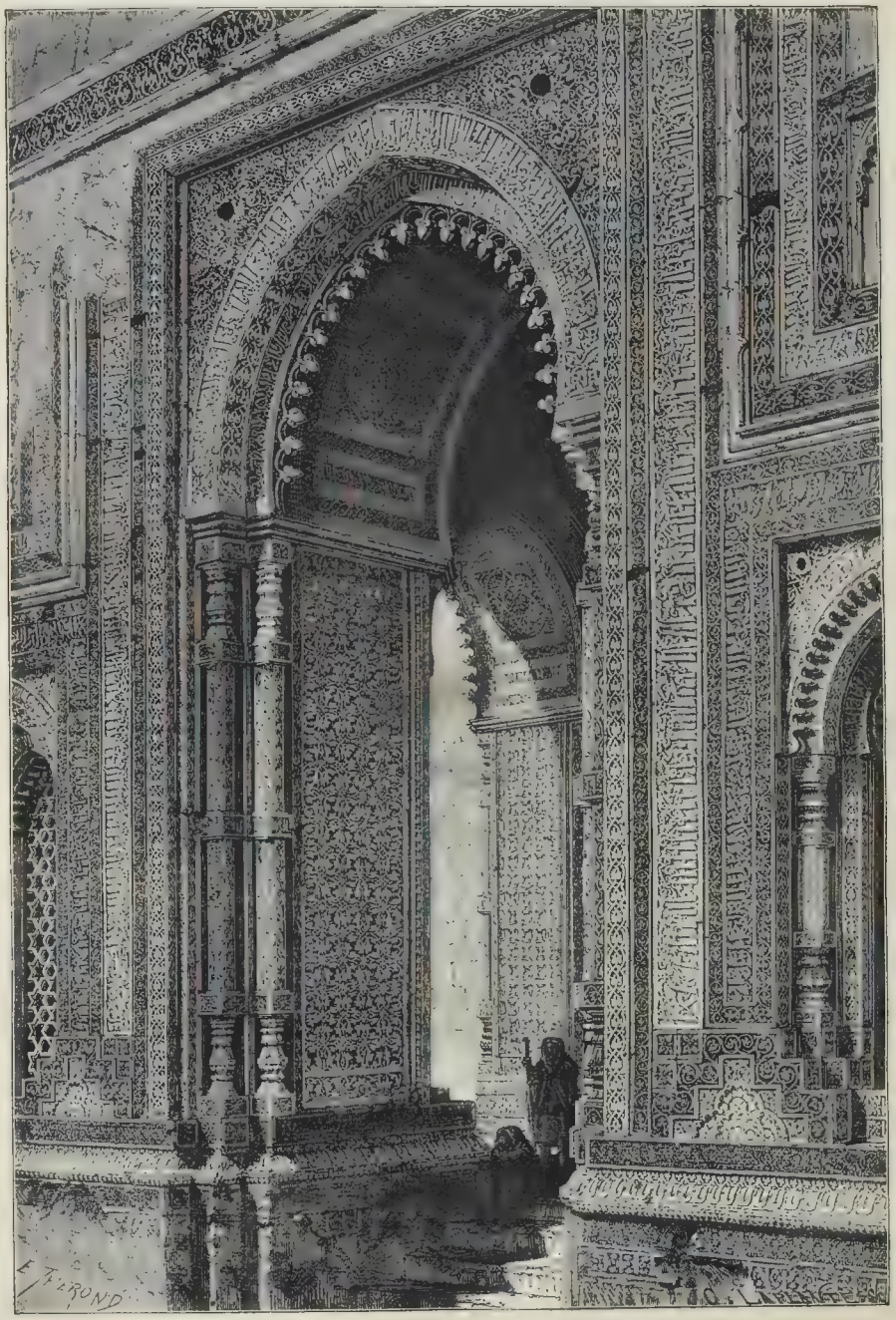


THE JUMNA MUSJID.

almost suddenly at the foot of the Kootub, which stands alone and isolated in the centre of a paved court, proudly raising its head at a height of 227 English feet.

The contrast between these gaudy exotics of Indian art, and the massive, solemn, almost sepulchral grandeur of such shrines, for example, as those of Vijayanagar, representing an enormous opulence and power;—terraces a thousand yards in length, of Babylonian solidity; gates surmounted by ponderous pyramids; idols rivalling in magnitude those of antique Egypt; staircases broad as a public street; temples crowded in hundreds, and each sufficiently superb to satisfy a modern town; infinite richness of sculpture; but no colouring whatever,—no polychromatic fancies, for those blocks of granite, 20 ft. by 12 ft., grey as they were at the creation, and worn as though by whole cycles of slow, unviolent, change. The two great epochs of Indian history stand forth here in a contrast and identification the most absolute conceivable, unless we give the palm to the Pagodas of Chillambaram, those seven sisters—or Lamps, if we prefer it—of a remote and mysterious art which carry in each of them the meaning of an entire mythology, dark, melancholy, and mysterious, but not exclusively black. They are varied by porphyry statues, and columns of sandal wood, by constantly renewed dedications of flowers, and by blazonries of polished copper, but never by a gem, a dash of vermilion, or so much as a square inch of mosaic. Why they were erected, human knowledge has never yet been able to say; but that they are the trophies of war, like the monuments of the Moguls, no student of the Indian chronicles will believe. Those men, to all appearance, reared their temples as expiations; the Moguls reared theirs as triumphs.

We will end as we began, by recommending to our readers "India and its Native Princes."



GATE OF ALLADEEN, KOOTUB, NEAR DELHI.



LONDON STREET ARCHITECTURE: OFFICES, CORNER OF THREADNEEDLE STREET AND BISHOPSGATE STREET.—Mr. Theodore K. Green, Architect.

NEW BUILDINGS AT THE CORNER OF THREADNEEDLE-STREET AND BISHOPSGATE-STREET.

These buildings, now in course of erection, are on the site of the church of St. Martin Outwich, and the adjoining rectory.

The excavations were commenced in the autumn of last year, but owing to the unsatisfactory nature of the subsoil, the difficulties encountered in maintaining the surrounding buildings, and the change of lessee, progress has been slow. There is a sub-basement over the entire site of church, intended for wine-cellars. The basement and upper floors will be arranged in suites of offices, and the ground-floor is an open space over the entire area. It is proposed to face the whole of the building with Portland stone, and to construct all floors and partitions with fire-proof materials.

The perspective view is taken from Bishopsgate-street, and represents the building as originally designed by the architect; but we are informed that there is a probability of the height being somewhat reduced in execution to meet the objections of adjoining owners, who consider that their light may be somewhat injured. Mr. Shepherd is the contractor, under the superintendence of the architect, Mr. Theodore K. Green.

THE PLASTERERS' COMPANY AND TECHNICAL EDUCATION.

This company, with the object of promoting technical education, as applied to its own special industry, has offered for the past eleven years prizes for modelling and for design to students in the art schools and artisan classes in connexion with the Department of Art, South Kensington.

A report just published by the company says as to 1874-5:—"The subjects for competition for the past year were,—

1st. A Model in Plaster for an Ornamental Bracket, intended to support a Bust or Statuette. Modelled and designed by the competitor.

2nd. A Design in Monochrome for the Ornamentation of a Doorway, capable of being executed in plaster.

Eight models were sent in for the bracket. That of Joseph Ellis, of Hanley, gained the company's first prize of 7*l.* 7*s.*, to which a national silver medal has been awarded. The second prize of 4*l.* was gained by Sidney Currie, of South Kensington, and a national bronze medal. A bronze medal has also been awarded to a model by D. Buchanan, of Glasgow. Three other models have gained third-grade prizes,—namely, two from South Kensington, and one from Birmingham.

Fifteen designs for the ornamentation of a doorway were sent in; that by Wm. Marshall, of South Kensington, gaining the company's first prize of 8*l.* 8*s.*; and that by Laurie Bisset, of Edinburgh, the second prize of 5*l.* 5*s.*, and also a book prize. Otto Partz, of South Kensington, is awarded a bronze medal for his design; and nine other students, third-grade prizes,—namely, three from the art schools of Lancaster, and one each from Belfast, Cirencester, Glasgow, Coalbrookdale, Edinburgh, and Sheffield."

The subjects for competition for 1875-6 will shortly be published.

SANITATION IN MADRAS.

A Sanitary Association has just been set on foot in Madras, and has inaugurated its career by calling the attention of the local Government to a rather formidable list of grievances which demand immediate removal. The chief of these is the prevalence of bad smells in various parts of the city; the existence of a large number of open drains in which offensive matter is allowed to accumulate, and by which the surrounding atmosphere is tainted; the system of burial in the existing burial-grounds, graves being dug so near the Cooum (a sluggish river which runs through the most populous districts) that water freely percolates, and the river is consequently contaminated; the insufficient supply of latrines and places of public accommodation, and the consequent perpetration of public nuisances; and lastly, the character of the water supplied by the waterworks, which is at times discoloured and offensive in smell, owing either to the want of a proper system of filtration, or to percolation of sewage matter into the water-pipes in places where they have been laid in close contiguity to, and at a lower level than, the street drains. If matters are in this state, it is little wonder that epidemic cholera was present in Madras during the hot season, and that the death-rate is higher than in the other presidential cities.

SPECIFICATIONS.

In the course of the introductory lecture in opening the engineering classes of Glasgow University, Professor James Thomson made the following remarks:—I propose, before entering on the routine business of our course, to make some general remarks, and to give emphatically some general advice, which I hope may be engraved on your memories, and may happily tend to bear good fruits in after years to yourselves and to the clients for the designing of whose works your services may be engaged, and may tend to promote the honour and dignity of the profession, whether of civil or mechanical engineering or architecture, to which you may ultimately apply your energies. One of the most important duties towards the good performance of which it ought to be your ambition to aim is the designing of works and arranging for their execution, and giving the necessary superintendence, to ensure, as far as may be, that they they shall be well and successfully carried out. For rendering it possible to perform such duties well, engineering science, whether acquired mainly through studies entered on in a university course of engineering education, and followed up with the attainment of practical experience in actual works, or acquired without the aids that university teachings can afford, is in most cases essentially necessary. Mathematics and natural philosophy are two of the most important elements in an engineering scientific education; but they are not all that is wanted. There is a mistake into which the college student of engineering is occasionally liable to fall, and which in some cases is found showing itself prejudicially in subsequent years, when he is engaged in the practical business of life, but which usually is rubbed off in the rude jostlings of experience. It is the mistake of having a too great longing for means of attainment of mathematical exactitude in subjects which from their nature do not admit of the judicious application of any elaborate or very refined methods or processes. In by far the larger proportion of cases in which important action must be taken a rough-and-ready decision is all that is wanted, or, at any rate, is all that is possible. If, however, the engineer or architect is well prepared with scientific principles to aid his judgment,—if he is intimately acquainted with the physical properties of materials,—if he is accustomed to take a comprehensive view of the relations and mutual influences of the different parts of structures in numerous and varied cases, with the aid of exact mathematical investigations in cases where mathematics may be truly applicable,—and if, too, his mind is amply stored with practical knowledge and experience, his decisions are likely to have more of the ready and less of the rough in their character. Mathematical investigations exact and, it may be, complicated, and involving refined and delicate physical considerations, have often very important practical uses in engineering, in architecture, and in naval construction. To you, as students in this University, there is no danger of the importance of these subjects passing unnoticed and unknown; but there is a danger of quite another kind, against which a timely warning given may be of vital consequence. It is the danger of being misled by bad advice, or bad usages, into neglecting to make efforts, with due vigour and determination, to have your designs complete, or as complete as they may, or can, or ought to be, before you will draw your client on, or allow him to go forward, into having the execution of them proceeded with. In so far as you allow your plans, in a state in which you ought better than any one else to know that they are incomplete and immature, to be begun and proceeded with in execution, you are laying up vexations for all concerned—losses and disappointments for your employer, and therefore grief for yourself. Now I have to tell you that the designs for the execution of any important piece of work, and even for the execution of pieces of work of minor importance, in almost all cases cannot be completely made and completely exhibited by drawings alone. It is necessary also in each case for the designer to write out a specification of various particulars to be attended to in the execution of the work. The nature and scope of a specification for the execution of works must depend on the manner in which it is intended that the work shall be carried out; but, in any case, it ought at least to contain clear explanations of many things which the drawings alone do not fully exhibit, and perhaps even could not be made completely to indicate. While an architect or an engineer is proceeding with the making out of drawings for any projected work he ought constantly to keep at hand a set of sheets of paper on which to jot down his notes for a specification; because, during the attempts to perfect the drawings, many things are likely to be thought of which ought to be distinctly stated as written instructions for the builder or maker, but which, if not noted at the time, may be liable to be afterwards overlooked and forgotten. Then, when the drawings are complete, or are supposed to be nearly so, the time comes for writing out a specification in all its desirable completeness. The primary and main object of a specification may be briefly described as being to give, fully and clearly, all necessary and useful written explanations and instructions for the execution of the work; and, in the case of works to be executed by contract, for making due preparations for the effecting of a definite and clear bargain between the contractor offering to execute the work and the person or company accepting his offer. But, while this is the primary and main object, there are two incidental objects of no trivial importance, which I shall now mention:—First, the specification, when submitted to the person or company for whom the work is to be done, affords the best possible means for understanding the drawings, and for judging on many points in the proposed scheme, which, though perhaps of great importance, would otherwise have escaped notice; and, secondly, the requirement for a good and clear specification involves this most important condition with the architect or engineer himself; that, in fact, he cannot draw it up at all, without first finding out what the design or work is that he wants to specify definitely, and what parts of his project must considerately be left unsettled and open for future decision. When he applies himself with earnest determination to draw up a specification well, he can scarcely let much pass unnoticed by mere inadvertence, as he is quite apt to do when he proceeds without a specification. I have been led to make these remarks because I have learned that a practice is adopted and worked upon by many architects,—worked upon very generally in the profession, it has been from various quarters strongly asserted, but I will not believe in the imputation as applied to the profession generally,—a practice, namely, of giving the instructions to the builders by drawings insufficient to exhibit the work at all completely, and by what are called bills of quantities, and of arranging the bargains by means of "priced lists"; but without any writing whatever of the nature of a specification. What, then, is the obstacle that leads into the omission of this all-important means towards the complete exhibition of a design? It is, ordinarily, just this: that the designs themselves have neither been fully delineated on paper in the drawings, nor have been formed with sufficient completeness in any human brain. When work is begun in this way, things sometimes go forward at first with great ease and satisfaction,—each person is relying upon the others; and even the architect himself has not distinctly realised how incomplete the designs and instructions he has given really are. But soon a time arrives when difficulties begin to show themselves; some things are found to be ill-arranged in their relations to other things; some things essential to be contrived have been unnoticed or forgotten altogether; the builders have to spend much valuable time that ought not to have been required in calling at the office of the architect to ask what they are to do next, or how they are to proceed with some part of the work already begun or far advanced, but in respect to which some alteration of plan is contemplated but not yet arranged or decided on. Troubles and anxieties proceed; but now I will draw the curtain over my unfinished picture of the consequences of proceeding to the execution of important works without a specification.

The Drainage of Potton.—At a meeting of the Biggleswade Board of Guardians, on the 10th inst., it was resolved, on the motion of Sir John Burgoyne, "That the scheme for the drainage of Potton which had been submitted by Mr. Miller, inspector of nuisances, be carried out forthwith, and that application be made to the Local Government Board for a loan of 900*l.*"

WATER SUPPLY OF THE METROPOLIS.

In the course of the opening address at the Society of Arts, on the 17th inst., the President, Lord Alfred Churchill, who reviewed all that had been done by the Society during the past Session, said:—

The results of the inquiry directed by the Council into what could be done for the prevention of the spread of fire and conflagration, led to the further inquiry how far the application of science and art might be brought to bear on the special improvement of the entire water-supply of the metropolis. This important subject still awaits the attention of Parliament to the Bill based on the conclusions obtained by the inquiries of the Special Committee appointed by the Council. In the Session before last, that Bill was thrown out by the unexpected opposition of the water companies, for there was reason to expect that they would not have opposed its being taken into committee on the main question affecting them. Last Session, compensation facilities were promised on the part of the Government, which it appeared they were unable to realise. But towards the end of the last session, public attention was roused, and in another measure which came before Parliament the popular sentiment prevailed, and a precedent was established, that measures affecting the security of life and property should have the precedence over those that do not. On this new and humane principle it is to be hoped that a due place will be yet accorded to a measure which, as relates to the metropolis, would prevent at least two out of three of the losses of life and personal injuries that regularly occur from fire, and save the great majority of the regular annual sacrifice of more than two hundred lives. It must be remembered that an improved water supply has not reference merely to prevention of fires, but largely affects the health of the population, and greatly facilitates the cleaning of the streets. Thus, proper measures would certainly prevent the injuries annually done to more than two thousand persons in the streets. All this has been clearly shown by the elaborate report issued last session by the committee of this Society. The President of the Association for the Promotion of Social Science, at the meeting held at Brighton, late a Secretary of State for the Home Department, ascribed a large amount of the existing criminality to the widespread drinking-habits of the population. But what more powerful cause contributing to drinking habits is there than impure or repulsive supplies of water,—of water which, if pure at its source, is made impure by the intermittent mode of distribution, which detains it in butts and vessels in crowded rooms, where it is kept stagnant, and absorbs the mephitic gases, and is made mawkish, offensive, and repulsive? It is not pretended that the provision of pure water is in itself a specific against the great evils of the drinking-habits of the population, described in a recent important article in the *Quarterly Review*, but it certainly goes to the removal of a great provocative. Our late lamented member, Mr. William Fairbairn, excluded the beer-can rigorously from his works, but he took care to provide for his people the best pure water that could be got. It would have been a sorry conclusion if he had left them the alternative only of water made repulsive by stagnation, in water-butts over cess-pools, or water de-aërated in crowded rooms. The present conditions of the metropolitan supply, besides great waste, are inferiority, if not impurity, in the sources from whence the supply is drawn. It was shown by Mr. Quick and Mr. Rawlinson, and other practical witnesses, that fully one-half the water pumped into the metropolis on the intermittent system is pumped to waste. This is confirmed by the fact that by measures conducted by Mr. Deacon, at Liverpool, where the supply is on a public footing, the consumption has been reduced from 33 gallons on the intermittent system, to 17 gallons per head on the constant system. It follows if that system were adopted in the metropolis one half of the 110 millions daily pumped might be saved, the other half being now pumped to waste. Nearly all this half, or 58 millions, is pumped from the Thames, which is yet sewer tainted, and tainted, at times, very much with the surface washing of heavily manured lands, giving matter in solution for drinking purposes which filtration has as yet failed to remove. There is, however, another source of crime to which the present conditions of water supply are contributory to an extent to which the right hon. gentleman must have been ignorant. At present the services of the fire brigade and its engines are limited as a rule to the prevention of the spread of fires beyond the premises where they occur. The incendiary for insurance money is pretty sure to have his object accomplished, and the trace of his work is limited to the particular house, and obliterated before the fire engines can arrive. How systematic all this work goes on is shown in the evidence collected by our member, Mr. McLagan. Mr. Tozer, in his evidence, showed that one third, at least, of the serious fires in London, are not accidental, but intentional, and criminal. But if water can, by means of hydrants, be applied, as it is proved it may be, in two minutes instead of twenty-four by fire-engines, incendiary speculators for insurance money are baffled. Whilst the supply of the metropolis still remains in the hands of private companies, and there are eight of these companies who divide the metropolitan supply among them, it is obvious that the first and main object must be, and indeed it is their duty, so to manage their affairs as to give the largest amount of dividend to their shareholders. This can hardly be consistent with a due regard to the perfect interest of the consumers. Doubtless, under unity of management, large economy could be effected, and, if administered on a public footing, the water supply might be rendered far more effective for the public benefit. A constant supply, with hydrants at frequent intervals, might be obtained without further burthen on the ratepayer, who would thus obtain a more adequate protection from fire, and increased facilities for cleanliness in the streets. Manchester and Liverpool are instances in proof. If unity of works and management had been got when it was first proposed, the extension of duplicate and triplicate trunk mains (one of them, extending from east to west, costing upwards of a million of money), extended reservoirs, providing for a waste, under the present system, of nearly double the actual consumption, would not have been incurred. Now, nearly the actual draught from the Thames, and the continuance of multiplied establishments, might all have been spared, and the expenditure of some three millions of money might have been, by unity, prevented, and the shareholders have received improved dividends from the profits which have gone elsewhere. It is to be observed that the Metropolitan Board of Works have, in consequence of the complaints on account of the increased rating by the water companies, given notice of a Bill to equalise the rate, and to extend a system of supply by meters to private houses. In this course, leaving the supplies to the separate companies as they are, that Board practically confirms the conclusion come to as to its ineligibility, from the restricted area of its jurisdiction and other causes, to take upon it the responsibility of undertaking the supplies directly for the public. But it is apprehended that, as separate works and extensions, and expenditures for them to an indefinite extent, must still go on, together with the expenditure on multiplied establishments and directorates, that any considerable augmentations of dividend to the shareholders, or any material reduction of rates to the consumers, must be very remote. The only practical source of considerable economy and early relief must be sought in the economy and great gains of unity of management on a public footing. Col. Beresford, the member for Southwark, has renewed his notice of a Bill on the basis of the report of the Special Committee, which, it is acknowledged, has done gratis the work of a very special commission on the subject. But it is submitted that the work is of a nature that ought not to be left to them, or to any private member, however competent, nor to any overworked sub-department, and that it is befitting the care of a superior department and Cabinet Minister.

AN OUTING.

CRYSTAL PALACE SCHOOL OF ENGINEERING.

This growing institution made the usual trip of inspection for the present term on the 11th and 12th inst., and as the lectures given by the Principal during the term now proceeding are upon "Materials and their Manufacture," it was arranged that this tour of inspection should be to the Black Country, and accordingly, arrangements having been entered into, and the kind co-operation of the managers of the various works to be visited having been secured, a party of upwards of fifty, including the Principal, Mr. J. W. Wilson, C.E., the assistants, and students, availed themselves of the special facilities offered by the London and North-Western Railway Co., and proceeded to Birmingham by the early express on the 11th inst.

On arriving at Birmingham, the party at once proceeded to visit the celebrated works of Messrs. James Watt & Co., passing on thence to the Patent Bolt and Nut Company's Works, and thence to the Birmingham Tube Company's Works. At all these places the most courteous reception was afforded to the party, who returned to their hotel at Birmingham, and dined together there.

The works of the Earl of Dudley at Round Oak, near Dudley, were inspected on the Friday morning, and by the kindness of the managers the whole process of iron manufacture was seen in actual progress. The visit to these works terminated in a descent to the "Robin Hood" Coal-mine; after which the party took train to Wednesbury, and, entering the Patent Wheel and Axletree Company's Works at that place, were enabled to view the Bessemer steel-converting process at work. Thus concluded a most interesting and instructive series of visits, and the dinner, which brought the expedition to a close, terminated in a hearty ovation to the Principal for the management of the tour.

NOTES FROM CANADA.

Canada is blessed with some of the finest lakes in the world, and instead of the Indian gibberish names, it would be as well to rechristen them with something one is able to pronounce. Many years ago, the writer was taken by his father to see the Ojibbeway Indians, then exhibiting in London: little did he think one day he would visit them in their peaceful homes, and a very different kind of "pusson" the Ojibbeway is from the noble savage he appeared to be, with his highly-coloured face, painted and feathered as shown in London.

The really gorgeous and magnificent lakes up the Gatmeau and Grand River are removed from civilisation, but there are a number of grand lakes on the Northern and Midland Railways of Canada, and were it not for the mosquitoes and sand flies, these places would be considered a hunter's paradise.

The termini of the Midland Railway is at Port Hope, a city most remarkable for its picturesque beauty, abounding with hills and valleys that somewhat remind one of the Isle of Wight, minus the fine buildings; but let us hope the days of the wooden band-box houses are numbered now brick is being used, which will cause architecture to be more closely studied.

Just on the borders of the town overlooking the noble lake of Ontario is a fine residence surrounded by a splendid park owned by Colonel Arthur Williams, a son of one of our noble salts of the brave Nelson days. The Colonel, with a liberality worthy of emulation, does not lock the gates of the park, and put up high palings, so that the tops of the lofty pines and splendid oak and maple trees may be seen over a high fence, but portions off the park for the use of the general public, and good cricketers are not shy in living up to the privilege allowed by the worthy Colonel. In the midst of the park is the owner's residence, a brick and stone building after the Elizabethan style.

The Midland Railway runs north, its final stopping-place being at Orillia, a small but flourishing little town, full of life and bustle, with every sign of expansion; there are a few miles of railway almost ready for traffic from Orillia to a place called Wanbesheue, and at some future time it is intended to extend the railway to the Georgian Bay, thus completing what no doubt will make the Midland Railway a success. Orillia is situate in close proximity to a most magnificent tract of water, studded with innumerable and picturesque islands. The village of Oashago and Rama border the Lake Conchiching. Rama is the Ojibbeway Indian settlement, and the tribe are a very peaceable class of people, living chiefly by hunting and fishing; they have a very noble look, and not so puny and skin-dried as the half-breds of Lower Canada are.

A large summer hotel has been erected on Lake Conchiching, affording a good deal of accommodation to tourists, hunters, and private families who flock there. The grounds of the hotel are laid out very decently, affording a good deal of accommodation for the lovers of croquet, cricket, and base ball, and a part has been allotted for a bowling alley. Three steamers navigate the lake

to the Falls of Muskoka, the lakes Severn, Simcoe, Sparrow, and Muskoka trading Lake. These lakes abound with salmon, salmon trout, black bass, pickerel, and other kinds of fish. Hunting just now is also good; plenty of deer and wild ducks. QUERCUS.

THE ARTISANS' DWELLINGS ACT IN THE CITY.

THE new Lord Mayor, Cotton, in the course of his first address at a meeting of the Common Council, said he thought he might be excused for referring on the present occasion to a subject of a very serious character. They were aware that a very important Act of Parliament, the Artisans and Labourers' Dwellings Act, had recently come into operation, and that the Government had conferred the privilege upon the City of London of being the authority for carrying out the provisions of this Act within the City of London. This privilege had been granted in perfect good faith and sincerity, and with the full belief that the City of London would carry out the Act loyally and to its full extent. They now possessed the power of pulling down all those places within the City that had been truly described as plague spots, and which were the constant sources of disease. He should be happy to render all the assistance in his power to carry out these important objects, and he was glad to see that the Commissioners of Sewers, who were the body specially appointed for the purpose, had already taken proceedings to carry out the Act of Parliament, and that they had resolved at once to pull down in one particular locality what had for a long time been complained of as containing residences and dwellings that were totally unfit for human habitation, and that they had resolved to do this important work as speedily as possible. This Act of Parliament gave them the power almost to rebuild the City of London; and as so much had been done in the way of building palaces within the City, it was most satisfactory to find that steps were now being taken to provide suitable residences in the City of London for the artisans and labourers who were employed within it. He would only add that he believed this Act of Parliament was quite clear in its provisions, and that it could easily be carried out; but he might state that if any unforeseen difficulty should arise in the course of the proceedings taken by the Commissioners of Sewers he should be happy to introduce a deputation to the Home Secretary to ascertain his opinion.

SHAKSPEARE MEMORIAL AT STRATFORD.

THE designs for the theatre, library, and picture-gallery are to be, in the first instance, sketch designs from architects desirous of competing for complete designs and plans. From these not fewer than five nor more than ten will be selected by the council, and the architects furnishing the designs so selected will be invited to send in finished and complete designs in competition for the Shakspeare Memorial, upon the understanding that the author of the design eventually selected shall (subject to satisfactory arrangements being made) be employed as architect of the building, and be paid the usual professional remuneration on the outlay. To each of the other competitors so selected who may send in finished and complete drawings in the second competition, the sum of twenty-five guineas will be paid by the council. The council will exhibit the designs and original sketches, either before or after adjudication, and in the selection of designs the council will seek professional aid.

The building is to be an ornamental structure, and will stand isolated in a garden, and be seen from all sides.

The cost named for the building, but without statuary, is 8,000*l.* to 10,000*l.*

The council consider that 5,000*l.* or 6,000*l.* should enable them to complete the theatre sufficiently for temporary use.

The Inhabited House Duty.—In a recently-issued Parliamentary paper an analysis is given of the inhabited house duty, which amounted last year to 1,381,116*l.* 7*s.* 3¾*d.* The annual value of shops and warehouses assessed at 6*d.* in the pound was 9,628,015*l.*; beerhops, at the same assessment, 3,770,153*l.*; farmhouses, at the same, 768,806*l.*; while the annual value of dwelling-houses at 9*d.* was 29,727,139*l.*

COST OF NEW VIADUCT, CARLISLE.

ON the 12th inst. the Carlisle Town Improvement Committee let the contracts for the construction of a new viaduct to Mr. T. B. Nelson, of Carlisle and York. The contract was offered in three divisions. No. 1 consisted of the bridge and works lying on the east side of the railway, as carried out upon arches; No. 2 consisted of the same works carried out upon brick retaining walls; and No. 3 comprised the works on the west side of the railway. Seven contractors competed. Mr. T. B. Nelson's tender for the whole work amounted to 13,241*l.* if executed with arches instead of embankment, and 12,205*l.* if carried out with brick walls and embankment, according to the original plan, the railway companies supplying the "muck." The tenders, according to the *Carlisle Journal*, were as follow:—

	£.
Armstrong,—	
No. 1 (6,839*l.*) and No. 3 (10,361*l.*).....	17,200
No. 2 (6,612*l.*) and No. 3 (10,361*l.*).....	16,973
McKenzie & Co.,—	
No. 1 (7,245*l.*) and No. 3 (9,861*l.*).....	17,106
No. 2 (6,390*l.*) and No. 3 (9,861*l.*).....	16,251
Dawson, —	
No. 1 (7,444*l.*) and No. 3 (9,333*l.*).....	16,777
No. 2 (6,044*l.*) and No. 3 (9,333*l.*).....	15,377
Jackson,—	
No. 1 (6,303*l.*) and No. 3 (9,620*l.*).....	15,920
No. 2 (6,145*l.*) and No. 3 (9,620*l.*).....	15,765
Ward,—	
No. 1 and No. 3	15,728
No. 2 and No. 3.....	15,348
Lees & Co.,—	
No. 1 (5,368*l.*) and No. 3 (8,010*l.*).....	13,378
No. 2 (5,614*l.*) and No. 3 (8,010*l.*).....	13,624
Nelson,—	
No. 1 (5,754*l.*) and No. 3 (7,487*l.*).....	13,241
No. 2 (5,718*l.*) and No. 3 (7,487*l.*).....	12,205

SURVEYORSHIP ITEMS.

Ramsgate.—At a meeting of the Ramsgate Local Board on the 16th inst., the principal business transacted was the election of a surveyor from the four candidates selected at a previous meeting, viz., A. W. Conquest, Clapham; B. M. Hiscocks, Wandsworth; R. H. Inch, Croydon; C. M'Callum, Dover. Each candidate appeared before the Board, and was examined by Mr. H. Hinds as to his general acquaintance with the following subjects:—Testing cement; ventilation of sewers; treatment of house refuse; disposal of sewage; construction of hydraulic works; distribution of water and of gas; and mathematical analysis. Eventually it was unanimously resolved that Mr. William Alexander Conquest be elected to the office of Surveyor and Inspector of Nuisances. Mr. Conquest is at present employed by the Metropolitan Board of Works in preparing Parliamentary plans for the approaching session. His testimonials included a strong recommendation from Sir Joseph Bazalgette.

Sevenoaks.—A special meeting of the Sevenoaks Local Board was held on the 15th inst., for the purpose of appointing a surveyor, five out of the fifty candidates having been requested to attend. The selected candidates were Mr. W. G. Bennett, Warrington; Mr. G. Detterfield, Rochdale; Mr. J. Hook, Brighton; Mr. James Macdonald, Glasgow; and Mr. James Macgregor, Edinburgh. It was unanimously resolved that Mr. Macdonald should be appointed surveyor, at a salary of 150*l.* per annum. Mr. Macdonald will enter upon his duties on the 1st December.

Lambeth.—At a meeting of the Lambeth Vestry on the 18th inst., a letter was read from Mr. Hugh M'Intosh, the surveyor, asking for an increase of salary. Mr. F. H. Fowler, in a speech of some length, alluded to the increased duties discharged by the surveyor, and his high qualifications for the office which he held. He moved that his salary be increased from 500*l.* to 600*l.* per annum, and the allowance for expenses from 200*l.* to 250*l.* per annum. The motion was seconded, and carried by 75 to 3, after a long discussion.

Sheffield.—At a meeting of the Sheffield Town Council, on the 9th inst., a letter was read from Mr. S. F. Holmes, intimating his intention to relinquish, as from the 6th of December next, any further payment on account of his appointment as Consulting Borough Surveyor, which office he has held since his retirement from the Borough Surveyorship, but expressing his readiness at all times to give such advice and information to the Borough Surveyor for the time-being, as, on account of his (Mr. Holmes's) long connexion with the town, may be useful to him. The letter also notifies Mr. Holmes's determination to retire from the engagement entered into by the resolution of the Council in July last, appointing him to negotiate on behalf of the Corporation for the purchase of properties required for the contemplated street improvements.

Haslingden.—At a meeting of the Haslingden Local Board, on the 3rd inst., the selected candidates for the appointment of surveyor (Messrs. Patterson and Duckinfield) were called in, after their applications and testimonials had been read, and several questions put to them. Both candidates stated that if appointed they were prepared to devote the whole of their time to the duties of the office, and also to reside in the town. The votes were taken by ballot, when there were thirteen in favour of Duckinfield, and four for Patterson. It was then resolved that Mr. Duckinfield be appointed.

Spennymoor.—At a recent meeting of the Spennymoor Local Board, Mr. Robinson, of Bedlington, Northumberland, was appointed surveyor and inspector of nuisances, at a salary of 130*l.* per annum.

Hythe.—Mr. Allen Gravener, the borough surveyor of Hythe, was accidentally drowned on the 14th inst. He had, during the morning, been inspecting the sea-wall, watching the result of the sea's action upon it, until at length he determined upon an attempt to reach the town some distance to the westward. He had nearly reached No. 13 Tower, when he was washed into the sea by waves. For a few seconds he was lost to view, and when he rose he seemed to be clutching at the bank of the beach, which was nearly perpendicular at the spot. The body was ultimately recovered.

WON BY A TOSS.

THE Liverpool School Board have introduced the system of selecting architects by lot, as their advertisement shows:—

"The Sites and Building Committee propose to form, from names sent, a list of those architects who appear to them specially fitted by experience to undertake the work, and will decide by lot which of the applicants on this list shall be recommended to the Board."

Such a course appears to us derogatory and damaging. It seems to us a way calculated to undermine a profession where *merit* ought to be the chief recommendation. The first proposal of the Sites and Building Committee was to *exclude* all architects who had built *two* schools. This has since been modified in the way to which we are alluding. It is an illogical thing: the selection does not go far enough. If they select say nine architects, as they did on a former occasion, it must be on the assumption that nine architects equally competent for the work in view can be found in Liverpool,—equal in what is now really a specialty. A School Board should be the last to teach people to depend on *luck*. A general introduction of this way of settling rival claims might be very comfortable and easy, but it is calculated to degrade and damage the profession.

THE SEVENTH AND EIGHTH BOOKS OF STRABO.

IN the old Abbey of Grotta Ferrata, near Frascati, a manuscript has lately been discovered said to contain the oldest text of the writings of Strabo, the Greek geographer, living at the time of Christ, and supplying many gaps of the present MSS. According to the *Cologne Gazette*, fugitive Sicilian monks, who, invited by the Emperor Otho III., had settled in the above monastery, brought with them valuable Greek manuscripts, which they carefully guarded and kept from strange eyes. Cardinal Angelo Mai, who died about twenty years ago, a well-known connoisseur and editor of old manuscripts, extended his explorations and discoveries also to the treasures of Grotta Ferrata. He was followed by Father G. Cozza, who has worked much in Bible manuscripts, and who found during his labours a palimpsest, or *codex rescriptus*, upon which, under a copy of the Old Testament dating from the eleventh century, another older writing appeared when chemical means were applied. It consisted of three columns of Strabo. Soon after several other, larger leaves were found, containing considerable fragments of Strabo—seventeen books on geography, especially of the seventh and eighth books, hitherto considered lost, so perfectly written that it will now be possible to correct the present editions. The

manuscript belongs, according to Father Cozza, to the sixth century; it is consequently older than the twenty-eight manuscripts of Strabo's works known at present.

THE THAMES EMBANKMENT.

SIR,—The trees on the Embankment on the left hand from the City are a disgrace, and must become a mere laughing-stock to any foreigner or one who would point toit as a thing of beauty,—high and low, crooked and stunted, knock-kneed and half-dead. Who now living can hope to realise its would-be attractions? Pay a visit even to the Charing-cross-gardens, and see what is deemed ornamental enough for a central tree of the most conspicuous portion of the ground, viz., a stump, with a few one-sided shoots, deformed in body and crippled in limb. I see a large tree, after standing some eighteen months, has become at last defunct, and has been replaced by another, with an Englishman's eye to putting on door-plates,—lop-sided,—and thus, what might at once be ornamental and prove an improving taste, is marred by an indifference to order and beauty, and only goes to prove the necessity of a Board not only for what should be done, but the manner of doing it. W. S.

STEETLY CHAPEL.

SIR,—Steetly folk will be much obliged to "G. W.," who grudges them the use of a beautiful chapel, long desecrated, but needing little beyond a new roof and internal fittings, and proposes "a small preaching-room" in its place.

Restorers, I am too sadly aware, have done much mischief, but there are men in England who might be trusted to restore even a "perfect gem" like Steetly to the purpose for which it was built, viz., the worship of God, without destroying its architectural and archæological value. The case of Kirkstall is by no means parallel. A vast building which would need a large amount of reconstruction is very different from a small chapel, which, except the roof, is almost perfect. M. A.

A STRONG POINT OF LAW FOR BRICKMAKERS.

IN the County Court of Durham last week, a gardener of the name of Taylor brought an action against John Hirst & Son, brickmakers, for damage done by the heat and sulphurous smoke of their kilns.

The gardener stated that he had a garden at the rear of his house, which borders on a field used by the defendants in the making of bricks. The distance from the brick-kiln to the garden was 38 ft. During the present summer his garden was as black as his hat from the smoke of the kiln, and he did not think there was anything left in his garden that was not damaged. He was certain that the heat and smoke did the damage. He described the various things that had been destroyed. Since the damage had been done, he pointed out the state of the garden to Mr. Hirst, and asked him if it were any use doing any more to the garden whilst the brick-kiln was there, and the defendant replied that he did not think it was. Mr. Hirst was tasting the gooseberries left on the trees, but no leaves, and witness told him he would poison himself.

Cross-examined.—Was certain the effluvium and heat from the kiln caused this injury. Had not plucked any fruit from the garden, as it would have injured anybody to eat it.

The Judge thought it best to see the place himself, and rode over to the kilns, and on his return, Mr. Nicholls, another gardener, said that in July he found the garden a complete wreck. From his experience of forty years he never saw anything like it. Everything was as black as a hat, and appeared to be in a consumption. The crop was thoroughly destroyed, and beyond that there was a further injury. The trees, in his opinion, would never recover.

The Judge asked if the kilns were done away with would the trees recover? The witness said they would not, and he would advise the plaintiff to plant others. He considered the valuation of the injured plants fair and moderate.

The defence merely rested upon the unfairness of the claim.

The Judge said the law was on the side of the plaintiff, for it was not to be endured that brick-kilns should be permitted to destroy gardens or fields in this way. He should award 10*l*. for injury to the garden, and 10*l*. for damage to the crop, and allow full costs.

It was stated that this was a test action, and that other brickmakers will feel the force of the decision.

"THE LESSONS OF THE FLOODS."

SIR,—The article written in your paper on this subject so completely coincides with my opinion, as expressed in a paper I read at the Chamber of Agriculture in April, 1874, that I venture to send it for your perusal. The worst that could have been anticipated from over drainage in this neighbourhood has happened, as the Kennet river is flooded, and great damage has been done. What is to be the remedy? I can only imagine that the storage of water would, to a certain extent, effect a cure. I think the water which now finds its way into the pipes, and thence into the river, should be intercepted by storage, and be made available in case of dry weather.

Newbury. J. T. CARDONELL.

TIDESWELL CHURCH.

SIR,—In correction of the paragraph respecting the restoration of Tideswell Church, Derbyshire, which appeared in the *Builder* of November 13th, will you kindly allow us space to say that the restoration of the De Bower Chantry, in the south transept of that church, was carried out wholly from our designs and under our superintendence, at the sole cost of Mr. J. Bower Brown, J.P., of Woodthorpe Hall.

This work, which was completed some eighteen months ago, included—in addition to the cutting out and replacing of all decayed stonework, &c., and the taking down and rebuilding, stone for stone, of the parapet and pinnacles—a new oak screen and panelling to the roof, stained glass in the windows, marble mosaic floor, and the refixing of the alabaster effigies (*tempus* Rich. II.) of Sir Thurstan and Lady Margaret de Bower on an almost wholly new altar-tomb, in which were incorporated three fragments of the ancient monument which gave the "motive" of the design of the new one, and which had been fortunately preserved by being for years, along with the effigies themselves, half-buried in the earth in a remote corner of the church used as a lumber repository. We are the more desirous of this correction being made, as we endeavoured throughout to preserve every possible fragment of ancient work, and should not like to be considered responsible in any way for the substitution in the chancel of a roof of entirely different type for the one which was existing, though much decayed, when the recent works were commenced: it was a fine, though simple, coupled rafter-roof, from end to end without trusses, showing signs of having been boarded or panelled underneath, and has been replaced by one with hammer-beam trusses, purlins, &c., which, in our view, is by no means so suitable to the somewhat peculiar design of the side windows, and, of course, entirely changes, though not improves, the *tout ensemble* of the place. INNOCENT & BROWN.

CHURCH BUILDING NEWS.

Bredfield.—Bredfield Church, Suffolk, was reopened on the 20th ult., after restoration under the direction of Mr. R. M. Phipson, the Diocesan architect. The church, which is dedicated to St. Andrew, consists of tower, nave, and chancel, without aisles. It is of Perpendicular date, although it appears to have been built on the lines of an earlier structure. The chancel had a fine carved roof till the present restorations were undertaken. It had, however, fallen into decay, and has now been replaced with a roof the principals of which are of pitch pine with the deep wall-plate and collar braces characteristic of the style. The west gallery has been removed, opening up the tower arch, and the old piers have been replaced by low oak benches. The works have been carried out by Mr. Last, of Melton, at a cost of about 700*l*.

Ayott St. Peter.—The old church of Ayott St. Peter, Herts, was struck by lightning and destroyed by fire on July 10th, 1874. A new church has now been built nearer the village, from the designs and under the superintendence of Mr. J. P. Seddon, architect, by Mr. Cornish, of North Walsham, builder, the amount of the contract being about 2,800*l*. besides fittings. The style is Early Decorated. The church consists of a nave, 50 ft. long by 22 ft. wide, with north porch, chancel with semicircular apse, and organ-chamber on the south side, and there is a tower surmounted by a stone spire now in course of construction, the gift of Mrs. Robinson, adjoining this chamber at the south-east angle of the nave. The walls are externally faced with red brick relieved with coloured ornamentation and Box-ground Bath stone dressings. The roofs are covered with local tiles, with terra-cotta ridge crest. Within there is a trefoil-shaped barrel ceiling to the nave, and single-arched ceiling to the chancel, with moulded cornices and ribs, and carved bosses at the intersections. The chancel arch, which is a free adaptation of Early English work, is a special and unique feature, being wholly of "Gris de Flandre" stoneware, modelled and coloured by Mr. C. J. Bailey, of the Fulham Potteries, modelled by Mr. W. E. Martin, sculptor. The glazing throughout is by Mr. J. R. Thomson. The pulpit is of Caen stone, with marble shafts, arcaded panels and carving, and is to have figures of St. Peter, St. Alban, St. Helena, St. Gregory, and St. Augustine, in high relief, by Miss Bonham. The central figure of St. Peter is already in its place. The heating is by a plan invented by the architect, by which air warmed by a Gill stove is introduced through perforations above the chancel arch. Polychromatic decorations of an elaborate character have been applied to the chancel ceiling by Mr. J. R. Thomson, from the designs of the architect. Mr. Pilgrim was the foreman of the works.

Blowwich.—On the 1st inst. Mrs. Harrison, of Norton Hall, laid the foundation-stone of a new tower for the parish church, Blowwich, which is now undergoing a complete renovation. In fact, with the exception of the north and south walls of the old building, the church, when restored, will be almost an entirely new edifice. The work is being carried out—according to plans prepared by Messrs. Davies & Middleton, architects, Birmingham,—by Messrs. C. Jones & Son, builders, Birmingham. The cost will be about 3,400*l*. The restoration will be such as to entirely change the character of the style of the church, which was formerly a very plain building with no architectural pretensions. The old circular windows have been taken out, and Gothic ones with stone architraves substituted.

East Allesley.—The new church of St. Andrew, Eastern-green, Allesley, near Coventry, was consecrated on the 4th inst. The church is in the Early English style, and is built of red brick with Bath-stone dressings. The tower is surmounted with a spire 80 ft. in height. The church will accommodate 150 persons, and the new school adjoining is large enough to accommodate seventy children. The cost of the erection of church, the parsonage-house, the school and house for schoolmistress (exclusive of the site), was upwards of 6,300*l*. The architect was Mr. S. S. Teulon, of London, and the builders were Messrs. Hallam & Co., of Coventry.

Mulbarton.—Mulbarton Church, Norfolk, was re-opened on the 11th inst., after being enlarged by the addition of a new north aisle, which renders the gallery unnecessary. The new aisle is connected with the nave by three boldly carved stone piers and arches in the Decorated style. The new aisle is 12 ft. wide, and has a pitch-pine roof, forming a lean-to against the nave, with principals and carved tracery spandrels. The church is warmed by the apparatus of Mr. Boulton, of Norwich. The south porch has been entirely restored, with a new roof, and windows, gables, coping, &c., all of which had been much mutilated. The cost has been upwards of 900*l*. The works have been executed from the designs and under the superintendence of Mr. Phipson, F.S.A. The works were executed by Messrs. Ludkin & Son, of Banham.

Slough.—A meeting has been held at Slough in furtherance of a proposal to enlarge and improve Slough parish church. Mr. John O. Scott is the architect who has been consulted in the matter. The intention is to build at once at the east end of the present building the first and most expensive half of a new church, and gradually to work westward.

Kimbolton.—The church of St. James, Kimbolton, has just been re-opened, after restoration. The whole of the roofs, which were found to be in the last stage of decay, have been reconstructed in their original form, in Baltic fir, stained and varnished. New buttresses, with splayed weatherings, have been placed where needed, and the existing ones restored to their original state. All the exterior stonework is executed in Luston stone. The chancel roof is entirely modern, and of low pitch. A new chancel arch of bold design has been put up, having pitched granite responds, with carved caps and bases; the archway between nave and tower being thus opened, adds greatly to the internal appearance of the church, which, with the framed rafter, affords, as viewed from the west end, an excellent perspective. A new archway of freestone has also been inserted between the nave and south transept, and, occupying its full width, the whole of the seats command a view of the pulpit. The restoration of the chancel has been carried out under the direction of Mr. Ewan Christian, architect to the Ecclesiastical Commissioners, at a cost of about 350*l*., and the whole of the remaining works of every kind from the designs and under the direction of Messrs. Haddon, Brothers, architects, at a further outlay of about 1,200*l*., the builder for the whole being Mr. Charles Edwards, of Leominster.

Neston.—The new parish church of St. Mary and St. Helen, Neston, Cheshire, has just been opened. The style adopted by the architect, Mr. F. Doyle, of Liverpool, is Early English. Red sandstone from local quarries has been used externally. The whole of the columns dividing the nave from the aisles are of white stone, and the dressings of the windows are of red stone slightly mixed with white. The chancel is of polished ashlar, with serpentine marble columns. There is seating for 700 persons. The total cost, including numerous gifts, was 7,000*l*. The contractor for the building of the church was Mr. William Tomkinson, of Liverpool; the reredos and the carving generally were executed by Mr. J. Rogerson, of Liverpool; the organ was built by Messrs. Whiteley, of Chester; the heating apparatus was carried out by Messrs. J. R. Cooper & Sons, Liverpool; and the lighting by Mr. Dovey, of Manchester.

Semley.—The parish church of Semley, Wilts, which has been newly rebuilt, was re-opened on the 20th ult. The old church having for many years been in a damp and dilapidated state, an appeal was made to the Marchioness of Westminster, who instructed Mr. T. H. Wyatt to prepare plans for a new church. The foundation-stone was laid by her ladyship on the 24th of March, 1874. The church, which is in the Decorated style, is built of local stone with Bath stone dressings. It consists of a nave, 53 ft. 6 in. long, by 22 ft. wide, and 35 ft. high; a south aisle, 53 ft. long, by 12 ft. wide, divided by an arcade of four arches, supported by pillars of Ham-hill stone, with finely-carved capitals. At the east end of the aisle is an organ-chamber, 16 ft. by 16 ft., leading into a vestry, 9 ft. by 12 ft. At the west end is a tower with battlements and staircase turret at the north-east corner. The tower is 85 ft. 6 in. high to the necking of the turret. The whole of the work has been carried out by the contractor, Mr. T. B. Miles, builder, of Shaftesbury, at the cost of about 4,200*l.*, exclusive of the chancel. The stone carving was executed by Mr. John Hamlet, of Reading.

Gloucester.—The new church dedicated to All Saints, Gloucester, was consecrated on the 2nd inst. The church consists of a nave, with north and south aisles, chancel and south chancel aisle, two vestries (one for clergy and the other for choir), with heating-chamber beneath, and organ-chamber above. The building is entered by a porch, 10 ft. by 9 ft., at the western end of the south aisle, and also by a doorway at the corresponding part of the north aisle. The nave is 76 ft. long by 26 ft. wide, and is 53 ft. high to the ridge of the roof, which is of wagon shape, boarded and panelled. The work is in the Decorated style, the windows being filled with elaborately-designed tracery. The nave and aisles are furnished with open seats. The chancel stalls, altar, and lectern are of oak; the pulpit is of stone, with solid base, and is richly panelled. The font is of octagonal form, having sacred emblems carved in the traceried panels. All the doors have hinges of wrought iron-work. The east window of the chancel and that to the chancel aisle have been filled with painted glass by Messrs. Clayton & Bell, at the cost of the Misses Hedley, who have given some 2,500*l.* towards the church, and have also presented the communion-plate and the appointments of the communion-table. The chancel is 33 ft. 6 in. long by 20 ft. wide, and is 48 ft. high to the top of the ridge of the roof. The chancel aisle is 22 ft. long by 15 ft. wide, and the aisles to the nave are 76 ft. long by 14 ft. wide and 22 ft. high. Sir Gilbert Scott, R.A., is the architect, and Mr. Clutterbuck, of Gloucester, the builder. The iron-work has been supplied by Messrs. Potter, of London, and the tiles for the chancel floor are from Messrs. Godwin & Co., of Lugwardine.

THE MANAGEMENT OF HASTINGS.

Sir,—In common with many of my fellow-townsmen, I am grateful for the observations in your last number. We are anxious that the right should prevail, and that a town-hall should be erected worthy of such a place, and on a spot where it will have a chance of being seen, and be an ornament to the town. You probably know under what fearful disadvantages we labour from old-fashioned obstructives, who have ever ruled this borough! The council have domineered over everything and everybody. Elected solely on politics, and the same men nearly always returned, it is strictly true (more is the disgrace) that the council has been the "Master of the ratepayers."

Hastings is very badly off for water; St. Leonard's is little better off, and now the Hastings Council propose to deprive it of some of its too meagre supply. It is too long an account to commence now.

The same member who opposes the Castle Hotel site for the town-hall also opposes any liberal supply of water, advocating water by measure as gas is measured. As he was told at a public meeting in the midst of a recent water famine in Hastings, had there been no more gas to measure by meter than there at that time was water, Hastings would have been in total darkness.

The same "penny-wise and pound-foolish" plan which prevails with a few will be the ruin of this borough; it is applied to all matters,—town-hall, water, roads drains, &c. Hitherto we have been tyrannised over by the Town Council. Much as a town-hall may be and is wanted for this borough, you will agree with me that a good supply of water is even more important still. But I suppose it would be impossible to get up a public meeting here for any matter touching water or any sanitary question. Everything of that sort is supposed to be perfect in a watering-place; not a word must be uttered about bad water and an insufficient quantity. There are but few who would not condemn such action. Why? Because they say, "Oh! people won't come if you say a word suggesting a doubt about the perfection of every sanitary point." Consequently, the public voice is shut in a place like this upon all sanitary matters, however bad they may be. The Council know the universal fear; they wrap themselves up in the security that they find in the belief that no one will venture to speak out about the water as they have about the town-hall site. Therefore, the Council feel they are "masters of the ratepayers," as the chairman of the Water Committee faithfully,—too faithfully,—represents the position, and the Council feels it can do as it likes on that subject anyhow.

"The Brighton and London papers will please copy" speeches made about water. So it is feared therefore no one will move to get up such a meeting as was got up about the town-hall. Our only hope is the London press. The people here think that if nothing is publicly promulgated from this borough the world will be kept in ignorance of our actual position. Unless the London press take up these subjects there is no hope or help for us.

Frequented as these places are by so many from all parts of the world, the question is emphatically of great public importance. As such I hope you will come to the rescue, and help rouse the ratepayers here out of their apathy, and stimulate them to acts which will prove to the Council that members of the Council are under the control and governance of the ratepayers, and not *vice versâ*.

No towns can possibly be more backward than these. The fearful floods of Sunday week would not have been half so destructive as they were but for the working of the "penny-wise and pound-foolish" policy of years since. For want of timely expenditure, the damage to property was much greater than it would have been, and truly dreadful and incredible to those who have not seen the devastation. We have a narrow esplanade before our largest mansions, at that very part, too, of the shore most exposed to the sea. Everything is conducted in the same niggardly spirit, which, instead of saving money, adds to expense, drives away visitors, and deters the best people from coming here at all. Our roads, too, are dreadful. The Council have ordered a "steam roller," but have no proper material yet to roll in.

In the interests not only of these towns, but in the general public interest, I beg to ask your close notice of our case. Owing to many, many years of misrule and favouritism, there is everything to be done to secure the public from imposition, particularly as to health and very life, and to place Hastings and St. Leonards so that conscientiously they may be called first-class watering-places.

A Sufferer.

THE EDUCATION OF THE ARTISAN.

Sir,—In the letter of mine on which you comment last week, I was dealing, of course, only with the utilitarian value of technical education. What I maintain is this,—that as regards working power the qualities which characterise our race, such as energy and perhaps conscientiousness, are more potent and extensive in their application than any mere grafting in the way of technical education ever can be. No doubt, other things being equal, a technically-educated workman would, in certain contingencies, have an undeniable advantage over one not so furnished, but the increasing specialisation of employments through the division of labour renders such contingencies less and less likely to arise.

What we may call the æsthetic value of technical education cannot be questioned, and yet even here we see the insufficiency of "provinciality," for the man who understands the principle of the lever and the composition of forces, if he knows nothing of history or literature,—if, in other words, he is destitute of that broader education which we call culture,—is not likely to be, and, in fact, is not much of an artist-artisan.

Sir A. Helps observes that "the shortest way, even to the good, which is of a purely physical character, lies often through the highest moral considerations." This is an admirable sentiment; to it I would add that those agencies which tend to keep up the vigour and *morale* of the people do far more to maintain our manufacturing supremacy than agencies which appear to be more special and direct.

This, of course, in no way traverses the sentiment or advice given in your article, which I wish earnestly might be read by every working man in England; for we are yet a long way from your ideal, and I sometimes wonder whether we are even moving towards it.

A Bedford Artisan.

MR. GLADSTONE'S CORRESPONDENT.

Sir,—My few words to Mr. Gladstone, kindly referred to in your leading article of last week, were written in full remembrance of the fact that it is conceivable for a workman whose mind is impressed with aspirations for the æsthetic ideal of mental development, to view the higher departments of his calling as fields in which the intellect is tied up rather than permitted that "most unbounded scope" which Mr. Gladstone emphasised as open to it.

Francis Moore.

CHURCH RESTORATION IN THE NINETEENTH CENTURY.

Sir,—The beautiful Church of Allhallows, Barking, after having been closed for some time, was opened on Sunday last. Its circular and hexagon columns, Norman and Early English arches, have all been smothered with paint and whitewash. Those who have been overseers of the restoration must have been Mr. Blindman and Mr. Wantwit.

A Laughing-Stock.

TECHNICAL EDUCATION.

The Council of the Architectural Museum have again drawn the attention of several of the City Companies to their efforts to promote the technical culture of workmen engaged in manufactures in any way allied to art.

The Council pointed out the many advantages to be derived from study in such a museum as they have been enabled to collect, and are able to announce, that owing partly to the generosity of some public bodies, and partly to an economical rearrangement of their official staff, they have been able temporarily to provide a teacher who has been highly recommended to them, and this autumn a fresh start has been made towards re-establishing the modelling and drawing classes.

With the view of making the arrangement permanent, the Council again seek the aid of those who may be interested in an enterprise so important for the public as this is, and who have funds at their disposal to promote it.

It may be interesting to mention that the Council have lately secured, as an addition to the collection, a portion of the ceiling of Carpenters' Hall.

BUILDERS' BENEVOLENT INSTITUTION.

The forty-fourth election of pensioners in connexion with this Institution took place on Thursday, the 25th inst., at Willis's Rooms, St. James's. The poll was open from 12 noon to 3 p.m. In the unavoidable absence of the president (Mr. John Aird, jun.), Mr. Dines, past-president, and Mr. T. G. Smith, presided at the opening and close of the poll respectively.

There were five candidates, of whom two were to be elected, one male and one female. The candidates were:—Evan Jones, 66, plasterer (4th application), who received 1,590 votes; William Stribling, 72, carpenter (3rd application), 2,423 votes; Thomas Richardson, 66, builder,—a subscriber to the Institution for fourteen years (1st application), 2,672 votes; Henry Atkins, 72, builder (1st application), 1,068 votes. The only female candidate was Mrs. Charlotte Day, who received 1,589 votes. Shortly after three o'clock, the chairman declared the successful candidates to be Thomas Richardson and Mrs. Day. A lady sent (per Mr. Waldram), 5*l.* 5*s.* for the male candidate who was second on the poll, and this sum was

accordingly handed to Stribling. Votes of thanks to the scrutineers (Messrs. Matthew Hall and F. W. Keeble), to the chairman, &c., concluded the proceedings.

A MARBLE PAVEMENT.

SIR,—As there appears to be some misapprehension on the subject, may we ask for space in your next issue to state that the Marble Mosaic Pavement now being laid in Mr. Albert Grant's mansion at Kensington, was prepared, and is now being laid, by Venetian workmen in the employment of THOMAS ORR & Co.

TEMPLE GARDENS.

SIR,—To prevent disappointment to any one, kindly let me state in the next number of the *Builder* that the old tree referred to by your correspondent, Nathaniel Waterall, has had to be removed to make room for the new buildings that are to be erected in the gardens. It was a fine specimen of the *Catalpa syringifiora*, and is said to have been planted by Sir Matthew Hale. Such parts of it as were found to be sound have been taken care of, and will be made up into several useful articles. It belonged to the Middle Temple Garden.

THE CLERK OF WORKS.

ACTION AGAINST A BUILDER.

THE case of Lord Bateman *v.* Thompson came before the Common Pleas Division of the High Court of Justice on the 18th inst. (sittings *in Banco*) before Lord Coleridge and Justices Grove and Archibald.

It appeared that in 1856 the defendant entered into a deed by which he covenanted for 12,260*l.* to do certain works, additions, and alterations to Shobden Court, Herefordshire, the seat of Lord Bateman. He also covenanted that the work should be done in a substantial and workmanlike manner, and of the best materials of their several kinds, to the satisfaction in all respects of the architect and of the said Lord Bateman. The action was founded upon the allegation that the work had not been done in accordance with this covenant; and it was contended that even though the architect had certified that the work had been done to his satisfaction, which, however, was not admitted, yet, still that Lord Bateman was not precluded from suing upon the ground that the work had not been done to his own satisfaction, and that improper materials had been used.

Mr. Matthews, Q.C., for the plaintiff, stated that improper stone and other materials had been used; and the consequence was that very great expense had been incurred in remedying the mischief so caused. It was specially said that the stone used on the external part of the structure had gone to pieces from exposure; and a number of photographs were handed in to show what was the state of the building.

Lord Coleridge said that it was clear from the photographs that Lord Bateman had good ground to complain against somebody, but still the judgment must be for the defendant. The work had been completed, the architect had certified, and his lordship had accepted that certificate and paid upon it. Lord Bateman himself thus expressed his satisfaction with the work, and no doubt he was then satisfied with it. This being so, the action could not be maintained by him upon the deed.

Judgment for the defendant.

KURRACHEE AND MADRAS HARBOUR WORKS.

FROM a report just published, it appears that, during the past year, the water-space in the new Kurrachee harbour has been lessened by nearly 4½ millions of cubic feet by the accumulation of silt brought down from the New Channel and Chinna-creek back-waters. Bar-dredging now means simply improving the entrance-channel. This channel, formed through the old bar, is intended to be 500 ft. wide and 20 ft. deep at low water springs, datum level. This may be said to have been practically effected; for except that soundings of a few inches less than 20 ft. are to be obtained along the edges of the channel, there is nothing to prevent vessels drawing less than that quantity of water from passing freely in or out of the harbour at all times and tides. Even heavily-laden vessels of 24 ft. draught can pass in or out at certain times and places on any day of the year. The dredge was employed on this work during the first and last three months of the official year, and removed 91,500 tons (1,830,000 cubic feet) of sand and rock which had previously been loosened by the divers, the cost being at the rate of 13½d. per ton. A party of dress-divers was employed during five months and a half in blasting and removing rock from the bottom of the channel. In their operations 412 tons of rock were raised and removed at an expenditure of 1,850 lb. in gunpowder and 800*l.* in money. The Manora section of the breakwater stood the effects of the south-west monsoon very satisfactorily. Only three concrete blocks were washed out, and these from the extreme end; and with them was carried away the temporary iron beacon placed on them. One of these blocks was replaced by a mass of concrete formed *in situ*; but the two outer blocks have not been restored, as it is uncertain whether the substructure is sufficiently undisturbed to make immediate restoration advisable. The settlement of the breakwater during the year amounted to less than 2 in. in the older portions of the work, and to from 3 in. to 6 in. at the outer end in the work last completed (1872-73). The whole settlement has been uniform for the last hundred yards of the extremity of the work, and has amounted in all to about 3 ft. at the end. Little denudation of the base has occurred.

Mr. May, the local superintendent of the Madras Harbour Works, has submitted a revised estimate for the works, amounting to 640,000*l.*, and a list of the buildings on the beach that will have to be removed has been sent in to the Government. In the case of this undertaking, at least, the Government of India seem disposed implicitly to abide by Lord Salisbury's instructions with regard to the strict economy which ought to be observed with reference to public works, and have refused to sanction the construction of a short double line of railway which was proposed for conveying laterite to the work, it being considered that the existing single line will suffice if used during the hours at night when it is not otherwise employed.

Mr. Beardmore, a concrete-maker, has already arrived at Madras, and Mr. Bhimaya Saenna, one of the native engineers who was connected with the Kurrachee Harbour, is expected to assist in the new construction. The site for the foundation-stone, which is to be laid by the Prince of Wales, has been fixed, and the local Masons have secured and will prepare a room in one of the buildings on the beach for a lodge. Meantime, the Government have ordered the firm of Orr & Sons to manufacture a handsome silver trowel for the use of his Royal Highness. It will bear on the obverse an appropriate inscription surrounded by a richly-engraved border; and on the reverse, a sketch in outline of the proposed harbour, from a design by Mr. May, C.E., the engineer in charge.

TASMANIAN TIMBER.

FROM a special supplement of the Hobart Town *Mercury* for August 7th last, which, in view of the Melbourne and Philadelphia Exhibitions, gives a large mass of information as to the products of the colony, we glean some particulars as to the native varieties of timber.

The principal timber-trees of Tasmania, such as blue gum, stringy bark, white gum or gum-topped stringy bark, swamp gum, and peppermint-tree, furnish a hard, close-grained, and strong timber, which is used in shipbuilding and house-building, and generally for all the purposes to which oak is applied in England. Huon pine is very durable, and is employed for boat-building, for which it is peculiarly adapted, and for house-fittings, &c. Black-wood makes excellent naves and spokes, cask-staves, &c. Native myrtle is valuable for house-fittings. Swamp gum yields the finest palings and other split stuff in the world. Sassafras affords timber for house-fittings, bench-screws, lasts, &c. Celery-topped pine is chiefly used for masts and ships' spars. The different kinds of timber in the following list are arranged according to their value. The diameter of the trees is measured at the height of 4 ft. from the ground.

Blue Gum (*Eucalyptus globulus*, Lab.).—The common name is derived from the bluish-grey colour of the young plants. Diameter, 5 ft. to 30 ft.; average of those felled for use, 6 ft. Height, 150 ft. to 350 ft. Specific gravity about ·945 to 1·055. Abundant in the southern and south-western parts of the island. Cut for house-building, it sells at 8s. to 10s. per 100 superficial feet; for shipbuilding, at 12s. to 14s.

Stringy-Bark (*Eucalyptus obliqua*, Lher.).—Common name taken from the coarse fibrous bark. Diameter, 4 ft. to 24 ft.; average of those sawn about 5 ft. 6 in. ft. Height, 150 to 300 ft. Sp. grav. about ·905. Abundant everywhere upon hilly ground. Price, the same as that of Blue Gum.

Swamp Gum—White Gum (*Eucalyptus viminalis*, Lab.).—Common names from its growing to perfection in humid situations,—and from its gigantic white trunk. Diameter, 4 ft. to 18 ft.; average about 5 ft. 6 in. Height, 150 ft. to 300 ft.; sp. grav. about ·885. Growing in forests with other kinds of *Eucalyptus*, in rather humid localities. A small variety called the Manna Tree grows abundantly about Hobart Town and in other places, on dry ground. Price, for general purposes, the same as that of blue gum; 5-ft. palings, 6s. to 8s. per 100.

Gum-topped Stringy Bark sometimes called White Gum (*Eucalyptus gigantea*, var.).—A tree resembling the blue gum in foliage, with rough bark similar to Stringy Bark towards the stem. It has been found recently that this wood possesses nearly all the properties of strength, solidity, and durability of the blue gum,—whilst being straight-grained, it is much easier to work. It is very abundant about D'Entrecasteaux Channel. Price, about the same as blue gum.

Peppermint-tree (*Eucalyptus amygdalina*, Lab.).—Common name from the odour of the leaves. Diameter, 3 ft. to 8 ft.; average, about 4 ft. Height, 100 ft. to 150 ft.; sp. grav., about ·895. The peppermint-tree abounds throughout the island, on gravelly and other poor soil. Price, about the same as that of swamp gum.

Huon Pine (*Dacrydium Franklinii*, Hook., fil.). So called because it was first discovered on the banks of the Huon River. Diameter, 3 ft. to 8 ft.; average, about 4 ft. 4 in. Height, 50 ft. to 120 ft.; sp. grav., about ·650. Abundant in portions of the south-western part of the island. Price, about 16s. per 100 superficial feet, in the log.

Blackwood (*Acacia melanoxylon*, Br.).—So called from the dark-brown colour of the mature wood, which becomes black when washed with lime-water. In moist, shady localities the tree grows more rapidly, and the wood is of a much lighter colour. Hence this variety is called "Lightwood" (in Hobart Town), to distinguish it from the other. Diameter, 1 ft. 6 in. to 4 ft.; average, about 2 ft. 3 in. Height, 60 ft. to 130 ft. Sp. grav., about ·835. Found throughout the island, but not abundantly in any one locality. Price, about 12s. to 14s. per 100 superficial feet, in the log.

Beech or Native Myrtle (*Fagus Cunninghamii*, Hook.).—Common name from the fancied resemblance of its dark-green leaves to those of the myrtle. Diameter, 2 ft. to 9 ft.; average, about 3 ft. 6 in. Height, 60 ft. to 180 ft. Sp. grav., about ·795. The native myrtle exists in great abundance throughout the western half of the island, glowing in forests of great size, in humid situations. Price, about 16s. per 100 superficial feet, in the log.

Celery-topped Pine (*Phyllocladus rhomboidalis*, Rich).—So called from the fancied similarity in form of the upper part of the branchlets to celery. Diameter, 1 ft. 3 in. to 2 ft.; average, about 1 ft. 6 in. Height, 60 ft. to 150 ft. Sp. grav., about ·655. Rather common in damp forests in the southern parts of the island, and in some sub-Alpine localities.

ORNAMENTAL WOODS.

The different kinds of wood included in the following list are all in constant use for cabinet and fancy work. They are arranged according to their value. The finest specimens of native myrtle, musk-wood, huon pine, and blackwood, exhibit qualities of the highest excellence, both in tint and variety of venation.

Beech or Native Myrtle (*Fagus Cunninghamii*, Hook.).

Musk Wood (*Olearea argophylla*, F. Mueller).—Named from the musky odour of the plant. Diameter, 6 in. to 1 ft. 3 in.,—the butt enlarging towards the ground to 1 ft. 6 in. and even 2 ft. 6 in. Height, 15 ft. to 30 ft. Sp. grav. about ·685. Abundant throughout the island in damp localities.

Huon Pine (*Dacrydium Franklinii*, Hook., fils.).

Black-wood (*Acacia melanoxylon*, Br.).

She-oak (*Casuarina quadrivalvis*, Lab.).—A portion of the common name is evidently derived from ths resemblance of the markings to those of oak. Diameter, 1 ft. to 1 ft. 6 in. Height, 20 ft. to 30 ft. Sp. grav. about ·845. Very common on dry stony hill, excepting in the north-western districts.

He-oak Casuarina suberosa, Otto.).—Diameter, 9 in. to 1 ft. 3 in. Height, 20 to 25 ft. Sp. grav. about ·855. Common on stony hills.

Honeysuckle Tree (*Banksia Australis*, Br.).—Named from the large quantity of honey in the flowers. Diameter, 1 ft. 6 in to 2 ft. 6 in. Height, 20 ft. to 40 ft. Sp. grav. about ·645. Abundant on sandy soil.

Dogwood (*Bedfordia salicina*, D.C.).—Diameter, 6 in. to 1 ft. 4 in. Height, 15 ft. to 25 ft. Sp. grav. about ·985. Common of small size, but rare of large proportions.

Native Laurel (*Anopterus glandulosus*, Lab.).—So named from its laurel-like leaves. Diameter, 6 in. to 10 in. Height, 15 ft. to 20 ft. Sp. grav. about ·675. Tolerably abundant in some sub-Alpine localities.

Blue Gum (*Eucalyptus globulus*, Lab.).—Curly-grained variety.

Peppermint (*Eucalyptus amygdalina*, Lab.).—Some specimens of this timber have a very fine wavy marking.

The following are some

USEFUL WOODS.

Silver Wattle (*Acacia dealbata*, Lindl.).—So called from the whiteness of trunk, and the silvery green of the foliage. Used for cask-staves and trenails. Diameter, 1½ ft. to 2½ ft. Height, 60 ft. to 126 ft. Sp. grav. about ·965. Very common.

Iron Wood, Tasmanian (*Notelæa ligustrina*, Vent.).—An exceedingly hard close-grained wood, used for mallets, sheaves of blocks, turnery, &c. Diameter, 9 in. to 18 in. Height, 20 ft. to 35 ft. Sp. grav. about ·965. Not uncommon.

Swamp Tea-tree (*Melaleuca ericæfolia*, Sm.).—So called, probably, because the leaves of an allied plant (*Leptospermum lanigerum*, Sm.) with similar bark are said to have been used as a substitute for tea. Diameter, 9 in. to 20 in. Height, 20 ft. to 60 ft. Sp. grav. about ·824. Used for turnery chiefly.

Native Cherry (*Evocarpus cupressiformis*, Lab.). so named because the colour of the fruit is similar to that of a Kentish cherry. Diameter, 9 in. to 1 ft. 3 in. Height, 20 ft. to 30 ft. Sp. grav. about ·785. Used for tool-handles, spokes, gun-stocks, &c.

White-Wood (*Pittosporum bicolor*, Hook).—Wood, white. Diameter, 8 in. to 1 ft. 1 in. Height 20 ft. to 35 ft. Sp. grav. about ·875. Used in turnery; probably fit for wood-engraving.

Native Box (*Busaria spinosa*, Cav.).—The leaves are somewhat like those of the English box. Diameter, 8 in. to 1 foot. Height, 15 ft. to 25 ft. Sp. grav. about ·825. Used for turnery.

Pink-Wood (*Beyeria viscosa. Croton viscosum.* Lab.).—Diameter, 6 in. to 10 in. Height, 15 ft. to 25 ft. Sp. grav. about ·815. Used for sheaves of blocks and for turnery.

Native Pear (*Hakea lissosperma*, Br.).—The woody seed-vessel is somewhat pear-shaped. Diameter, 8 in. to 1 ft. Height, 29 ft. to 30 ft. Sp. grav. about ·675. Fit for turnery.

SCHOOL BOARD SCHOOLS.

Cannock.—At the meeting of the Cannock School Board, on the 4th inst., Mr. Scrivener, architect, Longton, submitted four tenders for the erection of two schools, one at Walsall-road, Cannock, and the other at Rawnsley:—Messrs. Adams & Pemberton, Stafford, Cannock school, 6,746*l.*; Rawnsley school, 2,718*l.* Mr. Whittam, Stafford, 6,387*l.* and 2,688*l.* Messrs. J. Crisp & Son, Cannock, 6,166*l.* and 2,750*l.* Mr. N. Barlow, Stoke-on-Trent, 6,339*l.* and 2,470*l.* The last-named tender was accepted. Two other schools are now in course of erection at Hednesford.

Arbirlot.—At a meeting of the Arbirlot School Board, held on the 6th inst., plans of a proposed new school were finally approved. The building, which is from designs by Messrs. Aitkenhead & Mason, architects, Arbroath, will accommodate 130 scholars.

Dryfesdale.—The new public schools at Dryfesdale were formally opened on the 8th ult. The architect is Mr. Barbour, Dumfries. The buildings, the style of which is Gothic, are substantial. They contain school accommodation for upwards of 600 pupils. The school-rooms, of which there are six, measure about 22 ft. in width and 19 ft. in height, are well lighted and ventilated by opening-windows and roof-ventilators. The rooms are to be heated by large Gill-stoves. The cost, exclusive of site, will be about 4,500*l.*

Huddersfield.—The Berry Brow School, one of the series contemplated by the Huddersfield School Board, has just been opened. The style is Gothic, and accommodation is provided for 400 children. Mr. Edward Low, of London, is the architect, and Mr. Cairns was clerk of the works. The contractors were:—Excavators, bricklayers, and stonemasons, A. Graham & Sons, Huddersfield; carpenters and joiners, Messrs. Kirby & Scholes, Hillhouse; tilers, Messrs. W. Goodwin & Sons, Huddersfield; plasterer, Mr. Nathan Jessop, Berry Brow; plumber, Mr. G. Garton, Huddersfield; ironmongery and heating apparatus, Mr. J. Brook, Huddersfield; painter, Mr. G. Moxon, Huddersfield.

Epworth.—New school-houses and masters' residence are in course of erection at Epworth, for the School Board. Mr. Henry Kelsey, of Epworth, has obtained the contract for the erection of the buildings, which are to cost 1,386*l.*

Inverness.—At the monthly meeting of the Inverness Burgh School Board, on the 9th inst., plans for the new Central and Merkinch Schools, amended in accordance with suggestions made by the Education Department, were discussed. Messrs. Ross & Lawrie are the architects.

Cowpen.—The plans of Mr. John Gibson, architect, of Newcastle and Ryton, have been selected by the Cowpen School Board.

East Markham.—The designs by Messrs. Clarke & Son, architects, of Nottingham, have been selected for the Board Schools and master's house, about to be erected at East Markham, near Tuxford, Nottinghamshire.

Miscellanea.

London Anthropological Society.—On the 12th inst., the president, Dr. Charnock, read a paper on the "Origin of the Etruscans and their Language." The author traced the Etruscans to a Pelasgic colony from Lydia, otherwise called Mœonia. After referring to traditions, both Lydian and Etruscan, and to numerous classical authors in support of the theory, and to certain geographical names in Etruria, the author showed that the Etruscans resembled the Lydians in habits, manners, customs, and dress, and also in their sepulchral monuments; that their musical instruments were derived from Lydia, whence were introduced their stage-players, dancers, sports, games, and shows; that the appellation of the people may be traced to the name of a place at the foot of the Mesogis Mountains in Lydia, and that Etrusci, Tusci, and Rasena are etymologically the same word. There is no evidence of the Turanian origin of the Etruscan language, which is based upon the Old Pelasgic. It contains a few words from Persian and Phœnician, but none from the Celtic or Gothio-Teutonic languages. A great many words may be traced to the Greek; a lesser number are from, or allied to, the Latin.

Discovery of an Ancient Mural Painting.—We recently chronicled the re-opening of the new chancel at Cranbourne Church, Dorset. We now learn that in the course of the works a mural painting was discovered. The group consisted of ten figures, arranged in positions beneath the crucified Redeemer. Immediately under the arms of the cross, on either side, were two graves, the shrouded occupants with uplifted hands in prayer; again on either side were two crowned figures, supposed to be the Earl and Countess of Gloucester, patrons of the church, and behind them were guardian angels, 5 ft. in height, standing, all the other figures kneeling. At the foot of the cross, on either side, were a male and female figure with scrolls, the woman imploring for the dead, "*Voca me cum benedictis*"; the man supplicating for all, living and dead, "*Jesu, miserere nobis.*" Under the right arm of the cross, between the living and dead, as being dead to the world, was a nun, and below all, on the right, a man supposed to be the designer. The subject was painted on the stone. The ground colour was red, and between the figures, here and there, were lily-blossoms.

New Post Offices at Oldham and Rochdale.—Messrs. Neill & Sons, of Manchester, have received orders from Her Majesty's Office of Works to proceed with the erection of a new post-office for Oldham, at the corner of Union-street and Greaves-street. The building is to be erected from the designs of Mr. James Williams, of Her Majesty's Office of Works, and will be in many respects similar to the office reopened at Rochdale last week. The latter building is in the Grecian style, the principal façade being of fine Yorkshire stone. The area covered is 95 ft. by 32 ft. The front portion of the building is four stories high, including the basement. The principal office is in the front, and is approached by a vestibule. At the extreme back is a large room for sorting letters, this room being 51 ft. long by 26 ft. wide, and having an open timbered roof on iron principles. The builders have been Messrs. Robert Neill & Sons, Manchester. The cost has been about 7,000*l.*

Proposed Docks at Wisbech.—Mr. Abernethy, C.E., has prepared an estimate for a dock, &c., at Wisbech, the total cost of which, exclusive of cost of land, is 190,000*l.* It is calculated that the entire cost would be about a quarter of a million of money.

Breach of Contract.—Handley *v.* **Sanders.**—In this case, which came before the Longton County Court on the 9th inst., the plaintiff, a joiner of Longton, sued the defendant, a jeweller of the same place, for 14*l.* (including 15*s.* as cost of plaint) being the balance of an account of 29*l.* 10*s.* for work performed. The evidence showed that the defendant engaged the plaintiff to do some work at two houses he was building at Normacott, and a contract was entered into for the completion of the work for the sum of 50*l.* After doing a portion of the work, the plaintiff left it standing, alleging that he was unable to finish it in consequence of the defendant refusing to advance him money. Finding the work standing unfinished, the defendant gave the plaintiff a written notice stating that if it were not finished forthwith he would engage other workmen to go on with it, and charge him with any loss he might sustain. The plaintiff had not, however, finished the work, and Mr. Sanders said he had suffered a loss of about 20*l.* in consequence. The judge found for the defendant.

Utilisation of Tin Plate Waste.—An invention by Mr. F. G. Morton, of Bermondsey, proposes to utilise tin-plate scraps and clippings and waste articles made of tin-plate, such as Australian and other meat and preserved fruit tins and the like. Such scraps, clippings, and waste articles are utilised by separating the tin, solder, and lead from the iron, so that the tin, the solder and the iron are rendered available for use. For the purpose of separating the tin, solder, and lead from the iron the waste articles are subjected in a reverberatory furnace to the action of heat, the temperature being such as to melt the tin, solder, and lead without burning the same in melting the iron. The tin, solder, and lead having been removed from the iron, the iron plates are further treated by means of muriatic acid, allowing them to drain, and finally are washed in an alkaline bath or in water.

The Royal Society.—The award of the medals in the gift of the Royal Society for the present year, by the Council, is as follows:—The Copley Medal to Professor A. W. Hofmann, F.R.S., for his numerous contributions to the science of chemistry, and especially for his researches on the derivatives of ammonia; a Royal Medal to Mr. William Crookes, F.R.S., for his various chemical and physical researches, more especially for his discovery of thallium, his investigation of its compounds and determination of its atomic weight, and for his discovery of the repulsion referable to radiation; a Royal Medal to Dr. Thomas Oldham, F.R.S., for his long and important services in the science of geology, first as Professor of Geology, Trinity College, Dublin, and Director of the Geological Survey of Ireland, and chiefly for the great work which he has long conducted as Superintendent of the Geological Survey of India.

The Bargate, Southampton.—At a meeting of the Southampton Literary, Philosophical, and Statistical Society, held at the Hartley Institution on the 12th inst., a paper was read by Mr. B. W. Greenfield on "The Heraldry and Exterior Decorations of the Bargate." Much information was given concerning the eleven coats of arms on the north side of the Bargate. It was sought to show that, contrary to local historians, the arms of Abdey, Lych, Lewis, Lethiruller, and Hewitt are not on the Bargate; whilst the coats unknown to them were those of De Cardonnel, Leigh, and Newland. The bad condition of the eleven shields was noticed, and warning was given of their yet more rapid decay unless speedily restored, a hope being expressed that the Mayor and Corporation will no longer allow these memorials of the past to remain in their present neglected condition.

The Sheffield Architectural and Archæological Society.—"Spectator in Hallamshire," writing in the *Sheffield Independent*, says:—"A proposal is under discussion for the conversion of the Sheffield Architectural and Archæological Society into a section of the Literary and Philosophical Society, and I have good hope that it will come to perfection. Such adhesions would add strength and dignity to the older society, and if the example is set by the archæologists perhaps other societies might be tempted to follow. There may perhaps be some little loss of dignity, if any such exists, in merging an independent society into a section, but there would be the great gain in alliance with an old and strong society with rooms and a library at its service."

The Dublin Main Drainage Scheme.—At a meeting of the Dublin Town Council, on the 20th inst., a letter was read from Sir Michael Hicks-Beach, chief secretary for Ireland, announcing that the Public Works Loan Commissioners had refused to lend the Corporation half a million of money for the purpose of carrying out the main drainage works of Dublin, on the ground that there was nothing which the Corporation could tax at present for the purpose of security that could bear further taxation, and suggesting that some new security should be devised. The Council passed a resolution declining to consider the matter farther.

Pwllycwchon and Colwyn Bay Estate.—It is intended to develop a new watering-place on the Welsh coast which shall exceed in beauty and geniality of temperature any of its predecessors. A Manchester company have purchased the Pwllycwchon estate, of over 660 acres, from Mr. John Pender, and are laying it out in building plots for mansions, villas, and other dwelling-houses. A considerable quantity of land has already been sold, and it is expected that very extensive building operations will be commenced in spring. Mr. L. Booth, of Manchester, has been appointed agent to the company.

Rail-rolling Extraordinary.—The capabilities of the steelworks belonging to the Ebbw Vale Company have just been tested. A few days ago arrangements were made by Mr. J. J. Richards, manager, for the rolling of two steel rails of extraordinary length, weight, and quality. The first rail brought out was a ⊤ head rail, and its length is 74 ft. 6 in.; it weighs 16 cwt. 6 lb. The length of the second rail, a double-headed one, is 89 ft. 7 in. The weight, calculating 78 lb. per yard, is 1 ton 3 qrs. 14 lb. Both rails are good specimens of workmanship. These rails are stated to be the longest and heaviest ever rolled.

Smoke-Washing Apparatus for Factory Chimneys.—An apparatus for washing smoke, and so depriving it of its character of a nuisance, is in operation at a factory at Menilmontant, Paris. A fine shower of water, travelling in the direction of the smoke, and at five times its velocity, is projected into the chimney, where it mixes with the smoke, taking up the soluble gases, and precipitating the impurities carried up with the smoke by the draught. The foul water is discharged into a cistern, where it is collected, and a fine black paint is got from it. The arrangement is not a novelty in England.

National Penny Bank.—The objects of this organisation are to promote thrift by affording facilities for the exercise of thrift, which are not at present afforded by the Post Office or other Savings Banks; to establish a Permanent Penny Bank in every district, in every school, and in every workshop; to make such Penny Banks absolutely safe, self-supporting, and on a commercial basis; and to enable persons to become National Fundholders and possessors of Consols, by purchasing at the market price small sums of 16s. 8d. or more at a time.

Artisans' Dwellings at Birmingham.—The Birmingham Town Council have resolved to put in force the powers of the Artisans' Dwellings Act on a larger scale than they at first contemplated. At a special meeting on the 17th inst., the Council adopted a recommendation by the medical officer that the extent of the "unhealthy area" with which they propose to deal should be increased from 43 to 93 acres. The work will be done gradually, and a considerable proportion of the sum voted will be employed in the widening of streets.

New Harbour at Wardshore, N.B.—A harbour is at present in course of construction at the fishing-village of Wardshore, Aberdeenshire. It is being formed of concrete; the contractors are Messrs. Bisset & Son, Aberdeen; and the engineer is Mr. Willet, C.E. The boats belonging to Wardshore had always to go to other ports to fish during the herring season, and to remedy this inconvenience the proprietor, the Earl of Erroll, resolved to build a harbour to contain 200 boats.

New Reservoir at Guisbrough.—A storage reservoir in connexion with the waterworks at Guisbrough, situated two or three miles to the south-east of the town, has just been completed, under the direction of the engineer to the Guisbrough Water Company, Mr. Sheriton Holmes, of Newcastle. The reservoir covers about six acres, and it has been constructed to hold 8,000,000 gallons of water. The drainage area is from three to four miles.

The Jarrow Carpenters and Joiners.—On the 13th inst. a mass meeting of the carpenters and joiners employed in the Tyne shipbuilding yards was held at Jarrow, when twenty-four rules, as drawn up by the masters, were unanimously adopted. With respect to the proposed 10 per cent. reduction, a motion was passed that the men do not submit to any such reduction. A resolution to the effect that no overtime should be worked in any of the yards until the wages question had been definitely settled, was also agreed to.

Another Aquarium Project.—With the object of preserving the neighbourhood of the Dingle, Liverpool, from eventual absorption in small house building, and securing it to the public in its full beauty as a quasi-rural resort, Mr. C. O. Ellison and some other gentlemen have prepared plans for the establishment in the vicinity of the Dingle of an aquarium and pleasure-gardens.

The Lighting of Common Stairs.—The Partick Magistrates have fined a factor for failing to supply gas on the stairs of tenements under his charge. The defender held that his duty was discharged when he fitted up the requisite pipes and lamps in the stairs, but the magistrates maintained that he must supply gas as well. An appeal is made to the High Court.

The Proposed Schools at Darenth.—At the last meeting of the Metropolitan Asylums Board it was resolved "That the alterations suggested by the committee in the plans of Messrs. Harston, for the proposed schools for imbecile children at Darenth, be approved and adopted, and that the plans as amended be forwarded to the Local Government Board for their approval."

The Dundee Masons' Wages.—It is stated that the dispute between the Dundee masons and their employers, in regard to a reduction of wages, has been settled, and therefore no strike will now take place. The masters have agreed to the request of the men that the wages be 8½d. per hour, with full time guaranteed, and 9d. per hour when the men have to take their chance of the weather.

Proposed Art School for Kidderminster. The Mayor of Kidderminster (Alderman Goodwin) has presented to the people of Kidderminster a centrally-situated piece of land, worth about 1,000*l.*, as a site for an institute, to include a school of art, science classes, lecture-theatre, exhibition-room, free library, reading-room, &c.

"The Brighton" Art Union.—The Corporation of Brighton have arranged an Art Union in connexion with the present Exhibition of Modern Pictures, held in the Galleries of the Free Library and Museum, Royal Pavilion, Brighton. The secretary is, appropriately enough, Mr. Wonfor.

Strike of Masons at Montrose.—The masons in the employ of Mr. Ford, Mr. Reith, and Mr. James Mitchell, builders, are at present out on strike. They had received intimation that their wages were to be reduced from 7½d. to 7d. per hour, and, rather than submit, have struck work.

Proposal for Utilising Her Majesty's Theatre.—It is stated that an influential company is in process of formation for the acquirement of the Earl of Dudley's interest in Her Majesty's Theatre in the Haymarket, and that the preliminaries have been partially concluded for the formation of a West-end Stock Exchange.

Society of Arts.—A paper on the Registration of Trade Marks was read on the 24th inst., by Mr. H. T. Wood, the editor of the *Society of Arts Journal*. We are compelled, however, to postpone any quotation from it.

Her Majesty the Queen has been graciously pleased to accept from the Art-Union of London an artist's proof of "The Death of Nelson," engraved for the Society by Mr. Sharpe, from the original by the late Daniel Maclise, R.A.

TENDERS

For additions to the "Crab and Lobster," Ventnor, Isle of Wight. Mr. Francis Newman, architect. Quantities supplied:—

Moses & Wallder	£4,997	0	0
Barton	4,805	0	0
Meader	4,800	0	0
Ingram & Son	4,715	0	0
Sibley	4,549	0	0
Daish	4,500	0	0
A. & A. Newnham (accepted)	4,119	0	0

For the erection of printing and publishing offices of the *Manchester Courier and Evening Mail*, and warehouses and chambers at Cannon-street, Manchester, for Mr. Sowler. Mr. John Wolstencroft, architect. Quantities by Mr. Leonard Campbell:—

Thompson	£12,125	0	0
Southern	12,110	0	0
Foggett (accepted)	11,962	0	0

For alterations and additions to the "Empress of Russia," John-street-road, for Mr. Crozier. Mr. Thomas Parker, architect:—

Bodman	£2,289	0	0
London Artisans' Building Co.	1,850	0	0
Barton	1,337	19	0
Smalles & Taylor	1,212	10	0

Accepted for schools for 460 children, master's residence, board-room, boundary-walls, and playgrounds, at Woodhouse, for the Normanton School Board. Mr. William Watson, architect:—

Gibson	£4,420	0	0

Accepted for six houses in Manygates Park, Wakefield. Mr. W. Watson, architect:—

Elvey (excavating, brick and stone work)	£1,280
Craven & Lloyd (carpenter and joiner's work)	768
Driver (plastering)	200
Kirk (plumbing, glazing, and iron work)	180
Eyeroft (slating)	130
Moxon (painting)	40

For the erection of a warehouse to be called "Damon's Buildings," Shepherdess-walk, City-road. Mr. James Harrison, architect. Quantities by Mr. H. T. Gordon:—

Ashby, Brothers	£3,596	0	0
Browne & Robinson	3,321	0	0
Manley & Rogers	3,285	0	0
Eunor	3,203	0	0
Merritt & Ashby	3,133	0	0
Little	3,041	0	0
Wall, Brothers	3,014	0	0
Johnson, Brothers	2,913	0	0
Crabb	2,878	0	0
Bowman	2,774	0	0

For rebuilding the "Lord John Russell," City-road, for Messrs. Truman, Hanbury, Buxton, & Co. Mr. W. E. Williams, architect:—

Marr	£1,288	0	0
Ennor	1,198	0	0
Eton	1,170	0	0
Anley	1,140	0	0

For rebuilding portion of factory, 13, Holland-street, for Messrs. Wildey & Co. Mr. H. W. Hayward, architect:—

Baguley	£812	0	0
Linden	800	0	0
Anley	747	0	0

For repairs and decorations at the Neptune Tavern, Clarendon-street, Somers Town, for Mr. J. W. Dawson. Messrs. Bird & Walters, architects:—

Perkins	£233	0	0
Williams	277	0	0
Anley	249	0	0

For school, Fairfield-road, Bow, for the School Board for London. Mr. E. R. Robson, architect. Quantities by Mr. W. H. Barber:—

Roberts	£7,282	0	0
Kirk & Randall	7,275	0	0
Boyce	7,114	0	0
Williams & Son	7,102	0	0
Newman & Mann	7,086	0	0
Smith	7,076	0	0
Coleman	7,042	0	0
Sheffield	6,974	0	0
Hobson	6,937	0	0
Ennor	6,888	0	0
Wall, Brothers	6,878	0	0
Downs	6,870	0	0
Grover	6,664	0	0
Laurence	6,570	0	0
Timewell	6,514	0	0
Hook & Oldrey	6,399	0	0

For building two dwelling houses, situate Station-road, Woolwich, for Mr. William Jackson. Messrs. William Gosling & Son, architects:—

Blake	£725	0	0
Cropper, Brothers	585	0	0
Hunt	579	0	0
Vickery	575	0	0

For laying out and planting the Hampstead Cemetery, Fortune-green-lane:—

Addison	£3,120	0	0
Gardner	2,221	0	0
Malter	2,200	0	0
Cutbush & Son	2,850	0	0
J. & A. Wright	2,567	0	0
Meston (accepted)	2,500	0	0
Whittle	2,207	0	0

The War Department have accepted the tender of Messrs. Chandler & Sons, of York-street, Southwark, for alterations and additions to the Aldershott Camp Gas Works. The tender of the same firm has also been accepted by the Aberdare Local Board for 23,000 yards of pipe-laying.

Grimsby Schools.—The tender for these schools (Mr. C. Bell, architect), from Mr. J. Thompson, of Louth, 8,080*l.*, has been accepted.

TO CORRESPONDENTS.

W. P. G.—J. T. C.—M. M.—H. P.—J. & Son.—T. C. N.—J.—Rev. J. H.—E. L. F.—Dr. A.—A. H. C.—C. C.—J. C. M.—H. J. W.—H. M. C.—O. B.—J. G.—H. B.—J. A.—C. & Sons.—A. R.—J. F. G.—W. S.—G. C.—F. N.—T. A. B.—A. S.—J. D. M.—W. G. & Son.—H. K. (list should be sent).—C. B. (let us see a drawing or photograph and plan).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

The Builder.

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		An Election by the Brentford Local Board	1090	Miscellanea	1088

The "Cloaca Maxima" of the "Metropolis Magna."

COUNTRY people have a saying that "the streets of London are paved with gold," and, verily, when we come to sum up the vast amount of wealth sunk both *in* and *under* the metropolitan thoroughfares, it seems to admit of the bullion being spread, like so much gravel, over every square yard of earth trodden beneath the feet of the mother-citizens.* We have but to learn that the 2,500 miles of its roadways must have cost upwards of thirty odd millions of pounds to construct, and, lo! the very pavement appears to be inlaid with *precious stones*. Nor are the treasures which are buried beneath the soil less prodigious than those which are invested in it. The gas-mains which thread the substratum in every direction, like the veins beneath the skin of this Giant of a capital of ours; and the sewers, which are but the bricken intestines packed within the huge bowels of this same Monster of a metropolis, seem, when we come to reflect upon the cost of spinning the warp and woof of the mighty subterranean web, as if even the shoeless London beggar walked upon a "cloth of gold," more costly than that which was spread for the proud feet of the two voluptuous monarchs on their meeting between Guisnes and Ardres, near Calais. The expense of laying down the 5,000 miles of gas-mains throughout the metropolis, we have shown, could not have been less than three to four millions sterling; and now we come to inquire what amount of money must it have taken to fashion the enormous net-work of sewerage required to carry off the vast feculent flood of sewage daily provided by the four millions of human beings that make up the aggregate population of the capital.

Let us see.

But, first, there must be something like "method"—if not "in our madness"—at least to check the rambling vagaries of erratic reasoning. Method is, so to speak, the railroad of logical exposition: not only does it make the mental travelling easy and rapid, but, if the line be well laid down, it brings us, in the most direct manner, to our destination. For, in sooth, order is a potent intellectual *engine* in connexion with a long *train* of thought, and carries the mind, by the gentlest gradients, almost imperceptibly to the distant terminus.

The subject in hand, then, naturally arranges itself into three broadly-demarcated divisions:—

I. The sewage (or matter to be carried off); the materials, quantity, and quality of it.

II. The sewerage (or means of carrying it off); the character and extent of it.

III. The cost of construction and mode of government.

But, *imprimis*, a few words, by way of introduction, as to the social and sanitary, if not moral, necessity for making some provision for the due removal of the refuse from every large town.

The round of Nature is ever a perfect circle. Food makes the muck-heap, and the muck-heap makes food. Water, carbonic acid, and ammonia constitute the main ingredients of the nutriment required by every form of plant. These compounds are either absorbed or decomposed by the roots and leaves; and, being ultimately resolved into their elements (namely, carbon, oxygen, hydrogen, and nitrogen), become eventually,—together with certain inorganic elements derived from the soil,—elaborated by the vegetable organism into what are called "proximate principles"; or, in other words, into some form of vegetable structure fitted for the nutrition of animals,—that is to say, into all the modifications of "proteine" (the basis of muscular tissue), as well as into sugar, gum, and starch, and also into fat.

In the animal system, on the other hand, these same proximate principles are successively reconverted into the more simple forms from which they were originally derived, and thus finally made to *reproduce* the very carbonic acid, ammonia, and water required for the nutriment of plants; for carbonic acid and water are copiously evolved by the lungs, as well as from the skin; the kidneys secrete urea, which readily passes into carbonate of ammonia; and the inorganic substances are evolved in the *ejecta* of the bowels.

But the respective functions of vegetable and animal life have been so well contrasted by MM. Dumas & Cahours that we cannot do better than collocate them here in the same striking form:—

VEGETABLES.		ANIMALS.	
Produce	...Proteiniferous compounds.	*Consume*	...Proteiniferous compounds.
,,	Fatty matters.	,,	Fatty matters.
,,	Sugar, starch, and gum.	,,	Sugar, starch, and gum.
Decompose	Carbonic acid.	*Produce*	...Carbonic acid.
,,	Water.	,,	Water.
,,	Ammonia.	,,	Ammonia.
Evolve	.....Oxygen.	*Absorb*	.....Oxygen.
Absorb	.....Heat and electricity.	*Evolve*	.....Heat and electricity.
Constitute	...An apparatus of *reduction*.	*Constitute*	...An apparatus of *oxydisement*.
Are	.....Stationary.	*Are*	.....Locomotive.

One of the main uses of plants, indeed, is to change the inorganic earth, air, and water into the organic substances fitted for the nutrition of animals. The iron in our blood, and the lime in our bones, were originally in the soil, and could not have been in our body unless they had formed part of our food. Yet we live neither on metal nor on stones. It is, however, by means of the vegetable kingdom that we are enabled to convert the mineral into flesh and blood,—body and bones. Still, by what subtle transmutation inorganic nature becomes changed into organic, and dead inert matter gets to be quickened with all the exertion of life, is far beyond us, even to conjecture. Suffice it, an express apparatus is required for the purpose,—a special mechanism needed, in order to adapt the hard "*crust* of the earth," as it is called, as food for man and beast.

Nature, however, in the wondrous wisdom of her economy, has been even more careful of her children still. Not only has she ordained that the refuse of animals should be the congenial nutriment of vegetables; but (so that mere instinct should induce us to seek the removal of our ordure) she has rendered that which is rejected from the animal body as repulsive to the animal senses as it is poisonous to re-absorb into the animal system. The carbonic acid *exhaled* by the lungs is so noxious to human life, that, *inhaled* in a pure state, it produces immediate asphyxia; whilst even three to four parts of it diluted with 100 parts of atmospheric air are sufficient to act as a deadly narcotic poison. Moreover, sulphuretted hydrogen, which is the fœtid gas evolved by human ordure, is so innately offensive, that 1-1500th part of it (0·066 per cent.) mixed with the air is enough to produce intense nausea and vertigo, and 1-800th (0·125 per cent.) to kill a middle-sized dog; while even 1 part of it mingled with 150 parts (0·66 per cent.) of the atmosphere proves fatal to a horse. Hence, whilst the noxiousness of carbonic acid should enforce perfect *ventilation*, the loathsomeness and deleteriousness of sulphurhetted hydrogen should lead to equally perfect *sewerage*—in every enlightened community.

Plants, however, are not only nature's scavengers, but they are nature's purifiers also. They disinfect the atmosphere, as well as remove the filth from the soil; and so fit the air to be breathed by a higher order of beings. Without the vegetable creation, animals could neither have been nor be. The trees, herbs, grasses, and flowers not alone adapted the earth originally for the residence of man and the brute, but to this day they continue to render it habitable to us. Hence their nature has been made the very opposite to ours. That which we egest as pollution to our system, they assimilate as nourishment to theirs. What our bodies reject, their roots imbibe; what our lungs throw off, their lungs absorb; the gas which is a mephitic* poison to us, is vital air to them.

In order, therefore, that the balance of waste and supply should be maintained, and the principle of universal compensation kept up, Nature has given us several instinctive motives to remove our refuse from us. She has at once constituted that which we eject from our bodies the most loathsome of all things to our senses and imagination, as well as rendered its effluvium highly pernicious to our health,—sulphuretted hydrogen being, as we have said, the most deleterious and also the most offensive of all gases. Consequently, as in all cases where some great law of Nature has to be enforced by special injunctions, a *double* motive has been instituted, in order to *drive*, as well as *lead*, us to do that which is necessary for our well-being; and thus it has been made not only advantageous for us to remove our refuse to the fields, but positively detrimental to our health, and disgusting to our senses, to keep it in the neighbourhood of our houses.

In every well-regulated State, therefore, some effective and rapid means of carrying off the refuse of the community to a locality where it may be fruitful, instead of destructive, becomes a most important part of the social machinery; since it is manifest that to allow the exhalations from the excreta of a large body of people to contaminate the air within range of their nostrils and their lungs (instead of serving to nourish the

* Metro-polis = $\mu\eta\tau\rho$ + $\pi o\lambda\iota\varsigma$, *i. e.* the mother-city; chief city of a country or district.

* From *Mephitis*, the name of the goddess of *stenches*, who was supposed to preside over the ancient "*Cloacæ*."

plants fitted for their sustenance) is not alone to poison but to starve, the populace,—so true is it, in the scheme of vegetable and animal life, that what is a *boon* to the one is a *bane* to the other.

We are told in one of the Reports of the quondam Metropolitan Commission of Sewers, that Dr. Paley, the celebrated moralist, was wont to give Burckhardt and other African explorers a set of instructions as to points of observation concerning the manners and condition of the people among whom they were about to travel; and one of the main points in these was, "What the natives did with their ordure?" for the mode in which they disposed of *that* was, to the reverend Doctor's mind, a sure indication as to how far the race had advanced in civilisation, or how deep it was sunk in savagery. Indeed, the author of the far-famed "Natural Theology" was accustomed to declare that the facts connected with this topic gave him more information respecting the moral status of a population than the vulgar generally would suppose. "It taught him," he urged, "their habits of cleanliness, and their sense of decency and self-respect, as well as their susceptibility to those cognate moral sentiments which are of the highest social importance."

"The human ordure," adds the Report above referred to, "which defiles the churches and the bases of public edifices and works of art in Rome and Naples, as well as the Italian cities generally, affords more sure indication as to the real social and moral condition of the Italian populations than any impressions derived from the edifices or works of art themselves. Indeed," the Report concludes, "the subject concerning which the Jewish law-giver did not think it beneath him to lay down the most particular directions is one of the safest social tests as to the sense of refinement and propriety existing among different peoples."

Ay; for though it be true that "to the pure all things are pure," still, it is certain, the converse is equally true,—that "with the filthy even filth itself excites no sense of filthiness"; and as cleanliness is next to Godliness, so decency is close akin to Christianity, springing as it does from a fine sense of respect to the feelings of others.

Such, then, are the most salient physical and moral reasons for every enlightened community making some special provision for the removal of the refuse of the people from the immediate vicinity of the people themselves. Nature, in the very repulsiveness of a mass of rotting organic matter, bids us "get rid of the filth for our own *health's* sake"; for the stench is but a warning against the impending danger. Prudence says, "Get rid of it from your houses, but husband it in your fields, for its own *wealth's* sake"; for that which breeds disease and death in the town makes food and new life in the country. And Decency cries aloud, "Get rid of it for *goodness'* sake"; for there can be no goodness without purity; and pure air makes pure blood, pure blood a pure body, and pure bodies make pure minds.

But to cleanse an Augean stable with a stud of 4,000,000 living creatures stalled in it is, indeed, a Herculean task. Just think, for a while, and endeavour to form a concrete idea as to what a heap the mere excreta from such a herd of animals would form. Moreover, houses and towns have their excretions as well as animals themselves. The house-drains and street-drains are to our tenements and cities what the intestines are to the animal structure,—a mere series of tubes for the removal of so much sulliage. But who speculates as to what must be the extent of the *detritus* accruing year after year in a metropolis covering, as ours does, not less than 78,000 and odd statute acres, or 115 square miles,—where there are nearly half a million inhabited houses, and 2,500 miles of streets and roads? Who wonders as to how many tons upon tons of refuse earth have to be carried away *somewhere* from the excavations perpetually going on in and around London in the course of each twelvemonth; or as to the thousands on thousands of cartloads of old bricks and mortar which have to be got rid of *somehow*, from the old houses which are continually being pulled down (at the annual rate of 1 in every 200 of the entire buildings) during the year? Who but some zealous sanitary engineer worries his wits concerning the provision made for removing the millions of loads of mud and the millions of tons of street surface-water which are annually being deposited upon the endless miles of the almost endless thoroughfares, or as to the Niagara-like outfall of the collective "slops" from the infinite household crowded within the vast metropolitan area? And yet in an enormous city like ours all these various forms of refuse have to be thought of and provided against; else this *very* great "Great Metropolis" would, at its present rate of wear and tear, assuredly become one vast rubbish-heap,—a huge dust-heap and muck-heap,—ere another century had passed over its head.

So this brings us, in due course, to the consideration and classification of the different forms of refuse; for rubbish admits of being logically divided and subdivided as well as the more sterling and solid matters of common sense. Before proceeding to deal, therefore, with the quantity and quality of the metropolitan sewage, let us clear the ground of the wilderness of tangled ideas besetting it, and endeavour to give the reader some definite notion as to the several kinds and varieties of refuse in general.

Well, the refuse of a town consists of two kinds:—(1.) The street refuse; and (2.) The house refuse; and of each of these kinds there are two distinct species, viz.,—(*a.*) The dry or solid; and (*b.*) The wet, whether in a fluid or semi-fluid state.

The dry street-refuse consists principally of refuse earth removed during excavations, refuse bricks and mortar, the sweepings of the shops, and the dust of the streets; whilst the dry house-refuse is made up of the soot and ashes of our fires, the sweepings of the house-floors, the parings of vegetables, and the offal from meat, as well as the remains of broken bottles, crockery, &c.; in a word, the general contents of the dust-bin. The wet street-refuse, on the other hand, comprises the mud, horse-droppings, and surface-water of the public thoroughfares; while the wet house-refuse includes what is familiarly known as the "slops" of a household, the outpourings from the water closet and the rain-pipes, as well as the liquid refuse from the several factories and slaughter-houses.

With the different forms of *dry* refuse we have, of course, nothing to do here, seeing that such matters seldom or never enter the sewers, and are generally removed by the cart of the rubbish-carter, the scavenger, or the dustman. It is only the *wet* refuse of our streets and houses that concerns us in this place; for that alone is what can be said to constitute the *sewage* of a town,—the dry refuse being merely the rubbish of a city, and, from its having no principle of fluidity belonging to it, admitting of being carted off and "shot" into appointed "heaps," rather than being susceptible of *drainage*,—*i.e.*, of being carried away, by the mere flux of gravitation, through a series of bricken tubes or earthen pipes, to some convenient "outfall."

The sewage of a town, then, consists of the wet refuse either of the streets or the houses,—the *drainage* of the thoroughfares and the domiciles throughout the city. And now let us endeavour to arrive at some estimate as to the quantity of this same drainage arising from a capital where the roadways are more than one fourth of the diameter of the earth in length, and the tenements greater in number than the dwellings in many a German Principality.

The main "feeders" as regards the surface-water of the London streets are, of course, the rains. The average quantity of rain, therefore, falling annually upon the entire metropolitan area will give us some idea as to the amount of street surface-water which the sewers of London have to carry off in the course of the year. The following table shows,—

THE AVERAGE RAINFALL IN LONDON DURING TEN YEARS

(*According to the Observations of the Royal Society and Mr. Luke Howard*).

Months.	Average Depth of Rain in Inches according to the Observations of		Quantity of Rain falling at different Seasons in Inches.	Number of Days on which Rain falls in each Month.
	The Royal Society.	Mr. Luke Howard.		
January..	1·56	1·907	1st Quarter, 5·868	14·4
February	1·45	1·643		13·8
March ...	1·58	1·542		12·7
April	1·55	1·719	2nd Quarter, 4·813	11·0
May	1·67	2·036		15·8
June	1·98	1·964		11·8
July	2·44	2·592	3rd Quarter, 6·692	10·1
August ...	2·37	2·134		16·3
Septemb'r.	2·07	1·644		12·3
October...	2·16	2·872	4th Quarter, 7·441	16·2
November	2·58	2·037		15·0
December	1·65	2·489		17·7
Total ...	24·04	25·179	24·804	178·1

According to Mr. Glaisher, the quantity of rain which fell in London in 1873 amounted to 23·5 in., and that was 0·6 less than the average of thirty-two years; so, coupling this fact with the returns above cited, we may safely assume the mean rainfall in the metropolis to be, in round numbers, 24 in. per annum.*

Now, as we have said, the area of "London according to Act of Parliament," comprises exactly 78,080 statute acres (= 115 square miles); and as every statute acre contains 6,272,640 square inches, it follows that the entire metropolitan area must contain not less than 489,767,731,200 of such inches. Hence, this number multiplied by 24 (the average depth in inches of the rain falling in London, upon every square inch of ground, in the course of the year) will give us the gross number of cubic inches contained in the average annual metropolitan rainfall; and then we have but to reduce these into gallons, and the gallons into pounds avoirdupois, in order to arrive at the volume and weight of the whole.

But, not to bore the reader with the dry details of the calculation, we shall proceed at once to state the results.

The average yearly rainfall in London amounts to 11,754,425,548,800 cubic inches, or 6,802½ million cubic feet; and the average daily ditto, as nearly as possible, to 32,204 million cubic inches, or 18⅔ million cubic feet.

This is equal in volume to very nearly 42,400 million gallons in the course of the year, or to upwards of 116 million gallons, on an average, in the course of each day,—which is at the rate of rather more than 200 million tuns (of four hogsheads each) annually, and upwards of half a million tuns (550,000) daily; and since a tun by measure is very nearly a ton by weight, it follows that the gravity and the volume will be almost the same in amount.

Hence, the conclusion is: the average quantity of rain falling within the metropolitan area is equal to rather more than 6,800 million cubic feet, or upwards of 200 million tuns, as well as tons, per annum; and this is at the rate of 18⅔ million cubic feet, or 550,000 tuns, as well as tons, per diem.

"Taking an average of several years," says Sir Joseph Bazalgette in his account of "The Metropolitan System of Drainage, and the Interception of the Sewage from the river Thames," "it has been ascertained that there are about 155 days per annum" (178 according to the table above given) "upon which rain has fallen. Of these there are only twenty-five upon which the quantity has amounted to ¼ in. in depth in twenty-four hours, or the one-hundredth part of an inch per hour if spread over an entire day." But, on the other hand, "there are," as Sir Joseph truly says, "in almost every year, exceptional cases of heavy and violent rain-storms; and these have measured 1 in., and sometimes even 2 in., in an hour."

With such abnormal rainfalls, however, we have no necessity to trouble ourselves at present. The first problem to be solved is: what becomes of the enormous volume of rain which is poured down every year upon the metropolitan area,—a volume equal, as we have shown, to more than 6,800 millions of cubic feet, or 200 million tons weight per annum; and which, if spread out into one large lake, would form a vast sheet of water 2 ft. deep and 115 square miles in extent, and stretching from Chiswick to North Woolwich in one direction, and from Highgate to Norwood in the diametrically opposite one. One thing, however, is certain, and that is: the *whole* of this surface water does not enter the sewers; for in the report of Messrs. Bidder and Hawksley upon the subject it is said the fact has been established, from observations made in the year 1857, "that the quantity of rain which flows off by the sewers is, in all cases, *much less* than the quantity which falls on the ground; and although

* From the Royal Society's observations it would appear that the London rainy season occurs in September, November, and October, and the dry season in April, February, and March. Both Mr. Howard and the Royal Society agree in making March the dryest month of the year, and in placing October and November among the wettest ones. Mr. Howard, however, gives the average quantity of rain falling in September as only 1·644 in., whereas the Royal Society makes the mean rainfall during that month 2·97 in., or as much as 80 per cent. more, and so ranks it as the wettest of all the months in the year. Again, according to the Royal Society's tables, December is comparatively a dry month—the normal quantity of rain then amounting to but 1·65 in.; whilst, in the tables of Mr. Luke Howard, December comes among the wettest months—the rainfall during that period being made as high as 2·489 in., or 50 per cent. more. Moreover, it may be observed that very nearly 49 per cent. of the days in London appear to be wet ones, so that there is more or less of a shower occurring in the metropolis on almost every other day throughout the twelvemonth.

the variations of atmospheric phenomena are far too great to allow any philosophical proportions to be established between the rainfall and the sewer-flow, yet we feel warranted," say the gentlemen in question, "in concluding, as a rule of averages, that a ¼ in. of rainfall will not contribute more than ⅛ in. to the sewers, nor a fall of $\frac{4}{10}$ in. yield more than ¼ in. Indeed," they add, "we have recently observed rainfalls of very sensible amount failing to contribute any distinguishable quantity to the sewer flow."

Now, according to the above observations, it would appear that only about *one-half* of the gross amount of rain falling upon the metropolis finds its way down the "gullies" into the street-drains. What, then, becomes of the other half? "Of this," says Sir Joseph Bazalgette, "a large proportion is evaporated or absorbed, and either does not pass through the sewers at all, or does not reach them until long after the rain has ceased." And yet, in another part of the same work, while treating of the quantity of sewage to be intercepted, Sir Joseph says "That portion which is absorbed and evaporated is *compensated for by the dry-weather underground-leakage into the sewers.*"

Of course, the portion of the rain which finds its way into the drains can be only such as falls on that part of the metropolitan area which is occupied by buildings or streets. What descends upon the suburban fields, gardens, parks, and other open spots is, in a measure, imbibed by the soil. Moreover, a large proportion of the rain falling on the streets either sinks into the ground or is retained by the dust which is ultimately converted by it into mud. Hence, that alone which pours down on the housetops and the yards can be said to contribute in any considerable degree to the gross quantity of wet street-refuse discharged into the drains.

Now the streets of London are said to take up one-eighth part, and the houses another eighth part of the entire metropolitan area.* The eighty-six and a quarter square miles, therefore, which remain after deducting the space occupied by the streets and the houses from the 115 which are comprised within the limits of what is now termed "Registration London," may be said to be made up of suburban gardens, fields, parks (and the latter, according to a late return of the Ordnance Department, are, altogether, somewhere about three square miles in extent), commons (such as Clapham and Wimbledon), greens (such as Camberwell-green and Brook-green), downs (such as Hackney Downs), and heaths (such as Hampstead-heath and Blackheath). In such places, however, the rain, unless very heavy, would naturally sink into the earth. We have then only about one-fourth of the gross London rainfall,—*i.e.*, the portion descending upon the housetops and the streets,—which would be likely (except in the case of the abnormal rainstorms mentioned) to enter the metropolitan sewers; and reckoning a considerable proportion of this to be absorbed by the dust of the roads, we land at the conclusion that *less than a quarter* of the total quantity of rain-water falling over the London area makes its way into the drains. Well, therefore, might Messrs. Bidder and Hawksley assert that "as a rule of averages, ¼ in. of rainfall *will not contribute more* than ⅛ in. to the sewer flow, and that they had observed *rainfalls of very sensible amount failing to yield any distinguishable quantity to the sewers.*"

But, even of this one-fourth part of the entire London rainfall, how much can really be said to reach the gullies of the drains? Now, how is such a point to be settled? Why, simply by ascertaining the quantity of street-mud which is annually removed from the London thoroughfares; and this brings us to the consideration of the second form of wet street-refuse before enumerated.

The scavengers, to whom we must resort for the scientific classification of this branch of our subject,—the natural history, as it were, of dirt ("dirt," which Lord Palmerston described as "matter out of place"),—divide the street-refuse into four distinct species, to wit:—(1.) Street-dust, which, as Miss Landon said, is merely "mud in high spirits," *i.e.*, mud which, having got rid of the sober influence of the rain, has become rather "flighty," and is wont to circle away in mid-air as if it were really of an ethereal nature. (2.) Mud proper, or "Mac," as it is termed, according as it is either merely *swept* from off the granite or wood pavement, or both *scraped* and *swept* from the surface of Macadamised roads. This form of street-dirt is, of course, simply the dust or *detritus* of the paving agglutinated by the rain into a more or less semi-fluid consistence, but which, not having sufficient liquidity in it to be able to flow off, or be carried down, by the flux of gravitation, into the drains, has to be gathered into heaps by the scavenger's broom, and then shovelled up into carts, in order to be removed to some convenient "shoot." (3.) "Slop-dirt," as the scavengers style the still-more-fluid mud, but which has, nevertheless, sufficient consistence about it to admit of being swept from the surface of the pavement, and ultimately shovelled up and carted off, as in the other case, to some appointed "outfall." And (4.) the street "surface-water," which has enough liquidity belonging to it to flow off by itself into the channels and thence down the gullies and drains connected with the roadways.

We have to deal here merely with the two medium forms of street refuse, and by showing how many cartloads of mud and slop-dirt are removed in the course of each year from the London thoroughfares, endeavour to ascertain how much of the aggregate rainfall is absorbed by the dust of the streets and so converted into this same mud and dirt. Now, it would appear, from inquiries among the parish surveyors and contractors for cleansing the roads, that the average quantity of mud collected daily during the wet season from the different metropolitan thoroughfares varies from one cartload and a half per mile in those of the greatest traffic to three-fourths of a load per mile in the least frequented districts. There are about 200 miles of granite-paved streets (50 within the City, and 150 outside of it), which may be said to yield about one load and a half of mud per mile, and some 250 more miles of similarly-paved streets, which yield but three-fourths of a load; or say that the 450 miles of such streets produce altogether 500 cartloads daily throughout the wet season. The yield of "Mac" is, of course, considerably greater, owing not only to the Macadamised roadways being 1,900 and odd miles long, whereas the granite-paved ones are little more than 570 miles in length, but owing also to the quantity of mud produced by such roads being proportionately larger. Assuming then that the thoroughfares yielding "Mac" are only 1,800 miles in length, and that 200 miles of these where the traffic is greatest produce two loads daily per mile, and that the remaining 1,600 miles yield but three-fourths of a load per mile a day, we have 1,200 loads per diem for the gross amount of mud and slop-dirt collected from the entire Macadamised roads of the metropolis. Then, adding this amount to the 500 loads yielded by the granite-paved streets, we have an aggregate daily yield of 1,700 cartloads. But this quantity is collected daily during the wet season only; and as rain falls in London on but every other day, on an average, throughout the year, it follows that the average daily yield of mud and "Mac" would be merely half the above-mentioned amount, or 850 loads or tons per diem if taken for the whole twelvemonth.

Now, the mean daily rainfall we have shown to amount, in round numbers, to 550,000 tons in weight, and tuns in volume, or about 19 million cubic feet; but it has also been shown that only one-fourth of this quantity, or 137,500 tons, falls upon the housetops and roadways of the metropolis, and that this is the entire amount which, under ordinary circumstances, can find its way into the metropolitan sewers. Moreover, of these 137,500 tons, we have just seen that 850 tons are daily converted into as many cartloads of mud and "Mac," by the commingling of the rain-water with the dusty *d-tritus* of the roads; and, therefore, we may conclude that the London rainfall adds, on an average, about 130,000 and odd tons, or rather more than 4⅔ million cubic feet per diem to the aggregate sewage of the capital.

But if less than a quarter of the whole of the ordinary rainfall enters the London sewers, it is far different with the water supplied artificially, rather than naturally, to the metropolis. For the water which is artificially supplied to the metropolitan houses is the main source of the *wet house-refuse*; and for this form of house-refuse there is hardly any other outlet than the house-drains and the sewers themselves. Consequently, in order to arrive at the amount of sewage which proceeds from the wet-refuse of the London houses, we must ascertain the amount of the London Water Supply, for it is self-evident that the quantity of the one must be almost tantamount to that of the other, seeing that the volume of the wet house-refuse can hardly be more or less than that of the whole of the water supplied to the different dwellings and factories. Thanks to the several metropolitan companies, the returns furnished to the Registrar-General make the amount of the London water-supply a point which is readily determinable; and, accordingly, we find, on referring to the accounts given in the official report of 1873, that "the average *daily* quantity of water supplied by the eight London companies" in the course of that year was, 113,188,809 gallons." Add to this eight million gallons derived from Artesian wells every day, and two million more gallons from land springs, and we have a gross water supply of 123,188,809 gallons per diem.

Now, this number of gallons is equal to 549,950 tons, or about 19,765,200 cubic feet. But the average daily rainfall in London we showed to amount to 550,000 tons, or 19,767,000 cubic feet; so that, strange to say, the average quantity of water which is supplied *artificially* every day to the metropolis, by means of the water companies, &c., is as nearly as possible equal to the average daily quantity which is supplied *naturally*, by means of the rain! What connexion the one supply can by any means have with the other it is difficulty to perceive; but the coincidence is, at least, very striking and worthy of remark.

"According to the returns of the London companies made to the Select Committee on the East London Water Bills (Session, 1867)" adds the Registrar-General, in a foot-note appended to the table of the London Water Supply for 1873, "it was estimated that, during the year 1866, about 82 per cent. of the total supply of water for all purposes was for domestic use. This proportion has been applied," continues the foot-note, "in computing the number of gallons probably used for domestic purposes" by each household,—the average daily quantity made use of in this way being 18¼ gallons per house, and the average daily supply to the entire metropolitan population at the rate of not less than 25·9 gallons per head. But if only 82 per cent. of the whole of the water supplied to the metropolis is used for domestic purposes, the natural query is,—What becomes of the remainder? The answer is found in the "Minutes of Proceedings taken before the Commissioners appointed to inquire into the Regulations for a constant Supply of Water to the Metropolis"; wherein it is shown that a considerable proportion of the gross water supply is devoted to the purposes of trade,—the proportion in the case of the East London Company being estimated as high as 26·2 per cent., and that of the Kent Company as low as 3·2 per cent. Moreover, it is reckoned that probably one-third of the whole supply (or as much as 37⅓ million gallons out of the whole 113 and odd millions) is *wasted* every day; so that 8⅓ gallons out of the 26 supplied to each person per diem are devoted to no purpose whatever.

Now it is manifest that nearly *all* the water consumed or wasted in London must go to form the bulk of the total wet house-refuse discharged into the London sewers. There are, however, a few exceptions; though the water diverted from the drains in such cases forms so trifling a proportion of the gross supply that it is hardly worth mentioning. First, there is the quantity used in the extinction of fires. This the Registrar-General tells us amounted, in the year 1873, to upwards of 22½ million gallons, or about 100,000 tons; but as only one-third of this quantity, or 7½ million gallons, was derived from the street-pipes (the remainder being obtained from the river, the canals, and the docks), and this gives an average of but little more than 20,000 gallons a day, there is no necessity to cumber the present calculation with so trifling a drawback. Then there is the quantity which is used in laying the dust of the streets in dry summer weather, and which, being soon evaporated by the heat of the sun, cannot in any way serve to swell the volume of the sewage; so that no notice need be taken of it here. Then, again, there is the proportion which is applied to the watering

* This estimate is borne out in the following manner:—The average width of the London streets may be taken at 10 yards; hence each mile run of roadway would contain 17,600 square yards, or just upon three and two thirds statute acres; and consequently 2,500 miles of such streets would occupy 9,150 acres, or rather more than 14 square miles, which is just about the eighth part of 115 square miles, the entire extent of the metropolitan area. The area occupied by the houses, on the other hand, is computed as follows:—The average number of houses to the acre throughout all London at the time of taking the last census was 6. There are 4,840 square yards to the acre, dividing this, then, by eight, we have 605 square yards for the space covered by the entire six houses, and this would give an average of just about 100 square yards for the extent of ground covered by the premises in connexion with each house.

of gardens, and which being at once absorbed by the soil and the plants, cannot possibly make its appearance in the sewers. These exceptional cases, however, form so minute a modicum of the whole supply (amounting as they do to merely a few thousand gallons per diem out of upwards of a hundred millions), that it would be the mere pedantry of statistical precision to attempt to make any allowance for them in the present computation.

The total daily water supply, therefore, may be taken roughly as being the total amount of the wet house-refuse which is discharged every-day into the London sewers; and this may be safely set down, in round numbers, at 120 odd millions of gallons per diem. This quantity includes, of course, all the "slops" of every London household: the refuse water left after scouring, washing, and cooking, the waste from the surplus running of taps, the overflow of cisterns and bursting of pipes, as well as the discharge from private water-closets and public urinals. It includes, also, the refuse streams from the several baths and washhouses, dye-houses, tan-pits, and chemical works distributed throughout the metropolis; and indeed every form of refuse liquid, whether proceeding from the houses or factories of London.

The conclusion, consequently, is, that the only two sources of supply for the metropolitan sewage are the wet street-refuse and the wet house-refuse of the metropolis; that the quantity of the one depends on the amount of the rainfall, or the natural supply of water derived from the clouds, and that of the other on the artificial supply provided by the several metropolitan water-companies; that the average daily natural supply is as nearly as possible tantamount to the average daily artificial supply; that of the average daily rainfall rather less than one-fourth enters the sewers, under ordinary circumstances (the remainder being absorbed by the soil), whereas of the average daily water-supply almost the whole is discharged, in some refuse form or other, into the drains; and, lastly, that the quantity of sewage derived from the wet street-refuse amounts to about $4\frac{3}{4}$ million cubic feet, or 130,000 and odd tons per diem, whilst that derived daily from the wet house-refuse is not less than $18\frac{3}{4}$ million cubic feet, or 550,000 tons.

We must reserve our account of the sewers themselves, or the means of carrying off this enormous feculent flood of refuse, for another number.

"THE EIGHTEENTH CENTURY IN FRANCE."

THEATRES AND COSTUME.

In giving a general notice in our last issue of M. Lacroix's book above mentioned (p. 1052, *ante*) we reserved the right to return to it briefly in connexion with two subjects to which separate chapters are devoted, and which are of more direct interest to us, perhaps, than any of the other subjects treated of. The stage and the art of dress have always had due attention from us, as the two forms in which artistic considerations most closely affect public and private life respectively.

Court influence had thrown the theatre rather into the shade in Paris at the commencement of the eighteenth century. Madame de Maintenon's ill-balanced and acid pietism brought the *Grand Monarque*, who had formerly been a passionate lover of the stage, to a spirit of repentance on this head, and he expiated his former entertainments by having to refuse his attendance at any representations, except such as the semi-religious plays of "Esther" and "Athalie," written by Racine at the request of the high arbitress of court moralities and manners, perhaps as a kind of compensation to his Majesty for the lighter entertainments which he had foregone. The only theatres in Paris at this time were the Royal Academy of Music and the Théâtre Français. The Italian comedy-troupe, who had established themselves at the Hôtel de Bourgogne, had been banished from the city in 1697, under the plea of having satirised Madame de Maintenon. That they must have enjoyed public favour is evident from the recorded remark of the king in dismissing them, that they had nothing to complain of, as "they had come from Italy on foot, and had made enough to return in their carriages." The public followed the example of the sovereign, however, to a considerable extent, and theatres could hardly be said to be popular, though the possession and use of a box at the building in the Palais Royal, where the opera performances of the Academy of Music were held, was rather sought after by the wealthy as an outward sign of their position and privileges, the patronage of opera having been, ever since its invention down to a very recent period, apparently a distinguishing propensity and privilege of the "upper ten thousand."

With the Regency the tide turned in favour of the theatre, and the Italian players were invited or permitted to return; but their language not being familiar to the wealthy *parvenus* who formed then, as always, a considerable support of the theatre, they adopted the native language, and became known as the Théâtre-Italien, which thus disputed preference on equal terms with its three rivals, the Opera; the Comédie Française (or Théâtre Français, for it was called indifferently by both titles); and the Opéra Comique. These were the four Paris theatres of the Regency period and for some time after. The Opéra Comique traces its origin to the fairs at St. Lamont and St. Germain, where comic opera was first played, by permission of the Royal Academy of Music, which seems to have enjoyed a kind of prohibitory *veto* over this performance, possibly by way of stopping anything which might seem likely to trench on its own sphere of serious opera. Under these circumstances the Opéra Comique was developed out of the periodical "fair" theatre.

The Théâtre Français, though not so popular or pecuniarily successful as the Italien and the Opéra Comique, "was still the first theatre in France and in Europe, because it was the highest and most complete expression of the French dramatic art"; and we may probably add that, in its modern edition, it *is* still the first in Europe.

"The company of this theatre scrupulously maintained the traditions of high dramatic art, and was composed of the best actors, both of tragedy and comedy. Entitled to call themselves *Comédiens ordinaires du Roi*, they constituted, as in the time of Molière, an association which had the royal authorisation to manage the theatre itself, all questions of general interest being decided by a majority of votes in this assembly. The adjunction in the reign of Louis XV., of the four first Gentlemen of the Chamber, subjected the Comédie Française, in a certain measure, to the arbitrary authority which, under the Revolution, exercised sovereign control over the internal affairs of this and all the other theatres of Paris. The opinions expressed by these four gentlemen were as good as law, for nothing could be done without their sanction. Not only did they act as arbitrators between the public and the actors, but they also intervened in cases of misunderstanding between the actors themselves; they saw that the regulations in regard to the theatre were carried out, granted retiring pensions, ordered the *début* of a new actor, sanctioned the programme for each evening, and sometimes reprimanded any actor who failed in his task. The finance department alone was left by them to the management of the Sociétaires. In addition to the authority of the gentlemen of the chamber, that of the inspector of *menus*, though less meddlesome and harsh, was specially exercised whenever there was to be a State representation; and these regulations lasted till 1789."

Well might the unfortunate actor of that time have exclaimed, like the man who was beheaded in one of Artemus Ward's anecdotes, "We are too much governed." They were, in fact, between Scylla and Charybdis, being subject to the most undisguised and insulting demonstrations of opinion on the part of the audience if they failed to please them, and liable, if they ventured to resent the insults of their critics in the pit, to be imprisoned for contumacy. Many actors of genius and spirit were forced from the stage on this account; among others, Mdlle. Clairon, a celebrated actress of the Comédie Française, who withdrew from the stage when at the height of her powers. Her portrait forms an ornament to the chapter on Theatres, and a noble presence she must have been on the stage.

The admission of spectators on to the stage is a singular anomaly of the old theatre. At the Comédie Française there were seats four deep railed off by an iron balustrade on each side of the stage; and on crowded occasions a fifth row of spectators was permitted to stand round in a semicircle in front of the seats; these were often confounded with the actors, who had to come pushing through their ranks to get on the stage, and whose voices were half-drowned sometimes amid the hum of their conversation. The same kind of thing is referred to by Ben Jonson as common in the great days of our own drama, when it was a special ambition of the *jeunesse* of the day to have the privilege of sitting on the stage, on stools placed about for their use. It is strange to think of the masterpieces of Shakspeare and of Molière going on amidst what would seem to modern eyes such an almost indecorous jumble of actors and spectators. The pit of the French theatre was a formidable institution, too, *circa* 1750. It was not provided with seats, and the spectators, when a favourite piece collected a crowd, were half suffocated in the crush; and what with standing on tiptoe to get a sight of the actors over each other's shoulders, and simultaneously protecting their pockets and holding their canes, swords, cloaks, and hats, it was no wonder if their criticisms were delivered in a somewhat exasperated and exasperating fashion. The pit was surrounded by soldiers to keep the tumultuous mass in order, in which they were not always successful. "The supremacy of the pit, however, did not long survive the placing of seats in that part of the theatre,—a change which was effected in 1782.* It is said that this alteration had an unfavourable effect on dramatic art, and Mercier, amongst others, relates that the pit, when seats were provided, went from one extreme to the other, and from being over-excitable became lethargic and indifferent." This impression of a writer of the day is worth noting, for we might certainly cap it with instances of a somewhat similar tendency in the recent history of our own theatre. There can be no doubt that the old enthusiasm and interest of our theatrical audiences has greatly toned down since the main part of the area of most of our theatres was transformed from the crowded, eager, and not too conventional "pit" to the more spacious, easy, and decorous "stalls." It may be urged that the difference is in the quality of the plays presented; but the remark as to the change in the temper of the French pit when seated is at least suggestive. We know of one important provincial theatre where the attempt was made to do away with the pit entirely, and fill the whole area with stalls, and the scheme had to be abandoned, not only on account of pecuniary non-success, but because the house became so "dead" that the actors complained. The attempt in London, as at the foolishly-named Opéra Comique in the Strand, has never had good results. Among the various schemes for the resuscitation of the drama in England, perhaps we may next hear the proposition to clear away the stalls and restore the old pit, to act as a tonic to the actor and dramatist.

The study of theatrical costume seems to have been in as primitive a state during the first half of the century as the arrangements for the auditorium, the actors being accustomed to dress as they pleased, the only *desideratum* being that the dress should be brilliant and showy. This was really a practical necessity, for the stage, lighted, till 1784, only by tallow candles, was always in a state of semi-obscurity. The reform in the idea of stage costume was initiated partly by Mdlle. Clairon, under whose auspices, on August 20, 1775, Voltaire's tragedy, "L'Orphelin de Chîne," was played in Chinese costume, the first tribute to the principle of "local colouring"; though, from the print of one of these costumes for the character of *Idamé*, the result might rather be described as Chinese costume translated into French taste. The extravagance of the stage costume of the period is indicated in the figure of Madame Vestris as *Irene*, in a dress designed at the Théâtre Français; there is a certain superb character about it, too, though the figure seems lost in the costume.

Extravagance, however, was as much the rule in the costume of real life as on the stage. Many happy ideas were struck out which were simply spoiled by being carried to an exaggerated extent. It was a time in which nature, both mentally and materially, was swallowed up and utterly disguised in fashion. In the early part of the century, it is true, richness of dress was discouraged by the Court, Madame de Maintenon setting her face against this as she did against amusement at the theatres, and setting the fashion of sombre tones in dress rather than gay colouring. She is credited, however, with the invention of the lofty head-dresses which, though vanquished by the social edict of Louis XIV. towards the close of his reign, were found in even greater luxuriance at a subsequent period. The comparative engraving of costumes from 1720 to 1740, however, shows nothing more extravagant than we were all accustomed to recently in the days of the crinoline movement. The absurdity of these bell-like dresses is most apparent where they spring out from a tight waist with no attempt at carrying off the abrupt junction of lines; in what is termed the "*Grande robe*," illustrated in the plate by a figure from one of Parrocel's pictures, where the

* The *parterre* in some of the French theatres remained without seats long after this date. This was the case, we can remember perfectly, when in early days we attended performances in the theatre in Rouen.

outer dress, falling from the shoulders without being drawn in at the waist, envelopes the whole body, there is certainly an effect of considerable dignity and sumptuousness produced, of course at the cost of the loss of all "figure." It is remarkable that during the wildest vagaries of female costume the dress of the other sex has generally been at its best; except that it has a little too much of the mere "fine gentleman" cut (which, of course, was in accordance with the social facts of the period), the male costume of the period we are noticing is admirable in the way of elegance and suitability without extravagance. Then when the ladies' costume returns to common-sense, the gentlemen's sinks into insignificance. The only exaggeration noticed by the author against the male costume of the period is in the richness of materials, and the number of very small buttons, used as an ornament, and which in a comedy at the Théâtre-Italien were represented as having become so small as to need a microscope to discern them. The dress of the gentleman was, however, expected to be so frequently changed and renewed that it was a very expensive establishment; and this demand for constant change producing a superabundance of fine dresses, led to the curious result that the lower classes towards the close of the century dressed to a great extent in the left-off clothes of the rich; and it was common for artisans to turn out as dandies in their leisure hours: a sort of amateur levelling up which offers a strange contrast to the tremendous levelling down that was to follow. The women of the middle and lower class seem, however, to have had a more sensible aim in costume, and, in fact, to have represented the good taste of the period; and the Paris grisette was renowned throughout the whole of Europe for the neatness of her attire:—

"Gorgy, in his 'Nouveau Voyage Sentimental' (1785), says, 'The girls employed in shops of various kinds aspire to be classed above the lower ranks of the people; their dress is plain and yet comely, and amongst them is to be studied that sort of coquetry which Rousseau declares to be inherent in the female nature. It does not consist of a quantity of gewgaws which are but advertisements of the wealth of the wearers and the skill of the makers. These women wear only inexpensive dresses, with a little gauze and a few bits of ribbon, but they make the most of them, and produce considerable effect out of very little. Their coiffure is very simple, but it suits them so well that it seems perfect.' This corresponded very closely with J. J. Rousseau's opinions, for, in 'Emile,' he writes, 'Give a young girl who has good taste and rets little store by the fashion of the hour, some ribbon, gauze, muslin, and flowers, and she will make, without the aid of diamonds, laces, and trinkets, a head-dress which will suit her a hundred times better than all the jewelry of Duchapt could do.'"

Rousseau's lesson is, perhaps, not superfluous in the present day; of the species of head-dress which moved his criticism in his own day we have a number of examples given by the author,—specimens that are fearful and wonderful. There was the *loge d'opéra* coiffure (1772), which made a lady's face 72 in. high from the chin to the top of the hair; and the *pouf* coiffure, which was a heterogeneous composition of feathers, jewelry, ribbons, and pins. "Into this wonderful coiffure entered butterflies, birds, painted Cupids, branches of trees, fruits, and even vegetables. On one occasion the Duchesse de Chartres, daughter of the Duc de Penthièvre, appeared at the opera with her hair dressed in a "*pouf sentimental*," upon which was represented her eldest son, the Duc de Beaujolais, in his nurse's arms, a parrot pecking at a cherry, a little negro boy, and the initials worked in hair from the heads of the Ducs d'Orleans, de Chartres, and de Penthièvre." It was in ridicule of this special form of head-dress, probably, that the caricature of "An Attempt to Defraud the Paris Custom-house" (p. 482) was made, in which the officials are represented extracting nearly a cartload of contraband articles from a Brobdignagian coiffure. Another represents a lady with a negro boy in the rear holding her head-dress up with a kind of pitchfork, while she engages in a sentimental conversation with an admirer. Among a score or two of head-dresses figured (pp. 478-9), one represents a ship in full sail on the head; this is called *coiffure à la belle Poule*, but the names seem to have had no connexion whatever with the style or "motive" of the adornment, unless it referred to the name of some eminent ship of the period. One fashion which was prevalent, of introducing stuffed birds in the head-dress, we are sorry to see is being talked of again in English society; it is in bad, and, in fact, rather barbarous taste, and we commend to lady readers the equally pretty and sensible verses of our friend *Punch* on the subject last week.

One thing in which really artistic taste was exemplified was the shoe-buckle; in fact, the ladies' shoemaker under Louis XV. was almost an artist, and his small shoes in every colour of leather, and set off with gold and silver embroidery, with their buckles in gold or cut steel, were as costly as many articles of jewelry. Specimens of some of these buckles, engraved p. 473, are certainly superior in artistic merit to most ornamental work of the period, and there is no article of eighteenth-century costume so elegant in itself, and so indelibly associated with the social history of the period, as the small high shoe with the *talon rouge*.

PROTECTION OF TIMBER IN HARBOUR WORKS, JETTIES, AND PILES.

MR. BRITTON, to whose book on the decay of timber we again refer, says that as the destruction of timber by fungi has been called the *vegetable* rot, it may not be inappropriate to term the destruction of wood by various worms and insects the *animal* rot. The soft woods, and such as are of a saccharine nature in their juices, are the most liable to be assailed by worms; those which are bitter are generally exempt. It is obvious, therefore, that those palatable juices should be got rid of by thorough seasoning, and that the infusion of some unpalatable substance should be injected into the wood, for which those which have a regular grain afford sufficient facilities. The cedar, walnut, plane, cypress, and mahogany are of a nature to discourage the advances of sea-worms, but they are too expensive for general use. The *teredo navalis* is the most destructive of these worms. The Southampton water is particularly infested with it, and Mr. Britton says that it is found in every part to which coals are carried south of the Tees; in the Thames as high as Gravesend; and northward as far as Whitby. It is also found at Ryde, Brighton, and Dover.

About thirty years ago, as nearly as we remember, the late Mr. James Simpson, C.E., was called in by the proprietors of the old Southend Pier, in consequence of piles having been destroyed by marine worms. Mr. Simpson appointed Mr. John Paton to be the resident engineer of the work of restoration, and Mr. Paton afterwards contributed a paper to the Institution of Civil Engineers on the ravages of the teredo and other sea-worms, and became an authority on the subject, and was afterwards employed on sea works in Denmark and elsewhere, and to whom the author acknowledges his indebtedness for much information; and also to Mr. Newport, the eminent physiologist and anatomist, and to M. Forestier, engineer of La Vendée Department, in France.

In a fir pile, taken from the old pier-head at Southend, a teredo was found 2 ft. long and $\frac{3}{4}$ in. in diameter. These were fir piles, but in oak timber the teredo does not grow to so great a length.

Another kind of worm which is very destructive to timber is the *Limnoria terebrans*. Its ravages were first particularly observed in the year 1810, by Robert Stevenson, the engineer of the Bell Rock Lighthouse. The limnoria resembles a wood-louse, and is hardly perceptible in the timber it attacks, being almost of the same colour. It makes its way into the timber obliquely to the depth of about an inch and a half, the holes being perfectly smooth and cylindrical, about $\frac{1}{12}$ in. in diameter. It attacks most kinds of wood, but teak and green-heart seem to be exempt from it. At Lowestoft Harbour, square 14 in. piles were in three years eaten down to 4 in. square. At Greenock, a pile 12 in. square was eaten through in seven years. The limnoria almost always works just under neap tides; it cannot live in fresh water, and whilst it is destroying the surfaces of a pile the teredo may be attacking the interior.

Another destructive crustacean is the wood-boring shrimp, the *Chelura terebrans*. Its tunnels are made in an oblique direction, not very deeply sunk below the surface, so that after a while the action of the waves washes away the thin shell, and leaves a number of grooves on the surface; after which it again attacks the timber, which becomes in time wholly destroyed. It always swims on its back, and when commencing its work clings to the wood with the legs that proceed from the thorax. It was described by Mr. Mullins, C.E., in a paper read before the Institution of Civil Engineers of Ireland in 1847, to be far more destructive than the *Limnoria terebrans* to the timber piles in Kingston Harbour.

These worms, it is said, do not live except where they have the action of the water almost every tide, nor do they live in the parts covered with sand. It is said that the *teredo* is a native of India, and that it was introduced into Holland some 200 years ago, from whence it has spread through the ports of Northern Europe. The Dutch used to coat their piles with a mixture of pitch and tar, and strew upon them the fine particles of broken cockle-shells, which incrusted and armed the piles against the attacks of the *teredo*.

Another mechanical defence against worms is copper sheathing, but it failed at Southend; for although the piles were covered with it for 9 ft. or 10 ft. of their length, the limnoria not only penetrated between the copper and the timber, but the copper had decayed to such an extent that in some parts it was no thicker than writing-paper. Broad-headed scupper-nails form a better protection, if arranged in regular rows. The scupper-nailed piles at Southend, after twelve years' exposure, were perfectly sound, and although the nails were not driven close together in the first instance, yet the corrosive action was so great as to form a solid impenetrable metallic substance on the surfaces of the piles.

The author gives a list of woods which resist sea worms without any preparation.

Fir, and such timber as we have hitherto mostly used for harbour works, jetties, and piles, have been treated chemically by several processes, such as Kyan's corrosive sublimate, Payne's sulphate of iron and sulphate of lime, Burnett's chloride of zinc, and Bethell's creosoting process; and this latter has proved successful in resisting the attacks of sea-worms. "With regard to the different poisonous compounds having no injurious effect on the worms," the author says, "it should be remembered that all cold-blooded animals are much more tenacious of life than those of a higher temperament, and in descending the scale of animal creation, the tenacity of life increases, and this principle is more developed. A frog, which, though cold-blooded, is an animal of a much higher order than the teredo, will not only live in hydrogen gas, but also in a strong solution of hydrocyanic acid, while at the same time a single drop placed on the nose of a rat, or in the eye of a rabbit, would produce instant death."

The preserving property of soluble salts, such as corrosive sublimate, sulphate of copper, &c., was considered to be founded on their power of coagulating the albumen and the sap of the wood, but that very quality of combining with the albumen destroyed the activity of the poison of the salts.

The *creosoting* process of the late Mr. John Bethell is the injection into the timber of the oil of tar and other bituminous matters containing creosote, and also with pyrolignite of iron, which holds more creosote in solution than any other watery menstruum. The timber used at the breakwaters and piers of Leith, Holyhead, Portland, Lowestoft, Great Grimsby, Plymouth, Wisbeach, and Southampton has been creosoted, it is said, and in no case have the *Teredo navalis*, *Limnoria terebrans*, or any other marine worms or insects been found to attack these works.

Bethell's process is chiefly useful in impregnating and preserving the sapwood; it will hardly penetrate the heart-wood, but the sap-wood being impregnated it prevents the worms reaching the heart-wood; and thus whole round timber is preferred to squared timber for marine work. An almost complete preservation may be ensured by using first Burnett's process of injecting the chloride of zinc into the heart-wood, and afterwards Bethell's process. The author states the quantity of creosote for different kinds of wood per cubic foot, and the cost of the process, and gives in detail the report of Mr. Makinson upon the piles at Lowestoft Harbour, and of Mr. Doswell, who had the conduct of experiments on different descriptions of wood at Southampton, from both of which the great value of the creosoting process for protecting timber in such situations is apparent; and M. Crépin, a Belgian engineer, reported in 1864 upon experiments made at Ostend, that fir timber, well prepared with creosote oil of good quality, is proof against the *teredo*, and is certain to last a long time, resinous wood being easier to impregnate than white fir; and M. Forestier reported to the juries of the French Exhibition of 1867 upon both creosoted and uncreosoted oak, elm, ash, Swedish, Norwegian, and Dantzic red fir, Norway white pine, and plane, and showed that in each case the resistance of the wood, both to bending and crushing weight, was much

increased by creosoting; and that the results of the experiments undertaken by him in the port of Sables d'Olonne fully confirm those obtained at Ostend, and that they all go to prove that the *teredo* cannot attack wood properly creosoted.

ANCIENT AND MODERN EGYPT.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

At the ordinary fortnightly meeting of this Institute, held on Monday evening, the 29th ult., Sir G. G. Scott, R.A., president, in the chair, the following gentlemen were elected Associates, viz.,—Mr. R. P. Whellock, Vicarage-road, Camberwell; Mr. Frederick Thompson, York-buildings, Adelphi; Mr. Henry Lovegrove, Budge-row, Cannon street; and Mr. Frederick C. Deshon, Norfolk-street, Strand.

Professor T. Hayter Lewis then read an interesting paper entitled "Notes on Ancient and Modern Egypt." He commenced by stating that few discoveries of importance had been made in Egypt since those described by Professor Donaldson, M. Mariette, and Mr. Eaton. The site of Rameses (the treasure-city, and starting-point of the Exodus) was more generally identified with Tanis or Zoan, which theory, if accepted, would completely alter the hitherto-supposed route of the Israelites. After referring to the historical light derived from the study of ancient flint implements, the lecturer described one found by himself at Sakkara, the most ancient cemetery in Egypt. The discovery of the tablet, now in the museum of Boolák, recording the repair of the Temple of the Sphinx, was one of the most important in recent years. It showed the sphinx itself to be far more ancient than the Great Pyramid. Passages in the Queen's Chamber in the Pyramid had been opened by Mr. Dixon and Dr. Grant, and were supposed to have been constructed for purposes of ventilation. Having described some of the statues in the Boolák Museum, which, in point of design and execution, were greatly in advance of the architecture with which they were coeval, Professor Lewis detailed some of his own researches near the great Pyramids of Geezeh. In the vicinity of these structures are many tombs of the old empire, oblong on plan, with sloping sides ending with a level platform. Noticing a hole in one of the platforms, Professor Lewis descended it, and found himself in a chamber some 16 ft. wide. It had a flat ceiling of stone supported on the side walls, and apparently composed of roughly-cast voussoirs, which might be regarded as indicating the elementary principles of arch construction. The remains of Greek architecture in the southern parts of Nubia, though illustrated by Lepsius, did not seem to have attracted so much notice as they deserved. The lion-headed chairs so common in Greek work had probably an Egyptian origin, the ordinary mode of riding in the age of the old empire having been on a sort of seat stretched between two animals. Professor Lewis deplored the wanton injuries inflicted on Egyptian monuments by the rude hands of modern natives, and instanced the tombs at Beni-Hassan, where the mural paintings had been defaced as high as the arm could reach. Having exhibited some specimens of mortar from the stonework immediately under the casing of the great Pyramid, the lecturer said he had examined them by the aid of the microscope, and had found them to be different from all modern mortars and cements; they contained no sand, but minute grains of ground pottery and crystals of selenite. The Coptic churches of Old Cairo were very interesting, and the author said he found no difficulty in studying their beautiful details. The Church of St. Michael (now altered to a Jewish synagogue) is Basilican in character. The altar end has a chancel screen and wall lining enriched with Saracenic work. The secret vessels, crosses, lamps, pulpits, and screens in these churches were of exquisite workmanship. (At this point of the lecture Professor Lewis took occasion to thank Mr. J. D. Crace for the sketches which he had kindly lent in illustration of the subject.) As to the date of these churches, nothing definite is known. In the Rev. S. S. Malan's translation of "Al Makirzi," is described a terrible outbreak of fanaticism in 1002, when the mob pulled down churches and synagogues alike, and 3,000 were destroyed in Egypt and Syria. In 1300 further demolition occurred; but it was subsequently ordered that only those churches which had been built since Islamism had been established should be destroyed, hence the more ancient still remain. El Fostat (now Old Cairo) was founded by the Arabs *c.* 640; the next important part, El Katyë, containing the mosque Teyloon, in 869. But the part best known was founded *c.* 970, and partly reconstructed in the time of Saladin, about 1180, when the Norman architecture in England was giving place to a later style of work. One of the most curious instances of the mixture of Norman with Arab details is in the fine fortress on the road to Heliopolis, Gamarez Zahir. It reminds one of Sicily, where Arab workmen laboured under Christian architects, and both styles are thus mixed. At Cairo these conditions were probably reversed. The chief features of this city are the mosques, many details of which still remain to be described and illustrated. The bronze-work of the great door of the mosque Kaid Bey, 1496, equals, in Professor Lewis's opinion, any work of the kind executed in the Middle Ages. Some of the woodwork and mosaic in the mosques is exquisite beyond description. At Aboo Nasr, the wall-lining is of mosaic, outlined with mother-of-pearl, and the marble floor is bordered with mosaics of intricate patterns. At Kaid Bey the more prominent ornamental parts are raised in strong relief, giving a brilliant effect. Professor Lewis said he visited the Government School Library, where he was courteously received, and allowed to inspect the Arabic illuminated MSS., some of which are superior to any in the British Museum. Adverting to the gradual decline of local taste in architecture, the lecturer said he was unable to say anything in praise of modern works in Egypt. Many of the picturesque features which distinguish the old houses were disappearing, and were supplanted by others of common-place and inferior design. Professor Lewis concluded his paper by describing the characteristics of Egyptian architecture, and showing in what essential respects it differed from the styles by which it was succeeded.

In the discussion which followed,

Mr. Whichcord said it was nearly thirty years ago since he visited Egypt, but when he was there Cairo presented a far more picturesque appearance than, according to Professor Lewis, now characterised it. What struck him (Mr. Whichcord) most was the polychromatic decoration of the houses, somewhat Saracenic in effect. It was the most brilliant polychromy he had ever seen; the red, for instance, was like bright sealing-wax; but the brilliant colours were diffused over the whole of the work in very small portions. Another point that struck him very favourably was the exquisite manipulation of the joiners' work, which was wrought in a firm wood, somewhat analogous to deal, and in very small pieces.

Mr. J. D. Crace, after referring to the strata of salt discovered during the excavation of the Suez Canal as evidence of the Red Sea having flown at different times inland in the direction of the Bitter Lakes, said that Professor Lewis had not alluded to any definitely Roman or Byzantine work in Egypt, although he believed that such did not exist in a recognisable form so low down as Cairo. Near the first cataract of the Nile, however, were the remains of an almost complete Roman city, with a basilica the whole plan of which was clearly traceable. The lecturer had alluded to the bronze doors of Kaid Bey; but there were also some beautiful doors at the Mosque of Sultan Hassan. Professor Lewis had referred to a difference in the appearance of the gold in the initial letters, &c., in Arabic as compared with European MSS. This difference was due to the fact that gold in European MSS. was laid upon a very thick gesso ground, but in Arabic MSS. the gold was almost invariably laid direct upon the vellum or upon the coloured ground. In his (Mr. Crace's) opinion, the most interesting modern art of Egypt was to be found 300 or 400 miles further up the river than Cairo, in some of what might be called the provincial towns, which contained interesting specimens of coloured brickwork, sometimes inlaid with various kinds of tiles. These, and the very curious bond-timber, were quite worthy of illustration by any future architectural traveller to Egypt. As Professor Lewis had incidentally mentioned the Palestine Exploration Fund, it was interesting to know that the committee of that fund were anxious that he should extend his travels to Palestine, where his great knowledge of archæology would be invaluable.

Mr. R. Phené Spiers, in moving a vote of thanks to Professor Lewis for his paper, said he was particularly struck, when travelling in Egypt, with the strong resemblance which a modern block of Egyptian dwellings bore to an ancient pylon. In allusion to the mode in which the building artificer of modern Egypt performs his work, Mr. Spiers said it was precisely the same as that which prevailed in ancient times, as depicted on the ancient monuments. If a quantity of earth or other material had to be removed, a large number of men were employed, each carrying a small receptacle somewhat of the form of a pie-dish,—and he had even seen a cast-off English hat converted to the purpose. Such small receptacles were chosen in preference to hods or barrows, and consequently swarms of men were required. There was no doubt a great deal to deplore in the destruction which was taking place in all the buildings in Cairo. The mode of destroying a building was this: A mosque perhaps had one of its minarets out of repair; it was neglected until, by-and-by, a stone fell off and killed somebody. The whole building was then brought down by the run, and carriages found their way round the heaps of *débris* as best they could, until the stones were gradually taken away one after another. The inhabitants would neither restore the old buildings nor allow any one else to do so. Although their modern art was simply detestable, there was one building in Cairo, viz., the Mosque of Mehemet Ali, which was worth mention, but this owed its merits to its being copied from the mosques of Constantinople. It was, however, fast falling to pieces, owing to the shockingly defective state of the workmanship.

Mr. W. H. White, in seconding the motion, said it was the custom of our fathers to earn the citizenship of the world by visiting Cairo, and describing it as "the most Oriental city"; but now Cairo only appeared Oriental to those who had never been east of Bombay. On entering the city by the Suez Railway, the view of the pyramids was cut vertically by a factory-chimney, as ugly as any Londoner could possibly conceive. The city itself was full of houses with fronts of limestone, many stories high, and there were boulevards under the very foundations of the Mosque of Mehemet Ali; in fact, there was a touch of *ex*-propriation about it reminding one of Paris,—and that touch was very dear to the architect, particularly when he had happened to pass through the Egyptian Custom House, where the hand of *ap*propriation was so severely felt. Modern Mohammedan architecture, as seen at Cairo, was thoroughly inferior to the same architecture in North-Western India,—as inferior as electro-plate to solid silver. The bright red sandstone and brilliant white marble which dazzled the visitor to Delhi, and the delicate incised ornament of Ahmedabad, were represented in modern Cairo by paint and plaster. At the last meeting of the Institute, after the reading of Mr. Pullan's paper, some of the members seemed disposed to give up their cherished objections to stucco, but he did not suppose that on the present occasion they were prepared to swallow paint. He wished, with becoming humility, to offer a suggestion to the Foreign Secretary of the Institute; that suggestion was, that the Institute, without relaxing for one moment its extended grasp over Russia and Mexico, should enter into lively relations with some of our brethren in Cairo and its neighbourhood, and also with some of those who practised in the kindred profession, so that when the time came—and it was not far distant—there might be laid the foundation of an artistic intercourse which would be quite as beneficial to both Egyptians and Englishmen as that political intercourse which was inevitable in the no-remote future of Egyptian history.

The vote of thanks was carried by acclamation, and the meeting terminated with the announcement that the next meeting would be held on Monday, December 13, when a paper will be read by Mr. H. A. Darbyshire "On Dwellings for the Poor," with remarks by Mr. C. F. Hayward. This meeting will be special (for members only) for the first quarter of an hour, for the purpose of receiving, *pro formâ*, the report of the special committee on the affairs of the Institute.

New Church, Windsor.—On Thursday, the 25th ult., the memorial-stone of the new church in Bier-lane, Windsor, was laid by H.R.H. the Princess Christian, in the presence of the principal clergy and gentry of the neighbourhood. Her Royal Highness accepted a perspective drawing of the interior of the church from the architect, Mr. Stephen Wyborn, and at the same time expressed her desire to be present at the opening of the church, which will take place next Easter.

SOCIETY OF PAINTERS IN WATER COLOURS.

The fourteenth winter exhibition of "Sketches and Studies" (so-called, though the majority of the works are really finished drawings) is a very good one. It is true that one or two of the best names are unrepresented; but, on the other hand, we find matter for admiration, both in the Latin and English sense of the word, at the achievements of some of the leading members for what is only an *ad interim* exhibition. Look at Mr. J. D. Watson's contributions, for example. Here are no less than seventeen drawings, all worthy of the artist's reputation, many of them finished works, some of considerable size and importance, sent to this collection of "Sketches and Studies." Such indefatigable zeal is in itself worth note, and its results are no less so. Most of these works present the peculiar style of subject which the artist has made his own,—a nook of landscape, or a corner of a farmstead, with a figure which gives the key and forms the centre interest of the whole. The unity of feeling in these, the intimate relation between the landscape and the figures, both in regard to artistic feeling and scale of tone and colour, is perhaps more complete than in any contemporary work of the same class by English water-colour artists. Of those which illustrate specially this type of excellence may be mentioned "The Dragoon" (92), carrying on a parting flirtation with the dairymaid before he rides out from under the shadow of the entrance-archway; "The Grindstone" (101), a sketch with much power and feeling, where a conversation is carried on between a woman and a man as the former turns the wheel for the grinding; "His youthful Hosewell saved" (278), where the state of the said hose is examined by a worthy old couple with the solemnity and insight befitting the occasion. "A Tiff" (192) is a larger study, in thick opaque colour, of two fifteenth-century lovers at the crisis implied; the lady, in a "butterfly" head-dress, turns away from the expostulatory figure who addresses her. The harmony of colour, though sombre, is rich and effective. But the artist has been travelling a little out of his usual route in two or three subjects representing forest scenes, and having a somewhat more extended landscape setting for the figures than Mr. Watson usually allows himself; they are variously named,—"Touchstone and Audrey" (73), "A Dangerous Position" (119), "The Fallen Tree" (366), and one or two others, but the *motif* in all is the same; a woodland scene, with one or two figures in a smaller and less broad style than we are used to from the artist; the two last named are the best; the figures in "The Fallen Tree" are very carefully studied: the lady with the butterfly head-dress appears again here, seated on the fallen trunk, while her companion discourses to her. A small study, really a "sketch," in which landscape interest predominates, "Summertime" (23), is as admirable in its way as any of the larger works.

Mr. Alfred Hunt's contributions are not of importance in comparison with what he can do; "Dunstanborough Castle," "Capel Curig," and "Coniston Old Man" (362, 436, 441), are fine impressive little drawings showing his remarkable power in dealing with evanescent effects of nature. Mr. Albert Goodwin, after having his best works condemned to be "floored" or "corniced" by the hanging committees for some time past, has received the tardy compliment of a fine position for a work which does not seem to be at all equal to some former contributions, "Work among the Blue-Bells" (62); it is a peculiar and difficult subject in regard to colour, treated with great care and finish, but deficient in atmosphere and feeling. "Under the Fletchorn, Simplon" (35), by the same hand (one of the "corniced" drawings), shows a beam of sunlight over the middle distance more vivid and real than perhaps anything else in that way in the room; and an original and brilliant study is that called "Venetian Butterflies Spinning their Wings" (80), the butterflies being certain boats whose vividly-tinted sails make broken extensions and reflections of the same tints in the calm waters of the lagune. From this is to the open sea is a natural transition, and we find plenty for study in Mr. Powell's sea (56), almost cruel in its cold gleams and driving surf, and noteworthy for the careful drawing and movement of every portion of the water. A little study by the same artist, of "Reflection" (292), should be looked at. Mr. Oswald W. Brierley, who is "marine painter in ordinary to the Queen," justifies the title in one sense by sending nothing at all beyond "ordinary"; and a sea study by Mr. Birket Foster, with the favourite trick of white seagulls against a murky black sky, is a large example of the picture-book style. Miss Clara Montalba is at sea too, a very raging sea, with a quotation from Byron into the bargain (173); there is certainly power in this, yet it is power before which one must put a note of interrogation, for Miss Montalba has the same scale of tone and colour whatever and wherever she paints; her "Thames Mudlarks" (293) is a capital, freely-handled drawing, but there is no "Thames" in it at all. Her larger Thames picture, under the railway bridge at "Blackfriars" (250), shows serious deficiencies in the treatment of architectural detail both in regard to texture and perspective; as to the latter point, look at the pier of the roadway bridge seen in the background.

Sir John Gilbert renders brilliantly and powerfully the general character and costume of a certain type of humanity of a past day, as witness his capital and bold drawing called "Reconnoitering" (11), which has more power and less manner than many of his more finished works; but he seems to fail entirely in realising individual character. His "Hotspur" and "Prince Henry" (in Nos. 27 and 51) are, as ideas of the characters intended, enough to make Shakspeare turn in his grave,—they are like "supers" dressed up for the parts. Among painters of figure-subjects, Mr. Lamont presses to the front, and shows good drawing and character, with very repulsive colouring, in various subjects, of which "Out of Tune" (24) is the best, except, perhaps, "Spring Flowers," a smaller repetition of a work which was, if we remember rightly, in the Dudley Gallery a little while ago, and of which we spoke in praise at the time. Among other contributors of figure-subjects is Mr. E. K. Johnson, whose "Which Hand will You have?" (172), and "For You" (201), are both studies of girls of the would-be-young-lady type in surroundings of garden foliage, in the former case with an utter absence of shadow anywhere, which gives a singularly staring and unreal look to the scene. "The Anxious Mother" (32) (an old hen, namely, following the pretty girl who has taken up the brood in her arms), is pretty, and very carefully finished in every part. There is excellence of a much higher order in the figure subjects by Mr. Walter Duncan, whose "Lovers' Walk" (216), shows two figures in antique and rather grotesque costume parading silently the margin of a stream; in regard to colour and tone there is still more in his "Hundred Merry Tales" (237), apparently a reading from the *Decameron* by a man who leans over the back of a seat where two richly-dressed ladies are seated; whether it is a touch of sentiment, or a shock to her modesty, that makes the younger cover her face with her hand, is not very apparent; the expression of her *embonpoint* companion suggests the latter explanation. The same artist's "Cinderella" (155), which we take to be only a title for a figure study, is very original and striking in expression and *genre*. Mr. H. S. Marks sends a study for "The Bookworm" (168), and two or three other small sketches, whereof "Butterflies" (2) is notable for the complete outdoor effect obtained with little more than grey paper, and the easy and natural pose of the two figures.

A screen is filled with sketches and studies of the late Mr. Pinwell, including a tolerably complete study for perhaps his best work, the "Elixir of Love." In this not only are the disposition and colour sketched in, but the manipulation of some of the carefully-finished faces has been essayed beforehand. In others, the sketches are of the roughest, but quite intelligible in regard to the aim and feeling of each. The manner in which the action of the scene is conveyed is noticeable in such a sketch as "The Cock-fight" (422), where the character in both figures and birds is vividly given, though with mere dabs of colour. "Solitude" (407) is a scene perfect in feeling,—a girl with her back to the spectator gazing at a silent secluded pond,—though only a series of washes; possibly some of the feeling would have been "finished" out of it had it been completed. From the works of this late member to some of those who have lately become members, the transition is not quite encouraging. Of the more recent new members, Mrs. Allingham alone seems to keep her place. It is true this lady's merits have been a little exaggerated, she having the fortune to possess friends among that clique of critics who praise all their personal friends, and no one else; but such drawings as her interior of a scullery with a figure "Peeling Potatoes" (352), and her portrait of "Thomas Carlyle," seated in a garden with a cloak wrapped about him, and a very long clay pipe on the grass at his feet, are excellent in every way as far as they go; in the former the execution of detail is admirable, without any hardness or over-finish. That the artist has a sympathy for effects of another kind is proved by her powerful little sketch of the "Last House in Lynemouth" (240). Of the other recent members, Mr. Clarence Whaite seems to have settled down into a mannerism in the treatment of landscape, the results of which might be described as "symphonies in purple and gamboge" (to borrow a well-known artist's formula); Mr. Brewtnall, whom we suspected from the first of unfortunate leanings to a pretentious eccentricity of subject, has, we fear, stamped himself for good by sending such a production as "Crabbed Age and Youth" (227), a laboured joke, deficient in either humour, sentiment, or sound execution; and Mr. Radnor, whose *technique*, as exhibited again in "Idling" (333), is certainly admirable, as good as any in the room, has yet to show whether he can get beyond mere *technique*. Unless better material for new members is forthcoming, or better judgment shown in their election, the high prestige of the Society will suffer.

Among old exhibitors in the department of landscape who are keeping up their high standard of work, is to be noticed Mr. Dodgson, whose drawings are characterised by certain habitudes of execution which might be called mannerism, were not the aim and style of his work so completely in accordance with a true feeling for, and conscientious study of, nature. "On the Moors, Darnholm" (180), is the best of these. Mr. Edward Duncan's "Arthur's Stone, Gower, South Wales" (56), is a very powerful drawing, which, without being forced in effect, seems to tell from all parts of the room; other drawings by the same artist are of high merit. We must mention also with particular commendation, sundry works of Mr. Charles Davidson, in particular, two studies on "Wray Common" (89, 102), and one at "Red Hill,—Autumn" (224), which latter shows some of the finest and truest qualities of water-colour drawing. Mr. S. Read has a grand subject in "Holburn Head" (232), looking through a stupendous natural portal in the piled-up trap-rock to the distant sea; more might have been made of it; as a mere drawing it is good, but the sentiment seems to have been lost in the handling. Mr. A. P. Newton's "On Corpach Moss" (39) is a small picture made up of green turf, a wildly picturesque shieling, and a rainy sky behind, which is just perfect. Among out-of-the-way attempts may be mentioned Mr. Hale's very bold study of "Loch Broom, Twilight" (40), an indication of an effect almost impossible to realise on paper; and Mr. Jenkins's "Old Town in Sussex, Saturday Night" (37), a street view of a delightful rambling up-and-down old village lighted entirely from the lights in the windows, is an effect very well realised. Other old and well-known members are in their usual force with drawings alike certainly in excellence, but so much alike also in subject and treatment for many years past, as to leave no room for a new word to be said of them. But there is plenty to look at,—more than we have space to do justice to.

THE LIONS AT HOME.

Our heading is premature, perhaps, for the lions are not at home yet in their new house, but it is nearly ready for them. Visitors to the Zoological Gardens have noticed for some time past the long red-brick erection which has been in progress about a hundred yards from the present rather dilapidated-looking building in which the larger carnivora are lodged. "The new lions' house," which is now complete except in a few details of interior fitting, is a long and not too low apartment, entered by the public in the middle and at each end, lighted along one side with large windows nearly down to the floor, and on the other side bounded (as they say in the geography books) by a row of fourteen large dens. Before the dens runs an ornamental railing with a polished wood capping, to keep the spectators at safe distance, between which and the dens is the passage for feeding. Along the opposite side of the room run three tiers of stone steps for the accommodation of those who wish to get a better view of the animals when the place is full. There is plenty of floor space, however, for as many spectators as are ever likely to be there at one time. The apartment is covered with an open-timber roof, and there are

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skylights on the slope opposite to the den side; these, we presume, with the upright windows, are trusted to for regulating the ventilation, as there seems to be no provision for permanent or continuous ventilation except by opening the windows. We should certainly have supposed this would have been requisite, for the comfort of the spectators, if not for the animals who are now to be placed under cover, after having lived so long in open dens.

Opposite to the centre entrance for the public a door and passage lead, between Nos. 7 and 8 of the dens, to the back, where we find ourselves in a passage about 8 ft. wide running the whole length of the building, lighted from windows in the outer wall, and on the inner side showing a long wall with twenty-eight iron doors, in pairs, about 4 ft. from the floor. Each of the fourteen dens has a double chamber, divided across by a transverse wall, between it and the passage, each chamber having a door into the passage at the back, and into the main den in front. Each of the lions' houses, in fact, has three apartments on the ground floor, which by doors of communication can be thrown *en suite* or used as separate apartments. The smaller chambers, we believe, are partly intended as sleeping places in the colder weather, when the animals will be warmer than in the front den, and it will also be easier to make the floor comfortable with boarding or other expedients than in the larger area of the main den. The present dens, which, like the new ones, we believe, have cement on stone floors, have mostly to be boarded over in winter for warmth. But the ante-chambers at the back of the dens are also of use in separating the animals, or getting them out of the way for a time for cleaning and other purposes. The doors are of iron, not very thick, we should say (about one sixth of an inch,—rather less than more), in iron frames built into the wall. Those which open into the passage in the rear are hinged to open outwards, and fastened with a strong pin and staple; those between the "ante-den" and the den are hung portcullis fashion, and are raised and lowered by chains with counterbalance weights, worked from the passage, the chain connected with each inner door hanging down close to the corresponding outer door. The passage has a cement floor, grooved for the wheels of the trolly-cage used for transporting the animals. The method of introducing a lion or tiger to his new habitation will apparently be this,—the trolly-cage runs along the passage, stopping with its door close to the open door of one of the ante-dens. The inner door of this same den would be also raised, and the cage-door being then opened, the animal would naturally walk through to the apparent freedom of the front den, when a movement of the chain drops the inner door, and he is a prisoner. The cage can then be moved away, and the outer door closed and fastened.

The whole of the large dens have also intercommunication right along, by iron sliding doors, moved by a handle and a jointed bar, working through the pier which separates the dens, and kept in its place by a pin when the door is closed. The floors of the dens are laid with cement, with a fall to an iron gutter carried along the front.

As to the architectural style of the house, it is more ambitious than others in the gardens, but we do not think the lions have very much to boast of in regard to the picturesque qualities of their dwelling externally. There is not even the development of sculpture which is to be seen in connexion with the elephant's house, where the bust of the inhabitant is "done in stone" over his door. At the lions' house there is not even a bas-relief; a dull slab of stone only declares prosaically that this is "the new lions' house." It is rumoured, however, that lions are indifferent to the picturesque, and it must be remembered that the lions will not see much of the outside of the building; at least, it is to be hoped not. And we must say that not only are the new dens very much more roomy than the old, which is comfortable for the lions, but they seem very strongly and soundly constructed, which is comfortable for the spectators. The only loop-hole for the lions which occurs to us is this,—that there are no means before opening one of the doors into the back dens from the passage of seeing, first, whether the coast is clear. Of course, it is supposed that the keeper always knows where his lion is, but if he have, from the front, driven him into one of the two back dens and shut him in, may he not afterwards, at the back, inadvertently, or in a moment of forgetfulness, open the wrong door? In such a case an ordinary lion, in fair health, might see his way to make things very lively in the back passage for a time.

IRON VARNISH.

The very important functions which "iron" performs in modern architecture, having in most cases superseded the olden wooden constructions, need no longer be dwelt upon, since they are patent facts to every one. Still, the thorough preservation of its surfaces, consequently of the material itself, remains even at the present day an open question, and we think, therefore, that we may appropriately offer a few remarks on this subject, the more so since it has latterly received the attention of Continental architects.

By far the greater number of the so-called "compositions" having for their object the preservation of iron from oxidation or rusting are mostly composed of resinous or tar-ingredients; it is also perhaps needless to remark that most of these compositions are utterly worthless, whilst some of them are even injurious to iron. Up to the present time, we have not yet succeeded in finding a substance which, under the most sudden changes of temperature, could stick to the iron as well as a well-dried coating of oil-colour. Even in the very limited number of cases in which it is thought expedient and advantageous to cover iron-surfaces with such metals as are less given to the oxidising process, the oil-colour coating offers the *dernier ressort* when the metal coating has vanished with time.

Nevertheless, the iron oil-colour coatings, as prepared at the present day, have their own peculiar defects. It is not so very long ago since the lamented Fairbairn called attention to the fact that iron,—especially in those cases in which it was used for building purposes, where its preservation was of paramount importance,—did not receive the requisite protection from atmospheric influences, and that consequently great care should be taken in furnishing the material with a durable preservative coating.

It is generally known that the basis of all oil-coatings lies with the first coat or groundwork. If the latter is improperly or deficiently applied, then the efficacy of the entire coatings becomes very problematical, even if the subsequent coatings are properly laid on; for in such cases only a combination between the various coatings takes place, which, provided the groundwork does not stick to the iron's surface, soon becomes cracked, and later on shells or peels off. In former times miniums of lead were exclusively used for the ground-colour, and in more recent times miniums of iron, or the so-called "earthen colours," are employed, the chief ingredient of the latter being oxide of iron. Much discussion has been going on regarding as to the greatest efficacy of the two, and it has been frequently asserted that the miniums of lead, on account of their decomposing, caused an injurious effect on the oil-colour coatings. Dr. E. Wiederhold has given much attention to this subject, and has analysed various old iron oil-colour coatings wherever practicable, but he states distinctly that he has never been able to observe a decomposition of the miniums of lead, although he has remarked similar appearances with regard to the destruction of the coating, and the covered metal surface, in several cases in which the grounding was partly performed with minium of lead and partly with minium of iron colour. He thinks, therefore, that we are on the wrong track in seeking the reason why oil-colour coatings do not show the desired durability on iron, and believes that the result desired could be easily attained by a proper consistency of the oil varnish.

Three conditions ought to be fulfilled if the grounding is to be hard and durable, and these are:—

1. The ground coat should possess a good drying quality.
2. It should be a thin liquid; and
3. It should only be sparingly applied.

By a good drying quality, we understand that it should dry better than the ordinary oil varnish, so that the dew which is generally formed towards evening may not form a watery coat on the iron before the ground-colour has hardened, or, at all events, settled on its surface, otherwise a certain emulsion of the varnish takes place which prevents the oil colour from drying into an homogeneous mass. This fact, which has hitherto not received the attention it deserves, is well known in other forms to practical men; so, for instance, when an oil-colour coating becomes sprinkled with water, be it either by rain or otherwise. If the coating of iron is performed in the open air, a watery deposit on the iron surface may also be caused by the material itself. Although the heat-radiating properties of iron, like those of other metals, are insignificant in themselves, still the experiments of Melloni have shown that these properties are considerably increased if the metal surfaces are covered with a varnish coating. It is, therefore, quite possible for iron in such cases to cool down below atmospheric temperature under a cloudless sky.

The ground colour should be thin, so that all inequalities of the metal's surface may be thoroughly passed over and rubbed in. If the necessary care be not taken in this respect, and this may happen very often should the colour be of too thick a nature, then, with the subsequent cracking of the overlayers, caused by the expansion and contraction of the metal itself under changes of temperature, the atmosphere and moisture will gain access through the fissures, and gradually destroy the whole of the coating by rusting or oxidising the metal's surface, besides weakening the latter.

Lastly, the colour should only be sparingly applied, because varnish coatings applied to iron, or other non-porous surfaces, dry and harden very slowly into a solid mass. If the coatings are thickly laid on, then a skin first forms itself in time, under which the colour remains moist. This fact is clearly demonstrated by allowing a drop of oil-colour to fall on a dried painted surface, when the interior of the drop will remain long moist, although the outside appearance of the drop may seem to prove the contrary.

From the preceding remarks it is evident that the ground varnish is the chief component to the satisfactory solution of the three fore-mentioned conditions. We are, we think, not assuming too much in declaring that not a single varnish as at the present day introduced fulfils these three conditions in a satisfactory manner. Quick-drying varnish has hitherto been obtained by two methods. It is either boiled thick, or siccatives are added to it. Thick boiled varnish is, however, of no use for iron-surface coating, because it is impossible for the purpose in view to prepare from such a varnish colour of the required liquidity. Although the consistency of the paint might be greatly reduced to the required pitch by the addition of benzine or turpentine, still the evaporating cold which would be caused by the volatility of these addenda would so lower the temperature of the coated surface as to form a watery deposit on the latter, which would have the same injurious effects which we have already pointed out. An equivalent result is obtained if the ordinary varnish possessing the requisite liquidity is supplemented with siccatives to give it greater drying qualities.

Amongst the various preparations or compositions now introduced for iron or metal varnishes the best, possessing the requisite drying property are merely solutions of liquid boiled varnishes in turpentine. It is announced that the fore-mentioned Dr. Wiederhold has succeeded in effecting an improved process for the making of these iron-varnishes, by means of which he obtains an oil varnish of the ordinary liquidity and retains the specific advantages of linseed varnish, without the admixture of resinous or other strange substances used at the present day for this purpose.

NEW PASSENGER AND CARRIAGE DEPÔT AT ROTHERHITHE FOR THE SOUTH EASTERN RAILWAY COMPANY.

The South-Eastern Railway Company are erecting an extensive new passenger and carriage depôt at Rotherhithe, on a plot of land upwards of 3 acres in extent, situated principally between the company's main line and that of the London and Brighton Company, immediately opposite the South Bermondsey Station of the last-named company. The area of the new depôt, however, extends beyond the piece of land just named, and is connected with another piece of land having its frontage to the Rotherhithe New-road by lines of rails passing under several of the arches of the London and Brighton line, at a low level. On one portion of the land a large carriage shed has been erected. It is 340 ft. in length and 112 ft. in width, consisting of two bays, each 56 ft. wide. Eight lines of rails have been laid down within the shed, giving storage-room for about 500 carriages. The roof of the shed is supported in the centre by 24 strong iron columns. It is formed of wood on each side with a large proportion of glass in the centre

for light, and is also further lighted on each side by twenty arched windows, 16 ft. in height. The extreme length of the depôt is upwards of 900 ft., and its width 600 ft., and on this area sixteen lines of rails have been laid down, several of the lines on the south-west side passing under the arches of the main line of the Brighton Company. On a portion of the site a station-master's house and offices, together with a telegraph and general offices, are intended to be erected; whilst that part of the land fronting the Rotherhithe New-road, on the north-west side of the Brighton line, is intended to be appropriated to carriage-building and repairing, for which purpose carriage-building premises, including machine-shops, engine-houses, and other structures of a like character, will be erected. The large carriage-shed before described will be utilised for the storage of the carriages engaged in the company's traffic, which will to a great extent be brought to it when the day's train-service is over, and it will likewise be further used for the purpose of making-up excursion and other special trains. When the depôt is completed the intended enlargement of the Bricklayers' Arms Station will be commenced. The buildings on that part of the station formerly used as a passenger-station, and since used for the storage of carriages, will be taken down, and the site added to the goods station, in addition to the 4 acres of land which have been acquired for its enlargement.

THE EUROPEAN ARTISAN IN GREECE.

The usual daily routine for a European artisan in Athens, if he be a bachelor, is to take a cup of coffee with some bread on rising in the morning. At noon a meal is put before him consisting of soup with bread, of boiled beef with one vegetable, and of one other dish. The butchers' meat is not of a very nourishing or of a very tempting quality, but a person boarding at an hotel, for a fixed sum per day receives at a meal a sufficient quantity of food to satisfy his appetite; the market supplies vegetables, including spinach, cauliflowers, tomatoes, onions, potatoes, and French beans, in abundance; fruit likewise in great plenty, including grapes, apples, pears, melons, oranges, and figs; whilst wine is within the reach of all classes at a very cheap rate, a quantity rather less than a pint being as a rule supplied at each meal to each person. The European artisan, after an abundant midday meal such as indicated, resumes his work until nearly sunset, when he returns to his eating-house for another meal of one hot dish with bread and wine.

The demand for skilled labour in Athens is that of a city of about 50,000 inhabitants, having a port (the Piræus) containing about 10,000 more, and an out-port (Ergasteria) where 2,000 workmen are employed. There is also the flourishing port of Syra, at which town of 20,000 inhabitants many wealthy Greeks permanently reside, and which an artisan established at Athens could reach at the cost of 6s.

Native Greek skilled labour is greatly inferior in almost every branch to the average English, French, German, or Italian labour in the corresponding branches,—the departments in which Greek workmen show most skill being stone-cutting and shoemaking. The Greek population are, however, for the most part essentially a poor community, and are not accustomed to any higher style of workmanship than that which Athens presents. Thus the great majority of persons prefer indifferent native workmanship to greatly superior foreign skilled labour, provided the former can be procured for less cost. It would, therefore, appear to be scarcely worth the while of such British artisans as may not be able altogether to distance native workmen in the quality of their work to come to compete with them in Athens, unless, indeed, the Englishmen be prepared to accept the same amount of remuneration as is given to Greek members of the same crafts. It would not, for instance, be worth the while of an English shoemaker or mason to come to exercise his calling at Athens unless he can see his way to benefiting himself by accepting the prices given to a Greek shoemaker or Greek mason.

The Greek cabinet-makers, masons, carpenters, and painters earn from 3s. 4d. to 3s. 9d. a day,—the painter during August and September earns 5s. 6d., the latter being the month when people enter their newly-rented houses, and consequently the one during which the demand for the finisher is at its height.

The expenditure of a Greek mason averages about 20s. a month,—that is, 2s. for lodging (some six or eight men of this class occupy the same room), 13s. food, 3s. clothing, 6d. washing, 1s. 6d. extras. The expenditure of an average Greek artisan is somewhat higher, and may be estimated at 38s. a month; that is, 6s. 6d. for lodging, 22s. for meals, 6s. 6d. for clothing, and 3s. extras.

On the other hand, it would cost the average European artisan (not English) resident in Athens, to live, 3*l.* 4s. 8d. a month; lodging, unfurnished, per month, 5s. 8d.; meals, 42s.; washing, 8s. 6d.; clothing, 5s. 8d.; pocket-money, 2s. 10d. With reference to English artisans the following estimate would in most cases be found near the mark. Cost of furnished room per month, 20s.; food, 2*l.* 15s.; washing, 7s. 6d.; pocket-money, 3s. 6d.;—total, 4*l.* 6s., in addition to which sums are to be considered the following items,—cost of one suit of clothes a year, 35s.; three pairs of shoes, 33s.; linen, &c., 38s.; socks, handkerchiefs, &c., 37s.;—total, 7*l.* 3s. With extras the total expenditure would amount to about 5*l.* a month.

The experience of married workmen is to the effect that the expenditure of a man living with his wife in his own rooms need not be very much in excess of that which an unmarried man incurs by boarding at a small hotel. An unfurnished room may be hired for 8s. 6d. per month; the wages of a servant would be about 12*l.* a year; and the boarding of three persons in a house would not probably exceed in cost the amount paid by one person for his board at a hotel. Indeed, the average expenditure for the provisions consumed in a merchant's house by himself and two servants is usually set down as 4s. a day.

As to the amusements or means of recreation which Athens holds out to an English artisan, there are but few indeed. During the months of June, July, August, September, and October, the sun is so powerful as to render open-air exercise almost intolerable unless taken in the morning or evening; and the only apparent recreation for the artisan is to frequent one or other of the *cafés chantants* at night, there to drink beer and listen to German instrumental and vocal music. In the winter months there is a performance at the theatre alternately in Greek and French or Italian. English artisans arriving in Greece would find a language strange to them spoken, and, with the exception of a few engineers connected with the railway, they would find scarcely any of our countrymen.

There are at Athens, or in the neighbourhood, a not very large number of French, German, Italian, and English workmen employed, either in connexion with the Piræus Railway, with the Athens Gasworks, with road-making, and one or two other undertakings. The Englishmen are chiefly men skilled in making or working machinery. At the lead-melting works of Laurium, or Ergasteria, there are about 2,000 workmen employed, of whom 80 are foreigners,—French, Italians, and Spanish. The Spaniards receive as miners, 6s. to 6s. 8d. a day; the Frenchmen and Italians, as overseers and artisans, rather less, whilst the living of all costs 2s. a day. The native workman earns about 2s., and lives on about 8d.

The demand for English labour would seem to be only for men skilled in making, managing, or repairing machinery, and for locksmiths, bell-hangers, house decorators, sign-painters, and cabinet-makers. As to the quality of the workmanship in Athens, that can be estimated from the following account of house-renting, which is both interesting and instructive. When a year's house-tenure begins, it is so shattered and disfigured as to be, in the English sense of the word, uninhabitable, until it has undergone a thorough repair from the roof downwards. Yet at that particular time there is so great a demand for house-painters, glaziers, door-handle setters, that the new tenant is forced to go to an hotel, there to live for two or three weeks after possession of the house has been given up. In one case a tenant had to expend 10*l.* for the decoration of a set of rooms which he rented at 72*l.* a year, this being in addition to the amount expended by the proprietor for what he called "putting his house into a state of thorough repair." With the first rains, however, the water came in in streams through the ceilings of two rooms, as well as through that of a staircase, and the window of a passage, thus leaving a great part of the painter's work to be done over again. The windows of the rooms alluded to, in common with those of almost all Athenian houses, are very far from excluding rain when wind and rain play together upon them; and as the Venetian-blinds do not fit their frames, the result is that, on the occasion of each high wind, one or several panes of glass are broken. The occupant of these rooms requiring the wire which pulled a broken water-pipe reset, had to send to a French pipe-layer six times before the latter could find leisure to execute a piece of work which the person who had to pay for it at the rate of 18s. considered would have been overpaid for at 6s. elsewhere.

As to the means of obtaining furniture, the possessor of empty rooms has to purchase at sales, when these occur, such articles as may be presented, without regard to his taste or to their corresponding with each other. The German cabinet-maker is often unable to execute an order for months. The members of the consular body have, in a great measure, to furnish their houses from abroad, but they would of course prefer to employ upholsterers and cabinet-makers for the purpose in Athens, if they could find men capable of supplying their wants, which they cannot do.

The general diffusion of education in the Hellenic kingdom seems to stand in the way of the quality of skilled labour becoming improved. Education, in all its elementary branches at least, costs in Greece little or nothing, and the consequence is that thousands of men who, under other circumstances, would take their places in the ranks of productive industry, think themselves fitted for some more intellectual calling. And the result is that, whilst every deputy in the representative chamber, and every member of the Government, is notoriously besieged by a host of applicants for even the least remunerative public posts, the labour market has to be largely supplied from Crete and elsewhere in Turkey.

STAMPS ON CONTRACT PLANS AND SPECIFICATIONS.

Architects have been in the habit of preparing memorandums of agreement for small works, to be executed under hand only, and using thereon the sixpenny adhesive stamp, but stamping the agreement only, and not the plans and specification which are referred to in the agreement as "the plans and specifications exhibited herewith, and marked respectively A and B." It is now said by some that the unstamped specifications and plans cannot be received as evidence in a court of law without the payment of a penalty of 10*l.* Having been asked if it be necessary that the plans and specification should be stamped, and, if so, should every plan be stamped, seeing that, although they form a series, they are drawn on separate sheets of paper, and are not usually fastened together, we submitted the question to the Board of Inland Revenue, and are enabled by their courtesy to append the following reply:—

"Inland Revenue, Somerset House,
London, W.C., Nov. 27, 1875.

Sir,—In reply to the inquiry contained in your letter of the 15th inst., I am directed by the Board of Inland Revenue to inform you that if the specification and plans therein mentioned are fastened together, and annexed to the agreement under hand to which you refer, they are covered by the sixpenny stamp on the agreement.

If they are fastened together, but not annexed to the agreement, they would require an additional sixpenny stamp; and if they are not fastened together, each separate document would require a sixpenny stamp.

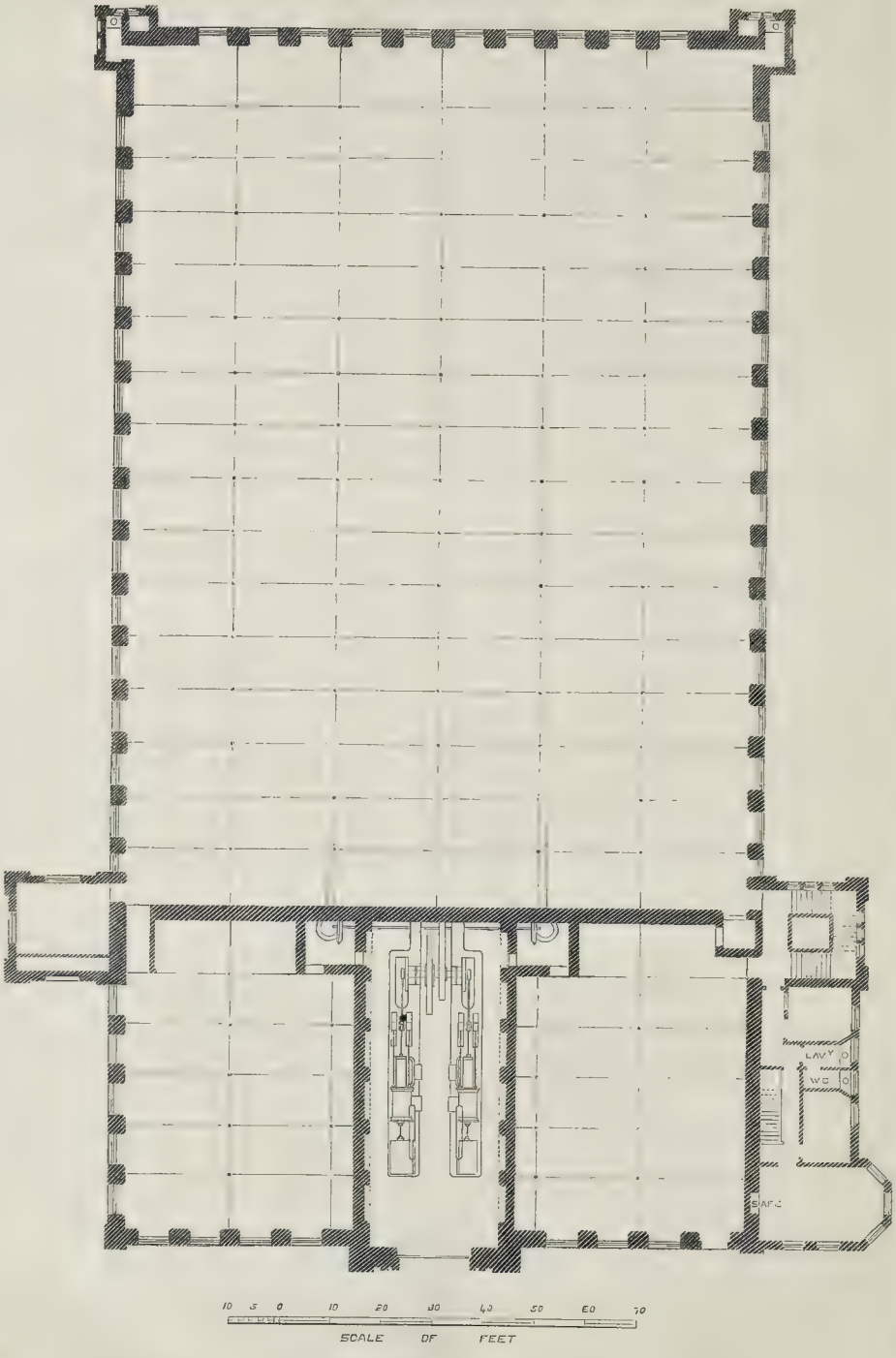
I beg to refer you to the Stamp Act, 1870 (33 & 34 Vict. cap. 97), schedule,—Tit., 'Schedule, Inventory, &c.'

I am, Sir, your obedient servant,
Fred. B. Garnett.

George Godwin, Esq."

NEW SMALL-POX HOSPITAL FOR GLASGOW.

Although no case of small-pox has occurred within the municipal boundaries of Glasgow for about two months back, the authorities have wisely determined to take time by the forelock, and to make more adequate and satisfactory preparations for any possible epidemic by the erection of a new small-pox hospital at Belvedere, outside the city, and in the vicinity of the Fever Hospital. At present small-pox patients are treated in the existing hospital in Parliamentary-road, the centre of a crowded locality, and this



THE UNITED MILL, OLDHAM.—*Plan.*

has given rise to considerable public discussion. Although these complaints resulted in preparations to erect a new hospital, the old building will be maintained in the event of its being required for any future emergency. The new hospital at Belvedere, to the south-east of Glasgow, and on the banks of the Clyde, consists of five pavilions, which are already partially erected, and which run north and south, with frontages to the east, and intervening spaces of open ground. Each pavilion is divided into four wards, two for acute cases in the centre—having no communication except from the outside—and two for the convalescents, one at each end. There is a total accommodation of 110 beds for acute, and fifty beds for convalescent cases. Nurses' rooms are attached to each pavilion, the necessary offices being approached from the entrance halls. In constructing the pavilions, which are almost entirely of brick, the outer wall is made 14 in. thick, and is followed by an inner air space which is secured by a second or internal wall 4½ in. in thickness. The object of this plan, which is adopted throughout the building, is to prevent damp penetrating from the outside. A current of air is introduced through gratings placed a little above the ground level, and escaping by smaller openings near the roof. Means have been adopted not only to prevent water rising from the foundations up to the walls, but to keep surface water from running into the foundations. The most approved sanitary principles have been applied to all the internal arrangements. Hot-water pipes have been carried round the building, and by appliances in each ward the temperature can be easily regulated. Ventilating appliances rise from the centre of the ceiling, and in addition, an iron ventilator, the spaces of which can be opened and closed at pleasure, is so placed near the apex of the roof of each ward that the vitiated air is drawn into the chimney. The roof is of iron, with wooden purlins, and lined with dressed flooring, while outside, between the woodwork and the slates, is placed a lining of felt cloth, for the prevention of damp. The floorings will be laid with oak. To the south-east will stand a large and commodious washing-house, while the matrons' and medical superintendent's houses, and dormitories for the nurses, to the number of forty, will occupy a position at the north-east corner of the grounds, close to which will be the morgue. There will be a large kitchen opposite the north end of the central pavilion. The main lodge will stand fifty yards off the London-road, communication being afforded by a wide spacious street, on either side of which a shrubbery will be planted.

The cost of the new hospital, it is estimated, will be upwards of 22,000*l.*

DWELLINGS OF THE DAMASCENE WORKPEOPLE.

THE Damascene artisan or handicraftsman can obtain a house of four or five rooms for 5s. to 15s. a month, built of a composition of mud and pebble. It is conducive neither to health nor comfort, with low roofs, situated in narrow dirty lanes, exposed to heat in summer and to cold in winter, without any attempt at scavenging or other sanitary precautions,—no furniture worthy of the name,—the life of the inmates is, indeed, very miserable; but neither better nor worse than that of their fellows in other purely Oriental cities.

The artisan's average wages are from 2s. to 2s. 6d. a day, according to the importance of the occupation in which he is engaged. His diet consists of fruit, vegetables, rice, oil, and bread. Meat is to him a luxury to be indulged in only on rare occasions. The luxuriant vegetation of the plains, however, enables him to obtain the necessaries of his existence at a very low cost, and leaves him a margin for rent and clothing and other expenses.

The assistants and labourers in the various trades earn from 1s. to 1s. 6d. per diem. The means at their command necessarily imply a mode of life far inferior to that followed by the master workmen as far as regards food, clothing, and lodging. If the labourer be a Christian, and unmarried, he shares a room with others of his fellows in a like position. If married, he has a room to himself, for which he pays next to nothing. His furniture is a rug or an "abba," a mat, a few crockery utensils, and his bed,—a mat in summer and a rug in winter. A moslem of this class, if unmarried, lodges in the khans, where the accommodation costs ½d. or 1d. a night. His food is obtained at one of the many cheap cookshops with which the city abounds.

The Damascene workman is an effeminate creature, contented with his lot, of no ambition. Happy when he has gained a few piastres, he shuts his shop and betakes himself to the gardens or the coffee-shop, where he whiles away his time until the exhaustion of his little profit warns him once more to return to work. Even if he be engaged in one of the trades paid by the job, he still preserves his apathetic, listless aspect, and continual supervision is necessary to make him perform his work within a reasonable time.

The superior articles of Damascene workmanship, for which this city was formerly renowned, are now seldom produced. The silk trade, once the chief support of Damascus, has, in consequence of heavy imposts, dwindled down until its productions are sufficient only for local wants. The rich carvings and gildings, mosaic work in marble, stone, wood, and glass, and the various intricacies of the stalactite and the honeycomb style of ornament with which the rich Damascenes were wont in better times to adorn their houses, are giving way to simpler and less costly modes of decoration. Many of the old native manufacturers have had to yield to foreign competition, and they are, consequently, confined to those articles which, by their inferiority or insignificance, have not invited rivalry on the part of the Western workshops. The agricultural portion of the inhabitants have a direct interest in the working and produce of the ground they till, the land in the neighbourhood being farmed on the share system. The class of farm-labourers is, therefore, almost unknown. The peasant lives in a mud-house; his furniture, a few pots of earthenware; his bed, a mat; his clothing of the coarsest native manufacture; his wife adds by her spinning to the household comforts; his fire is fed in winter by Indian corn-stalks and almond-stones; his light is produced by the oil of the castor-plant; his food is of the most primitive kind, and is entirely raised by his hand: barley and pea-bread, with fruit and vegetables, being his sustenance.

FLOODS AND BRIDGES.

THE recent floods have perceptibly told on the bridges in several counties, and those streams that have tidal currents appear less subject to damaged bridges than those rivers that merely flow into the sea and drain large surfaces of land.

The county of York is a great sufferer from the floods; and, somewhat suggestive appears to be the fact that the more ancient the bridge the stronger the structure. As an instance, one of the oldest bridges in England is the stone structure over the River Wharfe, at Tadcaster, and the volume of water and its torrent have been something grand and terrific, yet the stout old bridge is, apparently, as sound as ever.

At Malton, last week, the authorities met to take into consideration the damage done by the floods which had prevailed in that district during the past few weeks. A deputation waited upon the Board to complain of the great inconvenience and trouble felt by the residents in one part of the borough of Malton through being shut off for five days from direct communication with the town of Malton, the road leading to their part of the town being unpassable for the flood.

Captain Copperthwaite, one of the directors of the North-Eastern Railway Company, then called attention to the insecure state of the county bridge connecting the North and East Ridings, and spanning the River Derwent at Norton, which has been so much affected by the floods as to be positively dangerous, although considered a massive stone structure. The foundations are so weakened that it is expected an entirely new bridge will have to be constructed; and though the re-erection is a matter for the consideration of the two Ridings, it was necessary to take action without delay.

Mr. Seth Tinsley, builder, said that when the flood was at its height, he was upon the bridge, and distinctly felt the structure vibrate.

The bridges in the county of Durham have also undergone a severe shaking; and the River Wear was dangerously swollen: the flood eventually brought down a bridge near the city, and which spanned the River Dearness.

The north side of the east abutment, near the North-Eastern Railway viaduct, had the foundations washed out, and the parapet wall and other masonry fell into the water beneath. A portion of the arch came away with the subsiding abutment, but the rest of the structure remains.

The inconvenience and loss sustained by this damage to bridges all over the country has at least proved to the public the inestimable value of good bridges, and those who construct them.

UNITED MILL, OLDHAM.

OLDHAM has long been celebrated for the extent of its cotton manufactories, and for a considerable number of years has taken one-third of the cotton produced throughout the world. Here also co-operative enterprise has been pre-eminent, but during the early part of 1874 an extraordinary movement in this direction took place. From thirty to forty new companies (all under the Limited Companies Act) were projected, and so great was the mania for buying and selling shares, that the share-list of a new company opening in the morning was in some instances closed within a couple of hours, having obtained applications for the requisite amount of capital,—generally from 60,000*l.* to 80,000*l.*

The mill illustrated in our present number is one of these emanations from co-operative enterprise. The share capital is 80,000*l.*, in shares of 5*l.* each, and although the office was only open during one day for share applications, the value of the stock applied for amounted to between 300,000*l.* and 400,000*l.* The title given to the company arose from the fact that the Board of directors was chosen from the united Boards of various limited cotton-spinning companies. The mill is 80 yards long by 43 yards wide, and is practically of six stories in height, one portion of the cellar being 14 ft. high.

The construction of a cotton-mill, as here shown, is that of a large rectangular building, divided into bays of suitable dimensions by vertical cast-iron columns, which support transverse beams, also of cast-iron. These latter carry wrought-iron joists placed about 3 ft. 4 in. apart. From the flanges of the wrought-iron joists are sprung segmental brick arches, filled up and levelled at the haunches with cement concrete, upon which is placed the boarded or flag flooring, as required.

The building, when ready for the reception of the machinery, will have cost about 50,000*l.*; and, including the latter, the cost will reach to about 130,000*l.*

The contractors for the erection of the mill are Messrs. Robert Neill & Sons, of Manchester; for lodge making and foundations, Messrs. S. Dunkerley, Son, & Co., of Oldham; the engines, of 400 horse-power, are by Messrs. Pollitt & Wigzell, of Sowerby Bridge, and the piston speed will reach 600 ft. per minute; the boilers are supplied by the Fairbairn Engineering Company (Limited), of Manchester; the economisers are by Messrs. Green & Son, of Wakefield and Manchester; and the machinery is by Messrs. Platt, Brothers, & Co. (Limited), of Oldham.

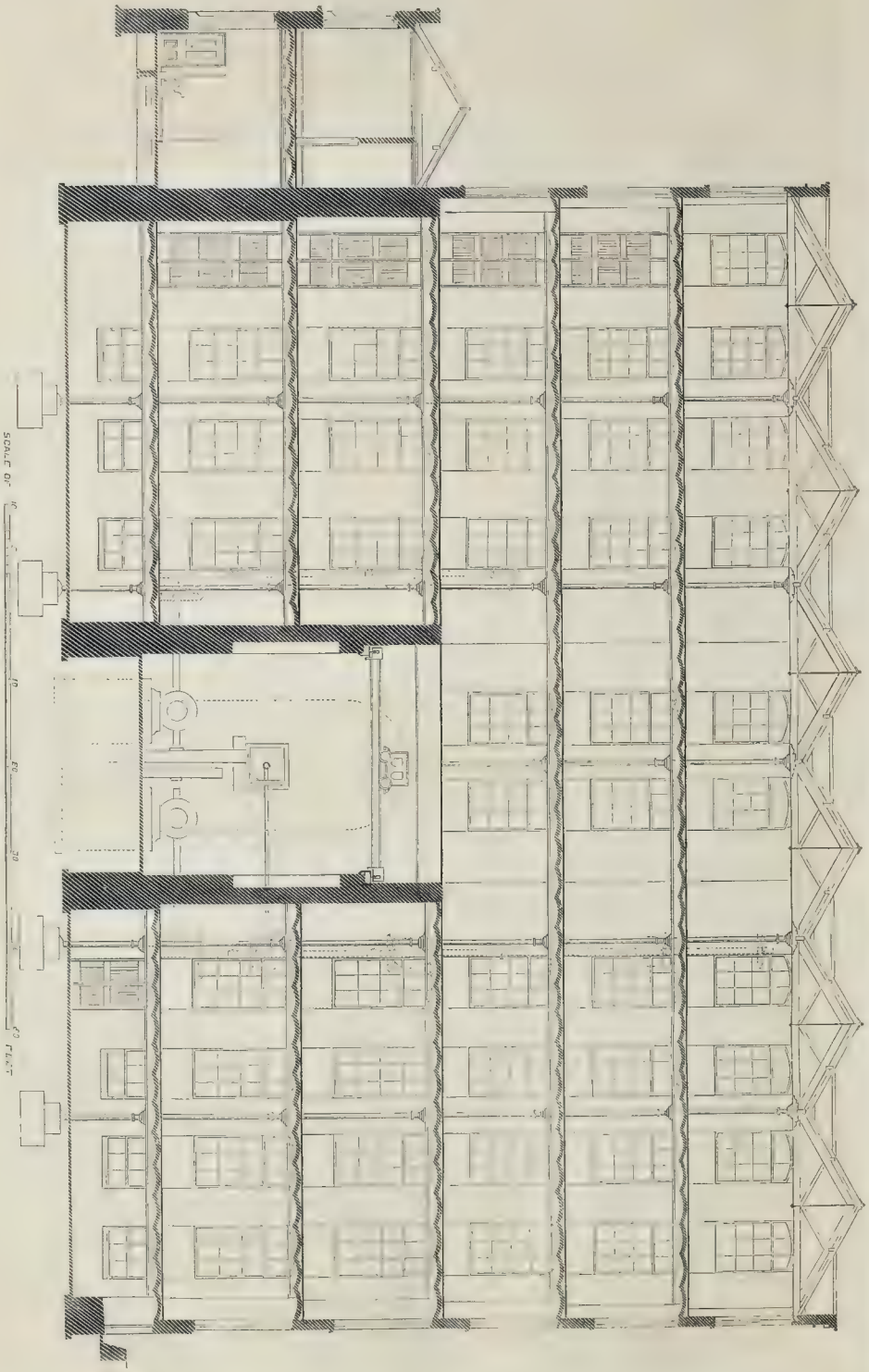
Mr. Thomas Mitchell, of Oldham and Manchester, is the architect. The supervision of the work is under Mr. John Handford, clerk of works.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

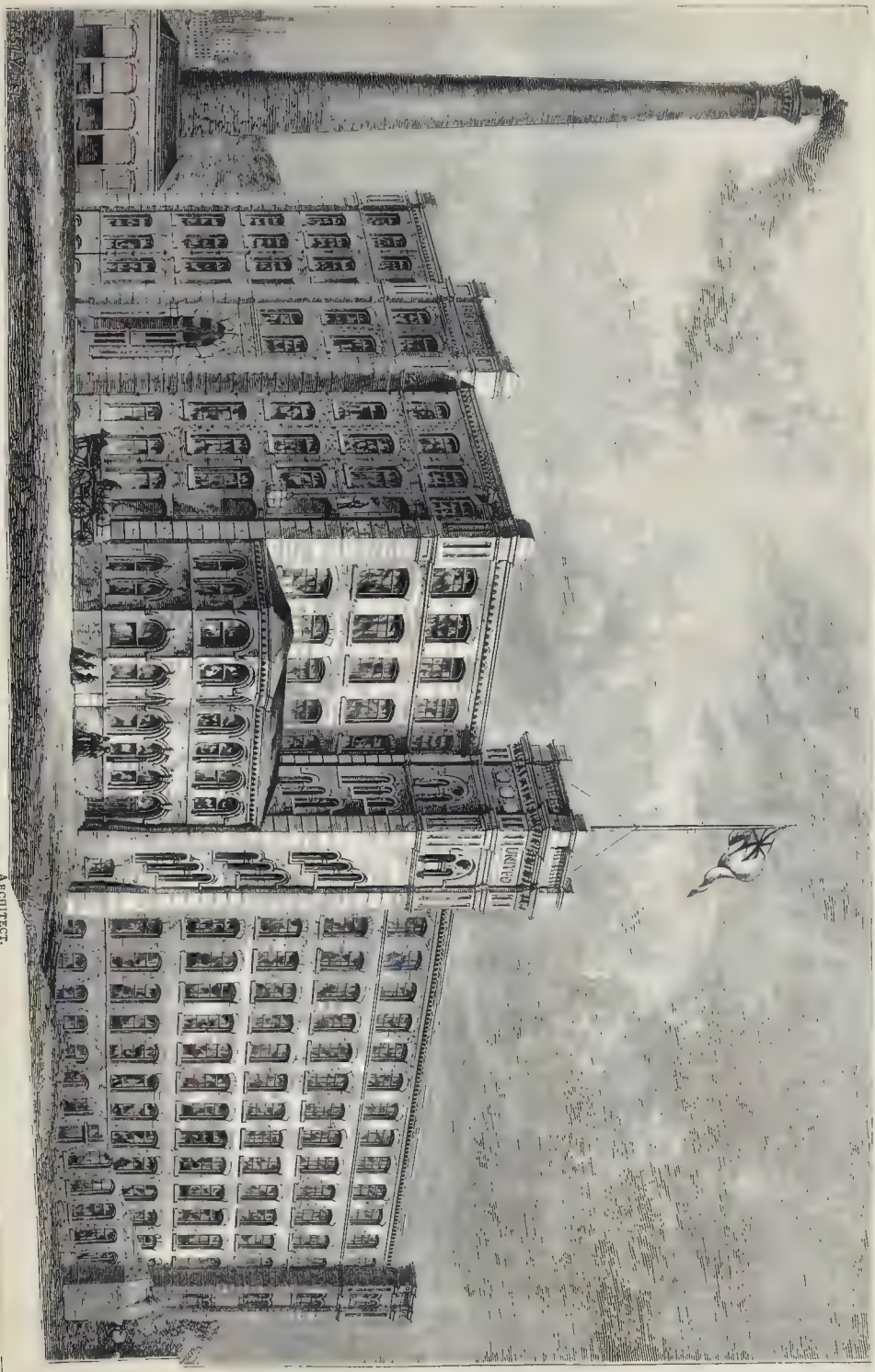
SESSION 1875–76 of this Society will commence on December 9th, when the President, Mr. W. F. Butler, A.I.C.E., will deliver an opening address. The following is the syllabus of papers for the Session:—

Dec. 23rd, 1875.—"London Bridge and its Traffic." By Mr. A. T. Walmisley, C.E.
Jan. 13th, 1876.—"Trade Unions." By Mr. Charles H. Rew.
Jan. 27th.—"The Testing and Strength of Materials." By Mr. R. M. Bancroft.
Feb. 10th.—"Permanent Way of English and Foreign Railways." By Mr. W. C. Street.
Feb. 24th.—"Aquaria and their Construction." By Mr. C. H. Driver, architect.
March 16th.—"The Hearworthy Bridge over the River Wye." By Mr. C. W. Whitaker, C.E.
March 30th.—"Concrete Flooring." By Mr. Alexander Payne, architect.
April 13th. — "Hydraulic Machinery." By Mr. Thomas M. Gray.
April 27th. — "The Spectroscope." By Mr. B. Haughton.
May 11th.—"Railway Rolling Stock." By Messrs. P. Burrell, C.E., and H. Valpy, C.E.
May 25th.—"Steam Tram Cars." By Mr. E. Perrett, C.E.

The annual meeting will be held on June 15th. Visits to various works in progress will be made during the session.



THE UNITED MILL, OLDHAM.—*Section.*



THE UNITED MILL, OLDHAM.—MR. THOMAS M[illegible], ARCHITECT.

A VISIT TO GRESFORD CHURCH AND NEIGHBOURHOOD, NORTH WALES.

THE three finest Perpendicular churches in North Wales are St. Giles's, Wrexham; St. Mary's, Mold; and All Saints', Gresford. Of the former two, detailed notices will be found in the *Builder*, vol. xxxi., p. 809, and vol. xxxii., p. 811, respectively; the following account of Gresford Church completes the Welsh architectural triad.

Gresford is said to derive its name from the four lanes, at the convergence of which the village is built. Another conjecture is that the word "Gres," corrupted from "Croes," a cross, is referable to an immense cross, which stood on the side of the road leading from Wrexham to Chester, and about an eighth of a mile from the village, the pedestal of which,—a large block of stone,—is still to be seen. The derivation of the name is of no moment,—

> "What's in a name? That which we call a rose,
> By any other name would smell as sweet."

The scenery of the Vale of Gresford is beautiful, with the River Alun winding through it, and the bold background of the Welsh hills, the vale royal of Cheshire, with the old city in the distance, gives picturesqueness to the view.

The great object of local attraction is the church, dedicated to All Saints. The land was given by the six sons of Ithel; and Ithel was the grandson of a lady known in those times as the heiress of Dyffryn, the vale of Clwyd, and who had extensive estates in the townships of Gresford and Allington.

The rectory of Gresford formerly belonged to St. Stephen's College, Westminster, built and endowed by Edward III. It was afterwards possessed by the Dean and Chapter of Westminster, who have sold it to the Ecclesiastical Commissioners.

Rickman says that the church "is a very beautiful Perpendicular edifice, with a lofty tower of fine composition, and deserves careful examination."

The church consists of a nave, with aisles, south porch, chancel, and aisles, formerly chapels, and a square tower at the west end, containing twelve bells, formerly reckoned among the seven wonders of Wales. The dimensions of this church are said to be as follow:—Nave, 73 ft. by 25 ft.; chancel, 37 ft. by 25 ft.; aisles, 85 ft. by 12 ft.; and the chapels, 25 ft. by 12 ft. The nave is separated from the aisles by piers, each pier consisting of eight columns, with moulded capitals and bases, supporting pointed arches, with a clearstory over, having windows with depressed arches, in four trefoiled lights. Quarry lights would much improve these windows, in lieu of the present ugly modern glass. The roof is a low span, of timber, and open, with rafters and tie-beams moulded, and knees with angels supporting shields, resting on stone corbel-heads. The spaces between the rafters are subdivided into squares, with bosses at the intersections. The pulpit stands on the north side of the nave, against a pier, at the east end. It is of an octagonal form, modern, and of Caen stone. The lectern, at the east end of the nave, is of brass, in the form of an eagle with wings expanded. The floor is paved with large red tiles, placed diagonally, with black borders and white angles. Two small white marble slabs in the floor record the remains of Thomas Boydell, of Trevalyn Hall, date 1804; and Margarette Golightly.

In 1867, the west gallery and all the high pews on the ground-floor were removed, and new solid oak benches, with poppy-heads, were introduced. As in Mold church, there is no tower arch, but only the plain side of the tower, and a small pointed doorway, with chamfered arch. On the south side is a mural monument to Elizabeth, widow of John Williams, of Gwersyllt Park, date 1855. On the floor, in front of the above, is a plain marble pedestal, inscribed John Williams, date 1848. On the pedestal is a female figure, kneeling. On the north side is a mural marble tablet, carved, to Anne, wife of Hugh Maxwell Goodwin, of Mount Alyn, date 1842.

The ground-floor of the tower is used as a porch, with a seat on each side. In the side walls are arched recesses, with tombs, formerly containing recumbent effigies. In an upright position are two stone effigies, said to have been removed from the vicarage, where they were located for fifteen years. They evidently were recumbent figures formerly in the church.

The windows in both aisles have obtuse arches. They are in four lights, with cinquefoiled heads, and trefoil-headed vertical lights above, filled with ancient painted and stained glass, said to have come originally from Basingwerk Abbey. The roofs of the aisles are open-timbered, of a low span, with rafters and moulded tie-beams and knees, supported by stone corbel-heads. The floors are paved similarly to the nave. There are vaults under the north aisle, noted by inscriptions on small marble slabs in the floor, to John Madocks, of Vrow-yw and Glanywern, and James Boydell, Rosset. In the west wall of the north aisle is a memorial window to Maria, wife of Patrick Hunter, of Mount Alyn, date 1867.

Of monuments and brasses in the north aisle, there is an elaborately-sculptured stone in an arched recess, having round a shield the words, "Here lies Grouw ap Jorwerth ap Dafydd, whose soul God absolve, 1320." The arms, three mullets on a bend, are of the family of the Ithels. There are also marble tablets to the children of George Shakerley, 1735; Richard Jones, of Llay, 1752; Judith, daughter of the Rev. Robert Porteus, rector of Cockayne Hartley, Bedford, 1820; Hugh Maxwell Goodwin, date 1846; Margarette, wife of Richard Golightly, of Liverpool, 1855. There is also an enriched stone Gothic mural monument to the wife of James Boydell, of the Rosset, 1861.

The organ is at the east end of the north aisle. It obscures one window, and has the appearance of a large horse-box; the pipes are placed on the top, unenclosed, and tattooed. The architect of the original church would have made an ornamental feature of the organ-case. During the Middle Ages, every object was rendered artistic,—tables, stools, crowns, mitres, sceptres, crosiers, and even buckles.

Beneath the central window of the south aisle, in an arched recess, is a tomb containing an effigy of a celebrated warrior in mail armour; on his shield is a lion rampant, and around were formerly the words, *Hic jacet Madoc ap Llewelin ap Gruff, A.D.* 1331. The sides of the tomb are decorated with sculptured quatrefoils in circles with shields, in relief. There are mural marble tablets in this aisle to the Rev. Robert Wynne, D.D., vicar of this parish, date 1707; John Travers, late of Trevallyn, 1748; William Travers, of Trevallyn House, Denbigh, 1765; William Pate, of Crosshowell, 1783; Sir Robert Townshend and his wife, 1790. There is also a brass plate under a memorial window inscribed to Lieutenant Rasbotham, date 1872; and a brass beneath a memorial window erected to Lieutenant Edward Hunter Townshend, by the officers, non-commissioned officers, and private soldiers of his regiment. He died at sea off Cape Coast Castle, Africa, while engaged with Sir Garnet Wolseley; date 1873. There are several other memorial windows.

The porch to the south aisle has an open span roof. The window on each side is square-headed, in two cinquefoil lights. The inner doorway has a depressed arch with label. The floor is paved similarly to the aisle. Over the above doorway in aisle is a mural monument with an open pediment, with a shield in the opening, date 1759. Another elaborate monument is to John Robinson, date 1680. The window at the west end is pointed, in four trefoiled lights, with flamboyant tracery in head, filled with painted and stained glass in memory of George Herbert Wickham, second son of Robert Wickham, M.A., vicar of Gresford, date 1868.

The stone font stands at the west end of the aisle; it is ancient, lined with lead, with water drain, octagonal in form, and enriched with sculptures. It is interesting, and does not appear to have been engraved.

The chancel is one step higher than the nave, and separated from the nave by a screen arched outwards on both sides at the top, forming a rood-loft, still remaining, of considerable beauty. The altar is approached by five steps, and has a large brass rail supported by ornamental standards. The floors of chancel and sacrarium are paved with ornamental glazed and coloured encaustic tiles.

The east window, restored by subscription in 1867, has a depressed arch, in seven cinquefoil-headed lights, with trefoil-headed vertical lights above. The reredos has been removed to Llanfynydd Church, near Hope.

On each side of the altar is a closed window, with a depressed arch; the recess within jambs is now used as a niche. On the north side is a bust to William Egerton, of Gresford Lodge; date, 1827. On the south side is a sepulchral vase on a pedestal, with a very large fat Cupid, nearly the size of the pedestal, pointing to an inscription to John Parry, of Gresford Lodge, date 1797; R. Westmacott, jun., sculptor. The removal of these monuments, and the restoration of the ancient windows, filled with painted and stained glass, would be a great improvement.

There are also mural marble tablets: to George Warrington, date 1770; to the wife of the Rev. George Warrington, 1802; also to the Rev. Henry Newcome, M.A., with a female figure in relief, 1803; and John Boydell, of Rofe Castle Cottage, 1839. On the north side of the altar are two brasses, let into the wall, to Lieut. Egerton, of the 2nd regiment Bengal Infantry, date 1841; and to the daughter of Philip Egerton, of Egerton, 1862. On each side of the chancel, placed longitudinally, are ancient carved stall-seats.

The north-chancel aisle, known as the Maddocks' chapel, formerly belonged to an old family of that name, who lived at Llay Hall. In this chapel are mural monuments to William Maddocks, 1749; John Maddocks, 1794; Thomas and Eleanor Hayman, 1810; John Hayman, 1839; and a Gothic monument to John Maddock, 1837. The floor rises one step above the aisle. In the east wall, by the north angle, is a canopied single piscina. The windows are similar to those of the aisle.

The south-chancel aisle is called Trevor's Chapel; the windows are similar to those in the aisle. Beneath the east window is a remarkable and expensive Italian mural monument to John Trevor, of Trevalyn Hall, date 1589. There are three semicircular-headed recesses; the central one is closed, and has an inscription in Welsh, stating that he was interred by his son, Sir Richard. He reclines in armour, the whole length of the three arched recesses; in the left-hand recess are his legs and boots, and in the right-hand recess is his head resting on his arm raised on a cushion, painted life-like! There is also an elaborate monument to Sir Richard Trevor, containing his effigy and that of his wife kneeling, full size, date 1638; and a mural monument to Dame Katherine Trevor, wife of Sir Richard, and five daughters, in relief, all kneeling in prayer, date 1602. There are also modern marble tablets to Julia Boscawen, 1832, and Thomas Griffith, of Trevalyn Hall, 1856; and a Gothic monument to the wife of John Boydell, 1851. At the east end of this chapel is an altar-tomb, with monumental effigies on brass, to Christopher Parkins, curate of this church, and his wife, 1843. This brass, by the Messrs. Waller, exhibits a satisfactory revival of the ancient art of engraving on brass. Beneath the window in the south wall, at the east end, is a piscina with canopy and corbel-heads.

The two chapels are separated from the chancel and aisles by carved oak screens, with open work, and crested on the top.

The new open seats, the paving, and the removal of the paint and whitewash from the panelled ceilings, walls, columns, &c., in the year 1867, cost 2,721*l.* The whole of the church is lighted by coronæ with candles, there being no gas, at present, laid on in the village.

Of the exterior of the church, the tower, clearstory, aisles, chancel, chapels, &c., are all embattled. The tower has a crocketed pinnacle at each angle, with a central pinnacle between, and between each pinnacle the statue of a Knight Templar, eight altogether. In a niche on one side of the tower is a statue of Henry VII. The tower is well proportioned, and the figures harmonise with the pinnacles, so much so, that at a distance they appear like smaller pinnacles. Beneath the embattlements is a cornice and band with quatrefoil panels. The belfry windows have mullions, transoms, and foiled tracery, with canopied heads, finials, and crockets. At the base of the windows is a cornice. About midway is another band, with quatrefoil panels. The buttresses are diagonal, with niches and figures. The lower part of the tower has been supposed to be of an earlier date, the door to be of the Decorated character, also a buttress and window on the north side. The gurgoyles have very large heads. A considerable portion of the tower was blown down about twenty-two years ago, but was promptly restored by the parishioners.

The east end of the chancel is surmounted by a cross, with crocketed pinnacles at the angles, and beneath the east window is a buttress, with a small door adjacent. The cornices of the clearstory, aisles, &c., are decorated with grotesque sculptures and pateræ. The buttresses of the aisles are canopied.

The church is surrounded by an extensive churchyard, enclosed by a palisade. There are some large venerable yew trees. One yew tree

often alluded to, and said to be 1,400 years old, and 26 ft. in circumference, still remains. On the north side are small red-brick buildings, slated, and a school and hospital, founded in 1725. On the south side are school buildings in the Early English style, with buttresses, erected in memory of the late Bishop of St. Asaph," an earnest promoter of education." He died in 1872.

In the immediate vicinity of the village is an eminence called the Roft, formerly a British camp, treble trenched, having at one corner a lofty mount or keep.

A natural phenomenon, petrifying waters, in the parish of Gresford, is spoken of. They permeate the slopes upon the western side of the Alun, for the length of half a mile. The quality of the water is to petrify all the vegetable productions it flows over.

Gresford is a remarkably pleasing village, worthy of a visit independently of its architectectural attractions.

W. Pettit Griffith, F.S.A.

JAPANESE ART AND INDUSTRY.

A small but unusually interesting collection of old Japanese bronzes is now in course of arrangement at South Kensington. They are lent by Mons. S. Bing. Many of the objects bear signs of a very venerable antiquity. One vase is covered, in the upper part, with a pattern that bears a very close resemblance to Chinese writing, although whether it is an actual inscription, or only a decorative pattern, we are as yet unable to say. A teapot in the form of a goose, and a model of a goose which is not apparently intended for anything but ornament, are of a very archaic type. An oblong brass tray, inlaid with silver, is notable for the delicacy of the inlay work. The quaint, varied, and elegant forms of the vases, tazzas, toilet-bottles, and other objects, are worthy of attentive study. There is a bronze tortoise, which the life-like expression of the head and limbs, as well as the aspect of the carapace, seem to warrant as a *fac-simile* portrait, but which draws behind it a flowing tail, more resembling the skirt of a lady's dress than anything with which we are familiar in chelonian life, or, indeed, in any part of the animal kingdom. There is a narrow embossed vase in black bronze which might be almost thought to be a fine casting in iron. This should be compared with the beautiful green hue of a nondescript retort-like vessel, in the form of a distorted gourd, which looks like malachite without the veining, but which is really bronze. This object, however, is said to be Chinese. The various forms of incense-burners also deserve attention, and so does the curious Kaya porcelain, exhibited by the Rev. F. H. Morton.

Highly interesting as this small collection is, it is likely to be outshone by a display which is in course of preparation for the Bethnal-green Museum. This includes Japanese objects of every possible kind, and will not only illustrate the arts of this curious people, but throw much light on their domestic, social, and industrial habits. We understand that it is intended to open this collection to the public in January next.

THE WHITEFRIARS THEATRES.

Will you allow me to add a few notes to the description of the Whitefriars Theatre which appeared in the *Builder* of the 13th ult.? These notes are taken from my "Memorials of Temple Bar, with some Account of Fleet-street" (published in 1869), p. 98, and while giving a summary of dates connecting the history of the Whitefriars and Salisbury-court Theatres, they added (at the time of publication) new and unpublished items of interest in connexion with these once popular playhouses.

The earliest theatre appears to have been established in the old Monastery Hall, and it may be a new fact to many of your readers if I add that the reason why the earlier playhouses were opened within the monasteries of the Black and White Friars was that these sanctuaries were out of the jurisdiction of the Lord Mayor and Corporation, who from the earliest to the present time have been opposed to theatrical performances within the City. The "Whitefriars" must have been opened shortly after that at Blackfriars in 1576. Mr. Collier says it was fitted up in 1586 and taken down in 1613, and that a survey of 1616 mentions it to have been used as a playhouse for thirty years; while Field's "Woman is a Weathercock," acted before the king and privately at the Whitefriars (printed 1612) was the first, or one of the first, plays acted there after the removal of the king's servants from Blackfriars.

I find the wardmote inquest of St. Dunstan's presenting, in 1609, "one playhouse in the same precincte of Whitefriars, not fittinge there to be now tolerable"; it had, in fact, very likely been the scene of a terrible accident, for I find in the burial register of St. Dunstan's entries in the year 1607,—"Sept. 29. Gerry, out of the playhouse in the ffryars," his wife, son, and three others within a fortnight, and as the plague was not then raging, but the playhouse particularly mentioned; and that in 1616 it is especially described as "the raine bath made its way in, and if it be not repaired it must soone be plucked downe, or it will fall," I think we have conclusive evidence that at this date (1616) the *first* theatre hereabouts,—the Whitefriars,—had practically ceased to exist.

"Salisbury Court" Theatre was erected just previously to or during the year 1629. It was destroyed by the soldiers in 1649, and not rebuilt till 1660, when it became known as the "Dorset Gardens." The leasing of the property by the Earl of Dorset for a term of sixty-one years, and for 950*l.* paid down as early as 1629, appears to have been a very complicated affair, and the Earl, his successor, when giving evidence before the Great Fire Commissioners of 1667 (as appears by the original documents which I have seen) did not hesitate to call it an illegal transaction. The same property, under the description of "Ye Manor of Dorsett House, with the appurtenances, quitt rents, court leets, and the great barne,"—afterwards the playhouse,—was in the same year (5 Charles I.) sold by Earl Dorset and others to Sir Henry Compton and Sir John Sackville for 4,000*l.* The new theatre (designed by Sir Christopher Wren), built after the Great Fire, and opened November, 1671, was called the "Duke's Theatre," from the Duke of York's company of players performing there. A quarter of a century later the company migrated to Lincoln's-inn-Fields,—the Portugal-street Playhouse, and subsequently the site of the Insolvent Debtors Court. "The Duke's Theatre," Dorset Gardens, was eventually pulled down in 1709, and upon its site since 1814 have existed the City Gas Works.

It may interest your readers to know that in my "Memorials," p. 99, I give a copy of a very interesting and important document relating to "Mr. Ben Jonson, the poet, and the players at the Blackfriars," kindly lent to me by my good friend Mr. Carter, of Fleet-street, for publication.

T. C. Noble.

PROPOSED STREET IMPROVEMENTS AT DURHAM.

At a special meeting of the Durham Town Council, held on Thursday, the 11th ult., at the Town-hall, Mr. Wm. Crozier, C.E., the engineer appointed by the council, read a report laying before them the plans, sections, and books of reference of such improvements as he considered would meet, for many years to come, the requirements for the largely-increased traffic in the city, more especially near the market-place, and the streets leading to it. With regard to borrowing powers, he said,—"Next, as to the financial means at the disposal of your Board for the carrying out of the works. I find the assessable yearly value within your district is 40,410*l.*, and you are allowed to borrow any sum or sums not exceeding in the whole two years' assessable value, or 80,820*l.*, less the present mortgages on the baths and washhouses of 4,454*l.*, which will make the extent of your future borrowing powers, 76,366*l.*; the repayment of the 4,454*l.* can, by the Public Health Act of 1875, be extended to forty years from the present date. Not knowing the exact amount required for the works, I have had a sinking-fund account prepared, showing at per 100*l.* borrowed what will be required for the rates to pay interest, and create a sinking-fund to pay off all in sixty years, and I find, at 4 per cent. per annum, it will take a yearly sum for each 1,000*l.* of 44*l.* 4*s.* 2*d.*, and at 4½ per cent., 48*l.* 9*s.* 2*d.*; to form a sinking-fund and pay interest for forty years on the mortgage of 4,454*l.*, it will require out of the rates yearly, if the interest is 4 per cent., 225*l.* 0*s.* 4*d.*, and if 4½ per cent., 242*l.*"

Mr. Crozier regretted that he had not been able to present an estimate of the cost of the proposed improvements, but it would be forthcoming shortly. The meeting was therefore adjourned to allow of the estimate being presented, and also to give the members time to consider the report and plans.

THE REGISTRATION OF TRADE-MARKS.*

You are all, doubtless, well aware that the Act which establishes a registry of trade-marks does little more than merely decree that establishment. It leaves to the Lord Chancellor, presumably as the principal Commissioner of Patents,—since it is to that body that the direction of the new system has been entrusted, — the duty of preparing the plan on which registration is to be carried on. It is so obviously important that from the outset the system should work smoothly and efficiently, that I feel sure considerable advantages cannot but result, if, before the rules and regulations are finally decided upon, an opportunity is given to those interested in the matter of expressing their views and pointing out what it really is that the mercantile community requires. That even the minuter details of the system are worth thought and attention will hardly, I think, be denied, inasmuch as on these details it must depend whether or no the object of all legislation on the subject be attained, the securing to the possessor the easy and uninterrupted use of his property.

It must seem strange, if we give the matter a moment's thought, that we, the greatest trading nation in the world, have been so far behind our neighbours in protecting our own interests in such an important particular. Not only have America, France, and Austria for some time extended to their manufacturers an advantage we have never provided for our own, but even Spain and Turkey† have, at least in theory, done what we have so long hesitated to do, and, by establishing a registry of trade-marks, shown themselves more awake to the true interests of their commerce than we, with all our experience. Even Germany, who, if reports are true, had but little to gain by authorising the registration of English marks, and thus checking the production of spurious goods with English marks upon them,—has been before us, and has anticipated by a year the process that with us is to begin on the 1st of January next. In the somewhat kindred subject of Patent-law, we took a very decided lead of all other nations, and, with all its undoubted imperfections, we still enjoy the advantages of a system which stands unrivalled by that of any other country. With regard to trade-marks, we have been content to let our neighbours get ahead of us, and thereby reap for themselves an advantage we, as the first commercial nation in the world, ought assuredly to have been the first to secure for our own interests. This being so, it only remains for us to profit by the experience of others, so that by examination and comparison of their systems we may frame for ourselves one including the best points of all.

The connexion between the various monopolies—the word is used in no invidious sense—patent right, copyright, and the right to use a distinctive symbol for purposes of trade, has now been recognised by bringing them—at least those portions of them relating to manufacturing or commercial interests—under one and the same jurisdiction, that of the Commissioners of Patents.‡ The wisdom of this step is obvious. The details of the systems to be applied in treating and recording grants of patents, and registrations of designs and trade marks, are almost identical. The Patent Office has now been at work on its present footing for over twenty years, and there is no question but that on the whole its work has been done well. The Designs Office has only just been transferred from the rule of the Board of Trade, and there is every reason to hope that the practice of that office will

* From a paper by Mr. H. Trueman Wood, B.A., read at the Society of Arts.

† The registration of trade-marks in Turkey seems, at least so far as foreigners are concerned, to be a mere farce. Messrs. Nowill & Sons, of Sheffield, have obligingly furnished us with some information as to their experience in the matter. About three years ago (in 1873 or 1873) they learned from their correspondent in Constantinople that goods were being introduced into the market from Germany, stamped with their name and trade-mark, and enclosed in wrappers with labels almost identical with theirs, the "w" in "Nowill" being reversed and turned into an "n," and "Sheffield" being altered to "Shemfield." Under these circumstances Messrs. Nowill determined to avail themselves of the recent Turkish law, and to register their trade-mark in Turkey. This, however, proved no easy task, and it was not until the beginning of the present year (1875) that they succeeded, after taking considerable trouble, and spending a large sum of money. Having got so far, they proceeded to take action against the infringers, but the result was, that most of the offenders simply took no notice whatever of the summons of the court, and those who did were told to sell out in twenty-one days, and not to do so any more. At this juncture Messrs. Nowill took advantage of the recent German law, and by registering their trade-marks in that country were enabled to get at the original offenders, the makers of the counterfeit wares.

‡ The Lord Chancellor, the Master of the Rolls, and the Attorney and Solicitor General.

be as soon as possible assimilated to that of the department to which it has been annexed. To ensure an efficient administration for the new Trade Marks Registration Office, it will merely be necessary to take the Patent Office system as a model, and adapt it by a few necessary changes to the altered conditions to which it is to be applied. It is therefore certain that the Patent Office, where the requisite machinery for registration is already provided, is the proper place for the registry of trade-marks, and that the framers of the recent Act were in this respect wiser than those who prepared the former Bills dealing with this subject.

It is a remarkable fact, and one therefore which calls for at least a passing notice, that this question of granting to individuals certain privileges or monopolies in return for some contribution made by them to the general stock of knowledge, is now, in various forms, widely attracting public notice, and that it has assumed during the last few years a wider shape than it had before by its extension beyond the bounds of separate nationalities. The question of international copyright every now and then raises up a fresh controversy, which becomes more and more acrimonious, till it exhausts itself for the time. A rather longer and calmer discussion than usual has just resulted in the appointment of a Royal Commission to investigate the subject in all its bearings. Patent-law reform was one of the questions of last session, and only the vigorous and united opposition of all the interests affected prevented the passing of an Act which would certainly have altered, for better or for worse, the existing law. The important Patent Congress at Vienna in 1873; the more recent Conference at the Hague,—these and other events show a very widespread wish for the adoption of some scheme,—what form that scheme should take is yet far from evident,—by which protection should be secured for invention in all countries alike and at once. Less important indeed than these, but second only to them in importance, comes the question of protection for trade-marks.

In this case, as with the other monopolies just mentioned, it is only the consideration of a general advantage that can justify a special privilege. The strongest arguments for the continuance of the few monopolies still existing are based upon the general benefit that results from their use, not on the inherent right—the right is, after all, but a creation of the law—of the individual to retain for his private benefit what he has produced. We believe that the protection of inventions fosters and encourages industry, therefore we grant to the inventor a patent-right in his ideas; we argue that the protection of literary and artistic property aids the development of our literature and our arts, therefore we grant the writer or the artist a copyright in his works; so experience teaches us that by giving the trader every possible assistance in the prosecution of the business he has established, we promote the growth of commerce. Thus the privilege granted to the individual results in the profit of the many, and it is only this beneficial result that justifies the restriction on general liberty.

There is indeed this great difference between the monopoly of a trade-mark and that of patent right or copyright. In the two latter cases the recipient of the privilege gives an actual return for it. He gives to the public an invention before unknown, or he adds something to the literary or artistic possessions of the country. As regards a trade-mark the return is less direct. Still it is none the less real. It is made in two ways. First, it enables the manufacturer to extend and protect his trade; and, secondly, it assists the public in obtaining the precise article they require. This second result is in practice the less important of the two, because there never can be any very wide-spread knowledge among the general public of the various marks used on merchandise. Even in the case of Hall-marks very few people know the meaning of the symbols employed, and so long as there is a mark of some sort on their purchases they are perfectly satisfied. Still there is a certain amount of protection in the use of a trade-mark, if there is sufficient legislative protection to guarantee authenticity. So far is this the case, that it was for long a question in France, before the passing of the latest enactments on the subject, whether the use of a trade-mark should not be compulsory, the manufacturer being obliged to put his mark on all his productions. As it is, under the French law, the power is reserved (and exercised) of ordering such a use in such cases as may seem necessary.

It is not a little curious that this wish to prevent the public from being imposed on by inferior imitations appears, from the preamble of the Act establishing the Cutlers' Company, to have been the principal reason for the passing of the Act, and as Mr. Hindmarch said in his evidence on this point, "the provision as to marks was rather in the nature of a restriction than a right conferred."

PORTSMOUTH IMPROVEMENTS.

THE Town Council of the Borough of Portsmouth have unanimously resolved to apply for power to borrow the sum of 120,000*l.* for the purpose of street and other improvements.

At a meeting recently held a comprehensive report and estimate, prepared by Mr. J. E. Greatorex, the borough engineer, was brought up. In it he estimated that the completion of sewering, road-making, and paving of all the undedicated streets in the borough would cost 92,000*l.*; that 10,000*l.* were required to reimburse the treasurer for moneys already expended in similar works, constructing the new esplanade, &c.; and, that a further sum of 18,000*l.* would be expended in widening streets, making new roads on the site of the old fortifications, now being demolished, and constructing another outfall sewer. And when it is considered that during the last ten years the corporation have expended 160,000*l.* in the construction of sewers, and erection of pumping machinery, it is a pretty fair proof that they are alive to the interests of the community under their charge, and that they are determined to make the borough, including the fashionable district of Southsea, more attractive, and, if possible, more healthy, although it already holds an enviable place in the Returns.

COUNTY COURTS.

A VERY important alteration in the mode of recovering debts not exceeding 50*l.* has been made by the Act of last session (38 & 39 Vic., cap. 50), called "An Act to amend the Act relating to the County Courts." It will result, says the *City Press*, in a large accession of business to these courts, and a great saving of time and trouble to the suitors generally. For the creditor, by proceeding under this Act, is enabled in all cases of debt (and it is not confined to trade-debts only) to issue a summons calling upon the debtor within sixteen days to state whether he intends to dispute the claim or not, and in default of his so doing, the creditor is to be at liberty to go to the county court office and sign an immediate judgment for his debt, without the inconvenience of attending at the court on a crowded court-day, and waiting for his case to be called on and heard. This latter circumstance alone has prevented many tradesmen from using the county court as a vehicle for recovering their unpaid accounts. The order, too, for payment is not to be left to the discretion of the court, but is to be for payment forthwith, or at such times as the creditor shall consent to give. If the debtor sends a notice of defence, then a day is to be fixed for the trial, of which each party is to have six days' notice. The only important formalities to be observed in the adoption of this proceeding are,—first, that the summons must be personally served on the debtor, or be proved to the satisfaction of the registrar to have come to his (the debtor's) knowledge, or that he wilfully evades service; and, secondly, if the debt be under 5*l.*, leave of the registrar is required to issue the summons, unless such debt has been incurred by the debtor in the way of his trade, profession, or calling, in which case no leave is necessary. Hitherto one of the greatest drawbacks to our county court system has been the necessity for the creditor's appearance in court with proof of his debt (often obtained at great inconvenience), when he knows that the debtor has no intention of disputing it; and not unfrequently, in the absence of such proof, the creditor has found himself non-suited, and his money, time, and trouble, thrown away. The Act came into operation on the 2nd of November.

Hayhoe's Patent Solvent. — We have already mentioned this solvent for removing oil paint, oil, varnish, japan, grease, and so on, from wood and stone, without injury to the surface, or to the brushes used. We have since tried its effect on an old door, and found the result to be as promised.

ARE BULGING WALLS TO BE REPAIRED BY TENANT?

PUTLEY *v.* COOPER.

THIS was an action for an illegal breach of covenant to repair. The defendant denied the breach.

The plaintiff was a cooper at Bermondsey, and was the original lessee of certain premises in Seething-lane, City, and the defendant, an eating-house keeper, held the premises from the plaintiff under a repairing lease. It appears, from the *Times* report, that the premises were more than 200 years old, and that a considerable amount of timber had been used in their construction. During the last few years of the defendant's term, in consequence, as it was supposed, of the decay of this timber, one of the brick walls of the building had bulged considerably, and after the expiration of the term the wall had been condemned, and had since been rebuilt by the plaintiff at an expense of 119*l.* He now sought to recover that amount from the defendant, on the ground that under the covenant to repairs in his lease the latter was bound to have made the wall good.

Baron Bramwell, in summing up, asked the jury whether they were satisfied that the defendant had not performed his covenant to maintain the house, walls, &c., in good and tenantable repair and condition. The best direction he could give them in point of law was to refer them to the old adage, "A stitch in time saves nine." The question in this case was whether the stitch required was one that the landlord or the tenant ought to have made. If a slate or a tile came off the roof or perished from decay, it was the tenant's duty to replace it, and any damage that resulted from his neglect to do so he would be bound to make good. But if a coat were sent to a tailor to repair, and it could be repaired by darning up a hole, the tailor was not bound to put in a new sleeve. It was a remarkable circumstance that the defendant had received a notice that he was to take out the bulge and the defective brickwork on each side of the bulge and to rebuild that part of the wall in cement,—that was to say, that he was to make a new piece of wall. Was making a new piece of wall in that way a mere matter of repair, or was it not rather a reconstruction of the building? It had been proved that this bulge had been the work of years, and that it had happened gradually; but that was not decisive against the landlord, because if a stitch in time of an ordinary description could have saved the premises it would be for the tenant to have put in that stitch. The evidence, however, appeared to him to show that the stitch required was not one that the tenant could have been called upon to make, inasmuch as it would have necessitated the practical rebuilding of the structure. The question, however, was one for the jury, who must say whether in this particular case the duty of taking the necessary steps to prevent the bulging of the wall lay upon the tenant or upon the landlord.

The jury returned a verdict for the defendant.

NEW CEMETERIES.

Cowley St. John (*Oxford*).—The foundation-stone of the new cemetery church of Cowley St. John was laid on the 1st ult. The new cemetery will be about three acres in extent. The cemetery church, which will also serve as a chapel of ease to the district, is being erected as a memorial church to the late Archbishop Longley, who was formerly curate of Cowley, and will comprise a chancel, 26 ft. 6 in. long by 20 ft. 3 in. broad, and rising a height of 54 ft. to the top of the cross on the east gable; a nave, 51 ft. long by 25 ft. broad; and a porch, 25 ft. long by 12 ft. broad, running along the west end of the nave, but divided from it by open arches, so as to admit of its being seated when additional sittings are required. The style of architecture adopted is Gothic of the Early Decorated period, Handborough stone being used for the walling, with Box stone dressings. The roofs will be of pine and open, except the chancel, which will be boarded on the underside of the rafters, forming thus a polygonal barrel roof, with moulded ribs at intervals dividing the boarding in panels, the whole being covered in with red tiles and ornamental red ridge cresting. The fittings of the church will be of a somewhat costly nature. The remaining buildings to be erected will comprise a porter's lodge, with Nonconformists' Chapel. The work is being carried out by Mr. Henry Castle, builder, of Cowley-road, under the direction of Mr. A. Mardon Mowbray, architect.

Mold.—For some time past the Burial Board at Mold have been engaged in the selection of plans for two mortuary chapels, lodge, and entrance-gates for the Mold new cemetery, they having advertised for designs to be sent in to them by a specified date; in response to which, designs were submitted by three architects from Mold, Chester, and Denbigh respectively, all of which were anonymously sent. The Board having given them a most cordial consideration, accepted the design of Mr. J. Humphrey Jones, architect, Mold. The two

chapels are combined, having separate entrances, the one for the Church of England, the other for the Nonconformists. Each chapel will contain an area 30 ft. 3 in. by 18 ft. 3 in., and is calculated to seat ninety-three persons, with a vestry accessible to the reading-desk by the sides. A tower 30 ft. high is fixed in the centre of the northern side, in which is placed the bell, surmounted by a spire 24 ft. in height. The style is Gothic, the materials to be used being brick, with stone dressings. The area of the cemetery ground is 3a. 2r. 2p. 17½ yds. The contract has been let to Mr. Hugh Hughes, builder, Maesydu, Mold.

AN ELECTION BY THE BRENTFORD LOCAL BOARD.

Sir,—Knowing your readiness to expose jobbery of any kind, may I call your attention to the fact that the Brentford Local Board, after going through the farce of issuing advertisements inviting applications for the office of their surveyor, receiving about seventy replies, and selecting some six or seven surveyors to attend their Board meeting, have ended by electing one of their own body,—a gentleman who at that time had not even resigned his seat as a member?

As one of the candidates, who was put to the trouble and expenses of printing testimonials, canvassing, &c., believing the election would be an open one, I may perhaps be allowed to express my disgust with the entire proceedings. I send a copy of the *Middlesex County Times*, containing the account of the affair, from which it will be seen that the member of the Board above alluded to was actually elected and attended the Board as the surveyor, and received instructions to proceed with certain works required to be done, before sending in his resignation.

Probably it is hopeless for outsiders to expect much fairness of treatment from Local Boards, composed, as these usually are, of the smaller tradesmen of the district, when the interests of one of their members are in question.

I have no objection to offer to the Brentford Local Board making one of their own members their surveyor, if they see fit to do so. They have the right to elect whom they choose, but I do most strongly object to their wasting the time and money of other people by going through the farce of an "election" when any disinterested person reading the account of the proceedings could come to no other conclusion than that the whole matter from beginning to end was "cut and dried."

The publication of this letter may serve as a warning to intending applicants in the event of a future surveyor being required for Brentford.

One of the Humbugged.

*** We fully agree with our correspondent. Those who wasted their time and money in replying to the advertisement have good reason to consider the affair little else than a swindle.

A FESTIVAL IN THE POTTERIES.

The workpeople employed at the earthenware manufactory of Messrs. Edge, Malkin, & Co., were entertained by their employers on the 16th ult. Mr. Joseph Edge, the senior partner, presided. The company partook together of an excellent knife-and-fork tea, after which a life-sized portrait of himself in oil was presented to Mr. Edge by his workpeople. Mr. W. Steele, principal clerk, introduced this part of the proceeding in a speech in which he spoke very warmly of Mr. Edge's character as an employer and a citizen, and congratulated all present on the excellent feeling existing between the employers and employed at the Newport Works. Mr. Steele was followed by Mr. Whiteball, who read a copy of an address, which had been illuminated by Mr. Ryles, of Congleton, the painter of the portrait. In this address the workpeople assured Mr. Edge that they presented to him his portrait as an expression of their sincere respect and esteem for him as an employer, and in acknowledgment of the kindness and courtesy which he had at all times manifested towards them. The address also referred to Mr. Edge's long life of public usefulness. Mr. Edge said he thanked sincerely and heartily all who had been concerned in this presentation. After an account of the various changes which had taken place in the *personnel* of the firm, Mr. Edge introduced Miss Meteyard, who referred first of all to the honourable position which Mr. Edge occupied in the Staffordshire Potteries. She then spoke of the manner in which purely literary pursuits had gradually led her to take a lively interest in potters and their beautiful art. In continuation Miss Meteyard said:—"During the last twenty years English pottery has in all its branches been so wonderfully improved as to lead to a most successful competition with the production of other nations. We are beating the French in their own fields, and exporting into districts whence, not so long ago, we were glad to derive supplies of a far inferior character. But this success must not make us vainglorious. We have much to do and learn before we reach the perfection of the potters of antiquity. Our bodies are far superior in every sense to theirs, but in the relation to form and in the application of ornament we have much yet to learn and practically adopt. Our comparative backwardness in artistic taste is, speaking nationally, not to be denied, but the deficiency is not, perhaps due to the lack of a real appreciation of its advantages. Taste will increase as the qualities and conditions of instruction approach a higher standard, and our ultimate attainments in art may be none the less distinguished because progress has been slow."

CAMBRIDGE ANTIQUARIAN SOCIETY.

AN ANCIENT TOMB IN ALGERIA.

At the general meeting of the Cambridge Antiquarian Society on the 8th ult., Mr. J. W. Clark presented and described a model of the Medrásen, a circular tomb, 60 ft. in height by 193 ft. in diameter, situated in Algeria, about fifty miles south of Constantine. The base is 18 ft. high, and from it rise sixty engaged columns without bases, and with plain capitals, supporting a massive cornice, which consists of a fillet and cavetto moulding repeated twice, of which the second half projects considerably beyond the first. Above this rises a truncated cone, consisting of twenty-three steps, each 2 ft. high by 3 ft. broad; on the summit is a circular platform, 37 ft. in diameter, having a hole in the centre, the motive for which has given rise to controversy. The latest opinion respecting the name is that it is the plural of Madrès, a mythical ancestor of the tribes of that part of Africa from whom Masinissa claimed descent. If this be so, the legend that the Medrásen is a royal tomb may be true, the plural number indicating that several persons were there interred. The union of the Classic columns and cornice with the barbaric design of the truncated cone appears to indicate an artist familiar with Roman work, so that no very remote date can be assigned to this interesting monument.

At a general meeting held on the 22nd ult., a paper, by Professor Palmer, was read in illustration of the "*hook*" as a symbol of rule in the right hand of the figure of Rameses III., now in the Fitzwilliam Museum. The Professor exhibited and presented a specimen which he described as the *mehjân* or camel-stick of the desert Arabs, and variously used as a goad, or a whip, or to hold the halter, or to gather prickly herbs of which the camel is fond, and to hand the beast such provender. Serving as it does so many different purposes connected with the driving, &c., of the camel, it came to be regarded as a fitting emblem of the possession of these animals. But as in the desert all power, wealth, and authority is measured by the number of camels possessed, it is easy to see how this instrument became a symbol of royalty. It is indeed one of the earliest forms of the sceptre, and is sculptured in Assyrian as well as Egyptian monuments. Thus held in the right hand and representing the sovereignty of the *Desert*, it is happily balanced by the three-thonged horse-whip held in the left, and symbolic of wealth and dominion over man and beast in *cities*.

THE GARDENS OF THE INNER TEMPLE.

Sir,—The writer of the letter signed "The Clerk of Works," which was published in the last number of the *Builder*, in reply to one of mine which appeared in the same journal the previous week, stating that the trunk of the old tree in the Inner Temple-gardens spoken of by me has been removed, is entirely mistaken. I visited the Temple-gardens last Saturday to see whether the tree trunk had been removed or not, and found it in its original position, and precisely in the condition I have described it. There is no building going on in its immediate locality. I was fully aware of the existence of another curious tree (the one referred to by "The Clerk of Works") in the Temple-gardens, which he states has been taken down. Had he read my letter carefully, he would at once have seen that the tree I have mentioned is in a different part of the gardens altogether, and of another kind to the one of which he speaks.

Nathaniel Waterall.

STAINED GLASS.

Margate.—A stained glass window has just been placed in the south aisle of the parish church, to the memory of the late Mr. C. T. Hatfeild, of Hartsdown. It is a two-light window,—one light representing the Ascension of Christ, and the other the Old Testament type of it, viz., the Ascension of Elijah. It has been executed by Messrs. Lavers, Barraud, & Westlake.

Fairford.—Messrs. Lavers, Barraud, & Westlake have lately been engaged in restoring several of the ancient stained-glass windows on the south side of this church, under the direction of Lord Dynevor. Great care has been taken in preserving their originality. It is stated that, in the case of a few of the lights especially, if some means are not taken to prevent it, the glass must drop out piecemeal at no very distant date, as the leads are fast becoming completely rotten, and the windows are very far short of being weather-proof.

Nantwich.—Special services were held on the 11th ult. at Nantwich parish church, on the completion of the west window, lately filled with stained glass in memory of the late rector, the Rev. Canon Chater. The window was designed by Sir G. Gilbert Scott, the style being pretty nearly identical with that of the original west window, which dates back to the earlier part of the fourteenth century. The tracery is flowing, the stonework having been carried out by Mr. W. Haswell, of Chester, at a cost of 250*l.*, while the stained glass is being supplied by Messrs. Clayton & Bell, at a cost of 800*l.* The subject, which is treated in accordance with the Middle Pointed period, is that of "Christ Present in His Temple," and the illustrations on either side of the centre light represent (1) The Presentation in the Temple; (2) The Cleansing of the Temple; (3) Christ watching those who brought their Offerings for the Service of the Temple; and (4) Christ receiving the Worship of Children in the Temple.

Tewkesbury.—Two windows by Messrs. Heaton, Butler, & Bayne have just been placed in Trinity Church, Tewkesbury, to the memory of the late Misses Ann and Elizabeth Mines. The one on the south side represents our Redeemer giving the Blind Man his sight, and the one on the north side represents our Saviour standing on the top of a hill with his disciples beneath him.

Whittington.—A stained-glass window to the memory of the late Mr. Hyld Holden has just been completed at Whittington Church, Worcestershire. The window is of lancet form, and the design adopted consists of subjects in medallion upon a groundwork of grisaille, the whole surrounded by a border of richly-coloured glass. The illustrations in this case are—Our Lord blessing little children, and setting a little child before the disciples as an example of humility. The window is by Messrs. Wailes, Son, & Strang, of Newcastle-on-Tyne.

Castlecaulfield.—A stained-glass window, by Ward & Hughes, has just been erected in Castlecaulfield Church, county Tyrone, at the cost of Mr. Robert Evans, of Dungannon, in memory of Eleanor, his wife. The window consists of three lights, on the centre of which is represented the offering up of Isaac. The side-lights represent the parable of the Good Samaritan and the raising of Jairus's daughter.

Hastings.—The east window of Christ Church, Hastings, was unveiled on the 21st ult. The subject is "The Heavenly Court," and the work is by Messrs. Hardman. The cost will be little short of 600*l.* The sacrarium of the church is being decorated by Messrs. Heaton & Butler.

Norwich.—A stained-glass window has recently been placed in the west end of the church of St. Peter per Mountergate, Norwich. The subject is our Saviour blessing little children. The window, executed by Messrs. J. & J. King, contains twenty figures. It is the gift of Alderman John Underwood, in memory of his sister, the late Mrs. Gaze.

BUILDING IN STOKE NEWINGTON.

Sir,—I have observed one or two paragraphs in the *Builder* relative to the houses being erected in Defoe-road, Stoke Newington. In order that you may not think the district surveyor was asleep, I forward you (for your private information) a copy of a letter I addressed to the Metropolitan Board of Works, in reply to one from them asking me for a report. As far as the siftings go, they are used in such a very small quantity in the brick mortar that I think they are infinitesimal compared with the plaster mortar, in which the siftings are used in a much larger proportion.

J. Douglass Mathews.

FEMALE SCHOOL OF ART.

THE students' drawings for the year have been exhibited, as usual, at 43, Queen's-square, and the collection was fairly up to the standard.

Miss Susan Ruth Canton had the National Gold Medal for original design for a spandrel, modelled (the design of which is open to criticism); the first Princess of Wales Scholarship (value 25*l.*); three Third-grade Prizes for a copy from the antique "Juno," modelled; and Vacation Prize for artist's "materials" or sketches.

Miss E. I. Hancock had the Queen's Gold Medal for a group of flowers in oil, from nature (very charmingly painted); National Bronze Medal for a group of flowers in oil, from nature; three Third-grade Prizes for sketches from nature (landscape); and Vacation Prize for sketches from nature.

Miss Alice Hanslip had the Queen's Scholarship (value 30*l.*), for second year; National Bronze Medal for studies of anatomy, and other prizes, including the second prize given by Mr. F. Bennock, for a study from the life in costume.

Miss Gertrude Hamilton, the National Silver Medal.

Miss Emily Austin, the National Bronze Medal.

Miss Jessie Rosina Corcoran, the National Bronze Medal for a set of very good studies from nature.

Miss A. M. Marshall, the National Bronze Medal for some clever modelling.

Miss Florence Reason, the Gilchrist Scholarship (50*l.*), competed for only by students under twenty years of age.

A large number of other pupils also obtained prizes; and Miss Gann feels quite satisfied.

BUILDING ON BONES.

OUR article on "Suburban Buildings" in Hackney District has been extensively quoted and commented upon by the metropolitan and local press circulating in East London. In several instances our statements have been corroborated. We append two or three extracts from the pages of papers published in the district noticed. The *Eastern Post*, under the heading of "The Dead and the Living," says:—

"The *Builder* of last week relates the result of a visit to 'some newly-erected ambitious three-story genteel houses' in the neighbourhood of Victoria-park. After describing the manner in which the ground of the houses was robbed of the natural soil, the writer goes on to say that the most filthy composite matter was shot down into the holes, and amongst it were human remains supposed to have been carted from some of the dug-out yards of condemned City churches. The prominence which other journals have since given to this revelation indicates the prevalence of a belief that such a proceeding is unusual, if not unique. That is by no means the case, for we recently saw large heaps of earth in which were mingled human bones, coffin-handles, and fragments of coffins, which had been shot close to some new buildings in Bromley. The inquiries which we made at the time were answered in such a manner as to give the idea that such matter was regarded rather as an acquisition than otherwise by the builder, and we believe that it was used in the case in question for garden mould. Well might Hamlet say, 'To what base uses may we come,' since the ashes perchance of the noble dead come to be so lightly regarded as to be mingled with dust-hole collections in any heap, where the enterprising builder chalks up, 'Rubbish may be shot here.'"

The *Hackney Express* writes:—

"A very capital article appears in last Saturday's *Builder*, on Suburban Dwellings in the Parish of Hackney. The writer sketches with much force and vigour the characteristics of the open spaces of the district, the prevalence of the 'shoot' system, the nature of public sewers and private house-drains, the death-dealing work of the speculative builder, and finally a few remarks about the parish itself and its rulers. We would gladly reproduce the article in our columns this week did space permit, especially as it is written on the exact lines on which the same subject has been so often discussed in this journal."

The writer of "Our Local Flaneur," in the *Hackney Gazette*, in quoting our article *in extenso* says:—

"I need not apologise to my readers if I, for once in the way, yield place to a larger 'Flaneur' than myself, and give his experience and opinions on the one great absorbing subject to which attention has been so frequently drawn in this column,—a subject that has been the cause of the utmost anxiety amongst my readers, professionally and unprofessionally,—to wit, our horrid Fever Haunts. It will be seen that my friend of the *Builder* has done his spiriting well and forcibly, and it is to be hoped will be a little more efficacious than our own in awakening the slumbering authorities to a sense of their responsibilities."

We hope our article may have the effect intended, and if the local press continue to do its duty, we have little doubt a reform will soon be visible.

The *Sanitary Record* says,—"Fresh complaints have just been made in our contemporaries of the digging gravel and sand from the sites of intended houses, and filling up the holes with refuse of the most abominable kind. One of the latest has just appeared in the *Builder*, and is stated to have occurred on the borders of Victoria Park, or rather in a space of ground which is situated between two divisions of the park. The ground was dug out, and the gravel and sand removed to a depth of from 6 ft. to 8 ft. where the houses were to be built, and to a much greater depth for the roadways, and the holes then filled up with filthy refuse, including human bones. The writer suggested that these came from some condemned City churchyard, but we are unable to affirm or object to his supposition, in consequence of the houses having been built some short time since. We have repeatedly called attention to this shameful state of things, and shall continue to do so till these deposits are discontinued. The matter is aggravated in this particular case by the unusual depth and extent of the excavations and subsequent deposits, as well as by the houses having a 'most respectable and genteel' appearance, and being known to be situated on a gravelly soil, so that occupiers and intending purchasers would scarcely think of making inquiry into the character of the subsoil."

AN INDECOROUS CIRCULAR.

MR. HENRY BAKER, with his compliments, encloses a circular which has been forwarded to him as a subscriber to the fund in aid of the widow and children of the late W. H. Knight, and which he thinks is deserving of severe censure, looking to the scandalous facetiousness of the mention of "the other officer," and the name last on the list, quite unintelligible to those not in the distinguished company of officers of the Metropolitan Board of Works.

The circular commences thus:—

Sir James Macnaghten, Hogg, K.C.B., M.P., Chairman of the Board	£5	5	0
The Officers of the Metropolitan Board of Works	39	9	0
The other officer	0	0	0

The last two names in the list stand thus,—

W. Williams	£0	10	0
T. E. Knightley	0	0	0

We entirely agree with Mr. Henry Baker in the opinion he has expressed. We know nothing of the circumstances attending the subscription in question, but the grave impropriety of the proceeding under any circumstances is obvious, and if allowed to pass unquestioned might form a precedent with very evil consequences.

The letter with which the list is forwarded is dated from the "Metropolitan Board of Works," and signed "F. W. Goddard."

SCHOOL BOARD SCHOOLS.

Arbirlot.—At a meeting of the Arbirlot School Board, on the 20th ult., alternative plans of a schoolhouse were submitted by Messrs. Aikenhead and Mason, architects. The first was a plain unpretending structure of one story, having four rooms on the ground flat, with two small bedrooms under the slates. The second was more elevated, having kitchen, parlour, and dining-room on the ground floor, and three bedrooms on the upper. The second design was adopted.

Shelf.—At a special meeting of the Shelf School Board, on the 18th ult., a committee was appointed to negotiate the purchase of a plot of land in Shelf Hall-lane, near Longrow, which had been favourably reported on by the architects, Messrs. Jackson & Fox, of Halifax, as an eligible site for a new infants' school.

Tadley.—At a meeting of the Wootton and Tadley United School District Board, on the 17th ult., it was agreed to appoint a committee to consult with Mr. Moore, of Basingstoke, as to the erection of the Tadley School, subject to some modifications of his designs.

Great Sampford.—New Board schools are about to be erected at Great Sampford, from plans by Mr. Pertwee, architect, Chelmsford. Provision is to be made for 120 children. Mr. Geo. Wiffin, of Saffron Walden, is the builder, the contract price being 630*l.*

Heage.—At a meeting of the Heage School Board, on the 17th ult., Messrs. Wilson & Masters, of Sheffield, were appointed architects to the Board. It is proposed to erect two schools.

Auchterarder.—On the 16th ult. new Board schools at Auchterarder were formally opened. The building, which is in the Elizabethan style, consists of two large and one small class-room, together capable of holding 250 pupils,—the boys and girls having separate departments. The architect was Mr. Simpson, of Stirling. The cost was about 2,000*l.*

Great Totham.—The Great Totham School Board have entered into a contract with Mr. John King, builder, of Halstead, in the sum of 985*l.*, for the erection of their school buildings in accordance with plans by Mr. Charles Pertwee, of Chelmsford. Accommodation is to be provided for 150 children, with teacher's residence, and offices.

VACANT DISTRICT SURVEYORSHIPS.

At the meeting of the Metropolitan Board of Works on Friday, the 26th ult., the following recommendation came up from the Building Act Committee, viz.:—

"That the District of St. Matthew, Bethnal-green, vacant by the decease of Mr. J. H. Stevens, be divided into two districts, to be designated Bethnal-green East and Bethnal-green West, and that Cambridge-road do form the line of boundary between such districts."

This recommendation gave rise to a long discussion, in the course of which it was contended that the proposed two districts were unequally divided in regard to the income likely to be derived from each, the western division being estimated as worth 550*l.* per annum, and the eastern division at 250*l.* It was suggested that the districts should be so apportioned as to allow 400*l.* to each surveyor, and an amendment to refer the whole matter back to the Committee for consideration and report was proposed. It was urged by those who supported the amendment that the Board should make the surveyorships, as far as possible, equal in value, and fairly lucrative, so that professional men of ability and integrity would be induced to compete for the appointments. A district surveyor was expected to discharge the duties of his office in person, but it was necessary for him to have a local office, the expense of which was about 100*l.* per annum, so that if the gross income of a district was only 250*l.*, no man of professional standing and repute would seek for the appointment. On the other hand, it was contended that the figures quoted were not reliable, and that the income of the eastern division would be much larger than stated, especially in a year or two to come. Incidentally it was remarked that there need be no fear of not getting men of professional standing to fill the appointments; architects were only too eager to obtain surveyorships under the Board, as evidenced by the large number of candidates presenting themselves whenever a vacancy occurred. It was further remarked by Mr. Selway (chairman of the Building Act Committee) and Mr. F. H. Fowler, that it would be the best plan not to split up the larger and more valuable districts as the surveyorships became vacant, but to retain them as they are, and promote to them the most deserving of the surveyors who had served perhaps for many years in smaller and less lucrative districts. The amendment to refer back was negatived by 23 to 14, and the committee's recommendation was adopted. It was then resolved that the usual course be taken for filling up the vacancies in the offices of District Surveyor for the above-mentioned two districts, and that the Board do proceed to the elections on Friday next, the 10th inst.

TIMBER.

SIR,—Perhaps some of your readers will kindly give me the name and address of the gentleman who patented, some few years ago, a process for preventing timber from shrinking after drying, by steeping it in a solution of borax. It was, I believe, an American invention, but patented in England.

OAK.

THE POWERS OF LOCAL BOARDS.

IN the High Court of Justice, Queen's Bench Division, on the 15th ult. (before the Lord Chief Justice and Justices Mellor and Quain), the case *ex parte* Dalton-in-Furness District Local Board *v.* The Justices of the Petty Sessional Division of Lonsdale North of the Sands was heard. Mr. Poland, Q.C., moved on behalf of the Dalton-in-Furness Local Board for a rule calling upon the Justices of the petty sessional division of Lonsdale North of the Sands to show cause why they should not be required to state a case for the opinion of the High Court upon questions of law raised before them in an information against James Cox for an offence against the 32nd bye-law of the Local Board. The justices dismissed the information. Cox was charged with intending to build certain new houses in Dalton-in-Furness without giving notice to the surveyor of the Local Board and delivering plans and sections, under their 32nd bye-law. A penalty attached of 5*l.*, and a further penalty of 40*s.* per day for the continued offence. The point raised was whether the Local Board had power under another bye-law to pull down the houses without giving notice to the defendant. The Court granted a *rule nisi*.

Dwellings for the Poor at Stratford-on-Avon.—The Mayor of Stratford-on-Avon has intimated that the favourable replies he has received in answer to the circular recently issued by him drawing attention to the great need of improved dwellings for the poor in Stratford-on-Avon justifies him in calling a public meeting, to be held at the Town-hall, on December 8. The business of the meeting will be to state the necessity that exists for immediate action in the matter, and to consider the best form for that action.

CHURCH BUILDING NEWS.

Lincoln.—The foundation-stone of the new Church of St. Andrew, for the parish of St. Peter-at-Gowts, Lincoln, was laid by the Bishop of the diocese on Tuesday last, the 30th ult. The architect for the new church is Mr. James Fowler, of Louth, and the builders are Messrs. Huddleston & Son, Lincoln.

Netteswell.—Netteswell Church, near Harlow, which has fallen into a very dilapidated condition, has been substantially restored, and a new vestry added. The old stonework to the windows and doorways is carefully preserved, and only restored where absolutely necessary. The roofs have been all stripped and repaired, and that part over the chancel is entirely new. The porch has been rebuilt on the south side after the design of the old one, in which some of the old timbers are replaced in their original positions. A new floor is laid in the chancel with Godwin's encaustic tiles; and Peake's Staffordshire quarries are used for the pavements in the nave, vestry, and porch. Porritt's air-warming stove is adopted for heating. The architect was Mr. F. Chancellor; and the works have been carried out by Mr. Gibbons, of Buntingford, at a cost of about 900*l.*

Brabourne.—The ancient parish church of Brabourne, which has been for some time in course of restoration, has been re-opened. The old oak roofs of the nave and chancel, which were greatly decayed, have been thoroughly restored; and the curious oak ceiling above the altar has been replaced. The massive Norman arch between the nave and chancel, which was crushed out of all form, has been taken down and re-built stone by stone. The Scott chapel, on the south side of the chancel, filled with the monuments of the Scott family, has been thoroughly restored. The curious clearstory windows, the stonework of which was sadly perished, have been almost entirely renewed. The masonry of the tower has been repaired and strengthened; the ugly brick partition which shut the tower off from the nave has been cleared away, and the western window, which had been torn down from its place, and the place filled with brick, restored. The restoration of the chancel has been undertaken by the Ecclesiastical Commissioners, under the superintendence of Mr. Ewan Christian, their architect, that of the Scott chapel by the representatives of the Scott family, and the nave and tower by the parishioners, Sir G. G. Scott, R.A., and Mr. A. A. G. Colpoys, being the architects. The contract for the entire work was taken by Mr. H. B. Wilson, of Canterbury.

Ford.—The parish church of Ford was re-opened on the 17th ult., after restoration and enlargement. Nave and chancel aisles, as well as a vestry, have been built out on the north side. The nave arcade is of three bays; the chancel aisle, which is provided for the school children, opens by arches into the chancel and nave aisle. A three-light east window takes the place of the modern square-headed one, and new traceried windows have been substituted for those of the last century "churchwarden" type throughout the church; they are glazed with thick cathedral-tinted glass, in quarries and patterns, by Mr. W. Done. New floors are provided. The chancel is paved with Maw's tiles. The nave and north aisle are fitted with open seats of pitch pine, and the chancel with stalls of the same material; the rest of the fittings, viz., pulpit, altar-table, altar-rail, and credence are of oak. The old oak screen between nave and chancel has been restored, and the interesting carved oak reredos. The roofs are covered with Mr. Parson Smith's tiles. Mr. W. Dodwell supplied the warming apparatus. The accommodation is for 185 persons, being an increase on the ground floor to the extent of eighty sittings. The cost has been about 1,500*l.* The work has been carried out by Messrs. Bowdler & Darlington, from the designs and under the direction of the Salop-in-Lichfield diocesan architect, Mr. Haycock.

Kirbymoorside.—On the 23rd ult. the Archbishop of York preached at a thanksgiving service in celebration of the restoration of Kirby-moorside Church. In the recent restoration, Sir Gilbert Scott, R.A., was employed. The work of restoration has occupied nearly two years. A new chancel has been added; the old high-backed pews have been removed and replaced by stained pine stalls. The unsightly gallery has been taken away, and the church is now light and open in appearance. A new organ, by Messrs. Forster & Andrews, of Hull, has also been erected. The sole contractors for the work were Messrs. Weatherley & Rymer, of York, builders. The cost has been between 3,000*l.* and 4,000*l.*

Chesilborne.—On the 11th ult. the parish church of Chesilborne, Dorset, was re-opened, after restoration, at a cost of 900*l.* There are many points of interest in the church, which possesses very good features of both the Decorated and Perpendicular periods, one singularity being in the arcading, that between the nave and south aisle having a large and smaller early arch and columns; a small arch was afterwards added in the tower during the Perpendicular period. The north aisle appears afterwards to have been added with irregular-sized openings, but differing from the south side in the largest opening being at the west end, and a small opening at the east end. In the restoration care has been taken to preserve the ancient work. New roofs have been put to the nave and south aisle. The whole of the work has been carried out by Mr. John Wellspring, builder, of Dorchester, under the superintendence of Mr. G. R. Crickmay, architect, Weymouth.

Miscellanea.

The Warrington Arbitration Cases.—Mr. Leofric Temple, Q.C., the arbitrator in the four cases of Pierpoint *v.* Artingstall, Artingstall *v.* Pierpoint, Collin *v.* Artingstall, and Artingstall *v.* Collin (to which we referred some ten weeks ago, p. 825, *ante*), has just been given. Mr. Temple awards and finds that in the action of Collin *v.* Artingstall, the plaintiff has no cause of action, and he awards and orders that a verdict for the defendant be entered on all the issues therein. In the action of Artingstall *v.* Collin he finds that the plaintiff has good causes of action against the defendant on the issues joined on the money counts, and he awards and orders a verdict to be entered on the said issue for the plaintiff for the sum of 150*l.*, and on the other and remaining issues in the said action, he awards and orders a verdict to be entered for the defendant. And as to the action of Pierpoint and Others *v.* Artingstall, he awards and orders a verdict to be entered for the defendant on all the issues joined therein. And as to the action of Artingstall *v.* Pierpoint and Others he awards and orders a verdict to be entered on all the issues for the plaintiff, with damages 40*s.* And in each and every of the said four actions he grants all certificates necessary to enable the successful party to recover his costs. And he awards and orders that John Pierpoint shall give security to the said George Artingstall for the sum the said George Artingstall is entitled to recover in the action of Artingstall *v.* Collin. And he awards and orders that in the said causes the costs do follow the event; and that John Pierpoint and Robert Wood Collin do each of them pay a moiety of this award and of the arbitration.

Oxford Architectural and Historical Society.—The first of the series of walks for this term took place on the 13th ult., when a party of about fifty ladies and gentlemen assembled at St. Mary's Church, where they were received in the chancel by the vicar, the Rev. J. W. Burgon. In pointing out some of the many objects of interest in the church, the vicar said that behind the woodwork, by the altar, was a curious old piscina. Proceeding through the vestry and a small yard, the party entered the Old Convocation House, and from thence a visit was paid to the lecture-room upstairs. On leaving this, the party entered the chapel at the north-west corner of the building, which, the vicar said, was of considerable interest. It was built in the fourteenth century by Oriel College, and in it was the tomb of the founder, Adam de Brome. He trusted that the chapel would be thrown into the body of the church. It was now used as a robing-room by the heads of houses. On the south wall of the church seven angels were carved, one of which was unlike the rest, that over the pulpit being a work of great artistic merit. In reply to a question, Mr. Burgon said that in the alterations which it was proposed to carry out, it was intended to remove the screen and gallery on the north side, throw the chapel he had mentioned into the church, put stained glass in the whole of the windows, re-seat the church, and fill with mosaics the space over the porch door.

Registration of Trade Marks.—It is contemplated forthwith to constitute a Trade Marks Committee to consider the subject in detail, to bring the views of the commercial community before the Lord Chancellor, and, if necessary, to apply for the reception by his lordship of a deputation.

Worcester Guildhall.—Mr. Waterhouse has reported to the Worcester Town Council on a reference to him by that body to consider whether it would be possible to reconstruct the present Guildhall, so as to provide the public offices, halls, and courts, necessary for the proper transaction of the business of the city of Worcester, or whether, in order to provide such accommodation adequately, it would be needful or advisable to pull down the existing structure altogether, as well as the other Corporation buildings in the rear, or any of them, and to erect in their place an entirely new building. He recommends the retention of the present front, in order to form the centre of the *façade* of a more imposing block of buildings. The north and south wings, with the adjacent buildings, he proposes to clear away, with the view of obtaining a sufficiently ample site for a building containing the required accommodation. The present front he proposes to support on either side by a projecting wing, 24 ft. wide, so that the present front will be thrown into a recess. Mr. Waterhouse estimates the cost at from 30,000*l.* to 35,000*l.*

Annual Art Exhibition at the Royal Institution, Manchester.—The prizes offered in connexion with the 55th annual exhibition of modern works of art held at the Royal Institution in Manchester have been awarded as follow:—A prize of 50 guineas to the artist of the best figure subject, painted in oils, awarded to Edward F. Brewtnall, for his picture of "Crabbed Age and Youth"; a prize of 50 guineas to the artist of the best landscape or marine subject, painted in oils, to J. C. Hook, R.A., for his picture of "Wise Saws"; a prize of 50 guineas to the artist of the best water-colour drawing to Francis Powell, for his drawing of "Loch Corruish, Isle of Skye"; a prize of 50 guineas, given by Mr. G. F. Watts, R.A., to the artist of the picture "of the most poetic design—the best picture regarded from the highest point of view," to C. J. Gregory, for his drawing of "Sir Galahad"; and the Heywood gold medal, or 25*l.* in money, to the artist of the most meritorious work of art, to W. W. Ouless, for his portrait of "H. D. Pochin, Esq."

Lectures on Work and Wages.—On this Saturday, the 4th inst., the first of a course of four lectures on this subject will be delivered by Professor Leone Levi at King's College, free of charge, to members of workmen's clubs and institutes affiliated to the Club and Institute Union. The titles of the lectures are as follows: "The Work and the Workers," "The Reward of Labour," "Trade Unions," "Strikes and Lock-out, Conciliation and Co-operation." The lectures will be delivered on Saturday afternoons at four o'clock, and some well-known public man will preside on each occasion. Mr. Samuel Morley, M.P., has consented to be present at the first lecture. A special feature in the arrangements is that after each lecture an hour will be devoted to the discussion of the subject, when the Professor will be glad to answer any questions put. At the conclusion of the course an examination will take place for such members of the clubs as may desire to attend; and the Cobden Club has offered 10*l.* worth of prizes to successful candidates.

Brickmaking Machines.—On the 23rd ult. a meeting of the master builders of Liverpool was held at the Clarendon-rooms, South John-street, for the purpose of considering the advisability of forming a company, consisting of builders only, with the object of obtaining one or more of Batley's Patent Plastic Brick-making machines, together with a suitable clay mine. The chair was occupied by Mr. William Evans, who, in opening the proceedings, said he thought it was high time that something in the shape of machinery should be introduced in Liverpool into the brickmaking trade. Mr. Baker expressed the opinion that the object of the meeting would have the sympathy of the building trade of Liverpool if it would render them a little more independent of the people who made bricks by hand. Mr. Batley having explained the principles of his machine, a committee was appointed to examine one of the machines in actual operation, and report thereon to an adjourned meeting.

The Exeter Reredos.—The additions to this erection in Exeter Cathedral are now nearly complete. Sir Gilbert Scott has himself, to a great extent, personally superintended the alterations. The additional height now obtained has been recognised as requisite from the first.

Architectural Association of Edinburgh.—The opening meeting of the session of the Edinburgh Architectural Association was held in their Rooms, 37, George-street, on Friday evening, the 26th ult. The meeting took the form of a fine art and literary *conversaxione*. On the walls were hung a number of architectural drawings, and on the table were likewise laid an interesting series of water-colours of "Old Edinburgh," along with a selection of photographs of fine specimens of Continental architecture. Mr. Robert Anderson, president of the Association, delivered an address, commenting on the prosperity of the Association and the decided step they had taken in starting a printed sketch-book of the architectural remains of Scotland. A cordial vote of thanks to Mr. Anderson brought the meeting to a close.

An Englishman's House his Castle.—At the meeting of the Rancorn Sanitary Authority, on the 24th ult., Mr. Edwards asked the clerk whether a sanitary officer had power, without a magistrate's warrant, to enter any habitation, without the permission of the tenant, to make an inspection of the premises. The clerk quoted the 102nd section of the Public Health Act, the effect of which was that if the occupier refused to give his permission for his premises to be inspected, the sanitary officer could not enter without having obtained a warrant from a magistrate to do so, notice having been given to the occupier of his application. Mr. Edwards expressed himself satisfied, and said that an Englishman's house was still his castle.

New Masonic Hall at Stockton.—The foundation-stone of a new Freemasons' Hall was laid at Stockton on the 18th ult. The site of the new building is in Wellington-street. The existing Masonic hall was erected in 1869, at a cost of about 5,000*l.*, but Masonry has prospered so much in Stockton of late as to render the existing hall totally inadequate for the lodges in the town. The adoption of the Free Libraries Act in the borough presented an opportunity of disposing of the present hall to the Corporation, and plans for a new building, estimated, with site, to cost about 6,000*l.*, were prepared by Messrs. Weatherill & Moses. The builders are Messrs Craggs & Benson, of Stockton.

The Zetland Working Men's Club, Richmond, Yorkshire.— The new Zetland Club, presented by the Earl of Zetland for the benefit of the working classes of Richmond, was formally opened by his lordship on the 25th ult. The site selected is in Newbiggin, and faces the Freemasons' Hall. The building, which was completed in the spring of the present year at a cost of nearly 2,000*l.*, was erected by Messrs. Thwaites & Son, of Richmond, and is well finished. The other contractors were Mr. Wm. Naylor, joiner; Mr. R. Barker, plumber; and Mr. Baines, slater, of Ripon. The dimensions of the hall are 52 ft. long by 24 ft. wide, and about 30 ft. high.

Liverpool Plumbers' Society.—On the 22nd ult. the annual *soirée* and ball of this Society took place at St. George's Hall. Upwards of 800 persons sat down to tea. At half-past nine o'clock the chair was taken by Mr. Councillor Lewis. Mr. Dobbs, the secretary of the Society, read the balance-sheet for the year 1874, which showed that the income from the ball last year amounted to 77*l.* 16*s.* 6*d.* The expenditure during the year was 89*l.* 14*s.*, and there was a deficiency of 11*l.* 17*s.* 5*d.* The chairman, in the course of a short address, impressed upon the members the necessity of providing for the widows and orphans of those belonging to their trade.

Sanitary Science in Rural Districts.—Mr. James Howard, Mr. J. Bailey Denton, and Dr. Abbotts Smith have adjudicated upon the essays "On the application of Sanitary Science to Rural Districts, with a view to ensure the Highest Condition of Health, and the Prevention of Disease," in competition for the prize of 25 guineas offered by Dr. Lory Marsh. The *Chamber of Agriculture Journal* learns that nineteen essays were sent in, and that the gentlemen above-named have awarded the prize to Mr. C. F. Gardener, of Ashbourne, Derbyshire, who was the successful writer of the essay on local taxation for the prize offered by our Local Taxation Committee.

"The Cattle Show." — The Smithfield Club's Show of Fat Cattle, Sheep, Pigs, and Implements, will open on Monday, the 6th of December, and remain open until the 10th, inclusive, at the Agricultural Hall, Islington.

Kilmarnock New Academy.—The memorial stone of the new Academy, Kilmarnock, was laid with Masonic honours on the 20th ult. by R. W. Cochran Patrick of Woodside, Depute P.G.M. of Ayrshire. The new school, which is intended to supply the place of the old Academy of Kilmarnock (erected about seventy years ago, and now about to be closed), is situated in North Hamilton-street, and consists of a centre building of two stories, with wings of one story occupying a frontage of 150 ft. The style is Elizabethan, and the architect was Mr. Wm. Railton. Accommodation is being provided for about 600 pupils, and the cost will be about 5,000*l.*

The Middlesbrough Surveyorship.—At a meeting of the Middlesbrough Rural Sanitary Authority, on the 25th ult., it was stated that for the office of sanitary inspector and surveyor, at a salary of 150*l.*, there were thirty-four applications. The following names were selected from the list:—Mr. J. W. Aird, Huddersfield, surveyor and inspector; Mr. John Cook, Sunderland, surveyor and inspector; Mr. R. C. Foster, Gateshead, assistant surveyor; Mr. George Harrison, Glaisdale, surveyor; and Mr. Joseph Nelson, Middlesbrough, builder. The meeting was adjourned for a fortnight, when the appointment will be made.

The Royal Archæological Institute.—In view of the intended visit of the Archæological Institute to Colchester in July next, a meeting of the Council of the Essex Archæological Society was held on the 17th ult., when a sub-committee was appointed, to act conjointly with the Museum Committee of the Corporation, and to communicate with the Archæological Institute in making the necessary arrangements for the proposed visit. At this meeting there were thirteen new members of the Essex Archæological Society elected.

State of Lincoln Cathedral. — Canon Blakesley, in a letter explaining why they called in a civil engineer as well as their architect, says:—"The importance of the matter may be imagined when I say that although to the eye of the common observer the appearance of the structure will not be altered if the attempt to be made is successful, yet the danger now apprehended is no less than that of the fall of a large portion of the western front and one of the towers."

Death of Mr. A. B. Houghton.—Mr. A. B. Houghton, one of the most able draughtsmen on wood connected with the illustrated press, died on the 23rd ult. at the age of thirty-nine. He was a member of the Old Water Colour Society, and contributed to the Royal Academy and other exhibitions. He was buried at Willesden Cemetery on the 27th ult.

"The Art of Garnishing Churches."—Those of our readers who wish information as to the decoration of churches, will find it in the 4th edition of Mr. Edward Young Cox's book, thus entitled. The work has been revised and improved, and contains all that is necessary, and more.

The City Poultry Market.—This building was opened on Tuesday last (November 30th), members of the Corporation eating a good dinner together on the occasion. A view and particulars of the market will be found at pp. 821, 823, *ante*.

Architectural Association of Ireland.—The opening meeting was held on the 25th ult. We have before us the address delivered on the occasion by the President, Mr. Thomas Drew, and will print some portions of it in our next issue.

Health Lectures for the People.—The Manchester and Salford Sanitary Association, with the view of extending the usefulness of the lectures prepared and delivered by their members, have decided to issue them under the title of "Health Lectures for the People."

The Macclesfield Carpenters.—The carpenters of Macclesfield have given notice that they require an advance equivalent to 6*s.* per week, and a reduction of time from 54½ to 54 hours.

Sculpture.—Mr. Wm. Day Keyworth, jun., has completed a statue of the late Mr. James Clay, M.P., to be placed in the Hull Town-hall, erected by public subscription.

The Royal Academy. — Professor John Marshall, F.R.S., commenced his annual course of lectures on Anatomy at Burlington House, on Monday last, the 29th ult.

Another Opera House for Paris.—It has been determined to erect a vast opera-house in front of the Château d'Eau, intended to seat about 9,000 persons.

The Over Darwen Stonemasons.—The stonemasons of Over Darwen struck work on the 22nd ult., to resist a reduction of 1*s.* per week.

TENDERS

For building a cottage and laundry at Westcott, Mr. Dibble, architect:—

Lynn & Dudley	£680 0 0
Heselgrave	501 0 0
Hamblin Brothers (accepted)	485 0 0

For boiler-house, loose box, &c., Mill Lodge, Barnes, for Mr. S. W. Keene. Mr. E. Leuchars, architect:—

Sale (accepted)	£123 0 0

For additions at No. 20. Barnsbury Park, for Mr. C. Cox. Mr. G. W. Warr, architect:—

Pemberton	£408 7 6 l
Whiting	309 0 0
Brown	300 0 0
London Artisans' Building Company	245 0 0 l

For roofing over part of the premises of Messrs. Frost Brothers, Shadwell. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

Wood	£839 0 0
Ashby & Horner	744 0 0
J. & F. Coleman	650 0 0
J. K. Coleman	617 0 0
Mackay	600 0 0

The tender of Messrs. Guynan & Son for blinds to the Manchester new Town Hall (Mr. Alfred Waterhouse, architect) has been accepted.

For alterations to warehouse, fitting up offices, &c., at No. 11, Curtain-road, for Messrs. L. Rose & Co. Mr. J. Groom, architect. Quantities not supplied:—

Smith	£670 0 0
Staines & Son	437 0 0
Woodward	446 0 0

For repairs, alterations, painting, &c., for Messrs. Grout, at No. 102, Bishopsgate-street Within. Mr. B. Tabberer, architect. Quantities not supplied:—

Larke	£570 0 0
Monk	474 0 0
Downs	473 0 0
Cohen	472 0 0
Staines & Son (accepted)	443 0 0

For alterations, office fittings, &c., at Gresham Buildings, for Messrs. Sanderson & Murray. Mr. C. N. Beazley, architect.—

Staines & Son (accepted)	£183 0 0

For new schools, Canning Town, for the West Ham School Board. Mr. J. T. Newman, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Enor	£5,887 0 0
Bangs & Co.	5,878 0 0
Norton & Son	5,833 0 0
Knight & Dustow	5,815 0 0
W. J. Rivett	5,783 0 0
Niblett & Son	5,760 0 0
Hosking Brothers	5,687 0 0
Morter	5,473 0 0
Atherton & Latta (accepted)	5,300 0 0

For sewers, sewage tanks, &c., for Evesham Drainage, Messrs. Gotto & Beesley, engineers:—

Meredith	£5,443 0 0 l
Jones & Fitzmaurice	5,431 0 0
Everall	5,379 13 6
Botterill & Co.	4,600 0 0
Meats	4,502 18 6
Walker	4,435 0 0
Dixon	4,293 0 0
Bugbird	4,200 0 0
Coker	4,173 2 6
Goodair	4,038 0 0
Cowdery & Sons	4,022 19 0
Webb	3,950 0 0
Kelly	3,430 0 0
Barnes & Co. (accepted)	3,328 0 0 l

For various works about to be commenced for the North-Eastern Railway Company:—

South Shields Branch.

Forster	£36,286 0 0
Tone	35,696 0 0
Gibb	35,000 0 0
Elliot	33,983 0 0
Waddell	33,900 0 0
Nelson	33,908 0 0
Scott (accepted)	29,640 0 0
Adamson	27,680 0 0

Alterations near Monkwearmouth Station.

Hurst & Sons	£16,065 0 0
Scott (accepted)	16,015 0 0

Railways near Durham.

Waddell	£26,086 0 0
Gibb	26,009 0 0
Nelson	24,432 0 0
Scott (accepted)	22,355 0 0
Adamson	20,392 0 0

Alterations at Shot Factory-lane, Newcastle.

Gibb	£9,656 0 0
Waddell	9,092 0 0
N. & R. Reed	8,990 0 0
Jackson	8,29 0 0
Broomhead	7,773 0 0
Scott	7,766 0 0
Elliot	7,510 0 0
Lee (accepted)	7,050 0 0

For erection of school and offices, Peter-street, Farringdon-road. Mr. E. R. Robson, architect. Quantities by Mr. W. H. Barber:—

Gammon & Son	£8,171	0	0
Hook & Oldrey	8,024	0	0
Boyce	7,988	0	0
Oliver	7,972	0	0
Newman & Mann	7,882	0	0
Coleman	7,730	0	0
Nightingale	7,742	0	0
Ennor	7,648	0	0
Williams & Son	7,600	0	0
Grover	7,347	0	0
Wall Brothers	7,333	0	0
Hobson	7,196	0	0

For new schools, Langdon-road, Holloway, for the London School Board. Mr. E. R. Robson, architect. Quantities by Messrs. Northcroft, Son, & Neighbour:—

Boyce	£10,822	10	0
Downes	10,779	0	0
Lawrence	10,677	0	0
Roberts	10,584	0	0
Williams & Son	10,520	0	0
Nightingale	10,371	0	0
Pritchard	10,327	0	0
Hook & Oldrey	10,320	0	0
Wall Brothers	10,210	0	0
Grover	10,191	0	0
Hobson	10,075	0	0

For new school and offices at Horseferry-road, Westminster, for the London School Board. Mr. E. R. Robson, architect. Quantities by Mr. John Nicholls:—

Wall Brothers	£8,136	0	0
Carter & Son	8,095	0	0
Hobson	7,931	0	0
Ennor	7,880	0	0
Scrivener & White	7,790	0	0
Downes & Co.	7,678	0	0
Hook & Oldrey	7,656	0	0
Jerrard	7,483	0	0

For decorations at the mansion, Twyford Abbey, near Ealing. Mr. Walter Graves, architect:—

Haynes	£850	0	0
Scott Brothers	557	0	0
Hook & Oldrey (accepted)	549	0	0

For the erection of a school for 550 children, on the site in Fairfield-road, Bow, for the School Board for London. Mr. E. R. Robson, architect:—

L. H. & R. Roberts	£7,242	0	0
Kirk & Randall	7,375	0	0
Boyce	7,114	0	0
Williams & Son	7,102	0	0
Newman & Mann	7,086	0	0
Smith	7,076	0	0
J. & F. Coleman	7,042	0	0
Sheffield	6,974	0	0
Hobson	6,937	0	0
Ennor	6,888	0	0
Wall Brothers	6,878	0	0
Downs & Co.	6,870	0	0
Grover	6,864	0	0
Lawrance	6,670	0	0
Timewell	6,514	0	0
Hook & Oldrey*	6,399	0	0

* Recommended by the Works Committee for acceptance.

For certain alterations and additions to the St. John's, Hulley-street, Limehouse, School, and for enlarging the school by 274 places, for the School Board for London. Mr. E. R. Robson, architect:—

Atherton & Latta	£4,490	0	0
F. & F. J. Wood	4,360	0	0
Sheffield	4,275	0	0
Kirk & Randall*	4,230	0	0

* Recommended by the Works Committee for acceptance.

For alterations and additions at the Prince of Wales, Hackney, for Mr. More. Mr. Edward Brown, architect:—

High (accepted)	£1,600	0	0

For rebuilding six houses and shops at the corner of Chancery-lane and High-Holborn. Mr. Lewis H. Isaacs, architect. Quantities supplied by Mr. L. C. Riddett:—

Elkington	£22,612	0	0
Chappell	22,223	0	0
Browne & Robinson	21,768	0	0
Patman & Fotheringham	21,486	0	0
Foster	21,479	0	0
Macey	20,892	0	0
Kilby	20,767	0	0
Scrivener & White (accepted)	20,644	0	0

For the erection of twenty workmen's dwellings at Langwith, Derbyshire, for the Sheepbridge Coal and Iron Company. Mr. S. Rollinson, architect:—

Harper & Smith (accepted)	£3,090	0	0

For the erection of five shops and three houses at Corporation-street, Chesterfield. Mr. S. Rollinson, architect. Quantities supplied:—

Hewitt	£2,900	0	0
Stevenson & Weston	2,578	0	0
Forrest	2,193	0	0
Tutin	2,088	0	0
Greenwood	2,050	11	0
Slim (accepted)	2,050	0	0
Marples (withdrawn)	1,915	0	0

Accepted for the erection of a house upon the Bath-road, Reading, Berks. Messrs. Morris & Stallwood, architects. Quantities by the architects:—

Higgs (bricklayer)	£1,628	12	0
Sheppard (carpenter & joiner)	1,140	0	0
Millington (plumber, glazier, and painter)	405	0	0
Harris (plasterer)	270	0	0
Huntley & Co. (smiths)	223	0	0
Wheeler Brothers (masons)	127	0	0
Warmsley & Co. (slaters)	118	16	0

For five cottages at Kategrove, for Messrs. Philbrick. Messrs. Morris & Stallwood, architects. Quantities by Mr. Morris:—

Goodey	£759	0	0
Filewood	723	0	0
Simonds (accepted)	672	0	0
Follley (withdrawn)	635	0	0

Accepted for the erection of a house at Redlands, Reading, Berks, for Mr. Henry Lea. Messrs. Morris & Stallwood, architects. Quantities by the architects:—

Higgs (bricklayer)	£961	0	0
Woodroofe (carpenter & joiner)	800	0	0
Moffat (plumber, glazier, and painter)	287	10	0
Grover (plasterer)	195	0	0
Wheeler (mason)	86	13	0
Catchpool (smith)	88	11	2
Warmsley & Co. (slaters)	80	5	0

For Wesleyan chapel and schools at Windsor, Berks. Messrs. Morris & Stallwood, architects. Quantities by Mr. Morris:—

	Spire.	Fence.	Total.
Dore Brothers	£160	£260	£5,365
Shearburn	150	289	5,295
Hollis	137	238	5,075
Kelly	119	237	4,859
Woodbridge	120	270	4,754
Reavell (accepted)	125	271	4,320

For certain alterations and additions to the vicarage house of St. Mary's parish, Reading, Berks. Messrs. Morris & Stallwood, architects. Quantities by the architects:—

Wheeler Brothers (accepted)	£491	0	0

For the erection of lodges at Gilridge and Gabriels, and repairs and alterations to cottages at Greybury-lane, Edenbridge, Kent, for Mr. J. T. Morton. Messrs. Ingram & Hollands, architects:—

Gilridge Lodge.

Godley	£490	0	0
Jordan	475	0	0
Goodwin	415	0	0
Kesterton	356	0	0

Gabriels Lodge.

Jordan	£425	0	0
Godley	400	0	0
Goodwin	375	0	0
Kesterton (accepted)	299	0	0

Greybury-lane Cottages.

Jordan	£320	10	0
Kesterton	164	0	0
Goodwin	185	0	0
Godley (accepted)	150	0	0

Extra Works.

Charlwood Brothers	885	0	0

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December 1st, 1875.

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The Builder.

Vol. XXXIII. No. 1714. Saturday, December 11, 1875.

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The Water-Supply and the Rivers Pollution Commission.

WHATEVER questions may have arisen with regard to the course pursued by the successive Commissions on the subject of the pollution of rivers, it cannot be said that the bulky volume which forms their sixth Report does not, in one sense at least, begin at the beginning of the matter. The area covered by the inquiry of the Commission has been enormously extended since that body was first constituted. It may be considered unfortunate that the primary question on which the Commission was designed to throw light has been somewhat obscured by mixing it up with a far wider inquiry into the whole water-supply of the country. To this we may in some degree attribute the slow progress of defensive legislation, and the lamentable fate of last year's Bill for preventing the pollution of rivers. A clear and business-like engineer's report on the subject of that pollution might long since have been completed, and no excuse would then have been left for legislative inaction. As it is, however, we must take comfort from a discussion of the entire subject of water-supply, and an accumulation of information of which sanitary engineers will be able to make use.

The great feature of the present Report is the chemical analysis, not only of water suspected of sewage or manufacturing contamination, but of water wherever found. Not only streams, springs and wells, lakes, inland seas, and oceans, but even rain, hail, and dew have had to submit to analytical investigation. As far as the pollution of rivers is concerned, this is beginning at the beginning with a witness.

It is not the first time that we have mentioned the fact that a rainfall of ½ in. over the area of England yields a quantity of water equal to the supply of fifty tons per head for every soul of the population. As the total average rainfall, in ordinary years, is rated at about 36 in., we thus require about 1 per cent. of what Heaven sends us for domestic use. Most householders are aware that by extremely simple contrivances they can collect much of the water that falls on the roofs of their premises; and that when no artificial supply is delivered to them, they may thus economise labour in the use of pumps and wells. They are also aware that water thus collected is admirable for some purposes, and disagreeable for others. For washing it is good; for drinking it is detestable. It is also no matter of novelty to be told that the rainwater thus collected in butts or tanks varies in its purity according to locality. The water-butt of a cottage on Exmoor contains a very different sort of fluid from the tank of a house in the City. London rainwater, we all know, is particularly abominable, black to the eye, as well as sulphurous, or otherwise obnoxious to the taste. It hardly needed, we should have imagined, the construction of a leaden rain-collector, of the area of the thousandth part of an acre, upon Mr. Laws's experimental farm, near St. Alban's, to prove that water which has washed the whole atmospheric stratum reaching to the clouds must contain an appreciable amount of impurity. It is, of course, satisfactory to have statistical returns on these points. The Commission have had samples of rainwater, collected in different localities, analysed. Stored rain-water, as might have been fully expected, proves often to be badly polluted. Out of eight samples analysed, but one was fit for domestic use. Even in cases where rain has been collected upon specially cleaned surfaces, and kept in properly cleaned receptacles, at a distance from any great cities, the organic pollution exceeds that of water obtained from springs or deep wells. It must not, however, be forgotten that the locality of such springs or wells is a matter of as much importance as that of the rain-water receptacles. The failure of even the recent abnormal rainfall to raise the volume of streams issuing from certain permeable basins, such as the green sand, to anything at all corresponding to the area of the water-shed which they apparently drain, shows how considerable is the subterranean flow through such *strata*. That such underground drainage should not meet with and carry off sewage and sinkage will be an exception, rather than a rule. The well, therefore, however deep, requires to be watched as carefully as the water-butt.

The Commissioners have tabulated the results of the analysis of no fewer than 1,274 samples of water, collected under the most widely different conditions. Here, again, their labour must be regarded as theoretical and philosophical, rather than as practical; as that of the chemist, rather than of the engineer. It is very well for us to know that the water of the Mediterranean is much fuller of solid impurities than is that of the tidal ocean that washes our own coasts. But that knowledge is hardly necessary for guidance as to the protection of our rivers. In fact, we rather suspect that the Commissioners have allowed a herring to be drawn across the track of the game which they were organised to pursue. We much fear that the inference that some people will draw from the analytic condemnation of rainwater, from the impurity ascribed to all sources of supply except deep wells and springs, and from the admission of the state in which most of our great lines of river-drainage now are, or are asserted to be, will be to argue that it is no use to attempt to make anything of a bad job; that we must leave the rivers to take their chance; and that we must look to the sinking of a number of artesian wells over the country as the future source of the supply of our cities and towns. We can only say that this argument proves too much, and that investigation of the under-current which accompanies the visible flow of such rivers as the Wey and the Mole towards the Thames basin is likely to reveal quite as much elementary pollution, on its road to the great reservoir under the London clay, as the rivers in question, with any decent care, would convey to the water of Thames itself.

It will not do to theorise on such points. The collection and analysis of rainwater from Cornwall, and of seawater from the Ionian Sea, is a charming pursuit. We rejoice to have these things placed within our reach, as we rejoice to have the analysis of Parian marble to compare with that of the marble of Pentelicus. But we confess to a little impatience at being presented with all this elegant and abstract information, when we want to stop pestilence from our streams. We know, without need of any Royal Commission, that we depend on the skies for every drop of water that we drink. We know that this water is most suitable for our wants when it falls upon certain soils, percolates their substance, and is caught as again it issues from the earth. If these pure and limpid springs are allowed to follow the course provided by Nature, and to form rivers, flowing beneath the open sky, and aërated by free leaps over pebbles, and by the dashing of the breeze which accompanies a flow over a gentle slope, we have the best source of drinking-water. That source we have suffered to be polluted in a shameful manner. If we are told that our streams have become so bad, that we must give them up as a bad job, and draw upon the subterranean rivers for supply, we reply that we have but little certitude that the latter will thus long remain purer than the former. In one case we can see the evil. In the other it is very difficult to do so. In one case we have certain known elements to deal with. We have the aid of the oxygen of the atmosphere, and of the direct rays of the sun. In the other case we have a constant succession of new chemical elements which the underground stream may take up in its course; we have a certain amount of sewage pollution from all the country districts; and we have many of the evils which attend on the artificial storing of water under cover and in the dark. There is no use in pretending that such a change is likely to prove a permanent sanitary gain. We must look our danger in the face. We must stop the source of pollution,—not allow it to take one channel, while we help ourselves to water from a neighbouring one. There can be little doubt that all those who have a vested interest in throwing poison into our rivers and streams will endeavour to draw support and countenance from this part of the Report of the Commissioners. These gentlemen seem to us to resemble that most dangerous of all

friends, the loquacious witness, who, in his eagerness to tell every incident that he thinks may enlighten the jury, and thus serve his cause, exposes himself to a keen cross-examiner, who makes use of his open-mouthed admissions to confuse the case which the witness laboured to support. We apprehend that the true function of a River Pollution Commission was a simple one. It was to ascertain the state of our rivers, and the causes of any bad features of their condition. The mode of preventing such mischief should have been an Administrative project, submitted to Parliament, based on the facts thus collected and tabulated. It is a most unfortunate thing that so simple and practical a line should not have been laid down and adhered to. The Commissioners will, no doubt, urge that from time to time their instructions were modified or their powers extended. But we know that, as matter of fact, such extensions of area are almost always due to the application of the persons charged with the inquiry. We are glad to have information on every element of the great water supply question. But one thing at a time. The increasing pollution of our rivers is a crying evil. It is monthly increasing in magnitude. It requires a vigorous check. No device could there have been more subtle,—if it were a device, and not a mere case of drifting,—than a recommendation, whether express or implied, to make this primary duty a constituent part of a vast scheme which it will require a quarter of a century to discuss. In fact, an implied necessity of this kind is far more objectionable than an open proposal. Every one would understand what the latter meant. But as it is, how many men will shake their heads and say,—"Ah! it is not so simple a question! It seems that they cannot purify our rivers, do what they will. Rivers are made of rain; and the Commissioners have discovered by analysis that stored rain-water is unfit for human consumption. Excremental dust is suspended in the air. Rain is full of excrementitious matter. It is full of zymotic germs. It is laden with products of animal and vegetable decay and putrefaction. In a tumbler of water we swallow as much impurity as would enter our nostrils from the air in more than a week. The Commissioners say that the rain-water at Greaseley turns out to be sewage. What a terrible discovery! Better leave the rivers alone; keep as far from their banks as possible, and drink nothing but Seltzer water. Or, if that cannot be done, have water-butts for washing, and revert to the old plan of wells for drinking purposes. Only every well must pass through an impervious into a pervious stratum. It will not, however, be very generally necessary to have wells more than 1,000 ft. or 1,500 ft. deep"! We do not think this is much of an exaggeration of the inferences that some people will be likely to draw from the Report, with one exception. That is, that the depth of the wells to which we are to be driven has not as yet been brought upon the *tapis*.

As to the influence of soil on the character of water, indeed, we are furnished with much valuable information. The geology of a district controls the quality, more than even the quantity, of its water supply. Various compounds of lime and magnesia with carbonic and even with sulphuric acids form soluble salts, which water readily takes up in its passage through *strata* containing those elements. These salts are those which chiefly render water hard. The calcareous *strata* form a large portion of the area of Great Britain. The upper and under chalk extend over a well-defined district. All limestone, dolomite, and selenitic rocks harden the water. Where much soluble saline matter occurs, the water soon takes it up. The destruction of organic impurities is effected by the filtration of water through porous soil. But in the course of such filtration, through the upper chalk for example, organic is only exchanged for inorganic foreign matter; and as the water becomes fitter to drink, it becomes less fit for other domestic purposes.

Regarded not from the engineering, but from the purely scientific, point of view, the information afforded by the Report as to the analyses of sea water has great interest. We are in the habit of considering that water, in the process of evaporation, leaves behind it all foreign matter. In artifical evaporation this is so far the case that potable water, as is well known, is distilled from sea water. But the Report refers to the carrying back to the land of considerable quantities of saline matter by the efficacy of sea breezes. The senses, indeed, inform us that such is the case. At how great a distance inland, in a good breeze, may we not scent the sea? The analyses of rainwater show that the amount of salt that thus returns to shore is appreciable. Organic matter, again, is much more abundant in sea water than in rain water, even when the latter is considerably polluted. Not only from various points along our own shores, but from the surface of the ocean, as well as from great depths in other parts of the world, samples have been collected and compared. The results of the scientific cruise of H.M. ship *Porcupine* have been pressed into the service. The proportions of organic matter found vary not only according to place, but according to time. Those collected at different dates from the same locality (off Worthing, for example) differ very much. The inference is that much of this matter is held in suspension rather than in solution. Further, while the suspended organic contents of our rivers consist of dead matter, that of the ocean is said to be living! Minute gelatinous beings, of microscopic proportions, inseparable from their native element by filtration, have their home in the water of the sea. Those who have seen the bright lines of phosphorescent light that mark the breaking of the Tuscan or of the Ionian Sea upon the shore by night, or who have watched, as a thunder-storm rolled down from the Apennines, how each flash of lightning from the sky was responded to by a phosphorescent shimmer from the sea, will be fully prepared to agree with this estimate of the condition of the organic contents contained in sea water. And a very beautiful proof of the theory is deducible from the fact that where, as in the neighbourhood of Aberystwith, waters containing poisonous solutions of lead are poured into the sea, the organic matter found in the latter is at a minimum. The fisheries suffer from this cause. It is curious to see one poison thus destroy another. But of the two the mineral contamination is by far the most hostile to animal life.

The Commissioners return to the subject of the slow rate at which self-purification takes place in the flow of rivers. We are told that instead of a flow of ten or twelve miles being enough to oxidise sewage diluted with twenty times its bulk of water, a course of fourteen or fifteen times that distance is insufficient to destroy two-thirds of the poison. The analyses of the Commission have not been such as to enable them to say at what distance, or after how much dilution, water once contaminated with sewage may be regarded as restored to purity. It is possible to make use of this statement in two ways. The safest and most natural is that which we have always advocated. We are not ill content, for the moment, to accept the doubt thus raised. But the inference we draw is, that it is absolutely necessary to prevent the streams from being polluted with sewage in the first instance. A glance at the numeric features of the case presents some important results.

Dr. Parkes's calculations give the average amount of 68 lb. of solid matter as the annual product of each unit of the population. Of this weight, 52 per cent.,—say 35 lb.,—consists of albuminous matter, which is not only incapable of assimilation by vegetation, but is a constant source of danger. It is indispensable that this matter should be destroyed by oxidation. This is effected either by the liberation of free oxygen in contact with the fluid containing the albumen, as is done by Condy's fluid; by filtration, as at Swansea; by agricultural filtration, as at Croydon; or by application of a high temperature, as by General Scott's process. By each of these different methods the same result is attained,—the matter is oxydised.

One part by weight of this organic matter in 100,000 parts; two parts of organic carbon, or of any metal, except calcium, magnesium, potassium, and sodium; or three parts of organic nitrogen, or of any dry mineral substance; will render water polluted, according to the Report of the River Pollution Commission. The organic contents of the sewage per unit of population will therefore be capable of contaminating 1,562 tons of water. We may take the mineral elements, in round numbers, at half that value, and rate the annual power of pollution per unit of the population at 2,350 tons of water. We have before seen that 50 tons of water per head is equal to one-third of an inch of rainfall over the entire area of England. This gives a ratio of 46 to 1. That is to say, that the sewage of the entire population, if allowed to sink into underground reservoirs of water, is capable of polluting from 15 in. to 16 in. of rainfall, being the total rainfall of a great zone of the county. In a little more than a century, if population keeps up its normal rate of increase, the sewage, left to itself, would be enough to poison the entire rainfall of England.

We must remember, however, that the distribution of population, and that of rainfall, are regulated by different laws. In some cases, where the population is most dense, the rainfall is the lightest. In the water-shed of the Thames, for instance, it is occasionally little over 16 in. But the population in this district is in a ratio to the area of double that of the average of the country. Thus, the sewage produced within this water-shed is enough (if allowed to soak into the sources of supply) to poison the whole annual supply of that water-shed to double the intensity declared to be dangerous. How soon that degree of contamination may be removed by natural causes, we are not in a position to say. When once diluted with a large quantity of water, it becomes very difficult to oxidise either the organic or the inorganic poison. We require to expose the fluid containing it to free oxygen that it can take up. We do that by filtration or other means, but it requires to be done in the first instance. As we dilute the poison we render it more difficult of direct neutralisation.

It must be remembered, however, that to compare averages is only a preliminary step in a scientific investigation. The last few days have shown us how absolutely capricious is the distribution of our rainfall. We have seen the average rain of two months descend, in more than one instance, where rain-gauges are kept, within twenty-four hours. These great flushes are balanced by great droughts. In the former case the water escapes to the sea in a short time. In the latter, we have a reduced quantity left to dilute the poison of which we speak. Again, there are local limitations of water storage within the bounds of every great water-shed area. Thus, it is clear that, in speaking of wells and springs, there are many places in the valley of the Thames where, in an exceptionally dry season, we have statistical reasons for expecting the outbreak of enteric fever from sewer pollution of the springs.

We do not bring forward this plain apposition of simple figures for the purpose of raising alarm. But we confess to being unable to contemplate them without some uneasiness. A matter is so much more tangible when brought to the balance, even if it be but from a very small sample that the weight of a mass is calculated. Our reason for urging our readers to make their own calculations in check of ours is this. We consider the idea of leaving the rivers to take their chance, while we seek our drinking water elsewhere, is a mischievous and false idea. We have no doubt that a very strong interest will not only urge the adoption of this idea in the next Session of Parliament, but will (fairly or unfairly) seek to draw arguments from the Report of the River Pollution Commissioners for so doing. Now what these figures show is, that there will be no safety in this course. We can leave nothing, in our dense state of population, to the unassisted operations of Nature. If we allow our rivers to be poisoned, there is the probability in some places, and the certainty in others, that we shall poison our subterranean water supply at the same time. The very irregularity of the geological structure of the country, while it diminishes the danger in some cases, intensifies it in others. The valleys of the Wey and the Mole, which we above cited, are cases in point. What becomes of the sewage of Woking, of Guildford, of Godalming, of all the towns on the various areas of pervious soil lying in the basins partly drained by these rivers? It is tolerably certain what becomes of it. It sinks through the porous soil to the subterranean water flow. No doubt it may be to some extent oxidised in its way, but how much we do not know. We know that when water was taken, years ago, comparatively near the surface, at Guildford, for the supply of the town, fever was very prevalent. Very much is gained by depth, but at the same time the power of inspection may be lost, while an accumulation of mischief may be going on.

We must therefore look to chemists to do something more than give us analyses of the water of the Mediterranean and of the Arctic Regions. They must help us to deal with the sewage question, as a matter of danger to be overcome by science. We are not undervaluing the wonderful chemical power of the earth itself. But we must know what we are doing. We must not think that all is right and safe if we

leave rivers to become channels of poison, and resort to deep wells. No one can doubt that this would be an engineering blunder of great magnitude. It would substitute steam power for the natural action of gravitation for the greater part of our water supply. It would be a tangible addition to our water-rates,—a permanent pressure on the cost of life. What we wish to show is that it may turn out a chemical blunder also. At all events, we come to the conclusion, whether it accord with, or be in spite of, the inner conviction of the River Pollution Commissioners, that every fact which they have collected, intelligently regarded, shows that there should be no time lost in preventing the conversion of the chief features of the beauty and of the health of the country into open and unmitigated sewers.

A NEW DUTCH PROVINCE.

It has been said with truth that peaceful conquests are the best, and the best of all that have lately come to our knowledge is that which the kingdom of the Netherlands is intending to make. The Dutch are verily going to take Holland; they propose laying dry the Zuyder-Zee, thus delivering it from the grasp of the ocean, and adding another part to their country, which they are truly said to have "built up." In twelve, sixteen, or at most twenty years, if the undertaking is successful, the kingdom will be richer by another province of about 750 square miles, and "our dear little country," as the Dutch fondly love to call their fatherland, will be enlarged by nearly one-twentieth.

This is certainly a grand undertaking for such a small country, but the Dutch are well prepared for it. Since the earliest times they have been constantly at war with the ocean, and if they had not so bravely resisted, it would have fared with them as badly as with the Friesians, who in East Friesland, as well as in the North Friesian islands, have lost by fearful storm floods a great part of their old land, with many flourishing villages and many thousands of inhabitants. The Dutch, on the contrary, have wrested from the watery element, by dykes and sluices, a considerable portion of their fertile soil, almost half of which lies below the level of the sea. This contest has not always been carried on without loss. The present Zuyder-Zee was, at the time of the Romans, terra firma. There was then in that district only an inland lake, Lacus Flevo, with an outlet into the sea, called Flevum. The lake degenerated by degrees into a morass, and in 1282 the waters of the North Sea swallowed up the whole marshy flat. This Zuyder-Zee is very shallow; beside deep channels of 15 ft. to 20 ft. deep extend large sand-banks with a depth of water over them of only 3 ft. to 4 ft. Such a sand-bank stretches almost uninterruptedly from Enkhuizen, in North Holland, to Kampen, in Overyssel, at the mouth of the Yssel. This circumstance gave rise to the idea of damming off the southern portion of the Zuyder-Zee by a gigantic dyke, to be constructed in two sections, one extending from Enkhuizen to the little island of Urk, and the other from the latter to Kampen. A plan of such dimensions would have never been matured if the Dutch had not already formerly been successful in undertakings of this nature on a smaller scale. The draining off of the Lake of Haarlem is a case in point; it was effected in thirteen years (1840 to 1853), at a cost of over 750,000*l.*, but it gave in return a tract of fertile land of 100 square miles, peopled in 1860 by over 7,000 inhabitants. The experience then gained was again practically applied in laying dry the Y, the river of Amsterdam, an undertaking completed in 1872. And now the Waterstaat of Holland, which probably includes the best nautical engineers of the world, proposes acquiring for the King of the Netherlands a whole province. Already in 1849 M. van Diggelen had prepared a scheme for laying dry the Zuyder-Zee, but it was found impracticable. In 1865, M. Rochussen, formerly governor-general of Dutch East India, a man of great enterprise, caused M. Beyerinck, who had directed the works of Haarlem, to prepare a plan confining itself to the draining of the southern portion of the Zuyder-Zee. The examination of its bottom proved very satisfactory. It is now known that nearly everywhere it consists of the most fertile soil, only waiting for deliverance. The Minister of the Interior, M. Heemskerk, then took the matter in hand, by appointing a committee consisting of eleven members of the Waterstaat, a strong majority of which, in April, 1873, declared itself in favour of the plan, and pointed out its advantages. Public opinion in Holland was roused by this declaration. In September of the same year, the king, in the speech from the throne, spoke favourably of the undertaking, and the States-General, in their reply, demanded the immediate commencement of operations. The chambers have voted a sum necessary for the completion of the preliminary works, and everything leads to the expectation that the carrying out of the great work will be actively proceeded with.

Naturally great difficulties have to be overcome. It is no child's play to construct, from Enkhuizen to Kampen, a dyke over 160 ft. broad at its base, rising 26 ft. above the level of the sea, and having a length of nearly twenty-five miles. But the bottom of the sea is favourable, consisting of soil capable, as experience has shown, of supporting the heaviest weights. When this principal dam is finished, the whole area will have to be partitioned off into squares, and the water pumped out by degrees and conducted by great canals to be made into the sea. The most important of those canals will lead from Enkhuizen to Amsterdam, and auxiliary canals will connect Hoorn, Eidam, and other small places with the ocean. It might be thought that by thus laying dry the great inland lake the small towns situated at its borders would lose. But this is not the case; for the Zuyder-Zee is so shallow, and so dangerous and almost useless for shipping, that this inland traffic is of too insignificant a nature. Most of the formerly flourishing towns on the shores of the Zuyder-Zee have declined to such an extent that a lately published book treating of them bore the title, "The Dead Towns of the Zuyder-Zee." The remaining channels to be left will serve much better than hitherto as a means of communication with the sea. It is calculated that over 470,000 acres of land will be reclaimed, of which over 370,000 acres are of the most fertile arable soil. But the expense will not be inconsiderable: it is estimated at 9,600,000*l.*; and if we consider that the work may take sixteen years or more, a considerable sum must be added as interest. The works will, no doubt, be carried on by the State, as the Lake of Haarlem was drained at Government expense. Complaints were rife at that time as to the slowness with which operations were proceeding, and the laying dry of the Y was given to a private company, the Government solely guaranteeing 4 per cent. interest. The draining of the Zuyder-Zee, however, is considered a work of too important a nature to leave it to private enterprise, and the State should surely keep the direction in its own hands when a whole province is at stake.

The *Cologne Gazette*, in welcoming the undertaking, says that it is glad to see the small, brave, liberty-loving, closely related nation of the Netherlanders, which formerly was distinguished by great enterprises, while latterly it seemed to have become somewhat sluggish, entering upon a work of such vast dimensions, and heartily wishes the Dutch people success. The *Gazette* takes pains to add that "Germany does not envy them their well-earned prosperity, and is far removed from harbouring those foolish and criminal plans of conquest against the Dutch of which she has been sometimes suspected by them. Actuated by this groundless fear, they have thrown up many small and almost useless fortifications; much more useful and fruitful of results will be the expense for the draining of the Zuyder-Zee."

NEW DISCOVERIES IN EGYPT.

Twenty-five years ago, a French expedition, similar to that which was made famous in the last century, undertook a fresh exploration of Egypt, and its first result was the discovery of the buried temples at Serapium. This took place in 1851. Since then the work of research has been carried on without intermission, and is now so far complete that very large spaces of subterranean Egypt have been sketched and described; and, accordingly, the world will soon be in possession of the details thus acquired. Meanwhile, an abstract, drawn up for the use of the Academy, may not be without its interest. Two thousand peasants were employed at Memphis, Thebes, Abydos, and Edfon; but they failed, for a long time, to decipher the text partly laid bare, in gigantic characters of stone, by Champollion. Strictly speaking, the scientific examination of these Egyptian monuments dates no farther back than slightly more than fifty years; when Europe was first taught to read the hieroglyphic language of the Pharaohs. The recent labours, however, of M. Mariette and his companions, have opened a quarry of investigation altogether unexpected and surprising. They were divided into two periods; one beginning in 1854, and another in 1858, which continues to this day. The first brought to light the ancient Serapium and the true Memphis, 7,000 relics of which are accumulated in the Louvre; the second laid bare thirty beds of inconceivably curious riches, which are, at length, catalogued and classed. They are so many in number as to defy, within moderate limits, any description; yet their general value may, perhaps, be indicated. M. Mariette arrived in Egypt in the autumn of 1850; he left Cairo, as he said, to spend a few days in the desert, and he stayed in the desert three years. His first endeavours were to examine the mighty burial-ground of Memphis, and to unlock the mysteries lying beneath it. This is a necropolis situated between the Nile and the hills of Libya, the Pyramids being all in sight, and here the inquiry commenced. To begin with, a plan was drawn of the entire cemetery, and an attempt made to arrange its monuments in chronological order. While this task was in course of accomplishment, various circumstances occurred. A stone, mystically engraved, led to the digging up of a sphynx, composed of a perfectly white stone, uninjured by ages of burial in the sand. Here was the key to an underground labyrinth which, day by day, extended itself as the explorer advanced. The clue, in fact, had been found, and nothing more than means were needed to reach, through a range of sphynxes, the Tomb of Apis, long ascertained to be far distant from his Temple, in the hypæthral Memphis itself, and long ago destroyed by Egyptian barbarism to be used up as building materials for new suburbs of Cairo. The god was supposed thus to have two abodes,—a temple and a tomb. With twenty stout fellows to help him, armed with pickaxes and spades, the Frenchman, on the very next day, commenced his search for the sanctuary; a second sphynx was unearthed; then a third; and so forth, until twenty-one had been recovered from their sandy graves. At this point, a sudden turn of the line took place, and the excavation became deeper and deeper, and more difficult, from hour to hour. After two months of unremitting toil, the 134th paradox in stone was once more given up to the light of Heaven, and there the procession ceased. In front, to the right and to the left, nothing further could be traced. Still, perseverance solved the problem. A considerable way off the scent was resumed, and, by a sharp bend, the excavators came upon a spacious subterranean court, beautifully paved, intersected by a double row of sphynxes, but Egyptian in little else. It was simply a hemicycle, adorned with statues of Plato, Lycurgus, Sophocles, and Pindar, whose effigies appeared to forbid all further advance. Nevertheless, the progress of the explorer was not stayed. A little temple, evidently of Egypt, and stamped with an approximately intelligible date, served as a finger-post, and its hint was taken. The bull image and the lunar disc now became more frequent, and the discoverers were full of heart and hope, when the signs were lost again. The road, it seemed, led nowhere. But it was remembered that the Egyptians were accustomed thus to mask the approaches to their shrines, through a jealous fear of their desecration by strangers, and the pursuit was accordingly pushed on.

Nothing in the narratives of Mr. Layard will possess a deeper fascination than this, when it is given in its fulness to the world. Here was the literal Worship of Death in its most plain and perfect form. The real grave had yet to be reached, but every wall, every block, was painted in honour of the corpse that, obviously, had lain embalmed not very far off. In every direction, blind passages were bit upon, like those in a maze; and a large sum of money was expended upon these abortive endeavours. Nevertheless, the work of excavation went forward. Two additional lines of wall were disinterred; then two other little temples; next, various exquisite fragments of Grecian sculpture; afterwards, a three-headed dog, a horse, a lion, and a panther; but no inscriptions, no story written on the stones. At length, the threshold of the Serapium itself was struck by the Arab pickaxe, and the explorers were rewarded. Not, however, without many a disappointment and check; their labourers ran away; their tents were blown

down; but these are incidents common to all such adventurers. Five hundred monuments of the remote past had been exhumed, and every fresh shaft sunk led to new discoveries,—among them a chamber, hollowed in the solid rock, without a tinge of colour on its floor, roof, or walls, or the outline of a tomb, or the faintest indication of any particular purpose, yet so secretly contrived as if it had hidden the mysteries of a thousand years. The interior obscurities of the Pyramids themselves are not more perplexing. Thence, a steep incline led to the portal of the tomb, covered over with inscriptions, and opening upon a wide and lofty gallery, without a glimpse of natural light. Here, then, in countless chambers, all hollowed in the rock, lay the sarcophagi of Apis; the walls enriched with sculpture and hieroglyphics, and in all directions unexplored corridors leading away to unexplored sepulchres. These were of a single pattern; but not far off were others, less deeply engulfed in the sand, each composed of two rock-hewn rooms and a staircase. The great tomb, however, eclipsed in interest the whole of these put together. Its main gallery is nearly 400 yards, or not far from a quarter of a mile in length; on both sides open the chambers of the dead, each containing a monolithic sarcophagus, with a ponderous lid; all decorated, moreover, with human images; and every one supposed, when once the rites of sepulture had been concluded, to be closed for ever against the sight of men. Of some the massive doors were thrown down by an earthquake; of others they were forced open by the profane curiosity of 1874. They have been examined, in succession, from the rough and clumsy work of the earliest periods, to the rich and elaborate sculpture of the latest, and their original sanctity exists no more. It is noticeable that, whatever the epoch, the sarcophagi are of about the same size; invariably in granite and monolithic, approaching to 10 ft. in height and 13 ft. in length, and leaving us to wonder how such bulks could have been transported from the quarries among the hills, across this breadth of desert, and deposited in receptacles so far below the surface. Yet another secret remained to be laid bare. At the end of the gallery ran a wall of masonry. The sound told that it was hollow, and tradition said that it concealed a vast golden treasure. In the result were found Pharaonic relics in marvellous variety, including vases, lamps, semi-human figures, masks, and urns assumed to be cinerary. The whole of these objects, nearly 3,000 in number, have been secured for France, as was just, and the total is continually increasing. The farther the excavations went, the more abundantly were they rewarded; but, in some directions, the subterranean architects would appear to have been interrupted in their task, since columns and tablets, evidently intended for inscriptions, were left completely blank. This fact suggested a somewhat astonishing idea to the French explorer. He took up his abode, for nights together, in these sepulchral halls, and, with the assistance of lamp-black, finished what he supposed the artists of the Fourth Dynasty, and the worshippers of Apis, to have begun. That was not all. He took down the inscriptions, then sufficiently toned to look like antiquity, and it was not difficult to palm them off, as originals, upon the Government at Cairo. Later on, with fresh funds, having completed the exhumation of the Serapium, though compelled to leave the sarcophagi in their places, as too heavy for transport, he had the mortification of seeing the Court of Sculpture, the Sphynxes' Avenue, the smaller isolated tombs, all the excavations, indeed, in the neighbourhood of the principal historic tomb, overwhelmed by the Libyan sands, beneath which they are hidden once more,—perhaps for ever, now,—sands scarcely less addicted to find a level for themselves than is water. Those who originally hollowed the rocks took care to encircle them by gigantic dykes and trenches, which resisted, long enough for them, at all events, the encroachments of the desert. Of all this record, only two fragments have publicly appeared; the one, a sketch of the works as originally designed; the other, a partial inventory of the antiquities transmitted, from the bowels of the desert, to Paris. In order to understand more, we have to consult the unpublished MSS. First among these is a series of plans, technical explanations, chromo-lithographs, imperfectly executed, and photographs from the museum at Boulak, which alone can give a just idea of the artistic and archæological results obtained. It is entitled, "Remarks upon the sixty-four Images of Apis found in the Excavations at Serapium." Its publication was never completed, even in the fragmentary form, and copies are exceedingly rare. The second was styled "A Selection of Monumental Discoveries made during the Exhumation of Serapium"; and the third, a "Memoir on the Mother of Apis." This may suffice to exhibit the literature that has grown out of the French researches among the graves of the sacred bulls. It may be of interest now to inquire into the style and epoch of the arts which they illustrate. From the most antique of all these tombs, articles of enamel and of gold were picked up, where not a remnant of that which might once have been flesh or bone could be detected; figures of man-headed horses, and others, not less exquisitely wrought than they might have been by the chisel of Cellini; and a thousand different forms, all, however, ostentatiously dedicated to the religious idea, and impressed with the rigour of an inflexible uniformity. The sacred suggestion is universally prevalent. Nothing is to change,—nothing to improve,—all is to be formal. The granite-worker of old Egypt was prohibited alike from deteriorating and from developing. Yet, a kind of unconscious superiority did manifest itself, from age to age, if not in the forms, at all events, in the manipulation, visible throughout these buried cities, wherein the dead have buried their dead indeed,—this most archaic of all unfolded mysteries, amidst which there are so many strange surprises, suggesting a comparatively modern fancy. Thus, a scribe tracing characters on a tablet; a man's image, in petrified cedar; heads and busts which might be accepted as models by nineteenth-century sculptors; a weasel and a lion in stone; a ring, a crown, and a dagger; a cross and a sceptre, which, until quite recently, conveyed no definite significance to the mind of even M. Mariette himself. When, however, a few years ago, he had burrowed to the basements, not of the Sphynxes only, but also of the great Pyramids, he met with surprises at almost every step. He detected an amount of made-up work, so to speak, which had never before been so much as guessed at. In addition to this, there was brought to light,—and only the academicians of Paris have as yet been favoured with a full description of it—a building constructed entirely of rose-coloured granite, such as is to be met with in the quarries of Elephantina, the columns of which are monolithic, while the walls are composed of irregularly-shaped blocks, somewhat Cyclopean in their dimensions. But there is not an inscribed character or a painted fragment, to suggest the history of this edifice, which may possibly rank among the most primitive architectural antiquities of the world. It contains, deep sunken in a well, a statue in stone, to which none except a conjectural meaning can be assigned. From this point a line of research was drawn, including no fewer than thirty important excavations, still continuing to give up sarcophagi, to let the light into long-hidden chambers of the dead, and to present varieties of that which some have agreed to designate as "hollow sculptures," tinted with rich and, apparently, imperishable colours. The opinion is, though the grounds for it may be regarded as uncritical and fragile, that they date from long before the foundation of Thebes, whenever that event may have taken place. The result, at any rate, is conspicuous. These latest exhumations in Egypt mark a distinct series of differences in arts, and, still more, in manners. The one set exhibits funeral customs resembling those of an Irish wake; the newest brought to light illustrates a woe and a despair beyond the power of words to interpret; and yet they are in close conjunction with joyous scenes; water-parties; dances under the palms; singing groups; and similar passages leading man, as it were, from life to death through the labyrinth of this practical and solemn philosophy. We must not, perhaps, further anticipate the revelations which the French Layard has to make from the Egypt of Apis and the mummies; but they are many in number and wonderful in compass; and, as casting not a few cross and side-lights upon a hitherto-confused and distracted history, will be valuable beyond any common estimation. To the chronicles of art and archæology, again, they will add a chapter, the contents of which, even for the chosen Forty, are not yet sufficiently summed up to be satisfactorily indexed.

Bequest of Pictures to the Nation.—The late Mr. Wynn Ellis, whose death has just been announced, leaves his collection of paintings by the old masters to the National Gallery.

ARTISTIC DRAUGHTSMANSHIP.*

In this extraordinary era of development on which we are entering, I venture to give young Architecture, as represented by this Association, my candid opinion, for what it is worth,—that we are falling miserably behind the rest of the world in the scale of educational attainments. All honour, I say, is due to the public spirit of those young men large-minded enough to recognise some deficiency, and who attempted to meet it by the formation of this Association; but I venture to tell their brethren who have not backed them in their efforts, but who are aspiring to the profession, that a time is coming when young Irishmen will not go, as I am proud to say many have done in the past, to be first the able assistants of English architects, and ultimately successful competitors with the architects of the whole kingdom. Already it is beginning to be recognised that an architectural assistant "up to the time of the day" is not (or very rarely now) an article of native Irish manufacture. Architects in good practice see their own pupils ebb and flow, and none qualify as they did in *their* day to fill the assistant's chair in their master's office; and it is a matter of every-day experience for me to hear architects express their desire to import a thoroughly qualified assistant from London or elsewhere. I am rather glad of this on the whole. The gentlemen who have been, or may be, imported into our midst, will always have a cordial Irish welcome, and I would rejoice if this portentous movement would open the eyes of our architectural youth to the fact that it means something serious for their future prospects of being successful men.

Time at disposal will not permit me to enter to-night on the constructive branch of the profession, and our backwardness in this, which would be a matter for not one but many discourses. I shall deal only with one detail of the fine-art side of our pursuits. I say that we are backward and deficient—wofully so for the time of day—in knowledge of styles, design, decorative art applied to architecture, and artistic skill in draughtsmanship, and to this last detail of study I shall confine my remarks. Other men elsewhere draw better than we do, and we should look to it. When I look at the amazing proficiency to which the rising generation of young Londoners have attained, chiefly under the fostering development of the London Architectural Association, and the superlative advantages for improvement which are to be had there, and so well taken advantage of, and when I look at the heavy disadvantages under which we labour, I confess I grow despondent about our future place in the race. I shall be told, perhaps, of what brave show has been made by our architects in past times; but I reply, past times did not dream of looking to the architect, such as he was understood to be but the other day, for such acquirements as are now looked for from him as a matter of course.

I would ask you to note an extraordinary fact illustrative of this development. For thirty years a great national scheme of art education as applied to manufactures has been in operation under the rule of South Kensington. That it must have effected great good for the country, on the whole, may be admitted, and what the country would be in the scale of art without some great attempt at such regeneration it is appalling to contemplate. It does not, however, amount to a libel to say that in the great and primary objects set forth—that of producing designers of art manufactures—the Kensington system has been a comparative failure.

It is a further remarkable fact that if we were to look into the origin of the design of some of the finest modern works—art-furniture, applied decoration to buildings and furniture of every sort, ceramic manufactures, textile fabrics, gold and silversmith's work, and work in the baser metals, stained-glass illumination, and even needlework and embroidery—we find the ablest, most practical, and vigorous of the army of designers are recruited, not from the leviathan manufactory of Kensington, but from knots of rising architects and their immediate associates; from a self-formed school which has arisen of itself in our midst. Again, nothing is now commoner in our picture exhibitions than to find architects straying into the painter's more legitimate field as exhibitors of landscape or figure subjects. Look at how much all this implies:

* From address, delivered at opening meeting of the Architectural Association of Ireland, November 25th, by Mr. Thomas Drew, R.H.A., President.

how much it indicates, not only of knowledge of architecture in its stricter sense, but of the decorative art of all times and nations, facility in drawing the human figure, knowledge of perspective, and mastery of the use of colour, and one must admit that the versatility of architects' study is indeed developed beyond what it once was.

When I say that we look in vain for proficiency in these modern accomplishments among our little school here in Dublin, I am only stating a melancholy fact. I am as painfully alive to the heavy disadvantages under which we labour in facilities for acquiring it as any man can be, and they are these which are no fault of ours; we do not enjoy the presence of innumerable great examples of architecture ever under our eyes. We do not possess in every hamlet, village, and country town some more or less glorious example, of Mediæval art more especially, to be studied and sketched, as does the more favoured Englishman. Farther removed from the great centres of wealth, we do not see daily the varied and vast employment of many materials and novel arts in building; we have not—and of this I take a right to make an Irish grievance and speak in just resentment of fault somewhere—any museum of art. Further, owing to our absence from the great sources of wealth and expenditure upon the present sumptuous surroundings of architecture unequalled in our history, we are not called on or stimulated to develop these more novel powers. So much for our misfortune, but how much now for our fault? Still would I cry with one of old, but with more justice,—"Ye are idle," "ye are idle." Ye have the wherewithal of some straw to make your bricks. We are all idle!

I put it to you, if you wanted to find a man to make you a good perspective drawing of an elaborate building, and to tint it or finish it in pen-and-ink, like an artist, where would you look for him? I put it, is this a creditable state of things?

To begin with,—for the ignorance of perspective prevalent among our students, there appears to me no manner of excuse whatever. Perspective I hold to be the simplest of accomplishments—an art the whole theory of which I maintain is capable of being acquired in one hour's learning, and practice of and dexterity in which, industry and exercise in it will surely bring. I am lost in amazement at the apathy and neglect that are widely shown in architects' offices by pupils in acquiring an item of knowledge so essential to their being worth anything either as designers or draughtsmen.

In acquiring the use of colouring and other elaboration of artistic drawings, I admit graver difficulties are with us, but by no means insuperable to willing minds. Instruction in art of this kind is not easily had in Dublin. There are not, to the best of my belief, any teachers of water-colour here who have directed their attention to the special kind of teaching we want; and, at the risk of bringing by my irreverence a house about my ears, I express my belief that, as an agency for artistic instruction of young architects, the Government School of Art at the Royal Dublin Society is a thorough delusion and a snare. While, perhaps, no other means of instruction is open of more practical efficacy, I would not say to our pupils,—avoid that institution and the "efficiency of the eminent masters" thereof, so frequently and appropriately mentioned in the inspiration of our newspapers. Drawing from the antique and the round, and any study of figure-drawing which a man can get, must be serviceable to him; but for the class of better educated youths who come to our offices, the School of Art Practical Geometry is waste of time, and an insult to their intelligence; its "perspective" is complicated, pedantic, and makes as much of a mountain as it can of a molehill of knowledge. Its exercises in mechanical drawing, in projection, and so forth, are so much sheer waste of time to the youth, who must acquire all this in a much more wholesome style in his master's office work.

Painting from still-life is going off the practically useful track, and the delineation and shading of cones, triangles, and other models—which I believe Government especially stimulate by "payment for results"—always appears to me a sad prostitution of time and talent. In the department of landscape painting, or use of water-colour in such a way as would be of benefit to the architect student, the School of Art is a failure and lamentable break-down.

That the objects of these schools are more diverted towards what may bear upon manufactures I am aware; but even in that point of view the total impotency of a "great school of art" in this department, and its ignoring of landscape painting and study from Nature out of doors, is a discredit to the system, and, further than the system can be accountable, to the intelligence of those who guide the school, and who appear to make no attempt to alleviate the deficiency. I complain the more strongly of this defect, as it is to this upas-tree of art-teaching that we owe the absence of independent professors of water-colour such as we want.

However, in discussing this disadvantage, I cannot accept it from our backward young artists as an excuse. There is much measure of remedy in our own hands. By patient study of some such works on the use of water-colour as Penley's, for instance; by constant attempts to use colour in copying good drawings and sketching out of doors, and by constant exhibition of these efforts to as many malevolent but competent critics as possible, I believe the student may be independent of the master to a great extent. As regards pen-and-ink etching he is at no disadvantage whatever. Thanks to the inestimable boon of photo-lithography we have all before us every day facsimiles of pen-work by the very ablest draughtsmen in the kingdom; and there are many works easily available, such as Johnston's "Early French," Street's "Brick and Marble Architecture," and, outside architecture, many publications of clever etching, in the study of which for himself any man may improve by practice in the use of the pen.

So urgent do I feel to be this question of improved draughtsmanship, that I would entreat of you,—and I wish it were possible by any words of mine to arouse some enthusiasm and energy about it among all the members present,—to consider whether we are not strong enough in numbers and resources to establish some special drawing-classes for ourselves, fitted to supply our special wants. It is by the establishment of such classes under the London Architectural Association that such a stimulus has been given among the younger members of that society to higher art training, with results I have referred to. I believe if we could obtain the names of a sufficient number of men who would co-operate, fix upon a sufficient scale of fees, and look about us, it would not be impossible for us to induce some competent artist to come among us, and take our classes in hand. I believe such a thing would be an invaluable benefit to ourselves, and not an unpromising opening for some artist wishing to undertake teaching.

The course which I would recommend would be some study of drawing the figure from the antique and from the life, both nude and draped. For such study as this there exists in the school of the Royal Hibernian Academy, free, gratis, and for nothing, and elsewhere in Dublin, every advantage that could be desired. The more special object of our class would be the practice of drawing in water-colour, of landscape, but with special direction of the skill acquired to representation of architectural subjects. The course of teaching might also embrace Perspective and drawing of Ornament applied to architecture, of different styles and schools, from the flat and the round.

For due edification of such classes, I would propose that we should form each year a small loan collection of architectural drawings,—say half a dozen or a dozen,—by the hands of the best known architectural artists, which would enable students to have for some time under their eyes the drawings of masters; and that in their delineation of picturesque architecture they might catch some inspiration from a Prout or a David Roberts, or in delineation of contemporary works of their own designs, they might "take wrinkles" from and aspire to emulate the handling of a drawing by a Waterhouse or a Lynn.

SCOURING THE RIVERS.

IN one respect, at least, the floods which are visiting us will prove themselves to be not an unmixed evil. Though the majority of our rivers are now raging torrents of more or less turbid water, spreading in all directions, and dealing havoc in their course, they will, when they have resumed their natural proportions, be all the better for the thorough washing and cleansing they have undergone. During the summer months, when there is generally little water passing down their channels, most of the rivers of this country are little better than dirty sewers. Abominations of all kinds, liquid and solid, are poured into them, and it needs an occasional storm to carry off the discoloured waters which too often are anything but a "sweet-smelling savour." Mines and factories, gas-works, and town-sewers, daily cast their filthy refuse into the nearest streams, whose beds are gradually choked up with the solid deposit, and whose waters are tinted various colours, and made more or less poisonous by the soluble matters which are dispersed throughout their length. Purple rivers, blue rivers, black rivers; rivers white like milk, rivers red like wine, rivers rivalling the Tiber in their yellowness, are the consequence; and pure water is difficult to procure in any English stream. So thick is the deposit, and so poisonous is the water in some instances, that when a flood has occurred, and the river has overflowed its banks, the submerged land has been totally destroyed for all agricultural purposes; the very grass and shrubs have been poisoned. Not long ago some ducks were poisoned by drinking in a river into which the refuse of a lead-mine had been cast; the crops of the unfortunate birds were opened, and the lives of one or two were saved. But human beings who happen to be poisoned cannot have their "crops cut open," and the chances are that any one drinking of such water once would not have an opportunity of doing so a second time. If it were not for occasional heavy falls of rain and a "fresh" in the stream, many rivers would become completely blocked, and so long as the present system of abusing them continues, we must be prepared to welcome frequent floods on account of the service they render in cleansing the natural watercourses, and relieving them of their noisome burdens. After the tremendous quantity of water which has been suddenly passed down the rivers, they will be for a time comparatively pure; but it would surely be better that, if such floodings of the country are to occur, it should be with pure water, instead of with poisonous mixtures, and though floods are of service in the way we have indicated, floods of pure water would be preferable.

THE LAST PROPOSAL AS TO LONDON BRIDGE.

THE most recent candidates for public approval of a design for increased accommodation on London Bridge are the well-known firm, Messrs. Brunlees & M'Kerrow, civil engineers, and, in conjunction with them, Mr. Valentine G. Bell. They claim for their plan that it will give increased accommodation to the traffic without interfering with the design, or increasing the load on the foundations, and that it is the only plan submitted, as yet, that combines these important advantages. It is stated that there will not be any construction that will be seen above the parapets of the bridge, and that the elevations will be left untouched. They also propose to give up the whole width of the bridge to the road traffic, but with the heavy and light traffic on different levels, and the foot-passenger traffic depressed, and in the centre of the bridge, instead of being at the sides, as now. It is proposed to have on each side of the bridge a roadway, 16 ft. 6 in. wide, and on about the present level. Between these roadways is a covered footway, 18 ft. wide, and 3 ft. 9 in. below the present roadway, with, over it, a roadway for light vehicular traffic. The heavy wagons will take on each side the lines next the parapets, and between these and the covered footway will be the lines for omnibuses and light vans. The cab and light carriage traffic will take as it does now the two centre lines, one in each direction upon the raised roadway, 6 ft. above the level of the proposed covered footway. The depression in the floor of the covered footway is to be obtained by removing the gravel and clay puddle, that add nothing to the strength of the structure, and interpose between the granite paving and the arches, and substituting for these materials a coating 3 in. thick of asphalte. The flooring of the covered way it is proposed to lay with encaustic tiles, and to line the side walls with the same, of ornamental pattern, to a height of 4 ft., above which the carriage-way for light traffic will be supported by ranges of dwarf ornamental columns, resting on the side walls of the covered way. The clear headway will be 8 ft., the upper open portion supplying light and ventilation. The floor of the light traffic road will be borne by longitudinal and transverse, rolled, wrought-iron girders, with arched iron plates riveted to the bottom flanges. These plates will be enamelled on

the under side, and form the ceiling of the covered colonnade. The space over the plates will be levelled up with concrete to 3 in. above the upper flange of the girders. The paving is proposed to be of wooden blocks bedded on sand. A centre row of columns is introduced to distribute more equally the weight of the upper roadway. These might be dispensed with by the introduction of an invert between the side-walls, which would involve a higher level for the road. The light-traffic roadway will have a footpath 3 ft. wide on each side, for the use of police-constables and others employed on the bridge. It is enclosed by a neat iron rail on each side, the uprights placed at greater distances than might be necessary for the side-boundary of a public footpath. This rail is the only portion of the new construction that can possibly be seen from the river above or below the bridge, and it is so slight that the obtuse visual angle of incidence is likely to make it invisible at the distance at which it may rise above the parapet in the line of sight. The entrances to the covered footways are by inclined planes and curved passages, from each side of the street at each end, the curves meeting at the entrance to the colonnade. The rise to the upper carriage-way is by a gradient not steeper than the existing road. The gradients of the inclined planes and curved entrances to the covered way are portions of 1 in 8, and 1 in 10. It is stated that the plan could be carried out with very little interference with the traffic; the approaches would be first constructed, and the work would be carried on from both ends under a temporary moveable platform provided for the passage of the traffic. It is stated that the cost of the work will not exceed 50,000*l*.

PROPOSED DESTRUCTION OF CÆSAR'S CAMP, WIMBLEDON.

WIMBLEDON AND PUTNEY-COMMON CONSERVATORS *v.* DIXON.

This was an appeal, in the Court of Appeal, on the 2nd inst., from a decision of the Master of the Rolls. The suit was for an injunction to restrain the defendant from carting building materials over the new road leading from Workhouse-lane across Wimbledon-common to the ancient earthwork called Cæsar's Camp, where the defendant was erecting a number of houses under a building agreement with a Mr. Drax, a freeholder. It was submitted that the defendant either had no right of way at all over the road in question, or, if he had, that it was a right of way for agricultural purposes only.

The Master of the Rolls said the defendant relied on public user, but he had only succeeded in showing that for a number of years people had been in the habit of leaving the high road at the National Schools and driving across the Common up to the gate of Cæsar's Camp, which appeared to be a favourite resort of the inhabitants of Wimbledon and the neighbourhood. Up to 1866, when the new road was staked out by Lord Spencer's orders, there was nothing which could be called a regular road across the Common, only a series of wheel-tracks, from which it was perfectly well settled that the law would not infer a right of way. Their Lordships affirmed the decree of the Court below, holding that the defendant had no right of way over the new road excepting for agricultural purposes. The injunction would, therefore, be made perpetual.

So long as this injunction is maintained, building operations can scarcely be carried on.

THE CADOGAN AND HANS-PLACE ESTATE.

The opening step to this new building speculation appears to have been taken, a tender for the formation of the road from Pont-street to Walton-street having been accepted. The following tenders were received,—Mr. John Ashdown, architect:—

Jackson & Shaw	£3,780	0	0
Nowell & Robson	3,689	0	0
Mowlem & Co.	3,600	0	0
Pearson (accepted)	3,400	0	0

THE HASTINGS TOWN-HALL.

The tenders for the proposed new Town-hall, adjoining the Recreation-ground at Hastings, were made known at the Council meeting on Friday. They were as follow:—

Willson Brothers	£36,420	0	0
Parks	34,300	0	0
Peto Brothers	33,850	0	0
Geary	31,750	0	0
Kempling	29,213	0	0
Adcock	28,210	0	0
Howell & Son	26,790	0	0

The tenders were divided to show cost of superstructure, foundations, and stone for interior work in lieu of plaster separately. Mr. Kempling showed the lowest estimate for superstructure, 19,679*l*.; and Howell & Son lowest for foundation, at 4,480*l*. Five of the tenders varied between 7,050*l*. and 7,980*l*. in the latter respect. The Council stipulated, in the premium awards, for a building to cost 18,000*l*., and allowed 2,000*l*. for foundations. The Building Committee made no recommendation, and no member offered a motion, so all the tenders are rejected. There was also read a letter from the solicitor to Mr. Heffer (who was awarded the second premium) asking if it was open to Mr. Heffer, as the plans of Mr. Jeffery and others were above the stipulated amount, to have his design estimated for, to show it could be carried out within the required amount. The Committee merely reported the fact, and Mr. John Wood (a builder) moved to pass to the next business. This being agreed to, there followed a prolonged discussion, in which Alderman Williams moved to rescind the resolution to build on the Recreation-ground site. In support of his motion he advocated the purchase of the Castle Hotel site. A memorial, signed by 500 ratepayers, in favour of that spot, was presented. Mr. Williams quoted figures to show that, instead of 20,000*l*., the Recreation-ground plan would cost 32,280*l*., whilst the Castle Hotel site would only cost 47,500*l*.; and a larger scheme, to take six adjoining houses, might be carried out for 76,000*l*. Several members spoke, the feeling being that the figures were under-estimated, and that a month's time ought to be given to consider the proposal before coming to a vote. No speaker gave approval to the scheme. At the termination of the discussion, it was decided to call a special meeting of the Council in Committee, and to adjourn the public decision for a month.

THE GOVERNMENT OF HASTINGS.

Sir,—Under the above heading, a letter, signed "A Sufferer," appeared recently in the *Builder*, calculated, if allowed to pass unchallenged, to inflict serious injury upon this growing and important watering-place.

Having spent all my life, now nearly "three-score years and ten," in this place, I may be presumed to know a little about it. I knew Hastings in its undrained, unpaved, and unlighted condition; when it had no public water-supply; when St. Leonards (the parish excepted) had no existence; and I say unhesitatingly that the letter in question is a gross libel upon the place, and consequently upon the people, more particularly upon the governing body, the Town Council.

I pass by the first paragraph in the letter, as simply "nonsense."

The second paragraph commences with the following:—"Hastings is very badly off for water, St. Leonards is little better off, and now the Hastings Council propose to deprive it of some of its too meagre supply." I deny that Hastings is badly off for water, or that the Council propose to deprive it of some of its supply. On the contrary, the Council have for years been extending the water-works. In or about 1860 they purchased the Eversfield Waterworks, which till then belonged to a private individual; they have recently purchased the St. Leonards Waterworks, and they are now engaged in extending and perfecting various portions of the water-supply.

In another paragraph the writer of this famous letter says, "The public voice is shut in a place like this upon all sanitary matters, however bad they may be. The Council know the universal fear; they wrap themselves up in the security that they find in the belief that no one will venture to speak out about the water as they have about the town-hall site." As an answer to this I enclose copies of three letters that I have at various times written (and these are not all that I have written) on sanitary matters. One of these you will see was addressed to the then mayor, the late Mr. Wm. Scrivens, on the subject of the water supply. For this letter I received the personal thanks of that gentleman, as well as the thanks of the Waterworks Committee. On another occasion I was particularly requested by the then mayor, the late Mr. W. Ginner, to draw attention to a fine spring that was found at the Gasworks in excavating for a new gas-holder. I wrote to one of the local papers, and in a short time I had the satisfaction of knowing that the spring was secured for the town. It now forms an important part of our waterworks.

Another paragraph commences thus:—"The same penny-wise-and-pound-foolish plan which prevails with a few will be the ruin of this borough; it is applied to all matters,—town-hall, water, roads, drains, &c. We have been tyrannised over by the Town Council." I for one do not approve of the Council in the matter of the town-hall: however, it is never too late to mend; but if they do not mend, I do not know that the ratepayers need cry about it.

Your correspondent complains of the roads. I do not deny that he has some ground of complaint; but the Town Council have ordered a steam-roller, and I have no doubt from the fact that, as a vessel lately discharged a cargo of broken Jersey granite for the Town Council, there will soon be some "proper material to roll in."

Next the drains are spoken of. I deny most emphatically that the drainage has been neglected. A very few years ago the sum of 26,000*l*. was expended in making an intercepting drain along the whole front of the town, and only a few weeks ago a Government inquiry was held for the purpose of borrowing money to drain a valley contiguous to Hastings; and I happen now to have plans in my possession for the drainage of other suburban districts, which is only waiting for the completion of the necessary preliminaries.

Your correspondent ascribes the effects of the late gale to the "penny-wise-and-pound-foolish policy of years since." He does not seem to know that for years the sea has been encroaching on the land all the way from Pevensey-level to Cliff's-end, and that thousands of pounds have been spent in erecting barriers to keep it back. Besides, are the Town Council responsible for the tremendous gale of wind that on that occasion blew *great guns* till and after the time of high-water, and high-water spring-tides, too?

It would have looked better, seeing that your correspondent has made such sweeping charges, if he had appended his name to his letter, as I do not care whether I offend the authorities or not by what I have written; and as I know it to be true I have no hesitation in signing my name to this.

John Banks.

P.S.—Your correspondent mentions a narrow esplanade before the largest mansions. This portion of the borough has been in the hands of the Council only two years. It was before in the hands of a totally distinct body, hence the Council are not responsible for the narrow esplanade.

PARIS HOUSES.

We have much pleasure in printing a paper, in three divisions, describing the system of residence and mode of house construction in Paris, prepared by Mr. William H. White, architect, who has had good opportunities of studying both. An abstract only, entitled "How the Parisians Build a House in Flats," was read by the author at the last meeting of the Architectural Association, as noticed on another page.

The newspaper writers of more than one country who used to compare Louis Napoleon to Octavius Cæsar, had at least foundations strong enough to support a superstructure more solid than a compliment. If the latter was enabled to say that he had changed Rome from a city of brick into one of marble, the French courtier who declared that the Emperor had found Paris of plaster and would leave it of stone, told a truth which neither the friends nor detractors of the Second Empire seem to have even yet completely realised. It is not too much to assert that within the easy remembrance of men of thirty years of age the Paris of to-day,—the city as it is known to the traveller and man of fashion from every corner of the globe,—has been rebuilt. Indeed, the only portion of the capital which succeeded in resisting the Imperial laws of expropriation was the old Faubourg St. Germain,—the Grosvenor-square of France,—and soon after the Great Exhibition of 1867 the Faubourg had succumbed. But the re-arrangement and reconstruction of Paris as it is has been proceeding gradually since the great Revolution. Much of that which was achieved by Napoleon III. had been projected by his uncle, to whom the Parisians are indebted for extensive schemes of internal reform and public works of general utility; although even as late as the time of Louis Philippe the majority of the streets had no foot-pavements, and the kennel or gutter was in the middle of the roadway. In lighting as well as cleanliness the streets of the French capital were then far behind those of London. Some only were lighted by gas, and the common mode was by oil lamps supported on ropes swung across the street. These are still to be seen in some provincial towns and villages, and during the summer months when the moon is bright they are not lighted. It is incredible to hear that thirty years ago the Parisians envied the Londoners their large open squares, their lamp-posts, and their vestrymen! To those who know the two cities as they are now Macaulay's celebrated description of the English metropolis, in his chapter on the "State of England in 1685," appears an exaggerated eulogium; but when it was written, London, in all but its architecture, was a finer city than Paris.

It may not, perhaps, be inopportune to trace some of the conditions of life amongst the French which in the course of ages have led to different architectural combinations,—conditions which apply almost equally to this country. Before the end of the twelfth century all the arts and sciences which go to compose what is called architecture were in the hands exclusively of the religious orders; and all the different building trades lived within the domain of the cloister. After their emancipation from direct ecclesiastical control, and although architecture was begun to be practised by laymen, monastic traditions were nevertheless preserved. In the feudal palace there was a cloister, or a courtyard resembling it; a hall, like the monks' refectory; a huge kitchen, sometimes forming a separate building; a common dormitory; a residence for the lord and lady; a hostelry for strangers and guests; a chapel; with stables, cellars, granaries, and gardens, arranged in a precisely similar manner to that of the monasteries in which the trade corporations had acquired the art of building. As order and security developed, the habitations which had sprung up here and there

outside the walls of monasteries and fortresses increased, and became towns. The inhabitants, asserting their rights, even as early as the thirteenth century, eventually took upon themselves municipal responsibilities. Each family then resided in a house of its own, and the ambition of the citizen or burgess was to possess a gable facing the street. But it is probable that even in the artistic days of the Troubadours lodgings were let and houses divided. At Montreale (Yonne) there are, or lately were, two houses,* built in the early part of the thirteenth century, which, like semi-detached villas of the present day have a party-wall, but, unlike them, have only one staircase and two flights of stairs so arranged that neither occupant can meet,—each beginning to ascend at opposite ends, under his neighbour's first-floor landing. At Cordes (Tarn-et-Garonne) there is, or was, a superior kind of house,† with shops on the ground-story, which was built at the beginning of the fourteenth century. The owners of these shops probably lived elsewhere (or slept perhaps under the counter or swung in a hammock), as there was no communication between them and the upper part of the house, the shops simply opening into the street. If such a division of tenements was customary in the provinces, it is likely to have been known in the large cities like Paris. But in the Middle Ages, and long after the Classical Renaissance, sets of people lived in common, or were grouped under one head. Soldiers were always attached to the service of some nobleman, and lived within the walls of his residence or domain. Merchants' assistants and tradesmen's apprentices boarded and lodged with their masters. The youth of both sexes were educated in the monasteries and convents, and the majority lived there. The often gentle attendants on people of quality did what upper servants do for their masters and mistresses now. They were gentlemen and lady helps, to use the phrase fashionable in modern Utopia. The servant was more of a dependent, and far better cared for by the family he or she served, than the same class at the present day. The anonymous author of the "Ménagier de Paris," a book printed in the fifteenth century, and containing the advice of a husband to his young wife, says concerning the servants she has to engage:—"Avant de les prendre à votre service, sachez d'où elles viennent; dans quelles maisons elles ont été; si elles ont des connaissances dans la ville, ou si elles ont une *chambre-à-loyer*," ‡—a term sufficiently descriptive, and one likely to frighten any honest burgess 400 years ago from engaging its occupant; for in those days only wild students, dismissed soldiers, adventurers, and strollers of all kinds lived in houses of public entertainment,—the *auberges* of the large towns. Travellers of note,—in fact, all those who could command letters even to the humbler inhabitants,—were received as guests, and it was deemed an accident or an indignity if men of any bearing were compelled to put up at an inn. Of course, besides those enumerated, there were inhabitants in all cities of no calling or caste who lived as they live in London now, anywhere and anyhow. The revolution at the end of the twelfth century, which rendered the less educated classes free of the cloister, and gave them liberty to earn their living as they chose, necessarily inflicted on some the obligation to starve,—an even then vexed problem, the solution of which becomes more difficult as sanitary science develops fresh resources to oppose the natural law of the survival of the fittest. At the beginning of the fifteenth century, the beggars and vagabonds of France formed themselves into a sort of corporation, of which branches were established in all the large towns. Certain parts of Paris were entirely given up to them, and their principal centre, to use a modern expressive phrase, was the Cour des Miracles. This was a large blind alley, unpaved, muddy, and necessarily pestiferous. In one mud hut, hardly four yards square, and half interred in the earth, there lodged more than fifty families with an infinity of children, legitimate or natural, and naked. In this and other similarly constructed shelters lived 500 families piled one upon another. When, more than a hundred years after the establishment of this extraordinary corporation, an attempt was made to carry a new street through the Cour des Miracles, the workmen were attacked by the inhabitants and compelled to relinquish their task.*

The sixteenth century effected many reforms, but it did not improve the dwellings of any part of the community at large. It simply put a classical and therefore foreign exterior to a traditional arrangement of internal distribution; and indeed little alteration was made in planning the interiors of houses by the architects of Henri IV. and Louis XIII. Only at the beginning of the seventeenth century did the habit of living in common, or, more correctly, in large groups, entirely disappear; and then the *salle* or common hall was divided into several distinct and separate rooms. Many and lasting improvements must have been made by both the architects Mansard, and their brilliant contemporaries. The Parisian house in flats, properly so called,—intended for the occupation of the middle class,—dates, I think, from the time of the younger Mansard, when also many of the noble mansions,—*entre cour et jardin*,—still extant in the Faubourg St. Germain, were commenced by the nobility. The custom of inhabiting houses by floors or flats is probably, however, much older, such a system being the logical consequence of increase of population in a town the limits of which were circumscribed by walls and fortifications. But the tall houses which attracted the attention of the legislature during the reign of Louis XIV. did not exist in Paris at the beginning of the seventeenth century. A bird's-eye view of the city, as it appeared in 1607, engraved upon copper by Léonard Gaultier, shows the Cathedral of Notre Dame towering above a number of one-story tenements; and the churches and public buildings stand out from a mass of houses of small elevation. The *fac-simile* of a design for embellishing the capital projected but not executed by Henri IV., in 1610, presents a similar appearance. I am constrained to think that the intercourse which had long existed between Paris and Scotland led to the adoption by the former of residence by flats as it was then practised in Edinburgh even by families of noble birth.

Amidst the multiplicity of plans which are to be found in French architectural publications of the last two centuries, there is not one (or at least I have not found one after diligent search) which represents a house arranged in flats, as such houses are understood in Paris at the present day. Nor are there any plans extant of Scotch houses of a like description, even though it is beyond dispute that many of the houses in Edinburgh of the sixteenth and seventeenth centuries were built in flats, some of these forming blocks of thirteen stories,—each story being a self-contained residence. As early as 1384, Froissart, after a visit, he then paid to Edinburgh, calls it the Paris of Scotland. Perhaps no city in Europe has been built upon a site more opposed to the possibility of lateral extension than was the old town of Edinburgh. The circuit of the walls was enlarged in 1513, and even then few if any European cities contained so large a population confined within such narrow limits. Unable to spread laterally, the city increased vertically; instead of adding to the number of houses the citizens piled new stories upon the houses already in existence; and those who chose to cut down and cart away timber from the borough muir were allowed to add overhanging wooden fronts projecting over the streets. The custom of residing by floors, although it may have prevailed before the burning of the city by the Earl of Hertford in 1544, probably did not become general until then. The old Tolbooth was five-storied, which seems to show that even before the close of the sixteenth century, it was usual to erect comparatively lofty buildings. There is, however, actual evidence of "an eligible town residence" to let in Parliament-close, Edinburgh, in 1680, the official description of which is:—"The house presently possessed by the Lady Ninewells, being the fourth story above the entry from the long trauss of the tenement upon the east side of the Kirkheugh, consisting of four fire-rooms, with one cellar, at a yearly rental of one hundred and forty-four pounds Scots."† On some of these flats were shields of arms, indicating the position in society of their occupants; and the evidence of design in the older houses of the old town still existing, or which existed a few years ago, leaves no doubt that the flat system, which even in modern times has received greater development in Edinburgh than in Paris, was in vogue in the former capital at least 300 years ago.

In Paris the legislature, by limiting the boundaries of the city, has assisted the people in controlling the number of the population. By the octroi tax, which is an almost ancient institution, and the Chinese wall of fortifications which, thanks to M. Thiers, is an almost modern one, the Parisians have been always reminded that their city must not exceed certain bounds. In the reign of Charles IX. the circle of the fortifications was widened to receive the Palace of the Tuileries, then in course of construction. Under Louis XIII. new walls were erected on the north-west side of the city, but under his successor the fortifications on the north side of the Seine were demolished, and the line of boulevarts as they existed in the time of Louis Philippe was formed. Many of the embellishments suggested under Louis XIII. as well as some of those projected by his immediate predecessor Henry IV., were executed during the reign of Louis XIV., when more than eighty new streets were formed, and the majority of the old ones improved and partly rebuilt.* The splendour of his court had brought the rich of all nations to France, and the pre-eminence of Paris amongst French cities had never before been so firmly established. The population had increased in disproportion to the accommodation the city afforded. It was computed at the beginning of the eighteenth century to contain 500,000 inhabitants, whereas at the end of the sixteenth century it is said that there were only 200,000 souls within the walls. At the end of the reign of Louis XV. Paris was surrounded by a wall comprehending a larger area than any previous inclosure; and at the time of the ninth inclosure in 1788 the population was about 600,000. The city which, under Louis XIV. covered less than 4,000 *arpents*, had spread about the period of the great revolution over an area of nearly 10,000 *arpents*. From Julius Cæsar to Louis Philippe Paris has been ten times inclosed; but the last inclosure has neither limited the population nor protected it. Whole streets and boulevarts of houses, villas, and other private residences have sprung up outside the walls. A census taken in 1817 gave a population, minus prisoners and hospital patients, of 657,172 inhabitants, and showed that 224,922 families resided in 26,751 houses, making an average of about eight families per house. Eight years ago Paris had 2,000,000 inhabitants to 50,000 houses, which makes forty inhabitants per house.†

That the house-in-flats, expressly constructed for the purpose, was not common in Paris until the end of the reign of Louis XIV., I think is nearly certain; and he died, amidst the execrations of the Parisians, in 1715. During his reign many of the houses reached a height of eight and sometimes ten stories, but the absence of plans, or, indeed, any description of plans, for houses let off in flats, in such works as those of Pierre-le-Muet, published in 1681, of Blondel, published in 1772, or of Patte, in 1777, leads me to suppose that no special thought was expended by architects upon such buildings; and, indeed, that many were old houses forsaken by their original owners, and adapted to the immediate wants of several tenants. According to M. Viollet-le-Duc, the custom of building houses for the express accommodation of several families does not go back further than the seventeenth century; and he probably infers that the new streets opened in the reign of Louis XIV. were lined with houses of this description. But the planning of them was of a primitive description. The comforts of the middle class, and special contrivances for improving their homes, are not likely to have preceded similar benefits conferred by the architects of the last century upon their noble patrons.‡ M. Patte, writing in 1777, says,—"People used to be lodged for appearances only, and the art of living comfortably, and by oneself, was ignored. All those agreeable arrangements that are now admired in our modern mansions, where the apartments are separated with

* M. Viollet-le-Duc, Dictionnaire de l'Architecture Française,—Maison, p. 223.
† Ibid., p. 275.
‡ M. Lacroix, "Mœurs, &c., au Moyen Age."

* Sauval, vol. i., p. 510.
† I am indebted to Mr. Bryce, R.S.A., and to Mr. Thomas Arnold, for my information about Edinburgh.

* Legrand & Landon, p. 28.
† In the 26th volume of the "Revue de l'Architecture," edited by M. César Daly, published in 1868, the following statistics by an Austrian architect are given concerning the average number of inhabitants per house in the principal European capitals:—London, 8; Berlin, 32; Paris, 35; St. Petersburg, 52; Vienna, 55.
‡ In the "Siècle de Louis XIV.," chap. xxx., written by Voltaire towards the middle of the eighteenth century, the author says:—"Il n'en coûte guère plus aujourd'hui pour être agréablement logé, qu'il n'en coûtait pour l'être mal sous Henri IV." Dr. Johnson, after a visit to Paris in 1775, said:—"The great in France live very magnificently, but the rest very miserably. There is no happy middle state, as in England."

so much art, those back staircases which render domestic service so easy . . . have only been invented in our time: it was at the Palais de Bourbon, in 1722, that the first attempt of the kind was made which since has been so frequently imitated." The introduction of back staircases into houses in flats dates only from the beginning of the nineteenth century, and M. Bedeau, a Parisian architect, is said to have originated an innovation which obviously contributed to develop and improve the system of arranging residences by floors. Blondel, in his "Cours d'Architecture" (1772), gives the elevation of a house in flats, consisting of four stories above an arcaded ground-floor; also another of a similar house built about 1719 in the Rue St. Martin; but he gives no plans, and he adds, with significant *naiveté*,—"We have shut up most of these bad examples in our portfolios, to be shown only to those of our private pupils, who, studying under us, ought, so to speak, to learn to distinguish with equal interest, both the mediocrity of architecture and its sublimity." The Place Vendôme, which was designed by the younger Mansard at the close of the reign of Louis XIV., was certainly not intended for the residences of families by floors; although some of the houses have been since converted into flats; and I am led to think that the modern Parisian *maison-à-loyer* only received its present developed form after the great French revolution.

M. César Daly, who is the recognised authority in Europe upon this kind of habitation, has divided Paris houses into three heads, according to classes of the population—the aristocracy, the *bourgeoisie*, or middle class, and the working class. The aristocracy includes, of course, more than is understood by the term in England, and the families of this class live in private houses (*hôtels*); the middle-class families occupy houses in flats (*maisons-à-loyer*); the working-class families, including, perhaps, more than is comprised under the term workman, inhabit houses from which the two classes above them have departed; and it is easy to understand that the rebuilding of Paris has been as disastrous to the men who were engaged in the mechanical execution of the work as it has been beneficial to their employers. Indeed, the working-class has been long driven from that part of Paris best known to the foreign visitor. As street after street was formed through the old and dilapidated quarters of the city, the workmen and their families were forced to seek dwellings further off—outside the barriers, and often in the immediate suburbs. A few, however, of the new houses erected in the cheaper localities are inhabited by the families of artisans, and the higher sorts of workmen. These houses usually consist of an external wall in rough stone plastered; party walls of the same material, and back external walls in wood and plaster. They have only one small staircase, and the floors throughout are tiled. The ground-floor consists of small shops, and the stories over are divided sometimes into small workshops, with bedrooms adjoining, sometimes into lodgings for a man, his wife, and one or two children. But it must be owned that new houses of this description are extremely rare. As M. César Daly has poetically said that the house is the family vestment, so, I may venture to add, the worn-out clothes of the few descend in all ages and in all countries to cover the many.

The house in flats, the habitation of the middle class of Parisians, has been divided by the same authority into three types or classes*:—

1st Class.—The front towards the boulevart or the street is of freestone, elaborately ornamented, and the external walls towards the courtyard are of the same material plainly treated. There is a grand staircase of an oak or iron carriage, with treads of stone, and sometimes marble, and a good back staircase for servants and tradespeople. On the ground-floor there are frequently shops. On each of the three stories over the ground-floor is an *appartement* or flat richly decorated. The joinery is of oak, painted and picked out with gilding, and the parquetry is polished oak of a superior pattern. The ironwork of the doors and windows is varnished and gilt. The ceilings and cornices are enriched in *carton pierre* coloured and gilt. The fourth story is usually divided into two residences. The servants' bedrooms are on the fifth floor; that is, in the roof. The courtyard is between 30 ft. and 40 feet square. There is a large carriage-entrance, and the passage, including small pavements for pedestrians, is about 10 ft. wide. Stables, coach-houses, and saddle-rooms, for the use of the occupants of the house are arranged in the courtyard. Water is laid on. The grand staircase and the entrance vestibules of all the residences are warmed by an apparatus placed in the basement, and at the expense of the landlord. The staircase is lighted with gas. Each tenant has two cellars in the basement, and two servants' rooms in the roof allotted to him. Such a house in 1860 cost to build about from 1,050 to 1,100 francs per square mètre.

2nd Class.—The front towards the street is of freestone moulded and carved, but the walls of the courtyard are of wood and plaster or of brick. The grand staircase is of polished oak, and there is a servants' staircase. The ground-floor is divided into shops, the four stories over into large residences, the fifth into small ones, the sixth into servants' bed-rooms. There are cellars in the basement, stables and coach-houses in the courtyard and a carriage entrance. The grand staircase is lighted with gas. This class of building cost in 1860 from about 800 francs to 850 francs per square mètre.

3rd Class.—The front towards the street is in freestone moderately moulded. There are six stories lighted from the street. The staircase is of polished oak, but often there is no servants' staircase. There are shops on the ground-floor, and over them five stories of residences of middling size. The sixth floor is divided partly into rooms to let separately and partly into servants' bed-rooms. Generally there is no courtyard, and therefore not a carriage entrance, but a comparatively small door. Such a block of tenements cost in 1860 from about 500 francs to 550 francs per square mètre.

This division into three types of houses is of course accompanied with all sorts of variations. Of late years a few superior houses have been built without a courtyard and carriage entrance. The *entresol* or mezzanine immediately between the ground and first stories has developed after years of abuse into what is substantially a first-floor. It was once the private dwelling of the shopkeeper. Its origin is Italian, and probably due to some economical tenant who having hired the ground story of a building intended for a more exalted use, found it too lofty for his purpose, and so suspended a false ceiling, above which he concealed a home for his household. These mezzanine stories in some of the older Paris houses were often very unhealthy residences on account of their small elevation; but now no story is permitted to be built of a less height from parquet to ceiling than 2m. 60c. (about 8ft. 6⅛ in.). In the best houses the entresol is often made 3 mètres high, and sometimes it lets for from 200*l.* to 300*l.* a year. Families living over it on the fourth floor are thus enabled to tell their friends that they inhabit *au troisième audessus de l'entresol*, which seems a much longer way than necessary for such logical people as the French to say *au quatrième*. Again, a first-class house may be built in a comparatively narrow street, and then its height according to law will not permit so great a number of stories as four above the shop, but this for economical reasons rarely occurs. Some of the ground-floors of the Paris houses are divided into small residences or bachelors' apartments of two or three rooms each, and these are much sought after by the *petits crevés* and the younger gentlemen qualifying for the title. In other houses the portion of the ground story usually devoted to shops is taken by the landlord and used as offices. When, as sometimes happens, he has erected a private house for himself behind a house in flats which faces the street, the ground-floor of the latter is often utilised as a kitchen and rooms for his servants, while the upper stories are let as residences in the ordinary way. It must not, however, be supposed that the families of the titled or the wealthy portion of Parisian society inhabit flats; there are a few who do; and during the last Empire two English noblemen, the late Lords Hertford and Pembroke, lived in this manner. But London, with all its wealth and security, its aristocratic influence and preserved traditions, does not possess private mansions of a more sumptuous or beautiful character than are to be found at the present day in the old Faubourg St. Germain, and, here and there, in the neighbourhood of the Champs Élysées.

Many fallacies are rife amongst Englishmen concerning Parisian dwellings, and people frequently talk about the "ten-storied" houses of Paris, the fact being that several streets of houses in the city of London are infinitely more lofty than any in Paris.* None of more than five stories above the ground-floor and a roof have been built in the latter city since the year 1784. It was then first enacted that for streets of 30 ft. (French measure) and upwards the height of a façade must not exceed 54 ft.; for streets of from 24 ft. to 29 ft., a façade must not exceed 45 ft. in height; and for streets under 23 ft. wide, a façade must not be higher than 36 ft. This height was to be calculated from the level of the road to the top of the cornice; and in houses of small depth the roof was not to be higher than 10 ft., and in those of extra depth 15 ft. Yet it has been said that the mansarde was invented to evade these laws!† But the curb roof to which the great Mansard gave his name, the tall roofs such as are to be seen at the Château de Maisons,—erected by him (1642-51),—had been in fashion for certainly 150 years before the first laws regulating the height of Paris houses were promulgated. From 1789 to 1791 other decrees were issued, and in 1844 the Count de Rambuteau laid down certain proportions for "the height of façades bordering the public ways," which were little, if at all modified by the Imperial decree of the 28th of July, 1859. The legal height of a Paris house depends upon the width of the street in which it is to be built. This height is measured from the pavement to the top of the entablature, including therein all constructions in stone, in fact everything vertical with the front wall of the house, and this height is as follows:—11 m. 70 c. for streets less than 7 m. 80 c. in width; 14 m. 60 c. for streets of 7 m. 80 c., and above that width up to 9 m. 75 c.; 17 m. 55 c. for streets of 9 m. 75 c. and above that width.

Only in streets or boulevarts of 20 mètres or more wide can house-fronts be carried to the maximum height of 20 mètres. A building situated at the corner of two streets of different widths may sometimes be carried on the side of the narrower to the height permissible for the wider street. But whether house-fronts are placed on the line or are set back from it, or are erected sloping or according to any other manner, if they face the street their height is determined by the width of the street in which they are built. Buildings hidden from the street in courts and quadrangles must not exceed, as far as their fronts are concerned, the height of 17 m. 55 c., measured from the level of the courtyard in which they are placed. And lastly, although on the boulevarts and streets which are 20 mètres wide the façades may be 20 mètres high, only five stories, including the entresol and exclusive of the roof, can be constructed over the ground floor. I am particular in these details because several erroneous statements concerning the laws regulating the height of buildings in Paris crept into the evidence taken before a Parliamentary commission which sat last year upon the subject of the Metropolitan Buildings Act.

The façade of houses erected upon the boulevarts and principal streets of Paris, must perforce be composed of freestone, and the face towards the street of the chimney-stacks, as well as of the party-walls, which, as in London, are carried up above the roof, must be of the same material. Although I am not sure if the law compel proprietors to build the floors of their houses with iron joists, filled in with plaster concrete, this is the invariable practice, and the general application of iron to the construction of floors in Paris is due to the carpenters, who in 1840 "struck" in a body, and with such effect that it was then impossible to obtain a carpenter either for love or money. Iron floors of a very complicated character had been used for a few public buildings,‡ and the necessity to do without carpenters compelled the architects to extemporise floors with bands of iron placed on edge, and strengthened with transverse iron bars. The

* See "L'Architecture Privée," by M. César Daly, one of the most useful modern books for both architects and students.

* In "Town Dwellings," a pamphlet, published by Messrs. Ashpitel and Whichcord, in 1855, occurs the following passage:—"The huge ten-storied houses of the Continental cities, where a peer inhabits the first floor and a chimney-sweep the mansarde!"

† In the Transactions of the Royal Institute of British Architects, Mr. G. R. Burnell, C.E., is reported to have said:—"The law which regulated building in Paris rendered it necessary that the cornice should not be more than 66 ft. from the pavement . . . . . This law was enacted in the time of Louis XIV., and the mansarde was invented for the purpose of evading its provisions." A statement both obscure and incorrect, and one which has been recently quoted.

‡ M. Brébion, architect for the Louvre about 1778, used iron in the vault and roof of the Museum, and in 1786 the vaults, floors, and roof of the "Théâtre Français" were constructed in iron by M. Louis. M. Patte, writing in 1769, says that, in 1765, there was established at Essone, near Paris, a manufactory of iron frames and casements which were not heavier than those made of wood.

French custom of filling in wooden partitions and the spaces between the roof rafters with broken lumps of old plaster walls run in fresh plaster, led to attempting the same process with the iron framework before mentioned. Ultimately the rolled T and double I joists were introduced by a few energetic manufacturers, and the problem of iron floors was solved, at least as far as Paris is concerned.* These floors, unlike similar work in England, are no man's speciality or patent. The rolled iron joists, once bought, can be laid by any smith, carpenter, or *maçon*, and finished in plaster by any one of the last-named trade. An order from the architect is alone necessary, and it may perhaps be useful to explain why an architect is absolutely indispensable to people about to build in Paris. In France there are no general contractors as in England,—none able or willing to contract for a whole house, much less a row of houses. The architect alone knows how to summon around him the several tradesmen who, in their different capacities, assist him in erecting the building he designs,—if not always under his immediate direction, under that of a trusted assistant or favoured pupil. On an ordinary Paris house there is rarely a clerk of the works. The foreman of the *maçons*, in conformity with tradition, is the head of all the workmen of all trades. He is the *maître-compagnon*; and in France the *maçon* is not a worker in freestone, like the English mason. He is bricklayer, plasterer, builder of rough stone walls, worker in cement of all kinds. The *maître-maçon*, *i.e.*, the contractor, is intrusted, not only with the foregoing works, but also with the masonry, as the term is understood in England. He employs the *tailleur-de-pierre* to work the freestone, and the *ravaleur* to finish it when it is fixed in its place. In ordinary buildings the *maçon* erects the scaffolding,—only on large edifices is the carpenter employed in such work. Indeed, it is hardly necessary in a house in flats to enter into an agreement with a carpenter; for, if his services be required, the *maçon* will employ him, and include the carpentry in his own bill. All such and similar work is paid for by measurement after completion, according to a municipal tariff, which varies annually, and which forms a basis of prices for artificers' work done within the city of Paris. Contractors sometimes tender against each other and agree to work at so much per cent., as the case may be, below the municipal prices, although some private works are executed at those prices. The Parisian architect has to treat with, say, a dozen tradesmen often unknown to each other, innocent of any sort of mutual organisation or connecting link, and unwilling to accept instructions from any one but their master,—the master-of-the-work. A dozen different contractors imply a dozen sets of drawings, a dozen stamped agreements, a dozen bills. These bills are prepared by surveyors (*métreurs*), who are specially employed by, or are in the employ of, the tradesmen in question. The architect has to verify the items of each bill, to check the dimensions, and reduce or modify the prices for labour and materials in accordance with the signed agreements and the Parisian tariff. He consequently employs a specialist (*vérificateur*), whom he pays out of his usual commission, sometimes eight francs in the thousand upon the total of the contractor's bills, sometimes as much as 1 per cent. The architect alone is responsible for the accuracy of these bills, the name of the surveyor who assists him not appearing in the transaction; and his responsibility to his client and to the State endures for ten years after the completion of the work with which he has been entrusted. Some of the tradesmen's bills are accompanied with drawings often of an elaborate character, of the particular works executed by them; and this occurs even when the architect's design has been carried out without alterations in the course of its execution, and when his drawings have been very carefully prepared.

* M. Viollet-le-Duc, "Entretiens," vol. ii., p. 339.

INSTITUTE OF PAINTERS IN WATER-COLOURS.

IT would be absurd to deny that the Exhibitions of the Institute display a high average of executive power in water-colour drawing, or that there are not to be found in all its collections some works of a high class in every way; but the prevalent mannerism of style among its members, and the commonness of idea and feeling which pervades a large proportion of the drawings, are drawbacks which show such a decided tendency to increase rather than diminish, that a visit to the gallery causes at least as much vexation as pleasure. As we walk up the room and see the eternal "Haddon Hall" of one member, and the stage trees with lights picked out in strong yellow, of another; as we once again come upon Mr. Bouvier's mincing Greco-French maidens, and are once more invited by Mr. Absolon to accept pinky-red balls with two or three spots upon them as representations of the human face divine, our wits get confused, and we begin to doubt whether it is this year's Exhibition or the last one that we are in, so pertinaciously do the same phenomena seem to come round with mechanical regularity. When, however, we see such a production as "Switzerland: the passing Carriage" (98), or the sketch-portrait of a disagreeable-looking baby (106), or the "Study" (199) of an Oriental ruffian in the style of a playing-card picture, our sense of identity returns, and we ar eforced to confess that we have not before seen any productions like these in the gallery,—a confession which is mingled with a wonder as to what will come next.

Among the contributions which form the pleasing minority in the collection, Mr. J. D. Linton has a large work, "Off Guard" (271), a set of rather nondescript helmeted and cloaked soldiers thrumming guitars and singing in the guard-room, while a female attendant brings an additional supply of whatever beverage they are accompanying the song with. In richness of tone, in careful but not laboured execution, in the completely satisfactory texture of every part, and the balance of the whole as a composition, this is in every way worthy of the artist; unfortunately the subject is uninteresting, and has little point. Of other figure pictures Mr. Townley Green's "Wayside Inn" (78), evidently in the good old coaching days, is really good; clear and decided, though not too hard in execution, and with much humour in the small groups round the two tables where wine and beer respectively are drunk; at the table where the more aristocratic refreshment is served the two clergymen are admirably contrasted with each other and with the very pretty young lady who faces them. The same painter's "Christmas Time" (47) shows much character and minutely-careful execution in the little figures bargaining for holly in the snow. Mr. Beavis's large work, "Tilling the Ground in Syria—Changing Camels" (291), is a capital and forcible drawing, more really original in manner and style than is usual with him, representing a turbaned black lad either putting on or taking off the harness of a kneeling camel—it is not quite clear which—while the other quadruped waits beside him. A couple of clever little studies by Mr. E. J. Gregory on one of the screens are to be noticed, "Studio Furniture" and "The Bride" (374, 377), and on the other side of the same screen the stained wood decorations by Mr. Herkomer (382, 384), which, besides the interest of a somewhat new method, show considerable originality of idea and invention, especially in the two figures representing "Legend" and "Oracle."

Mr. Collier holds the same post on the wall which he has held and merited in the two last exhibitions. His contribution this year is, perhaps, not quite equal to the previous ones, but has the same qualities of breadth of style and fine atmospheric effect: it is a barren coast scene under the title "Afternoon" (262). Mr. Small's "After the Storm" (297) has power and originality enough, but the sky is surely overdone and too inky, and as a representation it is not in all its details quite successful or explanatory. Among the artists who have resisted the local influence of mannerism is Mr. Syer, whose studies of landscape still retain the freedom of execution and power of effect which we have before noted; the best is the "Sketch near Clevedon" (300); and Mr. Wimperis is true to the standard of genuine water-colour art in various works coming more under the denomination of "Sketches and Studies" than most that are here, of which may be noticed "On the Shore, Harlech," and "Leominster Church" (48, 49), and the "Dipping Place" (115); and Mr. Whymper's "Hascombe Hill" (328) is in the same good vein, though a faulty effect in perspective is created by the train on the embankment to the left, which foreshortens too sharply, and seems running down hill. Mr. Hine contents himself with small studies, except "On Midhurst Common" (81), where the artist is seen on his usual scale, but not in his usual tones, having left his beloved downs, with their long green curves and swells, and betaken himself to the browner tones and more broken foreground of a different style of landscape. Sundry smaller studies by this artist are all, as little things, delightful in their way. Mr. J. Skill also sends small sketches from the neighbourhood of Venice and elsewhere, which are very pleasing specimens of the sketch proper; "The Colioni Monument" (323), among others. The same may be said of the little view of "Torcello" from the distance (24), looking over the spits of sandbank and lagunes, by Mr. Holloway, who also has a larger and more ambitious drawing, still sketchy in style, of "Santa Maria della Salute" (335), very bright and aërial in effect, and in which the artist has not been afraid of dealing frankly with colour in the distant buildings. His "Near Winchester" (254) is a drawing of much beauty and feeling. Mr. Cattermole is unfortunate in "Ferdinand and Miranda" (245), but decidedly fortunate in "Picketed" (244), where his group of horses are full of spirit and character. A good many drawings by Mr. J. C. Reed have an originality of tone and treatment about them, and though decidedly mannered, are in a manner which is free and effective, however conventional it must appear, more especially when the same trick of handling is found in each drawing. Mr. Orrock, who found a little while ago a somewhat new method of portraying sea, continues it with some success, and is best represented in the "Storm off Iona" (196); in another drawing the artist again repeats the rainbow effect of which he gave nearly half a dozen editions in a previous exhibition. Mr. E. H. Fahey is good in "Rainwater" (92), the title for a study of a nook of old building with a figure holding a pitcher in the foreground. A single sketch by J. Israels, "All worn out" (279), is enough to show how much real pathos differs from sentimentality, the highest pitch of feeling to which many of the contributors attain. Those who care for Mr. Guido Bach's figures may find plenty of them; those who are not tired of Mr. Hargitt will find his cattle still furnishing high lights in the foreground; and other good old customs are kept up in different parts of the gallery.

SOME OLD HOUSES AND THEIR STORIES.

BELLSIZE HOUSE.

ASSOCIATED with the numerous places of public entertainment which were popular in the last century, gardens held, as they had long held, a prominent position. They were to be found in every direction amongst the rustic and semi-rustic suburbs of London, all within easy walking distance of the great old city. But now it is long since rows of ugly brick box-like houses took the places of their trees and shrubs, displacing their little green arbours and comical grottoes; their fish-ponds, bowling-greens, dancing-rooms, and music-houses; converting the lover-frequented leafy alleys, broad gravelled paths, and hedge-row mazes into stone-paved streets, dingy lanes, courts, and labyrinths of unwholesome alleys,—all densely populated by people, most of whom pass half their days without seeing a genuine flower-garden, or treading the green turf of a breezy hill-side. Where now are the once famous old gardens of the jolly Bankside in Southwark, or in Lambeth?—those of Marylebone or Soho?—of Tyburn, Hoxton, Islington?—of Westminster or Highbury?—of Highgate, Hampstead, Hackney, Brixton, Bayswater, or Mayfair? They have all been swept away during the passage of the past, or within the memory of the passing, generation; and of nearly all, we may add, not even a green grass-blade remains to mark their sites.

Conspicuous amongst these places of out-door amusement was Bellsize House, an ancient mansion in the Hampstead-road, standing in the midst of a pleasant garden, with an extensive park attached to it, the site of which is still known as "Belsize Park," although the fine park, gardens, and the stately old-fashioned mansion have long been absent from that locality. In 1720 the advertisements of this place of entertainment announced that "the park, wilderness, and gardens" were "wonderfully improved, and filled with a variety of birds, which compose a most melodious and delightsome harmony," and must have been far preferable to the mawkish love-songs then in vogue at such places, as in fashionable drawing-rooms, songs which were full of artificial stilted sentiments, and often had a strong dash of coarse indecency in them, and which popular composers, not birds, set to jingling accompaniments, forming anything but "a most melodious and delightsome harmony." Many of these songs may be found, words and music, in old magazines of the period, of which some two

or three score fill out-of-the-way shelves and cupboards in our library.

Bellsize House stood in the open country, and as a place of amusement, in its earlier days, was not sufficiently easy of access to the meaner sections of the London population to attract any but the more select classes of visitors, and therefore it depended largely for support upon the fashionable world, who migrated once a year from the aristocratic portions of the metropolis,—that is to say, from Holborn, Bloomsbury-square, Covent-garden, Bedford-row, Brunswick-square, Mecklenburg-square, and their immediate neighbourhoods,—to such select watering-places as Islington and Hampstead; between which latter delightful village and Bellsize coaches ran regularly during the season, carrying passengers to and fro at sixpence per head. But on Sundays and holidays the middle and lower classes, dressed all in their best, found their way to Bellsize House and grounds; and on these occasions the more fashionable visitors were supposed to hold themselves aloof, and content themselves with the various diversions provided in Hampstead—the famous Assembly-rooms, and the public gardens established in and on that side of it farthest from London, some of which, shorn of their old extent and pretensions, still survive to delight the eyes of Cockney holiday-folk brought down afoot, or in tramway, cars, railway-carriages, and omnibuses, who call all the way London, and have no idea of its ever having been much unlike what it is. Of such visitors in such a resort a wit of the period—one W. Woty—wrote,—

"Human beings here
In couples multitudinous assemble,
Forming the drollest group that ever trod.
* * * * * * *
Fathers and mothers, brothers, sisters, friends,
And pretty little boys and girls. Around,
Across, along, the garden's shrubby maze,
They walk, they sit, they stand. What crowds press on!
* * * * * * *
Here he, who all the week
Took bearded mortals by the nose, or sat
Weaving dead hairs, and whistling wretched strains,
And eke the sturdy youth, whose trade it is
Stout oxen to contend, with gold-bound hat
And silken stockings strut. The red-arm'd belle
Here shows her tasty gown, proud to be thought
The butterfly of fashion; and, forsooth,
Her haughty mistress deigns, for once, to tread
The same unhallow'd floor."

The journey from London to Bellsize by daylight, past meadows and cornfields, market-gardens and groves of fine old trees, was pleasant enough, but the return journey in the dark, with not a lamp to show the way, was full of terrors. Even for riders in carriages with armed attendants and link bearers, the journey home was none too safe. Apart altogether from the darkness and the bad condition of the roads,* the way abounded with gangs of savage footpads and murderous highwaymen, whose daring was only equalled by their brutality. Some idea of their doings may be formed when we add that in 1744 the Lord Mayor and aldermen of London carried an address to the king, wherein they spoke of "divers confederacies of great numbers of evil-disposed persons, armed with bludgeons, pistols, cutlasses, and other dangerous weapons, infesting not only the private lanes and passages, but likewise the public streets and places of unusual concourse." Smollett, writing on the same subject, says:—"Thieves and robbers were now become more desperate and savage than ever they had appeared since mankind was civilised. In exercise of their rapine, they wounded, maimed, and even murdered the unhappy sufferers through a wantonness of barbarity." Walpole wrote in 1752:—"One is forced to travel, even at noon, as if one were going to battle"; and we read in the "Annual Register" of 1763:—"October 21st, a horse patrol, under the direction of Sir John Fielding, is fixed upon the several roads near the metropolis for the protection of his Majesty's subjects. The patrol consists of eight persons well mounted and armed." This patrol was afterwards increased from eight to thirty men,—a very significant sign of the times. The toll-gate keepers were all armed, and dare not keep any money at the bars after dusk. Bearing such things in mind, the following notice appended to the advertisement of Bellsize House in 1720 will be the better understood:—

"For the security of the guests, there are twelve stout fellows, completely armed, to patrol between London and Bellsize, to prevent the insults of highwaymen and footpads that may infest the roads." Such were the perils of the Hampstead-road a hundred years ago, and those who now indulge at night and morning in threepenny rides from Hampstead to their offices in Town all the year round, and rail against the police, may advantageously contrast those times with our own.

All the public gardens opened early in the morning, the usual hour being seven, and it was quite a common thing for the visitors to take their breakfast therein. The Ranelagh Gardens advertised breakfast as included in the charge for admission (half-a-crown), and in the Bellsize advertisements we read:—"Every morning, at seven o'clock, the music begins to play, and continues the whole day through; and any persons inclined to walk and divert themselves in the morning may as cheaply breakfast there on tea or coffee as in their own chambers." The ordinary hour for breakfast was then eight o'clock. George III., who rose at six, with his queen and children, always breakfasted at that hour.

The rage for gambling which then infested all classes of the community, and was specially denounced from the press, the pulpit, the platform, and the stage, spread to these places of public resort; and it was said that many a man lost in an evening's play at the gardens more than he could have been robbed of on the road outside. Horace Walpole, to illustrate the extraordinary power of this mania for gambling, and speaking of one of the worst of the most fashionable "hells" in London,—White's Chocolate House,—tells how, on the occasion of a man falling in a fit outside its door, bets were at once made on the probability of his being dead; and when a surgeon would have bled him, the brutal aristocratic fops who had bet that he was not alive furiously interposed, crying out that they would have no foul play of that kind, that the man should be let alone! This story has often been repeated, but it belongs to our subject, and will help to realise a fact to which this place of entertainment, and others like it, owed their abandonment by respectable visitors, and indirectly their final degradation and suppression.

The Park at Bellsize must have been one which extended for a considerable distance towards Hampstead, and the views it commanded were spoken of with enthusiastic admiration by many writers of its day. Some idea of its space may be formed when we say that, in 1722, on the occasion of a great hunt within it, when there were between three and four hundred carriages belonging to the nobility and gentry there, the deer, a wild one, was chased for about three hours before it was brought to bay by the dogs and killed by the huntsmen. At this time the place had arisen to the height of its fashionable reputation, and it is on record that the Prince and Princess of Wales dined there.

There is one feature of eighteenth-century life which was even more offensively prominent than the gambling mania to which we have alluded; that was the universal love of intrigue, which made virtue in woman a thing to blush for, and immodesty a fashion. Even those who were not vicious affected to be so, and men and women of the highest rank openly boasted of evil doings which they were never guilty of, merely to appear fashionable. To these real and pretended intrigues, with the moth-like sportings about a dangerous flame which so often resulted in torture and lasting misery, the dark embowered lanes in the secluded paths and alleys of Bellsize Park and Gardens lent both actual and seeming encouragement. Despite the protestations of the more wise and moral, the vigorous action of a society established for the improvement of manners, and other counteracting institutions, this vice increased so enormously that the gardens owed much of their disgraceful reputation to it, and a reaction setting in in favour of a more pure and moral state of things, the places suffered for the persons who patronised them, and one after another the favourite gardens closed their gates. Bellsize House was shut up about the middle of the last century, and, being very old, was soon after pulled down and rebuilt, when it once more became what it had anciently been, a gentleman's private residence. The view of this old house which accompanies the present article is the reproduction of an old engraving of the period.



Bellsize House. From an Old Print.

* In the year 1716 the roads from London to Highgate were described as "very ruinous and impassable for the space of five months in the year."

THE MONUMENT OF GASTON DE FOIX.

A curious history attaches to this work of art. Gaston de Foix was the nephew of Louis XII. of France, and being killed at the battle of Ravenna, his body was carried to Milan, at that time in the hands of the French, and it was determined to erect a sumptuous monument to his memory in the cathedral there. The work was confided to Agostino Busti, and not being completed in 1517, a number of other artists were also employed upon it. It was fated, however, never to be erected as intended. The precise reason is not known, but the bad fortune which attended the arms of France in Italy seems quite sufficient to account for this, but will not explain the circumstance that its various parts were dispersed throughout Europe, and no less than seventy-seven are ascertained to exist in Lombardy, Milan, Turin, Novi, and two statuettes and some panels in the South Kensington Museum, with the beautiful design for the whole executed at the beginning of the sixteenth century. Engraved representations of these we give in our present number.

In 1871, on the occasion of the National Exposition in Milan, a Commission was appointed and funds were voted for the purpose of bringing together the various parts of this remarkable work, but we believe nothing was done.



Charity.



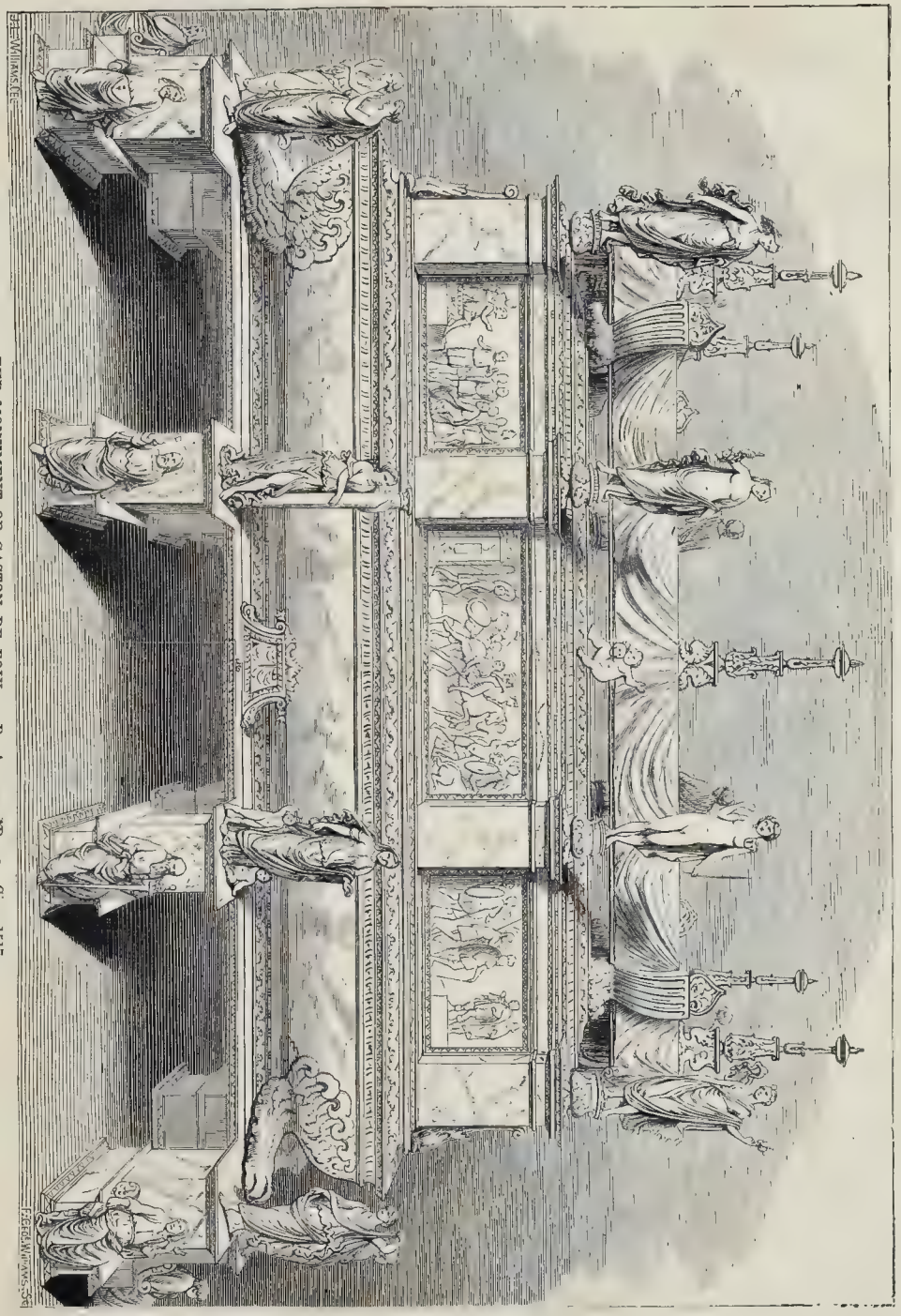




THE MONUMENT OF GASTON DE FOIX.—*Portions of the Sculpture in the South Kensington Museum.*



Strength.



THE MONUMENT OF GASTON DE FOIX.—By Agostino Busti. *Circa* 1517.

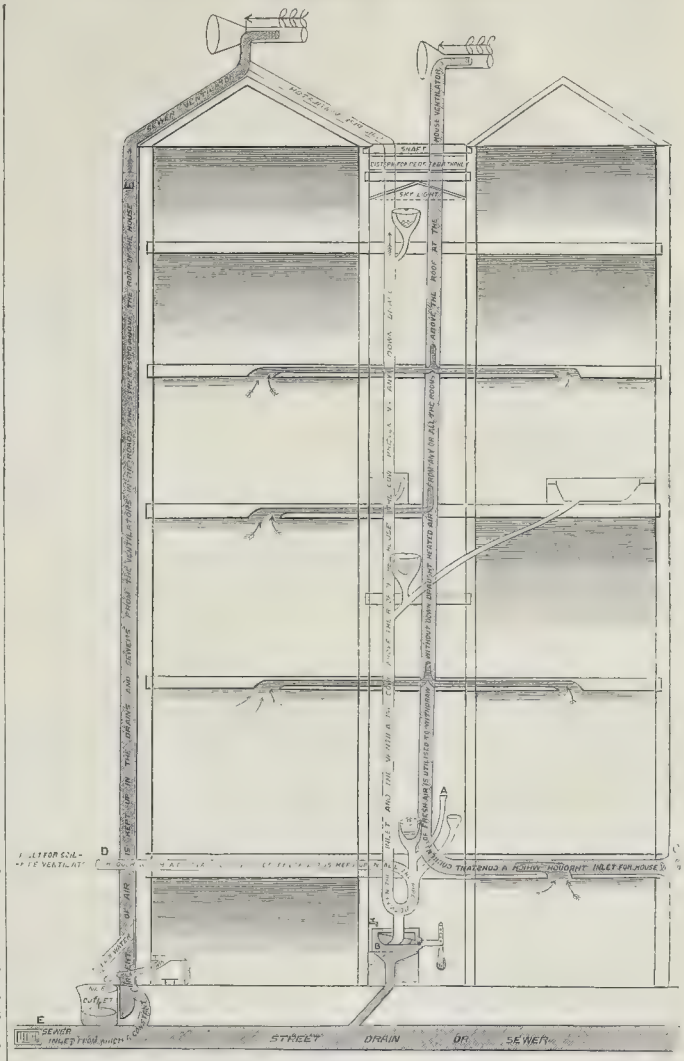
BANNER'S PATENT DRAIN TRAP AND FOUL AIR EXTRACTOR.

IN the course of our remarks on the recent exhibition of Sanitary Appliances in Brighton, we alluded briefly to the trap and ventilating cowl invented by Mr. Banner, and since then readers may have learnt from our advertising columns some particulars of the arrangements. The subject, however, is so important that we think it desirable to enable those who are interested in the matter to understand more fully the patentee's views, and to judge for themselves as to their soundness. We give, therefore, a section representing the mode recommended by the patentee for thoroughly ventilating the house, the soil-pipe, and the sewer, by means of three separate shafts, for which one cowl, mounted above the roof, might be made to suffice. C is the inlet of a horizontal tube leading external air to a vertical shaft or shafts, having his cowl on each, fixed above the roof, by the action of which vitiated air will be drawn from any room in the house, and may be regulated as desired by a throttle valve in each room.

D is the inlet of a horizontal tube leading external air into the "container," or the soil-pipe immediately above the patent drain-trap (B), (seen at the bottom of the diagram in the centre), and thereby causing a constant current of fresh air throughout the whole system of soil-pipes within the house from the inlet (D) to the cowl fixed on the top of the soil-pipe carried above the roof of the house.

E shows the same plan adopted for the sewer, by means of which the present road or street "Ventilators," so called, would become inlets, whereby a constant current of fresh air would be created and—accelerated by the action of a cowl mounted on the top of the pipe—would be constantly maintained throughout the sewer and street drains and up the pipes, carried outside each house above the roof.

The trap is peculiar. It consists of an air-tight chamber of cast iron (enamelled) or some other material, fitted with an inlet pipe, which projects several inches into its interior; the lower part of this inlet, surrounded by an india-rubber band sprung on, and slightly projecting beyond. The end of the pipe is closed and made air-tight by a copper cup pressed up to it by a suitable weight mounted upon a lever, having its fulcrum on an air-tight centre, and its outer end bent upwards at a right angle. The weight is suspended by a link on the raised end of the lever, and it is so arranged that, when the pan is in the act of tilting, the centre of gravity of the weight is brought nearer to the fulcrum, thus reducing the load, and allowing the pan to remain open till it is thoroughly flushed, yet retaining sufficient power to close the trap again after flushing. A series of holes in the raised end of the lever permit of a proper adjustment of the weight, and the bend in the soil-pipe, just above the trap, breaks the force of the water reaching the latter from above. The lower part of the chamber is formed with sloping sides, terminating in an outlet of communication with the drain. The box, in which the axle is fitted in gun-metal bearings, is air-tight. The soil-pipe is 4 in. in diameter inside where it is flanged and fixed to the upper side of the chamber, and tapers to 3 in. diameter inside at its point; 2 in. from its point is another flange to keep the india-rubber band in its place. For practical use, instead of any iron pipe above the chamber, there is a flange only, and then a few inches of leaden pipe, in order that a perfect joint may be formed with the leaden or other soil-pipe to be continued up from it. The cup is made of copper, tinned inside; it is 10½ in. long, 12 in. wide, and from the base or scoop or bottom to the top of the hood or hopper, it is 5 in. deep, except in front, where it is only 4½ in. deep, so that it discharges in front, and any clogging is said to be avoided. When the cup falls and is thoroughly flushed, there is an opening of 3 in. between the lowest point of the india-rubber buffer and the bottom of the cup, and also between the foremost point of the buffer and the inside of the cup in front of it, as well as between the front lip of the cup and the inside of the chamber. The cup, when full, holds five quarts of water with the tube immersed in it; this (or less, according to the "weight" opposed to it on the end of the lever) overbalances the weighted end of the lever. Until the moment when the cup falls the soil is kept in the pipe, while the valve has been sufficiently opened for water to pass into the cup and fill it; but it is not till the cup falls that soil passes into it, and when it does so, the water, nearly a gallon, rushing forward from the heel to the front of the cup (with the addition of a down-flow of water from the closet several feet above), carries all impure matter before it into the sewer; the front of the cup falls 4½ in., and in this way its whole contents are immediately swept away, excepting sufficient clean water retained in the scoop to seal the end of the soil-pipe while flushing. While the cup in the trap is down, there is a water-seal of ½ in., which is increased to 3 in. immediately the cup is brought to its normal position, and further increased by the overflow which the weight on the lever will permanently retain in the pipe, to the extent of 6 in. The efficacy of the trap thus formed cannot be destroyed by either pressure or suction. Besides, the area in the chamber for air being large, the water in the cup in its normal position is 2 in. or 3 in. below the top of the cup, which is open all over; and even if the cup could be unsyphoned, the pressure,—the increased pressure,—which the weight on the lever will exercise in forcing the bottom of the cup up to the india-rubber, will always keep several inches of water in the soil-pipe, and effectually prevent any gas from the sewer getting up into the house.



A is a pipe with a screw cap, to test at any time the state of the pipes within the house.
B is the only trap within the house; the waste from bath, lavatory, and housemaid's sink may be safely let through the patent trap.
A second inlet for House Ventilator can be placed at reverse side of the house if thought necessary, and ornamental pillars in a large room may be utilised in a similar way.

In this manner, the patentee maintains, the house will always be effectually trapped against sewer gas; and he is able to dispense with D traps, which, from their conformation, are, in point of fact, miniature cesspools. One of Banner's traps at the basement of the house, which may be placed above the level of the basement, like a gas meter, is considered sufficient for all the closets in a house.

We must not omit to mention another valuable appliance devised by Mr. Banner. Every one knows that ventilating-shafts communicating with the soil-pipes are recommended by leading authorities upon the subject. Although the theory upon which they are constructed is good, they are not always of practical utility. There is a difficulty in getting sewer-gas to ascend a long perpendicular pipe, while in some conditions of the atmosphere there may be a down-draught

instead of an upward current; and it is to overcome this that the cowl is introduced. The benefit that would result to the community from their general adoption would probably be great, as each would contribute to the ventilation of the sewers as well as of the pipes of the houses where they were fixed.

A branch pipe, led from outside the house to a little above the trap, is needed, to cause a current of air in, and thus act as a constant ventilator of, all the pipes between the trap and the cowl fixed on the soil-pipe carried above the roof of the house. A separate pipe may, if thought desirable, be fixed into the chamber, and taken up above the roof of the house, to ventilate the sewer.

This form of trap would have advantages for low-lying districts, where there is danger, in times of flood or high water, of the drains returning their contents into the basement, as the greater the pressure of the returning sewage matter towards the chamber below the trap, the more tightly is the copper pan closed against the end of the soil-pipe inlet, so that no flood-water, sewage, or sewer gas could be forced past it into the house.

The action of the cowl is as follows:—The larger end of a funnel-shaped tube (seen in the section), placed horizontally, is always directed towards the wind, and a current of air passing in there is pressed forward through the annular space between the two cylinders, and when it reaches the end of the inner one it expands all round it, and in its passage out at the smaller end of the cowl a vacuum is created round the point of the inner cylinder, which, by what is vulgarly called suction, draws out its contents into the open air, and thus induces an upward current of air from the shaft or pipe leading from the place to be ventilated. The invention is also adapted for use in churches or schools, where a shaft would not be needed, but merely an opening at the ridge of the roof.

That the cup should be properly fixed in the first instance is of course of the utmost consequence, and good materials for the bearings and the axle are also indispensable. The apparent costliness of the trap in question is met by the statement that one trap will suffice for half-a-dozen water-closets, or indeed for any number, provided the house be not of palatial size, when two or more might be necessary; and that the cost of D traps and their fixing, and other expensive arrangements as regards the closets themselves, may be safely dispensed with, as an inexpensive common pan-closet answers just as well, so far as security against the sewer is concerned, as the most expensive and elaborate valve-closets. These various arrangements have been in operation for two years in the patentee's house, and, as we are informed, and are prepared to believe, with undeviating good effect.

One lesson which Mr. Banner has learnt and, in his turn, teaches the public, namely, that to make a ventilating pipe of constant avail air must be introduced at the bottom, is of itself a boon of value.

RE-VALUATION OF THE METROPOLIS.

Under the provisions of the Valuation (Metropolis) Act of 1869, a return has been issued of the gross and rateable values of the several parishes and unions in the metropolis, as shown by the new valuation lists just completed and sent to the secretary to the managers of the Metropolitan Asylums District, and will come into operation on the 6th day of April, 1876. These returns show the enormous increase in the valuation of property within the metropolis since the first returns made under the Act on the 20th of November, 1870. At that period the gross value of the metropolis was estimated at 24,176,338*l.* 13s. 7d., and its rateable value at 19,900,072*l.* 11s., whilst the valuation lists of the present year, just completed, show the valuation of the metropolis now to be as follows:—Gross value, 27,609,062*l.* 12s. 10d.; and the rateable value, 22,765,676*l.* 10s. Total increase in the value of property since the passing of the Act in 1869 of gross value amounting to 3,432,723*l.* 19s. 3d., and rateable value of 2,865,603*l.* 19s. The way in which these valuations have been made is not very satisfactory, but that is not now the question with us. We give a few of the separate items:—St. George's, Hanover-square, gross value, 1,801,018*l.*; rateable, 1,504,469*l.* St. Pancras, gross value, 1,569,880*l.*; rateable, 1,311,797*l.* St. Marylebone, gross value, 1,561,519*l.*; rateable, 1,235,231*l.*; Kensington, gross value, 1,524,869*l.*; rateable, 1,271,235*l.* St. Mary, Islington, gross value, 1,405,905*l.*; rateable, 1,158,468. Paddington, gross value, 1,282,945*l.*; rateable, 1,078,700*l.* Lambeth, gross value, 1,263,046*l.* 10s.; rateable, 1,034,710*l.* Camberwell, gross value, 699,553*l.* 11s.; rateable, 561,708*l.* Chelsea, gross value, 447,843*l.*; rateable, 376,121*l.* Hampstead, gross value, 410,402*l.*; rateable, 339,464*l.* Shoreditch, gross value, 635,443*l.*; rateable, 514,903*l.* Fulham Union, gross value, 432,013*l.*; rateable, 351,157*l.* St. Margaret and St. John, Westminster, gross value, 632,419*l.*; rateable, 528,476*l.* Greenwich Union, gross value, 578,760*l.*; rateable, 462,268*l.* Hackney Union, gross value, 878,365*l.*; rateable, 709,473*l.* Holborn Union, gross value, 960,895*l.*; rateable, 790,199*l.* Lewisham Union, gross value, 566,803*l.*; rateable, 472,935*l.* St. Olave's Union, gross value, 908,562*l.*; rateable, 759,395*l.* St. Saviour's Union, gross value, 1,029,293*l.* 13s.; rateable, 839,598*l.* Stepney Union, gross value, 358,568*l.* Strand Union, gross value, 746,357*l.* 16s. 8d.; rateable, 620,807*l.* Wandsworth and Clapham Union, gross value, 1,085,738*l.*; rateable, 876,983*l.*; Westminster Union, gross value, 806,877*l.*; rateable, 673,366*l.*

HOUSES IN FLATS.

ARCHITECTURAL ASSOCIATION.

At the ordinary fortnightly meeting of this Association, held on Friday, the 3rd inst., at 9, Conduit-street, Mr. John S. Quilter, president, in the chair, the following new members were elected, viz.:—Messrs. H. F. Monckton, John F. Hennessey, W. H. Crocker, E. Vigers, jun., T. H. Smith, J. C. Coldwell, J. E. Ormes, W. A. Powell, H. W. Prior, P. Cowper, E. L. Drew, J. P. Power, T. F. Pennington, F. W. Hodgkinson, F. W. Nash, and H. J. Hollingsworth.

Mr. W. H. White read a paper, entitled "How the Parisians Build a 'House in Flats,'" being an abstract of a series of papers which we commence on another page.

In the discussion which followed,

Mr. T. Roger Smith said that one point which was very striking about the paper was the constant recurrence of the word "plaster," a material which in Paris played a part which it could not possibly do in our own constructions, and the abundance of which in Paris constituted one of the secrets of the great difference between London and Parisian construction. It was a material which set rapidly, and which, when set, was almost indestructible. It was obtainable by the Parisians at a price that enabled them to use it for all purposes. The material most closely approaching to it in London was Portland cement concrete, but this was incapable of effecting such work as could be executed in Paris. With us fine plaster-work was a luxury, necessarily used sparingly. The description which Mr. White had given of Parisian building was enough to make English architects envious of the solid construction and sound materials which were put into the most ordinary building in Paris. In London we had to contend with another difficulty besides the want of plaster: we had no stone procurable within easy reach, except Kentish rag, a material very unsuitable for general purposes, and we were therefore compelled to use brick. It was probable that had Paris been planted in a clay district, instead of in its own position, a great deal of the excellent and magnificent architecture which characterised it would have been absent. There were other causes for the difference between the architecture of the two cities, which possibly might be better understood by English architects in the future. The large rents which the Paris houses commanded would very well justify an outlay upon the buildings which would hardly be possible in London. He believed that one of the greatest possible improvements for London would be the adoption of houses in flats to a much greater extent than at present, especially for the middle and upper classes. There were a few flats in Victoria-street, Westminster, and some in Grosvenor-gardens, near the Victoria Station, and these, with perhaps a few other isolated examples, constituted all that was obtainable in the shape of dwellings in flats by people who were willing to pay something like 100*l.* per annum rent. Were the taste for such dwellings to extend,—and he thought it would extend if they were well built, well drained, in good situations, and liberally laid out,—the returns they would yield would allow us to construct them with a solidity which would enable them to vie to some extent with those of the Parisians. He thought another secret of the success of this class of building in Paris was the great care and pains bestowed upon the entrances, which were of very ample dimensions. Even where the frontages were comparatively narrow, a large portion was allotted to the entrance-arch, or *porte cochère*, which was always a most dignified feature of Parisian houses. Another point worth attention in the construction of such buildings in London was to make the floors sound-proof; for however tolerant Englishmen might be of the sound of a piano through a thin party-wall, they would not submit to noises overhead.

Mr. Arthur Cates said he had listened with great pleasure to Mr. White's paper, which was full of instruction. Mr. Smith had struck the key-note of the cause of the difference between the construction of the houses in London and Paris when he pointed to the free use of plaster; throughout Mr. White's paper the word *coulée* in plaster was constantly repeated. All that was required was to build the front and back walls with cut stone and the side walls with rubble, and then to make the skeleton of the floors with iron, and run in the plaster, thus securing without much difficulty a very good fire-proof construction. Here in London we had to be content with the more costly Fox & Barrett or Dennett system. He (Mr. Cates) must join issue with Mr. Smith when he said that the beauty of Paris was due chiefly to the abundance of plaster and fine stone. It was due in no inconsiderable degree to the Parisians themselves. Would Londoners have made their city equal to Paris if they had had the same materials to deal with? And would not the Parisians have done something better than we had done, even with our commonplace stock bricks? Not that he was an over-enthusiastic admirer of Parisian architecture, although at one time he thought Paris was a perfect paradise for *façades*. But admirable as was the detail, excellent as were the entrance-gateways, yet the continual repetition of forms and openings so nearly alike, in *façades* regulated by a certain legal height, caused the general effect to pall and become in time wearying. It was not just for Mr. Smith to charge the failings of London architecture upon the material, for brick was an excellent material when well used, but one which had been shamefully ill-treated. There were brick houses in London which were as excellent in execution and as charming in design as it was possible for any architectural work to be. The repulsiveness of the generality of London houses was due either to some defect of our commercial system, or to the shortcomings of the individuals into whose hands it had fallen to provide our dwellings. We were, he hoped, commencing a new era of London architecture, now that it had been discovered that it was possible to make a brick building presentable, and he trusted that something equally beautiful and more picturesque than the Parisian *façade* would be substituted for the monotony of Gower-street. Any one who had been acquainted with Paris for many years, and seen the gradual changes which had taken place throughout the reign of Louis Philippe and during the Second Empire, would know that they had resulted in making Paris more than ever the capital of the world, and a place of resort for all nations. Curiously enough, if he remembered rightly, Paris was indebted to this country for the bulk of the improvements made in the city,—at all events, for the commencement of them. At the time of the capture of Paris by the allies, sixty years ago, a heavy ransom was set upon the city, the money being raised by a terminable annuity running for about forty years, and falling in about the year 1855. The municipality raised the necessary income by means of *octroi* dues, and during the long period of forty years the Parisians became quite accustomed to their payment. When the terminable annuity fell in, the municipality took care to pledge the *octroi* duties in advance, and raised a fresh loan, which, with aid from the State, led to the commencement of the great improvements in the Rue Rivoli, and from that time the expenditure had been exceedingly lavish. If the case had been that of London, the *octroi* dues would have been abolished, for the sake of effecting some petty saving of perhaps a farthing in the pound; but the Parisians were wiser. There was a municipal aspect in which houses in flats might be advantageously considered. London was spread out north, south, east, and west by means of long rows of villas and small houses, each house accommodating only one or, at the most, two families. All this meant miles upon miles of road

which had to be paved, maintained, scavenged, and lighted with gas at considerable cost; miles of gas and water pipes, and miles of main and branch sewers, were necessary, and the cost of police supervision was very great. In Paris, on the contrary, with the "flat" system in general use, the people were more concentrated, and while the city was not less healthy than London, the cost of drainage, together with police supervision and the maintenance of roads, was greatly lessened in proportion to the people housed on a given area. Opportunities would soon be offered for capitalists to supply London with flats for the middle classes, the new street now being made from Oxford-street to Shoreditch offering some exceedingly suitable sites for such buildings. The new Charing-cross approach to the Victoria Embankment might also be partially utilised as the site of flats of a superior description.

Mr. Thomas Blashill said that the paper had shown how entirely different were the requirements of a French as compared with an English family, and this being the case he did not think it likely that the Parisian system of living in flats was likely to meet with much favour in England. Indeed, in order to make the plan of a French house suit an English family, the English family must change its nationality. He agreed with Mr. White as to the commendable compactness of French kitchens. Enormous waste of space generally characterised the planning of an English kitchen and domestic offices; and great and continuous waste occurred in our kitchens owing to the ill-adapted apparatus provided. What could be more unsatisfactory, for example, with reference to both economy and efficiency, than the ordinary English kitchen range? Mr. Blashill concluded by moving a vote of thanks to Mr. White for his paper.

Mr. J. Douglass Mathews, in seconding the motion, expressed his agreement with Mr. Blashill that buildings planned in the French manner were unsuited to English requirements, although at the same time the system of building in flats, which was an exceedingly good one, might be extensively practised with advantage in London, for Londoners were compelled to reside in the suburbs simply because they could not get residences in town. He agreed with Mr. Cates in thinking that there could be no better position for building some of these dwellings in flats than in the new street from Bloomsbury to Shoreditch. There was no doubt that the system of building in flats was an economical one for service, but it seemed to possess the disadvantage of lacking the privacy which was ensured by a house in stories, as on the "flat" system the servants were brought right into the house, as it were, and thus would be more likely to overhear everything.

Mr. Phené Spiers said he must confess that had he been a Parisian who had been walking about London in search of a lodging he should have been rather astonished at Mr. Cates's complaint as to the similarity of the houses of Paris. Except that the bricks in some houses were of one colour, and those in other houses of another hue, and except that the cement dressings of some houses had cracked or were peeling off while others remained intact, there was no very great variety in London houses. Although perhaps Englishmen might see no great difference in French houses, Frenchmen saw the very greatest differences between them. Every house in France was specially designed for its purpose, and no French architect ever thought of designing the same façade for two different houses. Indeed, the French architect spent a vast amount of time on his designs. If we adopted the "flat" system in this country, it would be difficult to know what to do with the *concierge*, who was a most important, though a very dangerous, individual, unless it was made worth his while to be friendly. He did not think that an Englishman, whose house was his castle, would submit himself to the tender mercies of the *concierge*.

Mr. H. H. Statham reminded Mr. Spiers that in Edinburgh, where houses in flats abound, the *concierge* was not known. The street-door of each house opened on to the stair-landing, and was attended to by the occupier's own servant. Therefore, the *concierge* was not a necessary concomitant of a house in flats.

The vote of thanks having been carried by acclamation, Mr. White replied to some of the points raised during the discussion. Mr. Cates, he said, had inferred that the commercial system of London was not favourable to good building; but the real reason why we did not have good houses in London was that the houses and the land belonged to different people. The feudal system still existed in London, which belonged to only a few people, and there was no community of interest between the owners of houses and the ground landlords. The question put by the chairman as to the comparative cost of Parisian and London houses per foot cube was not easy to answer, because the French architect never thought of such a dimension as a foot cube or even a *mètre* cube; he calculated at per *mètre* superficial. A great deal had been said as to the different modes of life prevailing in London and Paris; the principal difference appeared to be this, that in London we commonly had perhaps two or three families occupying a house intended for a single family, while in Paris each house or flat only accommodated one family. In conclusion, Mr. White expressed his indebtedness to Mr. Bryce, of Edinburgh, Mr. Thomas Arnold, and M. César Daly, for their kindness in lending him plans, and giving him information as to the erection of houses in flats; also to a member of the Association who had, as a sort of honorary overtime, made him some plans specially for the lecture.

The meeting then terminated. The next meeting will be held on Friday, the 17th inst., when Mr. W. Burges is announced to discourse "On Things in General."

THE PRINCE IN CEYLON.

THE COLOMBO BREAKWATER AND THE FUTURE SHIP CANAL OF INDIA.

THE colonists of Ceylon have at last surely reached the summit of their desires. After many years of importunity, they succeeded in obtaining the sanction of the Home Government to the construction of a harbour and breakwater at Colombo, and persuaded the Public Works Commissioners, with much reluctance, to advance the needful funds for the new erection. But they have not laboured or waited in vain, and as a crowning success, the Heir to the Throne has arrived among them opportunely, and has inaugurated the work in due Masonic form. It is somewhat remarkable that the Prince's name should be associated with the three great undertakings which cannot fail to revolutionise the coast traffic of the country. Up to the present time, India, although she has many harbours, has not a single port between Bombay and Calcutta at which a vessel can discharge her cargo on a pier. The Elphinstone Docks at Bombay, which he has already opened, add to the resources of a greatly overcrowded port; and the Colombo harbour cannot fail, not only to develop the wealth of this already prosperous colony, but will share with the Madras harbour works, of which it is expected he will yet lay the foundation stone, in increasing the trade of Southern India, and at the same time in rendering the many useful products of these fruitful provinces cheaper in the home markets. The Colombo breakwater and harbour are from the designs of Sir J. Coode, and the estimated cost is 630,000*l*. They have been planned with an especial view to affording protection for ships during the monsoons, and will consist of a breakwater pier, which will start from the Battenburgh Battery, on the west side of the Custom House Point, and run straight in a north-north-easterly direction for about 1,800 ft., when it will be turned eastward by a circular curve of about 300 ft., and will then again be carried in a straight direction towards east-north-east for a distance of about 1,500 ft., terminating in 28 ft. of water at low water, with a substantial head, having a small lighthouse upon it. The total length of the breakwater pier will thus be 3,600 ft., and the mode of construction is such that the inner or harbour face will in nearly all states of the weather be available for vessels landing and discharging cargo, as far as regards the straight arm nearest the shore, whilst the inner face along the outermost arm will be available at all times. Besides, if extension were at any time required, the seaward parapet of the now proposed northern arm could be removed, and transferred to a breakwater still further to the north, leaving a substantial stone quay, along both sides of which vessels might load or discharge their cargoes. Inside the breakwater there will be two jetties, each 1,000 ft. long, which will accommodate vessels on each side, and will be provided with the necessary railway lines and sheds so as to facilitate transport. These jetties have been so placed that the heads of the vessels lying alongside them will be in the direction of the wind during both the west and north-east monsoons. They will either be constructed of iron, or of "jarrah" timber from Australia. The breakwater itself will be of rubble stone in the base and hearting, and 12-ton béton blocks in the solid masonry parts. The Public Works Commissioners have agreed to advance a quarter of a million sterling towards the cost. The construction of this new harbour and port of call will naturally ruin Point de Galle; but nobody will murmur except those locally interested. Galle, although conveniently situated, is as ugly a place for ships as one could well wish to avoid. The harbour is studded with rocks, and not a few casualties have happened there. An old skipper is stated to have once said to no less a personage than Governor Gregory:—"I never go into it without apprehension, nor get out of it without relief"; and, as we shall show by-and-by, if the Paumben Canal be cut, as it must be before many years elapse, it will be utterly useless, while, even as it is, it is totally inadequate to meet the growing requirements of the steam traffic, which has been immensely developed by the opening of the Suez Canal. Galle is only thirty miles nearer Aden than Colombo, but the latter is the much more accessible port of the two. Sailing-vessels in making Colombo have not to contend with the treacherous current which exists off Galle, and sometimes sweeps them to leeward, giving them a month's additional work to regain their former position; and steamers when making Colombo at night have no occasion to keep up steam, as they can anchor at any time in the roads, and at the same time will be able to rely on quick despatch when they can moor to a jetty instead of tossing about waiting for cargo-boats.

As most of our readers are doubtless aware, Ceylon is separated from the mainland of India by Palk Strait and the Gulf of Manaar. Right across the passage lies the island of Rameswaram, which is connected with either shore by coral reefs. On the island are two towns, Paumben and Rameswaram, in the latter of which is a celebrated temple,—one of the great shrines of India. These towns have evidently been great in their time. For the whole six miles of distance between them there exists a paved road, 18 ft. in breadth, which has originally been well laid with enormous blocks of stone, but is now fast falling into decay. On either side of this road are extensive ruins of buildings which, in our degenerate days, would be termed mansions and palaces. Rameswaram, however, in getting old, has lost much of its celebrity, and the town now only contains about 1,500 inhabitants, most of whom are, in some way or other, connected with the service of the temple. On any of the great festivals about 50,000 devotees assemble here, and as the island is holy ground they are compelled to perform certain prescribed ablutions in the sea before approaching the shrine to offer their gifts and perform *pûja* or prayers. The poorer class of pilgrims, who far exceed their richer brethren in number, during their stay are provided with provisions from the stores of the temple, which are well supplied with every kind of grain, oil, and ghee, by the donations of rich individuals and native princes, who at different times have made over large grants of land for this purpose to the Brahmins of the temple. The building itself is not architecturally wonderful, but the jewels in the temple are reputed to be very rare and valuable, and some of the pearls are said to be of great price, they having been accumulating for many generations from the shrine possessing the right to the share of three boats, free of expense, every year the pearl banks of Ceylon are fished. This right has been continued during the government of the Dutch and English up to the present time. On the adjacent mainland also there are many fine temples and monuments, the chief of which perhaps is a magnificent column placed in the centre of a small fort in the village of Shalavanai Kapatnam, which was erected by the Rajah of Tanjore in 1814 to commemorate the victories gained by the British troops over those of France.

Native boats and vessels of light draught can even now sail through the narrow Paumben Channel, and so save 360 miles between Bombay and Madras, or, in other words, the whole distance round Ceylon. Such a saving has long been an object of desire to shippers and shipowners. At the very beginning of the present century Colonel Manuel Martinez exchanged sentiments with Stephen Rumbold Lushington, of the Madras Civil Service, then in charge of the southern provinces of Madras, regarding a

removal of the obstruction to the trade of Malabar, Coromandel, and Bengal, caused by the shallowness of the channel; but no practical examination of the pass was made until 1822, when Ensign (now Sir) Arthur Cotton surveyed it, and sent in a favourable report. After that surveys were tolerably frequent, and in 1837, Messrs. Powell and Ethersey, of the Indian Navy, accurately delineated the whole channel, but, strange to say, their report was pigeon-holed until 1871, when a revived interest began to be shown in the subject, owing to the increasing necessities of the steam traffic. Since then the Ceylon colonists have been anxious to have this route opened up, and have spent neither pains nor expense to accomplish their wishes. Unfortunately their desires outrun their finances; and having brought out the best engineers from England to survey the route, and discovered that the cost would be nearly a million and a half sterling, they have been fain to content themselves in the meantime with the opening of Colombo Harbour. This work, however, is merely the stepping-stone to greater things, and in inaugurating it the Prince of Wales has simply initiated a new era in the maritime traffic of Southern India.

PROJECTED NEW PUBLIC WORKS.

RAILWAYS, PIERS, HARBOURS, AND BUILDINGS.

The notices and plans with respect to the applications intended to be made in the next session of Parliament for private Bills, were deposited on the 30th ult., being the last day allowed by the Standing Orders. The entire number amounts to nearly 300, being somewhat less than last year's list. Many of the Bills, however, are in respect of public works of an important character, including new railways and extensions, piers and harbour improvements, public buildings, and town improvements. The railway Bills are 130 in number, eighteen of which are in connexion with projects within the metropolitan area.

Amongst these is a Bill promoted by the Midland Company, which, along with other powers, seeks Parliamentary sanction for the construction of a new line of railway in St. Pancras parish, called the Tottenham and Hampstead North Curve; also another new line called the Poplar branch, commencing by a junction with the London and Blackwall line in Preston-road, and terminating in Wigram's shipbuilding yard. The Bill further contains a clause empowering the company to form several new roads and streets in the locality of the last-named line. For new station buildings and other works in the metropolis power is also sought by the Bill to purchase lands and buildings in St. Giles's, Cripplegate, adjoining the Metropolitan railway, between Whitecross-street and Milton-street; also lands and buildings in Whitechapel, near the Mint; together with other lands and buildings in West Ham, bounded on the north-west side by the North Woolwich-road, on the south-east by the Victoria Docks, and on the north and north-west by Victoria Dock-road. The Great Western Company's general Additional Powers Bill embraces clauses sanctioning the alteration of the levels of Westbourne-park-place, Paddington, to Lord Hill's-bridge; also the closing of Cumming-street, Paddington, from Francis-street to South Wharf-road, and in connexion with closing Cumming-street powers are also sought for the purchase of lands and houses in Fulham, Hammersmith, and Acton. The Great Eastern Company have a general Bill, seeking very extensive powers on different parts of their line, including, in the metropolis, clauses sanctioning the conversion of the Bishopsgate high level passenger station into a goods station, either with or without continuing the present accommodation for passenger traffic. The clause likewise provides for the erection of arches, approaches, and other buildings in connexion with the conversion of the station. Another clause provides for the widening of the line near the Bishopsgate Station, commencing on the north side near Sclater-street, Shoreditch, and terminating near the Brick-lane Station, at Bethnal-green, and on the south side, from the west end of Bishopsgate Station to the bridge in Spitalfields which carries the line over Brick-lane. Other clauses in the Bill authorise the closing up of Sclater-street, Little Patience-street, Farthing-street, King-street, Queen's-court, King's-court, Matthew's-buildings, and Matthew's-court, all in Shoreditch, Spitalfields, and Bethnal-green. Powers are also sought in the Bill for crossing Wheeler-street, Bethnal-green, on the level, for the purpose of connecting the property of the Company on one side of the street with their property on the other; likewise powers for widening the main line from Bethnal-green to Stratford; and also for widening the North Woolwich branch from Stratford-bridge Station to Canning-bridge Station. The Bill further provides for the construction of several new branch lines and sidings in West Ham; the erection of wharfs on the river Lea, at West Ham; together with powers for the purchase of land adjoining the new Liverpool-street Station for the purpose of carrying out additional works and buildings at that terminus. The London, Brighton, and South Coast Company apply for powers to construct a short junction line near Queen's-road, Camberwell, to commence on the South London line of the company, close to the Queen's-road Station, and terminate by a junction with the Crystal Palace and South London junction of the London, Chatham, and Dover Company. Also for powers to construct a number of new arches at New-cross-road, Deptford, for widening the line at that point; and likewise for powers to construct a subway between the Victoria Station of the Company and the Chatham and Dover Company, and the Victoria Station of the District Company. The proposed subway is to commence in the station yard of the Brighton and Chatham and Dover Company, pass under Wilton-road, and terminate in the station of the District Company. The Brighton, Chatham and Dover, and District Companies are to join in the expense. The South Eastern Company include in their Additional Powers Bill a clause for the enlargement of Charing-cross Station, with powers to purchase for that purpose several houses and portions of the sites of Northumberland-street and Craven-street. The East London Company apply for powers to construct a line from Whitechapel by a junction with the line now in course of construction to the Great Eastern line at Bethnal-green. The Bill also contains powers for the construction of a joint station at Shadwell by the East London and London and Blackwall Companies. The Metropolitan Company have a Bill seeking powers for the construction of a continuation line from Aldgate, along Whitechapel-road, to join the East London; also an extension line from the Hammersmith and City line to Walham-green and Fulham. The London and South Western Company apply for powers to purchase lands and buildings at Twickenham and Merton for extensions and station enlargements. The London, Chatham, and Dover Company promote a Bill in which power is sought for widening the viaduct on their line over Denmark-road, Camberwell. The London and Blackwall Company apply for powers to widen the line near Fenchurch-street, at the west side of Crutched-friars, and at Shadwell, and also for powers to purchase land for erecting a new and enlarged station at Shadwell. There are also several Bills promoted by new companies to be incorporated for constructing entirely new lines in the metropolis. These include a Bill giving powers for the construction of a new line between London, Windsor, and Ascot, commencing by a junction with the Midland line at Hendon, and passing through Harrow and Uxbridge. Also a Bill promoted for constructing a new route to Brighton, called the "Metropolitan and Brighton," commencing on the Mid Kent line in Beckenham, and the London, Chatham, and Dover line at Penge. Two new lines to the Alexandra Palace are projected. One is from the Tottenham and Hampstead Junction to the Palace, and the other, called the Midland and Alexandra Palace line, commencing on the Tottenham and Hampstead line near Hornsey. Another project, powers for which are to be applied for, is the construction of a line by a newly incorporated company, between Turnham-green and Ealing, commencing by a junction with the Kensington and Richmond branch of the London and South-Western line at Turnham-green, and passing through Chiswick, Acton, and Gunnersbury, to Ealing.

The Gas and Water Bills are upwards of fifty in number, of which nine are connected with the metropolis. These include an application by the Southwark and Vauxhall Company for the extension of its limits, and the construction of a new reservoir at Petersham, adjoining the reservoir in Richmond Park, together with the construction of four embankments, 50 yards long each, and the vesting in the company the works of the Richmond Water Company. The Gas Light and Coke Company have also a Bill seeking powers for the construction of new works at Kensington, Woolwich, Barking, and East Ham. The Imperial, South Metropolitan, and North Middlesex Gas Companies each apply for powers to increase their capital. There are also two Bills, promoted jointly by the City Corporation and the Metropolitan Board of Works, the one seeking for powers to make alterations in the rates, and the mode of assessing them, of the several metropolitan water companies, and the other applying for powers for securing a uniform rate of charge for the supply of gas by the metropolitan companies. The Chartered and the Imperial have also Bills for amalgamation, and there is likewise a Bill promoted with the object of transferring to a royal commission the powers and property of the several companies now supplying the metropolis with water, providing for annuities to the shareholders, and compensation to the officers.

Amongst the applications for powers in respect of public works in the metropolis, is a Bill containing powers for purchasing lands, houses, and buildings as a site for public offices, bounded on the north by Charles-street, and that portion of Parliament street which was formerly Upper Charles-street, on the south by Great George-street, on the east by Parliament-street, and on the west by St. James's Park; also a Bill for the acquisition of property bounded on the south side by the gardens of the Victoria Embankment, on the west side by premises in Ivy Bridge-lane, and the houses and premises on the east side of Salisbury-street, on the north by houses in Cecil-street and Beaufort Buildings, and on the east side by houses in Lancaster-place, Wellington-street, Strand, as a site for the new Royal Mint. Another Bill is for powers to purchase land and buildings in the parishes of St. Martin-in-the-Fields and St. Paul's, Covent-garden, near Bow-street, as a site for an intended new Bow-street Police court. There is also a Bill for establishing an East London ferry, roads, and tramways. The proposed ferry is between Poplar and Greenwich, the works including a floating landing-stage adjoining Blackwall Stairs, 78 yards long, and another similar floating landing-stage at Greenwich, 100 yards long, to be connected with the shore by a bridge 80 yards in length. It is also proposed by the Bill to connect the ferry, by a tramway, with the London tramways at Greenwich. Another Bill, promoted by a company to be incorporated, is for powers to construct a carriage-way under the Thames by a tunnel, commencing at the south end of the Minories, and passing along Postern-row, into and under Trinity-square, and thence turning southwards, passing along and under Tower Ditch on the west side of the Tower, thence under the Thames, and terminating on the Southwark side of the river in Horselydown. The Metropolitan Board of Works also promote two Bills, one for transferring the Chelsea Embankment to the Board, and for powers to construct a new street from Sun-street to Worship-street; and the other Bill to acquire possession of a large area, with houses and other buildings, in Whitechapel and Limehouse, for improvements under the Artisans' and Labourers' Dwellings Act of last session. The recent inundation of the Thames has had the effect of two Bills having been prepared to prevent future floods. One of these Bills is for powers to the Metropolitan Vestries, Boards of Works, and other local authorities and owners of property abutting on the Thames, from Plumstead to Putney on the south bank, and from Barking Creek to Hammersmith on the north, to build walls to such a height as to prevent the Thames from overflowing them. Another Bill seeks for powers to use lands on the banks of the Thames, on Rainham, Wenham, Arley, Purfleet, and West Thurrock Marshes, in Essex; and Plumstead, Erith, Dartford, and Stone Marshes, in Kent, for the accommodation of flood water, and to provide for the construction of embankments, tunnels, bridges, culverts, floodgates, weirs, and reservoirs.

Amongst the several railway and other Bills in the provinces one is for the incorporation of a company to construct a railway tunnel under the Thames from the London, Tilbury, and Southend railway at Grays Thurrock, in Essex, to the London, Chatham, and Dover line at Cobham in Kent. The project is called the North and South Junction (Gravesend). The piers, rivers, and harbours Bills are twenty in number, and include, amongst others, the reclamation of several hundred acres of land on the foreshore of Morecombe Bay for building and agricultural purposes. The Bills of a miscellaneous character include one

seeking powers to purchase 4,500 square yards of land, with houses and buildings for the enlargement of the Manchester Post-office. The property proposed to be purchased is some of the most valuable in the borough, and includes two large hotels and several houses in Market-street. There are also bills for extensive town improvements in Leicester, including, in addition to the construction of new streets and the widening of others, works for the deepening of the river Soar for the prevention of floods. The Bill provides for the erection of embankments, piers, locks, and bridges, for facilitating the passage of flood water. The Bill also contains a clause to prevent the construction of cellars in houses to be erected in the low-lying districts of the borough, and also to make further provision for the construction of the foundations of houses and the lower stories. There are likewise Bills seeking powers for extensive town improvements in several of the other large towns in the provinces, including Walsall, Huddersfield, Llandudno, Cardiff, Lancaster, Whitehaven, Southport, and other towns. The Southport Bill embraces a clause seeking powers for the erection of forty cottages for the borough police, and the workmen employed by the Corporation; also powers to construct a new pier and promenade; to erect large new markets and slaughter-houses; likewise powers to purchase six acres of land for the erection of new gas works, and powers to purchase the tramways in the borough.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE Committee of Sessional Papers, with the approval of the Council, have slightly modified, and, indeed, added to, the programme which we originally published. Mr. Chisholm, the Government architect of Madras, will read his paper on January 31st, 1876. Mr. James Fergusson, F.R.S., has consented to read a paper "On the Erechtheum at Athens," on February 28th. The subject is certainly not a new one, but the building is one about which there is even now as much uncertainty as there is printed description. It is not improbable that Mr. Fergusson, who has recently had occasion to investigate the matter, may succeed in theoretically restoring the building. In any case a recital of his views upon the subject cannot fail to be valuable.

NEWCASTLE-UPON-TYNE WORKHOUSE INFIRMARY.

AT the meeting of the Newcastle-on-Tyne Board of Guardians on the 26th of November, a report upon the workhouse infirmary, from Dr. Mouat, her Majesty's Local Government Board Inspector, dated November 20th, was read by the chairman. The report spoke in very high terms of the infirmary.

We may add that the building was erected four or five years ago under the superintendence of Mr. Septimus Oswald, of Newcastle, architect. The above report is not the first official commendation which the building has received, the Lunacy Commissioners having reported upon it when near completion as "incomparably the best accommodation for the sick poor anywhere known to them, creditable to the humanity as well as public spirit of those who have provided it, and an honour to the town."

ST. ANTHOLIN'S TOWER.

THE British Archæological Association, as our readers know, lately memorialised the Ecclesiastical Commission for England against the proposed demolition of the steeple of St. Antholin's Church, Watling-street. To this memorial the following answer from the Ecclesiastical Commission was received last week:—

"The Ecclesiastical Commissioners for England have carefully considered the reasons in favour of the preservation of the tower and spire of the late church of St. Antholin, in the City of London, which are set forth in the memorial addressed to them by the British Archæological Association, and the views and arguments on the same subject which were orally expressed to this Board on the 25th ult. by the deputation from the Association, and by the churchwardens of St. Antholin's and the churchwardens of St. John the Baptist upon Walbrook; and I am now directed to state that the Commissioners can discover no grounds which would justify this Board in abstaining from doing, or in delaying to do, that which by section 3 of the Order of Her Majesty in Council on the 5th of August, 1875, which has the force of an Act of Parliament, is directed to be done, and that section, as you are aware, with a view to the ulterior proceedings in the same Order contemplated, directs 'that the said spire and tower of the said church of St. Antholin shall be taken down.'"

Under the dominion of this Board the rapid disappearance of the land-marks of London's past history may be feared.

SNOWFLAKES.*

SNOWFLAKES falling, ever falling,
Through the gaunt and leafless trees;
Chilly gloom the soul appalling,
As the very snowflakes freeze;

Freeze, on gable, wall, and tower
Of the ghostly church beyond;
Freeze, on ivy-mantled ruin
Close beside the Witches' pond,—

Pond, whose black unholy waters,—
Shaded by tall dismal yews,—
Heave and swell with sullen motion,
When no breath of Heaven pursues.

Ne'er shall breath of Heaven linger
On this pool so dark and dread,
For a fearful crime lies hidden
Deep within its murky bed.

Nameless is the crime; forgotton,
Save for this unresting tide
Seeming to resent its waters
Should so dire a death-deed hide.

Snowflakes rest not on its bosom;
Frosts ne'er sparkle o'er its face;
Birds and beasts and insects shun it,
Seeking other resting-place.

* * * * *

But the snowflakes still are falling,
Whitening all the earth around;
Dark and dense themselves appearing,
Ere they hover to the ground.

Thus, oft, messengers from Heaven,—
Trials, sorrows, pains, and tears,—
Look all black when distant from us;
But as each our poor heart nears,

Then we find how pure and tender,—
Soft as snowflake to the touch,—
Proves the trial that we shrank from,
Strove against, and fear'd so much.

R. F. H.

* We go a little beyond our province to print the following lines from a correspondent of long standing; their merits and the season must justify us.

AN ELECTION BY THE BRENTFORD LOCAL BOARD.

SIR,—The attention of this Board has been called to a letter under this heading appearing in your last Saturday's issue purporting to be signed by a correspondent styling himself "One of the humbugged," and to which you have been pleased to append an editorial note endorsing entirely the statements contained in the letter, and the conclusion sought to be drawn therefrom.

I am directed by the Board to express their surprise that a newspaper of the high standing of the *Builder* should commit itself to the expression of an opinion based upon statements in a communication from a nameless correspondent, and that without making some inquiry into the foundation of the assertions put forward. In this instance inquiry would have satisfied you that the election of the new surveyor, to which your correspondent refers, was conducted openly and fairly; that at the time the advertisements were issued no member of the Board (not even, I believe, the gentleman who was eventually elected) had the least idea that the member referred to would be a candidate for the office; and that it was not until his application for the appointment was opened (amongst the rest) that the Board generally were made aware of the fact.

The statement that he "was elected and actually attended the Board as the surveyor, and received instructions to proceed with certain works required to be done before sending in his resignation," is entirely untrue, as also is the suggestion that "the whole matter from beginning to end was cut and dried." The insinuation that this Board "is composed of the smaller tradesmen of the district" needs no remark. Those who know *how* the Board is composed know how unfounded is the observation.

STEPHEN WOODBRIDGE,
Clerk to the Board.

THE INDECOROUS CIRCULAR.

SIR,—You have remarked upon a circular addressed by me thanking the contributors to the fund raised for the family of the late Mr. W. H. Knight. Neither yourself nor Mr. Baker need apprehend that this will be made a precedent; it was an exceptional instance, and I have to thank many of the district and other surveyors for their very handsome donations. Mr. Knightley's subscription was delayed in transmission, and did not reach me until after the issue of the circular; the amount is now increased 2*l.* 2*s.*; 227*l.* 10*s.* in all. I had inserted his name feeling assured he would assist me, and hence by an accident it appears with the "0" attached. Several other district surveyors declined, but I did not invidiously refer to them, as they had perfect liberty to refuse. With reference to the "other officer," it was a joke among ourselves inserted for special reasons, and in which I would respectfully submit neither Mr. Baker nor the general public are concerned.

F. W. GODDARD.

SIR,—Had Mr. Goddard's indecorous circular not been publicly referred to, I should not have troubled you with any communication. I will, however, tell the public what I know about it, not that I feel called upon to explain, but that I wish to do so. I did receive a circular asking a subscription for Mrs. Knight, and the next morning information that my clerk's life had been attempted at Hammersmith, and that I was to be shot the next day. This diverted my thoughts, upset my arrangements, gave me extra work to do, and occupied my time several days at the police-court and Old Bailey, and it was not till Wednesday last, when the justices signed the necessary documents relegating the would-be assassin to a criminal lunatic asylum, that I felt at ease.

Then I bethought me of Mrs. Knight, and was in the act of sending a donation, when Mr. Goddard's circular arrived, which on one side sarcastically thanked me for my subscription, and on the other side assigned to me the zero position in the scale of benevolence. My first impulse was to burn the cheque; but I thought better of it, and sent it by other hands, and can only regret Mr. Goddard's hasty conclusion and want of good taste in despatching that ridiculous kind of *lettre-de-cachet*.

T. E. KNIGHTLEY.

STEETLY CHAPEL.

SIR,—Every one of right feeling must sympathise with the wishes expressed by your correspondent "M. A." (p. 1063, *ante*), that this beautiful specimen of Norman work may be not only restored, but re-dedicated to sacred uses.

It was visited by the British Archæological Association, in the month of August, 1873, during their Sheffield Congress, and in their *Quarterly Journal* of the following month of March will be found an accurate description of the building, a ground plan, and a good perspective view of the interior (page 114).

The chapel is interesting geologically, as well as in an architectural and archæological point of view.

The stone is magnesian limestone, from the same district as that from which what was used in the Houses of Parliament was obtained.

The mouldings and ornamental work generally are clear and well preserved,—a remarkable contrast to those of the great building at Westminster.

A wish was expressed that some steps be taken to induce the noble owner of the site to assist in restoring this beautiful specimen of Norman work, and I trust that something may yet be done towards that end.

"A MEMBER OF THE
BRITISH ARCHÆOLOGICAL ASSOCIATION."

THREATENED DESTRUCTION OF TADCASTER CHURCH.

SIR,—As one who deeply regrets the loss of our old landmarks, and more especially when the loss is aggravated by the fact of its wantonness, I lament the destruction of Tadcaster Church. Perhaps your kindly notice of this letter in your widely-read journal may be of some avail.

One of the churchwardens says that Sir Gilbert Scott has rendered a certificate to the church authorities there that the building is *quite sound*, and that no necessity whatever exists for its removal. It appears that some local builder examined the ancient rafters of the roof, and pronounced them rotten—the old, old story—and many a glorious church has perished through such a lame and miserable statement. The real reason for the rebuilding of Tadcaster Church is not that the present structure is incapable of restoration, but that some of the Tadcaster people have set their minds on having a brand new building, and they are deaf to all entreaties for the preservation of the fine old parish church, which will soon be a thing of the past. And so by degrees we are losing, year

after year, first one old place and then another, and which in many cases in after years becomes a matter of regret even to those who were the desecrators and destroyers. J. G.

MOVEMENT IN INDIA.

In commemoration of the visit of the Prince of Wales to Ceylon, Mr. C. H. de Soyza, a local millionaire, proposes, with the sanction of the Government, to erect and endow two boarding-schools, one for boys and another for girls, at a cost of 15,000*l.* He further intends to endow with 5,000*l.* two chairs,—one Pali and the other Sanskrit,—in connexion with the Colombo Academy; and will also provide the requisite funds for opening a new model farm.

Another Singhalese, Sampson Rajahpakse, has given 1,000*l.* for another scholarship at the Academy,—to be styled "The Prince of Wales's Scholarship."

The young Rajah of Kolapore means to devote from 20,000*l.* to 30,000*l.* to build a hospital at his capital, to be called the Albert Edward Hospital.

Government House, Calcutta, is now nearly ready for the reception of the heir to the Crown. Some idea of the vast amount of work which has been done may be formed from the fact that the running ornament and lines on the beams of the roof of the Marble Hall alone, with its panels, measures seventy-three miles. The Vice-regal Palace is particularly rich in paintings, and Lord Northbrook, who is a connoisseur in art, has already had cleaned, reframed, and hung in suitable positions, no fewer than thirty-nine portraits and landscapes by the following artists: Sir Peter Lely, Sir Joshua Reynolds, Sir Thomas Lawrence, Sir Watson Gordon, Sir George Hayter, Beachey, Chinery, Holmes, Hayes, and Richard Wilson.

The Madras Harbour Works are being brought into order for the grand Masonic display which will take place at the laying of the foundation-stone. The stone itself, which will weigh about five tons, will be of blue granite, and will be lowered on to several large marble slabs already *in situ* beneath. The trowel and measuring-rod which will be used by the Prince are both of gold, and have cost 1,700 rupees.

The Madras Government have sanctioned an expenditure of 166,000 rupees for the erection of a new gaol at Palamcottah. The sanitation of the building will be strictly attended to.

MANCHESTER PUBLIC FREE LIBRARIES.

The report (1874-5) shows that the total number of volumes on the shelves of all the libraries is 132,887, of which 53,821 are in the reference, and 79,066 in the lending, libraries.

The returns show that the total number of volumes taken by the readers to their homes during the year has been 554,779, against 590,646 in the preceding year.

The number of applicants to whom books have been delivered for home reading amounts to 474,216, and that for books to be used in the reading-rooms to 135,445; the number of readers who have used the newspapers and periodicals placed on the stands and tables of the news-rooms amounts to upwards of 1,639,365, showing that the number of times that persons have availed themselves of the free libraries during the year amounts to 2,249,026, as compared with 2,355,028 in the year preceding.

Plans for the building of the Cheetham Branch Library were obtained from several architects. Those of Messrs. Barker & Ellis were selected by the committee, after long and careful consideration and consultation with Messrs. Mills & Murgatroyd as their professional advisers. The work is now in the hands of the contractor, and will be carried out with all reasonable speed.

OILING SASH-PULLEYS.

Sir,—As I am one of those who think patents mischievous, I send you, *pro bono publico*, a short description of an invention which I made above a year ago for enabling the pulleys for heavy sashes to be oiled, and which has been used throughout a large house, nearly finished, by Messrs. Longmire & Burge. It consists only of adding two thickish pieces to the cast-iron side-plates of large pulleys, with small oblique holes in them from the pivots up to the front plate, where are two corresponding holes, down which oil can be poured to the pivots. Pivots cannot practically be oiled in any other way without taking out the whole pulley, which loosens the screws, and, in fact, never will be done. I have also a new window-fastener, for preventing either opening from without or rattling of the sashes when open, which I will describe some other time. Edm. Beckett.

WINCHESTER.

A new vicarage-house has just been completed for the parish of St. Faith, Winchester.

The plans were prepared under the directions of Mr. Charles Pink, architect. The clerk of works was Mr. Thomas Micklam; the contractor, Mr. G. Marsh. The vicarage is pleasantly situated on the side of a hill overlooking the valley of the Itchen, with the villages of St. Cross and Twyford in the distance.

It contains dining-room, 21 ft. by 16 ft.; drawing-room and study connected with folding doors, 38 ft. by 16 ft.; parish room, 14 ft. by 13 ft.; large entrance-hall, vestibule, and lobby, besides the usual offices for servants on the ground-floor, cellars below, and bed-rooms above, with dressing-rooms, conveniences, &c. A verandah runs along the south and part of east fronts.

DORCHESTER BOROUGH SURVEYORSHIP.

On the 1st instant, the Committee reported to the Town Council that they had held two meetings with reference to the vacant office. There were forty-three applicants, from whom they had selected seven, as possessing satisfactory testimonials,—Mr. Chick, Dorchester; Mr. Creame, East Grinstead; Mr. Hawkins, Newent; Mr. Nicholls, Bristol; Mr. James Tomlinson, Yeovil; Mr. W. Norman, Weymouth; Mr. Winship, Malvern.

The committee asked the council to make a selection from these candidates preliminarily to the appointment. The testimonials of each, with the exception of those of Mr. Chick, who is well known to the council, were read over, and the list reduced to three, Messrs. Chick, Norman, and Nicholls, who were asked to attend on (this) Saturday.

RAIN AND TELEGRAPHY.

Sir,—One of your correspondents recently drew attention to the extreme probability of the poles of the electric telegraph system being at least a probable cause of the predominance of moisture in the atmosphere. I should like to assist him in the inquiry, if he chooses to pursue it; for I think it extremely probable that, as far as he goes, he may be on the right track. Let him add to the polarity of the telegraph-poles the prodigious amount of waste steam, carbonic acid, and water, not to mention hydrogen in other forms, which is given off by our railway locomotives in the immediate region of the telegraph lines, and I am sure his conviction will be justified.

A. M.

STAINED GLASS.

Wheatley.—Three windows in the chancel of Wheatley Church, Oxon, have just been filled with stained glass representing the principal events in our Lord's life. They are by Fouracre & Watson, of Plymouth.

Elmham.—A painted window, to the memory of the late Lord Sondes, has just been placed at the east end of the chancel of North Elmham Church, Norfolk. The window, which is by Messrs. Clayton & Bell, has for its subject the Transfiguration of our Lord.

March.—The east window of the church of St. Wendreda, March, has just been filled with stained glass by Clayton & Bell, in memory of the late Mrs. Green and her sister. The central figure represents our Lord in majesty, surrounded by angels. On the right are figures of St. James and St. John, and on the right centre St. Agnes and St. Margaret. On the left are figures of St. Peter and St. Paul, and on the left centre St. Elizabeth, of Hungary. The base exhibits the Incarnation in a series of five representations, consisting of the Annunciation, the Nativity, the Crucifixion, the Entombment, and the Marys at the Sepulchre.

The Regulation of Sewage Grounds.—Mr. Alfred Smee, F.R.S., read a paper on this subject at the Society of Arts on the 1st inst., and made his accustomed onslaught on Croydon. Dr. A. Carpenter was present, and replied vigorously, as he has done before. Croydon has certainly been very unlucky.

Books Received.

A Concise Glossary of Terms used in Grecian, Roman, Italian, and Gothic Architecture. By John Henry Parker, F.S.A. J. Parker & Co., Oxford and London.

A new edition has been published of this capital little book,—the 4th. A topographical Index to the illustrations has been added.

VARIORUM.

A second edition of "The Timber Merchant's and Builder's Standard Guide," Weale's series, has been published by Messrs. Lockwood & Co. It contains a large number of useful tables. When we read, as a note to the second edition, that the duty on timber having been taken off since the publication of the first edition "care must be given to deduct the same on the calculations for cost, &c.," and afterwards read, at the foot of the "particulars of brick and mortar work," "wages 5s. per day," we are forced to think that a little further revision of the new issue would have been useful.——Part 35 of Cassell's "British Battles by Land and Sea," by James Grant, has been published, and concludes a work which cannot fail to be long popular. It is to be immediately followed by Cassell's "History of India," in monthly parts. With Part I., as a presentation plate, a portrait of the Prince of Wales will be given.——"An Old Story." The edition of 10,000 has been exhausted in somewhat less than a month. Mr. Hall is printing a new edition, that will be ready for issue on the 12th of December. We are glad it is rightly appreciated.

Miscellanea.

The Melbourne Intercolonial Exhibition.—The Melbourne Intercolonial Exhibition of 1875 affords a striking illustration of the rapidity with which a young country like Victoria can acquire all the elements of national greatness, strength, and prosperity. It is an index of the present state of learning, art, and manufactures in the colony, and as such its importance can hardly be over-estimated. The multifariousness, no less than the excellence, of the exhibits in every department cannot fail to be a matter of felicitation to every well-wisher of this flourishing colony, as it proves how successful it has been during the last twenty years in developing its natural resources and establishing those industries without which no urban population, and consequently no nation, can hope to permanently prosper. The Exhibition was formally opened on the 2nd of September, by his Excellency the Acting-Governor, in the presence of an immense concourse of spectators. Owing to the exertions of the officials and assistants the disposition of the various exhibits had been completed prior to the ceremony, and the appearance of the interior of the various buildings was very attractive.

Messrs. Sargood & Ewen's Warehouse at Dunedin, N.Z.—This firm, being desirous of erecting a building of first-class character and worthy of the city in which it is to be built, determined to call for competitive designs from a select few of the leading architects of both Melbourne and Dunedin; in all twelve designs were sent in, and after examination the first premium was awarded to Messrs. Reed & Barnes, of Melbourne, and the second to Mr. J. M'Gregor, C.E., of Dunedin. The building will stand on two contiguous blocks of ground extending from High-street to Dowling-street. The front to High-street is four stories high; the Dowling-street front, standing on a higher level, has only three stories above the ground. The building is in the Italian style of architecture, the elevation being divided into bays by piers and pilasters. The fronts have a bold cornice surmounted by a balustrade and parapet. A handsome pediment, which rises over the centre of the High-street front, forms an appropriate finish. The various floors are supported on iron pillars and girders.

New Post-office for Manchester.—The Post-office authorities in London have already begun inquiries with a view to securing all the property between the present office at Manchester and Marriott's-court, including the Clarence Hotel. The new building, if this scheme should be carried out, will be bounded by the Commercial Hotel on one side, and on the three other sides it will have Brown-street, Marriott's-court, and Spring-gardens.

Metropolitan Drawing Classes. — On Monday evening last the Lord Mayor distributed the prizes to the successful students attending the drawing classes in connexion with the Science and Art Department, South Kensington, conducted by Mr. W. Busbridge and his assistants, Messrs. Ellercamp and Topple, in the large hall of the City Terminus Hotel, Cannon-street, which was crowded on the occasion. The Queen's prizes and the certificates gained by the students at the examinations for the present year were considerably over 500, the students who gained them belonging to the science classes of Deptford, Marylebone, Paddington, Somers Town, Lambeth, Kennington, Westminster, Hoxton, Battersea, Kilburn, and Woolwich Royal Arsenal Mechanics' Institute. Mr. Buckmaster having addressed the meeting, the Lord Mayor distributed the prizes among those who had been found entitled to them, and after he had done so a resolution was adopted to the effect that the efforts now being made by the Science and Art Department to spread sound scientific and artistic knowledge among the industrial classes deserved to be acknowledged, and that every encouragement ought to be given to the extension of technical education, which the meeting trusted the various City companies would be induced still further to aid.

Ely Cathedral.—A meeting in furtherance of the restoration of Ely Cathedral was held in the Guildhall, Cambridge, on the 24th ult. The proposal made at the late Ely Diocesan Conference, on the occasion of the opening of the lantern and octagon (after decoration by Mr. Gambier Parry), has met with great encouragement. The Dean has already received promises amounting altogether to 3,150*l.*, which will enable the committee to pay off the debt still remaining upon the decorated lantern, and leave more than 2,000*l.* for further restoration. It is hoped that in due time the rebuilding of the north-west transept may be accomplished; but at present the general feeling seems to be that the exterior restoration of the lantern should be first undertaken. Resolutions were adopted to the effect that the first step to be taken in the further restoration of the cathedral should be the completion of the exterior of the octagon, and that the Dean and Chapter communicate with Sir Gilbert Scott upon the completion of the restoration of the exterior of the lantern, in accordance with designs already prepared.

New Hall at Carlisle.—On the 23rd ult. the new hall of the Carlisle Young Men's Christian Association was opened. The principal material used is brick, the façade being relieved by designs in darker-coloured brick and white stone facings and mouldings. Along the front of the building on the ground-floor are two reading-rooms, and behind is a lecture-hall capable of accommodating 450 persons. It is 62 ft. long and 27 ft. 6 in. wide. There is a gallery to the hall, so designed that it can be used for class-rooms and other purposes. Mr. James Lees, a member of the committee of the Association, prepared the plans and superintended the erection of the building without charge. The cost was 2,200*l.* The following were the contractors: — Building, Mr. Simpson; joiner, Mr. Wright; slater, Mr. T. Nanson; plasterers, Messrs. Johnston, Brothers; plumbers, Messrs. W. & R. M. Hill; painter and glazier, Mr. Westray; ironfounders, Messrs. Lees & Graham.

Church Decoration at Eton.—During the past month the east wall of St. John's Church, Eton, has been in course of decoration, and is now nearly finished. The ashlar on each side of the alabaster reredos is ornamented with a design, consisting of oak leaves, acorns, and circles of gold. The arcades on either side have a diaper pattern in rich colours. The columns represent black marble. The capitals are of a light colour, picked out with gold. Between the spandrels there is a small flowing pattern. The wall above the arcades on each side of the window is ornamented with a piece of foliage and gold stars, with a Greek cross. The artist employed is Mr. Charles Hudson, of London, under the direction of Mr. Ferrey, the architect of the church. Designs have been furnished for the decoration of the whole chancel, but will not be carried out until sufficient funds are forthcoming.

New Railway at Shields.—The contract for the construction of the new railway from the High Shields station to the proposed new railway station at the foot of King-street, South Shields, has been let to Mr. Walter Scott, contractor, Newcastle, who will commence work immediately.

Proposed New Exchange at Halifax.—The *Halifax Guardian* states that "a gentleman largely interested in the commercial welfare of the town" has made an offer to the Exchange Committee that he will build a new exchange and newsroom, asking only a reasonable percentage on the outlay, which is estimated at 10,000*l.*, and giving the committee power to purchase in five, ten, or fifteen years. The site he proposes is one at the bottom of George-street, now occupied by wool warehouses and offices. It adjoins the Halifax and Huddersfield Union Bank, and is in immediate proximity to the Post and Telegraph Offices, the Inland Revenue Offices, &c. In fact, no more central position could be chosen. A part of the plan is the opening out of a new street from George-street to Fountain-street, thus giving direct access to the Exchange from the south end of the town.

National Association of Carpenters and Joiners.—The Board of Management of this association have just issued their first annual report, from which it appears that the association has so far been a success, financially and otherwise. The expense of working the society for the first thirteen months has been but a little over 20 per cent. of the ordinary income. The Board strongly recommend the adoption of life insurance in connexion with the association, and urge that it can be effected with unusual advantages, seeing that the cost of management would be exceedingly light. The income of the year amounted to 1,030*l.* 5s. 1d.; the expenditure was 787*l.* 16s. 9½d.; the net surplus on the year being 298*l.* 8s. 3½d. This sum, added to that in hand June 1st, 1874—viz., 457*l.* 9s. 3½d.—leaves a balance in favour of the association of 755*l.* 17s. 7d.

Carlisle Cathedral Organ.—The organ in Carlisle Cathedral is now undergoing enlargement. When the instrument was erected, from specifications by Mr. Best and Mr. Ford, it could not be completed, principally on account of want of funds; nor was it thought altogether desirable or important that the back of the organ should be finished so long as St. Mary's Church blocked up the nave. The old parish having now a church of its own, and the nave of the cathedral being cleared from all obstructions, the dean and chapter have determined to complete and fill the back of the organ with pipes, as well as to add other stops as originally intended. It is stated that the back of the organ will now be filled with 32-ft. metal pedal pipes of the same scale as the Albert Hall organ, London. The work has been placed in the hands of Mr. Willis, who built the organ.

Excavating Machine.—Mr. E. W. Stoney has patented an invention which relates to improvements in the construction of apparatus for excavating. The invention relates to the construction of an improved double-acting combined helical and cylindrical excavator, and of a simple and efficient handle for working the same. The peculiar novel features of this improved excavator are that it can be opened at parts of its bottom, or of its bottom and cylindrical sides, for and during the process of excavating, and closed when full of excavated material for and during the process of lifting or raising the same to the surface of the well or cylinder being sunk to be emptied. In each modification of its construction the excavator is made cylindrical in shape, with an open top, with bottom helical cutters, and side cylindrical cutters.

The Villa Barberini.—An Italian paper states that an archæological discovery has been made at the Villa Barberini, near Castel Gandolfo, on the spot where stood the palace of the Emperor Domitian. Two fragments have been exposed of a cornice in white marble, having together a length of 16 ft., a width of 39 in., and a height of 20 in. They are in a good state of preservation; and the design and the sculpture are said to be most artistic. The rose ornaments, the borders, the brackets of acanthus-leaves, the scrolls, the foliage, and all the other portions of the entablature are in relief. On the upper portion, where the marble had not been hewn, there are the joints in iron and lead of the objects which were superimposed.

What did it Cost originally?—Some idea may be formed of the extent to which Sebastopol was fired upon when it is stated officially that from a tax of 6d. per cwt. which the Government levied upon the proceeds of the sales of old iron, shot, and shell picked up and sold by the people, a sum of nearly 15,000*l.* was realised.

A Great French Ironmaster.—The Parisian journals record the death of M. Schneider, who created the largest ironworks in France,—the vast machine manufactory at Creusot,—which supplied the French navy, and is a formidable rival to this day of English ironworks of the same character. It is to M. Schneider, born seventy years ago, that France is indebted (according to a Paris correspondent) for all the modern inventions and improvements of iron machinery as applied to shipping and manufactures. Practically speaking, no Frenchman of the day has performed so active and useful a part in promoting manufacturing wealth as the late proprietor of the Creusot Works.

Fire at Eton College.—A fire which broke out in the Eton College bakehouse, on the south side of the college, has destroyed the tapestry presented to the college in 1613, representing Christ in the Temple sitting in the midst of the doctors, "hearing them and asking them questions"; seventy bed-covers given by the Duke of Northumberland in 1760, the college china, and other valuable property. The tapestry was considered to be exceedingly valuable, and was preserved as a relic. It formerly hung in the ancient college hall, behind which a fire-place was discovered on its removal a few years ago, and it was used for purposes of decoration on any special occasion.

Serjeants' Inn, Fleet-street.—Now that the Judicature Act has come into operation, the title of serjeant-at-law has been practically abolished, and accordingly it is stated that the members of Serjeants'-inn, Chancery-lane, will, as soon as possible, sell the property, the value of which is estimated at about 40,000*l.*, and a proposal has been made to devote the money realised by the sale of Serjeants'-inn to the promotion of legal education. The inn is the absolute property of the serjeants'-at-law, now thirty-six in number. The statement as to proposed sale was denied some time ago, but we have reason to know that it is quite correct.

Chandelier for the Greek Cathedral, Bombay.—Messrs. Thomas Ford & Son, of Birmingham, have just completed a large chandelier for the Greek Cathedral, Bombay. It is Grecian in design, and is said to be an enlargement of a similar pattern in the cathedral at Manchester. The chandelier proper is 9 ft. in height by 7 ft. 6 in. in diameter, and it has forty-five brackets,—thirty in the lower, and fifteen in the upper tier—made to contain wax candles. Much care and elaboration have been bestowed upon its details and workmanship. It is brightly burnished and lacquered in every part, the rose, or ceiling-plate, being 3 ft. 9 in. in diameter. The chandelier will be pendent from the ceiling some 52 ft.

Water Supply of Warwick.—In laying mains for conveying water from the new source of supply at Haseley, some three miles distant, an excavation 40 ft. to 50 ft. became necessary. Part of the works have been let under a contract, in which the prices were limited to certain materials of a character easily worked. Much harder strata than any for which prices were given have, however, been met with, and a dispute as to value has arisen. The works are stopped, and legal proceedings are likely to arise, unless a proposition made by the contractor to refer the matter to arbitration is accepted.

Questionable Economy.—The Whitby Highway Board have decided that in consequence of the state of the Cleveland labour market and the general reduction of wages, the wages of men in the employ of the Board shall be reduced 2d. per day for the winter. That is (says a writer in the *Darlington and Stockton Times*) because trade is slack in iron and coal, the men who mend the roads are to have less wages, and that in the winter when living is most expensive and out-door labour means exposure to cold and wet! It may be taken for granted that the ratepayers who have to find the money do not sanction such a paltry measure as the reduction of 2d. a day.

Proposed Public Works at Accrington.—Mr. Robert Morgan, C.E., visited Accrington on the 25th ult. to make inquiries into public works for which the local Board had applied for sanction to borrow 16,000*l.* to execute. Part of this money was required for public slaughter-houses and market purposes, 2,000*l.* for street-lamps, and 11,000*l.* for private street improvement. The inspector suggested that the estimate should be increased by 3,200*l.*, so as to cover a site purchased by the Board for public baths.

Monument to a Gaelic Poet.—A memorial in the form of an obelisk, of Peterhead granite, 21 ft. high, has just been raised at Kinloch Rannoch, over the grave of Dugald Buchanan, a Gaelic poet of some note among Gaelic-speaking people. He got a good education, and when eighteen he was apprenticed to a carpenter in Kippen. He afterwards sojourned in many places, till in 1753 he was appointed schoolmaster of Drumcastle, in the Rannoch district. In 1766 he was appointed to go to Edinburgh to superintend the first translation of the Scriptures into Gaelic, but in two years afterwards he was seized with fever, and died at Kinloch Rannoch at the age of fifty-two.

Lady Architects.—The London correspondent of a provincial journal says:—"While Miss Orme and Miss Richardson have set up as conveyancers in Chancery-lane, a new lady doctor, Mrs. Atkin, has started in St. John's Wood. She had previously considerable reputation in Birmingham. Miss Fenwick Miller, who has been delivering a course of lectures on 'Simple Sanitary Science' at Tamworth, under the auspices of the Rev. Brooke Lambert, is going to repeat the lectures in Oxfordshire and also in London, for the National Health Society. The *Boston Women's Journal* advises women to become architects."

Design for a Carpet.—Among the works about to be sent in for the exhibition of works of art at the Westminster Aquarium, we have seen an excellent "design for a Persian carpet," by Mr. W. G. Thomas, a youth of seventeen, who thus exemplifies the result arising from the art-teaching now being developed throughout the country. Mr. Thomas, who is a pupil at the Lambeth School of Art, has obtained first-class certificates, and may hope for a successful future. The drawing, both in respect of form and colour, is very meritorious.

The Grangemouth Waterworks.—Contract No. 3 of the Grangemouth Waterworks has been secured by Mr. Kenneth M'Kenzie, contractor, Kirkcaldy. It embraces the construction of the collecting wells, aqueduct, reservoir, filter, valve-well, &c., as also the diversion of Millhall Burn. The last-mentioned work was commenced a few days ago. Mr. M'Kenzie is likewise executing contract No. 2, which includes the formation of the pipe-track and the laying of the pipes, of which about three-fourths is already finished.

The Sewerage of Lincoln.—In the Supreme Court, Queen's Bench Division, on the 23rd ult., Mr. Gorst, Q.C., obtained leave, on behalf of the Local Government Board, for a rule *nisi*, calling on the Mayor and Corporation of Lincoln to show cause why a *mandamus* should not issue, commanding them to supply the district with a better system of drainage. A special meeting of the council has been held, when it was decided to take immediate steps for the carrying out of the necessary works.

The Huts at Aldershott Camp.—It is stated that it has been decided to replace the present wooden huts at Aldershott Camp with buildings of a more substantial nature, either brick or concrete, and that a vote will be taken in the forthcoming army estimates towards carrying out a portion of the reconstruction next year. The new buildings will be two stories high, and about the same length and breadth as the present wooden constructions. The new quarters and lines will be lighted with gas.

The Temple of Diana at Ephesus.—Mr. Wood has in the press a volume, imperial 8vo., copiously illustrated, "Discoveries at Ephesus, including the Site and Remains of the Great Temple of Diana." This work will consist of a narrative of the Government excavations conducted by Mr. Wood during nearly eleven years. It will contain about 60 illustrations, and more than 200 Greek and Latin inscriptions found in the excavations, and now deposited in the British Museum.

Builders' Benevolent Institution Ball.—The twenty-eighth annual ball in aid of this charity will take place at Willis's Rooms, St. James's, on the 27th of January next. The committee being anxious to increase the funds of the Institution, are desirous that this ball should be a great success, and desire to receive the names of gentlemen willing to act as stewards.

Newton-Stewart.—The Marquis of Bute and Miss Monteith, of Duncree, having subscribed the money needed, the erection of a new Roman Catholic Church, in Newton-Stewart, has been commenced. The building will occupy one of the best sites in the town. The architect is Mr. Goldie, London; and the builders, Messrs. Wallace & Morgan, Coatbridge. The present chapel will be converted into a schoolroom.

Dipton, Co. Durham.—A School Board has recently been formed for the parish of Collierley, which includes the large colliery village of Dipton. Additional school accommodation for 520 children is required within the parish, and the erection of schools for this number, with teacher's house, &c., will shortly be proceeded with. Messrs. John Smith & Son, of Shotley Bridge, have been appointed architects to the Board.

Residences for Irish National Teachers. It is announced that the National Board are now authorised to expend a sum of 32,000*l.* in grants, or in loans, for the purpose of building teachers' residences. Each house will probably be required to contain a kitchen, a parlour, and three bedrooms, and it is stated that plans are in course of preparation for the guidance of promoters and builders.

Roydon, Essex.—In a limited competition for schools at Roydon, the plans of Mr. T. T. Smith, of Bloomsbury-square, have been selected. The following tenders have been received:—

Clarke	£1,357 0 0
Hampton	1,346 0 0
Bentley (accepted)	1,249 0 0

The Institution of Civil Engineers.—The number of the three classes now composing the corporation are,—828 members, 1,454 associates, and 15 honorary members, with a class of students attached numbering 332, making a total of all grades of 2,629, as against 2,412 at the same date last year.

Discovery in Rome.—A *Standard* telegram says a discovery of great historical importance has been made in the grounds of the Palazzi Antonelli, Rome, where a perfect arch of the period of 670 B.C. has been discovered.

Hackney.—We have various notes in our hands, but are forced to postpone attention to them. Observations at a recent meeting of the Local Board, and elsewhere, show that our recent statements have not been without effect.

Institution of Surveyors.—The next meeting will be held on Monday evening, December 13th, when a paper will be read by Mr. W. D. Gardiner, entitled "The present State of the Law as to the Right of Light."

Interesting to All.—Mr. Thomas Blashill will read a paper at the Society of Arts, on Wednesday, the 15th inst., on "Health, Comfort, and Cleanliness in the House."

TENDERS

For new ornamental iron railing to west front of St. Sepulchre's Church, Holborn Viaduct. Mr. W. P. Griffith, architect:—

Lidstone (accepted)	£295 10 0

For building villa residence, Finsbury Park, for Mr. James Toomer. Mr. John Viney, architect:—

Shurmur	£1,080 0 0
Thompson	1,050 0 0
Godden	1,045 0 0
Atherton & Latta	999 0 0

For alterations at the Red Lion, Harrow-road, for Mr. Ridgway. Mr. John Viney, architect:—

Hill	£119 0 0
Mark	116 10 0
Godden	111 0 0

For new schools to be erected in Westminster, for the Governors of the United Westminster Schools. Mr. R. R. Arntz, architect:—

Holland & Hannen	£16,870 0 0
Trollope & Sons	16,482 0 0
Baker & Son	16,460 0 0
King & Son	16,420 0 0
Lucas Brothers	16,327 0 0
Jackson & Shaw	16,045 0 0
Peto Brothers	15,780 0 0
Newman & Mann	15,648 0 0
Brown	14,500 0 0
M'Lachlan & Son	14,283 0 0
Adamson & Sons (accepted)	14,164 0 0

For alterations, additions, &c., at Risley, Beds, for Dr. Banks. Mr. F. T. Mercer, architect:—

Knight & Boston	£814 6 0
Chibnall	773 0 0
Wildman & Eady	745 15 0
Moore	717 0 0

For erecting infirm wards, master's house, entrance gates, administrative offices, and receiving wards at St. Marylebone Workhouse. Mr. H. Saxon Snell, architect. Quantities by Mr. Robert Griggs:—

Baker & Son	£31,894 0 0
Lucas Brothers	31,520 0 0
Smith & Co.	31,350 0 0
Holland & Hannen	30,887 0 0
Webster	30,929 0 0
Chappell (accepted)	30,643 0 0

For alterations and additions to Nos. 6 and 7, High-street, Battersea, for Mr. James J. Morgan. Messrs. Ribbetts & Cobb, architects:—

Aitchison & Walker	£695 0 0
Macey	533 0 0
Wagner	549 0 0
Gowland & Perkins	479 0 0
Steel Brothers	445 0 0

For alterations and additions to warehouse premises, George-yard, Crown-street, Soho, for Messrs. Alfred Goslett & Co. Mr. S. C. Capes, architect. Quantities by Mr. W. B. Catherwood:—

Bird	£2,126 0 0
Kilby	2,110 0 0
Wilson Brothers	2,102 0 0
Conder	2,055 0 0
Browne & Robinson	2,025 0 0
Scrivener & White	1,998 0 0
Nightingale	1,947 0 0

Accepted for waterworks by the Richmond (Surrey) Urban Sanitary Authority. Messrs. Russ & Munns, engineers:—

Contract No. 1.—Well.

Baker & Sons	£4,852 0 0

Contract No. 3.—Engines.

J. & T. Dale	£6,268 0 0

Contract No. 4.—Reservoir.

Bugbird	£3,600 0 0

Contract No. 5.—Pipes.

Hopkins, Gilkes, & Co.	£5,469 0 0

Contract No. 6.—Laying Mains, &c.

Bugbird	£3,400 0 0

Contract No. 2, for Engine-house, &c., is to be revised and fresh tenders obtained.

For the erection of new school building, adjoining St. Mary's Chapel-of-Ease, Castle-street, Reading. Messrs. Morris & Stallwood, architects:—

Strong (accepted)	£715 0 0

For erection of Shefford Schools. Mr. W. Watson, architect:—

Redhouse	£2,081 0 0
Moore	2,354 0 0
Dunham	2,150 0 0
Twelvetrees	2,039 0 0
Horn	2,294 10 0

For extension of winery, The Firs, Mitcham, for Mr. Edward Daun. Mr. W. C. Banks, architect:—

Parnacott	£296 0 0
Lurke	194 0 0

For office fittings, 67, 68, 69, Houndsditch, for Messrs. H. Hobson & Son. Mr. W. C. Banks, architect:—

Drew	£191 0 0
Colls	160 0 0

For stables at Harefield, Beckenham, for the Trustees of the late Mr. S. J. Cooke. Quantities by Mr. R. W. Griffiths. Mr. W. C. Banks, architect:—

Larke	£437 0 0
Cooper	415 17 3
Parnacott	4 0 12 0
Marriage	331 10 0

Accepted for additions to Turret House, Southgate-crescent, Reading, Berks. Messrs. Morris & Stallwood, architects:—

Higgs (Bricklayer)	£323 0 0
Sheppard (Carpenter)	288 0 0
Moffatt (Plumber)	150 0 0
Grover (Plasterer)	74 0 0
Hart & Son (Smith)	57 16 0
Warmsley & Co. (Slater)	44 0 0
Wheeler Brothers (Mason)	21 13 0

TO CORRESPONDENTS.

C. S.—F. S.—W. P. G.—M.—W. A.—A. A. C.—F. P.—G. H.—J. V.—W. J. W.—J. T.—J. A.—P. T. M.—T. T. S.—W. J. A.—H. S. S.—R. R. A.—R. M. A. T. S. S. W. E. L. E. J. S. K. & Co. L. S.—W. B. C.—C. C.—H. H. B.—T. B.—A. S. W. G.—Quercus.—A. H. (the inquiry not desirable. Must be re-attached) —J. N. (ditto) —Mr. V. Chertsey (book sent as requested).—T. F. (next week) —J. P. M. (next week) —F. T. B. (next week). J. S. (next week)

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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The Builder.

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Timber and Timber Trees.

NOT very long since we noticed at some length (p. 699, *ante*) an exhaustive French treatise on wood under the title of "Les Bois, indigènes et étrangères." We have now an English treatise with precisely the same title, of nearly the same extent, and of nominally the same scope and intention,* the result of the long and varied experience and knowledge of the present timber inspector to the Admiralty. We say of "nominally" the same scope, for no one who has at all compared English and French scientific treatises on similar subjects would ever expect them to be treated from quite the same point of view or in the same manner, even when the data were precisely similar. MM. Dupont and De la Grye, the authors of the French work, commenced, with true French philosophical exactness, with the question what a tree was, what was its place in the economy of nature, &c., and touched on various other subjects very interesting, but theoretically rather than practically connected with the main object of the work. Mr. Laslett goes, with true English directness, straight to the point, contents himself with giving facts and statistics, and leaves his readers, if they choose, to theorise for themselves. His practical information and suggestion ought to be extremely valuable, based as it is not only on the experience of many years in judging and experimenting on timber furnished to the royal dockyards, with all the opportunities there presented for experiment on an extensive scale, but also on the results of various expeditions carried out under Governmental sanction for the detailed examination of and report upon foreign timbers which it was thought desirable to bring into the English market, or which had been offered for it. Endeavouring, as he infers in his brief preface, to avoid that which is purely scientific and botanical, and which has no practical application to the wants of the shipwright or carpenter, he has sought "to concentrate into one form all the information that books and long experience could give, and so to arrange the materials as to make them intelligible and acceptable alike to the master-builder and apprentice."

The two chapters on the growth and structure of trees, which commence the book, though retailing for the most part only what is known to all who have given any attention to the subject, are so clear and comprehensive, in the description and illustrative diagrams, that any one considering them attentively may gain in half an hour a sufficiently accurate and comprehensive notion on this part of the subject to form a basis for most practical purposes in connexion with the use of timber. The only point we need specially remark upon, as a little out of the way, is as to the relation between the rate of growth, by which we mean here the amount of formation of wood in a given time, and the quality of the timber. Mr. Laslett has found that, in regard to oak-trees, "those which form their wood most rapidly under ordinary conditions of growth are the best in quality." This is illustrated in the table given (p. 17) of the number of annual rings found in a given diameter of the stem in different examples from various species of trees, from which it appears that, while an average specimen of English oak shows about twenty-two rings in a diameter of 6 in., thirty-four in a diameter of 1 ft., and so on in proportion, some remarkably fine specimens, as to quality as well as growth, showed only twelve and twenty, thirteen and nineteen rings respectively in the same diameters; in other words, they increased their thickness at nearly twice the normal rate annually; and from this and other similar data the author is disposed to think that the rule holds in every species of timber, and that such trees are not only the best, but the most durable. Before quitting the chapters on general growth and structure, we may note what the author says as to the mutual effects exercised by trees on their locality, and by the circumstances of the locality on the trees. Those in sheltered places run up quickly and leave long stems, from the tendency of the tree to seek the light and air; on the other hand, those which are allowed to grow in open and exposed positions assume, oaks especially, a more natural and unrestrained growth displayed in a greater redundancy of the lower branches, which, "meeting no obstacle to their development, assume every variety of curve, and produce timber which is especially valuable for naval purposes." Of the effect of situation upon growth curious examples may be seen sometimes. We noticed, not long since, in a narrow glen in Wales, a birch-tree, which grew up from the bottom of the glen, and had sent up an extraordinarily long, slender, and branchless stem, in its effort to arrive at the light, and which only condescended to send out branches when it attained the level of the higher overhanging trees which shut out the light from it. The long bare pole of the trunk swayed with the slightest breeze, as if the whole must give way, though it had evidently stood for years in those proportions. In Bickley Park, near Chislehurst, there is a locality, of small extent, where all the trees show a *penchant* for splitting into branches, and apparently almost into separate trees, immediately on leaving the ground. Scarcely a stem is to be seen. There is nothing apparent in the locality to account for this singular and consentaneous vagary, which, however, must have a cause. In speaking, on the other hand, of the effect of trees on the locality, Mr. Laslett says,—

"It has long been supposed that the presence of trees tends directly to keep up the water supply, and that the clearing of large forests results, in time, in the drying up of all the springs and water-courses in the neighbourhood. That such an effect is produced is certain, as attention was lately drawn to it by the condition of large tracts of land in the South of France and other districts, which, though long celebrated for their fertility, were rapidly becoming valueless. The change in the nature of the soil, consequent upon the partial drying up of all the sources of water supply, was proved to have commenced when the trees had been removed. At the same time it is said that, in places where there has always been a deficiency of water, the extensive planting of trees has remedied the defect."

Mr. Laslett next deals with these plagues of the worker in wood, "shakes"; in their three main varieties of "heart-shake," "star-shake," and "cup-shake," illustrated by sections of wood so affected, the portrait of "star-shake" forming the outer ornament also of the cover, on that system of advertising the contents of a book on its binding which is in fashion, and which we think foolish. The author does not attempt to account for the first two forms (the cup-shake arises naturally from the way in which the wood grows, and its origin is easily perceptible), but mentions teak, Cuba mahogany, and English elm as the most free from the otherwise so commonly prevalent heart-shake; while he is inclined to think that the most troublesome form of this defect, in which the shake changes its angle as it ascends, and may be found at the top of the stem at right angles to its direction at the bottom, is due to an effort of the tree (from external influence of light, &c., probably) to turn upon its base. Of star-shake he can only say, it is more frequent in trees which have grown on either a sandy or a rocky soil, than in those which have grown upon loam or stiff clay. This, and the fact that star-shake can often be detected while the tree is growing, from the slight swelling made by the lips of the crack at the surface, puts it out of the category of artificial causes; but in regard to the others, and more particularly cup-shake, we would ask whether it is satisfactorily proved that the method of felling trees has nothing to do with inducing or at least exaggerating these faults in the wood. The authors of the French book we previously referred to, are contemptuous, in a passage we quoted at the time, in regard to the prevalent way of felling trees with the axe, and letting them come down with a heavy fall (they recommend the use of the saw in felling); and certainly one would say that nothing could seem more likely to cause or increase that disintegration of some of the rings which is called cup-shake than the violent fall of a heavy tree. The very word "shake" seems almost to imply that the term was originally given under some such impression as this. From the following chapter on the "Selection of Timber," we quote these two comprehensive memoranda:—

"Bright-looking timber is better than dull, and that which is smooth in working better than the rough or woolly-surfaced."

"The heart of trees having the most sap-wood is generally stronger and better in quality

* Timber and Timber Trees, Native and Foreign. By Thomas Laslett, Timber Inspector to the Admiralty. London: Macmillan & Co. 1875.

than the heart of trees of the same species that has little sap-wood."

In experimenting during a long period upon the strength and quality of various woods, Mr. Laslett has used a very systematic process, and the exceptional advantages he has had from his position in connexion with the royal dockyards have enabled him to formulate results of tests upon a great variety of woods, including some rare and at present scarcely known species of timber, which may possibly at a future day be required for building purposes in this country. Considering that tests on very small pieces are not to be relied upon, in which we quite concur with him, he adopted a stated size for all the pieces of wood to be tested. The tests for transverse strength were in every case conducted with pieces 2 in. × 2 in. × 84 in., each of which was placed on supports 6 ft. apart, and then water was poured gradually into a scale suspended from the middle until the piece broke, the deflection at 390 lb. being noted in each case, as well as the breaking weight. After this a piece 2 ft. 6 in. in length was taken, when practicable, from one of the two pieces broken by the transverse strain, and tested for tensile strain by means of a powerful hydraulic machine, "the direct cohesion of the fibres being thus obtained with great exactness. Further, for the purpose of determining the proportions of size to length best adapted for supporting heavy weights, a great many cube blocks were prepared, of various sizes, as also a number of other pieces of different forms and dimensions, which were then, by the aid of the same machine, subjected to gradually increasing vertical pressure in the direction of their fibres, until a force sufficient to crush them was obtained." When we say that tables of these experiments are added to every important species of timber mentioned, it will be seen what an extent of reliable statistical information is comprised in the book. We may add that in regard to the most important to us, at present, of all timbers, oak, Mr. Laslett, being impressed with the want of information which exists on the resistance of British oak to a vertical crushing force, has directed a number of experiments towards this special point, the results of which are given in a considerable variety of instances.

We may note a few special observations on various points touched upon. Speaking of oak, the author refers to the fact that oak, in order to secure the bark at the period when it is of most chemical value to the tanner, is commonly felled in the spring when the sap is rising, in contradiction to the usual practice of felling when the sap is down in winter. The superior commercial value of the bark in spring must necessarily have its effect, yet it would appear from the statistics collected by the author (p. 68), that the tanner has been somewhat unduly considered at the expense of the shipbuilder and the architect. Several cases are here adduced of the remarkable longevity of the framing of ships built with winter-felled oak; one being the *Royal William*, built at Portsmouth in 1715-19, and which, after being slightly repaired at three different times, was taken to pieces in August, 1813, after a service of ninety-four years, when not only was the wood in remarkable preservation, but the iron fastenings, above the water-line, were in general good, proving that winter-felled oak is marked by an absence of the acrid juices which in this wood, under other circumstances, exercise a deleterious effect upon iron. It would seem, however, that the English wood-cutter, or wood-owner, is influenced by the obstinacy of habit, as well as by pecuniary considerations, in the spring-felling of oak, for it is on record that the authorities, in 1717 or 1718, offered 5 per cent. advance in price for winter-felled oak, as a compensation to the contractor for the loss of the bark, but, as we are led to infer, without much effect; and the author adds in a note,—"A much higher premium than 5 per cent., in addition to the contract price of spring-felled oak timber, was offered and paid by the Government a few years since for winter-felled oak, without, however, being able to obtain more than a fraction of the quantity required for the royal dockyards." The contractors might perhaps think that the determination of the Government to pay extra for winter-felled oak would be only temporary, whereas the demand of the tanning trade was necessarily permanent. But the fact that there is not oak enough for supplying the most exacting requirements of the constructor without depriving the tanner is really to be laid to the door of the Government itself, who, as we have before this observed, have neglected any systematic encouragement of the continuation or extension of oak-growing, and have thus allowed a splendid building material, and a considerable source of national wealth, to be wasted through want of foresight and prudence in dealing with it.

Among the peculiarities of timber mentioned are those of the Greenheart and Sabiou; in the former of which the sap-wood cannot be distinguished from the heart-wood in appearance, and is only certainly discriminated by the assistance of a tell-tale worm which bores as far as the sap-wood, and there always stays its course: a curious instance is mentioned of the detection of sap-wood in this way by cutting a thin section from a log which an experienced judge had pronounced to be all heart-wood. The resistance of Greenheart both to transverse, tensile, and crushing strain is greater than that of most other woods, but in its behaviour under the crushing test it shows a peculiarity shared, the author believes, only by Sabiou; "it bears the addition of weight after weight without showing any signs of yielding; and when the crushing force is obtained, it gives way suddenly and completely, with a loud report, nothing being left but a mass of shapeless fibres." Such a peculiarity seems more like the behaviour of a granulated or crystallised than a fibrous material. Two foreign woods which Mr. Laslett seems to think might have more attention among English constructors are the Tewart, a variety of the Australian white gum-tree, and the Jarrah, a mahogany tree of Western Australia. The former is thus particularised:—

"The wood is of a yellowish or straw colour, hard, heavy, tough, strong, and rigid; the texture close, and the grain so twisted and curled, as to render it difficult either to cleave or to work. It is a very sound wood, possessing few or no defects, with the exception of a mild form of heart and star-shake at the centre, which would necessitate a small amount of waste, if it were required to reduce the logs into thin planks or board; but if employed in large scantlings, it will be found a most valuable wood, especially where great strength is needed.

The Tewart shrinks very little in seasoning, and does not split while undergoing that process; it is also characteristic of this wood that it will bear exposure to all the vicissitudes of weather without being in any but the least degree affected by it. I have known it subjected to this severe test for fully ten years, and when afterwards converted, it opened out with all the freshness of newly-felled timber."

Though used in shipbuilding, this wood is almost unknown in civil architecture in this country, and is recommended by the author for such uses as piles for piers, supports in bridges, and the framing of dock-gates, "as it withstands the action of water, and is one of the strongest woods known, whether it be tried transversely or otherwise. But it would probably be found too heavy for use in domestic arts." The Jarrah is a wood with noticeable qualities more in regard to shipbuilding than civil use. It is said to be capable of use with iron without injuring either material, and that it bends well without steaming; but is very dependent for its quality on being cut at the proper time of year. "Some three or four years since (about 1871)," adds the author, "the Western Australia Timber Company were busily engaged in the forests preparing a large quantity of jarrah for exportation. The company professes, I believe, to select only the best trees, and to cut them at the proper season; the deliveries should therefore be of the very best sort the country produces. I have earnestly looked for sample cargoes to arrive in the London Docks, but up to the present time (1875) none of any importance have been imported." We may notice in passing that in a short chapter on that historic tree, the cedar of Lebanon, the author betrays great scepticism as to its reputed age, and, indeed, cuts it down by some ruthlessly-handled statistics (as to rate of growth, &c.,) from 3,000 years to an average of 400 years of life. The scarcity of the tree renders it of no consequence commercially. The less poetic but widely-extended and useful family of pines receive due attention, and a great deal of practical information upon them is condensed into the chapter treating on the subject. We must recommend special attention to the chapter on the seasoning and preservation of timber, which contains suggestions and directions such as, although in themselves apparently merely the natural application of common sense and experience, are often neglected. For these and many other things we refer the reader to Mr. Laslett's book, which deserves every recommendation as a sensible, comprehensive, and practical treatise, dealing as fully with the subjects as its limits will permit, and making no pretence to anything beyond its real and professed aim, and which should be in the hands of all who are practically interested in the importation or constructive use of timber.

THE SANITARY CONDITION OF INDIA.

At an opportune time, when the Prince of Wales's tour has been marred by the presence of a virulent epidemic in the Southern Presidency of India, a bulky collection of papers bearing on the sanitary condition of the country has been issued from the India Office. Few persons would expect that the picture which they present would be a bright one. India, the supposed birthplace of cholera, the home of fever, the haunt of the plague, cannot be a healthy land; but, on the other hand, few persons who have not visited it, or carefully studied some such collection as the present, would suppose that Nature deserves so little blame for the excessive mortality, and man so much. In comparatively recent issues we have noted the sanitary improvements which have either been proposed or effected in the three Presidential cities,—Calcutta, Bombay, and Madras; and have shown the state of affairs in these great centres of population before the health officer and the sanitary engineer interposed to save the crowded masses from wholesale destruction by pestilence. But our revelations were weak compared with those given in the present volume, which represents Hindostan as a very sink of corruption, full of filthy villages and still filthier towns and cities, with native inhabitants who do not seem to have the faintest ideas of cleanliness either as to their persons, their dwellings, or their communities. Unfortunately, their Anglo-Saxon conquerors and rulers have hitherto had little cause to boast of their good example which they have set before the Hindoo and the Mahommedan. The cantonments and barracks, the gaols and hospitals, and, in many instances, even the residences and palaces of the British, are deplorably unhealthy, and show an utter disregard of those simple provisions, without which life in such a climate cannot be rendered safe or comfortable. True, sanitary science is a plant of comparatively recent growth, but it has taken such deep root and borne such good fruit in Europe, that it might have been expected that Englishmen would have sooner perceived the advantages of introducing and fostering it in India, where disease is so virulent and proves so fatal, while its causes are so patent and so easily removable.

To begin with the cities. In Calcutta 65 per cent. of the mortality is due to zymotic diseases, 40 per cent. being occasioned by various classes of fever. The local officer of health has no difficulty in discovering the cause. In his report for 1873 he says that the whole native town is in such a condition that to him it is a marvel how human beings can exist in an atmosphere such as pervades a vast number of places not far removed from the main streets; and cites the account given in 1834 by the late Sir Ranald Martin, to show that as matters were then so they are now. Sir Ranald says: "There are not six beegahs of soil occupied by natives which do not contain marsh and other concentrated sources of periodic fevers," and the officer of health, while despairing of obtaining anything like a real improvement under the existing municipal laws, adds, "I shall never cease to draw attention to the present state of things, which absolutely nullifies the benefit of the water supply and drainage operations." We have already described these great works, and their sanitary effect in the limited area with which they deal is very great. But the great cause of disease remains, and is perpetuated by the inactivity of the justices. They have the power to compel the owners of unhealthy houses and places to improve them, but have hitherto allowed it to remain almost inoperative, and hence the poor people continue to suffer. Mr. Clark, the sanitary engineer, proposed to make a beginning of improvements by constructing a model native village, but this has not been done. It is, however, satisfactory to learn that the native proprietors, urged forward by mutual rivalry, are voluntarily beginning to improve their bazaars and markets. We have mentioned insanitary hospitals; and the death-rate in the Calcutta hospitals amounts to 13·2 per cent. of the cases treated. The Medical College Hospital is one of the worst. The building was constructed so recently as 1852-53, and the results of operation cases treated in its wards were so unfavourable as to call for a special inquiry eight years ago. Externally, the building has a very fine appearance, and rather resembles an art gallery, or a splendid municipal building, than a hospital. Its cost must have been out of all proportion to the object for which hospitals are erected, and the Army Sanitary Commissioners

say :—"Its interior arrangements are about the very worst that were ever embodied in a hospital plan. With certain alterations, it might be used for any purpose but a hospital, for which its destination could hardly have been discovered until after having seen patients in it." The wards are in two floors over a basement, also used partially on emergencies as wards. On each floor there are seven large wards, from 21 ft. to 22 ft. wide, and about 70 ft. in length. But all the wards virtually communicated originally with each other by arches in the middle of their length, and the windows are at opposite ends of the wards, 70 ft. from each other, with the beds arranged down the dead walls between them. It appears also that the different floors communicated directly with each other by means of the staircases, used alike for the living and the dead. Besides, the site was a bad one from want of drainage, and the external air, from which the wards had to be supplied, was fouled by stagnant water and filth in drains and holes. Perfect segregation was impossible, and Dr. Fayrer, now in attendance on the Prince of Wales, who was for a long time senior surgeon and Professor of Surgery there, says :—"The natural results followed; osteomyelitis, pyæmia, and other manifestations of toxemia followed and added largely to the mortality," and he adds, after all had been done that could be done,—"Radical improvement is impracticable in the present building." This opinion is indorsed by the Army Commissioners, who say :—"The only rule to be safely adopted is to place as few beds in the building as possible, or, still better, to cease to use it. It is not suitable for a hospital, still less for one attached to so great a medical school."

In Bombay, the death-rate from fever, during 1873, is given as 39·2 per cent. of the total deaths; and this high mortality is attributed by the officer of health to dampness of the soil, and of a great part of the island from want of subsoil drainage, and to the state of the flats, which are described as "a filthy and unwholesome swamp." The chairman of the municipality says, "as regards scavenging, Bombay is one of the cleanest cities in the world;" but if it is so in this particular, it is not so in other respects. Its drainage is still very defective, and of Walkeshwar, which ought to be the healthiest part of the island, and in which many Europeans reside, the officer of health says :—"The advantages bestowed upon it by nature have been more than outweighed by the carelessness of the inhabitants; the most ordinary sanitary laws have been neglected and despised by them; neither the fear of death nor disease has roused them to keep watch over and attend to the cleanliness of their compounds, and, so long as nothing offensive met their eyes, so long did they rejoice over and flatter themselves on the much better chances of life they had than their poor neighbours in the town;" and another authority adds :—"The sanitary condition of the hill is disgraceful, there is not a single drain on it. The sullage is allowed to run away until it is absorbed into the earth, and this absorption has gone on to such an extent, that every pore has now become choked." If the statements in these reports are correct (and being official there is no reason to doubt them), Bombay and Calcutta milk must be a very peculiar commodity. The health officer of Bombay states that there are eighty-one cow-houses in the city, containing about 2,000 milch cows, and, from measurements made of these places, it is shown that in the great majority of them less than 300 cubic feet of space is provided for each cow, or about a fifth of the accommodation usually allotted to every occupant of an English cow-shed. In twenty-six cow-houses the people in charge live above the stalls, and it can easily be believed that "the heat and stink are dreadful." It appears also to be a habit to feed the cattle on stable-refuse and horse-dung, on the ground that it increases the yield of milk, and the dodge of giving them a lot of water to drink immediately before milking is practised for the same reason. The result is that the milk is poor, and rinderpest is rife, while the general health of the people suffers. The water-supply, although not so bad as it once was, is in many places equally abominable with that of milk. Writing on this subject, the officer of health says:—"That our well-water should be impure cannot be a matter of surprise to any one who has examined the ground around the wells. Not only do the people who come for water bring dirty vessels, but they often wash themselves over the well; the ground immediately around is saturated with waste water from washing, part of which must soak into the well. The tops of the wells are also open, and dirt or filth of any description can either fall or be thrown into them without let or hindrance." We could add many other examples of pollution, but the whole story is told in the following sentence from the report of the Army Sanitary Commission, dated so recently as the 25th of June, 1875 :—"The great want of Bombay is a good sewerage and drainage system," and the Commissioners add :—"The key to future progress lies in carrying out the requisite works without delay."

The reports of the Madras Municipality and Health Officer had not been received at the India Office when the compilation before us was made, so that we have nothing to add to our brief picture of the city when lately describing Mr. Clark's new drainage scheme; but the filth of Black Town and St. Thome, and the liquid abominations of the Cooum and the foreshore, are too apparent to need official condemnation to urge on sanitary improvement. We could multiply sickening descriptions of Indian cities really *ad nauseum;* but shall merely add a few further details to show how prevalent the evil really is. The ascertained death-rate in the Punjab cities is between 40 and 93 per 1,000, and for comparison it may be stated that the death-rate of London averages 24·16 per 1,000. Of Delhi it is said that much is being done to improve the city, but in addition to structural alterations the chief disease-causes requiring removal appear to be an old and very bad system of sewerage and unwholesome water-supply. Peshawur, we are told, has no proper system of sewering or draining, and, to sum up all, Dr. De Renzy, the Sanitary Commissioner, says :—"There is hardly a large town in the province whose water-supply does not furnish the most unmistakable evidence of being contaminated with sewage. There are open sewers which carry away a portion of the fluid refuse, but most, even of the fluid refuse, sinks from generation to generation into the soil on which the people live. . . . . When the air is at all damp, and rain has recently fallen, it is impossible for any one not hardened by habit to endure foul smells, to go into the back streets of cities like Delhi, Lahore, and Umritsur, without experiencing a sense of depressing and sickening nausea. . . . . Works of water-supply and sewerage are the great wants of the Punjab towns, and without them it is idle to hope for any serious reduction in the pestilential death-rates." In the North-west Provinces things are little or no better. Cawnpore has a sort of imperfect system of purification, but how imperfect it is may be guessed from the fact that when the sanitary officer last inspected the public latrines, he condemned them as a public nuisance and source of ill-health. Indeed, he discovered places where the fœcal matter taken from them was covered with so thin a coating of earth that it was considered unsafe to walk there. Of course such spots not only served to pollute the subsoil and subsoil water, but were rendered unfit for building purposes for many years. In Allahabad there is a large and costly conservancy establishment, but sewage impurities are still buried in the ground and impure liquids drain into it. Filthy houses, cess-pits, and impure water continue to exist there as elsewhere. Lucknow has no drainage; all the foul water from houses, &c., passes into the subsoil, to cause malaria, and pollute the well-water. The Central Provinces appear to be best cared for as far as sanitation is concerned, while the condition of the cities of British Burmah, our latest acquisition, is indescribably offensive.

If the cities and towns in which there are a considerable number of European residents are bad, the villages and smaller towns which are tenanted solely by natives are naturally a very great deal worse. No matter to which province we turn, their condition is the same. Here are a few samples : — Bahadurgarh. — "Town surrounded on all sides by immense holes, some receiving the waters of the Sabi, and some the town drainage. Wells inside the town all saline, not drinkable; wells outside mostly holes, some supplied by town drainage. Water swarms with animalcules, which have to be drained out before use. Excessive sickness. Death-rate, 76 per 1,000." Furreedabad.—"Mud huts of the poorest description, greatly crowded; narrow passages, through which two persons could not walk abreast; town filthy; were it not for the scavenging of pigs, would be uninhabitable from stench." Mahudpoor.—"Wells in the ground saturated with filth. Water, of course, abominably impure. One well is close to a ditch which serves as a receptacle for the fluid filth of the village." Descending to the solitary dwelling, we find it no better. The Indian huts are about as miserable places of residence for human beings as could be provided. They are built and repaired by those who live in them. Ill-shaped, unplastered mud walls enclosing one little room, the floor of mud in no way raised, the roof a thin grass thatch or covering of poor tiles, form the houses of the millions of Ind. Inside there is positively nothing in the way of furniture, certainly nothing to tempt the poorest thief, and the square opening serving for doorway and window together, wants no door. Palace and hovel alike are impure and unhealthy, either from indolence or ignorance.

The barracks and gaols have already been incidentally mentioned, and a few particulars respecting them will not be out of place. Hazareebagh usually contains about 1,000 British officers and men. In 1873 its condition was so bad that a special inquiry was called for, and it was found that a great part of the station, including the spot on which the barracks stood, was a mere swamp. The buildings were ill-ventilated, ill-floored, ill-built, and not raised sufficiently to admit of natural drainage, and the roofs leaked so much that the men often found it difficult to find a dry spot for their beds under the rotten thatch. The consequence was an outbreak of typhoid, and it was only after death had set his seal upon it that the place was condemned. At Cannanore, the barracks are built at the form of a square closed even at the corners, and large latrines of very objectionable construction are placed between them and the prevailing winds. Covered drains, untrapped and badly ventilated, run through the barrack enclosure, and there is a most filthy native village, without the least attempt at conservancy, close to them; while the latrines are very badly placed—two being on the sea-face between the sea and the barracks, so that the sea-breeze is at times largely impregnated with the smell from them, and it is said that a fœcal odour is perceptible in the barracks from whatever quarter the wind may be blowing. The sea-beach, also, under the cliffs, close to the barracks, has been extensively used by the natives as a latrine; and the smell is very offensive, and quite perceptible on the plateau above. The huts in which the native regiments are quartered are much more offensive, and even the men themselves murmur when they contemplate the greater comforts of their foreign comrades. As for the gaols, a great number of them are constantly overcrowded, and the death-rate in them is very high; but, on the whole, it is preferable to be in gaol than in barracks in India, although fever, cholera, and small-pox often bring about a gaol delivery not contemplated by the authorities. Buildings, of this class at least, ought to be rendered as healthy as modern science can make them. Soldiers, prisoners, and hospital patients have no option but to remain where they are placed, and a grave responsibility attaches to those who place them in dangerous situations; whereas, if people voluntarily choose unhealthy houses, and neglect sanitary precautions, they have only themselves to blame if the natural results of disease and death follow. With the natives we have much more sympathy than with the Europeans. They are to the manner born, and are unclean, because they have forgotten how to be clean, and because their ancestors were so before them; just as the mill-workers of Lancashire refused to wash their feet because their forefathers had never done so. They inherited filth, and they propagate it. Nevertheless, it is among them that the real work of reform must begin; and it is gratifying to learn that in this, as in other matters, the Hindoo proves an apt and submissive pupil. Where the sanitary officer is at all energetic, and the collector in the least degree popular, marvellous efforts are made to please them, and persuasion is made to go much farther than punishment. Already many villages are so transformed that "the oldest resident" would not recognise them; yet a little spade labour and not much exertion on the part of the local head man have sufficed to bring about the change, In nine cases out of ten where "Sahib" is beloved, he can procure comparative cleanliness in the homes of the ryots, and can induce them to keep their streets clean, to refrain from polluting the wells, and to remove their cattle to the outskirts of the village, and he can also induce them at odd times to fill up old sink-holes as well as to refrain from constructing new ones. Public buildings should be at once attended to, whatever the cost; and as for the

towns, the more obvious measures required, apart from permanent sanitary works (which are imperatively demanded, and ought to be begun as soon as funds can be procured), appear to be rigid attention to house conservance and surface cleansing and draining, with improved water supply, tree-planting, and the like. There cannot be a doubt that many disease-causes in the larger groups of population can be effectually dealt with by such measures until the towns are brought under organised municipal institutions and systematic sanitary control.

STUDENTS' DRAWINGS AT THE ROYAL ACADEMY.

Last Saturday the paintings and other designs made in competition for the various prizes and medals offered to students by the Academy were open to public inspection in Burlington House. The subject for oil painting was a very good and suggestive one,—Elijah denouncing Ahab and Jezebel when meeting them in the vineyard they had obtained by such foul means. We should hardly say that any of the students had exhibited much force or originality of idea in their treatment of the subject; the one that struck us as most direct and forcible was one "honourably mentioned" (the students' names were not appended to the works), a very hard picture in a style of colour and execution recalling a little some of the early pictures of the pre-Raffaellite movement, but in which the figure of Jezebel seemed more characteristic and energetic than anything else among this set of designs. Nevertheless, we quite concurred, on general grounds, in the award of the gold medal to a work which, though not presenting anything very striking in conception, was certainly the most able and best-balanced composition of the set. It is noticeable that all the best designs took a realistic view of the prophet, representing him as an ordinary roughly-clad gaunt man, dignified and impressive only by virtue of the earnestness or vehemence of his manner; the old idealised "Bible-picture" type of prophet, with flowing robes and a long beard, being adhered to only in the designs of inferior general power and execution,—an indication of the tendencies of "the coming race" of painters.

The principal sculpture subject, a "warrior bearing a wounded youth from the battle-field," was illustrated by a set of models of very high average in execution, and several of which showed an evident thoroughness of thought and study as to the technical as well as the artistic conception. It was evident from one or two of the groups that the mechanical problem of the result, in action and attitude, of the weight of one figure upon the other carrying it, and the practicable method of supporting the figure that had to be carried, had been carefully thought out by their authors; and there was much to admire in the expression and feeling of more than one of the groups. Here again we believe there would be no question as to the right award of the medal.

On this latter point we hardly felt so sure in regard to the landscapes, the subject for which was the line "Under the opening eyelids of the morn" (a very nice suggestive subject again), where we half thought the first and second designs might have changed places. The landscape in the post of honour, however, was perhaps the one which showed most of an attempt actually to realise the facts of nature under the circumstances prescribed, rather than to make an imaginative striking effect; and this is perhaps what study (as such) should chiefly aim at.

The architectural drawings comprised designs for a nobleman's town-house, and a museum for a provincial town; these scarcely arrived at anything very original, though shewing a high standard of drawing, and a commendable attention to plan. The award of the gold medal cannot be considered satisfactory, inasmuch as the successful competitor has disregarded the published conditions. These require that the plans should be drawn to the scale of $\frac{1}{8}$ of an inch to a foot; whereas the scale of the plans of the rewarded set is but $\frac{1}{16}$. Moreover, the elevations can scarcely be considered in outline only, as prescribed by the conditions. The author of the set marked "Thue" has probably himself partly to blame for missing a reward. His design for a nobleman's mansion shows unquestionably more talent than the selected set; but his sections are unfinished, and his perspective view represents the back instead of the front of the house, which leaves his design at a disadvantage, at any rate to unprofessional eyes. The medal set of drawings from existing buildings showed a very careful and conscientious illustration of the front and details of St. Mary-le-Strand.*

The following is a list of the awards:—

Gold Medals, with 60*l*. Scholarships and books:—Historical Painting, Ahab and Jezebel confronted by Elijah in the vineyard of Naboth, Frank Dicksee; Composition in Sculpture, a warrior bearing a wounded youth from the battle, William Thornycroft; Design in Architecture, a nobleman's town house, W. Frame.

Gold Medal.—Landscape painting (Turner Medal), "Under the opening Eyelids of the Morn," James H. Davis; travelling studentship in architecture, Bernard Smith.

Silver Medal.—Painting from the life, Alfred Phillips; copy executed in the School of Painting, John Dickinson; drawing from the life, 1st medal, Herbert A. Bone; drawing from the life, 2nd medal, Frank Dadd; model from the life, 2nd medal, Alfred Gilbert; drawing from the antique, 1st medal, Miss Kate May; drawing from the antique, 2nd medal, Henry H. La Thangue; model from the antique, 2nd medal, William H. Tyler; perspective and sciography, Henry Branch; premium of 10*l*. for the best drawing executed in the Life School, James Christie.

Silver Medals.—Architectural drawings, 1st medal, Thomas Edward Price; architectural drawing, 2nd medal, F. E. Kales.

The following extra rewards were given:—Painting, historical, 2nd scholarship, John Charles Dollman; painting, historical, honourable mention, Thomas Mat. Rooke; sculpture composition, 2nd scholarship, William J. S. Webber; architectural design, honourable mention, George Lewis Luker; Turner medal, silver, Edward Henry Bearne; Turner, honourable mention, Richard Ellis Wilkinson; painting, life, honourable mention, William R. Symons; drawings from antique, honourable mention, James Christie.

The public having been informed by paragraphs in the newspapers that admission could be had by presentation of address-card, the rooms were well filled during the day.

* Since writing the above we have heard it is not unlikely that the award of the gold medal will be reconsidered by the Council. It certainly should be so.

SOCIETY OF BRITISH ARTISTS.

Having felt compelled frequently to speak in derogatory terms of the recent exhibitions in Suffolk-street, it is pleasant to be able to note a decidedly better average of work in the present collection than we have seen for some little time. One or two of the most important works by members who possess real ability, we confess, seem a little doubtful. We cannot accept Mr. Donaldson's large picture, "The Eve of the Battle" (111), as presenting a result worth the care apparently bestowed on it; his peculiar and real, though rather *bizarre* genius in water-colour, is shown in the prismatic-looking drawing, "Indian Jugglers" (599); and we like very much his small oil-picture, "Oxford" (437). Mr. Wyllie, whose small sea-studies were generally among the best points of the gallery, has a large and very ambitious sea-picture, under the name of "Chinese Clippers," one of which makes her way in the middle distance across a seething mass of water, the foremost wave of which is driven in a great heap across the picture. It is a very bold conception in regard to design, colour, and light, but seems to fail in giving the surface and reflected light of water; still, it should be looked at. Miss M. Backhouse sends a really pretty thing in "Consider the Lilies" (188), a young, dark-haired little girl, life-size, seated, in a nearly white dress, with a red ribbon in her hair, and a coral necklace, and holding a lily; the execution is very broad and full, and the sentiment charming. In the same room Mr. Wyllie has a clever study of sand-hills and sky, and two children enjoying "The Golden Age" (288), and Miss Montalba, a good little work, a "Fidjee Island Canoe" (216). There are no large figure-subjects worth mentioning; one or two little works, such as "The Temptation" (21) of a chubby child by a plate of fruit, by Mr. C. Bauerle, and Mr. Soden's interior, shewing the man who is "Down on his Luck" (22), have both humour and good execution. A variety of small landscape and idyllic subjects are worth notice, among which, Mr. Anmonier's "Returning from Work" (66), and "Lengthening Shadows" (451), the latter an original study of a corn-field towards an August evening, are admirable. Mr. Parton's "The Llugwy" (6), though hard, has something in it. Mr. C. Bromley's "End of the Weir" is a well-meant echo of the feeling of Corot; several small landscapes, by Mr. A. F. Grace, are all good; Mr. Ludovici's sketches of social scenes, though not very refined in style, are spirited; "A Wasp!" (207), for instance; Mr. A. Goodwin's "Alpine Border-land" (71) is fine; Mr. Haynes King has a very nice study of interior detail and a pretty peasant girl, under the title "When Pensive I thought of my Love" (76); Mr. Wyke Bayliss a fine study of the often-painted interior of Milan Cathedral (94); M. Girardot is pleasant and characteristic in his two pictures of child musicians, especially "Am I Sharp enough?" (326); and among others may be mentioned "Durham," by H. Dawson (43); "The Truants," by T. Charles (51); "Sea Banks, a Sketch," and a very good one, by C. Green (104); "The City Walls of Chester," by T. W. B. Knight (158), a large work very freely painted, but perhaps somewhat too sketchy for the scale, and which does *not* recall the local character of Chester to us; and "Evening," by F. Dadd. A single work by Meyerheim, "In the Castle Grounds" (171), a field of rank weeds bordered by a belt of dark plantation, awakens recollections of exhibitions of a very different calibre. However, we are only too glad to see a somewhat higher tone pervading the Suffolk-street collection, and sincerely hope it is a sign of better things beyond.

There are some good things in the water-colour room, which we have not space to particularise, but may just mention, from its peculiarity, Mr. H. Bright's study of a number of starved-looking sparrows clinging together on the branches of a tree in winter, looking querulously at a robin cheerfully chirping to them, under the title of the "Favourite of the Season" (544): as a study of birds it is curious and clever.

THE REVIVAL OF THE VENETIAN GLASS INDUSTRY.

Amongst the many interesting matters brought to our notice by the voluminous reports on the late Vienna Exhibition, one of the most instructive is an account, by Herr Jacob Falke, on the revived manufacture of Venetian glass. Venice, as we know, was the great site of the glass manufactories of the dark and middle ages, glass being made there from the foundation of the city in the seventh century. From that time its manufacture continually improved, and in 1291 the numerous establishments were removed to the island of Murano, where a guild was formed, and the secret kept with the greatest jealousy. Venetian glass enjoyed for a long time a monopoly; in more modern times, however, it was superseded by English and Bohemian manufactures; but a few years since a fresh impulse was given to its manufacture, and the old Muranese furnaces were, so to say, lighted again. During the few years that have elapsed since its revival, Venetian glass has not only again become an object of art, rivalling the old productions, but its manufacture has assumed an importance enabling it once more to enter the competition with other industries as an especial and independent product. Large quantities are now annually imported to England, and thence transshipped to her colonies, and other parts of Africa and Asia.

The first efforts made in Venice of reviving the old art of glass-making, and of restoring to the city a flourishing branch of industry, date from the year 1859. In that year, Dr. Salviati, whom we were the first to introduce in England, was enabled to interest sufficient capital for beginning the undertaking. He called in the assistance of a clever glassmaker, Lorenzo Radi, and the two, after considerable labour, succeeded in regaining the former methods of manufacture one after another. Their united efforts having thus been successful, a new and flourishing glass industry soon sprang up at Murano; all the old technical productions and forms, even the most intricate, are again put before us as new products; they find favour, and are readily bought, and an army of skilled workmen find remunerative employment.

The large manufactory of Dr. Salviati has in the meantime been transferred to a (principally English) company, but it remains under the management of its founder. We may expect, therefore, that, while he is at its head, it will neither retreat from its present standpoint of excellence nor surrender its artistic aims.

This method rests, as should be the case with all matters connected with art industry, upon the quality of the material and the excellence of the process pursued. Venetian artistic glass shows unmistakable traces of its Oriental origin, and is principally blown. Its forms, which, at its first introduction, were soon copied by other countries, are given by the hand of the skilled workman to the material, softened and swelled by heat, and are permanent, i.e. they are not

subsequently changed, refined, or moulded by means of the usual instrument, the wheel. Venetian artistic glass being purely hand-made, and as such, in proportion as the use of the machine and mould is dispensed with, to be considered on its own merit, has claims to be regarded as an art-product, which, in the case of English and Bohemian glass, is true only of the better descriptions of goods. Venetian glass consequently depends entirely upon the intelligence, the appreciation of form, the taste, of the workman, all which requirements are entirely dispensed with in the case of pattern-made articles.

Production carried on under such conditions, where the hand plays the principal part, has one defect; at least, it is considered so by a great many connoisseurs. While in the case of Bohemian or English glass the several pieces belonging to a set are exact counterparts of each other, the products of Murano always differ in some little detail. Many larger and more artistic objects show irregularities totally absent in the cut crystal glass. It may therefore truly be said that in this respect the former descriptions of objects are seldom perfect; but, on the other hand, it is these small defects which stamp them as the work of a practised hand, as compared with the products of the machine or mould, and which impart to them greater value in the eyes of the art collector.

This, though it is the most essential, does not constitute the sole defect of Venetian glass. The workman, once an artist, in trying to improve his handiwork, oversteps the limits of his province; he is tempted to force his cleverness as well as his material to productions which in so far exceed the measure of what may be permitted in art as to make them appear rather artificial work than works of art. This shows itself in two ways.

On the one hand, the artist, attracted by the tenacity as well as by the pliability of his material, is induced to give to the articles extremely complicated forms, and to adorn them with all kinds of decorations, which no doubt shows his cleverness, but in no wise always increases the beauty of his productions; on the contrary, it tends to give his work an extremely delicate and fragile appearance. It is through this exaggeration that a fanciful, often bizarre, character is imparted to Venetian glass which need not at all be connected with it.

The other drawback consists in the addition of colour, completely excluded in the case of the best productions of the English and Bohemian crystal glass industry. The coloured glass of the old Venetian glass-makers was first made in 1436, and continued to be manufactured until the close of the sixteenth century. In that century, lace patterns and mirrors, as well as plain glass, gilt and enamelled, were introduced. We next hear of crackled and reticulated glass, and in the eighteenth century variegated or marbled glass made its appearance. Millefiori glass is said to have been made from the rise of the Venetian manufacture, and to have descended from the Romans. In the modern application of colour, the old patterns principally are imitated, in a most varied, but generally very artistic manner; as a rule, however, the material is coloured before being wrought into the required forms, the tint being given either to the body of the article or to the parts added as decorations. Painting proper, especially of figures, such as French taste has transferred from porcelain to glass rendered opaque (the so-called porcelain glass), especially alabaster glass, is entirely absent in the real Venetian article, isolated examples and experiments forming the exception. Venetian glass objects, besides being coloured in their mass, which causes them to produce a play of colours on light falling through them,—which is especially the case with dark shades of red, blue, and green, but more so with opal glass, refracting the rainbow colours, according to the light, in a most varied form—have glass of another tint let into the clear mass by the smelting process, either in threads, which spirally surround the object, and cross each other, forming what is termed reticulated or filigree glass, or in flowers and other simple figures (millefiori glass). Thirdly, wings, buttons, rosettes, or other flowers of transparent or opaque glass, mostly according to nature, are put on, although the material is very little adapted to this treatment—the latter being a description of decoration which made its first appearance at the time of the decadence of the former period of the Muranese glass industry.

If modern Venetian glass is to maintain its position in England, greater care and taste must be shown in the general design.

PROPOSED CHANGES IN THE INSTITUTE.

AT a special meeting, previous to the general meeting of last Monday, the report of the committee appointed to consider the position of the Institute, financially and otherwise, with a view to increasing its efficiency and extending its influence as the representative body of the profession, was read, as well as a subsidiary statement by one member of the committee of his reasons for dissenting from the report of his colleagues. The further consideration of the report was adjourned to another special meeting at an early date.

The proceedings being, *pro formâ*, private, we are not, at liberty, of course, to comment in detail on the proposals of the committee; we may just say that their report, while very ably drawn up, and showing that much consideration had been given to the subject, contemplated changes, one or two of which may be more important in their results than those who suggest them have quite realised; and without adopting what we hear of as the very pronounced opposition of the dissentient member referred to, we cannot but suggest every caution in making such extensive alterations in the rules and conduct of the society as some suggestions of the committee would involve.

The report will, of course, be circulated among members, and we recommend all those of them who are interested in the present and future position of the Institute to attend the next special meeting, and insure the full consideration of the subject from every point of view before any step is taken which cannot be recalled. Some of the proposed changes, we believe, would be beneficial to the Institute—all may be so; but nothing should be done in a hurry.

DESIGNS FOR GOLDSMITHS' WORK AT THE ARCHITECTURAL MUSEUM.

THE designs sent in competition for the annual prizes offered by the Goldsmiths' Company are now on view in the Architectural Museum in Tufton-street. The prize of 50*l.* has been awarded to Mr. J. Watkins for a design for a large silver centre-piece, on a very ambitious scale, and almost architectural in its general arrangement. Upon an oblong base a large cup stands as the centre object, surrounded by four smaller cups of somewhat similar character at the angles, and two tazzas occupy the centre of each of the longer sides. The centre vase is dedicated to Homer, the four angle ones to Dante, Virgil, Tasso, and Shakespeare, and the tazzas to Ovid and Milton (an odd combination); each vase being decorated with bas reliefs on the bowl, representing scenes from the works of each poet respectively; and the tazzas similarly decorated on the upper surface. There is a definite idea thus carried throughout, which is always desirable; the general design is very good in effect, and the outlines and forms satisfactory,—the detail perhaps rather less so; but the whole design is of considerable merit, and the drawing exceedingly good. The separate vases, &c., are all drawn out full size. The 25*l.* prize for an article not exceeding 30 oz. in weight has been awarded for a design for a gold and *cloissonné* enamel casket, by Mr. J. J. Shaw; this is an article irreproachable as far as good taste goes, and in which the general effect is good as to colour combination, and the detail of the inlay is elegant; there is hardly anything that can be called fancy or originality in it, however. This quality, nevertheless, is just what we want in goldsmith's work—just what the nature of the art and the material, and the class of objects it is commonly applied to, give suitable opportunity for. There seems to be too much leaning towards the merely saleable article rather than the encouragement of artistic originality in design. Mr. Shaw's casket would be classed as a very neat article in the goldsmith's shop-window; but it would hardly attract any one looking for artistic character or novelty.

The collection of designs generally, however, is much better in regard to good taste and artistic quality than that of last year. Among the other designs a good one, very well drawn and coloured, for a challenge cup for musical contests, gold and silver with enamel figures, claims notice; the designer's name is not given. A Greek jewel casket by "Dædalus" shows very good and characteristic detail in the upper portion, and a well-designed and spirited figure subject representing the marriage procession; the feet spoil it, and are out of keeping with the rest. The same author's sheet of designs for domestic service plate is very meritorious, though we think the reaction from weak flowing curves to straight lines and circles in this kind of design has been carried rather too far. We may compare with this Mr. Hewitt's casket to be executed in silver, with majolica painted figures introduced; the general design of this is good and original; the angle figures should have something more to support than the mere thin edge of the lid; the feet, which are satyrs' faces, flat, and looking upwards, are original, and show that kind of fancifulness which is in keeping with the art. In this respect Mr. A. Smith's casket with the white griffins at the angles, though a little too odd, shows spirit and originality. Mr. Randall sends a very large and quite over-done and over-pretentious design for the furniture of a writing-table; it is spoilt and vulgarised by the attempt to do too much with every part, and to cram figures and ornament on everywhere; but it deserves recognition for its ambition, and for the capital free drawing and tinting. There are several good designs for cups and vases; one for a vase in the Cellini style, by Mr. Christie, which is a good reproduction of the style, and very well shown in a careful coloured drawing; and a design for a "bachelor's tea-set," by Mr. Thomson, though one does not see the special bachelorhood of it, is good. The drawings are worth a visit, and, as we have said, show a decided improvement upon those last exhibited.

SUBURBAN BUILDINGS: HACKNEY.

IN our article under the above heading, on the 20th ult., we gave a circumstantial account of the construction and materials of certain dwellings in the borough of Hackney, and we incidentally alluded to the character of the new sewer constructed through the Marsh lands or borders. Our statements respecting the buildings are not disputed, but the chief surveyor of the district, by a letter which we published, endeavours to give a more favourable character to the new sewer than it deserves, on the score of construction, materials, and effectiveness. He doubts that the house-drains are as bad as we described them, but that is all, his answer being specially confined to the question of the new sewer. If we minutely described what we saw and examined, blame must rest somewhere either on the contractors or upon the surveyor, and that has not been our purpose, our sole aim being a sanitary one. We stated incidentally that "the great defect of the new sewer, which has cost several thousands, is that its fall is insufficient, and in times of flood the houses in the low-lying districts in the vicinity are in danger of being inundated. The workmanship of the sewer is on a par with other parish contracts; it alternates bad and good in formation and materials. We more particularly allude to the last and largest executed portion, which runs through a very soft and yielding bottom, and which needed a uniform adherence to the same materials and finish, and not a change in the nature of the bricks, and an absence of a backing of concrete in places." We added, that if the specifications were followed, the contractor had nothing to answer for. The chief surveyor to the Hackney Board says the last and longest portion of the work has not been constructed on a very soft bottom, but in a good, solid, natural bed of gravel, and that "the invert and side walls of the sewer, throughout its entire length, have been constructed on a solid bed of Portland cement, 1 ft. in depth at the bottom, and 6 in. backing to the side walls; also, that the whole of the arch from Hackney-wick to Homerton-road has been covered with concrete, as well as the portion of the smaller sewer where it passes through a market garden; but it was not considered necessary to cover the arch in the same manner in other parts of the line because of its greater depth in the ground and narrower span." If we are to be credited with the possession of our eyesight and our senses, we certainly saw and understood what we described. To begin with the beginning, the short and first-completed length of sewer constructed at Hackney-wick, and passing the entire length of Wallace and Windsor roads, passes through a very soft and bad bottom indeed, mostly made-up "shoot" land, and

here the crown of the new sewer, when the arch was turned, was on a level with the roadway. After the completion of the first length, the surface of the roadway above the sewer arch was raised. So high, indeed, does the sewer rise here, that the water level in it, in times of flood, must be higher than the basement floors of the houses along Wallace and Windsor roads. The houses in these streets, and the streets running parallel at the back, have no proper house-drainage, notwithstanding the new sewer, but it is fair to add they were built previously to the new sewer being made. It would be an act of humanity for the authorities to pull down the whole of these houses, for their present condition is deplorable, and they are living sepulchres to the poor occupiers. Their foundations are veritably water-logged, or, in a manner, swimming in water, and their walls, up to 4 ft. high, are oozing with chronic dampness and rankness. The new sewer here can afford no relief in draining the foundations of these houses. The state of the streets here is so bad that even the surface-drainage is not carried off, but flows betimes in upon the hall floors of these houses. Some of the inmates, to protect themselves from injury from the surface-water that flows in from the footway and streets, have raised their thresholds some inches higher than they were originally. We may also add that there are other streets besides those in the vicinity of the new sewer, in a wretched state, with sludge and filth, neither paved nor macadamised. We saw a fair bed of concrete and backing, fair materials and workmanship, in this first finished portion of the new sewer, which we would have liked to have seen carried out uniformly throughout the length of the second and longest portion commenced some months later.

The second portion of the new sewer runs through fields or marsh-meadow land, and from Hackney Wick-road to Homerton-road a by-road runs on one side. The brickwork of the arch rises here considerably above the surface of the meadow or marsh land, and since its completion the by-road that runs along parallel on the inside has been raised to a level with the top-dressing that covers the crown of the arch. No solid bed of gravel was reached here, for the bed of the sewer is but a very small depth under the surface of the soft marsh soil.

We have no wish, however, to pursue the subject further. We have awakened attention, and that will suffice.

MUSEUMS AND PICTURE GALLERIES ON SUNDAYS.

On the occasion of delivering the prizes to the students of the Liverpool Institute School on the 8th inst.,

Sir Henry Cole said, in the course of his address,—I now approach a subject on which bitter differences of opinion prevail, but I hope shall not give offence in stating my own views—I mean the use of Sunday. I will not enter on the religious differences involved in Sundays and Sabbaths, or the customs which history has made known to us. I will only attempt truthfully to relate what comes under my own personal experience, especially in London and our great towns, of the ways in which my countrymen pass Sunday—dividing them into the few rich, the numerous middle classes, and the overpowering millions of poor classes. I hate this imperfect nomenclature of classes, and use it only as expressions commonly understood. A rich man with 10,000*l.* a year may be a poor man and have no money at his banker's; and a poor labouring man, with his 20*s.* a week, may be a rich man with money in the savings-bank. The rich, relieved of their weekly work, go to church (often in their carriages) in the morning, and send their wives and daughters in the afternoon or evening. They frequent their clubs, read the *Saturday Review* or *Economist*, admire and examine the pictures they possess in their gilded homes. They go to the Zoological Gardens. The middle classes also go to church or chapel, have a good dinner on Sundays with a cosy nap afterwards, take a walk if it be fine, and spend the rest of the day in looking at the pictures in the illustrated newspapers. Both classes give their servants a holiday to go to church or chapel, if they are so minded, or to walk with a cousin. I regret to say that all I can see and learn proves to me that the millions of the poor classes do not go to church or chapel. They spend the forenoon in their only one room if they live in towns, and generally in bed. They read a penny newspaper, which, as a parish missionary told me, is "Church, chapel, and Bible to them," and they pass the evening in the public-house. Do not let us deceive ourselves. The millions of this country have ceased to be attracted by our Protestant churches and chapels, and the law cannot compel them to attend. Our forefathers before the Reformation induced the people to come to churches, and abbeys, and cathedrals, where the poor found music and pictures on the walls and in the windows. The Roman Catholic Church now makes its way with the people by the same attractions, and all creeds have done so, whether regulated by Moses among Israelites or Sesostris among the Egyptians, or by the high priests of Minerva in Athens, or, in subsequent years, by Leo X. in Rome. Human nature craves for beautiful work of God or man. The fine arts are the handmaidens of religion and gentle culture. But during the last three centuries in our kingdom we have neglected, if not despised, this craving. Fine arts are now beginning to be recognised again as humanising. If you wish to vanquish drunkenness and the devil, make God's day of rest elevating and refining to the working man. Do not leave him to find his recreation in bed first and the public-house afterwards; attract him to church or chapel by the earnest and persuasive eloquence of the preacher, restrained within reasonable limits; help him to solve the mysteries of his daily life by the simple light of his Bible, rather than puzzle and wear him with dogmas spoken during long hours; give him music in which he may take his part; show him pictures of beauty on the walls of churches and chapels; but as we cannot live in church or chapel all Sunday, give him his park to walk in, with music in the air; give him that cricket-ground which the martyr, Latimer, advocated; open all museums of science and art after the hours of divine service; let the working man get his refreshment there in company with his wife and children, rather than leave him to booze away from them in the public-house and the gin-palace.

BUILDING ON "SHOOTS."

OPINION OF COUNSEL.

At a recent meeting of the Hackney District Board of Works, the Clerk reported that in accordance with the instructions of the Board, he had submitted a case relative to the erection of dwellings on house-refuse and other rubbish, to Mr. Michael, a legal gentleman well versed in matters connected with the "Nuisances Removal Act," for his opinion thereon, which he now begged to submit.

Mr. Beck questioned the wisdom of making known the reply in the presence of reporters.

The Clerk said he agreed to a certain extent with the views of Mr. Beck, but so much had been publicly said and written concerning dust-shoots and the action of the Board in reference thereto, that he thought the opinions of counsel should also be made public. He then read the case submitted to Mr. Michael, and that gentleman's replies to the queries put to him. They were to the following effect:—1st. He was of opinion that an order could not be obtained to restrain builders from erecting houses on made-up soil which was not covered with a layer of concrete sufficiently thick to prevent the escape of injurious gases. 2nd. He did not think the Board possessed the power to prevent the letting of houses which were built upon refuse, and which were not covered with concrete under the basement floors. 3rd. He was of opinion that a magistrate would grant an order for the removal of refuse deposits of which it could be proved that the accumulation was such as to be injurious to health; but every case would have to be tried on its own merits, and the magistrate would require some direct proof that the refuse was injurious to health. 4th. He did not think the Board could legally refuse their sanction to the laying of drains for dwelling-houses in soil composed of refuse, for any danger which might be apprehended from the made-up soil could be prevented by the adoption of measures which a practical surveyor could suggest. Lastly. He believed that although the question of proper subsoil to houses was of great importance, as affecting the health of the public, yet it was impossible in the present state of the law to deal with the question satisfactorily.

Mr. Beck said the opinion of counsel amounted to this:—That the Board had no power to interfere with the erection of houses on dust-shoots. The Board were probably aware that the Metropolitan Board had in three successive sessions brought forward a Bill for dealing with the subject, but they had been unable to get it passed.

On the motion of Mr. Bowser, it was then resolved to forward copies of the counsel's opinion to the Home Secretary, the Metropolitan Board, the Local Government Board, and the Borough Members.

THE COURTS AND ALLEYS IN ST. GEORGE'S, SOUTHWARK, AND THEIR OWNERS.

A point of some importance as to the ownership of courts and alleys came before the Vestry of St. George's, Southwark, at their meeting last week. In the course of the proceedings Mr. Bayley, one of the members, drew the attention of the Vestry to the wretched state of the courts and alleys in the parish. Adverting to a case where a court was unpaved and undrained, and altogether in what he described as a lamentable state, he added that when recently he, as one of a deputation, visited a block of buildings reported upon by the medical officer, he felt ashamed that such a place existed in the district. He considered that some one was to blame in not making the owners pave the courts according to the terms of the Act, and he should like to know where the fault lay. This elicited a reply from the Clerk to the effect that he did not think either the Vestry or its officers were to blame. He observed that it all turned upon the word "owner" of the court, and they could scarcely find one. The definition of owner was that he was entitled to the rack rent. But a lessee was not the owner, and the freeholder might lease the ground, which constituted the difficulty. Mr. Bayley having quoted the Act, the Clerk observed that it was a penal one, and of course would be interpreted strictly in favour of the defendant. He had never known of a case where a magistrate would commit. Mr. Bayley intimated that he was able to cite a case where a conviction had taken place before a magistrate, and stated that he would again bring the subject forward, and prove the conviction to which he had alluded, with the view of proceedings being taken by the Vestry against these owners, in order to compel them to pave and drain the courts complained of.

ELECTION OF DISTRICT SURVEYORS.

METROPOLITAN BOARD OF WORKS.

For the then vacant district surveyorships of Bethnal-green East and Bethnal-green West, twenty-six candidates presented themselves at the offices of the Metropolitan Board, Spring-gardens, on the 10th inst. The following gives the names of the candidates, with the votes recorded for each:—

Bethnal Green West.—Preliminary voting:—A. Allom, 12; R. B. Bell, 4; T. Blashill, 29; A. Bovill, 22; J. Clarkson, 11; H. H. Collins, 26; J. W. Forge, 1; V. J. Grose, 13; J. Hebb, 2; R. C. James, 33; L. Karslake, 9; G. O. Lane, 16; W. O. Leonard, 3; H. Lovegrove, 3; R. P. Notley, 35; A. Payne, 17; J. S. Quilter, 7; E. Richardson, 3; L. W. Ridge, 10; W. Seymour, 5; T. Stone, 11; F. Todd, 5; J. G. Turner, 7; F. Wallen, 27; T. W. Willis, 20; J. Young, 12. The candidates being reduced to the six who had the highest number of votes, the second voting was taken as follows:—James, 32; Notley, 31; Blashill, 23; Collins, 22; Wallen, 21; Bovill, 17 (Bovill struck off). Third voting:—James, 29; Notley, 27; Blashill, 22; Collins, 18; Wallen, 19 (Wallen struck off, after a further vote as to which of the last two names should be retained, the votes recorded being Collins, 21; Wallen, 18). Fourth voting:—Notley, 29; James 25; Blashill, 23; Collins, 18 (Collins struck out). Fifth voting:—Notley, 26; Blashill, 20; James, 19 (James struck out). Sixth and final voting:—Notley, 33; Blashill, 8. The chairman, Sir J. M. Hogg, declared Mr. Notley to be duly elected. Mr. Notley undertook to perform the duties of the office subject to the usual conditions, and thanked the Board for his election.

Bethnal Green East.—For this district surveyorship the candidates were the same, with the exception of Mr. Notley, elected for the west district. The preliminary voting was as follows:—Allom, 12; Bell, 5; Blashill, 27; Bovill, 22; Clarkson, 13; Collins, 23; Forge, 0; Grose, 9; Hebb, 1; James, 34; Karslake, 9; Lane, 19; Leonard, 2; Lovegrove, 4; Payne, 17; Quilter, 7; Richardson, 3; Ridge, 8; Seymour, 4; Stone, 11; Todd, 9; Turner, 8; Wallen, 27; Willis, 13; Young, 16. The candidates being again reduced to the six who had the highest number of votes, the second voting resulted as follows:—James, 30; Blashill, 24; Collins, 22; Lane, 19; Bovill, 13; Wallen, 14 (Wallen struck out). Third voting:—James, 30; Blashill, 21; Collins, 19; Lane, 18; Bovill, 17 (Bovill struck out). Fourth voting:—James, 28; Blashill, 18; Collins, 18; Lane, 18. (Lane struck out, after a further vote as to which two of the last three names should be retained, the votes recorded being Blashill, 21; Collins, 18; Lane, 17.) Fifth voting:—James, 26; Blashill, 23; Collins, 20 (Collins struck out). Sixth and final voting:—James, 29; Blashill, 13. The chairman declared Mr. R. C. James to be duly elected. Mr. James undertook to perform the duties of the office subject to the usual conditions, and thanked the Board for his election.

MIDDLE CLASS SCHOOLS: ROBERT ASKE'S CHARITY.

IT would be absurd to assume that in either elementary or secondary education the condition of the United Kingdom is all that is desirable or possible, in either the number or character of our educational institutions, or in their operations and results. We have not fully attained nor are we already perfect in these things; but tides have set in that must ere long float in ample and excellent educational provision of the various kinds necessary to complete national culture and development,—elementary, secondary, technical, and scientific, culminating in the culture of the Universities.

As touching elementary education, Mr. Forster's Act was five years old last August, and the first School Boards were elected under it in the following November, Manchester, that has been so long the cradle and nursery of educational movements, leading off and electing the first Board under the Act on November 24th; Liverpool, London, and other large cities and towns following in rapid succession. It is not hyperbolical to say that splendid triumphs have already been achieved under the Act. Much more than half the population of England and Wales is under its operation, in almost all cases voluntarily on the part of the municipal authorities, as representatives of the ratepayers. Of 224 municipal boroughs in England and Wales, 113 have School Boards. Of 69 towns, with a population of 20,000 to 25,000, 42 have elected School Boards. Of 21 towns, with a population of 50,000 to 100,000, all, except "Proud Preston," have elected School Boards. Every town containing more than 100,000 people adopted the Act by resolution of its town council. The London School Board, which was elected on November 29th, 1870, has incurred much censure because of alleged extravagance. It would seem that they have a good answer to the charge. The Board had expended to Lady-day last 1,763,407*l.*; a large amount certainly, but what have they to show as a set-off? Above 200 large, commodious, and substantial school buildings, and the land upon which they are built. In these buildings nearly 600 efficient boys', girls', and infants' schools are conducted, —schools that are much superior in accommodation, equipment, scope of instruction, and teaching power, to a majority of the elementary schools in existence when they were established. The cost of land and school buildings should be put to what may be called capital account, not current expenses, which have absorbed about one-seventh of the total amount, an expenditure abundantly justified by the Board having been instrumental in bringing under instruction 100,000 children who would otherwise have been neglected, and educationally destitute. The successes of the London and other School Boards throughout the country in the matter of providing increased and improved means for elementary instruction ought to pacify the most confirmed pessimist; and these great results are being achieved in London, with a rate of about 3d. in the pound for the two half-years, against a poor-rate of more than ten times the amount.

Of late years much consideration has been given to the question of secondary or middle-class education, but not more than the importance of the subject demands. In this direction also, there have been great improvements effected of late, in management and control, in the application of existing resources, the correction of abuses and malversations, extension of the scope of the instruction given, and in better methods of teaching. The provision of increased and improved means for middle-class education is not a social or political duty as imperative as that of providing elementary instruction, the birthright of every child. Necessarily progress on this line must be slower than on the other. The School Boards obtain the funds that they are themselves to administer. The funds of existing endowments have to be looked to for the greater part for the provision of secondary education, and there are accordingly trust deeds, charters, and statutes, to complicate the administration of such funds. Reference is here made to Cathedral trusts and private bequests for educational purposes, that would probably be ample, if properly applied, for the provision of highly efficient middle schools for all who may desire admission to them.

In connexion with our cathedrals large funds have been provided by statute for educational purposes that have not been so applied. Whatever may be thought of the propriety or justice of Henry VIII. in abolishing the old monasteries, abbeys, and priories, because of alleged abuses and violations of trust, there can be no doubt that he intended to secure by the charters of the new foundations the means of a liberal education free to a certain number of youths in connexion with the cathedrals. The preamble to the charters states their purpose to be, *inter alia*, that "youths might be liberally trained, old age fostered with things necessary for living, and that liberal largesses of alms to the poor in Christ, and reparation of roads and bridges, and other offices of piety, teeming over from them, might thence flow abroad far and wide to all the neighbouring places, to the glory of Almighty God and the common welfare and happiness of the subjects of the realm." The preamble to the Act 31 Henry VIII., c. 9, preserved in his own handwriting, sets forth that the new cathedrals are established "to the intente that god's worde myght the better be sett forthe, cyldren broght up in lernynge, clerces nuryshyd in the universities, old s'vantes decayed to have lyving, allmes housys for pour folke to be sustayned in, readers of grece, ebrew, and latyne to have good stypende, dayly almes to be mynistrate, mending of hyght wayes and exhybision of mynisters of the chyrche." The statutes of the new foundations provided most liberally for the free maintainance and instruction of 212 boys, viz., 50 at Canterbury, 40 each at Westminster and Worcester, 24 at Ely, 20 each at Peterborough and Rochester; and, in addition, the free instruction, without maintenance, of 24 boys at Chester, and 20 each at Bristol, Carlisle, and Gloucester. Money now is of nearly seventeen times the value that it was in the fifteenth century, and the stipends of many of the members of the cathedral have properly gone up, but not *pro rata*, the poor scholars faring worst of all. A table published at page 51 of Mr. Whiston's "Cathedral Trusts," &c.,* is interesting and instructive. The table gives a comparative statement of cathedral incomes in the sixteenth and nineteenth centuries. Some of the figures are now, it may be, subject to correction; we quote from the figures as given by Mr. Whiston. At the foundation, the Dean of Canterbury had 300*l.* a year, that had increased to 2,050*l.* in 1849, or 6¾ times the original amount. Incomes of the prebendaries or canons increased from 40*l.* to 1,010*l.* each, or 25 times the original amount. The grammar boys have been reduced from 4*l.* to 1*l.* 8s. 4d. each. At Rochester, the dean's stipend, or rather his takings out of the cathedral fund, is more than fourteen times the original amount, and those of the prebendaries or canons thirty-four times the amount of the statutory allowances. The grammar boys remain nominally at 2*l.* 13s. 4d., and the students at the Universities, when there are any, are reduced from 6*l.* 13s. 4d. to 5*l.* The offices of vice-dean, receiver, and treasurer are filled by canons; the bedesmen are non-existent; two canonries have been suppressed, and the offices of seneschall, barbitonsor, deacon, and sub-deacon, caterer, butler, or manciple cook, and under-cook, have been suppressed. Where these stipends have gone does not clearly appear, unless they have been divided by or among the dean and chapter. At Peterborough, the original stipend of the dean has to be multiplied by eleven, that of the canons by twenty-six; the grammar boys remain at 2*l.* 13s. 4d., as in 1542. Gloucester dean's stipend has to be multiplied by eleven; canons', by twenty-seven; grammar boys, *nil*. Worcester, —dean's income increased elevenfold; canons', thirty-one fold; grammar boys reduced from 2*l.* 13s. 4d. to 5s. 10d.! Bristol, —dean's allowance about nine times the original amount; canons', twenty times; grammar boys, *nil*. Carlisle,—dean's stipend increased eleven times; canons', twenty-nine times; grammar boys, *nil*. Chester,—dean's, ten times; canons', twenty-one times; grammar boys from 3*l.* 6s. 8d. to nothing. Winchester,—dean's income increased to above seven times the statutory amount; canons', to thirty times; grammar boys, *nil*. Durham,—dean's income, eighteen times the original amount; prebendaries' or canons', sixty-eight times; grammar boys, 26*l.*, or eight times the original amount; bedesmen, 20*l.*, or three times the original amount. At Ely the dean's stipend is eleven times, and the canons' more than thirty-one times the original amounts; grammar boys, reduced from twenty-four to seven at 3*l.* 6s. 8d. as in 1542. These statements, it may be repeated, are carefully deduced from Mr. Whiston's table. If the allowances to the fifty grammar boys of Canterbury had been augmented in the same ratio as the takings of the prebendaries, the school capitation money would amount to 3,860*l.* per annum, besides "commons without stint," of which they are now, and have long been, deprived, contrary to the express provisions of the statute. By the same rule the Rochester Grammar School Endowment would reach 1,913*l.* 6s. 8d., exclusive of the "table." Mr. Whiston refers to a time when the dean and chapter of Rochester were paying 1*l.* a year each for only two boys.

Cathedral, and many other ancient endowed schools, have fallen almost completely into disuse, from two principal causes, (1) that the governors have starved them financially, as in the case of most of the cathedral grammar schools; and (2) that the governors have lagged behind the age. Grammar was interpreted to mean the Greek and Latin languages, and the staple instruction long continued to be in the ancient classics; very useful for scholars, but only indifferent auxiliaries in the counting-house, the warehouse, the retail shop, the factory, or the workshop. This practice was not so absurd in former times as it is now, when there is an abundant choice of substitutes for the exclusive study of the dead languages. The consequence was what might have been expected. Those who wanted an education to fit them for business had to seek it elsewhere than in the grammar school, and the mastership of such schools, in many instances, became sinecures, and the schools have been altogether diverted from the intentions of the founders. This seems to have been the case with the Derby School, at the opening of which the Marquis of Hartington officiated so efficiently the other day. In many instances masters charged extra for teaching what was wanted, giving instruction free in what was not wanted. In other instances the schoolhouse was converted into a private boarding establishment. It is not at all surprising that in the original reports of the Commissioners of Inquiry into endowed charities for education, &c., such statements should abound as,—"school discontinued," "no scholars for many years," "master non-resident," "no free scholars taught," "grammar school abolished by trustees," &c. The genius of reform, however, is now happily at work among the grammar schools. The Court of Chancery, upon the representations of the Commissioners, has remedied many of the most glaring abuses, and the new scheme for the management of Robert Aske's foundations at Hoxton and Hatcham is another evidence of the important services that the Endowed School Commissioners are prepared to render in connexion with middle-class schools, their extended usefulness, and reformed management. The liberality of the scheme is creditable alike to the Governors of the Haberdashers' Company, who are the trustees of the charity, in concert with whom the scheme has been drawn, the Endowed Schools Commissioners and the Committee of Council on Education, whose sanction was necessary to its being carried into effect. It is another highly satisfactory outcome from the Endowed Schools Act of 1869, and an excellent augury of good things to come, in connexion with the constantly increasing revenues of many educational endowments.

The charity was founded and endowed by will and codicil of Robert Aske in the historic year 1688. He left 20,000*l.* for the purchase of land within one mile of London, and the erection of an almshouse for twenty poor single gentlemen, preference being given to such as were free of the Haberdashers' Company. Also land, in remainder, for as many poor boys, by preference sons of members free of the Haberdashers' Company, as for 20*l.* a year each could be supplied with "meat, drink, clothing, and schooling." About 32,000*l.* in all were received by the company under Mr. Aske's will. Subsequently, additional sums were bequeathed by others in augmentation of the charity:—Mrs. Mary Turgis, 50*l.*, in 1704; Joseph King, 500*l.*, in 1717; Sir John Smith, 100*l.*, in 1733; and Peter Pope, 500*l.*, in 1807. Property for a hospital or almshouse, and schools to carry out the objects of the trust, were bought at Hoxton, where the hospital and schools were built. Among the conditions were that no pensioner should be admitted under fifty years of age. Pensioners must not follow any business without leave. They must attend chapel morning and evening every Sunday, and on Good Friday and Christ-

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* "Cathedral Trusts and their Fulfilment." By the Rev. Robert Whiston, M.A., Fellow of Trinity College, Cambridge, and Head Master of the Cathedral Grammar School, Rochester. Fifth edition. 1851. Ollivier, Pall-mall, London.

mas-day, on the four quarterly days of meeting, and on the mornings of every Wednesday and Friday. The old men were allowed 1*l.* per quarter and the "sacrament money," about 7*l.* 4s. per annum. They were also allowed a gown every year, but no other clothing. They were lodged and fed in the hospital, and had an allowance of coals. They had a hot dinner every day, except Saturday, when in lieu of dinner they had an allowance of 3s. A dinner was afterwards provided on Saturdays. The hospital was not always full, from the small number of single men otherwise eligible for admission. The Company purchased from the trust funds a valuable property at Ashford, in Kent. The rental of the trust property is nearly 9,000*l.* per annum.

At Hoxton the hospital was carried on, and a school successfully conducted, for many years. Some time since the hospital was closed, and the almsmen made out-pensioners, compensation being also paid to the discharged officials, viz., the chaplain and head-master a pension of 120*l.* per annum; the master, a pension of 50*l.*; and the matron, a pension of 20*l.*, during their respective lives, in each case in the event of the Company not offering suitable employment to these officers. The almsmen elected since the 1st of October, 1872, are entitled to such annual pensions, not exceeding 75*l.*, as the governors may determine. They have now fourteen at 75*l.*, two at 70*l.*, and four at 50*l.* per annum each.

The "Haberdashers' Hoxton Schools" provide for 300 boys and 300 girls, and "Aske's Hatcham Schools" for 300 boys and 200 girls; the latter will be the higher class schools of the two. The sole management of the schools is vested in a Board of fifteen members, constituted thus:—Nine members, of whom two shall be women, are appointed by the governors, one by the Lord Mayor and aldermen of London, one by the Common Council, two shall be members of the Hackney division of the School Board for London, and two members of the Greenwich division. The governors' managers are to hold office for seven years, the others for five years, and shall then retire. Religious opinions do not in any way affect the qualification for being a manager. No person is disqualified from being a master not being, or intending to be, in holy orders. By notice in writing to the head-master or head-mistress parents or guardians may withdraw scholars from attending prayer, religious worship, or lessons on religious subjects, such withdrawal not to deprive the scholar of any advantage or emoluments from the school, or the endowment to which such scholar would be otherwise entitled. The weak points in this fair-seeming condition are the formal "notice in writing," and the power of the master or mistress to expel a scholar, subject to their making "a full report of the case in writing to the managers," who may, in turn, by two-thirds of their number, first suspend, and afterwards "wholly and finally dismiss him or her"; he and she having previously signed a declaration in the minute-book that they "will acquiesce in such removal, and will thereupon relinquish all claim to the office and its future emoluments," &c.

In the Haberdashers' Hoxton Schools the head master is to have a salary of 100*l.* a year, and the head mistress of 75*l.*, with a capitation allowance of not more than 30s., or less than 10s. per scholar, The entrance fee is not to exceed 5s.; the tuition fee is to be not more than 4*l.* a year, or less than 2*l.* Boys are not to remain in the school after they are fifteen, or girls after they are sixteen years of age. Applicants for admission have to pass an examination on the standard of reading easy narrative, and writing text-hand, doing easy sums in the first two rules of arithmetic, and knowing the multiplication table. The course of instruction in both schools includes reading and spelling, writing, arithmetic and elementary mathematics, English grammar, composition and literature, outlines of history, geography—political and physical, natural science, Latin or French, or both, drawing and music; and in the girls' school, household management and needlework. 400*l.* are to be set apart annually for exhibitions, not exceeding 12*l.* a year, tenable at Hoxton Schools. For scholars leaving the school, 600*l.* will be appropriated for exhibitions.

The head-master at Aske's Hatcham Schools is to have a salary of 150*l.*, and the head-mistress of 100*l.* a year, with capitation allowances of not less than 2*l.*, or more than 4*l.* per scholar, either of which, if the schools are nearly full, will bring their incomes up to a handsome amount. The registration fee on application for admission is not to exceed 5s., the entrance fee is not to exceed 1*l.*, or the tuition fee be less than 4*l.*, or more than 8*l.* a year. Scholars are not admitted under the age of eight years. The entrance examination is on a higher standard than at Hoxton. The course of instruction embraces,—the English language and literature, French and German, Latin, arithmetic and mathematics, history and geography, natural science, drawing, music; and, in the girls' school, household management and needlework. Exemptions from fees are to be granted by way of exhibitions, and the managers may assign an annual sum of 1,200*l.* for exhibitions not exceeding 40*l.* a year each in value, tenable at Hatcham, or any other approved school. These are mainly intended for the children or grandchildren of freemen haberdashers. For scholars leaving the school 600*l.* will be assigned for exhibitions. All the exhibitions of different kinds will be divided as equally as possible between boys and girls. The scheme provides for science classes in connexion with the Government Science and Art Department, for the establishment of a pension fund, and the application of residue and surplus funds. At Hoxton the managers engage and dismiss assistant teachers; at Hatcham these powers are vested in the head-master and head-mistress.

Board Schools furnish ample facilities for the education of the children of labourers, artisans, and ordinary mechanics, and for such classes no further provision is needed. There is a large section of the middle class that are now in very much worse case as regards education. They contribute their full quota to the School Board and other rates. The Board Schools are, for reasons that need not be entered into, not available to them, and they have the mortification of knowing that they are contributing towards the maintenance of schools in which a better education is given than they can secure for their own children. The application of the increasing revenues of educational endowments to the establishment of such institutions as "Aske's Hatcham Schools" will prove a great and highly-prized boon to the meritorious class referred to, and seems to be a wise and perfectly legitimate use of the trust funds.

The schools, which are in two separate blocks of buildings, are built upon the crest of a hill, and give admirable relief to the sky-line from almost any direction of approach. They stand in about four acres of ground, which have been laid out and planted with excellent taste by Mr. Phelps, landscape gardener. A very fine view of London and the surrounding country is commanded from the school grounds, the sweep ranging from Shooter's-hill in the east to the Houses of Parliament in the west, taking in the Surrey and Commercial Docks, St. Paul's, and other prominent objects; the South London Gasworks, however, between the middle distance and the foreground, interposing to the annoyance of the gazer. At the foot of the hill on the west side, is Nunhead, and close to its base, on the opposite side, is the rapidly-increasing suburb of Brockley, inhabited by just the class of people, for the most part, that need such schools as are here provided. Unfortunately, although the schools are quite near to these suburbs, there is as yet no road between them, and the schools can only be reached by a long detour. Ere long roads will be made, probably, and the spacious road to the schools from New-cross Gate will speedily be taken up, doubtless on each side, for building purposes.

The school-houses are Elizabethan, and very effective in their elevations, agreeably relieved by gables with wrought-iron finials, and the forms and positions of the windows and other openings. The internal accommodation and arrangements are all that could have been desired for comfort and convenience. The music-room is a curiosity, in fitting which the difficulty of the task has been grappled with, we hope it may be found, with a moderate degree of success. Neither a separate room for each pianoforte nor complete isolation in the same room was practicable. The room contains six closets, that are covered at the top, and separated from each other by a wide centre aisle and 3 ft. spaces. They are in size 6 ft. by 7 ft., and have the upper quarters filled with fluted glass. The general school-rooms, class-rooms, of which there is a very liberal number, lavatories, cloak-rooms, &c., are all good of their kinds, and thoughtfully arranged as regards their relative positions. Covered playgrounds are provided. There is no residence in connexion with the schools, excepting that of the caretaker, who, by the way, might have been allowed a little more elbow-room in his apartments, which are very small.

The schools are from the designs of Mr. W. Snooke, architect, of Duke-street, London Bridge. Messrs. Perry & Sons, of Stepney, have executed the contract. Mr. Gammage has acted as clerk of the works.

The Haberdashers are trustees for a large number of charities in addition to Aske's. These include Somers's, Gale's, Huntlow's, Sir George Barnes's, Johnson's, Culverwell's, Buckland's, Heydon's, Barrett's, Lady Burghley's, Offley's, and thirty-five others, making about fifty in all. One of these charities, at Monmouth, is an important establishment, including large schools, with numerous class-rooms, and a chapel and masters' residences. Mr. Snooke is at present engaged in enlarging the schools. Additional accommodation for the masters is also about to be provided. The buildings are Elizabethan, and entirely of Forest of Dean stone. The area of the main building is 400 ft. by 350 ft.

DWELLINGS OF THE WORKPEOPLE OF SICILY.

The working classes in Sicily are, for the most part, wretchedly housed. Artisans and the better class of servants occupy two or three rooms on the ground floor, or on the *entresol*, which they furnish with some neatness, and hang the walls with a few copper saucepans, and a multitude of coloured prints. But if the dwellings of this class show some appearance of comfort and cleanliness, such features are altogether wanting in those of the day labourers or unskilled workmen, whose family is generally crowded into a chamber barely spacious enough for the bed and the loom, and often receiving light and air only through the open doorway.

In the country the houses of this class are, if possible, more miserable than in the towns, and the inmates share them with donkey, pigs, and fowls, when they possess such riches. Hence their hovels are redolent of filth and miasma, and swarm with vermin. Fortunate, nevertheless, are they who enjoy all the year round the shelter even of a roof. In the sparsely populated districts, where no village lies within his reach, the agricultural labourer often inhabits a conical hut of reeds, with no furniture beyond a litter of straw and a few utensils for cooking and drinking. The workmen in the mines also, when these are not accessible from any village, after toiling all day in the bowels of the earth, come to the surface only to pass their nights in holes or caves hollowed in the hill-side, and more like the dens of wild beasts than the habitations of human beings.

As may be supposed, the foul, unventilated hovels which the mass of the working-classes of Sicily inhabit are fearfully detrimental to their health, notwithstanding that they spend their days in the open air. Scrofula and consumption, fever and cholera, when they visit the land, decimate the labouring population, and are attributable mainly to the horrible condition of their dwellings. This applies more particularly to the country towns and villages, but also in a great measure to the abodes of the corresponding classes in the large cities. It is true that Palermo, Messina, Catania, and other large centres of population, have made immense progress of late years in cleanliness and sanitary arrangements. In the capital in particular the drainage of the principal streets is now admirable; so are the municipal regulations for the removal of filth and rubbish. Even in some of the smaller towns, such as Girgenti, which used to be notorious for their filth, great sanitary improvements have been effected, but others of the country towns are still just what they were five-and-twenty years ago. Terranova is an instance. Beyond one paved street which traverses the town, and is kept in decent order, all is abominable filth. Pools of black mud 1 ft. deep render most of the side streets impassable, and the foul odours they emit are pregnant with disease.

The remuneration of labour in Sicily has risen considerably since 1860, when the establishment of the conscription withdrew a large number of young men from productive employment. Skilled workmen, before that date, used to receive 2s. a day on the average, now they can earn from 2s. 6d. to 5s., according to the craft, the average being about 3s. Compositors, cabinet-makers, ship-builders and founders, gilders, and other handicraftsmen, reach it. On the railways and other public works, masons

and stonecutters can earn from 3s. to 3s. 6d. a day. In the sulphur mines the pickmen get about 3s. a day, while the boys who bring up the ore to the pit's mouth receive only 9d.

The Sicilian artisan lives on bread and maccaroni, cheese, pulse, vegetables, and fruit. Fish he purchases only when abundant and cheap, but which is not always wholesome during the hot season. In meat he indulges rarely, it being very dear, and almost beyond the reach of a labouring man. The chief wines which form the ordinary beverage of these classes are not unfrequently adulterated in the cities, rarely in the country; but, on the whole, they are not injurious if taken in moderation. The clothing required by a workman in Sicily differs in a great measure from what he would use in England. The climate enables him for many months in the year to dispense with warm clothing, and during the height of summer he is glad to wear the lightest fabrics he can procure.

The ambition of the Sicilian artisan is to appear of a higher rank in the social scale than that to which he really belongs; and with this view he saves his earnings that he may appear with his family on the promenade on *fête* days, as smartly if not as well dressed as his employers. He is nervously jealous of what he considers is his respectability, rejoices in the title of "Don," scorns to carry a parcel, or to appear in public in his working-dress; and, although condemned during the day to dirty work and shabby clothes, he takes care, at least, to go and return from his labour with clean face and hands, and attired as much like a gentleman as his means will allow.

As to the quality of work executed by a Sicilian workman, there is little to be said in commendation. As a rule he does not take pride in his work and put his character into it. His great object is to turn out his work in an attractive form so as to get the quickest and highest return in cash; he cares little for its excellence and durability, or for the reputation he risks, by his indifference on these points.

THE UNDERGROUND TELEGRAPHS OF LONDON.

On the 8th inst., at the meeting of the Society of Telegraph Engineers, held at the Institution of Civil Engineers, Great George-street, Westminster,—the president, Mr. Latimer Clark, in the chair,—an interesting paper on "Underground Telegraphs; the London Street Work," by Mr. Charles Fleetwood, of the Postal Telegraph Department, was read.

The author stated that from the original five wires used by Cooke & Wheatstone in July, 1837, between Euston and Camden, to test the success of the original five-needle telegraph, the system has gone on increasing latterly with rapid strides, culminating at the present time with 750 different wires entering the central station, and a total mileage of 3,500 miles of gutta-percha covered wire. On the successful issue of the Cooke & Wheatstone telegraph, it was started commercially, and a line of five wires was placed underground in lead pipes between Paddington and Drayton. This line became defective, and in 1841 was replaced by posts and overhead wires. The existing lines erected by Mr. Cooke from this period were, in 1846, on the incorporation of the Electric Telegraph Company, led by wires in iron pipes to the first office in London, 345, Strand. In the following year the system was extended under the streets to their new Central Station at Founder's-court, Lothbury, which office was opened on 1st January, 1848, when the total system of the company at that time reached 1,500 miles of telegraph wire erected and in progress, a mileage less than one-half the present system under the streets of London alone. The wires were formed into cables, and drawn through iron pipes; the wires were of No. 4 gauge. These cables were connected to what were termed testing posts, standing up like a street-post. The wires were connected in these boxes by a mechanical joint, which it was easy to open and disconnect for testing.

At the present time the street work of London consists of about 3,500 miles of No. 7 gauge gutta-percha covered wire, wrapped with tape, and tarred, drawn into cast-iron pipes of 3 in., and in some cases 4 in., diameter. This system connects the central office at St. Martin's-le-Grand with the several provincial railways and the main road lines of telegraphs; it also serves a large number of the metropolitan telegraph offices. After describing the main routes of the pipes through the various districts of London for a length of 110 miles, the author went on to state, that at the New General Post-office the whole of the 740 wires are carried up the interior of the building, and terminate on a test box, where each wire is numbered. Provision has been made on this box for 500 wires from the west, and a corresponding number from the east, a total of 1,000 in all. A 4-in. pipe will hold 120 wires of No. 7 gauge prepared, and a 3-in. pipe 72 wires, but it is not well, unless compelled by circumstances, to draw in those numbers. The pipes are 9 ft. long, and previously to being laid are well cleaned inside by having a heavy chain or mandril drawn to and fro to rub off any superfluous substance left in casting. The socket joints are packed with tarred yarn, and lead run in, as in the case of gas or water-pipe joints.

In marking out the route the footpath is generally chosen, and the pipes are laid under the pavement, it being much more accessible, especially since the asphalt has been introduced. Flush-boxes 2 ft. 6 in. long, 11 in. wide, and 1 ft. deep, are fixed, in some cases 50 yards apart, and in others 100 yards, according to the number of wires required and the nature of the streets. A No. 8 galvanised iron wire is threaded through the pipes from box to box as the pipes are laid, by which the cables are hauled through. All the cables are sent out from the Postal Stores in lengths of 400 yards. On arrival at the place where they are to be used, the cable is coiled in a loop, a short distance from the centre flush-box loop, a short distance from the centre flush-box and in others 100 yards, according to the number of wires required and the nature of the streets. A No. 8 galvanised iron wire is threaded through the pipes from box to box as the pipes are laid, by which the cables are hauled through. All the cables are sent out from the Postal Stores in lengths of 400 yards. On arrival at the place where they are to be used, the cable is coiled in a loop, a short distance from the centre flush-box loop, a short distance from the centre flush-box

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of the 400 yards length. The ends of the wire are trimmed for about 6 in. The cable is then divided into two, and each portion being twisted is then passed through the loop in the iron leading-in wire in contrary directions, beaten back, and secured. A piece of canvas is then wrapped round and fastened with string. An iron frame with wooden rollers is then fixed in the flush-box. The cable is made to pass over one roller and under the other, and the latter is so arranged that the cable enters the pipe with a clear lead, and without being chafed against its edges. All being now ready for the drawing in, two men stand within the coil cutting the ties, and delivering the cable to a third man over the flush-box, whose duty it is to see that the cable enters the pipe evenly, the foreman standing near, so as to watch the cable entering the pipe, and to signal to the men at the next box when to commence or cease pulling. When the first 50 yards of cable have entered the pipe, which is known by the end appearing at the next box, a piece of tape is tied round the cable; and when this has passed through the pipe, a second piece, and so on till the 200 yards have been drawn through. As the cable comes out of the pipe, it is coiled on the opposite end to that from which it has been drawn; the cable is then turned over by being re-coiled on to the contrary end of the box ready again to enter the pipe. This operation is repeated till the whole 200 yards have been laid. A corresponding operation has to be performed with the remaining 200 yards of the cable, but, of course, in the opposite direction. As soon as a few sections of the cable have been laid, the jointers follow, starting from the Central Station, St. Martin's-le-Grand, and jointing the wires in the vaults under the pavement at the corner of Bath-street, Newgate-street, to the house wires leading from the test-box in the instrument-room, and which pass through a rack numbered to correspond with the terminals on the test-box. Having completed the joints at that spot, one man proceeds to the next joint-box, 400 yards distant, and the other to the test-box, where he commences numbering the wires by putting the current on the lowest number through a galvanometer, and when found by the man in the flush-box, three signals are passed twice each way. The wire is then fitted with a small piece of composite tube, on which a number has been stamped corresponding with the test-box number. Every wire is numbered in this way at the 400 yards boxes, so that at every joint-box the number of any wire is at once known. The men engaged in this work in London have had great experience, and although the whole of their joints will not, perhaps, to use their own phrase, "stand the shadow test" (Thomson's Reflecting Galvanometer), they are generally good. The greatest enemy they have to contend with is dirt, and although full instructions are issued, and every care taken, it is difficult to carry them out thoroughly in the streets of London. There have been several methods proposed for improving the joints in the streets, but as yet they have met with little favour from those engaged in the work. It has been the custom to make a twist joint, and now it has been suggested to insert the ends, after being cleaned, into a piece of slit copper tube, tinned on the inside, of about ¾ in. in length, after which it is soldered. This makes a good joint, and it is believed will prove beneficial, as it does away with the sharp points that must be left when a twist is made. A plan for insulating joints is on trial at several places. The two wires are passed through the wooden bottom of a short tin tube, the twist made and soldered, and then the wires pulled back into the tube, and the latter filled with melted paraffin wax. Such a system of mechanical jointing of course could not be used where it would be necessary to draw the joints through a pipe.

On the subject of maintenance, the author stated that within the past five years nearly the whole of the underground system in London has been re-laid, the number of wires having been found insufficient to meet the increased metropolitan traffic, as well as the additional wires rendered necessary on the railways and road lines for the rapidly-developing provincial business. This work has been effected with comparatively little or no interruption of the working circuits, and by far less than is experienced from renewals on railways or road lines.

The underground wires are tested periodically from the Central Station by means of a Wheatstone bridge and Thomson's galvanometer. To prevent stopping the circuit, two spare wires (where available) are used between St. Martin's and the point to which the tests are to be taken: one joined to an instrument for a speaking circuit, and the second as a substitute for the working wire during the time it is being tested. . . . . During the latter portion of the time the old building in Telegraph-street was in use, it frequently happened that a wire was worked out of a mass where there was nothing to identify it by. In that case, rather than prick the wires, a wire-finder, such as mentioned by Mr. Culley in his Handbook of Practical Telegraphy, was used, but it was found to be a difficult task, owing to the currents in the working wires affecting the needle. Eventually it struck the author that if he used a quantity current and the horizontal galvanometer, generally used for the Wheatstone Bridge, he should succeed. It proved to be correct; the quantity current only moving the needle. This plan has since been used in the street and answers admirably. In conclusion, the author expressed a hope that we might see the underground system extended far beyond the outskirts of London, believing that if the same care and attention were given to it as is given to submarine cables it would prove to be a great success.

DWELLINGS FOR THE POOR.

ROYAL INSTITUTE OF BRITISH ARCHITECTS.

A special general meeting of this Institute was held on Monday evening last, for the purpose of receiving the report of the Committee appointed at the annual general meeting on the 4th of May, 1874, "to consider and report to a special general meeting as to the financial condition of the Institute and the best means of increasing its efficiency." The report having been read, it was resolved:—"That the report of the Special Committee appointed on the 4th of May, 1874, be received, printed, and circulated among the members of the Institute, and that this special general meeting be adjourned until Monday, the 10th of January [1876], for the purpose of considering the report."

Mr. H. A. Darbishire then read a paper "On Dwellings for the Poor." The author, in introducing the subject of his paper, observed that the provision of suitable dwellings for the poor was a more difficult task than was ordinarily supposed. In addition to financial questions, there was the fact that that portion of the community generically described as "the working-classes" was subdivided into many sections, each representing a different rank in the scale of comfort and accommodation required. Their requirements were to a great extent determined by the wages they received. Experiments by which it had been attempted to promote friendly intercourse between these different ranks, by providing each with its own accommodation under the same roof, had usually failed, partly owing to the strong class prejudices, and partly because the humblest and neediest often preferred to hide their poverty in obscure courts and alleys to exposing it in an open thoroughfare. The claims of the higher sections had at first been

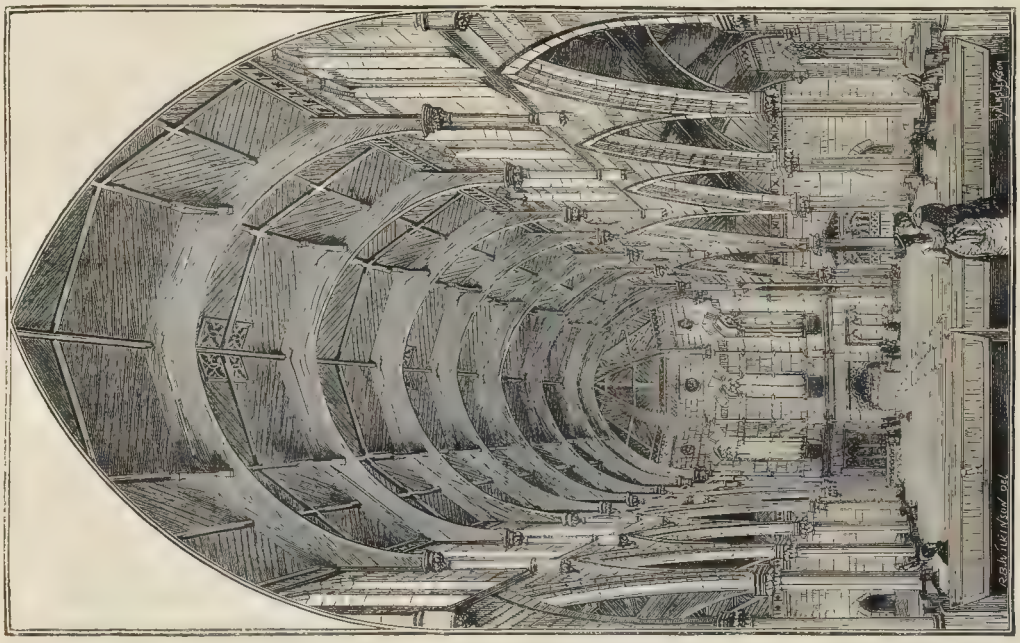
brought forward with greater prominence, and therefore had been more generally recognised; but latterly buildings had been erected for the purpose of meeting the wants of the lowest classes, represented by artisans and others whose wages average 25s. per week. Sanitary appliances of an elaborate nature were avoided, but light, fresh air, and a liberal supply of water, were held forth as the principal attractions of the model dwellings. The plan of the first erected was very simple. The rooms were arranged on either side of a central corridor lighted and ventilated at each end by windows and an open staircase. The water-supply was placed at the ends of this corridor, while washhouses and baths were on the topmost story. After a time this arrangement was modified. The position of the staircase was made more central. The water-services were provided in sculleries at each end of the staircase, while the bath-rooms occupied a sort of mezzanine floor. By degrees the wasteful habits of the tenants, which at first presented a difficulty, became influenced by their improved position; and an increased acquaintance with the ways of decent living made them more economical. The buildings most recently erected on an improved plan suggested by the experience of former trials are in Grosvenor-road, Pimlico. They are arranged in blocks of four stories in height, each story containing ten living and bed rooms. The blocks are placed together for the purpose of composing dwellings of various sizes without rendering any structural alteration necessary. Uniformity in construction and distribution of the walls is of importance, since it not only effects a saving of materials and labour, and therefore of time and money, but it secures rooms of regular shape, which is of great advantage to the tenants. In referring to the arrangements for ventilation, Mr. Darbishire observed that "the working man hates fresh air at home; the elements seem to affect him but little while he is at work and his blood is warm with exercise; but when his work is over, and rest allows his body to cool, he feels chilly and uncomfortable; he complains of draughts and too much ventilation, and attributing much of his uneasiness to the discomfort of his dwelling, he stops up every chink and crevice by which he thinks a breath of air might enter, and hugs himself at last in the clouds of smoke which his sulky fire pours forth in consequence. Experience has shown how vain it is to attempt any disguised device to save him from suffocation; however clever it may be, he finds it out and renders it useless; and unless the air, which *must* find its way in when doors and windows are opened from sheer necessity, is as free from stagnation and impurity as possible, the interior of the very best-arranged dwellings must be unhealthy and offensive." After describing in detail the appliances for lighting, ventilating, cooking, &c., adopted in workmen's habitations, Mr. Darbishire proceeded to enumerate the conditions which should regulate their arrangement in regard to (1) site, (2) drainage, (3) boundary fences, and (4) open areas and playgrounds. He then summed up the subject of his paper by submitting the following conclusions, which had been derived from his experience in dealing with the question:—"That before the working-class, as a whole, can be suitably provided with dwellings, it should be divided as far as possible into sections. That the standard of wages affects this division more accurately than any other, and affords the best means of determining the accommodation which is most consistent with the habits and mode of living of each section. That each section should have its dwellings arranged with strict reference to its requirements, so that they may not be too large for convenience, nor too confined for the purposes of decency and health. That the size, shape, and general construction of the dwellings affect their cost and adaptability to the site upon which they are built, their sanitary condition, and the resources of the tenants. That self-contained dwellings more than two stories in height are undesirable as residences for every section of the working-class, and the privacy which is put forward as their chief recommendation is proved by experience to be more apparent than real. That the rents of the dwellings should be proportioned to the wages of the section for which they are provided, and that no more than a fairly-remunerative profit should be expected from them, so that the tenants may obtain the greatest amount of benefit in return for their rent. That the evils of underletting are most serious, and considerably exceed the advantages derived from any mere commercial success which the buildings are able to yield by its aid. Lastly, that in calculating the cost of the dwellings, and the profit to be derived from them, their site and extraneous works in connexion with it should form a separate portion of the estimate, as being subject to variations from which the buildings themselves are exempt."

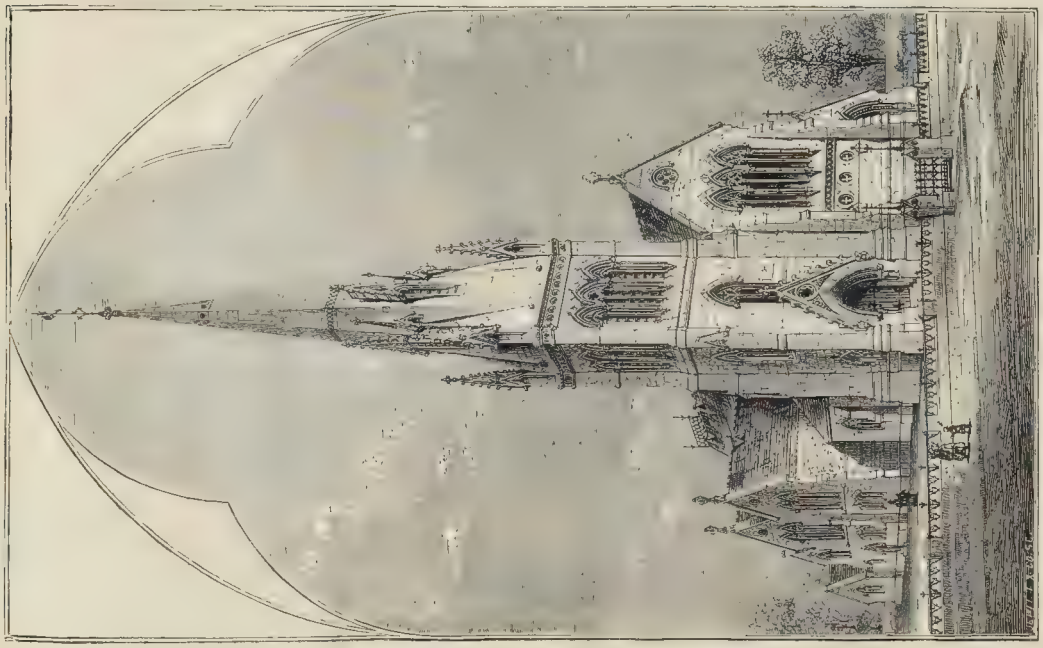
Mr. C. F. Hayward followed with a short paper on the same subject. He remarked that the story he had to tell was too well known, and too sad to be new. To think that we were now discussing how to meet one of the first necessities of life, and had got no further in our civilisation than to recognise the fact that thousands of honest men and women, and tens of thousands of little children, were living in places to which a clean dog-kennel was to be preferred! The few facts which he had to lay before the meeting were with reference to a neighbourhood with which he was officially connected as district surveyor, namely, St. Giles's. The overcrowding in this locality might be said to have been somewhat increased of late years; firstly, by the operation of that part of the Metropolitan Buildings Act which related to dangerous structures; secondly, by the clearance of the underground dwellings of the district; thirdly, by the operation of the Act of 1868, known as "Torrens's Act"; and fourthly, by the demolition of property, necessitated by the carrying out of street improvements, and by the erection of warehouses and other buildings. All these causes had combined to greatly reduce the number of the dwellings of the poor, no other dwellings having been substituted. It had been said that the poor thus displaced had migrated to other parishes, but this was extremely doubtful. From the year 1871 to the present time, thirty houses, containing 192 rooms, had been demolished in the district on account of their dangerous condition, displacing as many as 500 people. In 1872, the underground dwellings of the district were visited, and about a thousand persons ejected. Nearly as many more were disturbed by the operation of Mr. Torrens's Act, the houses being for the most part demolished, and nearly all the sites remained vacant at the present time. The number of persons displaced during the same period for the erection of business or manufacturing premises, and the carrying out of street improvements, was at least two thousand, making a total of nearly 5,000, or 1,000 per year out of a total population in the district of 53,000. The total number of dwellings destroyed was 207, and of rooms 1,434 (including the underground apartments no longer allowed to be inhabited). During the same period, in the adjoining parishes of St. Martin's and St. Anne's, there have been 600 people unhoused. Mr. Hayward here expressed his great regret at the recent death of Dr. Ross, late medical officer of health for St. Giles's, who was fully conversant with the subject of dwellings for the poor, having made it a study for many years. Mr. Hayward said he had intended, when he promised to supplement Mr. Darbishire's paper with some remarks on the matter, to have brought Dr. Ross with him. Having paid a tribute to the *Builder* as having been one of the pioneers in the movement for providing better dwellings for the poor, and as having done much, not only by its articles, but by means of woodcuts, to direct public attention to the wretched manner in which masses of the poor are housed, Mr. Hayward proceeded to quote from a report by the late Dr. Ross on the condition of the poor of St. Giles's, which showed that while the average death-rate over the entire metropolis was twenty-one per thousand, the rate in the southern part of St. Giles's was twelve per thousand more, or thirty-three per thousand. This was not the result of epidemics, but simply the effect of overcrowding. Mr. Hayward then went on to say that the provison of dwellings for the poor,—the really poor, the very poor,—was much more pressing than the provision of dwellings for artisans. Artisans, who seemed to be able to co-operate for the building of cotton-mills, and who frequently exercised their power of combination for less laudable purposes, could easily combine together for building their own dwellings, and thus show their independence of philanthropic or semi-philanthropic efforts for providing them with better dwellings. As a remedy for the deplorable state of things which existed with regard to the dwellings of the very poor, we must not look to construction alone,—that might be, and often had been, far in advance of the requirements of the case,—but we must look to the improved education (using the word in its broadest sense) of the masses. In providing dwellings for the very poor, the buildings must not be too good, although always capable of improvement. It was necessary to strongly insist on this, for the generous efforts which had hitherto been made had generally resulted in the production of buildings which were as much beyond the means of the really poor as an abode in Belgravia. The designer of buildings for the very poor would have to steel his feelings to the minimum of accommodation required. The dwellings should be airy, and the openings in outer passages need not be glazed. Separate storesheds should be provided wherever possible for the storage of baskets, boxes, and stock-in-trade of costermongers, &c., who should not be allowed to store their goods on the landings or in the passages of their dwellings. The rooms should not be too large, as the very poor had not much furniture. Watercloset fittings, &c., should be of the simplest and strongest kind. Mr. Hayward concluded by explaining a plan which he had prepared for a dwelling suited to the "low standard of habitability" of the poorest classes of the metropolis, remarking that if we commenced with a low standard of buildings, we might hope to improve them as their tenants began to know how to use them. By proceeding on this moderate scale of requirements the well-meant but disorganised efforts of kind-hearted millionaires and noblemen would be superseded, and a return of at least 5 per cent. per annum would be secured.

In the discussion which followed,

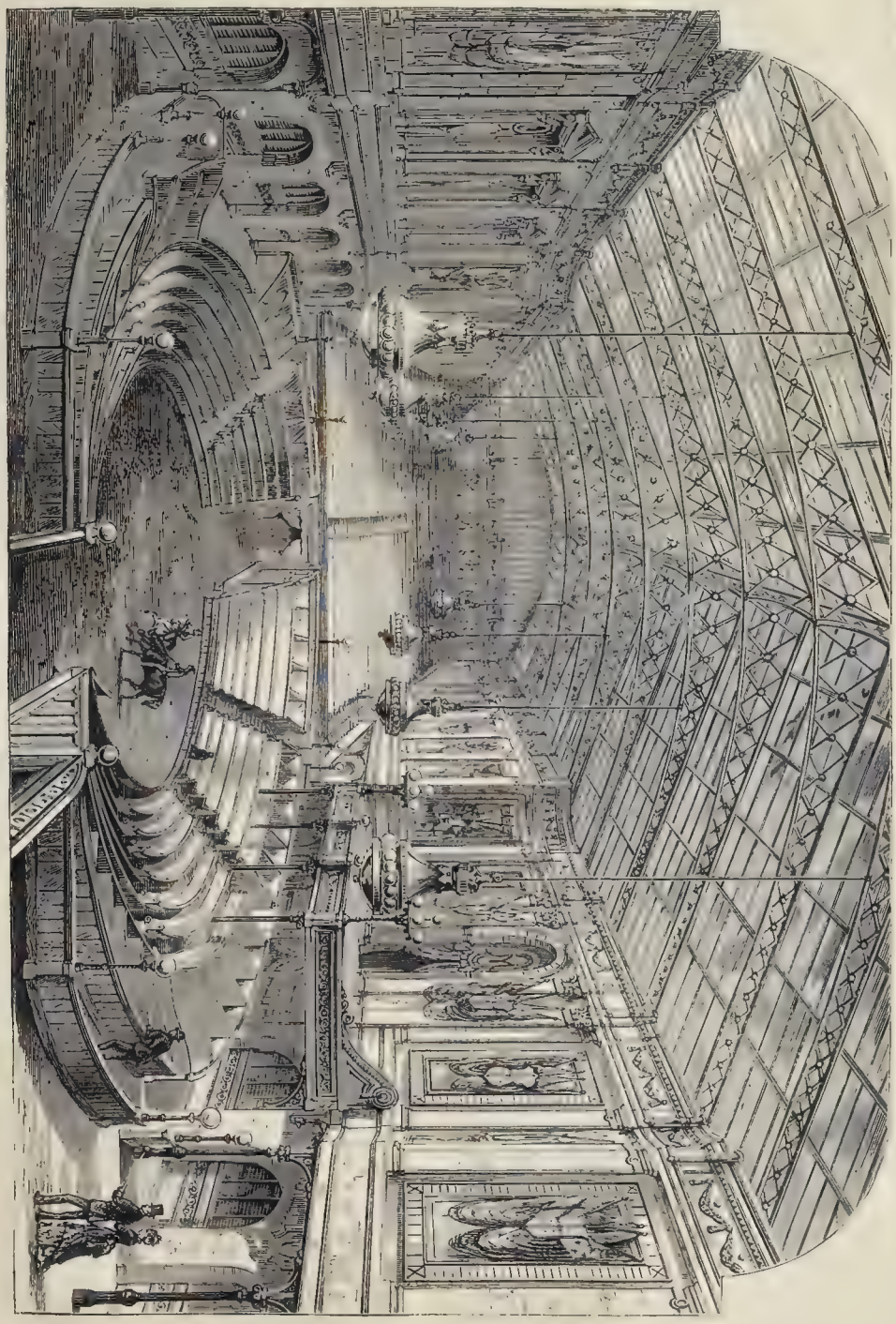
Mr. Gatliff, secretary to the Metropolitan Association for Improving the Dwellings of the Industrious Classes, said that the society he represented had had thirty years' experience in providing improved dwellings for the poor. During that period they had provided accommodation for 1,060 families, upwards of 800 families being accommodated in buildings five and six stories in height, and 230 in cottages or small dwellings, 164 of the latter being in the country, and seventy or eighty in Spitalfields. The cost of the large buildings varied from 42*l.* to 54*l.* per room, some of them having been erected twenty-five years ago, when building was less expensive than at present. The cost of the cottages averaged about 34*l.* per room. The rate of mortality in the buildings owned by the Association averaged only 14 per 1,000 over a period of eight years. The percentage paid by the Association was 5 per cent., and therefore dwellings of this class were a thoroughly safe investment. Last year, out of a rent-roll of 12,257*l.*, 12,101*l.* were received, leaving a deficiency of only 156*l.* for temporary vacancies owing to removals and repairs. The Association had generally selected plots of ground measuring about 200 ft. by 150 ft., and had built blocks of dwellings on three sides of this space, leaving the fourth side and the central space open as a recreation ground.

Mr. Charles Barry, in moving a vote of thanks to Mr. Darbishire, said he agreed with that gentleman in recommending that provision should be made in separate buildings for the different sections of the working classes, amongst whom there was as much class-feeling as existed amongst the upper classes. It would be futile to attempt to induce a mason or bricklayer to live in the same passage or on the same landing as that inhabited by a bricklayer's labourer. In one respect Mr. Darbishire's paper was disappointing; it had not been devoted to the discussion of what might be called the most important question of the day, namely, that of providing, on a commercial basis, healthy dwellings for the poorer sections of the working classes. If such dwellings could not be provided on commercial principles, then the recently-passed Artisans' Dwellings Act would remain a dead letter. But he did not think the problem was impossible of solution. It might be reasonably expected that far better and more suitable dwellings for the poor could be provided at a sufficiently remunerative interest to induce people to invest their money in such dwellings. He did not think any reproach need attach to the attempt to mingle philanthropic with commercial principles, so long as the latter did not tend to anything like usury. But what had been done by these agencies so far? The able report drawn up by the Superintending Architect of the Metropolitan Board of Works (Mr. Vulliamy), in conjunction with the Engineer to the Board (Sir Joseph Bazalgette), stated that "there had been twenty-eight associations of individuals who, from motives of philanthropy or commercial speculation, had, up to the present time, devoted





CONGREGATIONAL CHURCH, ENFIELD.—Messrs. Tarring & Son, Architects.



THE NEW CIRCUS FOR PARIS: PLACE DU CHÂTEAU D'EAU.—M. G. Gridaine, Architect.

themselves to housing 32,435, in all, of the artisan working class." But in a metropolis with a population of 4,000,000, this was solving only a very small portion indeed of the problem, and it was quite certain that if we were to depend alone upon philanthropic or commercial efforts on the part of individuals or associations, we should not be able to cope with the continually-growing evil of over-crowding. He quite believed that it was possible to provide the really labouring poor, earning from 15s. to 25s. per week, with decent dwellings, which, while within the means of the tenants, would yield a good return commercially. He was supported in this opinion by the statistics of six blocks of buildings built by Mr. Freake, and which paid 6 or 7 per cent. Each block was three floors high, and contained forty-two rooms, the cost per block, twenty years ago, being 1,500*l.* The cubical contents of each block were 62,000 ft., which worked out at a cost of 5·85d. per foot, or about 35*l.* 10s. per room. Mr. Freake charged 5s. 6d. for a three-roomed tenement, and 4s. 6d. for two rooms, and allowed no underletting to lodgers, this rule also being observed by the Improved Industrial Dwellings Company, of which Sir Sydney Waterlow is chairman.

Mr. Vulliamy, who was invited by the chairman to speak, said he had nothing to add to what was contained in the report alluded to by Mr. Barry. He was, in fact, rather in the position of a learner than in that of a teacher. He had had comparatively little experience of the subject in the past, although he had no doubt that for many years to come he should have to devote a great deal of time to it under the operation of Mr. Cross's Act.

Professor Kerr expressed a hope that the discussion would be adjourned, for want of time prevented justice being done to a subject of such vast importance to the profession. Certainly architects ought to be able to solve the problem of housing the poor on remunerative principles.

A Member said there ought to be no difficulty in housing the poor on remunerative principles for he found he could buy weekly property which would pay him 12 per cent. By buying up existing property, and improving it by the addition of extra cooking-ranges, &c., 8 or 9 per cent. would be secured.

Mr. Horace Jones said his experience, after going into the matter very closely, was, that the average return on weekly property was only a fraction over 4 per cent. He agreed with Mr. Hayward in deprecating too great an expenditure on accessories; for instance, there was no need to provide a separate water-closet for each tenement. Many of the blocks of improved dwellings which had been put up were too costly to come within the means of the very poor, but their costliness was due to the provision of accommodation which professional men who lived in such places as the Temple had to dispense with. What was needed was to provide light, airy rooms, soundly but plainly built, with the minimum of extraneous accommodation.

Mr. Edward Hall said he believed the solution of the problem of improving the dwellings of the poor of London involved several collateral questions, of which a comprehensive scheme of street improvement was perhaps the most important.

Sir G. G. Scott, in putting the vote of thanks to Mr. Darbishire (with whose name was coupled that of Mr. Hayward), said he did not see how the suggestion of Professor Kerr could be complied with this session, as every evening was filled up; the subject might, however, profitably be taken up again next session. The great work of housing the poor of London never could be carried out on a scale commensurate to the health of the population by philanthropic efforts only. It could only be carried out, as Mr. Barry had suggested, by tapping that enormous fund of wealth whose owners could not afford to give, but who could afford to lend, especially if some guarantee could be given of a moderate rate of interest. Were there no potent bodies who would guarantee a certain minimum rate of interest on such laudable enterprises? He thought the Corporation of London and the Metropolitan Board of Works, and even the Government itself, might safely give such guarantees. If they would do so, a great impetus would be given to the provision, on a commercial basis, of healthy dwellings for the very poorest.

The vote of thanks having been carried, Mr. Darbishire briefly replied.

The next meeting of the Institute will be held on Monday, January 3, 1876, when Mr. R. Reynolds Rowe will read a paper on "The Lantern of Ely Cathedral."

CONGREGATIONAL CHURCH, CHASE-SIDE, ENFIELD.

THE building known as Christ Church, of which we give exterior and interior views, was opened in November last. The plan is cruciform fronting the east, consisting of nave, aisles, and double transepts, with an apse at end of the nave, three vestries, and organ-chamber, and tower and spire at the south-east angle rising to a height of 160 ft.

The internal dimensions are as follow, viz.: nave, including apse, 108 ft. long by 23 ft. 10 in. wide, aisles 41 ft. 3 in. long by 10 ft. 7 in. wide, transepts 38 ft. 6 in. broad by 11 ft. deep.

The apse end is enriched with a carved and panelled reredos, including a sculptured panel in high relief of "The Last Supper." The capitals of columns, corbels, &c., are carved throughout with naturalesque foliage, and in the spandrels, formed by transept arches, are four panels carved with emblematical representations of the four evangelists.

The nave is covered with a timber roof, supported by principal rafters with carved ribs, and boarded between the purlins and intermediate principals; the transepts and aisle roofs are ceiled, but are divided into panels by the principals and purlins. The building is constructed of brick, faced outside with Kentish rag stone, and Bath stone dressings throughout, and inside with Bath stone ashlar, relieved with blue Bath stone bands. There are two entrances at front and two at back. There is accommodation for about 800 adults on the ground floor. There are no galleries.

The building has been erected by Messrs. Cooke & Green, builders, of Blackfriars, Messrs. J. Tarring & Son being the architects. The carving was executed by Mr. Sansom, the warming by Mr. Grundy, and the lighting by Mr. Hoydon. Mr. Jarvis was the clerk of works.

THE CIRCUS OF THE CHATEAU D'EAU, PARIS.

AN enormous new circus has been provided for Paris in a very brief space of time, and has been decorated and lighted by English contractors, Messrs. Defries, with the help of English workmen alone. Many of our readers will recollect the immense block of buildings known as the *Magasins Réunis*, in the Place du Château d'Eau. The *Magasins Réunis* were built some years ago by a company, which issued bonds redeemable in fifty years, for the purpose of co-operative trading; but the scheme not proving successful, the lease eventually fell into the hands of Baron Erlanger. A lease has been taken for twenty years of the courtyard and façade of this pile by Mr. Myers, and within the courtyard the circus has been formed. M. Gritaine, architect, of Paris, by whom the structure has been designed, has enabled us to give a view of the interior, and informs us that the circus will contain 4,000 sittings, besides considerable standing-room in the promenades, and that he is arranging to add to this a large "*balcon*" facing the orchestra, and some private boxes. He had engaged that the circus should be completed, with the exception of the upholstery, with which he had nothing to do, in eighty days, and this has been done within the time. Besides the circus, there is a large saloon about 250 ft. long, lined with looking-glasses and red velvet hangings, with girandoles and fountains. There is also an American Bar, about 110 ft. long, in the front, next the Place du Château d'Eau, handsomely decorated, the ceilings adorned with sculpture and artistic paintings. The stables are under the rising seats of the circus, and afford accommodation for eighty horses, besides elephants, camels, and lions, with a tunnel to admit of a carriage driving from under the seats without being seen by the audience. Dressing-rooms, property-rooms, and so on, are provided in the basement. The circus, entirely constructed of iron and masonry, is said to contain literally nothing to burn but the *fauteuils* and the actual seats of the *gradins*, supported on iron. The court in which the circus is formed having a glazed iron roof, the architect has painted the whole of it, and formed beneath it a fine network of galvanised iron wire to prevent the possibility of accident from the fall of broken glass. We may add that the circus is completely isolated from the rest of the building by an enclosure of iron, and will cost 32,000*l.* The rent paid for the premises, on a lease for twenty years, as we have already mentioned, is 2,560*l.* per annum.

PARIS HOUSES.*

I PROPOSE to describe the construction of a first-class house in Paris, with the best modern appliances, which have come under my notice, or have been practically tested by myself. The house in question is, however, a mere fancy picture, sketched at different times, and from several examples. I will suppose that a well-to-do shopkeeper, who has been carrying on business on the boulevart, is seized, say about the year of promise 1867, with the idea of buying the house in which he has lived for several years, and the land upon which it is built. He might, of course, have been expropriated, and then he would have bought land elsewhere, or made special arrangements with the municipality; but to Englishmen the practice of expropriation must appear wantonly frightful, and so it is better not to refer to it. He intends not only to build a new shop for himself, in conformity with the tastes and fashion of new Paris, but he knows, from the experience of his neighbours, that the residences he can build over it will not only refund the interest of the money he will lay out in building, but also the annual rent of his shop. He employs necessarily an architect; the plans are ready and approved; he has obtained his *alignement*,—and to get one's line of frontage in a Parisian street is a thing quite as serious as getting married or buried,—the contractors have signed their agreements, and the principal one, the *maître-maçon*, is ordered to begin. The old house is pulled down, the site is cleared, and the master-companion marks out the trenches to receive the foundations of the new basement-walls; but below these are two large cubes of earth to be excavated for the construction of two cesspools required to drain two separate sets of water-closets, one set for the large residences, and one for the servants and a few small residences. A cesspool in Paris must be almost immediately under the water-closets it serves. The drain-pipe must descend vertically into it, and continue vertically to a certain height above the ridge of the roof. A junction-pipe, connected with the water-closet apparatus, enters this main a little below the level of each floor, and in juxta-position to this main is placed another pipe, which ascends vertically from the cesspool to above the ridge of the roof, the latter being used exclusively for ventilation. Both these pipes are attached to a strong wall, often the party-wall, with hoop iron, and completely enveloped in cement. The walls, bottoms, and vaults of these cesspools must, according to law, be built of *meulière*,† a reddish petrifaction, full of cavities, and very hard. It is found near Paris, and is little if at all known in England; and it affords an excellent surface to receive the coat of cement with which the walls internally of all cesspools must be covered, their internal angles being rounded. From the vault of each cesspool a communication must be formed with the courtyard, or at least some open area, and the top of this shaft must be covered with a stone slab, fitted into a stone frame. This slab is hermetically sealed, and only opened when the cesspool is full, and then it cannot be refixed until the interior has been officially inspected. These cesspools are so built that the top of their vaults is on a level with the floor of the cellars or basement story, which is perhaps extravagant. Sometimes the cesspools are constructed in the basement story itself alongside and not under the wine and coal cellars of the several tenants. While they have been building a gang of men have been occupied at another corner of the site. They are preparing *béton*, which learned professors tell is of Roman origin, and which, I venture to say, is less easily adulterated than the English concrete. In the corner alluded to a platform has been made of planks, on one side of which is a heap of pebbles and chips from the stone-cutters' yard, on the other a heap of sand, and under a shed close by a large number of sacks containing hydraulic lime, and some mortar is already prepared for use. Wheelbarrows are scattered about, and the bottoms of some of these are made with iron bars to hold the pebbles,—for it is necessary that these be thoroughly washed,—and consequently when placed in the wheelbarrows the water escapes from them through the iron bars. My *béton* shall be, perhaps, extravagantly good; and, as is well known, *béton* is a mixture of hydraulic mortar

* See p. 1100, *ante*.

† Its composition is quartz, carbonate of lime, aluminum, and oxide of iron.

with pebbles or stone chips, which must be hard, rough, about the size of an egg, and similar to those used to macadamise a road. The mortar and pebbles are sometimes very well mixed by a machine, but it is better done by hand; and for this purpose five wheelbarrows are required,—three with bottoms of iron bars, and two of ordinary make. The three first are filled with clean pebbles or chips, and the two others with hydraulic mortar. One barrow full of pebbles is wheeled to the wooden platform, and its contents are spread out over the entire surface; above these is uniformly spread a barrow of mortar. Then a second barrow of stones is deposited in the same manner, and a second barrow of mortar, which is then covered with a third barrow of stones. The heap is then turned over with spades; and with a three-pronged fork or hook the substance is dragged backwards and forwards by the workmen. The pudding thus made is considered to be sufficiently stirred when the pebbles are entirely enveloped in mortar. Before throwing the *béton* into the trenches a layer of gravelly sand has been spread over their bottom surface, which will prevent the mortar from becoming deteriorated with the soil beneath before it is properly set. There is no absolute necessity to ram *béton*, if only it be carefully laid. I have ordered it to be spread in horizontal beds of from 8 in. to 10 in. thick, and I shall begin the walls upon it almost immediately. No *béton* has been put under the cesspools, not because the soil upon which they are built is exceptionally firm, but because the principal walls of the building are not carried upon those of the cesspools. Under the principal walls there is a height of 2 ft. 6 in. of *béton*, and when they have reached a few feet in elevation I shall spread over the whole area of the building about 10 in. thickness of *béton*, the top surface of which shall be level with the top of the *béton* under the walls. Thus I can support the 9-in. brick partitions required to form the numerous coal and wine cellars which occupy the whole of the basement, for in Paris an underground story is seldom if ever inhabited. Double retaining-walls to protect a basement from damp, which are common in England, are seldom used, and the walls which touch against the earth are built of rough, hard stone, 2 ft. at least thick, coated externally with cement. These walls are now within a few inches of the street level; brick arches are being turned over the cellars between the partition walls, their flanks are filled up with more *béton*, and a general even surface is obtained about a few inches below the finished level of the ground story. A horrible odour pervades the works. Around the cauldron with a blazing fire under it, two men are dancing. One stops to throw into it a lump of bitumen, then a little gritty sand, and the other stirs up the contents. Suddenly one rushes off with a saucepan full of the boiling liquid and spreads it cautiously over a part of one of the walls; then a bricklayer lays bricks hurriedly upon this same spot, blasphemes and sucks his fingers; more asphalt is brought, always in a boiling state, and eventually two courses of hard bricks are laid over the principal walls. Ultimately a coat of asphalt about ½ in. thick will be spread over the whole area of the ground-floor, under stone, tiling, or parquetry, as the case may be. Above this level there are seven stories, including the roof to construct, and the existence of a shop on the ground-floor necessitates as much open space as possible. The weight of the internal walls must be concentrated upon a succession of supporting points or piers, which must be built in solid blocks of hard limestone. The difficulty of making a house-front appear logically constructive when a shop-window forms its ground story is lessened in Paris by the fact that each house has an entrance for the inhabitants of the residences over. This entrance (*porte-cochère*) is necessarily of stone and wide enough for carriages; and the lateral walls of it are of stone, although for the rest of the ground-floor front iron columns are placed between the stone piers. These columns are generally coupled in the thickness of the wall; so are the lintels they support, which are of rolled iron. These joists, about 10 in. deep, are secured together with wrought-iron collars about 4 ft. apart, and planks having been temporarily placed under them they are filled with bits of broken brick, pottery, lumps of old partitions, &c., and the whole "run" in fresh plaster. A solid lintel of iron and plaster concrete is thus formed about 18 in. thick and 12 in. deep, and say from 6 ft. to 8 ft. long. Sometimes, in very superior work, these lintels are filled up with new bricks carefully laid in cement; but where there is no risk of damp, plaster is as good, and certainly cheaper. Similar lintels are being placed over all the internal piers, and upon them the ends of the rolled iron joists forming the floor of the first story will be laid. These lintels also receive the weight of the partitions of the different stories over. The joists can be obtained of all scantlings at St. Etienne, near Lyons, and elsewhere up to 12 in. in depth, with flanges of comparative thickness and width. They are slightly curved, so that when enveloped in plaster and weighted they become almost straight. The completed flooring, including the plaster ceiling and the parquetry, will certainly not exceed 12 in. in thickness. The rolled joists, about 6 in. deep, are placed 30 in. apart; and at right angles to them are fixed wrought-iron bars of from ⅜ in. to ½ in. square, which are bent at the ends so as to clip the upper flange of the joist, and permit the bottom of the bar to be level with the lower flange of the joist. These bars are placed about 3 ft. apart, and as much as possible in a straight line; for, in this manner, they act as a strut. A blow with the hammer suffices to fix them, and this done the joists are necessarily stiffened. Upon these bars, in lines parallel with the joists and of the same length, light iron rods are laid. All this iron has received two coats of paint,—of iron minium (*minium de fer*),—and the skeleton of the floor is now ready to be *hourdé plein en plâtre*. This is a simple proceeding: a temporary ceiling of planks is erected under the skeleton. Upon this planking are thrown bits of old plaster, brick, and hard rubbish of all kinds until the whole space between the joists is filled up almost to the level of their top flanges. Liquid plaster is then run into and over the whole mass of iron and ballast; and the next morning it is possible to jump upon the floor and order the removal of the planking beneath it. But that useful substance plaster has a tendency to swell, and if a small cavity be not left between the solid plaster floor and the stone wall the latter will be pushed outwards. It is usual to tie in the external and party walls with iron bands looped at different points over circular iron rods (*ancres*) inserted vertically in the centre of a solid block of stone, and run in plaster. These bands are hooped together midway between the rods. This is the Parisian practice, and the chains laid on a level with each floor serve in stone construction the purpose of hoop-iron bond in brickwork. But in spite of the precaution usually taken to paint them, the insertion of such chains into soft calcareous stone, and indeed the insertion of any iron into limestone, is a hazardous proceeding, more particularly when plaster is used. Damp swells the plaster, rusts the iron, which then increases in bulk and cracks the stone; or it is ultimately reduced to carbonate of iron. For my part, I think it quite possible to build a solid stone wall without iron chains or cramps, and only use them in deference to the vested interests of the master-smith.

The building is now at the level throughout of the first story or flat, and the walls have reached to within a few inches of the finished line of parquetry. The foreman is engaged in finding the centres of his doors, windows, fireplaces, &c., and these centres are all carefully marked upon the plans. He has fixed to the scaffolding outside the walls strips of deal, and tells off upon them the distances from centre to centre of the front window openings. If the walls are rectangular, he tells off the same distances upon similar strips of deal fixed to the scaffolding outside the walls of the courtyard. Lines of thin cord are then stretched from one point to another, and the principal centre lines drawn, as it were, full size upon the works. Where these lines cut the walls, he spreads upon the latter a layer of plaster, and then with the aid of the plumb-line, square, and a piece of black chalk (*pierre noire*), he marks upon the plaster the centres of all openings, which marks remain until the masonry is terminated; and they serve again to find the centre of the keystone in the arch over. The first course has now to be laid over the shop-window lintels, and this is a projecting cornice of hard stone. The top of it forms the sills of the first story or entresol windows, which are casements, and descend almost to the parquetry. Up to this height the stones have been lifted with slight difficulty, either rolled upon an inclined plane made of planks, or pulled up by the "*chèvre*," a species of "orab." But, in the meantime, four tall masts, some 70 ft. high, have been fixed just in front of the façade. These will be connected at intervals with transverse planks, and further strengthened with cross-pieces, the whole forming, when finished, a skeleton shaft. Within it, the blocks of stone will be lifted to the height required by chains swung over a wheel fixed at the very top, the motive power being stationed at the bottom, and consisting of steam or water or manual labour, or the last new invention,—human force, however, being the most frequently employed, for in the present state of education it is the cheapest in the end.

The façade now being put together will be composed of solid blocks of freestone, about 22 in. thick to be laid in the same position horizontally as they were found in the quarry, and one of the reasons for this is that the bed of stone ought not to be exposed to the atmosphere. Nor ought the heart of the stone to be exposed. As is well known, the material used in building operations in Paris is a soft limestone found deposited by layers in the quarry, and it is extracted in large blocks. It is not worth while to saw those layers horizontally, even though it only requires the toothed saw to do it. The height of each course is the height of a layer of stone, and its power of resistance to the many deteriorating influences around it depends upon the free exercise of that natural action with which it is endowed. To use it as mere ashlar facing is positive destruction to it. In London the appearance of an ashlar face soon after completion is well known. The salts developed in the mortar behind it (of plaster, lime, or cement) force their way to the surface, and though Portland stone may be sometimes strong enough to resist the internal disintegration which the passage of such salts causes, the soft limestones of France suffer actual injury in their component parts from such action. Soft calcareous stone easily soaks up water, but it also easily ejects it; and provided the action caused by moisture be free from the outside to the inside of the stone,—provided the stone be so placed as to permit the moisture it has received from the outside to be drawn away from it in a fluid state, its component parts will not suffer deterioration. But if (as in the case of ashlar when only one side is free) the exposed face of the stone dries and leaves the heart unnaturally wet, the internal moisture, which must find a way out, will crystallise upon the surface which will become inflated and then scale off. Damp attacking a solid stone wall from the inside of the room which it encloses is drawn from it by natural means; but damp penetrating internally, a brick wall faced with ashlar destroys the latter, because the moisture cannot be drawn naturally through the stone, which on its external surface is dry. Consequently, if soft calcareous stone, such as that found at Conflans Ste. Honorine, at Méry, and in the more immediate neighbourhood of Paris, be used, it must be laid in solid blocks, and upon their natural bed. The fixing of one stone is but the repetition of another, just as the laying of one iron floor resembles another. M. Viollet-le-Duc explains how these stones should be laid. He says*:—"Each stone ought to be fixed in its place upon thick wedges of wood, leaving a clear space between the courses of 3 in. The mortar should then be spread under it over the whole surface to a thickness of nearly 1 in., then the wedges should be withdrawn and the stone allowed to descend upon the mortar, and pressed until only ¾ in. thickness of mortar remains to form a joint." It is needless to add that, as a rule, French workmen cannot be persuaded to do this. The joints are generally "run" in plaster. The stones are laid upon wedges about ¼ in. thick, and these are not withdrawn. Once in their places, and tested with plumb-line and level, the outside edges of the joints are stopped with thick plaster, and only a small hole left in one topmost corner, into which liquid plaster is poured until it overflows, and thus proves that the interstices between the blocks are filled. A joint thus made in plaster does not generally vary in height from ⅛ in. to ¼ in.; but it is not what ought to be considered a workmanlike joint.

The front wall is now ready to receive the principal cornice, the top of which is on a level with the base of the mansarde; and this level is about 65 ft. 10 in. above the foot-pavement, which is the extreme height allowed by law for a house on a boulevart of 20 mètres wide and upwards. There are, however, still means to construct one more story, and an apology for another. The one will compose a flat, and the other a host of small bedrooms, a few, perhaps,

* "Histoire d'une Maison."

to be let separately, and the majority to be apportioned amongst the various tenants for the accommodation of their servants, both male and female. These stories are both in the mansarde; but the lower one is so contrived that the external wall is perpendicular, and not sloping. The laws relating to roofs in Paris are as logical as they are precise, and all the ingenuity of the Mansards, both uncle and nephew, could not have evaded them had they tried. In streets less than 15 mètres wide, the roof must not exceed a height equal to half the depth of the building, including the projection of the top cornice; and the profile of the roof on the portion facing the street must not overstep a line inclined at an angle of 45°, starting from the extreme projection of the top cornice to the ridge. But in the case of this house, which is upon a boulevart of 20 mètres wide, the straight line of 45° may be altered to a quarter of a circle, whose radius is equal to half the width of the building, exclusive of the projecting top cornice, which must be left outside the quarter of the circle. The chimney-shafts must not break the sloping line of the roof, except at a distance of about 5 ft. measured horizontally from the external face of the front wall, nor must they rise more than 2 ft. above the ridge. The external face of the dormer windows facing the boulevart must be set back at least 1 ft. from the face of the front wall; and their width must not exceed 5 ft. from out to out. The compulsory setting back of the dormer windows favours the construction of a broad continuous balcony over the top cornice, which causes the fifth floor of a Paris house to be much appreciated. There is also a continuous balcony supported upon corbels over the first floor, and smaller balconies of slight projection to the other windows of this house. The balconies are constructed of slabs of hard lime-stone from 8 in. to 10 in. thick, moulded on the face, and their soffits are panelled.

Many of the Paris houses are roofed with rolled iron principal and common rafters and purlins all enveloped in plaster, forming sloping walls of great solidity. I intend to eschew all battens to receive the slates and lead flashings, for it has been satisfactorily proved in France that the best foundation for lead coverings is plaster. The mode of making lead terraces—without rolls or other excrescences and presenting a perfectly even surface—has reached a high pitch of development from the exertions of M. Monduit,* who, under the direction of M. Viollet-le-Duc, has successfully revived the forgotten traditions of the lead and copper beater's art; and with such success as to leave the firm, of which he is the worthy head, without a rival in Europe, and with very few imitators in England. Strips of iron are to be screwed to the iron rafters, and the slates will be suspended from them upon copper hooks. In very good work such as this, the lead flashings and lead "slates" are hooked—never nailed or fastened with cement—or they are dressed up freely under a projecting stone-fillet moulding. This practice is advisable, because the extreme heat and cold experienced at different seasons in Paris have a more potent effect upon the contraction and expansion of metals, than possibly London architects, whose deadliest enemy is damp, will choose to believe. The French dormer windows are, of course, of all sizes and shapes and almost of all materials. Some are of oak painted like lead, others of zinc, lead, and sometimes copper. Those which can be supported upon the front wall are generally of stone. In the time of Louis XIV. they were often made of oak and covered with lead. But it is now known that oak deprived of communication with the air destroys its lead covering. The same action does not take place, at least so rapidly, when the framework is of deal. But, for my lead dormers, the crudest possible skeleton in iron has been put together and painted. Upon this the skilled workman has adjusted the different pieces of beaten lead ornament, moulding, or plain covering, as the case may be. He has soldered them together at the back and round the iron; and the dormers finished at the workshop have only to be packed and sent to the building, of which they form no insignificant part. Similar, but of course more elaborate works, upon a score of public and private buildings in France, are due to the ordinary workmen taught in the workshops of M. Monduit; and I have seen some of them converting, with eye and hand alone, rough pieces of copper and lead into human shape from a full-size drawing suspended before them.

The roof is now covered in, and the party-walls and chimney-stacks are finished; but the façades fronting the boulevart and the court-yard have yet to be dressed, cut into mouldings, and carved, for at present the different architraves, cornices, pediments, and mouldings have been merely "blocked out" by the ordinary stone-cutters. Another set of workmen have now to shape them according to the full-size profiles which they have received from the architect. All the nearly horizontal surfaces of the stone exposed to the weather, excepting the balconies, will be covered with zinc. Where there are no projecting balconies to the windows the sills will be covered with zinc. A mahogany rail will be fixed in the opening upon iron brackets, secured to each reveal, for all the windows of a Paris house are casements descending to within a foot or less of the parquetry.

As the carvers and sculptors finish, the scaffolding descends from story to story, until, arrived at the ground-floor, the Parisian architect may pardonably congratulate himself upon having accomplished a piece of work fairly artistic when compared with similar work executed in another and a neighbouring capital. But he does nothing of the kind, for he knows that his troubles only begin when the roof is covered, and the task of completing the interior begins. He has summoned the contractors to wait upon him at the usual hour,—between seven and eight a.m.,—when the detail drawings, copies of which are already in the hands of the joiner, smith, and smaller tradesmen will be re-examined by both architect and contractors. On the same day there will be an appointment at the works, and the curious passer-by will possibly see, towards four in the afternoon, a crowd of respectable, sometimes polished-looking, men standing in a forest of scaffold-poles. These are the contractors. They are seldom displeased at being often kept waiting, and some, doubtless, while away the time by deploring the last Revolution and discussing the next. Suddenly they all take off their hats, for the architect has arrived, and has summoned the master-companion to attend him in the inspection he is about to make in company with the whole bevy of contractors. As he passes through the works the men salute him, and from the beginning to the end of a new building he is the recognised master-of-the-work, whose decision is final, and whose position is unassailable. And the politeness with which they treat him is increased when, as I know from personal experience, he sometimes happens to be a foreigner.

The first thing now to be done is to fix the principal staircase, and this shall consist of a comparatively new combination of iron and plaster with treads of white marble and a wrought and cast-iron railing covered with an ebony hand-rail. An iron carriage of an L shape, the upper edge of which is cut into the requisite number of steps, is secured at the bottom to the brick vault or a wall, and at the level of the first landing to a joist much the same as in wood construction. Each riser is a piece of thick sheet-iron fixed at one end to the carriage with an angle plate and bolted, and the other end is inserted in the wall. To form the soffit, iron bars must be placed below the risers; one end of them is secured to the flange of the carriage, and the other let into the wall. Upon these bars thin iron rods are laid, and this skeleton is filled with plaster concrete in the same way as the iron floors are treated. Not alone the soffit, but the section of the stairs, is thus formed, and upon the latter will be fixed slabs of white marble with the moulded nosing of each returned over the iron carriage. The landings are formed with iron joists, bars, and rods, in the usual way, enveloped in plaster concrete. This horizontal plaster surface will afterwards receive a marble covering, the border of which will be in slabs of white marble, and the centre in small cubes of coloured mosaic work. The standards of the iron railing will be fixed to the external face of the carriage, and the soffits of the stairs and landings will be finished in plaster in the usual way. The metal portions will be painted not to imitate marble, but with iron minium obtained from Belgium. A few years ago a small staircase of this description was constructed by M. Millet,—the architect of the Château de St. Germain,—in a house erected for himself, with one exception, that the treads and landings were covered with polished oak instead of white marble.

The staircase fixed, contractors and architects can get up to the fifth floor, which is to be let as a residence, and so the living-rooms and the vestibule must be boarded with polished oak parquetry, only the kitchen, and the passage leading to it, will be tiled. The oak door frames have now to be put in their places. In walls of one brick or more thick these frames are fixed with cramps, or rather staples, against the face of the wall; the reveal is made with plaster, and on the opposite side an oak architrave about as thick as the plaster coat, is secured with iron staples. These staples (*pattes*) are screwed at one end to the wooden door-posts, and at the other are split into claws, which are inserted into the wall, and fixed with plaster. The junction of the wood and plaster is concealed by wood mouldings. In Paris, no wood lintels are ever used. In a solid stone wall the arch over an opening is made through the whole thickness of the wall, and the rebate to receive the wood frame is cut after the building is covered in. The frames are fixed in these rebates with iron staples and plaster. In a brick wall which has only its own weight to support, the openings are covered with iron bars, upon which bricks are laid in the form of an arch, and the whole enveloped in plaster. The ceilings and cornices will be much more artistically finished than people are accustomed to see in England; and, descending from floor to floor, the ornamentation of both will increase in value. The common use of *carton*, and the fact that in Paris there are firms of decorators who possess in their workshops models of nearly every form of enrichment invented since the sixteenth century, renders it possible to impart to any set of rooms any fashion of architectural ornament. A client has but to say that his drawing-room must be in the style of Louis XIV., XV., or XVI., and hey! presto! it is done,—mere manufacture, doubtless, but not more so than the corresponding custom in this country of presenting a client with Early, Middle, or Late Pointed details, according to inclination, and the contents of the buyer's purse. These applied ornaments of *carton pierre* are generally of a more delicate description than can be obtained in London, and celebrated decorators like MM. Huber, Brothers, are hardly known here; yet some of the best buildings in France, and others in Germany and Egypt, have been carved and ornamented by them. French woodwork is often overloaded with what, when painted, appears to be carving; but, generally, the enrichment is *carton pierre* stuck upon wood mouldings. In all flat residences, mirrors with gilt frames are placed over all the fireplaces, those of the bedrooms included, and they are considered neither as fixtures nor furniture, but as part of the architecture. In the better class residences the fireplaces are built for the consumption of wood, as of old, but in the smaller ones cast-iron grates are now introduced for burning coal. The fittings of the shops are usually left to the taste of the tenants who are to occupy them, although the cost is defrayed by the landlord. The sanitary arrangements of a Paris residence are perhaps not so satisfactory as those of a London house, but the water-closet apparatus is quite as scientifically made as that in use here,—particularly when it is remembered that the existence of a closed cesspool renders a copious flow of water almost impossible. Ever since the time of Louis XV. this monument of human humiliation and relief has been called by Frenchmen "*l'Anglaise*,"—a compliment which Englishmen with habitual modesty are probably not unwilling to accept. A host of other things ought to be described, but time is relentless. Suffice it to point out sundry little peculiarities of French custom in domestic life and its architecture, and the difference between it and that of England.

The ordinary Paris house is built of stone, iron, and oak; the ordinary London one of brick and deal. The common house fronts of Paris are the works of educated architects; scrape the outside of a superior London residence and it will be found to be only Gower-street disguised. The Parisians love the open air, large casement openings and balconies, and they are not ashamed at being overlooked by their neighbours and the passers by; the Londoners shun their native fog, prefer sash windows or guillotines, and are often woefully afraid of being observed. The Parisian uses his bedroom by day, and only eats in his dining-room; the Londoner often sits all day in his dining-room, and only sleeps in his bedroom. The Parisian system of iron floors is almost fireproof; in London it is only those

* To the well-known firm of which this gentleman is the head France is indebted for the lead and copper enrichments on the dome of the Invalides, the roofs of the New Opera House, the Cathedral, &c., in Paris, the Château de Pierrefonds, and a host of châteaux new and old throughout the country.

buildings technically called fireproof of which when burning the firemen are afraid. In London the gas circulates in the walls, between the joists through cellars and roofs, in pipes embedded in plaster or cement—a perpetual and hidden source of danger; in Paris no gas-pipes can legally be concealed except they pass freely through an iron or zinc tube having at each end direct communication with the open air. The floors of ordinary Paris houses are lined with polished oak artistically laid; those of even the best London houses are of rough deal. In an ordinary Parisian residence it costs at least 10*l.* a year to keep the oak parquetry bright, whereas English carpets could be got to cover it for less than 40*l.* cash, and they would last five years. The French use carpets which are always movable; those of the English are rarely raised. Of the odours which sometimes emanate from houses in London many are born of the carpet; those of a Parisian drawing-room savour of bee's-wax. The walls of the latter are painted and often gilt; those of a London house, even a fashionable one, are papered. Bugs are of both nationalities, but the London bugs are better cared for than their Parisian cousins. The latter can find but slight shelter in roof-rafters and floor-joists forming a concrete mass of iron and plaster; the fir and deal combinations of the London speculating builder's house are just the thing for vermin. The party-wall of a block of Paris residences is a solid mass, 18 in. thick, and no flues may be constructed within it; that of a London house is in parts so permeated with flues and fire-places as to leave only 9 in. of solid brickwork between two houses. The Parisians use thin walls of hollow bricks supported upon the iron floors and lintels; the Londoners rack their brains over the philosophy of a wooden trussed partition. Parisian doors are generally folding, and as specimens of joinery are thin, leaky, and inferior. The iron and brass furniture upon them is clumsy. The locks are never mortised, and always dangerous to unwary fingers. A French key is a thing to look at, not to handle, and it is an awful object of contemplation. With the exception of the *espagnolette* and the *crémone*—instruments for fastening casements and folding doors—the English locks and keys are incomparably superior. A London kitchen and its offices occupy a whole floor and represent the extreme of wastefulness; a Parisian kitchen covers a space of about three or four yards square, and is the extreme of economy. The Parisians every morning deposit their dust at the side of the roadway, where the dustmen, both private and municipal, are ready to take it away; the Londoners carefully store their refuse for days together beneath their own and their neighbours' noses. The Londoner employs many servants, the Parisian few. French middle-class wives help their husbands in the trade or profession they exercise, and are proud of office or shop. English wives of the same class often live in villas and ignore both. The Parisian cheats posterity, the Londoner overburdens it. In London several families often live in a house constructed for the accommodation of only one: in Paris, as a rule, each family lives in a self-contained residence. Generally speaking, Paris lives in, and London out of Town; and when once at home, the Parisians are lodged horizontally, the Londoners vertically. The former walk, the latter climb, from room to room.

William H. White.

THE NEW KARAKEUI BRIDGE, GOLDEN HORN.

The masonry of the abutment on the Stamboul shore of the Golden Horn being nearly finished, it is hoped that the opening of the new iron bridge to traffic will not be delayed much longer. It was in 1872 that the Ministry of Public Works contracted with Mr. George Wells, C.E., represented here by Mr. Ross Taylor, C.E., for the construction of an iron bridge, to replace the old wooden structure connecting Galata with Stamboul, and it was then stipulated that the work, including the placing in position of the new bridge, should be completed by July 28th, 1875. The *Levant Herald* says that, according to the original contract, the undertaking was to be executed for a sum of 95,000*l.* The bridge was to be 450 mètres, or about 1,350 ft. in length, and was to have been laid across the Horn, not at Karakeui, but between Azap-capou and Oun-capan. Shortly afterwards the Government changed their mind as to the position of the bridge, and the order for the material having already been given to an iron-foundry of Newcastle, a new contract became necessary. Messrs. Wells and Taylor having in the mean time quitted Constantinople, the second agreement was signed by a third party, acting temporarily as Mr. Wells's agent; but the document omitted to specify the dimensions of the bridge, a modification whereof was rendered indispensable by the change of site, and this omission was at once noticed by the contractor, who pointed it out to the Ministry of Public Works. That department acknowledged that, in view of the change of site, the length of the bridge would have to be increased to 486 mètres, but availing themselves of the omission in the contract, refused to allow anything above the contract sum of 95,000*l.* for the extra 36 mètres. The contractor hereupon had recourse to a suspension of the work, and a litigation followed, which ended in a compromise, the Government consenting to pay some 6,000*l.* in excess of the sum originally stipulated. The works were then resumed, but the prospect of their completion within the allotted period became again doubtful in consequence of a fresh difficulty. It was found on examination of the stone abutments that they were hardly solid enough to support the weight of the bridge, and it was deemed necessary to demolish them partly so as to rest the iron piles of the bridge on the more solid portion of the masonry. Surveys were held, and after considerable delay, the Government asked the contractor to add 20 ft. of ironwork to the bridge at each end, agreeing to pay him an additional sum of 3,000*l.* for the prolongation. The extra ironwork was accordingly ordered out from England, but when the bridge, thus lengthened, came to be placed in position, it became apparent that the Ministry of Public Works had given about 9 ft. too much in its estimate! To remedy this error, it was determined to cut out a basin in the abutment on the Stamboul shore, and this expedient was attempted. But when the workmen, in cutting away the masonry, arrived at a certain depth, they encountered the iron clamps which hold the blocks of stone together, and through which it was impossible to cut without causing the whole of the abutment and the contiguous stone wharf to give way. In this dilemma, the Government requested Mr. Taylor to raise the level of the bridge by 3 ft. at the Stamboul end and by 2 ft. on the Galata side. Mr. Taylor at first opposed this demand, having already, on the dimensions given by the Ministry, fixed the height of the bridge at the extremities at 7 ft. 3 in., but he ultimately consented. The level of the bridge at both ends was therefore raised by the discharge of a portion of the ballast in the pontoons. But the bridge itself having been ready by the 28th of July last, according to contract, the contractor, declaring that the subsequent delay had been due entirely to the Ministry of Public Works, now claims an indemnity of 100*l.* for each day that shall have elapsed between that date and the final delivery of the bridge into the hands of the Government.

THE INFLUENCE OF EXHIBITIONS IN DIFFUSING A TASTE FOR ART.

Professor Archer, F.R.S.E., director of the Liverpool Museum of Science and Art, and president of the Royal Scottish Society of Arts, was entertained at dinner by the members of the Liverpool Art Club on the 22nd ult. Subsequently he read a paper before the members "On the Influence of Exhibitions in Diffusing a Taste for Art." He said wealth was absolutely necessary to art. No man could have leisure to indulge in æsthetical pleasures until he had insured for himself immunity from those cares which were inseparable from the struggle for existence. The Frenchmen and Italians had more refined taste than the English, and he believed it arose from the fact that they had grand galleries of art—exhibitions to go to; and the art feeling learned in them, and carried from one generation to another, had survived even the debasing influence of francs and centesimi. These were facts with respect to Continental nations, but there was one connected with their own which was worthy of note, but it rarely, if ever, had been considered. No matter how low the popular taste had fallen, there had always been a select conservative few who had felt the love of art in its highest and best qualities, and who had gathered and garnered in their homes treasures of art which made the nation rich in art possessions. They formed exhibitions in their own houses. The gleanings of the Exhibition of 1851 were brought together at Marlborough House, and formed the nucleus of that grand collection at South Kensington, which, whatever the typical English grumbler might think and say, was the greatest and best school for the art student in the world—a fact which was now unhesitatingly admitted even by Frenchmen. Through all grades of society good seeds were sown, and although their germination and growth might have been slow, we were now beginning to see the fruit ripen. Lancashire could boast as many *connoisseurs* in art, and as many choice collections, as any similar extent of the civilised world; and it would be most unfair, and he ventured to think untrue, to deny that much of this taste, good and bad, was due to the Manchester Exhibition. He believed he was especially right in calling it a great exhibition, for he did not believe that any other country than Great Britain could have formed such a one. It was only a careful selection from the art-treasures of private collections; there was no State aid, and no contributions from the national collections, and in this respect the Manchester Exhibition was unique. It would always be a matter of deep regret that so little was done to secure for the museums of this country from the rich abundance of beautiful objects which could have been obtained in every department of the Vienna Exhibition. No nation could have reaped greater good from purchases judiciously made than we could, and yet nothing, comparatively, was spent. Messrs. Elkington's magnificent work, "The Poetry and Music Vase," the Worcester porcelain decorated by Bott, and several of the splendid productions of Mintons and Copeland, were of such a character as to make them of national importance as museum specimens, and to lose them was a misfortune to the nation. Happily, there was in these firms a spirit of patriotism, as well as of progress in art, and it is well known that, for some of their finest things, they refused foreign offers, preferring to keep them on their hands rather than let them leave this country. Doubtful as this might appear, it was nevertheless actually the fact. The museum authorities of Austria, Prussia, Russia, France, Bavaria, Wurtemberg, and the United States of America, all bought more largely of art-objects in the Vienna Exhibition than we did.

THE LINCOLN TOWER, WESTMINSTER BRIDGE-ROAD.

Christ Church, at the angle of Westminster Bridge-road and Kennington-road, which has for some time been in course of erection to replace Rowland Hill's Chapel in Blackfriars-road, which is about to be taken down, is now almost completed externally. The whole of the building has been covered in, and the more prominent architectural features, consisting of the Lincoln Tower, the tower and spire over the central octagon, and that surmounting the lecture-hall, are now receiving their finishing touches. The Lincoln Tower has been finally completed within the last few days by placing the vane on the spire, and the scaffolding is now in course of removal, distinctly exposing to view the large proportions of the lofty structure, which, with the exception of those at the Houses of Parliament and Westminster Abbey, is said to be the highest tower in the metropolis. Its exceptionally great altitude is proved by its being visible at distant points along with the Victoria and clock towers, and the towers of Westminster Abbey only, although the new structure stands upon comparatively low ground. The tower is carried up to a few feet below its turrets in Kentish rag stone. From this point the materials of the structure, including the whole of the spire, are Portland stone. The latter is octagonal in form, and one of its distinctive features consists of bands of red Dumfries stone being carried round it at three different elevations, between which are carved stars on the Portland stone facing, intended to represent the stars and stripes indicative of the several States of the American Union. Similar carved stars are also carried round the upper portion of the tower.

The Pollution of the Thames. — A summons has just been issued against the Local Board of Hampton Wick (of which Mr. T. J. Nelson, City solicitor, is chairman) by the Thames Conservators, to recover 94,000*l.* for penalties incurred by failure to divert their sewage from the river Thames.

BELFAST ARCHITECTURAL ASSOCIATION.

On the 6th inst. a general meeting of this Association was held in the Museum, College-square North, when a paper was read by Mr. Conway Scott. Subject,—"Notes from an Engineer's Field-book." Mr. Robert M. Young, hon. secretary, announced that in addition to other prizes, Mr. Vere Foster has offered prizes amounting to 6*l.* for the best design for a town school-house, and Sir Charles Lanyon has expressed his intention of giving a prize of 2*l.* 2s. Mr. Scott proceeded with his lecture,—the first part of which dealt with personal experiences in the survey and formation of great American railways,—the camp life and scenery of the country, its topography, races, and mineralogy; and in the second part he referred to Canada, the Grand Trunk Railway through the British possessions, the question of emigration, and other subjects of an interesting nature. The paper was spoken to by Mr. Lockwood, Mr. R. M. Young, Mr. W. R. Jackson, and Mr. Watts; and on the motion of Mr. Jackson, seconded by Mr. Watts, a vote of thanks was passed to Mr. Scott.

THE SURVEYORSHIP OF THE BRENTFORD LOCAL BOARD.

Sir,—I am pleased to see that the letter which appeared in the *Builder* of the 4th inst., signed "One of the Humbugged," and to which you were pleased to append an editorial note, has come under the observation of the members of this body.

Being a disinterested party, I was thereby enabled to read both letters, signed respectively "One of the Humbugged" and "Stephen Woodbridge," with an impartial feeling; and, in comparing the two letters, I find that the real cause of complaint in the former letter is not in any way mitigated by the statements contained in the latter, but I should rather infer from its perusal that the whole affair was "cut and dried," and that the insertion of an advertisement inviting applications for the surveyorship was a farce. As to the statement made by Mr. Woodbridge in his letter,—"That at the time the advertisements were issued no member of the Board (not even, I believe, the gentleman who was eventually elected) had the least idea that the member referred to would be a candidate for the office," I think such a remark an insult upon the readers of such a paper as the *Builder*,—a statement, I believe, that would not be accepted as a fact by the most credulous reader of its pages. If it is to be supposed that there is a shadow of reason in the accuracy of such a statement, then we must force the belief upon ourselves that when the advertisement appeared it was found to contain the magnificent offer of 120*l.* yearly, and this large income so much worked upon the mind of the selected (believe) candidate that he "condescended" to resign the membership of the Brentford Local Board to become its surveyor.

I inclose my card. L. L.

*** The *Richmond Times*, commenting on the letter which appeared in our columns and the answer which has been given, says:—"Now, it may be perfectly true that none of the Board had any previous knowledge of Mr. Figg's intention to apply for the surveyorship, but they must not be surprised if outsiders formed a different opinion, especially before any public contradiction had been given to the letter in question. It may even be quite true, as Mr. Figg avers, that he did not 'make up his mind' to become a candidate until the day before he sent in his application; but if so, some kind friend must have 'made up his mind' for him; for we are not overstating the case when we say that his candidature was a common topic of conversation throughout Brentford some time before he applied,—indeed, we personally heard of the matter at least a week before."

THE WAGES QUESTION.

CASE UNDER THE EMPLOYERS AND WORKMEN ACT.

Mr. H. R. Gill, a carpenter and builder, in business at Polygon, Somers-town, appeared before Mr. Barstow (Clerkenwell Police Court), to answer a claim which was made against him by Arthur Abbott, journeyman carpenter, of Wharfdale-road, under the provisions of the Employers and Workmen Act, 1875, for 4s. 7d. alleged to be due to the plaintiff by the defendant for wages earned by the former, being 1d. an hour on fifty-five hours' work, from October 19th to and including October 25th, over and above the sum of 8d. an hour due by the defendant to the plaintiff for such work. The plaintiff, who is a skilled workman, was engaged by the defendant's foreman on October 19th, and at the end of the week he was paid at the rate of 8d. per hour, whereas the practice and custom of the trade was (it was said) to pay 9d. per hour. The plaintiff said the question had been settled by the delegates of the employers and the men. Had never received less, though he had worked for several employers in different parts of the metropolis. Mr. Marten contended for the plaintiff that he was entitled to recover by the custom or usage of the trade. Cases bearing on the point having been stated by the learned counsel, Mr. Barstow said the question was whether there was a custom throughout the entire trade to pay to skilled artisans 9d. per hour. At present he was of opinion that there was not. Witnesses having been examined on the subject, Mr. Barstow said it was the duty of the person seeking to be hired to ask what was the rate of wages he was to receive. The plaintiff had not done so, and therefore he considered that he was bound by the rate of wages that was paid to skilled artisans in the defendant's shop. He dismissed the summons, but refused to allow the defendant any costs.

THE TOLL-GATES ON THE DULWICH COLLEGE ESTATE.

It is stated that the governors of Dulwich College have resolved to abolish the several toll-gates on the estate, which, it is said, have had the effect of decreasing the traffic on the particular roads where toll-gates exist, and thus injuring the college property for building purposes, notwithstanding the great increase of building in the neighbourhood generally. It appears that the necessity for the tolls was never urgent, inasmuch as the cost of repairing the roads has not amounted to half the sum paid by the public in tolls, the balance being profit to the governors. For several years after the reconstruction of the college in 1857, the tolls of the college estate roads realised 500*l.* per annum. During the years 1859–62 the total cost of repairs to the roads and expenses was 673*l.* 12s. 6d., being an average outlay of 229*l.* 9s., giving an average profit of 270*l.* per annum. In 1862 they were let for 520*l.*, and from March, 1867, to March, 1868, the contract was 580*l.*, the actual receipts for ten years down to 1867–68, being 5,183*l.* 13s. 11d., or an average of about 518*l.* per annum. It seems that since 1868 the annual value of the tolls have been constantly decreasing, in consequence of the continued falling off of the traffic in the roads in which the toll-gates are placed, and it is said that one of them, at the end of Lordship-lane, does not now even pay the expenses of keeping up. Under these circumstances it is not surprising that the governors of the college should contemplate their entire abolition, a step which, if carried out, will doubtless give an impetus to building on the estate, and thus add to the annual revenue which the governors at present receive from their tenants from ground and other rents. It is suggested that, in the event of the tolls being abolished, the Camberwell vestry would undertake the task of keeping the roads in repair.

A DELIGHTFUL PLACE!

Dr. Verity reports that, last week, he paid a visit to some of the huts built on Hirwain-common, Bryncethin, Glamorganshire. He says the huts are made of turf, and therefore in wet weather absorb moisture. They are much overcrowded, and from their present construction it is not possible to remodel them so as to make them fit for human habitation. The huts are erected on ground saturated with wet, and constructed with one basement floor, and each contains one general room and two sleeping-rooms. The size of the rooms are 12 ft. by 12 ft., and 7 ft. high. In one of the houses he found six adults and four children; in another, eight adults and four children; in another, seven adults and five children; in another, nine adults and three children; in another, five adults and four children; and another, five adults and four children. There is no drainage to the huts to carry away the rainfall or slops; they are crammed full of families, all huddled together irrespective of age or sex. The walls are generally moist, by reason of the damp nature of the materials used in their construction. The wind penetrates through the interstices, and the walls are insufficient to maintain an equable temperature. The floors are damp and made the receptacle of refuse and filth. There is no closet accommodation attached to one of them. The living apartments are overcrowded, as many as eight sleeping in one room; and this state of affairs does not rouse the proper authorities. Glamorganshire always boasted of its sanitary condition. Is there anything to boast of here?

SEWER GASES AND SMELLS.

At a recent meeting of the Poplar District Board of Works, Mr. Bracebridge rose to move "That a special committee of six members of this Board be appointed to wait upon the Metropolitan Board of Works, and submit to the consideration of the said Board the fact that foul and offensive exhalations and smells arise from the air-shafts and other openings in the main sewers in this district, and that the said nuisance ought to be abated, as being greatly injurious to health." Mr. Bracebridge proceeded to remark upon the prevalence of fever, and attributed it to the sewer smells, which were so abundant, and more especially in the neighbourhood of Poplar ridiculing the idea that in the present age of scientific discovery, a remedy was not to be found.

In the course of the discussion,

Mr. E. R. Cook said that he, amongst other people, thought that it was not the most fortunate thing that the present system of sewerage had been adopted. The great evil which attended it the Metropolitan Board were quite alive to, and had tried every reasonable suggestion that had been put before them. The air-shafts with great fires had been tried, but had failed, for some of the gases being heavier than the air it had been found that upon quitting the shaft they turned over and went down the nearest chimney-pot, so that it was impossible to adopt that method. Then they had tried the disinfection of the sewage by immense quantities of carbolic acid and chloride of lime, and the placing of charcoal boxes at the mouth of the ventilators, but the aqueous vapour coming up from the sewers wetted the charcoal, and rendered it useless as a disinfector. Mr. Cook then proceeded to blame architects for the illness arising from the sewers by their permitting an improper system of drainage, by which sewer gases were admitted into the house, and urged that the Board should exercise its powers to the fullest extreme, and seek for more to prevent the evils from drainage arising from the negligence of architects.

Mr. Cook, who is a soap-boiler, and has works within the district, represents the District Board at the Metropolitan Board of Works. He is apparently ignorant of the fact that probably not one per cent. of the houses in the district are built, or have been built, under any arrangement in which an architect's assistance has been included.

In reply to a question, the Surveyor (Mr. Parker) said that plans only of the drainage from the house, and not in the house, had to be lodged with the local authorities.

This is a most surprising statement from Mr. Parker, who has been surveyor to the Board since its formation in 1856. There can be no doubt but the Metropolis Local Management Act confers authority on the District Board over the private drainage in the house as well as over that portion under the street. If Mr. Parker has acted for the last twenty-two years on the opposite view, it is scarcely a matter of wonder that complaints should be heard.

Mr. Bracebridge, in accordance with a suggestion from the chairman, altered his resolution to the effect that it should be presented by Mr. E. R. Cook instead of a deputation, and in this form it was eventually adopted.

ILLEGALITY OF BUILDING ON LAND REQUIRED FOR THE PURPOSES OF A PARK.

A lesson has been taught by one of the Vice-Chancellors to the Corporation of Sunderland, at the suit of the Attorney-General.

The information filed by the first law officers of the Crown, was for an injunction to restrain the Corporation from erecting public buildings on parts of land adjoining Sunderland Park, and which the Town Council had recently procured for the alleged purpose of enlarging the Park in question.

The existing Park was now upon 15 acres in area, whilst the land newly acquired was in separate plots, in all covering about 10 acres. On a portion of this newly-acquired land, the Corporation had taken steps to build a Town-hall, a public library, a school of arts, a museum and Corporate buildings.

Counsel on behalf of the Corporation opposed the issuing of the injunction, urging that the land was vested in the Town Council, with a discretionary power to use it for public purposes, and if even that any trust were imposed upon it, it was within the term of the trust to use it for the objects in question, the erection of which, it was said, would be an improvement and protection to the Park.

The Vice-Chancellor was of opinion that the erection of any of the proposed buildings, except a museum and conservatory, was beyond the jurisdiction of the Corporation, even the library and school of arts, and at once granted the injunction prayed for by the Crown.

BUILDERS' COMMISSION.

In the Common Pleas Division of the Supreme Court of Judicature, on the 4th inst., before Mr. Justice Brett and a special jury, the case of Potter *v.* Pilkington was heard. The plaintiff sued to recover commission upon an order for the asphalte required at the new St. Thomas's Hospital. The defendant, on the 24th of May, 1866, wrote,—"If you succeed in getting me the asphalte works at the hospital, I undertake to pay you a commission of 15 per cent., provided I am not

called on to pay the builder or contractor for the said works any commission or discount out of the said works. If the builder or contractor should require his commission I agree to pay you a commission on a reduced scale, as shall be agreed on between us." The defendant laid down the asphalte, and in 1873 he received 7,045*l.* for so doing. The plaintiff claimed 15 per cent. on this sum; but the defendant paid into court 352*l.* 5s. 4d., being a commission of 5 per cent., the builder having deducted 10 per cent. himself when he paid the money.

Some evidence was given on both sides upon the question what was a reasonable amount to be paid to the plaintiff; and

The jury found a verdict for the plaintiff for 2½ per cent. beyond the amount paid into court.

PUBLIC IMPROVEMENTS AT LOFTUS.

Some very extensive improvements of a public character are being made in the thriving little town of Loftus-in-Cleveland. At the west end, on the Loftus estate, the Earl of Zetland has lately laid out about twenty acres for building sites, and a number of men have been employed during the summer, and up to the present time, in making new streets and laying the necessary drains. In place of the old road at the entrance to the town from the west, a new street, 50 ft. in width and 500 yards in length, has been formed. A large number of sites have already been let, including several for villas and a number of houses, are now in course of erection. The plans of these important improvements were prepared by Mr. M'Lean, agent to the Earl of Zetland; and the whole of the work has been carried out under his supervision.

GREEN AND BLUE COLOURS FOR DISTEMPERING.

Sir,—I should be much obliged if I could be informed if there are any greens for wall distempering made up without arsenic? Also, if this poison is used at all for blues or any other colour? A Subscriber.

THE STRIKE AT OVER DARWEN.

Sir,—Will you be so kind as to correct a report which has gone the rounds of the press, and has appeared in the *Builder*. On the high authority of that professional journal it is believed that the stonemasons of Over Darwen are on strike through a reduction of 1s. per week. It is through a reduction of 1s. per day. The local rules specify 33s. per week in summer, and 30s. in winter. During the past spring and summer months, the employers of the building trade advertised through the local press and advanced the masons' wages 3s. to 4s. 6d. a week, making them 36s. a week, and as much as 38s. 6d., to obtain labour. We think they ought to reduce the wages to 33s. a week only, instead of reducing them to 30s., and for the purpose of keeping at that figure; hence the dispute which caused 270 masons to suspend work on the 22nd ult. I feel that the truth of our affair should reach you in its proper colour, and be made known in a paper which is highly appreciated and most honourable towards the Working Man.

STATE OF THE ROYAL ARCHITECTURAL MUSEUM.

Sir,—I shall have to give up subscribing to the Architectural Museum. Nothing but appeals for aid. I have had another begging letter from the secretary to-day. Ever since the council hid away the collection in their present hole, against which you always protested, this desperate struggle for funds has been going on. How much longer is it to last? The collection moreover is useless to me, for it happens that I want my youngsters to study Greek and Italian forms rather than Gothic, but I have been hoping against hope that it might one day become what the *Builder*, years and years ago, sketched out and advocated, — a complete Architectural Museum. A Worn-out Friend.

SILICATED CARBON FILTERS.

Sir,—I have been so much occupied during the last few weeks that I have not been able to read my *Builder* as usual, but I observe in the number for October 30 a statement with regard to the properties of the above filters which is so curious that I am led to ask for further information respecting them. The Silicated Carbon Company claim, as it appears, that their filter is "the only kind adapted for the removal of lead from drinking-water." It will be valuable information if the company will strengthen the bold claim which they thus put forward by stating upon what principles their filters act in effecting so paradoxical a physical phenomenon. For it is a fact well known to the merest tyro in science that a filter can only remove what is mechanically suspended in a liquid, and as lead is always in solution it is difficult to see what effect mere mechanical filtration can have on it. It is true that new filters of certain kinds, notably those containing charcoal in their composition, will to a certain extent oxydise, and therefore remove, various organic bodies in solution in water, *e.g.*, colouring matters, and possibly, also, sewage products in a certain stage of decomposition, but this property is soon lost, and, even if it were not, it is not easy to see how it could affect lead in solution. Moreover, if the lead is removed in an insoluble condition, it is obvious that the filter must be soon choked and rendered useless. Methinks, therefore, the company doth claim too much!

A Medical Officer of Health.

RINK.

Sir,—You are an exposer of humbug, and I trust you will discountenance the vulgar habit of calling things by their wrong names. What is a skating "*rink*"? I presume "ring" is meant. Then why, in the name of common sense, is it not called so? I remember during the Crimean war seeing some verses (in *Punch*, I think) to this effect:—

"Is it Kronstadt with a K,
Is it Cronstadt with a C,
Is it Cronstadt,
Or do you leave out the *d*?
Is Sebastopol the word,
Is it Sevastopol you say?
Really it seems so absurd
Not to spell one word one way."

B. W.

ALL SAINTS', SOUTH LAMBETH.

Exactly twelve months since, the extensive and populous parish of St. Barnabas, South Kennington, was divided, and a new parish formed, under the name of All Saints', South Lambeth, containing 11,000 souls. Sir Frederick Fitzwygram, bart., liberally in perpetuity endowed it, and placed as first vicar the Rev. Allen Edwards, jun. The vicar soon filled the iron church (capable of holding 730 persons), and now it is found to be absolutely necessary to proceed with a larger and permanent church. A meeting was therefore held on Thursday, the 2nd inst., presided over by the patron, Sir F. Fitzwygram, at which plans were submitted and adopted, prepared by Mr. Alfred Bedborough, architect. The church is to consist of a very long nave, aisles, large chancel with an apsidal termination, a highly ornamented tower and lofty spire, and open-timbered roof. It will have a peal of bells. The church will be in the Decorated style of architecture, and built of Kentish rag stone. It is intended to commence it at an early date, and to complete the whole during the ensuing year.

CHURCH-BUILDING NEWS.

Highfield.—The new church of St. Barnabas, Highfield, Sheffield, is fast approaching completion. The building is of wall stone, with ashlar dressings, and is about 96 ft. long. The chancel is at the north end. At the left of the chancel a vestry has been arranged, and over this will be the organ-gallery. In a corresponding position with the vestry, and on the other side of the church, will be the children's seats, to which access is gained by a special door. Mr. Edward Gibbs is the architect, and the total cost will be about 7,000*l.*

Canvey Island.—On the 9th ult. the Bishop of Rochester consecrated the rebuilt Church of St. Catherine, Canvey Island, on the South Essex coast. In 1872 the Bishop, having constituted the island a separate living, appointed the Rev. H. Hayes as vicar. A commodious new school was soon erected, and the church was opened regularly for divine worship. A more commodious place of worship being found needful, plans were obtained from Mr. F. G. Lee, architect, and Mr. Thorpe, of Leigh, and Mr. Eaton, of Hadleigh, were jointly entrusted with erecting the church. The new church occupies a central position. The style is Early English, the plan being cruciform. The accommodation is double that afforded by the old church, the benches being capable of seating 200 people. The total cost is 600*l.*

Latchford.—Christ Church, Latchford, is now being enlarged by the addition of a transept and an organ-chamber. The latter is on the north side of the chancel, and the organ, which has hitherto been at the west end of the church, will be removed into it. A new vestry is also being built. The church at present seats scarcely 250 persons; but by the above alterations accommodation will be provided for nearly 100 more. The work is being executed by Messrs. Gibson & Son, under the direction of Messrs. Tate & Popplewell, architects, Manchester. The total cost will be about 850*l.*

Inverurie.—At a meeting of the general committee for carrying out the improvement of the parish church, Inverurie, held on the 19th ult., a report by Mr. Matthews, architect, Aberdeen, as to the repairs and alterations necessary for the interior of the church was approved of, and Mr. Matthews was empowered to accept the following gentlemen's estimates for the necessary work:—Painter work, Messrs. Garvie & Son, Aberdeen; and for the carpenter work, Mr. Wm. Milne, Inverurie.

Sulham.—Sulham Church, near Reading, has been enlarged, by the addition of a new vestry and organ-chamber, and the old chancel has been restored. The builder was Mr. T. Boxall, of Pangbourne; and Messrs. Edgington & Summerbell, of Windsor, were the architects. Mr. Campbell, of London, undertook the decorations, and the oak carving was executed by Mr. Norris, of Sunningdale.

Boxley.—A meeting of the parishioners of Boxley, Kent, was held on the 27th ult., to consider plans by Mr. Christian, architect, for the restoration of the roofs of the nave and side-aisles, and for building an organ-chamber and new vestry on the south side of the chancel. It was resolved to accept the plans, and to undertake the work at a proximate cost to the parish of 1,000*l.*, the Ecclesiastical Commissioners undertaking to restore the chancel. The contracts are to be made with Mr. Vaughan, builder, Tunbridge-road, Maidstone.

Upottery.—The parish church of Upottery, Devon, a Perpendicular building, dedicated to St. Mary, was re-opened on the 28th ult., after restoration. The chancel has been restored by Mr. Ewan Christian, architect to the Ecclesiastical Commissioners, and the main body of the church, under the joint direction of Mr. B. Ferrey, F.S.A., and Mr. E. B. Ferrey, architects. The church consists of chancel, nave, north and south aisles, and western tower. The work now done embraces new roofs throughout the church, of pitch-pine, ornamented with moulded ribs and carved bosses in English oak, covered by Cornish slate. The new seating in the body of the church is of pitch-pine, and in the chancel of English oak. The plastering with which the tower was coated has all been removed from its exterior, and the fine old stonework pointed down. The works have been carried out by the contractors, Messrs. Herbert, and Frederick Burridge, of Exmouth. The stone and wood carving is by Mr. Harry Hems, of Exeter. Mr. Down, Viscount Sidmouth's steward, has superintended the work on behalf of the Building Committee. Mr. James Baker was the contractor's foreman.

Coleraine.—Coleraine parish church was re-opened on the 7th inst., after restoration. An organ-chamber has been erected on the north side of the chancel, together with a new vestry with heating-chamber beneath, the hot-water apparatus being by Messrs. J. Jones & Son. The aisles and chancel have been laid by Messrs. John Powell & Co., Liverpool, with Maw's encaustic tiles. The painting and decoration was done by Messrs. J. & D. Baxter. The whole works have been carried out by the contractor, Mr. D. Christie, Coleraine, at a cost of 800*l.* The architect was Mr. James H. Coyle, Coleraine.

March.—The parish church of St. Wendreda, March, has just been re-opened by the Bishop of Ely, after restoration. The parish church contains an indulgence granted by Cardinal Wolsey, which recites that the Chapel of St. Wendreda was built at March (at that time a hamlet of the parish of Doddington), by permission of Pope Clement VI., then residing at Avignon; and that the permission to build it was given, because the inhabitants of March were frequently prevented, especially in winter time, by the floods, and other hindrances, from resorting to their parish church, at Doddington. The church is a handsome structure, mainly of the Early Perpendicular order, built, probably, about the beginning of the fourteenth century. The church contains many points of interest, though numerous alterations have been made to the original building. It now consists of a nave with north and south arcades of five arches. The nave had originally a high-pitched roof and no clearstory, but now it has a

clearstory of nine windows on each side, and a double hammer-beam roof, both of which date from the latter part of the fifteenth century. The roof is one of the finest in the county, and has well-carved figures and canopies under each of the beams. The chancel has been entirely rebuilt. In the old chancel traces of the fourteenth-century work existed, and the new chancel has therefore been built in the style of that period. The whole of the pews and galleries have been swept away. The roofs have been most thoroughly restored, and all internal works to the walls have been repaired. New floors also have been laid throughout, and new oak doors provided to the entrances. The chancel is, as before stated, entirely new. A carved oak pulpit has been provided with a figure of Christ as the Good Shepherd, carved by Mr. Forsyth, of London. The whole of the works have been carried out by Mr. E. Brown, builder, of Lynn, under the direction of the architect, Mr. W. Smith, of Adelphi, London.

DISSENTING CHURCH-BUILDING NEWS.

Audley (*Staffordshire*).—The memorial stones of a Wesleyan chapel were laid a few days since. The new structure is of Italian style, faced with red bricks with Hollington stone dressings. It is 60 ft. long by 45 ft. wide inside, and will have sitting accommodation for 725 persons. The pewing, gallery front, rostrum, and other internal fittings will be of pitch-pine stained and varnished; a spacious minister's vestry is provided, also over the same is arranged a recess for the organ; the ceiling will be formed at the tie-beams, and have a deep and enriched cove running round the building; the chapel will be heated with hot air (Blake's system). The cost of the entire buildings and fittings will be about 3,000*l*. Mr. William Watson, of Wakefield, is the architect, and Mr. Charles Hayes, of Audley, the contractor for the works.

Howden. — Plans for the enlargement of Howden Wesleyan Chapel have been prepared by Messrs. Holtom & Connon. From 80 to 100 additional sittings are to be provided, at an estimated cost of 410*l*.

Galashiels. — The new Free Church in the Market-place, Galashiels, was formerly opened on the 21st ult. The building, which is in the Early English style, takes the form of a cross. The total length is about 130 ft., and the general breadth 40 ft. within the walls, the transepts projecting clear at either side about 7 ft. or 8 ft. The church itself is about 90 ft. in length by 40 ft. in breadth, and is seated to accommodate 650, the remainder of the space to the back being occupied by a class-room, capable of holding 150 persons, with vestry, retiring-rooms, &c. The architect was Mr. John Starforth, Edinburgh, and the contractors were,—Mason and joiner work, A. Herbertson & Sons, Galashiels; slater-work, W. & J. Gibb; plaster-work, John Johnstone & Sons; plumber-work, John Tweedie; glazing, James Milroy; and painting, Thomas Graham. The heating apparatus was supplied by Meiklejohn & Son. The total cost was about 5,150*l*.

Ballymena.—Extensive alterations and enlargements have just been completed in the First Presbyterian Church, Ballymena. The church has been re-floored and re-pewed; the galleries, which were too elevated, have been lowered; the vestibules of the right and left galleries have been thrown into the church, and these galleries have been carried back 5 ft. or 6 ft. The accommodation of the church has been in this way very much enlarged. The work has been carried out by Mr. William Moore, Ballymena, under the supervision of Messrs. Young & Mackenzie, architects, Belfast.

Newbiggin-by-the-Sea.—On the 12th ult. two memorial-stones of a new Wesleyan chapel at Newbiggin-by-the-Sea were laid. The buildings are designed in the Early English style, and consist of a chapel 60 ft. 6 in. long internally, by 27 ft. 6 in. wide, with an eastern apsidal end, and presenting a gable to the west end of the street,—a porch on the south side with a vestry adjoining, the former having a heating-cell below it. The architect is Mr. F. R. N. Haswell, of North Shields, and the contracts, amounting to 1,060*l*., have been let to Mr. Thomas Gibson, of Newbiggin, for masons' and joiners' work; Mr. R. B. Charlton, of Newcastle, for plumbers' and smiths' work; Mr. Preston, of Blyth, for slating; Mr. Montgomery, of Newcastle, for plastering; and Mr. Jameson, of Newbiggen, for painting and glazing.

Tonbridge.—On the 1st of December Mr. Samuel Morley, M.P., laid the memorial stone of a new Congregational Church, Sunday Schools, &c., in this town. The building is well situated in the High-street, near the railway station, and is to cost, exclusive of site, 3,200*l*. The architect is Mr. Chas. Pertwee, of Chelmsford; and the builder is Mr. Samuel Woods, of Weybridge. Mr. A. A. Clark is foreman of the works.

Hillsborough.—A new Wesleyan Chapel was opened at Hillsborough, Sheffield, on the 1st inst. The building, which is estimated to seat 520 persons, has a small spire at the eastern corner. There are front and side galleries. The architect is Mr. Webster, of Sheffield. The total cost is estimated at 3,000*l*.

SCHOOL-BUILDING NEWS.

Seale.—A new school-chapel at the Sands, Seale, Crooksbury-hill, Surrey, was opened on the 13th ult. The architect is Mr. Alfred Guy. The joiners' work and fittings were done by Mr. Diamond, of Farnham; and the glazing by Mr. F. Hughes. The chapel, which is in the Tudor style, is built of Bargate and Bath stone. The inside of the walls is stuccoed with boarded dadoing; the roof is stained, varnished, and filled in with diagonal boarding; the glazing is alternate squares and diamonds, with roundells at the corners. The tracery portion is filled in with stained glass, the glass itself being cathedral, with three tints. Sittings are provided for about 120 persons. The cost was about 500*l*.

York.—The memorial stone of the York Adult School was laid on the 25th ult. Good progress has already been made with the building, which, when furnished, will have involved a total expenditure of about 3,000*l*. Mr. E. Taylor, of Stonegate, is the architect; and the contractors are Messrs. Walker, Brothers, who undertake to complete the work by April next.

Derby.—The new Royal Class Rooms at Derby were opened on the 19th ult. by the Marquis of Hartington. The new building is connected with the St. Helen's House by an entrance and corridor opening into a spacious stone staircase. On the ground-floor are six class-rooms and a laboratory, each averaging 25 ft. by 15 ft., and 14 ft. high. On the first floor is a large school-room, 60 ft. by 36 ft., and 21 ft. high, with head-master's room and retiring-room. The head-master's room is separated from the large school-room by folding doors, forming ample space for a stage or platform when required for speech days, &c. On the second floor are two dormitories, each 60 ft. by 17 ft. 6 in., and 17 ft. high, and overlooked by a master's bedroom, and on this floor is a bath-room, &c. The large schoolroom and dormitories are warmed by hot-water apparatus, and the whole well lighted and ventilated. The works were carried out by Mr. Humphreys, contractor, under the superintendence of Messrs. Thompson & Young, architects.

Kingston.—A new girls' school for St. John's parish, Kingston, was opened on the 3rd inst. It is 40 ft. long by 20 ft. wide, with a class-room 18 ft. by 14 ft., and will accommodate 124 children. The walls are of local stock bricks, with red brick dressings, and the roofs are covered with red tiles. The boys' schoolroom and class-room will be the same size as those of the girls. The infants' schoolroom, which will occupy the site of the temporary new schoolroom, will have a class-room 27 ft. by 18 ft. opening into it, and will be fitted with galleries for 160 children. The schools were designed by Mr. A. J. Style, architect, of Thames Ditton, and have been built by Mr. Mason, of Kingston, whose tender for the whole of the buildings, which will accommodate 408 children, was 2,040*l*.

Box. — On the 16th ult., the Bishop of Gloucester opened new parochial schools at Box, near Bath. The entire cost of the building will be 2,480*l*. The architect was Mr. J. Hicks, of Redruth, and the contractors Messrs. J. Bladwell & R. Anst, of Bath.

Waterloo (*Liverpool*).—St. John's Schools, which were opened on the 7th inst., are from the designs of Mr. T. Mellard Reade, architect to the Liverpool School Board. They contain a large infants' schoolroom and an assembly-room, which can be thrown together by sliding screens, forming one L-shaped apartment, very suitable for public meetings. There are an infants' class-room, a committee-room, and basement under. The style is Free Gothic, brick and wood being the principal materials used, the buildings having a picturesque outline. The lighting of the rooms is from the end and sides, and the whole of them are ventilated by Pott's Patent Ventilating Cornice Company. The contractors are Messrs. Burroughs & Son, of Liverpool, and the cost of the building will be about 1,400*l*.

Books Received.

"Mann" and Manners at the Court of Florence, 1740-1786. By DR. DORAN, F.S.A. 2 vols. London: R. Bentley & Son. 1876.

IN 1737 Mr. Horace Mann was appointed to the English Legation at Florence by Sir Robert Walpole; and Horace Walpole, his son, became soon after Mann's attached friend. For nearly half a century they corresponded freely and regularly. Walpole's letters were periodically returned to the writer, by arrangement, and were published, having been written with that end in view. Those of the other Horace, some thousands in number, for he wrote once, and sometimes twice, a week for more than forty years, remained unused. They were well known, and their publication had been thought of, but they contained, with much that was interesting, "an infinite deal of nothing," were slipshod in style and loose in their spelling (to say nothing of stories equally so), and nothing was done with them. It remained for Dr. Doran, with the light and graceful pen which belongs to him, his good taste and judgment, and his full knowledge of the period, to take them in hand, separate the chaff from the wheat, and produce us a most palatable dish. By using a dozen lines from one letter, twenty from another, and fifty from a third, with comments and elucidations of his own, Dr. Doran has made a consecutive and readable narrative, rich in illustrations of life in Italy during the middle of the last century, and which serves to throw light on many points hitherto obscure.

Mann has not said much about art,—he would probably have written as the other Horace wrote from Bologna, "We don't go a staring after crooked towers and conundrum staircases,"—but we find now and then a passage in that direction not without interest. Here, for example, is a note under date 1762, concerning a well-known English engraver:—

"Strange has returned hither from Rome and Naples with such a numerous and well-chosen treasure of his own drawings from the most capital pictures there, as will abundantly repay him for the time he has spent abroad. He has been very much distinguished wherever he has been, and particularly admired, for a new method he has invented, of *drawing in colours*, which, by great application, he has reduced to certain and fixed principles; so that at the same time that this elegant invention will, as he says, be of great use to him in engraving those drawings, it has a more extraordinary and beautiful effect in them than can be either described or conceived, without seeing them. They give the clearest idea of the originals and of their colourings, and by that means they themselves have the merit of becoming pictures of a much more delicate nature than miniatures. Mr. Strange is impatient that you should see them, and begs his very respectful compliments to you. Many people *I know* will vye with each other for the purchase of those drawings, though the cost will be very high; but nothing will tempt him to part with them, till he has engraved them; and by one or two at a time, the whole will at least employ ten years to engrave."

Strange, when in Italy, was chosen member of the Academies of Rome, Florence, and Bologna; and was appointed Professor of the Royal Academy of Parma. He became Sir Robert in 1787.

The two volumes are tastefully bound, and a large class of readers will feel much indebted to Dr. Doran.

A Course of Painting in Neutral Tint. With Twenty-four Plates, from designs by R. D. LEITCH. Cassell, Petter, & Galpin.

WE have noticed previously two small instruction books, by Mr. Leitch, in "water-colour" and "sepia painting." The present book, uniform with the above, is intended as a kind of connecting-link between them; the author defining as "painting in neutral tint" the use of two colours or tones only, the studies being supposed to be executed in sepia with the addition of a single grey tint. We confess that we can scarcely see the validity of this distinction, or why, if there is a special instruction-book for drawing in two colours, there should not be one for three colours, and so on. A drawing is either monochrome or coloured. We can hardly see where any intermediate line can be drawn.

Every one, however, may not have the same feeling on this point, and there is certainly no other objection to be urged against this third contribution to the series, which, in regard both

to the artistic feeling of the designs and the execution of the chromo-lithographs, appears to us to be rather superior, if anything, to either of the other two books. Any student going through the book would be likely to acquire a considerably increased feeling for general balance of tone and composition in landscape effect; and the author is careful to point out that copying is a means and not an end. The general remarks and criticisms as to the practice of the art are as well judged and suggestive as in the former publications.

A Handy Book of Ornamental Conifers, &c. By Hugh Fraser, Fellow of the Botanical Society of Edinburgh. Blackwood & Sons, Edinburgh and London.

This is a compact and convenient-sized book, giving a synopsis of the many varieties of this large class of trees, so extensively used in what may be termed the architecture of gardens. The *habitat*, the general appearance and characteristics, and the nature of the situation most favourable to each variety, are shortly stated. To this is added a considerably extended section on rhododendrons, a class of plant generally used in what the French term *massifs*, and the value of which in ornamental gardening the author thinks is under-rated. The extensive adoption of rhododendron planting in gardens, however, if carried out now, will only be a revival of an old, and at one time, rather prevalent taste. As to the beauty and individual character of the plant, when so used, we quite concur with Mr. Fraser. The book seems well done, and likely to be very useful to those whom it directly concerns.

Miscellanea.

Fireclay.—At the supplementary meeting of the Iron and Steel Institute, held in London on the 25th ult., the subject of "Fireclay and other Refractory Materials" was discussed in a paper by Mr. G. J. Snelus, who said that all concerned in the manufacture of iron and steel would admit that it was of the utmost importance to obtain good materials for building their furnaces. It was found that the presence of alkaline in sensible quantity,—say, about 1 per cent.,—conferred so much fusibility upon a clay as to render it unsuitable for very high temperatures. There was a practical point in the management of fire bricks which was too often overlooked. Bricks were very porous bodies, and absorbed a great deal of moisture, even when under cover, and, of course, much more when allowed to get wet; in fact, apparently dry bricks often contain a good deal of water, and if put into a furnace in this state and the heat is got up rapidly, the bricks crack and crumble to pieces. This was especially the case with silica bricks, and the writer had known instances of bricks being condemned as chemically bad when the fault lay with those who used them. Instead of properly drying them, it was as well in the case of silica bricks to actually set them as hot as they could be handled. In all cases when a furnace was started, and especially with Siemens' furnaces, a very small fire should be kept up for several hours, and then very gradually increased. This plan would add weeks to the life of these furnaces.

London and Middlesex Archæological Society.—The *conversazione* of the London and Middlesex Archæological Society was held on Wednesday evening, the 15th inst., at Ironmongers' Hall, Fenchurch-street. The visitors were very numerous. A large collection of antiquities more or less connected with the City of London was exhibited in the great hall and corridor of the building, including some Roman remains — pottery, coins, and implements — recently discovered in excavating for the premises of the National Safe Deposit Company in Queen Victoria-street; Mediæval armour, exhibited by Mrs. J. Walker Baily; pre-historic remains, consisting of bones, flint implements, and pottery from a mound at Cissbury, excavated during the present year, with models and plans of excavations, exhibited by Colonel Lane Fox; some interesting full-size drawings of painted glass in Long Melford Church, and of wrought iron work, exhibited by Mr. Charles Baily, &c.

The New National Opera-house.—H.R.H. the Duke of Edinburgh laid the first stone of the New Opera-house, Thames Embankment, on Thursday last, and expressed good wishes for the success of the undertaking.

School Progress.—An evening paper states, on the authority of the annual report of the Committee of Council on Education, that up to the 30th of April last the number of Board schools for which the Education Department had sanctioned the borrowing of money from the Public Works Loan Commissioners was 941. The total expenditure thus sanctioned on behalf of the school buildings amounts to about 4,200,000*l.*, and represents new accommodation for some 375,000 scholars. The repayment of loans is spread over a certain term of years, according to arrangement with the commissioners. The actual expenditure for the four years commencing with Michaelmas, 1870, reaches nearly 3,500,000*l.* Taking some of the principal school districts, we find the estimated cost of school buildings per child provided for ranges from 7*l.* 17*s.* 6*d.* at Nottingham to 17*l.* 7*s.* 10*d.* at Bradford; of both sites and buildings together from 9*l.* 12*s.* 10*d.* to 22*l.* 14*s.* in the same two towns.

"Corn, Coal, and Finance." — Mr. J. Ebenezer Saunders, as chairman of the Corn, Coal, and Finance Committee of the City of London, entertained at the Albion, on Wednesday evening last, the chairmen of the various sections of the coal trade and other guests. In reply to various toasts, admirably well proposed by the Host of the evening, Sir Henry Havelock, M.P., and Admiral Ommaney, spoke for the army and navy; Sir Thos. Chambers, M.P., for the House of Commons; the new Lord Mayor (Alderman Cotton, M.P.) for the Corporation; Sir Jas. Hogg, M.P., for the Metropolitan Board of Works; Mr. Godwin for Art, Literature, and Science; and Dr. Shaw for the Guilds. Some remarkable statements were made as to the progress of the coal trade in London: the quantity on which the tax will be levied this year is estimated at not less than 8,000,000 of tons,—the largest yet known.

The Cadogan and Hans-place Estate.—At the first ordinary (statutory) general meeting of the Cadogan and Hans-place Estate Company (Limited), held on the 11th inst., the chairman (Col. Makins, M.P.) stated that the greater portion of the capital required for the undertaking having already been subscribed, the deed of assignment and trust deed had been duly executed and debentures allotted. The works for the northern road, being a continuation of Pont-street, through Sloane-street, into Wilton-place, would, he said, be commenced forthwith, the tenders having (as already announced in the *Builder*) been accepted. Many applications for sites for mansions had been received, in addition to the forty-one plots taken up by Messrs. Trollope, and the new roads will be completed as rapidly as possible. The report was adopted.

Temple Bar.—A deputation from the City Lands Committee and Commissioners of Sewers waited upon Lord Henry Lennox, First Commissioner of Works, on the 7th inst., to call his attention to the state of Temple Bar as it affects the approaches to the new law courts. Plans were submitted for the widening of Fleet-street both east and west of Temple Bar. The City authorities were willing to remove Temple Bar, and contribute to the scheme by removing the houses on the north side. His lordship expressed the great interest he felt in the matter, but at the same time pointed out how very small a share the City authorities, under the proposed arrangement, would take on themselves. However, he promised to call the attention of the Government to the matter.

Smethwick Sewerage. — The Smethwick Local Board having received a communication from the Town Clerk of Birmingham stating that he was instructed to take proceedings against the Board in order to put a stop to a nuisance occasioned by the pollution of the Aston and Hockley Brook as it flows through the borough, unless within a week the Board gave an undertaking to abate the nuisance, a special meeting of the Board was convened, and it was decided to give the undertaking required. Mr. Bramwell, C.E., has been retained by the Board to advise and assist them in carrying out a system of sewering for the district.

Asphalte.—Sir John Kelk is having paved with Claridge's patent asphalte the floor of his skating-rink at the Priory, Stanmore. At the Palace of Westminster, the State Office court and adjoining courts are being paved for carriage traffic by Claridge's Asphalte Company. The whole is to be completed before the meeting of Parliament.

Architectural Association of Ireland.—A meeting of the above body was held on Thursday evening, the 2nd inst., Mr. T. H. Longfield in the chair, when a paper was read by Mr. W. A. Robinson (hon. sec.), on "Foundations," which led to a long and spirited debate. Mr. Fennell explained the various methods employed in the works carried out under the War Department, where the soil is untrustworthy to any depth. He also illustrated the method of building a brick foundation for a factory chimney. Mr. W. G. Doolin explained the method adopted by him in the case of some public buildings at Waterford, the foundations of which were on a foreshore, and where there was found buried an old quay wall.

New Market at Widnes.—A new public market for Widnes, Cheshire, was opened on the 1st inst. The market is situated a short distance from the railway station. It consists of two departments, divided in the centre by iron columns. The height from the floor to the roof is 22 ft., the length is 140 ft., and the width 70 ft. There are thirteen shops, and the stall space is in the centre of the market. The whole of the shops have been let, and a large portion of the stall space has also been taken up. The market has been built from the designs of Mr. Hughes, of the firm of Pierpoint, Hughes, & Pierpoint, and the cost is estimated at 3,400*l.*

Shakspeare's Church at Stratford-on-Avon.—The Vicar of Stratford-on-Avon, Dr. J. D. Collis, has just issued an appeal on behalf of the restoration of the church of Holy Trinity. He wants 10,000*l.* to restore the fabric of Shakspeare's church as Shakspeare saw it, and 4,000*l.* or 5,000*l.* more to fit up the interior properly and in better fashion than at present. He has hopes that the Freemasons of England, India, Germany, and America, will undertake the former part of the task as soon as the Grand Master, the Prince of Wales, returns from India; the second part of the work he thinks might well be left to the public spirit of Stratford and Warwickshire.

Close of the Preston Industrial Exhibition.—This exhibition, which was noticed at some length in the *Builder* a short time ago ("*En Route* through Preston"), was brought to a close on the 4th inst., after an existence of seventeen weeks, having been opened on Monday, the 9th of August. The report of the General Committee states that the receipts have exceeded 7,000*l.*, and that the total number of admissions has been upwards of 200,000. The net balance, after defraying all expenses, is to be devoted to the funds of the Institute for the Blind and the Institution for the Diffusion of Knowledge.

Cornish Granite for Road-making.—"The granitic backbone and the ribs of the neighbourhood of Penzance," says the *Cornish Telegraph*, "are being hewn to pieces and the pieces 'spalled' into bits. Worse, they are sold to north-east England and to Wales, to make roads of. With a good deal of enterprise Mr. James Runnalls, of Penzance, has founded and carries on a large export trade in granite and elvan 'metal.' As he destroys no dolmens or cromlechs, and employs largely (for he and his customers prefer hand-cracked to machine-crushed stones), we all wish him success."

Lambeth Earthenware.—Messrs. Howell & James, of Regent-street, have filled some new galleries on their premises with original works of decorative art in "Lambeth Faience," designed by the director and students of the Lambeth School of Art, and these are now on view. The collection includes some very charming specimens, both of the stoneware and painted ware. Considerable progress has been made in both, and of the latter, some of the works, especially those by Miss Watts, are exceedingly artistic and agreeable.

Liverpool Art Club.—On the 13th inst. the Liverpool Art Club entertained at dinner Sir Henry Cole, C.B., Professor Sidney Colvin, and Lord Houghton. In the course of the evening Professor Colvin delivered an address on "The Place in the Art and the Imagination of Greece held by the Deities of Life and the Earth's Produce, Death, and Resurrection."

Newark Castle.—The Commissioners of Woods and Forests having intimated their intention of repairing the Castle, Mr. Goddard, architect, of Lincoln, has examined the edifice, with the view of reporting on the work necessary to preserve the ruins from further dilapidation.

The Channel Tunnel.—M. Lavalley, president of the French Society of Civil Engineers, and inventor of an apparatus which was used in the construction of the Suez Canal, announces that fifteen experimental soundings have been made in the Straits of Dover. In none of them were the results unfavourable to the possibility of boring a tunnel to join the two countries, and M. Lavalley adds that all the engineers are agreed that the completion of the project is only a question of time and money.

Burghley House, Stamford.—The Cowan Patents Company, of London, have just completed the erection of an apparatus for warming throughout this fine old mansion, the seat of the Marquis of Exeter. The boilers are in the basement, and the system of hot-water pipes extends from the top galleries, warming on its way the corridors, great hall, and staircases. The pipes are so arranged that any one part may be warmed separately, or the whole together. The apparatus is said to be giving great satisfaction.

The Royal National Hospital for Consumption, Ventnor.—Since last year an additional block of houses has been opened, and by the end of this month the two last blocks contemplated in the original design of the building will be completed. The hospital will then contain sixteen houses in eight blocks, and will provide accommodation in separate bedrooms for 100 male and female patients. Funds are urgently needed.

Restoration of an Ancient Effigy.—There has just been erected in Grappenhall Church an effigy of Sir Hugh Boydell, who flourished in the County of Cheshire in the thirteenth century. Some time ago the original effigy was discovered, but, owing to the process of decay, it was found to be minus its head and arms. Mr. Warrington Wood designed a model, from which the missing parts were restored, and the completed figure has been erected in a niche in the chancel.

Reopening of Columbia Market.—This market was again opened on Wednesday the 15th inst., under the auspices of two or three of the great railway companies. The premises consist of twenty-four small shops and twelve large shops, with residences containing twelve rooms. There are stands for 100 persons, and forty-six cellars. The rent charged is merely nominal. Already many persons have taken possession.

Another Candidate for Honours.—At a meeting of the Twickenham Local Board, on the 4th inst., a letter was read from Mr. W. H. Lenham, of Southsea, offering to carry out the sewage works by some new system, by which the water would not only be rendered a valuable commercial commodity, but even the foul gases in the sewers,—"the father of fevers," the letter called them,—would be transformed into health-giving media.

Assessment.—Mr. William Eve, of London, has been appointed by the guardians of Caistor Union to assess the whole of the ratable property in the town of Great Grimsby, except the docks and railway, the ratable value of which have, on appeal, been recently settled by the Railway Commissioners.

The Sunderland Building Trades.—The Sunderland Builders' Association has issued the following notice to their employers:—"In accordance with previous arrangements, the wages of bricklayers and masons will commence to be paid at 33s. per week, those of labourers at 24s. per week, from December 1st, 1875."

Masonic Hall.—The new Masonic Hall for the Londesborough Lodge, at Bridlington Quay, was dedicated to Masonry by Dr. S. P. Bell, P.S.D., of Hull, on the 7th inst. The building has been designed and superintended by Bro. Lakewell, of Leeds, and the work has been executed by Bro. Hudson, of Sewerby.

Christmas Cards.—Messrs. Dean & Son have sent us a pile of Christmas Cards, ranging from as low as 1d. each. This serves to show how general the practice of sending such must have become. Some of them are pretty enough.

TENDERS

For works at 128, High-street, Stoke Newington, for the Incorporated Society of Licensed Victuallers. Messrs. Dunn & Green, architects:—

Toms	£1,840	0	0
Grimwood & Sons	1,285	0	0
Pickersgill	1,245	0	0
Anley	1,175	0	0
Cole	1,145	0	0
Lamble	969	0	0

For new house and refreshment-rooms, Castle Brewery, Newport, Monmouthshire, for Messrs. Blake & Co. Mr. E. A. Lansdowne, architect:—

Richards	£970	0	0
J. Williams	950	0	0
Christophers	950	0	0
Linton	944	0	0
Miles	929	0	0
Bamfield	908	0	0
W. Williams & Sons	895	0	0
Thomas & Webb (accepted)	880	0	0
G. Jones	830	0	0
W. Jones & Sons	857	0	0

For erection of new stables, &c., for Messrs. Greenall & Co., at Wilderspool. Mr. R. Davison, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Gibson & Son	£3,041	0	0
Collin & Son (accepted)	2,990	0	0
Iron Stable Fittings.			
Cottam & Co. (accepted)	£130	4	7

For the extension of Messrs. Greenall & Co.'s Brewery, at St. Helen's, Lancashire. Mr. R. Davison, architect. Quantities supplied by Messrs. R. L. Curtis & Sons:—

Builder's Work.			
Harrison (accepted)	£10,970	0	0
Iron Work.			
Moreland & Son	£8,310	0	0
Daglish & Co.	5,790	0	0
Head, Williams, & Co.	5,540	0	0
Robinson, Cooke, & Co.	5,525	0	0
Laidlaw, Sons, & Caine (accepted)	4,931	0	0
Copper.			
Dale	£1,316	0	0
Pontifex & Sons	1,277	0	0
Suddeley & Co.	1,272	0	0
Orley & Son (accepted)	1,083	4	6

For the erection of a pair of semi-detached residences at Bromley, for Mr. John Radmall. Quantities by Messrs. Goodman & Vinall. Mr. E. Hoole, architect:—

Roberts	£3,962	0	0
Kilby	3,790	0	0
Haydon	3,650	0	0
Payne & Balding	3,543	0	0
Grubb	3,353	0	0
Carter (accepted)	3,347	0	0

For a villa residence at Kingswood, Surrey. Mr. E. F. Roberts, architect. Quantities by Messrs. Strudwick & Mennie:

Cook	£1,500	0	0
Cullum	1,498	0	0
Downs	1,469	0	0
Shearburn	1,438	0	0
Hards	1,398	0	0
Holdsworth	1,387	0	0
Nightingale Bros. (accepted)	1,248	0	0

For alterations and additions to a cottage residence, called "The Warren," at Edenbridge, for Mr. C. L. Lewis. Mr. E. Hoole, architect:—

Shorter	£325	0	0
Haydon	275	0	0
Snook (accepted)	189	0	0

For 6,480 superficial feet of roofing over oxide ground, for the West Ham Gas Company, at their works, Stratford. Mr. E. H. Thorman, engineer:—

Bangs & Co.	£586	0	0
Rivett	563	0	0
Perry & Co.	469	0	0
Norton & Son	428	0	0

For alteration and building new billiard-room, at the Plough, High-street, Notting-hill. Mr. H. J. Newton, architect. Quantities by Mr. H. Budd.

Godden	£810	0	0
Taylor	807	0	0
Boden	785	0	0
Hockley	783	0	0
Cooke & Green	769	0	0
Wells (accepted)	668	0	0

For erection of new premises, Soho, for Messrs. Sanders & Co. Mr. J. Perry, architect:—

Wilson	£3,180	0	0
Wood	2,097	0	0
Sharp & Maxwell	2,055	0	0
Target	1,976	0	0

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We are compelled to decline pointing out books and giving addresses.

All statements of facts, list of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

SPECIAL NOTICE.

Christmas Week.—*The* BUILDER *for the week ending December 25th, will be published on* **Thursday, 23rd** *inst., at the usual hour.*

Advertisements for insertion in that issue must therefore reach the Office before Three o'clock P.M. *on* **Wednesday, 22nd** *inst.*

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By order, W. GRANGE, Clerk to the Board,

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1842

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The Builder.

Vol. XXXIII. No. 1716. Saturday, December 25, 1875.

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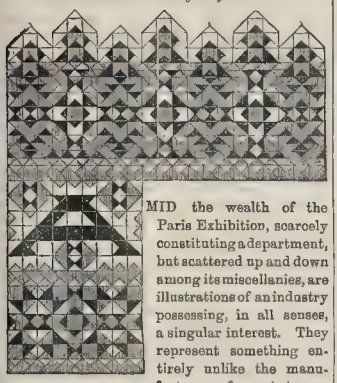
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The Industrial Villages of the Jura.



AMID the wealth of the Paris Exhibition, scarcely constituting a department, but scattered up and down among its miscellanies, are illustrations of an industry possessing, in all senses, a singular interest. They represent something entirely unlike the manufactures of great towns, and yet they are known all over the civilised world. Along the western slopes of the Jura are ranged a series of villages, some perched on the mountain summits, others buried in the deepest valleys, in almost each of which some particular occupation absorbs nearly all the inhabitants. The two principal, excepting one, the most curious of any, and presently to be noticed, are Saint Claude and Morez, each claiming to be an industrial centre. The first, pitched at the bottom of a precipitous ravine, is celebrated for its turnery, and "articles of Saint Claude" have a reputation at every fair and in every market-place throughout France. Nearly all the work done in the place is in wood, though ox-horn and bone, ivory and tortoiseshell, have of late years been added to the stock of native materials. This, however, has only been since the box-tree, the favourite material of the turner,—through an improvident waste,—almost wholly disappeared from the hill-sides of the Jura. Its place has been chiefly taken by the briar, which, grown in those districts, is capable of a brilliant polish, and exhibits a rich veining. In one substance or another, at any rate, the artificers of Saint Claude send out yearly, by thousands, children's toys, cups-and-balls, nine-pins, tops, and so forth; kitchen utensils, beads for chaplets, cotton-reels, wine-taps, snuff-boxes for the rural population, pipes, and other trifles endlessly various, which form the foundations of a far-spread and fertile industry. There is no necessity for the employment of steam-power. This is a country of waterfalls, and every torrent turns its wheel, by the aid of which the wood is cut in lengths, shaped into square or circular forms, joined, polished, hollowed, pierced, and improved; machinery is continually invented to assist it. The finer processes, however, are effected by lathes, worked by the foot, and when these are complete, they are handed to the women and children for varnishing or polishing. Still, in one way or another, the entire population appears to dwell in an atmosphere of ivory and bone shavings or sawdust; and it will never, if prevention be possible, admit a stranger into what are called the secrets of its vocation, though these, in reality, are no secrets at all. The earnings of the people are tolerably good; but their merchandise is sold at exceedingly humble prices to the traders, who arrive every season, and who often extract from the customer three farthings for that which has not cost them the tenth of a penny. Seventy-five per cent. is the customary difference, at all events, between a bit of turnery bought at Saint Claude, and the same bit priced for a Parisian bazaar. The artificers of the valley are a very simple race; they rarely invent new forms; their aim is to be eccentric rather than beautiful in their designs; and probably with respect to the peculiar industry followed by them they are in the right; but their neighbours of Morez are more ambitious. They are only planted at a distance of about twenty miles; yet the two villages carry on only a slight intercourse one with another. Neither do their compeers of Long Chaumais, La Mouille, or the other hamlets scattered near to them in the Jura vales.

Indeed, there is an almost total distinction between their lives and the industries they pursue. The Saint Claudian works upon wood; the Morezian, almost exclusively upon copper and iron, principally the last. The circumstances of his natural position do not allow him to attempt the establishment of great manufactures, for the production of such mechanisms as emanate from the foundries of Birmingham and Sheffield. He must be satisfied, therefore, with a lighter task, and seems, as it were, a clock-maker by instinct, chiefly on the principle of using weights. In nearly all parts of France,—in churches, town-halls, schools, factories, and railway stations,—the name of Morez will be found conspicuous, stamped or painted upon huge clockfaces, and these clocks have the character of being far more exact than those worked by springs. But this may be a a Morezian tradition. The manufacture spreads itself into many branches, as those for the turning out of wheels and bells, of cases and dials, of pulleys and hammers. It is only of late years that the novelty has been introduced at Morez of watch-making, and the experiment encountered a violent resistance from the ancient clockmakers of the mountains. They declared that it would effeminate their artisanship, destroy its unique fame, and expose them to a rivalry in which they might not be triumphant. They had only to climb the steeps of Faucille to perceive, lying below, the city of Geneva, with which they had no desire to enter into rivalry. This argument, in a great degree, prevailed, and Morez has maintained its renown for clock-work, without acquiring one for watchmaking. The villagers, however, carry on with much success two other industries,—the manufacture of opera-glasses and of enamel for the lining of China ware. They are more mechanical than their compatriots of Saint Claude; that is, they depend less upon simple hydraulic force, and put deep faith in the inventive genius of the times. Perhaps it will be admitted, therefore, that they rank somewhat higher in the industrial scale. But in both localities a similar division of labour exists. Thus women are employed to inscribe the hours of the day on the clock-faces, and, almost invariably, they take their taskwork home. It is on Sunday, as a rule, that the artificers go to their employers to give up what they have finished, and to apply for more. They may be seen, trudging in long files, with burdens on their backs, or, if these are too cumbrous, drawing immensely long and exceedingly narrow barrows, adapted to the narrow mountain paths, and it is customary to take away a fortnight's work, and receive a fortnight's payment, at a time. Upon an average they earn more, while their products are cheaper, than those who are so famous among the solitudes of the Black Forest. As for their customers, they are to be found in all parts of the world where clocks of this description are known,—far more widely spread, indeed, than those of America or Germany, ingenious and cheap though their fabrics be. In fact, works from the Jura frequently bear the imprints of Nuremberg and the ingenious cities of the New World.

But perhaps the most interesting of all these primitive, yet industrious, communities, is at Septmoncel, where the colony of lapidaries has its home. Their village is planted upon one of the most isolated plateaux of the whole mountain range, as if they were designed to dwell apart from the rest of mankind. They have not only a special industrial, but also a special social, organisation. By the generality of people in France, and, indeed, everywhere in Europe, their very existence is scarcely known, as though they had been lost, or forgotten; but their work goes on incessantly: it keeps alive the fires of many a hearth, and it feeds a large and constant demand throughout the world, civilised or savage. Rarely does a French,—never, in all likelihood, an English,—tourist, unless he is uncommonly constituted, penetrate through those solitudes up to that lonely village. The way, in the first instance, has to be trodden on foot; there are no guides or guide-books worthy of the name; the place has not been made sufficiently familiar to excite curiosity. Yet the industry of these mountaineers is certainly unique, so far as the hill districts of France are concerned, differing altogether from any carried on in the Forez, Vosges, or Auvergne regions. About 4,000 individuals, indeed,—men, women, and children,—are here engaged upon the cutting of precious stones. It is, in this respect, at once the Paris and the Amsterdam of the Jura, but the latter city is chiefly celebrated on account of its preparation of diamonds for use in jewelry. The lapidary of the Jura works, however, alone, with his family, in a little workshop, furnished with two wheels, at a rent of from about 2s. to 4s. for twelve hours' use of it and the machinery. He never touches a diamond; otherwise, every natural stone of value is welcomed by his hand, as well as those others artificially manufactured, which he can set forth in a manner to deceive all except the prac-

tically initiated. The lapida y of Septmoncel, indeed, often begins by fabricating the gem which he afterwards cuts and polishes; and it is marvellous how he can simulate at once the tint, the degree of hardness, and the weight, upon which, in genuine stones, the value, of course, depends. These ingenious villagers, as they are termed, although the centre of their abode resembles rather a township, recognise eleven classes of gems, giving the foremost rank to the diamond, which, however, as we have said, they do not profess to deal with; but, next to it, they rank, as colourless stones, the white sapphire, the white topaz of Brazil, and all the varieties of rock crystal. In succession, they prize the red qualities,—the many varieties of ruby, the garnet, and the crimson tourmaline; thirdly, the blue, comprising most of the sapphires, the beryl, or aquamarine, and second variety of tourmaline,—very rare at Septmoncel, at least. The colour green they hold to be represented solely by emeralds, whether Brazilian, Peruvian, or Oriental, regarding the apple-green crysolite and its kindred as mere mixtures; while, of the yellow, they acknowledge the topaz of that tint, the Singhalese crystal,—often mistaken for diamond,—and so on, through all the glittering list of crysoliths, amethysts, hyacinths, opals, moonstones, sunstones, the turquoise, agates, and an inferior family, which are not precious in the strict sense of the term, and include malachite, jasper, lapis-lazuli, cameo, and cornelian.

Whatever of these are destined to be operated upon at Septmoncel are received there from an agent. The local craftsman does not know whence, in the course of commerce, they come; he takes them in their rough state, executes his task according to exact instructions given, and returns them to the same agent, without the slightest idea of their destination. Of course, this kind of industry requires great experience, and an extremely delicate manipulation. The least excess in cutting may ruin a stone of the noblest quality, besides wasting so much of costly substance. Then, a discrimination has to be exercised with respect to the surface which shall be hidden in its bed of gold, and that which shall remain open to the light; besides which a flaw may have to be dissimulated beneath the angles of a facet, while the slightest inequality of polish may be fatal to the value of the gem. So that these Jura jewellers have responsible work to do. In order to do it, each has his wooden hut provided, within which are two wheels,—the one of lead, to cut, the other of copper, to polish. The man sits in front of this simple machine on a sufficiently low stool; with his left hand, by means of a crank, he turns the wheel; with his right he holds the stone firmly fixed to a little rod; but it is needless to dwell upon details well known to the lapidary everywhere, for the mechanics of this industry vary little, except with regard to the complexity of the machinery employed. It is the condition of the isolated Septmoncel lapidaries which, perhaps, suggests a more interesting topic. Their toil is not severe, and their health is generally excellent, unless when a colic breaks out through the perpetual action of the leaden wheels, though this can be usually avoided by the use of precautions quite familiar to these mountaineers. The lapidaries are nearly always men, women being considered as unfitted for this industry; but boys commence their apprenticeship at the age of ten or twelve years, upon the softest and most easily-wrought stones. Wages are not paid by the day, but in proportion to the result; so that the workman may employ himself during as many or as few hours as he pleases, and with the lapidary of Septmoncel, these frequently number fifteen or sixteen for the day. It is difficult, consequently, to infer an average of earnings on the part of this singular community. It cannot even be estimated in proportion to the time which he devotes to his labour; for he may be either a slow or a swift workman; but it may be said, generally, that the cost of cutting a precious stone in this Jura village amounts to about a tenth of its value, with regard to the inferior qualities. With the higher it is less. Upon the whole, an estimate may be taken at 1s. 6d. a day for men, 1s. for women, and from 2d. to 6d. for children. That is,—the Septmoncelais earn about one-fourth of what is earned by the lapidaries of Amsterdam, though the work of these latter is, undoubtedly, more important and more difficult. Yet the former exhibit no appearance of discontent or misery; they inhabit comfortable abodes; their furniture and clothing are alike respectable. On the other hand, they are intensely frugal, rarely consuming meat, or wine, or fruit, or even bread, but subsisting, for the most part, on black oat-cakes, potatoes, and milk, with an occasional addition of most inferior cheese. And these folk pass their existence with jewels of one kind or another in their hands, yet neither understand their value nor ever seem actuated by the smallest desire to possess them. These lapidaries of that Jura table-land form, in all respects, a remarkable community. They would seem to be possessed by an implicit trust in one another, to be vexed by neither litigation nor mendicancy; to fear no thieves; and to be implicitly confided in by employers, who scarcely know them, and whom they scarcely know at all. On the other hand, they are exposed to few temptations, are totally ignorant of the outer world, but still have built up a society of their own, in which the rules of labour are not less respected than those of morality. It is by these means that they have been enabled to hold their ground against many rivals who have sprung up, with the advantage of superior machinery. However this may be, the result is undeniable, because the lapidaries of the Upper Jura, if they have not grown richer, have certainly not become poorer, within the last century; and their industrial annals, with those of the other "villagers" we have noticed, have an interest, not apart, but different from, those of other industrial organisations, no matter in what quarter of Europe.

THE "CLOACA MAXIMA" OF LONDON.

We resume our account of the Herculean task of cleansing the Augean four-million-stalled stable of this *very* "great metropolis."*

We have already shown that, by some strange coincidence, the *natural* and the *artificial* supplies of water to London are as nearly as possible tantamount each to the other; that is to say, that the average quantity of rain descending daily upon the 78,000 and odd statute acres which make up the entire metropolitan area is within a fraction identical with that of the water provided by the several companies, artesian wells, and land springs, to the half a million inhabited houses gathered within the boundary of the capital; and that, whereas rather *less than one-fourth* of the gross metropolitan rainfall goes to swell the volume of the London sewage, under ordinary circumstances, still very nearly the *whole* of the water supplied to the metropolitan dwellings for domestic use, as well as that furnished to the factories for trade purposes, is returned in the form of "sulliage" (far out of the range now of urban London) to the Thames,—at Barking on one side of the river, as will hereafter be seen, and at Crossness, adjoining the Plumstead Marshes, on the other. We have shown, moreover, that the rain unabsorbed by the soil of the gardens, the squares, the parks, the fields, the commons, the heaths, the greens, the "downs" (such as Hackney Downs), and other open grounds, which still constitute what are well termed the "lungs" of London,—we have shown, we say, that the rain, unabsorbed by these oases in the great brick-and-mortar desert, enters the sewers principally in the form of wet street-refuse; whilst the water supplied by the metropolitan companies is carried off by the house-drains, in some sullied form or other, mainly as wet house-refuse; and that whereas the average quantity of the one cannot amount, unless in the case of exceptional rain-storms, to more than 130,000 tons, or 4¾ million cubic feet, daily, that of the other can hardly be less than 550,000 tons, or 19¾ million cubic feet, per diem.

Let us, however, check this estimate by others, or rather by the measurements which have been taken as to the absolute quantity of sewage passing daily through the London sewers. Well, in the summer of 1844, long before the present system of "main intercepting" sewers was even thought of, an experiment was made as to the amount of discharge from 8 of the principal outlets for sewage situate between Chelsea and the Temple. The issue from the more important sewers in the Westminster district was found, from "the mean of seven observations taken during the summer," to be, in round numbers, 1,800,000 cubic feet in twenty-four hours, while the number of acres drained was ascertained to be a fraction more than 7,000 (= 12½ square miles); so that the average discharge per acre per diem amounted to about 250 cubic feet for a space comprising the urban as well as suburban parts of the capital. This quantity of sewage was derived almost entirely from *artificial* sources, or house-drainage, for there had been little or no rainfall at the time; whereas the greatest sewer-flow is always, of course, during the wet weather. It was, therefore, after other and similar experiments, assumed officially that the average discharge of the urban and suburban sewage from the several districts included within an area of 58 square miles is equal to 256 cubic feet per acre, or 164,000 cubic feet per square mile per diem. Hence, as 43 of the 58 square miles comprised in the before-mentioned calculation were situate on the northern side of the Thames, and the remaining 15 on the southern side, it was computed that, at the time of making the experiments, there were discharged *daily* into the Thames, *in the very heart of London*, rather more than 7 million cubic feet of sewage from the Middlesex bank of the river, and very nearly 2½ million cubic feet from the Surrey one,—or 9½ million cubic feet together.

But the extent of surface estimated to be drained by the sewers in the above instance was only half that of the gross metropolitan area, or 58 square miles out of 115. It comprised, moreover, that portion of London which was more crowded with houses and factories than the purely suburban districts. The buildings in the extreme suburbs, however, average barely 2 to the acre; whereas in the most densely-populated quarters there are more than 25 dwellings huddled together on each acre of ground. So that, all things duly considered, it was estimated that the sewage from the remaining half of London might be fairly computed as being at least fifteen to twenty times less than that from the more thickly-peopled moiety of the metropolis; or, in other words, that the gross quantity of metropolitan sewage,—suburban as well as urban,—might be safely set down at between 10 and 11 million cubic feet per diem. Still, this calculation was made in the year 1844, rather more than thirty years ago, when the water-supply, from all sources, was but 55 million gallons daily; whereas the year before last it amounted to as much as 113 and odd million gallons, or upwards of 100 per cent. more. Hence, as the wet house-refuse must have increased in the same ratio, the present quantity of sewage ought to be about 21 million cubic feet every twenty-four hours, irrespective of the suface-water from the streets. Nevertheless, according to the estimate given in the preceding article, it cannot be more than 19¾ millions. The numbers, however, approximate so closely, that, allowing for the difficulty of precise measurement in the one case, and of precise calculation in the other, they may be fairly taken as being near enough to the truth for all present purposes.

But Sir Joseph Bazalgette, in his account of "The Metropolitan System of Drainage," published in 1865, puts the question as to quantity entirely at rest; for he tells us authoritatively that "the sewage on the north side of the Thames at present amounts to 10 million cubic feet per day, and on the south side to 4 million cubic feet," or 14 million cubic feet together; "but provision," he adds, "is made for an anticipated increase up to 11½ millions on the north side, and 5¾ millions on the south side." Still, in '65 the average daily water-supply was hardly more than 20 gallons per head; whereas it is now nearly 26 gallons, or 30 per cent. greater. So that if the gross amount of sewage was 14 million cubic feet per diem ten years ago, it must, according to Cocker, amount to at least 18½ millions at the present time. Hence, allowing for leakage, absorption, and evaporation, the numbers agree sufficiently well to show that there can be no very great error either in the estimate or the measurement. The gross quantity of the London sewage, then, irrespective of the surface-water of the streets, may be taken, in round numbers, at somewhere about 20 million cubic feet per diem; and this derived from half a million houses, gives 40 cubic feet, or, within a fraction, 260 gallons, as the average amount of wet refuse from each building, including factories as well as dwellings, throughout London.

So much for the *quantity* of the London sewage; and now as to the *quality* of it, in order that we may form some notion concerning the nature and uses of it. First, concerning the noxious character of the London sewer-water, and hence the vital necessity for removing the

* See p. 1073, *ante*.

sewage far away from the immediate neighbourhood of the metropolis. Dr. Arthur Hill Hassall said in his examination before one of the Parliamentary Committees on the subject,—"I have examined microscopically the water of several of the principal sewers of London, and detected in it but few forms of animal life,—those encountered for the most part being a kind of worm or '*annelid*,' and a certain species of animalcule of the genus '*monas*.' The absence of animal life is doubtlessly to be attributed in a great measure to the large quantity of sulphuretted hydrogen gas which is contained in sewer-water, and which is continually being evolved by the decomposing substances included in it. With a view to determining whether or not the sulphuretted hydrogen in sewer-water was present in such large quantity as to be prejudicial, and even fatal, to animal life, I made the following experiments:—A given quantity of Thames water known to contain living *infusoria* was added to an equal quantity of sewer-water, and when examined *a few minutes afterwards*, the animalcules were found to be either dead, or deprived of locomotive power, and in a dying state. A small fish placed in a wine-glassful of sewer-water immediately gave signs of distress, and after struggling violently, floated on its side, and would have perished in a few seconds, had it not been removed and plunged into fresh water. A bird was encaged in a bell-glass jar, into which the gas evolved by the sewer-water had been allowed to pass, when, after struggling a good deal, and showing other symptoms of the action of the gas, it suddenly fell on its side, and although immediately removed into fresh air, was found to be dead. . . . . I infer from these experiments that sewer-water, such as is contained in the Thames near London, is prejudicial to health; and I regard the Thames in the neighbourhood of the metropolis *as being nothing more than diluted sewer-water!*"

But if sewer-water be so prejudicial to animal life, what says chemistry as to its probable benefit to vegetable life? Professors Brande and Cooper obtained from one gallon (10 lb. = 7,000 gr.) of sewer-water, when evaporated to dryness, 85·3 gr. of solid matter, of which 74·8 gr. were again soluble, and the remaining 10 gr. insoluble. The 74·8 gr. which were resoluble were found to consist of a *large quantity of organic matter*, besides some potash and soda, with 10 gr. of chlorine, 6½ gr. of lime, 3½ gr. ammonia, and a small proportion (barely 1 gr. together) of sulphuric acid and phosphate of lime. The 10½ gr. which were insoluble yielded, on the other hand, rather more than 6½ gr. of sand, not quite 2½ gr. of the phosphate of lime, and barely 2 gr. of the carbonate. From another gallon, evaporated to dryness, the solid matter weighed 55 gr., of which nearly 21½ gr. (not quite half, mind) were combustible, "*being composed of animal matter rich in nitrogen*," some vegetable matter, and a quantity of fat; while the remaining 33½ gr. consisted of 21½ gr. sand, barely 7 gr. phosphate of lime, with a small proportion of chalk and plaster of Paris, and 2 gr. of oxide of iron,—the sand and earthy matter having been derived, as other evidence showed, from the "mac" and mud, combined with the mortar or concrete which had come from the pavement, and which had been washed from the surface of the streets into the sewers. Other analyses exhibited merely such variation in the results as was inevitable from the state of the weather at the time when the sewer-water was collected. Thus, then, we find that sewer-water yields, when evaporated to dryness, about 5 gr. of solid matter, or "manure," as it is called, to every 500 of the liquid (Mr. Smith, of Deanston, calculated the yield to be 1 to 500, or about 4½ lb. per ton), and that of this solid matter or manure *rather more than one half consists of those constituents which are known to possess the highest fertilising properties.*

And now let us compare the above results with the chemical constituents of guano, of the fecundating virtues of which there cannot be the least question. According to the analysis of the best kinds of Peruvian guano (which is second only to that of "Angamos" in the quantity of ammonia which it contains) the average proportion of ammoniacal salts found in that form of manure is 50½ per cent., while the salts of lime are rather more than 22½ per cent., those of potash 4½ per cent., and the soda salts not quite 2 per cent. Hence it follows that the organic matters and ammoniacal salts found in the "manure," obtained by evaporating sewer-water to dryness, are as nearly as possible equal to those present in the best kinds of guano, and considerably more than those contained in the guano from Ichaboe, in which the nitrogenous elements do not exceed 40, and are often but little more than 30, per cent. Moreover, the phosphates in sewer-water rank as high as 20 per cent. (or 6·81 gr. in 33½ gr. of the ash), whilst in Peruvian guano they are but 23·48 per cent., in that from Angamos only 17, and in the new guano from Ichaboe not more than 19½ per cent. Consequently, according to chemistry, the "*manure*" *obtained from sewer-water ought to be possessed of at least the same fertilising properties as even Peruvian guano itself.*

Such, then, are the quantity and quality of the London sewage. There are not only 20,000,000 cubic feet, or upwards of 500,000 tons, of it to be got rid of every day; but they are 500,000 tons of a substance which, if there be truth in agricultural chemistry, should be every bit as valuable as Peruvian guano, containing,—as the residue of sewer-water does, after being evaporated to dryness,—as nearly as possible the same per-centage both of ammonical salts and phosphates as the most prolific manure.

But we must pass now from the *sewage* itself, or matter to be got rid of, to the consideration of the *sewerage* or means of getting rid of it. The question is, how are 20,000,000 cubic feet of stuff (we use the fine old Saxon word in its fine old Saxon sense) to be disposed of every day,—of stuff, too, which, if allowed to rot and fust under the noses of the people, is sure to poison the air, and if discharged into the nearest stream, as sure to poison the water imbibed by the community? Now, just try to comprehend what a vast volume 20,000,000 cubic feet of liquid really is. Why, it would require a tank 10,000 ft., very nearly two miles long, by 100 ft. broad, and 20 ft. deep,—to contain it: a capacity which is more than sufficient to float an entire navy; and, bear in mind, that this same tank would have to be filled with the most filthy, loathsome, and poisonous mass of corruption known to human nature. It needs, indeed, the same large social machinery to remove the fluid and solid refuse of a large community as it does to provide them with food and drink. If what they digest in the aggregate has to be thought of, what they egest in the aggregate has to be considered also. It is said that this monstrous London, which cannot grow a blade of wheat, or hardly feed a sheep, to support itself, never has a stock of provisions within it sufficient to keep the people for more than three or four days together; but, be that as it may, it is certain that, were there not some rapid and effective means of carrying off the refuse of four millions of human organisms, the ordure from such a vast flock of wingless bipeds would soon form a far greater deposit than even the immense beds of guano left by the countless generations of birds in South America.*

Now, there are several more or less obvious means of disposing of the refuse of a population. The first is the rude and ready mode still practised by many a Continental, and so-called civilized, community, viz., of ejecting it in the public thoroughfares, and leaving it to be removed or not, as it may. The second is to dig a large hole in the immediate vicinity of every household, and then, by means of a series of bricken tubes or earthen pipes, leading from the dwelling to the vile reservoir, to carry off into it all the feculent "slops" of the family, and there to allow them to remain seething and putrifying under the very nostrils, and within range of the lungs, of the young and old, the women and children, until such time as the filthy tank is full to overflowing. This constituted the disgusting system of cesspoolage which (one would hardly credit it) prevailed in this great capital of ours till within a quarter of a century ago, and which still prevails in Paris,—"*la cité*,"—as the French delight to inform you, "*qui est la plus civilisée du monde.*" The third method is to shoot the liquid and semi-liquid house-refuse into some drain or channel, such as an open or covered ditch or watercourse (or, what is close akin, some sewer), having a greater or less fall to the nearest river, and thus allow it to discharge itself, by the simple flux of gravitation, into the adjacent stream; there to be carried backwards and forwards by every ebb and flow of the tide (if the said stream happens to be a tidal one), and thus to become eventually so thoroughly mingled with the fluid from which the population is sure to derive its principal water supply, that the very liquid which the people use for drinking, cooking, washing, and brewing purposes is destined, sooner or later, to become a turbid and fœtid mess of so much "*diluted sewer water*,"—water that has been shown to be so prejudical to animal life that even the very animalcules which live and thrive in stagnant pools are killed by it *in a few minutes*, in which fish are immediately poisoned, and which is for ever evolving such a miasma of sulphuretted hydrogen that birds encaged for a short while in a bell-glass jar filled with the gas from it, flutter their wings, and die, even though removed, on the first symptoms of distress, into the pure and uncontaminated atmosphere. Such was the system of sewerage prevalent in this great and "enlightened" metropolis (one would hardly credit it, we repeat) until A.D. 1859, not a score of years ago; and to this system, there is hardly any doubt, may be mainly ascribed the intense virulence of the cholera which made a plague-spot, and almost a charnel-house, of London in the years 1848–9 and 1853–4, when nearly 20,000 persons fell victims to the poisoned air and water at each visitation of the pestilence. The fourth method is to carry the entire wet-refuse of the capital, by means of covered channels, miles away from the *heart* of the capital itself, and to discharge it into the river at a point so far "below bridge" as to be beyond tidal influence, and thus prevent the possibility of its returning to pollute the stream and the atmosphere from which the people derive their daily supply of the water and the air on which they live. This constitutes the present system of what are called the "main intercepting sewers," which, by crossing at right angles, and at a slightly lower level, the old main sewers leading to the Thames are arranged so as to relieve them of their contents on their passage to the river; and then to carry the sewage, by means of fitting inclinations to the conduits on the "high level," and by suitable lifting stations at those on the "low level," to appointed "outfalls" situated on the opposite shores of the metropolitan stream, at the extreme outskirts of the metropolis itself.

Now, these four different modes of getting rid of the liquid and semi-liquid refuse of a city differ only in two essential particulars. By the first pair of methods the refuse is kept in the immediate vicinity of the homes of the people, and removed only *periodically*; by the last pair, however, it is carried off by means of conduits, more or less *directly* to the neighbouring stream, and discharged, in the one case, into the river, in the very heart of the capital, as we have said, but, in the other, at the extreme boundary of the metropolis. Still, *removal*, sooner or later, is the sole object. The refuse is not only a nuisance, but (we are at length beginning to understand) a danger as well, to have near us; therefore, it must be got rid of, and be carried, not alone, as formerly, to the nearest point of the adjacent river, but, as at present, so far away that there may be less chance of its offending or harming the people for the future. But to convert the bane into a boon,—to transmute the deadly poison into strengthening food,—to give a commercial value to that which we now cast away as worse than worthless,—in a word, to apply the refuse to the beneficent uses for which the Almighty intended it, is a "consummation" which is *still* "devoutly to be wished." Let us, however, *not* rest, but "be thankful." We have got rid, *pro tempore*, of our refuse from under our very noses,—we have stopped it poisoning the water we drink and the air we breathe; and now all that remains to be done is for some ingenious chemical philosopher to discover an easy and inexpensive process by which to make that which we at present fling into the sea the future means of giving so much more bread and beef to the people.

Who invented sewers?—*i.e.*, covered or subterranean conduits for the removal of the wet-refuse from the immediate precincts of a town,—and when were they originally instituted? is almost as profound an architectural mystery as who laid the first stone of the Egyptian pyramids. All we know is that the celebrated "*Cloaca Maxima*" of ancient Rome is the earliest example of such a structure extant; and *that* is said to have been built by the second Tarquin, better known as "*Tarquinius Superbus*," who succeeded Tullius Servius as king of Rome, after the said Servius had been inhumanly murdered by his daughter Tullia and this same "Tarquin the Proud," B.C. 534, more than 2,400 years ago. But as Livy tells us that "Tarquin sent for artists from every part of Etruria for this and

* The term *guano* is in Spanish also written *huano*, and this is derived from the Peruvian word *huanu*, which signifies *dung*.

his other public works," it seems highly probable that the Roman Cloacæ were really of *Etruscan* origin. Be that as it may, there is not the least doubt that the stone of which the great Roman sewer is built is a proof of the great antiquity of the work; for it is not the "*peperino*" of Gabii and the Alban Hills, which was the building-stone in ordinary use at the time of the Republic; but consists of the "*tufa litoide*" of Brocchi, one of the volcanic formations, and *that* material is found only in the more ancient Roman constructions. The great Cloaca, we are told, cost 1,000 talents of gold (about 190,000*l.* of our money); it was formed with three arches, one within another, — the innermost being about 14 ft. in diam., and each of the hewn blocks just upon 5½ ft. long, and 3½ ft. high, and joined together with cement. The main arch, which is still existing, is one of the oldest examples of the use of the key-stone; indeed, from this very circumstance many architects of eminence have been induced to refer the date of the structure to a much later period. From the above-mentioned dimensions it will appear by no means incredible that a wagon laden with hay should have been able, as stated by Strabo and Pliny, to pass down the principal archway; still, it should be borne in mind, as has been well observed, that the vehicles of the Romans were much smaller than our own. Nevertheless, it is beyond question that this great sewer drained, not only the valley between the "seven hills," but the low grounds about the Palatine and the Capitoline. It crossed the Forum beneath the pavement, and extended to the Tiber; thus serving to remove the surface-water, not alone from the adjacent country, but the streets of the city as well. Moreover, Dion Cassius states that Agrippa, when he cleansed the sewers, passed through them in a boat, to which circumstance Pliny probably alludes in his expression "*urbs subter navigata*" (the subterraneauly-navigable city); and the extraordinary dimensions of these underground passages, as well as that of the embouchures through which the waters poured into them, are still further attested by the fact that it was a project in the days of Rome's greatness to turn *seven* navigable rivers into them, so that barges might continually pass along the covered canals, and thus carry on the traffic of Imperial Rome. But the term Cloacæ (which, as Pliny tells us, was derived from the ancient verb *cloare*, or *cluere*, to wash, cleanse, or purify) was not only applied to the spacious subterranean vaults which were used to carry off all the streams brought to Rome by the aqueducts, as well as all the sewage from the dwellings in the capital, to the neighbouring Tiber, but it was also given to any smaller drain, formed either of wooden pipes or earthen tubes, with which almost every house in ancient Rome appears to have been supplied, in order to discharge its refuse into the sewer. For the entire capital, according to Pliny, was so undermined with these intersecting submerged conduits that he terms it "*urbs pensilis*" (the suspended city) in his enthusiastic description of the ancient Cloacæ. Hence, there can be no doubt as to the old Roman sewers having been main drains, rather than simple watercourses.

When sewers were first instituted in this country it is difficult to discover, owing to the word having been originally applied to conduits for water, instead of channels for that form of sulliage to which the title of "*sewage*" is now given. Indeed, the old English term for a *sewer* was simply a *sew*; and, accordingly, in "Nare's Glossary" we find "*sew*, a sewer," with a quotation appended from the "Nomenclator," of 1588, in which it speaks of "*l'esgout d'une ville*" as being "the town sinke,—the common *sew*." So in Halliwell's "Dictionary of Archaic and Provincial Words," we have to "*sew*, to drain land," and a "*sew*, a covered drain or wet ditch," as well as to "*sie*, to strain milk" and a "*sey*, a skimming-dish." Now, according to Webster (Goderich's edition), the Teutonic original of the old English verb to "*sew*, to drain, as a pond for taking fish," was the Gothic *seon* and Anglo-Saxon *sihan*; and the latter Bosworth explains as "to strain, or sile, and in Derbyshire to *sie* (*percolare*),"—the Icelandic equivalent for this being (*vide* Cleasby's Dictionary) *sia* (aĕ) to filter, while the noun *sia* or *sifa* (which is but the Scandinavian form of our word *sieve*) signifies either a sieve for flour, or strainer for milk; as *mjölka sia* (used in dairies), a milk-strainer; so that the word meant originally either a sieve, strainer, or *drainer* (as a skimming-dish), and hence a drain or "sew," and as we have *to* drain, *a* drain, and a drainer, even so had we formerly, *to* sew, *a* sew, and a sewer.*

Hence, it is evident that the old word *sew*, or *sewer*, originally meant merely a *sieve* or *sifter*, when applied to solids like flour; and a *strainer* or *drainer* in connexion with liquids, like milk, *i.e.*, something wherewith to discern the coarser from the finer particles in the one case, and in the other to separate the solid particles or impurities from a fluid,—rather than signifying, as it does now, a conduit into which such impurities are intended to be cast. Accordingly, in the early English documents relating to sewers, we find them spoken of mainly as *watercourses*, and certainly *not as drains* for the reception of the city's filth. Indeed, Stow, whose description of London was published towards the end of the sixteenth century, never in any way alludes to a sewer as being such as we at the present day understand it:—a covered submerged channel for the sulliage of the houses, the factories, and the streets. Even in his account of the Fleete Ditch he tells us only of the sums continually expended by the "*Maiours*" to keep the "course" clean; and informs us that "before 1569 the said Ditch lay open, without either Wall or Pale, having therein great Store of very good Fish, of divers Sorts, as many men yet living, who have taken and tasted them, can witness,"—a circumstance which, it has been shown, could not possibly have happened had the said Ditch been merely a common sewer; seeing that sewer-water is fatal to all forms of animal life. Moreover, the same trustworthy old chronicler records the fact that at the beginning of the fourteenth century (35 Edward I.) Henry Lacy, Earl of Lincoln, "complained to the Parliament, then holden at Carlisle," that "whereas in times past *the Course of Water* running at London, under Oldborne Bridge and Fleete Bridge into the Thames, had been of such Breadth that ten or twelve Ships' Navies at once, with Merchandise, were wont to come up to the aforesaid Bridge of Fleete, and some of them to Oldborne Bridge as well, now *this same Course*, by reason of the Filth of the Tanners, and such other, is sore decayed; but especially by a Diversion of the Water made by them of the new Temple, in the first Yeare of King John, for their Mills standing without Baynard's Castle, and divers other like Impediments; so that the Ships cannot enter as they were wont, and they might." Further, Stow, writing somewhere about 1582-90, assures us that "at this Day there be no Ditches or Boggs in the City, except the Fleete Ditch; but, instead thereof, there be large common Drains or Sewers, *made to carry away the Water* from the Postern Gate, between the Tower-hills to Fleete Bridge without Ludgate." Hence, it is manifest that, in Stow's time, Sewers and common Drains were merely, as we have said, watercourses, *i.e.*, channels made to carry away surplus water rather than filth. Indeed, in the year 1218, the Fleete, which was then called the "River of Wells," being fed by several springs, from which originated the names of the neighbouring districts now known as "Sadler's Wells," "Bagnigge Wells," as well as "Clerkenwell" (literally the Clerks' Well—so called from its being the custom of the parish clerks of the City to meet in that neighbourhood once a year, and give before the Lord Mayor and Aldermen theatrical representations of certain parts of Scripture)—this "River of Wells," we say, which afterwards came to be called the "Fleete" (probably from the swiftness of its current in the olden time), is known to have supplied with water, at the beginning of the thirteenth century, the people who resided west of Chancery-lane and were then styled "Foreigners." So particular, too, were the authorities at that date as to the preservation of the purity of the stream that in the year 1307 the mills before referred to as standing "without Baynard's Castle" and belonging to "them of the new Temple," concerning which the Earl of Lincoln had complained to the Parliament "then holden at Carlisle," were removed on the ground of their *disturbing*, as well as diverting, the stream. Further, the waters from a spring at "Tye Bourne," situate in the locality now known by the grand title of "Tyburnia" as well as those of the Bays-water Brook, now called the "Ranelagh Sewer," were conveyed in 6-in. leaden pipes into the neighbouring houses.

In fact, many, if not most, of the main valley lines of sewers—such as the "Ranelagh," "The King's Scholars' Pond," the "Fleet Ditch," &c. — were formerly merely open brooks, ponded up, at various points along their route, so as to form ornamental waters in the pleasure-grounds of the nobility and gentry resident in what was then considered to be the "rural" portion of the metropolis. For, it is on record that, even as late as 1730, Queen Caroline, immediately after the accession of her husband, George II., to the throne, fed the ornamental water in Kensington Gardens as well as the Serpentine in Hyde Park with the stream from the Ranelagh Sewer, which ultimately, however, so polluted the lake that it had to be diverted, a few years ago, by a new main drain through the park.

In fine, the most convincing proof that the old sewers were never intended to be conduits for what is now understood as sewage, is to be found in the fact that up to a recent time it was, as Sir Joseph Bazalgette has said, "*penal* to discharge sewage, or other offensive matters, into the sewers;" for cesspools were then regarded as the proper receptacles for house-drainage, and sewers as the legitimate channels for carrying off the *surface-waters* only.

In a word, the so-called sewers were simply drains and not sewers, in the modern acceptation of the word, at all; and although, shortly after the commencement of the present century, householders were tacitly permitted to drain their wet refuse into the old watercourses—the *quondam* Bournes and Brookes and Wells of London—still it was not till the year 1847 (but little less than thirty years ago) that the first Act of Parliament was passed which made it *compulsory* to drain houses into the sewers themselves.

At that period, however, some such measure had grown to be almost a matter of necessity; for, owing to the increase of the metropolitan population, the subsoil had become thickly honeycombed with cesspools; while, owing to the introduction of improved domestic appliances,—such as the substitution of water-closets for the disgusting barbarisms known as privies, and the consequent increase in the wet refuse of every household,—"overflow drains" had to be constructed from the cesspools to the sewers. And so, as the sewers, or old watercourses, naturally came to be polluted by this same cesspool-overflow, it grew necessary that covered bricken channels should be substituted for the previously-existing open streams. Thus, in the march of civilisation, what was originally a somewhat capacious river, dwindled eventually into a simple watercourse, then into a mere drain or ditch for carrying off the surface-water of the neighbouring land and streets, and latterly was debased into being nothing better than an open channel for the overflow of the house-refuse from the cesspools; while, finally, it had to be converted into a *covered* or *submerged* conduit for the removal of the entire sulliage from the streets, the houses, and the factories, of the overgrown capital.

Such is the "natural history," so to speak, of sewerage: and such the simple social means by which the old English term, a *sew*, which, as we have shown, originally signified merely an instrument for the *separation* of impurities,—as a sieve for solids, and a strainer or drainer for liquids,—became, in the course of time, changed into a *sewer*, or vessel for the *reception* of all the impurities of a city; till, at length, the ancient watercourses got to be mere rivulets of refuse,—submerged streamlets of sulliage; nothing more nor less, indeed, than *ordure-ducts* for the removal of the filth of the community.

But, let us make all due acknowledgment for the removal of the said filth *now* to a point so far distant from the city itself that it must be at least less hurtful than before, even if it cannot be made useful, as it assuredly must be in the future; for "*dirt*," as Lord Palmerston said,—at once wisely and wittily,—"is but matter in the *wrong* place."

Builders' Benevolent Institution. — We are glad to learn that the late Mr. Tozer, of Edwardes-square, Kensington, has bequeathed a legacy of 50*l.* to this useful institution.

* Dr. Latham, in his recent edition of Todd's Johnson derives the word *sewer* from the Norman-French *sewiere*, or *sewiere* (neither of which words, by the bye, are to be found in Cotgrave or Kelham), and this he connects with the modern French verb "*essuyer*, to wipe dry, dry up." But *essuyer* is proved by Littré in his French Dictionary to be "from the Latin *ex-succare (oter le suc, ou l'humidité) de 'ex' et 'succus' (jus)*"; the several dialectic forms of which he shows to be: Provenc.: *esugar* or *eshucar*; Spanish, *enjugar*; Portugese, *enxugar*; Italian, *asciugare*. Consequently there can be no more doubt that the root of the French *essuyer* is the Latin *succus*, juice, than there is that the root of the old English *sew*, a drain, is the Anglo-Saxon *sifa*, and the Icelandic *sia*, a sieve, strainer, or drainer. *Succus* and *sifa*, however, are two etymological radicles, which are essentially distinct; and *sewer* therefore can have about as much philological connexion with *essuyer*, to wipe dry, as it has with *sueur* (Latin *sudor*), sweat.

A MANUAL OF HOUSE-PAINTING.

In a clever story which appeared in a leading "monthly" some time ago, an omniscient Crichton of a private secretary, advising an old schoolfellow as to the various openings in life before him, suggests,—"or you might try scene-painting; did for some time myself; pays very well; quite easy work, you know; done with a big brush, this way," moving his arm backwards and forwards in explanatory pantomime. Perhaps the same sort of description, though the most unlearned readers may perceive that it falls a little short of being an adequate definition of the art of Beverley and Grieve, would be assumed by most to be a tolerably comprehensive setting forth of the labours of those whom an able artist (Mr. Eyre Crowe) has depicted, in one of the best of his small but highly-finished works, under the title of "Brothers of the Brush," leaning in various positions from a ladder to beautify with a new coat of white a vertical strip of London street front. Yet we have here a volume of not far short of 400 pages,* devoted to the full explanation of this humbler and more practical branch of painting, and a warning in the preface against the idea that house-painting consists of manual processes only, or that a young man "has only to follow others to become a competent workman." It is true that the author includes in his treatise not only the ornamental processes (for those who so consider them) of graining and marbling, but devotes a chapter to "the principles of decorative art." This, however, is not viewed as going beyond the house-painter's proper calling; but is added in consideration of the fact that he is constantly consulted as to decorative features, such as the colouring and "picking out" of a cornice, and should, therefore, be able to give sound advice upon principles rather than upon mere imitation and following of precedent.

In regard to the more general processes of covering external and internal surfaces with paint, it is only necessary here to observe that beginners will find a very full description of the composition and mixing of the various pigments employed, and sufficient directions as to cautions to be observed even in the sort of work which may really be considered as little more than manual labour—"done with a big brush, this way." Perhaps no branch of painter's work is so extensive as that which consists in painting cement exteriors; certainly no other branch spreads over so vast an area of surface as the cemented fronts which are painted would annually amount to. It is almost painful to think of the amount of material and labour expended in what, in the eyes of the architect, is certainly "labour for that which satisfieth not"; though we think this field of operations is considerably narrowed, comparatively, at least, from what it used to be. There is a good and a bad way, however, even in this application of paint; and among other things the "Manual" calls the painter's attention to the unsatisfactory consequence of hurry in painting stucco before it is fairly dry, or (which is less thought of) before the walls are fairly dry. "Perhaps in general cases, where persons are building on their own estates or for themselves, two or three years are not too long to suffer the stucco to remain unpainted, though frequently in speculative works as many weeks are scarcely allowed." One could hardly expect the originators of speculative work, however, to expend upon mere painting an amount of conscience and forethought which they rarely think necessary in regard to the more vital portion of the construction.

Coming to the more "high art" branch of graining, &c., we find, with abundance of written instructions, the reminder that "the grainer who has the ambition to rise above mediocrity must bear in mind that he will not accomplish his object by merely following the written instructions here given, by copying the examples, or even by following the generally accepted pattern adopted by the mass of painters. He must think for himself, must examine and carefully study nature; and in this way he will understand the exact character of each wood, and will be able to produce good and natural representations of it." This, it will be seen, is, in fact, the same advice generally given to those who wish to excel in landscape-painting. As in that, so in graining, "go to nature"; and the grainer ambitious of excellence is advised to procure veneers cut from each of the best marked or most frequently used woods, and have them French polished or oil-rubbed, and glued on deal boards, so as to preserve them for reference and study. This is, no doubt, the way to get original and life-like effects, and there can be no denying, we think, that in graining studied and developed in this manner there is an artistic element, and that it differs from mere handiwork and mechanical labour, in the demand it makes upon the taste and perception of the painter. Whether the result is worth this trouble and study, and whether the cost of the extra labour and skill thus expended in producing an imitation of a high class of wood might not go some way, under proper management, towards obtaining the better and more beautiful material itself, is, however, a question to be considered. The woods recommended for study are bird's-eye maple, pollard oak, satin-wood, mahogany, walnut, wainscot oak, and rosewood. Coloured specimen plates of several of these are given, and (what is of more importance) the main facts as to the structure and growth of wood are given in a separate chapter. To imitate the markings of the wood accurately and with spirit, the first desideratum is to understand the way in which they are produced.

This principle is rightly laid hold of, again, in regard to marbling. The attention of the painter is called to the formation of marbles:—

"It must be observed that they are beds of rock that are veined by metallic or other substances running amongst them, and that the veins always run in the direction of the strata, precisely as thin streams of water would if poured upon an inclined plane, such as the top of a table slightly raised on one side. If this experiment is tried, it will be found that the streams, if they commence regularly, will, from some inequalities of the surface, soon alter their course and turn in various directions, sometimes joining together, forming a sort of star, and then spreading into finer threads, while others will join and form a thick vein, but still running in various forms towards the bottom. This is precisely the way in which the various substances spread themselves on the limestone, of course penetrating the surface and interspersed with the strata.

From this experiment, the painter will see *that however he may vary the direction of the veins, they must all appear to be travelling to the same point by different roads*, and nothing can be more contrary to nature than those violent and eccentric breaks which painters of veined marbles usually practise. This will apply to all marbles except black and gold, porphyry, and Florentine."

We shall probably not be wrong in suspecting that the greater part of imitation marble veining is done with little consideration of the method and principle on which the original markings come into existence, though conscientious and sometimes very successful attempts are made to catch their trick and character. The author refers to the Geological Museum in Jermyn-street as a place where fine specimens of veined marbles may be studied with advantage. A specimen of the *modus operandi* of marble-making may be interesting to those not familiar with it. In imitating one of the finest in appearance, though one of the least trustworthy and durable marbles, that known as "Black and Gold," two or three methods are suggested, of which the first and apparently the most common is, on a black ground to paint the large spots, from which the fibrous veins are to run, with yellow ochre and white, brightened with a little vermilion, dabbed with a brush full of colour and whilst quite wet, threads to be drawn from each "dab" in different directions. But a more recondite receipt—"another way," as the cookery-books say—is as follows:—

"In cabinet work, most beautiful imitations of this marble may be produced by spreading a leaf or two of gold in any part of the work where the gold, and silver leaf where the white, veins are intended to run. The black ground is then to be rather thickly painted over the whole surface, covering the gold and silver leaf; and, after the colour has been on a short time, take a round-pointed bodkin, or similar implement, and draw the colour in small reticulated veins from off the gold and silver leaf—the metal will then show in fine lines; the larger masses are to be nipped off with the wash leather spread over the finger and thumb, or a piece of wood. When the black is dry, the yellow and white veins are to be painted as before directed, and drawn over the gold and silver, which will by this means show through them, and give great brilliancy where the work has been subsequently varnished."

If imitation marbling is admitted at all as a source of decorative effect, it is no doubt better that it should be done well than ill. Nevertheless, without drawing the line too hard and fast, it must be conceded that every person whose education has led him to cultivate a pure taste in such matters, would probably prefer the plainest finish to the interior of his house to the factitious appearance of sumptuousness which can be attained by such expedients as the above, and the demand for it is certainly likely to diminish rather than increase with the progress of education on the artistic side.

That part of the painter's trade known under the general term of "sign-writing" (to which term our author with some reason objects, suggesting "letter-painting" as a more correct description of the general work included under it) has more than once been the subject of remarks in our columns, partly on its practical side, partly in regard to the "curiosities of literature" connected with it. The apparently simple business of painting a name or inscription, large size, so as to look all right in every way, in regard to proportion, size, and spacing, is a much less easy matter than those who have not tried would suppose. In treating of the execution of letters in slanting hand, Mr. Davidson rightly comments on the absurdity of making a point of the painter dispensing with mechanical aid in securing a regular slope and absolute resemblance between repetitions of the same letter, as if the painter had not as much right to (as well as need of) mechanical aids as the bricklayer or joiner to their plumb-line and rule. We cannot say that the chapter on forms of lettering, when it gets past the plainest forms, exhibits any thing very picturesque or novel; perhaps the aim was only to give the kind of letterings most in vogue; otherwise we are much in want of a little more fancy and artistic form in lettering; and it is surprising, if we come to try, what a very slight change of line or of manner will make all the difference between common-place and character in lettering. A consideration at the close of the chapter, that the character of the lettering should accord with the style of architecture of the building on which it is put up, is not always, perhaps not often thought of; and another point for which architects are to blame sometimes, is that when it is known that a building will have to carry a large inscription, no provision is made for it in the architectural design, so as to make it look like a pre-considered incident, but the painter is left to paint his big letters over the walls wherever he can, to the detriment of the total appearance of the building. We have before pointed out this in the case of one or two new erections for newspaper offices. As to the chapter on shading letters as if they were projecting, the best advice to the painter on that head would be,—"Don't." One ultra-absurdity the author does condemn, that of letters painted and shaded as if warping or twisting away from the ground, or sticking out from it, apparently, at different angles, of which he says that "while an artist may admire the drawing, the public fail to read the inscription." Mr. Davidson surely must know very well that "an artist," above all, would detest such a piece of misplaced cleverness. Painters who wish to show originality in this kind of work should seek for it in form and colour, and more particularly in form, in the designing of letters, and not in illusive tricks of shading. Of course, however, the painter is in the hands of his employer very often, and the worst offences against good taste in inscriptions are usually purposely concocted as advertisements.

The information on such perspective and geometrical problems as the painter is likely to meet with (the former are, however, in reality out of his beat) seems adequate to the occasion; but the chief value of the book lies in its condensed technical information, and in suggestions which may set a good workman thinking, and lead him to invent for himself improvements in the more ornamental branch of his business, and to develop his taste in a right direction.

* A Practical Manual of House-painting, Graining, Marbling, and Sign-writing: containing full Information of the Processes of House-painting in Oil and Distemper, the Formation of Letters and Practice of Sign-writing, the Principles of Decorative Art, a Course of Elementary Drawing for House-painters, Writers, &c.; and a Collection of useful Receipts, with nine coloured Illustrations of Woods and Marbles, and numerous Wood Engravings. By Ellis A. Davidson. Lockwood & Co., London, 1875.

CADOGAN AND HANS PLACE ESTATES.

THE proposed thoroughfare to open out these long slumbering and dull districts will confer great benefit upon the whole outlying neighbourhoods of Chelsea and Brompton; and if, as it has been reported, this line is to be continued across Yeoman's-row, towards the Cromwell-road, then, indeed, a most important duct of communication will be available for South Kensington and the adjoining districts. At the commencement of such a project, it will, however, be advisable, if not necessary, to make the roadway at least 80 ft. wide, or if it eventuate in a grand boulevard, then 100 ft. from front to front. To continue a new route at the width of Pont-street would be useless, if it be purposed to give importance to a new structural town in such close proximity to Belgravia.

Leading on to Eaton-square, to Buckingham

Palace, the Houses of Parliament, the New Opera-house, and Hyde Park Corner, it would give light and bestow a value on districts which, although vicinal, have been hitherto little frequented, and but little known.

As the object is obviously to open out an estate for building requirements, it is hard to see how a line drawn from Pont-street, in a westerly direction, can meet the object in view, without removing the old mansion and its adjuncts; but if the issue into Sloane-street were by Pavilion-place, then those might be left to intervene with Old Hans-place.

The condition of Cadogan-place garden, the marginal boundary of Belgravia on the west, has long been a reproach to the ninety aristocratic houses forming its north, east, and south boundary, or else to the Cadogan estate, if under its control. Some eighty years back it was planted and ornamentally laid out as a public garden; now it is a wilderness. In extent it is, perhaps, one of the largest railed-in areas of London; but a central portion, which was for many years let out as a nursery, with one residential villa and offices, is at present let out in three tenements—an artist's studio, a literary professor's school, and a private villa!—if the property pertains to the Cadogan Estate, this is certainly not the most profitable mode of farming it. Despite these blots and blemishes on this bushy margin of Belgravia, the opening out of the Pavilion Estate, if suitably carried out, must contribute largely to public requirements, as well as to the private interests of the proprietor.

QUONDAM.

THE WATERLOO-ROAD RAILWAY STATION.

For some time past the South-Western Company's principal terminal station in Waterloo-road has been undergoing a very extensive enlargement, the extensions applying both to the Richmond and Windsor section on the York-road, or north-west side, and also to the main line portion of the station to the south-east, in the direction of Lower Marsh and the New Cut. Works of great magnitude, involving a large outlay in the purchase of property, are about to be commenced on the last-named side of the station for the purpose of adding to the station area for the main line traffic, which, when the works are completed, will be almost double its present size. The owners and occupiers of a large number of houses and other buildings immediately adjoining the extreme south-east entrance to the station have for some time been under notice, and in a few weeks their several tenancies will expire, when the buildings will be demolished, and the site upon which they stand will be thrown into the station area. Upon a considerable portion of the space so added new lines will be laid down, with the construction of a corresponding number of new platforms, in addition to which there will be several new sidings, the whole of this added station accommodation being required in consequence of the constant increase of traffic. The extension also provides for a new carriage approach to the station on the south side from the direction of Westminster Bridge-road. The space thus added to the station will be covered in by a light ornamental roof. New station buildings are likewise in course of erection at the east boundary of the existing main line portion of the station. Over that part of the colonnade running alongside the platform, and also at the south-east angle, new ranges of offices, carried up two stories in height above the existing buildings, for the general purposes of the company, are in a forward state. The extensions and new approach to the Richmond and Windsor section of the station, in York-road, have been completed and opened within the last few weeks. This portion of the enlargement has also necessitated a large expenditure, upwards of one hundred houses and a considerable area of land having been purchased in order to carry out the works. The new approach from York-road is by an inclined plane, and has two roadways, the one giving access to the station, and the other egress from it. The approaches in York-road are inclosed by ornamental iron gates and railings.

The Westminster Aquarium.—H.R.H. the Duchess of Edinburgh has consented to open the Royal Aquarium and Winter Garden at Westminster on Saturday, January 8th.

DOVER AND MODERN TOWN BUILDING.

What tales could Dover cliffs, even before the days of Hengist, unfold, says the guide-book, if the stones of them could but cry out! What, indeed, and not in one tone only, but in many, for Dover cliffs have witnessed not a few changes sufficiently momentous. The cliffs truly remain pretty much as they were thousands of years ago, but how much all things human have changed since men first saw those white Dover cliffs. Indeed, might they not tell the whole history of man, and a great deal more? Many lessons, architecturesque and picturesque, may, we think, be gleaned from a contemplation of these cliffs, and what they bear up, and some hints may suggest themselves as to how best to "improve" them, or at least part of them; for, as it seems, man's ingenuity and desire to do a something cannot leave them quite alone.

Sea-side towns are always of special interest, for we may,—especially when there are cliffs with rents in them,—read in them their history more or less clearly. Time was when no town or vestige of human habitation existed on them, and when nature had supreme sway, the sea and cliffs doing battle with each other perpetually. This was a long time ago indeed, but it still goes on in out-of-the way spots where the ground bids defiance to all attempts at cultivation or improvement; and there it is seen, and there alone, what nature really can do. It is the very mightiest of all sights; and the eye is never tired of gazing again and again at it. Some little time and patience, may be, is needed to see it clearly, but once seen it is never forgotten; and what is more, never to be mistaken for artificial or cultivated work. There would seem to be no possibility of either cultivating or improving the perpendicular wall of a sea-cliff; all that can be done is to shore it up, sometimes in ways not a little awkward and inartistic; but in the time we are now referring to, before man made his appearance on the scene, all was the work of nature and the natural forces. No choosing a "point of sight" from whence to get glimpse of an artistic picture was needed. This was the first phase in the history of Dover, and it seems a pity that so potent a genius as Turner, who tried his hand at Dover more than once, did not go to work, and with or without imaginative power,—and which would it be?—limn Dover with its sky, sea, and cliffs, as they were *minus* the human additions. Turner has not done this,—it does not seem ever to have occurred to him; but he has almost of necessity hidden a good deal of the modern formal and utterly inartistic "marine parade" and hotel architecture by masses of vapour and sea mists. The ever-restless sea, the sky, and cliffs are as ever the same. This was epoch the first in the history of Dover, the Continental gate, as we are told, of the kingdom. What was the next epoch in its history?

The next phase in its history, looking at it artistically and architecturally, and pictorially,—and this will be found to be a not a little remarkable phase of it,—was in that time when it seemed possible, which it certainly is not now, to cover large or small plots of ground with buildings without injury to the pictorial landscape. Leaving for the present the earlier and savage hut-building, always, by the way, picturesque, and sometimes more than that, what can possibly be more pictorial, and how better or more effectively placed, than the old Norman Castle on the summit of the northern cliff! What tales, indeed, as the guide-book says, could Dover Cliffs tell! Very many, indeed, and this not the least: that the rude untutored men who first built solidly on the tops of Dover Cliffs knew well how to do their work, and to take advantage of the nature of the ground on which they built. You may go many times round and about this Norman castle, and it will be hard to say how it could be in anywise improved, so thoroughly well studied has the ground been. The towers one and all rise from it almost naturally, as trees when growing wild rise out of the earth, and the very ground itself is made to regulate the rise and fall and sky outline of the building, or rather series of buildings. Turner never found difficulty with this fine old castle building; that always appeared, even through the "mist" of his pictures,—adding to the interest and marvel of them! How was it that the rude Norman men of so distant and unenlightened a past should do instinctively what would seem to be utterly beyond modern power to accomplish,—except in a picture? How much there is yet to be thought about and done in the architectural education department of things. If any doubt it, let them go to Dover. It is not "music" only that is there wanting.

We could dwell for a long time on this building of a past, almost forgotten age, so full of remembrances of all kinds, and can but regret that it is in the state it is. Like some others, unfortunately, as the Tower of London, it is full to the brim of military stores, and what is really nothing else but lumber, so that it is all but impossible to see it. A glimpse here and there is all. Military storehouses are of course, in places like Dover, absolute necessities, but why fill such a building with these "stores," when one properly constructed for the purpose, of plain brickwork, would do so much better? Such a building should certainly be left empty, and suffered to exist as a memorial and remembrance of a past age, and state of things utterly out of date. To attempt to "utilise" this Norman castle would be as hopeless as to attempt to go back to cross-bows and battering-rams. May we urge upon the authorities to clear out this venerable and antique ruin, and put the stores into some of the multitude of barrack buildings round and about it, some of them apparently quite empty? We would fain go the round of this castle, and try to look at it as it once was, but the "modernisings" in it have rendered this all but an impossibility. Some parts of it are quite new, mere contractors' work, without "mason's mark," for all has been levelled and smoothed down into a dull uniformity, outside as well as inside; so that at times it looks not a little like a modern castle building fancy, like Windsor Castle. All romance goes when this is ever in sight, and the very spirits of the dead Past flee away creaking from the bran new battlements! Totally neglect it, leave it to rack and ruin, and the weird spirits abide in and about it; but invade it with railway modernisings, and more is done to destroy it from foundation to tower top than all the sieges it has ever yet gone through. More's the pity of it! Can nothing be done? Then, again, there is the not-to-be-omitted Castle Church of St. Mary, the most ancient church in the kingdom, as the guide-book says; but no one could well think it, for it looks almost new, so neat and cleanly does it show itself, contrasting not a little strangely with the really antique-looking "Pharos" close to it. No restoration fortunately has here been attempted, it is a ruin yet. Doubtless it was in its day a lighthouse or beacon indicating the position of the castle to those out at sea. Tradition says it was, once on a time, some 120 ft. high, with flaming beacon-fire at the summit,—a striking object at sea, and fairly visible from its very size, and, it is certain, cheering and home-inspiriting to the storm-tossed mariner. There is nothing like a light-house light at sea. This Pharos is instructive, and not a little suggestive, as it shows how the old builders were up to their work, and could contrive simply useful structures as well as castles and churches, and could at the same time compel them all to harmonise. It is now, says the guide-book, "put to the ignoble use of a coal-house," so that it does not fare better than the adjoining castle. Thus may we get, as through a glass darkly, a glimpse of the Dover cliffs in the darkness of the Middle Ages, and in times of the fierce Normans. We may even people such a place with its old inhabitants, with its knights, and fair ladies, its soldiers, and hangers-on; and some curious thoughts arise as to such a state of things mundane. What was the genuine Saxon, the real Englishman, doing all this time, and what had he to do with this Norman castle and stronghold? And the still more ancient Briton, had he disappeared altogether, or was he to be seen every now and then as a wild outcast, startling even the fierce Norman himself? Nature, sea, sky, and cliffs, were there the same, whoever was master.

Thus was, in its day, Dover Castle, and right well must it have harmonised with the ground on which it was built, and with the surrounding country. The old Norman town, by the way, as its base must have been a quaint place to go through; and some vestiges even of this may yet be made out by the help of buildings here and there, and by the turns and directions of the narrower streets, and, may be, even in the odd names of some of them. It is, of course, only in the older parts of the town, and in spots where the force of modern improvement has not completely ploughed up everything, that this is to be in any way got at. It is fast disappearing, but is surely worth a word of record before we come to the new and quite modern town. A

ood part of this new town is of to-day, and ill going on. Before we quite leave the older wn it may be well to note the existence of the old churches," though they do not *look* old; for here so much repairing and mending and ightening up of the old stonework is done, l sign of age and antiquity well nigh dispears. There is St. Martin's-le-Grand, here the "time" was struck on a bell, for the her churches to go by. The site of St. Peter's hurch is now covered by an hotel. The really teresting church of St. Mary the Virgin, with s long nave, with simple Norman columns id round archways, looks almost like quite ew work, so thoroughly has it been cleaned id brushed up. It is a right goodly church is, and almost as impressive as a cathedral. estoration! Would it were possible to "restore," the real sense of the word, this identical urch, *i. e.*, to make it look again as it was fter its centuries of existence, time all the hile adding nought but colour? How solid looks, compared with the new work so ose at hand. The old Norman men, it is uite certain, knew well how to build. We me to the new town at last, and plenty there of it. The good people of Dover must have me up to our mighty London for the idea of a uite new, and quite straight, and quite uniform, id utterly without interest of any kind, sort of reet, *i. e.*, rows of houses and a passage etween them. You find yourself in suburban ondon again, without the trouble of the railway urney. One can only wonder at the modern ot of such as these little flimsy, smart pillxes of houses pushing the old town, and in me the very Castle itself, into the restless sea!

"ON THINGS IN GENERAL."*

In May, 1867, I had the honour of delivering y last lecture to the Architectural Association. t the end of eight years I feel there is the same ecessity of saying very nearly the same things s I said at that time. In fact, the situation is at very little changed. As I am to talk of ings in general, it may perhaps be as well to ake a division of the subject under three great eads:—(1.) The present State of our Art; 2.) The State of the Institute of Architects; 3.) Our Prospects of future Progress in Architectural Education.

I. *The present State of our Art.*—In 1867 I entured to state the last development of omestic Gothic architecture as follows:—fter noticing the prevalence of notchings, hamfers, and straight-sided arches, I remarked hat "the last invention is to use large sashindows, with the maximum of glass and he minimum of wood; then to put in a flat tone lintel, and over that a pointed arch, lled in with brickwork. Now a window-opening emands cutting up, if the scale of the building s to be preserved, and, as far as I am able to udge, nothing is more destructive to the general ffect of our modern buildings than these enorous sheets of plate-glass in the windows." ince the above observations were made we ave been blest with what is called the "Queen nne" style. The receipt for this invention is imply to take an ordinary red-brick house, and o put as many gables, dormers, and bow-windows as possible; in fact, to cut up the outlines: he great object being to get the picturesque by ny and every means. The windows should be long nd narrow, and filled with lead glazing, or with mall frames divided by straight bars painted hite. One professor of the style (if not the nventor) used to put in some twelfth-century eature, such as a very severe pointed arch, ike those found in the South of France. This nay have been done for conscience' sake, but t is only fair to observe that the other professors, who are, for the most part, deserters from he Gothic camp, keep very clear of any such eccentricity. The ornamental parts consist of a few crolls in the brickwork, and coarse woodwork, ccasionally verging on the Jacobean, dull reen and white being used for the interior ainting. It cannot be denied that there are undry advantages connected with this arrangement, which fully account for so many good men hrowing over their own style and adopting it. In the first place, there is the picturesque outine, which, by the way, has but little to do with he real "Queen Anne" style. In the second place, he small panes of glass and the thick bars upply in some part the use of tracery, and give scale to the building. In the third place, it saves a very great deal of trouble,—the mouldings, such as they are, are those in common use; and above all, the style, if so it can be called, is fashionable. It has been said, with great truth, that the real restorer of Mediæval art was Sir Walter Scott, who made it popular by means of his writings. In the same way, Thackeray, by means of his writings, has made Queen Anne's style popular; whether it will continue so is quite another question. The Mediæval architecture was a perfect system; it had its own development, and was surrounded by all the subsidiary arts. On the contrary, in Queen Anne's time we were at the very dregs of the *Renaissance*; our domestic architecture was imported from Holland, and our ecclesiastical from France. There is a well-known letter of no less a person than Sir C. Wren, in which he describes himself being at Paris and going about the print-shops to pick up grotesques with a view to the ornamentation of St. Paul's. I have carefully looked over the plates in the architectural journals, and I find, as far as regards those buildings in which a certain amount of money is available, very good and fair architecture; in fact, there is a decided improvement upon what was to be seen eight years ago. It is true that, occasionally, the architect appears to be under the influence of what is called "the picturesque," and we find designs for houses which are to be built in various materials, where strict logic would demand that a single one should be carried through the building; and even, occasionally, different epochs mixed together so as to give the idea of the edifice being built at various dates; still, it must be confessed that for the most part they are artistically combined, the bad designs being in a very considerable minority. It should be observed that these illustrations demonstrate the sort of work that is going on all about, both in London and the provinces, and are not merely the works of our most eminent architects; for since the invention of photolithography, a drawing which is fairly etched, and which can be copied right off, has a far better chance of being published than the best water-colour, which entails the necessity, and consequently the expense, of being in the first instance translated into black and white. Thus much for buildings where some little money is available. But what is to be done where less money is available? I have told you how the problem was endeavoured to be solved eight years back, and I have also told you how certain architects solve it in the present day; but the question is, are we absolutely obliged to solve it in this manner? It is impossible to go on building dwelling-houses in the "Queen Anne" style, and parsonages and town-halls, and the domestic buildings of the better class, in the Gothic style. One must swallow up the other; and what would happen if the former were the victor, and we went back for our domestic art to that period? At present the practitioners of it are well-learned men, for they are nearly all deserters from the Gothic school. But fancy a man brought up in the "Queen Anne" style! What would he have to fall back upon, having been taught no art but that? I, for one, would be very unwilling to give up the Gothic school, not only because I have been brought up in it, but because I think it has more capabilities for our climate than any other. If all the Gothic buildings which have been erected within these last thirty years could be collected together in one or two cities, what glorious cities they would make! It is simply because they are dispersed in a wilderness of modern builders' houses that they get lost and forgotten. As I have before remarked, I have no fear whatever as regards the erection of such buildings as town-halls, parsonages, hospitals, and anything upon which some money can be spent. The question to be resolved regards such buildings as those where the money available allows very little more to be done than in the ordinary builder's edifice. It is evident that the picturesque outline of the "Queen Anne" school is available to all styles. The real difference is between the sashes and mullions. If we use the latter, we require, in the first place, stone, and in the second, casements; sashes and mullions do not go very well together, though sometimes used. If narrow windows are adopted, it is surely better to be content with tolerably-stout bars dividing the panes of glass than to use one large piece. Besides, it does not always follow that the panes should be square; on the contrary, they may be made in any pattern. The next things are the mouldings and details; and I would here suggest whether these could not as well be Gothic as those of commerce, and whether the scrolls (such as they are) might not be left out with advantage? If large sheets of glass be wanted, why not let them be confined to the bottom of the window, through which there are things to be seen, and not employed at the top, where we do not want the full glare of the light over our eyes? We should, morever, never forget the difference between town and country buildings, as is too often the case. A town building should have a certain amount of composition in its façade, and, as a general rule, be built of stone or brick, with wood sparingly applied,—not to make the walls of stone and the gables of wood, when the great object in town houses is protection from fire. We have also still to solve the problem of making imperishable façades to our town houses, with materials impervious to smoke and atmosphere, and to apply our granite, majolica, and mosaic in the proper manner. (Those I see are generally applied in a very improper manner.) I hope in another eight years more progress may have been made both in this problem and in that of applying good art to the ordinary brick house. As to the "Queen Anne" fashion, like other fashions, it will have its day. I do not call it "Queen Anne" art, for, unfortunately, I see no art in it at all.

II. *The Institute.*—I now come to my second topic, viz., that of the Institute. I can well remember in my younger days how the Institute was considered as a sort of Sleepy Hollow, especially in the possession of the followers of what was termed "Classic" architecture. So much was this the case that it was seriously debated, at a meeting of the Mediævalists, whether they should form a new society or join the old one; but inasmuch as the old society was well established, and had charter, funds, and an organisation, it was finally determined, and I think very wisely, to join it. I can only say that we were exceedingly well received, and in due time had our fair share of the government, *i.e.*, we were put on the Council and committees. Between that time and the present many good results have followed. Thus there has been a scale of fees, which, unfortunately, has been often misunderstood. It simply proclaims that the ordinary scale is five per cent., but there is nothing, I conceive, to prevent the architect making his own bargain with the client for more or less before the work begins (I have heard the Institute called a "trade-union," because it insists on five per cent., but it does not). I presume the five per cent. applies in case nothing is said before hand either on the architect's or client's part. Some years ago, before the division of labour began to obtain in the profession, an architect was supposed to be everything and do everything; thus one day he might do a warehouse, where the same bay was repeated several times, and the next day he might have to design a church. The good pay of the warehouse was supposed to reimburse him for the bad pay of the church. Now that we have one class of men who design warehouses, and another who do churches, it is evident that the same rule should not apply to both. Another production of the Institute is the "Agreement." This, among architects and their lawyers, is generally considered as a little too favourable to the builders, but I believe it works very fairly, and, above all, contains the clause about written extras. The library has been considerably enlarged, but would well bear further extension. There is also the Architectural Examination, which would undoubtedly be very useful were it a question of granting a diploma, but as it leads to nothing it is not particularly useful, except to enable gentlemen to test the amount of knowledge they may have acquired in a certain time. Of late, I understand sundry propositions, more or less unofficial, have been made to induce the Association to join the Institute. I confess, for my part, I hardly see the expediency of it. With or without determining whether the Institute is, as some of its members affirm, a non-educational body, there can be no doubt but that the Association is most decidedly an educational body. No pupil can expect to get on in his profession who does not work beyond his office duties, and the Association is exactly the institution which helps him to do so. Hitherto, you have been quite equal to the management of your own affairs, and I should venture to recommend you to continue in the same path. I decidedly think that, like the Legislature, the profession should have its two houses, where the lower should be a preparation for the upper. But if it be not desirable for the Association to join the Institute,

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* By Mr. W. Burges. Paper read before the Architectural Association on Friday evening, December 17.

on the other hand there can be but little doubt of the usefulness of being affiliated to it. There are many advantages in this course. By negotiating, your members could have access to the library during the evenings. Now, the Institute Library is a very good one indeed, and contains many books which could only come within the students' reach at the British Museum or at South Kensington; the former is shut up after dark,—the only time the majority of the Association could use it,—and the latter is at a somewhat inconvenient distance, besides, it is also a loan library, and it sometimes happens that the particular book you may want is on its travels among the art-schools of the provinces. On the other hand, the books of the Institute are always there, and are never taken away. As regards a loan library, you have a very fair one of your own, which will doubtless augment every day. Another advantage the Institute offers is the Soane Medallion, also the Pugin Studentship. It is almost impossible to overrate the value of these, as well as of the travelling studentship of the Academy. All architects should travel, but more especially the art-architect; to him it is absolutely necessary to see how various art problems have been resolved in different ages by different men. Fortune has perhaps not been kind to him; he may have, in a pecuniary sense, no father. The Institute and the Academy place these advantages within his reach, if he has the talent and can work. Were the Association affiliated to the Institute, its council or a committee might ask official questions and receive official answers as to the meaning of the conditions of these prizes, and thus the very unlucky and painful discussion which took place on the subject of last year's silver medal would be avoided. My own opinion upon the matter is that the instructions were clear, and were fairly worked out by Mr. A. Hill. Still, some students had doubts, and if, instead of writing themselves to the Institute they could have got the Association to write, I fancy all would have gone well. I do not speak of sundry presents of books which are occasionally offered as prizes, nor of the various medals, for a more useless thing than a medal it is impossible to conceive, from the great gold medal of the Institute downwards. As a general rule, you cannot wear it (the medallists of the Institute do); you cannot in honour sell it, and if you could, it would not fetch much, except it was of gold; and nobody would for a moment think of retaining it as a work of art, for our modern medals, as well as our coins, are very far from having a claim to that distinction. On the other hand, the affiliation of the Association, as well as of the country societies, would, doubtless, strengthen the Institute, and it should be considered the right thing for a man, after being a certain number of years in the Association, to go to the Institute and form new blood in the upper house. There he will have every chance of being put upon the Council, and if he has good fortune and polite address, and treads on nobody's toes, he may become vice-president, and even obtain the highest honour in the profession, *i. e.* that of president. I wish I could promise him the Academy; but there the chances are against him. There are too many and too few architects in that body, and there is no receipt for obtaining the honour. If the Academy chose from two or more gentlemen selected in the first instance by the Institute, an Associateship might possibly be held forth as attainable by talent and so forth; but as the painters are in a very large majority, and naturally are not very well up in the merits of the members of another profession, it is difficult to give any receipt as to attaining the distinction. My own view, therefore, would be to strengthen the Institute in every manner. If possible, I would have all the other architectural societies and exhibitions collected under the same roof. Thus I would have the Architectural Museum; also a more or less permanent exhibition of working architectural drawings (the pretty perspectives going as usual to Burlington House); also an exhibition of ordinary building materials, another of models, and a third of new inventions; in fact, there should always be some exhibition,—free if possible,—on hand. The lower parts of the building should be converted into shops for trades connected with the profession, *i.e.*, for the sale of books, bronzes, goldsmiths' work, &c.; and I would even have the Arts Club,—the real Junior Athenæum,—in an adjoining house. This is, I am afraid, but a dream, and yet one not altogether impossible to realise. But there are other things which the Institute is perfectly able to do without incurring any such expense as the foregoing scheme demands. Such would be a standing judicial committee, which might be paid by the litigants, and which would, in most cases, avoid law-suits. We also want many points of professional etiquette firmly established and put into print, such as the rule of calling upon another architect who has been employed previously by the same client, and ascertaining that he has closed his relations with the said client; also, whether it is "professional" to ask for work; and other points of the sort, which are generally understood, and not written.

III. *Prospect of Future Progress.*—My third point is the prospect of future progress. Now this progress refers both to the client and to the architect. As regards the client, why is it generally believed that the French or Italian client is a better judge of art than an English client? It is not because the latter is not so well learned in general matters as the former; on the contrary, much more care has, in nine cases out of ten, been taken with him. It is simply because the foreigner, being in the habit of seeing beautiful things around him in the streets, museums, and churches, has a better chance of educating his eye than the Englishman, who sees few works of art in his daily walks. All honour, therefore, to the late Mr. Slade, whose object, in founding the professorships at Oxford and Cambridge, was to get hold of the client in his youth, when, if ever, he is likely to receive impressions. These professorships are but as a brick out of a house; to effect his purpose there are wanted at each university not one professor, but twenty. A man ought to be allowed to take his degree in the arts as he does in law or medicine. As it is, the client hears a few eloquent discourses from the learned professor, and probably enters into public life with reminiscences of Turner and sundry ancient and modern painters as his only art-knowledge. Sir Digby Wyatt tried to teach the other arts, but how could he do it in a few lectures? Our client begins public life, and while in London lives in a house in one of the great roads in South Kensington, and which is exactly like his neighbour's. Perhaps he buys a few modern pictures to hang round the walls, or perhaps he tries to buy old ones and gets taken in. His country-house is an old or new Elizabethan edifice at the best, with very white plaster ceilings, and very black oak panelling; the only colouring he has the chance of seeing is when he goes occasionally to the theatre. The church he attends is equally without colour, except some glaring stained-glass windows, which had better be broken up. At the same time he probably reads the standard books on art, but they only give him some crude information which soon evaporates, because he sees nothing around him to keep it up. The best thing for him is to go in for archæology; but even in that branch there is a lamentable deficiency in all classes of life. A short time ago there was a wonderful paragraph which went the round of all the papers, including the architectural ones, about a sword found in digging the foundations of the New Opera-house. According to the gentleman who supplied the first information, the handle was of gold, and the date of the fourteenth century, while the blade was of "the true Spanish temper." How the writer found out this latter peculiarity he did not stop to inform us, but we were told that the original was in the office of the architect, Mr. Fowler. Now all, or nearly all, the newspaper offices are within ten minutes' walk of Mr. Fowler's office, but none took the trouble to look for themselves, although the golden handle of a fourteenth-century sword could not fail to be a most wonderful and curious thing. When we consider the comparative rarity of gold at that time, and how accustomed our ancestors were to make precious materials still more precious by means of workmanship, we might expect to see something like King Arthur's sword, as described by Tennyson, or the wonderful sword in the Treasury at Cologne Cathedral. It turned out, however, to be a lansquenet's weapon, such as must have been manufactured by hundreds, and such as are to be seen in any number in the prints of Albert Dürer, Hans Burgmaier, and other artists of the beginning of the sixteenth century. I mention this one fact to show that archæological ignorance is not confined to one class alone. I now come to the art architect. I have already stated that he cannot expect to learn his art simply during his articles of pupilage; it is absolutely necessary that he should educate himself and travel. As to his education, it is never finished. I do not speak simply of his art-education, such as learning the figure, but his book-education. If he wants to obtain judgment and taste, the figure and reading are almost the only means to that end. I do not mean to say that they will give brains to a man who has none, but they will enable the grain of mustard-seed to become a tree. The reading should consist of the greatest and best historical and imaginative authors, and every piece of knowledge should be acquired with regard to its bearing on his art. Another plea for reading is that he must be able to converse with his client, who is almost always up in this part of his education, and also in his travels. With regard to the students' travelling, I should recommend staying long in one place, and mastering thoroughly one or two things; anybody with money can rush from town to town. Before going to work it is always advisable to give some considerable time in contemplating the object to be studied,—to ask one's self why was this done, and wherefore was that left undone. Sketching is of course useful, but the art-architect must learn his profession at the foot of the ladder, and take his time about what he does. Now with every respect to my friend Mr. Sharpe, for whom, I need not tell you, I have the very greatest regard, I do not see how the last two journeys,—I was about to call them scrambles,—could have benefited those who joined them. I read that there was an introductory lecture, very good indeed (like all Mr. Sharpe's lectures), and then every one was told off to measure a certain portion of a church or cathedral; whereas, to have done justice to the lecture, what was wanted was to have spent the day looking carefully round the buildings, making notes and observations on the previous lecture. If the student can possiby afford it, he should by all means go to Athens, and see Greek art *in situ*, for a knowledge of Greek art will be his sheet-anchor during his artistic life. He will be saved many an error in composition if he only asks himself, "What would a Greek have said to this?" I have one word to say about drawing. Doubtless it is a good thing to draw well, but do not imagine for an instant that fine drawing will ever supply the want of thought. Drawing, after all, is only a sort of writing; and in a letter it is not a question of how you write, but what you write. If you draw without thinking you will be obliged to rub out, and, somehow or other, a thing that has been much acquainted with the india-rubber seldom looks as well as one that has been put in at once after having been carefully considered. As far as I can judge, I venture to think that we are really progressing in art. Thanks again to Mr. Slade, a good figure-class is established in London, and it is your own fault if you do not make good use of it. It is to be hoped that under Mr. Poynter's management, the Dyce outlines, and the system which employed them at the beginning of the course of study, will be abolished, for no book ever deterred so many people from learning to draw as this one. South Kensington is also making itself felt, for designers for the various trades such as carvers, &c., can actually be got who can draw ornament very fairly. I do not believe that an average Englishman is more deficient in capacity than the average native of other countries of Europe; the latter, as I said before, has the inestimable advantage of having beautiful things around him; the obvious thing for us to do is to create beautiful things. You all have the power to do this,—not to a large extent, for that requires money; but if you cannot have many objects, you can have one or two or three which you can create yourselves. Thus you can paint the walls of your studios, or illustrate your Tennyson. It all depends on yourselves, and the better you do these same things for yourselves the better you are likely to work for your clients.*

The Hastings Town-hall Site.—The *Hastings and St. Leonards News*, which reports a long debate in the Town Council on the merits of the rival sites for the proposed new Town hall, says:—"The Battle of the Sites is only just begun in the Council. The Town-hall question is put off for a month; and, after another engagement, will probably be put off again. Meantime, some notice should be taken of the builders who have tendered for the hall on the Station-road site."

* A discussion followed, report of which we will give in our next.

PARIS HOUSES.*

r it be true that the flat system of residence
political, moral, and domestic drawbacks of a
rked character which the French themselves
e long pointed out, it is right that these should
known and discussed in order that London
hitects may be enabled to avert or at least
dify similar disadvantages in the different pro-
ts for houses-in-flats, to which the English
tropolis is gradually getting familiarised.
Viollet-le-Duc argues, with his habitual
se, that the sentiment amongst men of
sonal responsibility and individual distinction,
ich has diminished in France since the six-
nth century, has been preserved to a great
ent in England. This, he says, is due to
fact that families in this country are not
llowed up in a huge depôt of a building as in
is,—that although the exteriors of London
ses present a uniformity of ugliness, the
eriors are singularly varied, and reflect the
erse characters of their occupants. He says,
walls of a man's own house, within which
children grow up, have ears and eyes, and a
gue, and the owner would be ashamed to do
hin them much that perhaps might be
erated in a lodging, which he could quit in
months. Nevertheless, the modern tendency
gnore the individual and level distinction in
iety is perhaps more conspicuous in aristocratic
gland than in democratic France. The only
erence here between the nobleman and the
man, who descend by the same omnibus at
same hotel, is that the former is No. 20 and
latter No. 200,—in the hall-porter's memory
the visitors' books. Amongst middle-class
milies in France, the formality of precedence
often maintained with tiresome precision. It
uite an erroneous impression which is current
n amongst travelled Englishmen, regarding
mixed and heterogeneous character of the
abitants of a Paris house. It is popularly
posed that in Paris a marquis inhabits the
t floor, a count or viscount the second, a plain
nsieur (decorated of course with a red rosette)
third; while tradesmen and their families,
helors of all grades, and even simple working
a and women divide between them the upper
rs of a house-in-flats. It is argued that English
ple would never consent to such a system.
ither, with all their democratic foibles, do the
isians. As a rule, Paris houses are inhabited
families of equal or nearly equal position in
iety, or, at least, they are so arranged by
ans of separate staircases that the meaner
ants do not encounter their happier co-inhabi-
ts except in the open courtyard, or at the
riage-entrance. But that a number of families
ng under the same roof, though in self-con-
ned residences, renders evil communication
nparatively easy, even if it do not induce to
is indisputable. No better or truer descrip-
n of "life" in Paris towards the end of the
cond Empire can be found than in M. Sardou's
y of the "Maison Neuve." Unlike, how-
r, the characters in that celebrated comedy,
milies occupying the same house generally
trive with French tact to bow, but not to
ow each other. With the servants the case
different; and the acknowledged immorality
ongst the Parisian servants is certainly en-
raged by the manner in which they are
ged. Indeed, considering the high-flown
timents which are promulgated in France
ont the equal rights of flesh and blood, the
nestic servants of Paris put up tamely with
ch against which their English brethren would
olt. M. Jules Simon, writing years ago, said:
ll the servants of a house, femmes-de-
ambre, nursemaids, female cooks, valets, and
chmen inhabit under the roofs. . . . . In
th, this story is inhuman. . . . . But is it
y inhuman? Who overlooks these limbos,
ccessible by their elevation, their temperature,
ir dirtiness? . . . . Therein is permanently
ablished the school of theft and lust. God
serve every young girl from serving in a
tuous house which can lodge her only there!"
ce these words were written, some improve-
nts have been made in servants' rooms, and
sanitary arrangements throughout a house
re been improved, but the moral taint still
vades, and must continue to pervade the
per story of the Parisian mansarde.

The *concierge* or porter is also a sinister
ture of the Parisian system of residence;
it is due in a great measure to the use which
too frequently made of him. Successive governments have enrolled the worst of these functionaries in the ranks of the secret police; but the fees they receive to lie or be silent come quite as often from the tenants as from outsiders. The Parisian porter is the recipient of all the letters delivered by the postman. He is the servant of the landlord, not of the tenants, and he generally collects the rent of each residence. His position makes him an idler, at least in the best houses; although in the business localities he is often a petty tradesman, and mends boots or clothes. He must be married, for there must be always some one in the lodge, and the wife answers whether the tenants be out or at home, while her husband is dusting the stairs, cleaning the courtyard, or delivering letters and parcels on the different floors. There is, however, no reason why, in a house-in-flats, a *concierge* properly trained and treated, should not be as useful and respectful to the different residents as a porter is to the members of a London club. But that it is not so in Paris, and that the *concierge* is a social evil and a domestic nuisance of increasing magnitude, no inhabitant of the French capital, of any shade of politics, will deny.

Whether the economical habits of the French middle classes are due to the manner in which the majority have been lodged since the days of Louis XIV., it is difficult to say. There is, however, authority for the assertion that habitual sacrifice at the shrine of Malthus, which distinguishes the French people, is now so far traditional as to have deprived, at the present day, many women of the power to bring forth children; but that this is the result of dwelling in flats is hardly probable, seeing that the owners of private houses have not been more prolific than those who have only occupied a part of one. It is easier to understand that the small space devoted in a Parisian residence to the kitchen has led to the retail purchase of domestic provisions; whereas the Londoner buys them, comparatively speaking, wholesale. The domestic offices of a Parisian flat are as necessarily confined as those of a London house are extravagantly extensive. The pecuniary waste of the latter is enormous, compared with that of the former. In a London house of any importance there are often two kitchens, a scullery, two pantries, and a larder, besides a number of smaller offices and cellars; but a Parisian flat seldom embraces more than a small kitchen, which is used for washing as well as cooking, with perhaps a small pantry or store-room; while in the basement there are two cellars, and in the roof two bedrooms for the use of the tenants' servants, which are let with each residence. The Parisian generally has a comparatively large store of native wine in one cellar and wood and coal in the other; but his daily food is purchased by his cook from hand to mouth. She often makes two descents a day to buy what is necessary for each meal. From time immemorial the Parisian appears to have been satisfied with two meals a day, which simplifies the service of a household,—a breakfast of coffee and bread and butter not being considered a meal, as it is brought into the bed-room at an early hour in the morning, for Paris is essentially an early riser. The origin of what in courtly English phrase is called the "levee" is still unconsciously practised even among the middle-class Parisians. Once people pressed in the antechambers of Versailles and Whitehall when Louis the Great and Charles II. were having their corns cut or their wigs arranged; and just after the sovereign was out of his bed was deemed a convenient moment to ask a favour or communicate bad news. The habit of receiving, as they lay in bed, visitors of both sexes was practised by French ladies even after the death of Louis XIV.; and at the present moment a Parisian lady of the highest propriety will receive a visit from a gentleman in her own or her husband's bedroom. Such rooms, being more used, are consequently better furnished than in England, and the sleeping apartments of the English middle classes are by no means arranged with the same comforts,—not to speak of luxuries,—as those of Parisians in the same state of life. For the latter may argue that to use a room only at night is opposed to the economical principle which dictated the flat system of residence.

It is quite as amusing to read the complaints made by Englishmen against the Parisian mode of habitation, as to hear the stories told by Frenchmen of London houses. Dr. Johnson, writing on October 16, 1775, said, "The French have a clear air and a fruitful soil, but their mode of common life is gross and incommodious and disgusting." More than sixty years before, Addison, in a letter to the *Guardian* written from France, had said, "The people are the happiest in the world, and enjoy from the benefit of their climate and natural constitution such a perpetual gladness of heart and easiness of temper as even liberty and plenty cannot bestow on those of other nations." Now the ordinary Englishman is born a grumbler, and to govern him well he must be encouraged to grumble. If the Londoner were ever compelled to adopt the Parisian system of living he would have to eschew for good many of the fancied privileges he possesses,—more particularly the rooted fallacy that his house is his castle,—and so become a more agreeable neighbour than he is often said to be at present. As population increases, and metropolitan land rises in value, the suburban semi-detached boxes and strings of terraces which are inhabited by families, who, if they lived in London, would be obliged to occupy lodgings, will perhaps be swept away to make room for larger and more remunerative houses. It is, therefore, not premature to consider whether there be anything in the national temperament which leads Englishmen to prefer living in a vertical slice out of a row of small houses rather than in a horizontal slice out of one large house.* There is a great deal to be said against the system of inclosing several families within the same walls and under the same roof,—a great deal to be said against the dangers of a public staircase. As a contributor to the last number of the *Quarterly Review* has urged, it is, of course, most desirable that "only one family should be lodged in each house." Nay more, to cap the Reviewer, every rood of land is said once to have maintained its man. But, putting aside sentimental reflections, it is just as well to be reminded that a large number of the inhabitants of London proper are lodgers. All these lodgers—groups of people and families—now live in houses each expressly constructed for the accommodation of a single family. To put some of these lodgers into flats containing domestic appliances exclusively contrived for separate groups, instead of allowing them to extemporise kitchens, larders, and privies in the way they now do, would surely jeopardise no time-honoured customs. On the contrary, it would ratify the existence of an educated lodger population, which the Legislature has already recognised. Economy of space is one of the problems which Londoners at no remote period will have to grasp. No doubt, one day Brighton will be joined to the metropolis by rows of villas lining the high road; and then, perhaps, the comparative emptiness of London proper will be thought worthy the consideration of practical economists.

The flat system of residence as practised in Paris is, however, unfitted for the actual ordinary lodger population of the English metropolis. But in this country more than in others there is a class of poor gentlemen and ladies who make few complaints, and of whom very little is heard. They live in far-off suburbs, or sometimes on the upper floors of houses the lower part of which is devoted to trade purposes. The incomes of these people vary from 200*l.* to 300*l.* a year, and their state may be described as one of respectable poverty. They probably would be satisfied with a small flat residence on the fourth or fifth floor of a large house, where they would pay a rent of from 30*l.* to 40*l.* a year, with taxes in proportion. Even at the present day they can obtain this, or rather its equivalent, in Paris, where the taxes, compared with those of London, are *nil*. Then, again, there are the married younger sons of gentlemen, and even noblemen, who hang on to the patrician quarters of the town, some of whom live in houses like that in which Becky Sharp and her husband enjoyed life upon nothing a year. Tall, narrow, inconceivably uncomfortable, and confined residences in which a great portion of the day is spent, and a great deal of labour wasted, in climbing the stairs,—stairs, too, of a shape and section unknown anywhere on the Continent, except, perhaps, in Holland. Everybody is not privileged to enter these aristocratic abodes, but I am told that there are houses in Mayfair where a moderately sized butler and a slender page completely block the entrance passage,—where to escort a lady easily and delicately, even one dressed as compactly as modern ladies are, from the ground-

* See pp. 1100, 1131, *ante*.

* Read an interesting article in the *Saturday Review*, Oct. 23 last: "Houses by Flats." The Reviewer, however, forgets that London houses are rarely the work of architects. House architecture in this city is done principally by estate agents and builders.

floor to the drawing-room, and *vice versâ*, requires years of practice, and months of humiliating failure. For the servants, the staircases of such houses are domestic treadmills, upon which master and valet, mistress and maid, are constantly knocking against each other. To be obliged to ascend five flights of stairs, as people with moderate incomes do in Paris, may seem frightful to the majority of Londoners, but they only do this twice or thrice a day at the utmost. The Londoner who pays with taxes often 400*l.* a year for his house, is for ever ascending and descending his deal "dog-legged" staircase, to fetch his gloves, dress for dinner, receive a visitor, dine, breakfast, lunch, and sleep. The occupant of a London house scales a greater number of stairs in the course of twenty-four hours than a Parisian living on a fifth floor does in twice that space of time.*

The traditional spirit of shabby gentility which is peculiar to English people is hardly known to the French, who, nevertheless, would be grievously offended if accused of doing or being what is not *gentil*. For instance, there is Brown, whom everybody likes, and upon whom you frequently call, and wonder why he does not "ask you up,"—the phrase is insular and Dutch, and savours of the staircase-ladders of England and Holland,—to the drawing-room; when suddenly you are horrified to learn that he lets his first-floor rooms to a newly-married couple, whose love was stronger than their common sense. Of course, you "cut" Brown—the parents, brothers, and cousins of the turtle-doves on the first floor having already "cut" them. Again, the Joneses, who made their money in tallow, were ruined by the introduction of composite candles, and took apartments over a shop! the degradation of which was only equalled by poor Mrs. Robinson, who, left a widow with a large house and a small annuity, took boarders!! It is certain that these three families would have been spared similar indignities,—would have never committed the same social crimes, had their home been Paris, and not London. In the latter place a family takes the upper part of a house, and, confident in the eminent respectability of the street and the street-door, hugs to itself the thought that the world will not know that it lives in apartments. One house of this kind resembles another, and they abound in this metropolis. In others, where the lodgers are less particular, the landlord and his wife pass the day in the front kitchen, and the night in the back parlour. Their surname, inscribed upon a brass plate, is affixed to the street-door, where a neat card, slily insinuated into the fanlight, whispers "apartments" to the passer-by. The front parlour, with the second-floor front room and the back attic, is let to perhaps two bachelors; the two drawing-rooms, the second-floor back room, the front attic and the back kitchen are let, may be, to a respectable middle-class family who are supposed to have taken the upper part of the house. Where the houses are a story higher the third floor is sometimes let to another family who cook in their sitting-room and contrive a small scullery on the staircase landing. One water-closet situated under the stairs on the landing leading to the basement is the common retreat of all the groups of people inhabiting the house. Sometimes, as in Soho, the different families hold communication with the outer world by means of a bell, the wire of which descends to the street-door, and terminates in a brass knob—the number of knobs indicating the number of separate interests inclosed within, over and above those of the landlord who monopolises the middle rail of the door, and answers only to the area bell. The house having been built to supply the wants of only one family, contains only two cellars and a stray cupboard, which the landlord takes, not for the purposes for which they were intended, but possibly for the procreation of rabbits and other domestic fancies indispensable to the comfort of inferior middle-class people. To descend to the lower strata of the metropolitan population, to thread the "slums" which fester upon nearly all the estates of the London ground-landlords, is to find houses which the worst municipal government in Paris would condemn. It has been shown that a family lodging in one single room in some of these slums—say in Bedfordbury—pays a larger relative rent for the cubical contents of its habitation than his Grace the ground-landlord pays for his house in Eaton-square. If the citizen of Paris has lost a due sense of individual responsibility and distinction by choosing to inhabit a self-contained separate residence in a huge "depôt of families," if the dweller in flats run a risk of moral contamination from the propinquity of his fellow tenants, surely the dangers which families occupying London lodgings must incur are ten times more imminent. In a London lodging-house, one family cannot shut its door upon another. The children must perforce mix, for the lodgings are not let off by floors, but are dovetailed into each other,—a bit of one floor into a bit of another, as has just been described. The modern craving for privacy and exclusiveness may be selfish, and even expensive, when the pecuniary advantages of co-operation are considered; but by the flat system of residence it is possible to exercise some watchful care over the younger branches of the family, to rule the servants, to be master and mistress of the household, and to shun a quarrelsome or otherwise immoral neighbour. In a London lodging-house only the worst features of life in common, as it was practised centuries ago, have been preserved; the best have been long and perhaps irrevocably forgotten.

The fashionable system of Co-operation, though it may fail when pushed to extremes, such as the attempted revival of several families and groups living and boarding in common, may perhaps be profitably developed in London by the construction of houses divided by floors of separate residences.* But an insuperable obstacle to the improvement of London dwellings lies in the manner in which land is held, and in the conditions imposed by the agents of the ground-landlords upon lessees desirous of building upon their estates. The most conservative *Review* in England has truly described the present complicated state of house property in London in an article entitled "The State of English Architecture," published a few years ago. The *Quarterly* Reviewer then said, and no one has satisfactorily contradicted him in this particular,—"Throughout London and its suburbs not one house in a hundred is absolutely freehold..... The houses are built not primarily as a comfort for the occupant, but as a security for the freeholder. . . . . London houses and the people of London are merely in accidental contact. . . . . Leasehold tenure, with its gambling speculation, extensive and often fraudulent building agreements, forbids prudent men of business to erect substantial, well-built houses." Again, later on, he added,—"The greater part of the house property of London belongs to no one in particular. . . . . First, there is the freeholder, who has a ground-rent; second, a leaseholder, with an improved ground-rent; third, the nominal proprietor, with the rack-rent; fourth, the first mortgagee, &c.; then the tenant with perhaps a sub-tenant, yearly, and probably some lodgers, by the week or month." Paris would never have been rebuilt within the space of a generation had the house proprietors been compelled to build upon land which was not and could never be their own. Who cares to build substantially for the supposed benefit of his superior's grandchildren? In what other capital of western Europe are houses erected at the present day of such trashy materials and defective workmanship as some of those which are springing up, mushroom-like, upon the great London estates of some English noblemen? It is affecting often to hear these ground-landlords deplore in concert the immorality of the lower classes of the metropolis. They attribute it wholly to the publican, and the drink he sells. But I take it that in the Great Diary of things left undone, the name of more than one noble freeholder is more than casually recorded. Better and differently-constructed houses must be erected for some of the middle-class population of the metropolis; but to do this well and effectually the feudal laws relating to the tenure of English land must be altered and reformed. "The Londoners," said the Reviewer above mentioned, "have so small an interest in their houses, that they might, with proper independence and moderation, urge the cessation by legislative means if necessary, of a custom which is in every way so injurious to all."

If the flat system of residence is ever to become generally popular with middle-class families, and perhaps with some above them in station—with people, in fact, who are compelled or who desire to live in London itself, the houses must be constructed with more art, and made more attractive than many of those which have already been erected in London by architects and builders. Several points in the Parisian house-in-flats are worthy of study and application to insular wants and prejudices. Importance must be given to the staircase, and a means of driving up to it under cover must be contrived. The entrance must be open during the day; and carriage access and exit imply a courtyard, which should be rendered an artistic feature of the building. Some of the houses-in-flats, however expensive, and, may I be forgiven the expression, aristocratic, which have been built in London, possess an unmistakable lodging-house air; and this is not dissipated by the shabby butler-looking person who, in the cast-off dress-coat of a gentleman, "attends" to the street-door. The floors must be of iron, entirely enveloped in some description of concrete, for iron is only fire-resisting when so treated; and a thickness of floor, including ceiling and parquetry, of 15 in. ought to be compulsory between each residence. The stairs, constructed without winders, should never exceed 6 in. in height of riser; and seats should be arranged on each landing. There should always be a well-lighted staircase for the servants and tradesmen. The bedrooms of the female servants must be placed in the flat which their employers occupy, and this should be enjoined by law. The men-servants should occupy rooms in the roof. If small areas or courts be introduced in the middle of any building, they should never be less than a certain superficies, to be calculated by the height of the surrounding walls. The staircases must be lighted at night, and warmed during winter. The porter and his wife should be lodged on the ground floor, and, to satisfy English prejudice, there must be no shops. In fine, the whole block of building must be far superior, both internally and externally, to the sort of house in which the middle classes of London now dwell, and with no Portland cement stucco about it except in the foundations. I am convinced that the erection in London of new buildings of this description, or the conversion of several old houses adjoining each other into floors of separate self-contained residences, would be appreciated by not only travelled but untravelled Englishmen—not only by middle-class families, but by all grades of English society, amongst which riches and poverty are indiscriminately allotted,—and that speculation of the kind would redound to the increased happiness of many worthy people, to the improved aspect of the streets in which large and lofty houses would be built; and,—what is paramount in this conservative country,—to the ultimate profit of the few owners of London soil, their agents, and middlemen.

WILLIAM H. WHITE.

* See "Town Dwellings," by Messrs. Ashpitel & Whichcord.

* It is certain that great and lasting benefit would accrue to all concerned if in some of the tolerably good localities of London where the by-streets are hopelessly given up to lodgings, the party-walls of say seven houses were removed, together with the staircases: one large staircase could then be contrived in the middle house, and admirable residences for families arranged by floors on either side of it.

NEW BOARD SCHOOLS, WALSALL.

THESE schools are built in Bath-street, in one of the most populous parts of Walsall, and form a prominent object on the hill. They have been recently opened, designed to accommodate 60 children, in the proportion of 230 boys, 1 girls, and 200 infants, and make the third of series lately built by the Walsall School Board.

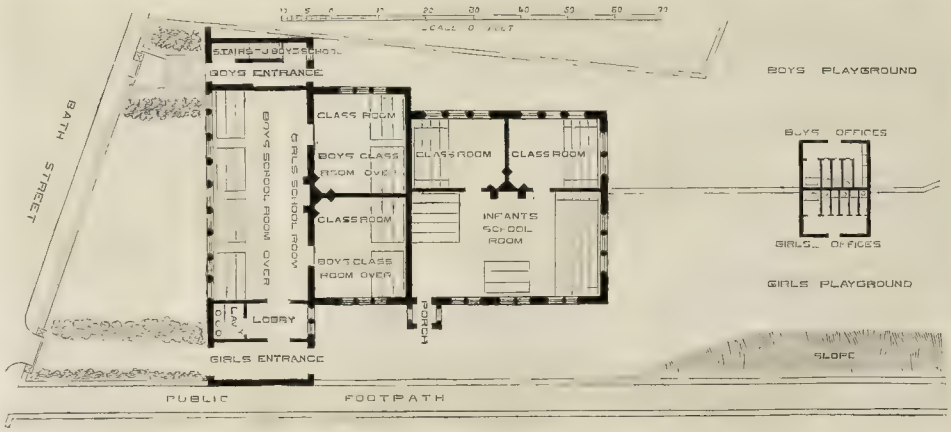
The girls and infants are placed on the ground floor, and the boys on the first floor, and to each school-room are attached two class-rooms, a convenient lavatories and lobbies. The space allowed for each child is 10 ft. superficies exclusive of lobbies, and 150 ft. cube.

There are separate offices for the boys and girls and large well-drained playgrounds laid with gravel. The schools are built of brick, with B stone dressings, the principal front, t two returns, and the whole of the interi walls being faced with Garrison-lane press bricks, those for arches, splays, &c., specia made. The roofs are covered with plain til laid with ornamental grouped bands, except th of the bell-turret spire, which is of green slat The timbers used in the construction of the fl floor and roofs are exposed, and are stained a varnished; all the desks and other fittings are pitch pine, varnished.

The work has been executed by Mr. Thom Taylor, of Walsall, contractor, from the pla and under the superintendence of Mr. T. Roy Lysaght, of Wolverhampton, architect, who designs were selected in an open compe tion in the early part of 1874. The ironwo was executed by Messrs. Hart, Son, Peard, & C the carving by Messrs. West & Son, of Leicest and work connected with the warming by Mess Haden & Son, of Trowbridge.

The cost has been (exclusive of site) a lit over 3,000*l.*, and has not exceeded the architec competition estimate.





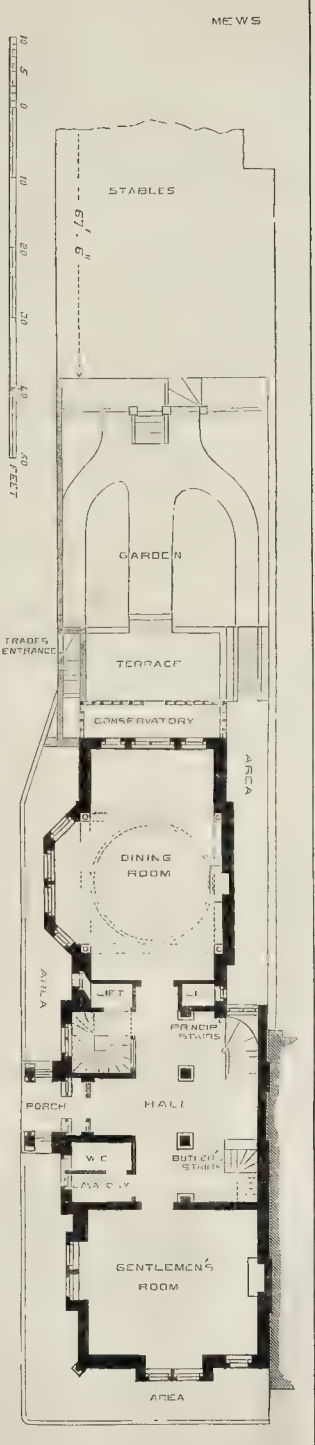
NEW BOARD SCHOOLS, WALSALL.—Mr. T. R. Lysaght, Architect.



LONDON STREET ARCHITECTURE: HOUSE IN BROOK STREET, GROSVENOR SQUARE.
Mr. Charles Forster Hayward, F.S.A., Architect.

LONDON STREET ARCHITECTURE: A HOUSE IN BROOK-STREET, GROSVENOR-SQUARE.

THE house which no doubt many of our readers have noticed for the last year or two rising at the corner of one of the streets leading out of Brook-street, and near Grosvenor-square, is a reconstruction arranged under the enlightened policy of the present Duke of Westminster, who seems to be not only a discriminating judge of what suits his own position in the construction of magnificent works for himself in town and country, but also a wise and careful administrator of the various details arising on a vast estate; taking advantage of special opportunities to remove difficulties and to encourage the construction of work of an architectural and artistic character in place of mere speculative building. The site was a very limited one after the removal (by fire) of the buildings formerly occupying it, as the new lines had to be considerably set back from the former ones, besides the loss of a party-wall. This fact, together with the requirements of plenty of light and air, necessitated the numerous projections in bay-windows and oriels, but the result is considerably more accommodation than formerly on the larger site, there being no dark corners anywhere. The colour, red brick and stone, was prescribed, and the character of the design approved as worthy of the position it had to occupy. If anything, perhaps the windows are too numerous, but internally none of them could well be spared without detriment not only to the design but to the proper distribution of light, air, and ventilation. The architect was Mr. Charles Forster Hayward, F.S.A., Montague-street, Russell-square, and the builder Mr. J. M. Macey, by whom the works have been very well carried out.



House in Brook-street, Grosvenor-square.

Plan of Ground Floor.

JAPANESE LACQUER WORK.

IN this country we rarely see articles of lacquer-ware of any great dimensions, the goods imported being chiefly little better than toys or trifles manufactured expressly for the European market; but in Japan the case is different. This style of decoration is applied to useful articles in daily household use, and to broad surfaces, and the lacquer industry is one of the permanent trades of the country, and gives employment to very many hands. The ground-work of lacquer consists in the sap of the "urushi" tree, which is one of the most valuable forest-growths of the island, its wood being exceptionally good, and its leaves furnishing the vegetable wax which is no inconsiderable article of export. The sap is drawn off by making a lateral incision in the trunk of the tree, allowing it to heal partially, and then, four or five days later, puncturing the wound, which will then have become covered over with a thin skin. From the orifice thus made the sap exudes, and is carefully transferred by a small spatula into a wooden jar. There is considerable art in choosing the proper time and the right place in the tree. Only one incision is made at a time, commencing from the root upwards, and all the trees in a plantation are taken in turn. This cutting, or wounding, process, is continued until each tree exhibits a series of cuts all up the trunk. The trees are afterwards felled. The drawing off of the sap is begun in the middle of summer, and continues to about the month of November. The best quality is that which exudes in the middle of summer, when the tree is full of the natural juices. When the sap is descending the tree in the autumn the quality is considered inferior. The "urushi" tree flourishes in the eastern portion of the empire, and is found with comparative rarity in the western provinces. The market price of the sap, or varnish, in Yokohama is about $100 per picul, or close on 4*s.* a pound. Some difference exists among the Japanese as to the date at which the art of lacquering was first discovered; but those who have most carefully considered the subject fix the date within ten years of the commencement of the tenth century of the Christian era. However this may be, it would appear to have attained some perfection 300 years later, for the name of a distinguished lacquer-painter who flourished A.D. 1290 is still handed down as the founder of a particular school of art in lacquer painting. From that time it developed until it attained its present perfection. The best, or "makiyé," style of lacquer-painting is practised at present somewhat in the following manner:—The design is drawn by the artist on the thinnest of paper,—and the Japanese, as our readers are aware, are adepts in paper manufacture,—and the tracing thus made is carefully gone over with a composition of mixed lacquer-varnish and vermilion; or, in other words, with a coloured and glutinous fluid which will easily transfer itself to the wooden surface selected for decoration. When the transfer has been effected, the work is left to dry for twenty-four hours, after which gold powder is dusted over it, and the pattern is lightly rubbed with a peculiar kind of charcoal in order to secure evenness of surface. The work is then rubbed with polishing powder and afterwards carefully wiped. Up to this point the outlines have been the main consideration. And if they have been reproduced perfect and unbroken all is thought to have gone well. A coating of varnish is now applied, and the work is polished with the finger and horn-dust until it assumes a rust colour. The fainter lines,—such as the tracing of leaves on trees, the petals of flowers, the wings of birds, and the characteristic markings of the human countenance,—are then added, often by the artist himself; more gold powder is sprinkled over the work from a bamboo tube, is lightly rubbed in with a brush, and afterwards carefully toned down with charcoal, and, after a subsequent polishing, the design appears in due form. All this takes time and costs money, and it must not be understood that the articles of household ware in general use in Japan are so elaborately finished. Such dainty gear is, as yet, only reserved for the wealthy, and the furniture of the middle classes can only boast a plain coating of varnish, or the baldest of outline pictures. Last year about 50,000*l.* worth of lacquer ware was exported from the island.

A very fine collection of Japanese lacquer ware, illustrative of the various branches of the art,—the raised, the incrusted, and the flat,—will be found just now in the rooms of the Burlington Fine Arts Club, Savile-row.

HEALTH, COMFORT, AND CLEANLINESS IN THE HOUSE.

THIS was the title of a paper read by Mr. Thomas Blashill, at the Society of Arts, on the 15th inst. The reader divided his subject under the following general heads:—The site and approaches; the fabric generally; lighting, warming, and ventilation; the kitchen and its dependencies; removal of dust and refuse; drainage,—treating each separately. We give his observations on,—

Lighting, Warming, and Ventilation.—If any man whose occupation is not chiefly out of doors will notice the time actually spent by him in the open air, he will be surprised to see how small a portion of his whole time it is, and how much he depends for light, warmth, and pure atmosphere upon the conditions which exist within the house. Townsmen will spend twenty to twenty-two hours per day indoors, women and children twenty-two to twenty-three hours, even in fine weather; sick persons, twenty-four. With the climate of weather reports and topographical descriptions they are, then, only indirectly concerned, for it is but the raw material of the climate in which they really live. The lighting, both natural and artificial, the warming, and the ventilation of the house thus become of great practical importance.

In this country sunshine is generally so precious that the house should be so placed, the windows so arranged, as to invite it into every room. The windows should rather be too large than too small. When the sun is too hot we can shade it by shutters and blinds, and as the air of winter is too keen some of the windows may have double sashes, between which a fern-case may be put, or they may open into a small conservatory. Thick plate-glass is much warmer than common glass, is cheaper in the end, and can be insured. I shall have occasion to observe on the importance of light in the working departments of the house. Broad daylight shows up dirt everywhere, facilitates work, saves gas; sunshine freshens the air, keeps it moving, and keeps it dry better than fires.

For artificial light, candles and lamps, when we can afford the cost of them, are better than gas. Gas is always burnt in excess, so that unless there be very good ventilation the foul air from it may be actually smelt, and, together with the heat, becomes oppressive. I believe no notion exists of the extent to which gas-burning is a source of damp. If we light an Argand burner, the glass chimney will in the first moment become

clouded with moisture, the next moment the moisture will disappear, driven off by the heat of the glass. But this formation of watery vapour really goes on as long as the gas is burning, being caused by the combination of the hydrogen in the gas with the oxygen of common air. In many houses all the gas-burners are lighted at nightfall, and allowed to burn till bed-time; some being kept alight through the night. In a large house which structurally was dry, a client of mine complained of damp within the movable wardrobes, where the silk dresses had become actually wet. Suspecting the gas, I found they were burning as much of it as would generate over two gallons of water per day, much of which must settle on smooth surfaces in any unwarmed, ill-ventilated parts of the house. A friend who went abroad during the cold of last winter, found the servants had aired his drawing-room by burning his gas night and day, till the walls were made thoroughly wet and the decorations spoilt. I once saw gas burnt for two or three weeks in order to dry some obstinately wet plaster, until the condensed water covered the ceiling and dropped plentifully upon the floor. Where much gas is burnt, some effectual mode of carrying off the products of combustion is essential. Where the air in the room is not changed rapidly by means of a suitable fireplace, the ventilating globe light may be used as the best substitute, but it is difficult to apply it so as to ensure durability and continued perfect action. I may mention here that the Parisian Building Act does not permit the concealment of any part of a gas-pipe, any leakage can therefore be detected easily and at once repaired.

From the condition of our climate the questions of warming and ventilating the house can best be considered together. During those long months when artificial warmth is most needed, artificial ventilation is also most needed; warmth supplies the necessary force, and may therefore be first considered.

There are habits, I might say fashions, as to warmth which override individual instincts. The houses of the middle-class have, in my recollection, become colder, except as to the unwholesome heat given out by gas. The roaring fire has dwindled, lighter clothing is worn indoors, soft feather-beds, with close hangings, and other luxuries are discouraged, as well as hot stimulating evening drinks. Habits of personal cleanliness also involve increased coolness. Accepting these changes as improvements in themselves, we must admit that the general climate of the house needs more than ever to be ameliorated.

During the winter months, the temperature of passages, staircases, and bedrooms not specially warmed will range from 50° down to 40°, and even much lower. At such temperatures out of doors, and while in active exercise, men put on their overcoats and thick gloves, women wear warm cloaks and furs. At these temperatures indoors we go shivering in thin clothing, change the warm for the cold, and allow children to run about more nearly naked than they would do in the warmer climate of France in August. It is as if a whole section of the population were training for an Arctic voyage, although they may be confident that the vast majority of them, all except the idle, the extravagant, and the unfortunate, will be more able to keep themselves in comfort as time goes on. Victims of this infatuation plead that they were always taught when young, to harden themselves, and to avoid "coddling" in the house. But the ancestors of these townfolk were countrymen, sportsmen, Highlanders, tillers of the soil, who lived out of doors, and would have despised our sedentary habits, small fires, and evening dress. Now the middle, or perhaps the middling, class stands alone in doing these things, for neither the rich nor the poor submit to them. The former try to warm their houses throughout, making every part habitable. The latter spend a large part of their money on the fire, papering up every hole and crevice, and almost stifling themselves, not, as is absurdly said, because they hate fresh air, but because they hate draughts.

In a comfortable house the inhabited parts of it are kept at a regular temperature throughout of nearly 60°, where you can sit in any part of a room, and be free from draughts. A draught is an artificial east wind, more dangerous than the natural wind, against which, when out of doors, we know how to protect ourselves. A comfortable house is also perfectly free from damp. Out of the house we guard against damp by suitable clothing, but if we get ever so wet we do not suffer from it as we do from damp within the house. There must be a gentle movement in the air to give it freshness. We must be able to turn at moments of unusual discomfort to the glow of an open fire. Beds, and all articles of clothing and furniture, must be of a genial temperature, and articles of food and drink that are not hot should be served at the temperature of the room. On going out of the house our extra clothing should be of the same moderate warmth, and not at about the freezing-point. There are diseases of the organs of breathing which require care in passing suddenly from such an atmosphere into the cold air, but no fairly healthy person suffers from such a change. Cold ablutions, which are pleasant and invigorating when the air is genial, fail to be so when we are already chilled by exposure to a raw air, and when everything we touch is cold and damp. The question is how to produce this regular warmth along with perfect ventilation.

France, Germany, and America are the countries most like ours in climate and in the habits of the people. The Frenchman burns wood upon fire-dogs; a pleasant, but expensive and insufficient mode of heating in very cold weather. The German burns wood or coal economically in a close stove, that warms—overwarms—the room, causing little draught, but not bringing in the fresh air. The American lights the fire in his underground heating apparatus in November, and keeps it going till May, supplying fresh air, too warm and too dry, to his principal rooms. Our own system is that of the open fire of coal, admitted to be a wasteful contrivance, but one which, I think, we shall not discard. The love of it is no mere prejudice; we do not regret it when the weather is dry and warm, we do not circle round it much even in winter when the drawing-room is comfortable, but on coming fresh out of the raw cold air nothing warms us so quickly and pleasantly; and in the family circle there are many little offices we require of it. At the season when sunshine is scarcest with us it gives up to the atmosphere of our homes the sunshine which long ago nature stored in the mine, and we rejoice together in its glow.

In seeking for some system which will do for us what we want, we may first state what we do not want, what we are rather tired of being teazed to buy. We do not want,—Those which make things little better than they are; nor those which warm the house, but do not ventilate it; nor those which ventilate, but do not warm; nor those which neither warm nor ventilate.

Schemes which make Things little better than they are.—Of this class are the numerous small improvements of the common fireplace, which reflect a little more heat into the room, or save a little of the fuel. In this direction the great harvest was reaped long ago by Count Rumford, who taught us the best form for the grate and its adjuncts; but, while not refusing to accept any small additions to his improvements, they should not divert attention from more thorough reforms.

Schemes which Warm, but do not Ventilate.—This class comprises all stoves which resemble the German stove, in simply warming the air in the room, while they are usually inferior to that stove in carefulness of arrangement for the purpose. The action of the Gurney stove is superior, in that it supplies moist, warm air, which quickly travels over the house, but much of the moisture which it carries with it must, at the end of its journey, be deposited somewhere as damp.

Schemes which Ventilate, but do not Warm.—These are schemes for admitting cold fresh air into the room at particular parts, the best of which is a valve fixed in the outer wall near the ceiling, such as Sheringham's ventilator, which causes the fresh air to travel along the ceiling until it gradually mixes with the air of the room. This ventilator, or a simple *louvre*, may also be fixed over the door of a room to admit air from the passage, and so prevent its coming from the lower parts of doors and windows. For this plan there may be a certain limited use for rooms that are often crowded, and for admitting additional air to rooms during warm weather. An old plan for admitting fresh air, by means of an upright tube rising from the floor and projecting a column of air to the ceiling, has recently been successfully employed in hospitals, but does not seem to be necessary for an ordinary room.

Schemes which neither Warm nor Ventilate.—I notice those which consist of plans for bringing fresh air by a tube to the front or bottom of the grate, and so feeding the fire with it, chiefly for the purpose of noticing what pains people will take just to miss the thing that is wanted. For while all the expense of introducing pure air is incurred, it is simply used for feeding the fire, so that the air of the room is even less changed than with a common fire. The two schemes last named aim at the prevention of draughts and smoky chimneys.

For a large house it is necessary to admit warm air into the hall and larger rooms, either through coils of iron pipes fixed in or close to the rooms, or through a heating chamber near the furnace, whence it is conveyed by tubes to the several rooms, and is usually admitted through a grating in the skirting. The gratings should be large, as a sharp current of air, which, though much above the temperature of the room, is below that of the body, will have all the qualities of a decided draught. The gratings should not be put in floors, where they will admit dirt to the warm-air channel.

For warming and ventilating an ordinary house the first step is to place in the entrance-hall a good slow combustion stove, or an open fire with a heating chamber, amply supplied with fresh air from the outside of the house. This will bring a large portion of the house to a genial temperature; it will prevent cold draughts from windows and outer doors, foul currents from closets, and undesired smells from the kitchen department. The result should be to make the atmosphere in the hall not less sweet than that in the rooms, and nearly as pure as in the open air. In an old house a gas fire could be much more readily fitted, as the flue for carrying off foul air from it would be more easily constructed than the flue required by a fireplace or stove.

Every room should have a ventilating open fireplace, which may be of the class to which the Galton stove belongs. In this, fresh air is brought to the air-chamber at the back of the fire, is warmed and discharged into the room, not at the level of the mantelshelf, nor still less below that level, but quite close to the top of the room, so that it will travel along the ceiling and become gradually dispersed. The fire draws away cold air from the level of the floor, but a much smaller fire is required to raise a room to a given heat, and the current towards the fire is slight. I should prefer to see these stoves so constructed that the air-chamber at the back may be easily examined without disturbing the setting, and filtering materials, disinfectants, or means of generating ozone introduced when thought necessary. There would be little difficulty in utilising the waste heat from the fires of kitchens and lower rooms by making their flues pass through the fresh-air chambers of the bed-room fireplaces, and so causing a current of warm, dry air to those rooms, regulated by a valve. Indeed, all the heat produced by the fire may be utilised in this way, except so much as is necessary to keep up the ascending current in the chimney.

Another plan is to use Jennings's ventilating chimney-tubes, in which the smoke-flue is surrounded by fresh-air flues, and which, when carefully fixed, produce the same results. Both these schemes do for every separate room of a house all that has been mentioned in the case of the hall stove. By isolating the atmosphere of each room they render it more easy, in case of infectious disease, to keep the air of the sick-room from mingling with the domestic atmosphere and carrying with it the active principles of disease.

The expense of fitting up these ventilating fireplaces in a new house is inconsiderable. Their introduction into an old house would generally be practicable at greater expense. Where this cannot be done, pure warm air should be introduced into the passages and the rooms supplied with it from thence.

Thermometers should be placed in many parts of the house, as well as outside one or more windows, to indicate the external temperature. Tolerably good ones cost 2s. or 3s., and cheaper instruments may be fairly accurate, but should be tested with one of the better sort, or they are a delusion. I have one which is inaccurate to the extent of 10°. It is an error to suppose that the use of the thermometer demands greater intelligence than is usually possessed by the family and by servants.

In the summer, when there is no fire to induce a rapid change of air, there will be a gentle current up the chimney, and fresh air will enter the room. If the weather be damp a fire should be made; occasionally throwing open the doors of cupboards, moving the furniture from the walls, and filling the room with warm air, is the

most efficient plan for airing the house in the absence of bright warm weather.

The best way to keep a house dry and healthy is to use it, living in all the rooms either every day or by turns. A spare room is usually a damp ill-ventilated room, and an empty house deteriorates much faster than one that is occupied. When we leave home for a time, ventilation and warming should be carefully kept up.

In the discussion which followed,

The Chairman, Mr. R. Rawlinson, C.B., said, in the course of his observations, speaking of the supereminent value of human life, remove human life from this mighty mass of wealth in London, and it would become a vast heap of rubbish; and if human life were the only source of wealth, healthy human life must be the highest kind of wealth, and nothing could be expensive which tended to improve and to keep that life healthy. Of what value was 10,000*l.* a year to a man if he lived under conditions which created disease? Unfortunately, Englishmen seemed bent on blindly accumulating wealth, under the idea that the great aim and end of all was to have a large sum to bequeath by will at death, but no greater mistake could be made. After all, it was a question of education. The rising generation must be taught to take care of their own health, for without that all legislation would be futile. Health and its true conditions could not be disregarded, and many persons, as he knew by personal experience, afflicted with what was termed delicate health, owed their prolonged life to the care which they took of themselves; and he himself had seen scores of men apparently possessing three or four times his strength, go to their graves simply from the reckless way in which they chose to live.

RED RIVER SETTLEMENT.

MANITOBA is the name given to the new Province which the Canadian Government has recently added to its territory. Winnipeg is the only place as yet settled, it being the chosen seat for the government of the new Province. At present emigrants are taken by what is called the Dawson route, Mr. Dawson having made an exploration survey in the years of 1857, 1858, and 1859, commencing from Lake Superior to Fort Garry. This survey was a most arduous one, and occupied three summers and two full winters.

The country between Lake Superior and the Red River Settlement was regarded by Mr. Dawson as forming four divisions:—Lake Superior section; Height of Land to Fort Francis or the Lake Regions; from Fort Francis to the north-west angle of the lakes in the woods division; and from the lakes in woods to Fort Garry might be termed the final division.

Around Fort Garry are extensive prairies, and a more monotonous scene than a prairie cannot be imagined,—not a single tree to be seen for miles and miles, and as it is said it is easier to form a forest than to clear one, the quicker the Canadian Government set about forming a few forests, the better for everybody. There will be millions of acres for settlement, and my experience of Kansas, Nebraska, Dakota, and other new territories of the United States, makes me feel it incumbent on me to warn many who are doing well to pause and seriously think of the hardships to be undergone to make both ends meet out here. In fact, from general observation, a man to make a home in the prairies and wild woods of America, *unless with capital*, must work hard, and fearfully hard, and by the time (to use an American phrase) he will be ready to pass in his checks, he may have worked up a homestead, perhaps valuable, or as the case may be, a place where a man can live, if he only knows how to work, and all for the benefit of his grandchildren. There is a class of people that seem to thrive anywhere. The Mennonites, a sect from Russia who do not believe in war, have numerously settled around Winnipeg; a more hard-working, industrious class of people could not be found on the face of the globe. A farmer, perhaps worth thousands of dollars, who could live with a little ease, trudges and slaves away, just as if a cent. saved by his own labour would send him to Heaven. Yet there is a kindness among the people; they religiously help one another. Women, children, and men are all workers: no drones.

In the section known as the Height of Land, go in whatever direction you will on passing over a mountain-range, a lake is sure to be met with; the place may be described as a region of lakes, intersected with ridges of land running through them. In the wood division, there is an uninterrupted navigation on the Rainy River (so called from the continuous rainfalls), of about 120 miles.

The inhabitants of Manitoba consist of Hudson Bay men, half-breeds, and the real Simon pure Indians; the latter are most numerous on the Rainy River and Lake of the Woods. These Indians have a Government of their own, the regulations being made by the chiefs.

The Indians are very superstitious, and appeared to me to be heathens, and worship some unknown spirits, by beating a kind of drum, chanting, and incanting with most unearthly noises. The Indians around the section of Rainy River are far more moral and docile than those around Fort Garry, proving that white blood rather demoralises than civilises.

A great number of the Indians from the United States visit Manitoba, and having had a diplomatic training, are not slow to teach their friends the value of treaties which, I am bound to say, are faithfully kept to the letter by the Canadian Government.

The curse to the Indian is whisky; there are a set of scoundrels who trade with the Indians by means of liquor. If these fellows were taken and hanged right away for breaking the law, there would be fewer murders and crimes done by Indians.

The Sioux Indians seem to be a roving, warlike class of people, and, as the country becomes settled, I fear these Indians will show fight, unless the Canadian Government keep up a frontier defence party in the shape of mounted police.

A more general description of the country I must postpone for my next letter. QUERCUS.

RECENT DISCOVERIES IN ROME.

THOSE who have studied the topography of ancient Rome will be interested in the announcement made by the Roman correspondent of the *Morning Post*, of the very recent discovery of another portion of the Servian walls of Rome under the casino of the Antonelli Villa, on the Quirinal, which has just been demolished to make room for the new main street, entitled Via Nazionale, at its intersection with the Via del Quirinale, opposite the church of Santa Caterina da Siena. This discovery is the more important from the fact that it not only comprises a tract of the Servian circuit, but also one of the gates of that early period, very probably the Porta Fontinales mentioned by Varro and Livy. It is constructed of massive blocks of tufa, like the agger, and apparently owes its nearly perfect state of preservation to the circumstance of its having been built upon towards the end of the first century of the Christian era, judging from the fine quality of the brickwork, and put out of use by a complete change of level, as may be seen by the remains of a street paved with blocks of basalt which passes at an elevation nearly approaching the spring of the ancient arch.

On the other side of the Via del Quirinale is the Villa Aldobrandini, which has also to be cut through for the Via Nazionale. During these excavations further discoveries are anticipated, especially with respect to the Thermæ of Constantine, which occupied this locality. The Sindaco of Rome has promised that in case of any important ancient building being brought to light the course of the new street shall be deviated in order to preserve the ancient monument.

A DIVISION IN ARUNDEL CHURCH.

THE Duke of Norfolk, the lay impropriator, has bricked up the chancel arch of Arundel Church, and maintains his right to do so, not on the ground that he is lay impropriator, and therefore has possession of the chancel, but that it is a private chapel,—the Fitzalan Chapel,—and belongs to him as private property. Before the restoration of the church, the arch was boarded up on one side, chiefly for the sake of warmth, as the chancel was in a ruinous condition, and, owing to the extraordinary arrangement of the old pews, no chancel was required. When it was determined to begin the work of restoration, three years ago, the churchwardens wrote to the Duke informing him of their intention to open the arch. The answer was an intimation that the Duke did not intend to allow them to do so, and this was further rendered clear by the appearance behind the iron "grille" of a rough brick wall. A lawsuit against the Duke is talked of, but the vicar says he could look for no support from the inhabitants, who are mostly the Duke's tenants, and dare not stir in the matter. The Duke appears to be pursuing a dog-in-the-manger policy. Although he keeps the parishioners out of the chancel, he makes no use of it himself, and is allowing it to go to ruin fast; slates blown off are not replaced, windows broken are not mended. He is determined that the parishioners shall not have that which would make their church one of the finest in Sussex.

EDINBURGH ARCHITECTURAL ASSOCIATION.

AT a meeting of this Association, held within the rooms, No. 37, George-street, Mr. Thomas Bonnar, vice-president, in the chair, a paper was read by Mr. John W. Balmain, C.E., the subject being "Wrought Iron, with Reference to its Application to Architectural Purposes." The paper described the properties and uses of wrought iron, and its great adaptability to modern architectural as well as engineering requirements, and also its superiority to cast-iron in many respects, particularly in the case of girders of large span. By means of numerous diagrams and sketches, attention was called to recent applications of wrought-iron, architecturally and otherwise, these examples being contrasted with each other, with a view to point out the cases in which the material had been well and economically treated, and where not so. The importance, to the architect, of a knowledge of the strength of materials and of the strains to which, in the form of girders, tie-rods, &c., wrought-iron is subjected, as enabling him to avoid lavish waste of material and useless expenditure to provide a strength not necessary, on the one hand, and possible weakness, failure, and ultimate great cost in consequence on the other, was also pointed out, and various examples were adduced. A discussion followed.

MEMORIAL FOUNTAIN, MICKLETON, GLOUCESTERSHIRE.

ON the 13th inst., a fountain, erected as a memorial of the late Sir J. Maxwell Steele Graves, bart., and his daughter, Mrs. Bowen Graves, was inaugurated in this village. The structure, which is of Forest of Dean stone, elaborately carved, has been built by Mr. J. Clifford, of Ilmington, from the designs of Mr. W. Burges, and comprises portrait medallions, in Sicilian marble, of the late baronet and his accomplished daughter (authoress of "My Queen," and other popular lyrics), from the chisel of Mr. F. Scarlet Potter. The whole cost of this, and of two other less ornamental fountains, as well as that of supplying the village of Mickleton with water from the neighbouring hills, has been borne by Lady Steele Graves, of Mickleton Manor, and her son-in-law, Mr. F. Bowen Graves.

PALESTINE EXPLORATION FUND.

MONSIEUR GANNEAU, in the course of his exploration in Jerusalem, came upon the fragment of a statue, the head of some important personage, it being encircled by a wreath. He concluded at once that it was that of Hadrian. The features and general character do not show the refinement of the existing busts of that Emperor, who was one of the handsomest men of his period. The execution is coarse, and the treatment hardly equals that of the best artist of the time. A remarkable object on the wreath is an eagle, which would seem to identify this head with Herod, who is stated by Josephus, Antiq. xvii. 6, 3, to have erected over the great gate of the Temple a large golden eagle of great value, and had dedicated it to the Temple. This was an Act of such profanity in the eyes of the Jews, that, instigated by their teachers, the young men pulled it down and cut it into pieces with their axes. The eagle therefore would seem to be emblematic of Herod, and suggests the probability of this being his portrait. Should other evidences arise to confirm this supposition, this bust will be a singular and interesting illustration of Jewish history.

Joiners' Wages at Crieff.—The journeymen joiners of Crieff have demanded an advance from 6d. to 7d. per hour, to take place on the 1st of March next. The request, it is said, will be granted.

CASES UNDER THE BUILDING ACT.

MORTAR.

On the 1st inst., Mr. Jarvis, district surveyor of Camberwell, summoned Mr. Bowles, a builder, for not having solidly put together with mortar or cement the bricks in the walls of some houses at Peckham-rye. The case was heard by Mr. Chance at the Lambeth Police-court.

The District Surveyor defined what mortar is, and submitted specimens of the so-called mortar used in the walls, and urged that mould was mixed with the lime instead of sand. He was supported in his evidence by a builder of good reputation and large experience.

Mr. Bowles, the builder, in reply to a question put to him by the Magistrate, acknowledged the specimen submitted by the District Surveyor was not mortar, but he stated it was not a fair sample of the materials used. Upon this the Magistrate said he would send an officer to collect specimens from the walls, and adjourned the hearing of the case for a week.

Upon resuming the case, on the 7th inst., the officer submitted pieces of the so-called mortar, and on comparing them with those submitted by the District Surveyor the Magistrate said he could not see there was any difference between them.

The solicitor for the builder called a surveyor who stated he considered the material in dispute was mortar, and the Magistrate decided that as there was such conflicting evidence a surveyor should be engaged as an assessor to assist him in coming to a decision, and he named Mr. Lovejoy, of the firm of Drury & Lovejoy, to act in that capacity, and again adjourned the case.

Mr. Lovejoy examined the work, and attended the Court on the 14th inst., and gave it as his opinion that the composition complained of by the District Surveyor was not mortar.

The Magistrate therefore made an order for the builder to pull down the walls of the four houses.

ARE BAY WINDOWS BUILDINGS?

LORD MANNERS AND ANOTHER *v.* JOHNSON.

This was a suit in the Chancery division of the High Court of Justice, the chief object of which was to compel the defendant to pull down certain bay-windows which he had erected on the front of his two houses, Nos. 1 and 2, Palace-road, Roupell Park, Streatham. It appeared that the houses in Palace-road were about 80 ft. from the road and 40 ft. from one another, and the plaintiffs' case was that certain bay-windows which the defendant had erected to his houses, and which projected 3 ft. or 4 ft. from the main line of his house, which was itself some inches too near the road, was a violation of his covenant as to building, and injured the value of their property by destroying its privacy. The defendant insisted that the main walls of his houses followed the line of frontage he was bound to observe, and that the bay-windows were only projections from the main wall, and did not come within the words in his covenant, "any building"; that uniformity had already been departed from with regard to other houses in the Palace-road; and that what he had done had, as to Lord Manners, enhanced the value of the property; and as to the other plaintiff, had done him no injury.

The Vice-Chancellor said the question whether the defendant had a right to erect these bay-windows depended entirely upon the construction to be put upon the covenant contained in his conveyance. As the Vice-Chancellor read that covenant, it imposed upon the defendant a positive obligation not to erect any building nearer to the Palace-road than the line of frontage of the then present houses, which was not qualified or detracted from in any way. The question, then, was, were these bay-windows buildings within the meaning of this covenant? It was said that they were not, and that they were mere projections from the main building, like porticoes or verandahs. But it did not require scientific evidence to satisfy his Lordship that when bay-windows were carried up from the foundation of a house to its roof, they were part of the main building. Everything was constructed accordingly, and upon the plain meaning of the words there had been a clear violation of the contract. His Lordship accordingly declared that the buildings of the defendant, so far as they consisted of the bay-windows, constituted a breach of the covenants contained in his conveyance, and granted an injunction to restrain him from permitting them to remain for a longer period than six months from the date of the order.

SANITARY MATTERS IN VIENNA.

Sir,—Reading in your esteemed paper lately the interesting article in which are defined the necessities to a perfect city, I, like most other people who read that paper, was for the time as much enchanted by the prospect as ever we were in reading fairy tales or those of the Arabian Nights. The occupant of a comfortable English home, however, as he laid his *Builder* aside, and awoke from his dream, would awake to a less painful consciousness than some of us Continentals. If the writer, or any of his readers, ever were in Vienna, they will know some of its sanitary defects. Henry Fielding said in his time, he hurried over the Continent holding his pocket with one hand and his nose with the other. Is there any change to-day? The completion of the great water scheme might have been expected to have had as a first result a beneficial sanitary influence. While Viennese believe water to have a cleansing influence on themselves, they seem possessed of two firm ideas, viz., that filth is disposed of when removed from sight; and that where a drain or a water-closet is there must be a smell. Use of smell-preventers or "traps" seems quite unknown. Even in your kitchen you may have water. You draw your water over an open waste-pipe in connexion with the main drain, and your dwelling is a ventilator to the canal, and this principle is carried out in nearly all native work. Give an order to any of the almost innumerable firms executing such work, and everything will stand on your account as "English,"—the system, material, everything; and the most barbarous thing man ever invented is called an English water-closet. Truly, English skill and labour have much to bear if any one thinks the production English.

I notice the *Vienna Free Prees* of a few days back extolling its native skill in the water-branch, and claiming for a firm here the honour of doing something for Paris. Now, if "English" is so often employed here when it ought not to be, it is employing "English" where it ought to be when we say the said firm has a staff of English workmen under the direction of Mr. J. Smeaton, formerly, I believe, of a London firm, W. Smeaton & Sons, sanitary engineers. Honour to whom honour is due. Y. Z.

HOW SHALL WE IMPROVE THE EDUCATION OF BRICKLAYERS?

One thing especially that strikes the thoughtful workman with surprise, in his daily vocation, is the wide-spread ignorance displayed by those with whom he has to labour side by side in the struggle for bread, and it is not only in reading, writing, and arithmetic that they show this deficiency, but in the practical carrying out of the calling which they profess. I will not attempt to explain the cause of this ignorance, but try and suggest some means by which those who call themselves bricklayers may be lifted out of their ignorance, and I am sure that all intelligent bricklayers will admit that it is time something was done. I know that there is a class of men who will not go with me, for this reason: they say that there are already enough skilled bricklayers, and that if they teach others to be as good as themselves they will outstrip their tutors, and the tutors will have to stand back while the others advance. For myself I say, let them do it if they can.

But now for a few suggestions as to the means whereby they are to be improved. First of all, I think that our time in the lodge-room could be more profitably used, if, instead of idle discussions, some papers upon the different applications of our trade were read and explained by some of our senior members. Then I would suggest that bricklayers' mutual improvement classes be commenced, where bricklayers only should be members; let this restriction be made, that it be well inquired into whether any one wishing to join is a bricklayer. There are plenty of schoolmasters who would gladly undertake the schooling of the members. Let the meeting-nights be not less than two in a week. Then I would suggest that a drawing-board, with all the necessary implements for striking out gauge work, also drawing instruments for plan-drawing, &c., be purchased. I would also suggest that the members throw open their doors to members of the Institute of Architects and Architectural Association, many of whom (if I understand some of the papers aright that are read by them) would avail themselves of the opportunity of mutual improvement. I should be glad to hear the opinion of some intelligent bricklayers on this subject; at the same time, I would say that I am willing to commence such a class if I can see that others are willing to join me.

J. P. Morris, Secretary,
London Lodge, M.U.O.B.

ARE PATENTS MISCHIEVOUS?

Sir,—If I may judge from the tenor of Sir Edmund Beckett's letter in the *Builder*, I should imagine he rejoices in the supposition that he is an inventor, and willing to work entirely *pro bono publico*. It may or may not be so; for the mere fact of making public such an idea as the method for oiling sash-pulleys is no certain proof either for or against. The gift of that which costs us nothing is not worthy in itself of extra commendation. Had Sir Edmund made public property an invention that had cost him years of close application and much anxiety and outlay in the construction of models, &c., then, and not till then, would his actions exactly coincide with his belief, viz., that he, being an inventor, is of opinion that the granting of protection by letters patent is detrimental to the commonweal. Would your correspondent kindly inform us in what way he considers it has an injurious effect on our manufacturing industries? If we are to continue as the first power (with regard to commerce) in the world, would it be politic to trust entirely to those who, with time, talents, and capital at command, may feel disposed to expend the same *pro bono publico, plus* a fraction of honour? I trow not, for there is every reason to believe that improvements then would be very few and very far between. It is an indisputable fact that the vast majority of inventions (of any note) patented in this country, but more especially in the United States of America, originate and are brought to perfection by mechanics, who, wishing to rise from the rank and file, exert themselves for the sole purpose of pecuniary gain; which, at the same time, tends indirectly to the good of the public; therefore withdraw protection and you annihilate, or at any rate, stunt, the inventive faculty. This is in a measure proved by the large number of inventions patented in the United States. Not that the Yankee is in any way smarter than John Bull, but greater facilities are offered in the form of cheap protection, consequently greater stimulus for renewed exertion.

As this is a subject of considerable importance to the public at large, and more especially to inventors, I trust you may see fit to grant this a space in your next impression.

T. Marcus Houghton.

THE ACOUSTICS OF CHURCHES AND THEATRES.

Sir,—After reading in your August Number the article on "Church and School Architecture," I feel inclined to protest against the acceptation as "American" of the views of your New York correspondent. On the contrary, I am sure that the majority here will approve of your remarks, and agree that the needs of a congregation vary much from those of the audience in a theatre. In connexion with comfort, and certainly with good acoustic effect and ventilation, there can be no doubt of the successful application of the severest forms of Mediæval building to our present uses. For twenty years we have enjoyed in Baltimore the use of a large clearstoried church, style Early English, which I designed with transepts and other stumbling-blocks to sound. But in building St. Luke's I kept in view the great importance of hearing well, and in it I made the first partial application of the principle of air movement towards the audience. Its success, acoustically, is complete.

The Baltimore Academy of Music, which was completed under my superintendence within the year, is a striking, and perhaps conclusive, example of the importance of the principle I have mentioned. It is a theatre as large as the New Opera of Paris, yet the sigh of *Lucia* (Albani), and the breathing of Ristori in the sleep-walking of *Lady Macbeth*, were heard throughout the house.

When I add that an unusually effective ventilation forms a necessary part of this system of acoustics, I hope to have indicated one good way to avoid the possible imperfections in hearing of the one span, or of the three-aisled forms of church building.

J. Crawford Neilson, Architect.*

Baltimore.

APPOINTMENT OF ARCHITECTS TO SCHOOL BOARDS.

Mr. J. H. Brown, of Norwich, has been appointed architect to the Woodton School Board.—Mr. W. Watson, of Wakefield, has been appointed architect to the United School Board District of Beal, Birkin, and Kellington, Yorkshire.—Messrs. Jackson & Longley, and Messrs. Hargreaves & Bailey, Bradford, have been appointed architects to the Bingley School Board.

* Mr. Neilson will perhaps send us drawings and particulars of his theatre.

THE BRIGHTON SEWERS.

INSTITUTION OF CIVIL ENGINEERS.

At the meeting held on the 7th December, Mr. Thos. E. Harrison, the president, in the chair, the paper read was on "The Brighton Intercepting and Outfall Sewers," by Mr. J. G. Gamble, C.E.

The paper stated that the area affected by these works was about 1,800 acres, and comprised the whole of what was ordinarily called Brighton. Portions also of the parish of Rottingdean, east of Brighton, might be drained into the intercepting sewer. The range of tide varied from 22 ft. to 9 ft.

Until about thirty years ago, the sewage of Brighton was drained into cesspools. Such sewers as there were chiefly served to convey away water to the upper part of the beach. When, however, the houses were drained into the sewers, the sewers became a great nuisance, and were gradually extended farther and farther seaward. In 1870, at the time of passing of the Act for the present works, there were eight outfalls, all of which with one exception, were abolished, the sewage passing to the outfall at Portobello.

To remedy the evil Mr. Hawksley proposed still further to lengthen the pipes. Mr. Robert Rawlinson, C.B., suggested an intercepting sewer, with an outfall to the westward of the town. Sir Joseph Bazalgette recommended an intercepting sewer, with an outfall to the eastward, near Roedean Gate. Messrs. Maclean & Wright also proposed that the sewage should be taken in the same direction, but placed the outfall at Saltdean. The present position, Portobello, was recommended by Sir John Hawkshaw, who designed and carried out the whole of the work, the author being the resident engineer. Mr. Matthew Jennings originally took the contract for the works, but they were finished by Messrs. John Aird & Sons.

The intercepting sewer began at Hove-street, ran under the Shoreham-road nearly to the end of the Brunswick-square-lawns, passed under the beach till it entered again under the road at East-street, and excepting for a short distance at Rottingdean, it extended from thence under the Marine Parade and the Newhaven-road to Portobello. The sewer was of brickwork, and was of a circular section, 5 ft. in diameter, up to East-street; 6 ft. in diameter between East-street and the Steyne; 7 ft. in diameter from the Steyne to the Penstock Chamber, Portobello; and between the Penstock Chamber and the sea, the sewer was partly of brickwork, partly of three cast-iron pipes, 4 ft. in diameter, laid side by side; the total distance was 38,590 ft., or, 7¼ miles. The average fall was about 3 ft. in the mile.

The invert at	Hove-street was	21	6	
,,	the Steyne	15	3	above low water of spring tides.
,,	Blackrock	14	3	
,,	the penstock chamber	2	0	
,,	the outfall	0	0	

Besides the main line, a considerable length of junction sewers was constructed to connect the old main sewer by suitable curves. Catch-tanks were inserted in the tributary sewers just before their junction with the main sewer.

There were three storm overflows in Brighton, at the former western, central, and eastern outfalls respectively. In the six months ending the 21st of December, 1874, the central overflow had come into operation three times, and the other two once. In the first six months of 1875, the storm overflow only came into operation once. In that at the Steyne, a weir was built in a slanting direction across the old sewer, and the ordinary drainage passed along a new sewer towards its junction with the intercepting sewer. The level of the top of this weir was about 2 in. higher than the old storm overflow, a level found sufficient to prevent the flooding of the lowest basements in case of the water getting past the house-drain flaps, and backing-up the house-drains. The storm-water was discharged by the former central outfall. An inlet had been constructed at the Steyne with penstocks to admit sea-water to flush the lower part of the sewer; this was generally used at spring-tides. Arrangements had also been made for working two sets of penstocks, one by which the tide should be shut out in case of the valves not acting, the other for penning back the sewage temporarily, so as to flush the outfall at low water. This chamber was provided with a passage to the beach, and with a louvred roof for ventilation. Between the penstock and the sea, the section of the sewer changed from a circle to a semicircular arch with a flat invert, and then again, by an arched chamber, to three iron pipes. The iron pipes were held together in a frame of greenheart timber, with wrought-iron bolts, and the pipes were retained in line by bolts which passed through lugs cast on them for that purpose. Beyond the mouth of the pipes the sewage ran in a trench only visible at low water during spring-tides.

The progress of the work, and the method of laying out the line of sewer, were next described. The works were begun in January, 1871, and were completed in June, 1874. The brickwork was 9 in. thick, except between Rottingdean and the penstock chamber, where it was 13½ in. thick, and between the penstock chamber and the sea it was 18 in. All this brickwork was set in Portland-cement mortar with the exception of the walls of the penstock chamber, which were in greystone lime mortar. Gault pressed bricks, or bricks made at St. John's-common, near Burgess-hill, were used in the inverts, and ordinary Gault or stock bricks in the arches. The bricklayers were paid 10s. for each 12-ft. length of 9-in. work, and 15s. for each 12-ft. length of 13½-in. work. Brick blocks of eight whole bricks and four half bricks were used when the bottoms were wet. Radial bricks were not required, owing to the large diameter of the sewers. More than six million bricks were used,—sixty-three courses being required in the inner ring of the 5-ft. sewer, and eighty-six courses in the 400 lineal feet of brickwork in tunnelling were executed per 7-ft. sewer. Pipes were laid under the invert to carry off the water, much of which was met with while the brickwork was being put in. When the junction was made between the brickwork from one shaft with that from the next, the pipes were plugged or closed by a valve built for that purpose. Under the sills at Portobello iron pipes were used, which were afterwards filled with Portland-cement grout. So great was the pumping that the wells at Rottingdean and the coastguard station at Portobello were seriously affected.

The ventilation of the sewer during the progress of the works was good in every portion where there were two openings. Where there was only one opening the air in the heading became bad, and openings to the cliff had frequently to be made.

The total cost of the work had been 100,000*l.* The cost of a lineal foot of the 5-ft. sewer, which was built almost entirely under the first contract and in open cutting, was 29s. The cost per lineal foot of the 7-ft. sewer, 9-in. work, which was done by tunnelling, was 27s. under the first contract, 41s. under the second. The extra cost of 3-ring work (13½ in.) over 2-ring work (9-in.) was, under the first contract, 12s.,—under the second, 16s., per lineal foot. The cost of a ventilator varied from 20*l.* where the sewer, as at Cliftonville, was not far from the surface, to 160*l.*, where the ground level was, as at some places on the Newhaven-road, from 150 ft. to 160 ft. above the invert.

ALLEGED BREACH OF CONTRACT.

HORNE *v.* LABOUCHERE.

This was an action which came before the Exchequer Subdivision of the Supreme Court of Judicature, on the 7th instant, before Baron Huddleston and a special jury.

The plaintiff was a house-painter, decorator, &c., carrying on business in Fenchurch-street. The defendant was the ex-M.P. for Middlesex. Having recently purchased "Pope's Villa, at Twickenham," he entered into an arrangement with the plaintiff for the painting, &c., of that interesting and historical residence. On the 18th of March last the terms of the arrangement were reduced to writing, and they were in effect that the plaintiff undertook to paint the whole of the woodwork of the edifice in a workman-like manner for 140*l.*, with two coats of paint, &c. Soon after the work had been begun, namely, in April, the defendant found fault with it, complaining that the old paint had not been burnt off before the new paint was put on. There was also raised at this time the question as to whether the plaintiff ought not to have employed scaffolding in order to execute the work in "a good workman-like manner." The plaintiff declining to adopt the views of the defendant, the latter dismissed him, being dissatisfied with the manner in which he was proceeding. The plaintiff then brought the present action, claiming 58*l.* 10s. 1d., being the alleged value of the work done, including interest, &c., on the amount.

The plaintiff and his witnesses gave evidence in support of the claim, declaring that the work was being properly done when the defendant dismissed Mr. Horne. He had burnt or scraped off the old blisters and paint where he thought it necessary.

It further appeared that in 1861 the villa was thoroughly painted outside by the plaintiff, that scaffolding was then used for that purpose, and the old painting was burnt off by burning-pans before the new work was commenced. An accident, however, occurred in consequence of the tower having taken fire and become damaged.

Mr. Labouchere was examined on his own behalf. He stated that in consequence of the old paint of 1861 not having been burnt off, the new work showed a great many blisters, and was not done properly and in a workman-like manner.

The surveyor of the Twickenham Local Board, who stated that he had thirty years' experience of such work, and Mr. Holmes, an architect and surveyor for about fifty years, declared that the old paint and blisters should have been burnt off, and that the work executed by the plaintiff was not done in a good and workman-like manner.

The jury found a verdict for the plaintiff for the full amount claimed.

THE NEW PICTON READING-ROOM, LIVERPOOL.

The foundation-stone of the new Picton Reading-room, Liverpool, was laid on the 2nd inst. The new building (which is named in honour of Mr. J. A. Picton, F.S.A., one of the town councillors, and who has been chairman of the Library, Museums, and Arts Committee for the past twenty-five years) will be circular, and constructed on the same principle as the reading-room of the British Museum. The building, which it is estimated will cost 13,000*l.*, will consist of one large circular room 100 ft. in diameter and 60 ft. in height from the floor to the centre of the dome. It will be built of whitestone, and in the Corinthian order of architecture, and will be lighted from the top. In the front, facing William Brown-street, there will be sixteen fluted Corinthian columns, each 35 ft. in height, supporting a frieze and cornice 8½ ft. in depth, and surmounted by an open balustrade. Between the pillars will be niches for the reception of life-sized figures in stone. The room will be approached from William Brown-street by two bold flights of steps on each side, leading to a colonnade which runs round the building and connects the Free Library and the Museum, between which and the Picton Reading-room there will also be internal communication. Mr. Sherlock is the architect. Mr. Picton has well earned this mark of consideration.

SCHOOL BOARD SCHOOLS.

Sheffield.—Three new schools were opened under the auspices of the Sheffield School Board on the 1st inst. The Park school, in Norwich-street, is erected upon a site comprising 2,227 square yards of land. The total floor area of the rooms is 7,707 square feet, and the "breathing space" 122,438 cubic feet, the accommodation being for 739 scholars. At the Pye Bank school provision is made for 846 scholars. The site occupies an area of 2,500 square yards. The school and classrooms are on an extensive scale, and contain 8,606 superficial feet. The cost of erecting them will be about 8,000*l.* In these schools, as in the others erected by the Board, every facility is given for the scholars, both in respect of space and light. The desks are from the pattern patented by Mr. J. F. Moss. The Springfield school occupies the site formed by the junction of Broomspring-lane, Cavendish-street, and Broomhall-street, and is Early Geometrical in style. The school is carried up to a considerable altitude, covered playgrounds occupying most of the ground floor, save only on that part set aside for infants,—at the end adjoining the Convent wall in Cavendish-street. This latter school is suitably placed for infants upon the ground floor. The other schools are upon the two stories above the playgrounds, but over the infants' rooms there are no schools. Grenoside stone is the principal material used, the worked and finely-tooled dressings of the windows, buttresses, splays, &c., contrasting well with the deeper tone of the nobbled walling. The roofs are slated with blue Welsh slates, surmounted by bright red ridge tiles, and the windows are filled with semi-opaque glass. The internal arrangements of the school appear to be satisfactory. The area of the rooms is, alto-

gether, 8,154 square feet; the breathing-space, 134,994 ft.; and the number of scholars for which accommodation is provided, 752,—viz., 242 boys, 244 girls, and 266 infants. The cost of the site was 3,851*l.*, and the cost of the building will probably be from 7,000*l.* to 8,000*l.* The ironwork is by Messrs. Brawn & Downing, of Birmingham; Mr. Bodley, of Sheffield, has executed the stonework; and Mr. Spink, also of Sheffield, the woodwork. The stone carving is by Mr. Harry Hems, of Exeter. The school has been erected from the designs of Messrs. Innocent & Brown; and the clerk of the works was Mr. W. Dickinson.

Portobello.—The new Board school at Portobello is nearing completion. The structure is of one story. The main block is divided into two departments, juvenile and infant. A large hall, 54 ft. square, with an open roof, 27 ft. in height, occupies the centre of the building. This will be set apart as a mixed school, over which the head-master will preside. A sloping gallery fills a recess on the east side, and on the north and south sides are four class-rooms, two for boys and two for girls. These apartments are divided from the large hall by glass screens, so that the head-master will be able to keep an eye on every class, and so preserve discipline. The northern portion of the school will thus be occupied by boys for whom lavatories and other conveniences have been erected, and the opposite end appropriated to girls. The infant department is placed at the extreme south end, where a class-room has been run out from the main building. Archimedian screw ventilators are employed. The passages leading to the various out-houses are covered with corrugated iron. A house for the janitor is being erected. Messrs. Moffat & Aitken, Edinburgh, are the architects; Mr. A. Wilson, Tranent, having the contract for the mason's work, and Mr. H. Scott, of Portobello, that for the joiner's work. The cost is not expected to exceed 7,000*l.*

Wrexham.—The Broughton Board Schools were opened on the 29th ult. The buildings have been rather costly, the site being of such a peculiar character that strong retaining walls have had to be erected, at a cost of about 1,000*l.* Mr. W. Turner is the architect, and Mr. Samuels the contractor, who in a recent letter to the Board says he is a loser of 500*l.* by the undertaking.

Bulkeley and Ridley (Cheshire).—New Board Schools are in course of erection on the Ridley and Bulkeley-road, in the township of Ridley. Externally they are built of red and white stone, obtained from the quarries on the Bickerton and Peckforton hills, the white stone being used for the corners, windows, &c., the style being Gothic. The large schoolroom has glazed red brick half way up the walls, an open red pine roof, supported by white stone buttresses springing from the walls, and is both lofty and well lighted. The master and mistress's house adjoins the school, but has separate entrances. The architect is Mr. Bowers, of Nantwich, and the contract has been undertaken by Mr. Feet, builder, of Beeston.

THE LONDON SCHOOL BOARD AND THE HACKNEY "SHOOTS."

Twice, if not more often, in discussing sanitary matters at Hackney-wick, we described the site of the new London School Board School at Gainsborough-road and its vile surroundings. At the last meeting of the Hackney District Board of Works, a letter was received from the London School Board, complaining that the attendances at the above school had been seriously affected by the bad state of the approaches to the building; and the matter was referred to the General Purposes Committee for consideration.

At the same meeting a report was brought up from the General Purposes Committee, *in re* the Surveyor's Department and the Supervision of the Roads of the District. Mr. Runtz, the Hackney representative on the Metropolitan Board of Works, expressed his dissatisfaction with the report, and said that for many years he had tried to get proper supervision over the highways, but had always been thwarted by family and other influences, which even now had not disappeared. It was patent to every one who drove through the thoroughfares of this district that proper supervision was not exercised over the roads. In addition to the chief surveyor and assistant surveyor, it was eventually resolved, after a long discussion, to appoint two new officers, to be called road surveyors, the appellation of "road foremen" not being considered respectable enough for possible holders or candidates.

CHURCH-BUILDING NEWS.

Merevale.—The restoration of Merevale Church has been commenced, under the direction of Messrs. Paull & Bickerdike, of London. The building is an adjunct to Merevale Abbey, and is of unusual plan, the eastern or principal portion of the church,—in which the services are held,—being an exact square divided into a nave and aisles in the usual way. The date is the fourteenth and fifteenth centuries. To the westward of this, and opening into it, are remains of the thirteenth century, consisting of two bays, the aisles to which have been destroyed, but the central portion remains, and forms a sort of antechapel to the church. There are fragments of a very fine stone screen lying about the churchyard embedded in the earth and overgrown with grass. There is also a remarkable loft of oak, and of late date, in the church against the west wall, and a considerable amount of late painted glass in the windows. It is contemplated to restore and refit the whole building. The present works are confined to the north aisle.

Chilton.—The parish Church of St. Mary, Chilton, Suffolk, has been re-opened, after restoration. The exterior masonry and flint work have been generally repaired. The works to the chancel consist of decorations in gold and colour of texts, symbols, and ornaments, in lines, diapers, panels, borders, and strings; and alterations to seating and new windows in south and east walls. The carrying out of the works was entrusted to Messrs. Geo. Grimwood & Sons, of London and Sudbury; the general superintendence and decorative designs being by Mr. A. Grimwood. The church is fifteenth-century work, and contains an interesting wall tablet and two alabaster marble tombs, with sculptured recumbent figures, in memory of the Crane family. These, however, have been badly mutilated.

Shipley.— St. Paul's Church, Shipley, near Bradford, has been re-opened, after alterations designed by Messrs. Healey, architects, of Bradford. The west gallery has been removed, the organ which formerly stood there having been re-erected on the north side of the new chancel; the old pews have been replaced by oak benches both in the nave and north and south galleries. A screen wall of Caen stone is placed at the entrance of the chancel, the pulpit, base, and steps being combined with it. The pulpit and choir-stalls are of oak, and of elaborate character. Several special offerings have been made, such as a brass eagle, by Messrs. Potter; an alabaster font and two memorial windows, by Messrs. Powell, of Leeds. Including external repairs, the total cost of the restoration has been about 4,000*l.* Messrs. Whiteley, of Leeds, were the contractors.

Edlesborough.—The chancel of St. Mary's Church, Edlesborough, has been re-opened, after restoration at the expense of Lord Brownlow. The original Purbeck mullions and shafts of the east window were found to be so decayed that it was necessary to restore them in stone, following out the details of the old work. The whole of the tracery of this window was taken out, the decayed parts renewed, and thoroughly reinstated with new stone; this was a work of much trouble, on account of the richness of detail and the size of the window. The roof has been entirely taken off, and all the defective rafters replaced by new to assimilate with the old ones; and all the old colour-wash has been removed. The rood-screen, a very fine specimen of the work of the fifteenth century, has had the paint removed from the east side, exposing the old oak. The whole of the chancel is paved with tiling, by Mr. Godwin, of Hereford. The north door in the chancel has been opened out and restored, and a new external lobby added, forming a passage to the north transept. The restoration has been carried out by Mr. Chappell, builder, of Tring; Mr. Withers, of London, being the architect; these gentlemen also restored the nave in 1867. Mr. King, of London, has acted as clerk of the works. The cost of restoring the chancel will be upwards of 1,000*l.*

Stourport.—Arrangements are in progress for the erection of a new parish church at Stourport. Sir Gilbert Scott has prepared plans for a building capable of seating 1,200 persons, at an estimated cost of 25,000*l.*, but owing to difficulty in obtaining the whole of the funds, it is under consideration whether a smaller church, capable of seating 900 persons, at a cost of 15,000*l.* or 16,000*l.* shall be erected, or whether, as Sir Gilbert Scott has suggested, his original designs be partially carried out at first by the erection of four bays of the nave, with chancel, vestries, and organ-chamber, the west end being temporarily bricked up till funds can be obtained for further extension and for the erection of the tower.

Stokesley.—Stokesley Church, Yorkshire, was re-opened on the 2nd inst. by the Archbishop of York. The body of the church was until lately occupied with high-backed, square, old-fashioned pews, and there were three cumbrous galleries. These have all been removed, and the church furnished throughout with open seats of oak. Under the old system of pews and galleries, the number of seats was 520, but now, with the substitution of open sittings and the abolition of the galleries, the accommodation is for 470, or a decrease of but fifty sittings. The work has been done by Mr. White, of Whitby, joiner. The flooring has been repaired, a new pulpit erected, and the church fitted with a warming apparatus, designed by the Rev. C. P. Peach. The total cost has been about 530*l.*

Abingdon.—At a vestry meeting held at the parish church of St. Helen, Abingdon, on the 2nd inst., the committee to whom it was some time back referred to obtain a report from an architect or engineer as to the condition of the tower and spire, presented a report from Mr. F. W. Shields, the engineer to whom they had applied, who, together with Sir Gilbert Scott, had thoroughly examined the building. The report stated that the top of the spire was deflected from the perpendicular to the south and to the west, that the south-west turret was very much cracked and damaged, and that the western face of the tower was also cracked. These cracks were all old. It was necessary to remedy the defective state of the tower without delay, and the report recommended that four buttresses be built, one at each of the four angles of the tower, that the damaged stonework in the turret be cut out and replaced stone by stone, that certain alterations be made in the floor of the tower, and that the crack at the base of the spire be stopped with cement.

Highgate.—The new church of St. Mary, Brookfield, Highgate-rise, built from designs by Mr. Butterfield, was consecrated by the Bishop of London on the 7th inst. The new church is to be a chapel of ease for the parish of St. Anne's, Highgate. It stands on the edge of Lady Burdett Coutts's property, and is also on the boundary line between the rural deaneries of St. Pancras and Islington.

Derby.—St. John's Church, Derby, has been re-opened, after alteration and decoration. A new organ, by Willis & Son, has been placed at the east end of the north gallery. The space gained by the removal of the old organ from the west gallery has been fitted with seats, and the west window is now visible. The whole of the woodwork of the interior has been painted, grained, and varnished. The ceiling has been coloured a pale French grey, and the panels of the ceiling picked out with ultramarine and vermilion, the timber trusses being stained dark oak. The chancel walls, to the cornice running round from the sills of the windows, have been decorated by Mr. W. Cantrill. A choir vestry has been formed under the new organ.

Lincoln.—The foundation-stone of the new Church of St. Andrew, Lincoln, was laid by the bishop of the diocese on the 30th ult. As originally contemplated it was intended to provide a church which should cost about 8,000*l.*, and which should accommodate a large congregation; and the Rev. Prebendary Swan, who is one of the principal proprietors of the soil in the neighbourhood, generously gave a site, at the corner of Portland-street and Canwick-road, and further a sum of 1,000*l.* towards the cost of the building, the Bishop presenting the committee with — besides a handsome contribution in money—the fabric of the Old St. Martin's Church—the material of which will be used in the erection of the new Church of St. Andrew. The new church will not be, for the present at any rate, what it was originally intended it should be, inasmuch as instead of having, as required, some 8,000*l.* or 9,000*l.* at their bankers, the committee have at present only some little over 3,000*l.* to their credit, and with this in hand it is proposed to at once provide accommodation, on the site already named, for about 400 worshippers, which it is estimated will cost about 4,700*l.*, and by degrees the committee hope to proceed

in the good work till they shall have attained the completion of the original plan. The plans are prepared by Mr. J. Fowler, of Louth, and the work will be entrusted to Messrs. Haddleston & Son, of Lincoln.

SCHOOL-BUILDING NEWS.

Ramsgate.—The memorial stone of the St. Paul's Mission School, King-street, Ramsgate, was laid on the 1st inst. by Mr. J. G. Talbot, M.P. The building will comprise a schoolroom, class-room, lobbies, mistress's house, offices, &c., and an infants' nursery. The edifice will be built with bricks, with Bath stone dressings. The principal front in King-street will have four gables with stone coping, the principal gable being in Belmont-street. The walls will be ornamented with bands of red and black bricks and Doston stone. The arches of the windows will be constructed alternately of red and black brick and Doston stone. The building will be covered with blue and red slate, and will be surmounted with a bell-turret, 60 ft. in height. The school will accommodate 150 boys, girls, and infants. The nursery is to be 30 ft., by 20 ft., and is calculated to accommodate about forty children. Mr. L. Shrubsole, builder, of Faversham, has taken the contract for the erection of the building, and the designs have been prepared by Mr. Robert Wheeler, of Tunbridge Wells.

VARIORUM.

"TRAINING Schools and Training Ships: for the Training of Boys for the Navy, Army, and Mercantile Marine" (Stannton & Son) is the title of a well-timed pamphlet by Mr. Edmund E. Antrobus, F.S.A. It has for its chief object the advocacy of some such Bill as was introduced, last session, by Captain Bedford Pim for the founding of county training schools and ships, and deserves wide consideration. It is desirable that the position of our navy and mercantile marine should be placed before the public as much as possible. The latter service has drifted into a lamentable condition, and thereby has deprived our country of this "reserve" which formerly existed for the supply of men for the Royal Navy in the time of war. Mr. Edmund Antrobus is an active justice of the peace for Middlesex, who has particularly interested himself in the Middlesex Industrial School at Feltham, and has given much consideration to the subject in question. We quite agree with him that to have at command a reserve of men properly trained and accustomed to discipline, not only for the immediate wants of the navy in time of peace, but to meet all contingencies, is of vital importance.——The *Garden*, for the future, will, every week, contain a coloured plate (full-page size) of a beautiful or rare flower or fruit, of proved value for gardens. The aim is to illustrate, as nearly as may be in their natural colours, the finest of new flowers and fruits. This addition will greatly add to the attractiveness of the publication.——"The Doom of St. Quereo," a Christmas legend, by F. C. Burnand & Arthur A'Beckett (Bradbury & Co.), is a wild, weird story, with some good illustrations; the whole suggestive of a dream after a supper of pork chops. The lovers of diabolic legends will find it satisfactory.——The frontispiece of "Punch's Pocket Book" for the coming year is an amusing caricature of Mr. Long's fine picture, the Babylonian Marriage Mart. The meaning of some of the other illustrations is less clear than it might be.——From Messrs. Partridge & Co. comes a packet of well-known serials for the young, now formed into little volumes for the year,—"The Friendly Visitor," "The Infant's Magazine," "The Children's Friend," "The Family Friend," and others,—all remarkable for their good wood-cuts. The last-named, "The Family Friend," includes illustrations of several of the English cathedrals. "The Band of Hope Review," issued by the same publishers, and "The British Workman," continue their good course. The wood-engravings in the latter are as good as any of their kind that are done.

St. Michael's, Queenhithe.—Another of the City churches has been doomed to demolition, and the closing service has been held. The church in question is that of St. Michael, Queenhithe, situate in Upper Thames-street. A church stood on the site of the present one as early as the year 1181.

Miscellanea.

Decoration of a Birmingham Church.—St. Peter's Church, Dale End, Birmingham, has lately been closed for repairs and decoration, the work having been entrusted to Messrs. J. R. Lee & Co., of Ann-street. The large ceiling is panelled in nine panels, and each panel is tinted in subdued primrose. The enrichments which surround them are relieved with gold and picked out in tints. The stiles round the panels are of warm neutral tints, enriched with ornament and lines. In the centre panel around the ventilating gauze is the honeysuckle and lotus ornament in self-colours; in the small panels is a stile and sinking line round the same. The cove, which is 10 ft. in depth, is of a warm neutral salmon colour, relieved with a warm grey stile, enriched with medallions with the keys of St. Peter on either side, the crown and inverted cross, on a rich blue ground, the whole being surmounted with ornaments and lines in colours, with the Tudor rose and star in gold. In the centre medallion over the chancel is the monogram I.H.S. The cornice is picked in in gold and colours; the frieze is a rich blue, with an ornament of self-colour, relieved with medallions of red and gold, with devices thereon. The walls are of a quiet salmon colour, with a warm dado; the two colours being divided by a dark line, enriched with a small appropriate ornament above. The window linings are of a cold cream tint, the mouldings being picked in in colours, with a Greek ornament on the flat. The gallery fronts are in three tints, relieved with gold, with lines and ornaments to harmonise with the organ; and the seats are done in two rich browns, relieved with black and gold. The chancel ceiling is picked in in colours, with blue backgrounds; the enrichments are relieved with gold, and each side is diapered in colours and gold; the pilasters are marble, with black marble bases. The gasfittings have been supplied by Messrs. Blews & Son and Mr. Barrett, and the new font is the work of Mr. Bennet. The vestibule and baptistery have been paved with tiles supplied by Messrs. Craven, Daniell, & Co.

"The Lions at Home."—A correspondent, who signs himself "The Carpenter," says, with reference to our observation as to the apparent want of means of ventilation save by door or window, that,—"In the external wall are twelve ventilators (Hit and Miss) under the tiers of stone steps, by which air is admitted to the building after permeating through inner ventilators of perforated metal, inserted in the risers of the said steps. In addition to this, and in conjunction therewith, a current of air is constantly flowing above the ceiling by means of fixed louvre ventilators, and the vitiated air which escapes, through openings in the ceiling, covered by framed flaps workable by line and pulley at will, is at once caught by this current and quickly hustled 'outside'! The 'heating apparatus,' the 'seat' of which is in the basement next the windows, was done under the superintendence of Messrs. Weeks & Co." That the animals may be in the open air in fine weather, outer dens (four in number) are being erected, 45 ft. by 31 ft., open to the sky (except from open ironwork). Our notice was intended to be anything but ill-natured, and we willingly add, now we find some one to tell us, that the architect of the building is Mr. Salvin, and that the contractors are Messrs. Simpson & Son, of Baker-street.

Water Companies' Accounts.—There has just been presented to the Lambeth Vestry, in compliance with its request, a report upon the accounts and charges of the two local water companies, and the proposed legislation of next year. The companies are the Lambeth and the Southwark and Vauxhall. The report is drawn up by Mr. William Storr. It summarises the accounts for seven half-years, the time during which Parliament has required them to be published in their present form; it vindicates the legal conduct of the companies in increasing their per-centage charges with the increase of valuation; it gives their charges and compares them, and states objections of principle to supply by meter, and to extra charges for gardens, baths, &c.; it embodies the recommendations of the Rivers Pollution Commissioners condemning Thames water, and it sums up in eight resolutions the conclusions suggested by the consideration of the whole subject.

House Moving.—This feat, quite a common occurrence, even on a gigantic scale, "over the water," was successfully accomplished, on a small scale, at Arbroath the other day. Owing to damage done by the sea, during the recent gales, to the boat-building shed of Messrs. Watson, it became absolutely necessary to remove the building to a vacant site some 20 ft. further inland. The building, which is of timber, substantially built, is 42 ft. in length and 22 ft. in breadth, with roof, windows, &c. To have taken it to pieces would have wasted material, besides taking away its present finish. The alternative was to remove it bodily. The building was framed upon a series of strong timbers sunk into the earth. A site having been selected and carefully measured, holes for these timbers were dug at the regular distances, depth included, and the ground carefully prepared. The building having been secured by stays and braces to prevent shaking, was then lifted so high as to leave the timbers clear of the ground. Ways having been laid, the structure was rested on them, drawn gently along till the timber-pillars were above the holes prepared for them, into which they dropped. The whole business was accomplished in six hours.

Carpenters' and Joiners' Soiree at Liverpool.—A *soirée*, followed by a concert, took place on the 9th inst., at the Hope Hall, Liverpool, in connexion with the Amalgamated and General Union Societies of Carpenters and Joiners. Mr. W. Rathbone, M.P., presided. Mr. John Cogley, the secretary, read the report of the two societies, from which it appeared that in the year 1864 they numbered 150 branches, 6,230 members, with a reserve fund of 5,666*l.* 10s. In 1874 the societies had increased to 406 branches, 23,518 members, with a reserve fund of 50,979*l.*, being an increase in the ten years of 256 branches, 17,288 members, and 45,312*l.* 9s. 11d. The income during the year 1874 was 49,367*l.* 7s. 4d., and the expenditure 35,178*l.* 8s. 8d., showing a saving in the year of 14,188*l.* 18s. The benefits paid in 1874 were, to men out of employment, 4,101*l.*; for loss of tools by fire, water, or theft, 1,046*l.*; for sickness and superannuation, 9,966*l.*; accidents to men disabled, 2,100*l.*; funeral benefits, 2,218; benevolent purposes, 540*l.*; and trade privileges, known as strikes, arbitrations, and law expenses, 2,760*l.*

A Poor Reward for Long Service.—At a recent meeting of the Sherborne Local Board of Health, a report was presented containing the following passage:—"It appears to be quite clear that increasing age and tendency to illness have prevented the surveyor from efficiently discharging the duties of his office at certain times for some time past; while, on the other hand, from the important works which are now being carried out, his attention and careful supervision are more than ever required. We therefore recommend that the Board should at once give the present surveyor notice to terminate his services, and that a younger man should be forthwith chosen. At the same time, inasmuch as the present surveyor has faithfully served the Board for a period of more than twenty-four years, we recommend that he should be retained to assist the new officer at a salary of 20*l.* per annum." The report was adopted, subject to an amendment giving the ex-surveyor 25*l.* instead of 20*l.* per annum.

Compensation Case at Liverpool.—In the Sheriff's Court, St. George's Hall, Liverpool, on the 25th ult., the case of Cliff *v.* The Cheshire Lines Committee was heard before a special jury. The claim was in respect of a dwelling-house and land in Sandforth-road, West Derby, taken by the railway company. Messrs. Picton, Hornblower, Sherlock, Shelmerdine, and Bradley, architects and surveyors, were examined on the part of the claimant, and Mr. W. H. Weightman and several surveyors from Manchester on the part of the company. There was a remarkable difference between the gentlemen examined on the two sides as to the value. The valuations of the claimaint's surveyors were 10,000*l.* and upwards, and those of the company's surveyors little more than one half. The jury awarded 9,700*l.*

A Carpenter Fined for Intimidation.—A carpenter named Joseph Parkin was recently fined 2*l.* at the Barnsley Police Court for intimidation. The charge against the defendant was that of asking two men, as they were going to their work, whether they did not know that they were "blacksheeping," and telling them that if they thought anything of themselves they would go away.

The Disposal of Sewage.—In the course of an inquiry held at Twickenham on the 1st inst., Major Tulloch, R.E., the Government Inspector, gave it as his opinion that no system of mechanical and artificial downward filtration would meet the requirements of the Thames Conservators as to effluent water. In consequence of the Twickenham Local Board having decided to adopt this plan in the disposal of their sewage, they have been obliged to suspend their works. Borrowing powers to the extent of some 24,000*l.* were some time ago obtained, it then being understood that irrigation would be the system adopted, but as no land for the purpose could be obtained they have been compelled to change their intention. The estimated expenditure being exceeded, the Board applied for a further loan, and hence the inquiry. Major Tulloch, finding that no definite plan was proposed, stated that he could not recommend the Government to lend the money.

The Spire of St. Mary's Church, Oxford. Captain L. J. G. Ferrier, R.E., in fulfilment of a promise he made during the proceedings of the Architectural and Historical Society's visit to Merton College on the 20th ult., has tested, as far as possibly could be done, the amount that the spire of St. Mary's Church is out of the perpendicular. This was done by repeated observations with a 5-in. theodolite, from a point close to the south of the Radcliffe Library. From absolute measurement, the deviation as observed was 1 ft. 9½ in., and from calculation 1 ft. 8⅜ in., giving a difference of $\frac{7}{16}$ in., which is very trifling. No deviation from the perpendicular was observable in the tower from its base up to the point of the window over the north door, leading, therefore, to the conclusion that the deviation existing is due rather to an imperfection in the original construction than to subsequent settlement. The top stone of the spire is 188 ft. 6 in. above the gravelled path of the churchyard.

Lambeth Palace Library.—The appeal recently made for contributions towards a collection of works on Kentish literature, antiquities, and topography for this library, has met with much success. The librarian, Mr. Kershaw, still asks all who take an interest in the subject to contribute what they can. As an adjunct to the ancient records of the see and diocese of Canterbury, preserved here, the Kentish collection will be of great assistance in the researches of those to whom the library is so freely open on three days of each week. The following, among other works, have been contributed by their respective authors:—"History and Antiquities of Kemsing Church," by E. H. W. Dunkin; "Historical Sketch of Lyminge," by R. C. Jenkins; "History of St. Martin's Priory, Dover," by J. Tavenor Perry; and "The Church and Fortress of Dover Castle," by Canon Puckle.

The Slate Trade.—At a meeting of the Carnarvon Slate Club, held at Carnarvon on the 11th inst., a rise of 10 per cent. on the existing tariff price, which came into operation on the 1st of November last, was unanimously resolved on, such rise to take effect from the 1st of February next. Some of the most influential members of the club suggested the propriety of a resolution that the new price should rule for twelve months certain, but the majority thought it advisable not to bind themselves for so long a period. The Slate Club (says the *Mining Journal*) regulates the price for the home trade, which is at present very brisk, the demand greatly exceeding the supply, and there appears to be every prospect of this continuing, but some doubts were entertained whether a similar rise will take place in the export foreign trade, which is almost exclusively confined to the Festiniog slates shipped from Portmadoc, until later in the spring.

Mr. and Mrs. German Reed's Entertainment.—One of the best pieces produced at the Gallery of Illustration, and which enjoyed an unusually long career of success, was poor Shirley Brooks's "Our Card-basket." The piece has been revived at St. George's Hall, and the celebrated trio, the Sisters Pry, represented by Mrs. German Reed, Mr. Alfred Reed, and Mr. Corney Grain, are as amusing as ever. A recent novelty, "A Spanish Bond," by Mr. G. A'Beckett, music by Mr. G. Reed, deals with a bond of revenge, not of the "needful," and ought, contrary to the laws of our country, to prove more valuable to the lessees than the lowly-quoted Spanish bonds seem to be at present to their owners.

Resignation of the Medical Officer of Health for St. Pancras.—Dr. Thomas Stevenson, medical officer of health for the parish of St. Pancras, has tendered the resignation of his office, which he has held for a period of seven years, stating the chief cause of his doing so to be, "That while I am held responsible for the sanitary condition of the parish, I am denied that assistance in out-door inspection of houses either visited with contagious diseases or habitually in an unsatisfactory condition which I believe to be necessary. I feel that the severe condemnation which a house-to-house visitation of the poorer parts of the parish has received from a majority of the Sanitary Committee must of necessity hopelessly weaken my authority with the sanitary inspectors, and render nugatory my efforts to carry out the Sanitary Acts."

Sheffield Architectural and Archæological Society.—The annual meeting of this society was held on the 2nd inst., the Rev. J. Stacye, M.A., president, in the chair. The report and statements of accounts showed the society to be in a sound financial condition, but the amount of work done was scarcely commensurate with the opportunities afforded. The president and other officers were re-elected. A scheme was laid before the members for constituting the society a section of the Literary and Philosophical Society, under which it is believed both societies will reap advantages. The proposal met with the unanimous approval of the members, and now only awaits the acceptance of the Literary and Philosophical Society, whose annual meeting is held in January.

The Need for Beautiful Surroundings.—Mr. George Dawson, in a recent lecture at Birmingham, said:—The office of a man's house was not only to give shelter, food, and meat, but also to surround his children with those fair sights and sounds by which the sense of beauty might be developed. There were houses in that town in which not a poem was read nor a song sung throughout the year, and yet people wondered why their children were vulgar. The beauty of towns was one of the most neglected duties and one of the most deserving. If a town was beautiful people took pride in it, liked to live in it, and were sorry to leave it. In Birmingham they wanted a new society, to be called the Beauty Society.

The Hythe Surveyorship.—At a meeting of the Hythe Town Council on the 17th inst, the candidates for the office of surveyor were in attendance by request of the Council. They were Mr. Charles MacCallum, from the office of the borough surveyor of Dover, and Mr. William Martin, from the office of Mr. T. W. Collard, surveyor, of Canterbury. They were called in separately, and a few questions were put to them by the Mayor. Both were proposed and seconded, and four votes were given for Mr. Martin and six for Mr. MacCallum. Mr. MacCallum was therefore elected. It was resolved that the salary be 100*l.* per annum.

The Disconnexion of House Drains.—At a recent meeting of the Rotherham Town Council, Alderman Harrison moved "That the owners and occupiers of property in the borough be required to have all sink-drains and other house-drains disconnected with the sewers, and that the sink-drains, wherever practicable, be made to discharge above the top, and some distance from the grate of the gully; and that the necessary notice be given by the town clerk or surveyor for the carrying out of this resolution as speedily as possible." Mr. Morgan seconded the motion. Mr. Fell moved as an amendment that the matter be referred to the Health Committee. Alderman Wigfield seconded the amendment, which was agreed to by Alderman Harrison, and carried.

Steam Tram Cars.—Experiments have lately been made in Paris with a steam tram-car, which is said to be free from the defects of those previously tried, viz., slowness, cumbrousness, extreme costliness and ugliness, and noisiness. The brake-power is said to be capable of prompt and efficient application, and the engine is packed into a case which is neither extravagantly large nor intolerably ugly. The whole cost of feeding and working it is estimated at only 20 fr. a day. Between the Porte de Chatillon and St. Germain des Prés its mean pace,—up and down a slight incline,—was just 300 mètres to the minute,—that is to say, a rate of at least ten miles an hour, with a full load of passengers.

Trees for the Streets of Warrington.—Some six months ago the Paving and Sewerage Committee of the Warrington Town Council recommended that the experiment should be tried of planting a number of trees in some of the wider thoroughfares of the town. The idea was approved, and a number of trees have just been planted in Winwick-street. They are of two kinds, the Ontario poplar and the narrow-leaf English elm, and they will be planted alternately. Both kinds are of a very hardy and robust habit, and it is to be hoped that they will be able to survive the deleterious effects of chemical vapours and the other adverse influences to which vegetable life is more or less liable in a manufacturing town.

Cork Harbour.—At a meeting of the Cork Harbour Commissioners, on the 9th inst., the harbour engineer announced that the new dredge, built on the Clyde at a cost of 21,000*l.*, had made a satisfactory trial. He recommended that it be set at work immediately in forming a new channel from Passage to Cork, a distance of four miles, 200 ft. wide, and giving a depth of 14 ft. at low-water springs. The present channel is only 150 ft. wide. At high water it would be possible, with the new channel, to bring up a vessel drawing 25 ft. or 26 ft. The recommendation was adopted. It is expected that the new channel will be formed in sixteen months.

Soane Museum.—Sir Digby Wyatt has felt himself obliged, from failing health, to resign the trusteeship of the Soane Museum, to the great regret of his colleagues. The other trustees met on Thursday, the 16th inst., Mr. Sydney Smirke, R.A., in the chair, and unanimously elected Mr. David Mocatta, F.I.B.A., to fill the vacancy. Mr. Mocatta is the only surviving pupil of Sir John Soane, and doubtless his intimate acquaintanceship with the premises, in which he passed so many years of studentship, and his knowledge of every fragment and picture in the galleries, will render him a valuable member of this important trust.

Consecrated at Last.—The new Church of St. Mary, Denbigh, which has remained closed for two years, in consequence of the dispute about the reredos between the bishop and the building committee, was consecrated and opened for worship by the Bishop of St. Asaph on the 7th inst. The church, which has cost about 11,000*l.*, was erected for the purpose of superseding the old church of St. Hilary, on the Castle Hill, which has done duty from a time prior to the Reformation. The new church is to be used for English services in the mornings and Welsh services in the evenings.

"The Mint," Southwark.—The Metropolitan Board of Works has been asked by the Vestry of St. George the Martyr, Southwark, to render assistance in the construction of a new street from Blackman-street through Mint-street, into the Southwark Bridge-road, so as to make the Dover-road more easy of access for vehicles. It was stated that the surveyor (Mr. Hiscocks) had prepared the necessary plans, and some of the old rookeries in the Mint would be removed, and a great public improvement effected at a comparatively small cost.

Motya.—The Berlin correspondent of the *Morning Post* states that Dr. Henrich Schliemann has written from Palermo that he is now about to make excavations in the place of the old and once very celebrated town of Motya, inhabited by the Phœnicians and Carthagenians. The site of ancient Motya is on the western corner of the isle of Sicily, from six to seven miles north of Marsala. The town is said to have been destroyed by Dionysius 397 B.C.

Stone-cutting Machinery.—A recent invention by Mr. John Jordan, of Liverpool, consists in arranging and setting one or more circular saw-like tools a certain distance apart on a spindle, which spindle is attached to a more or less vertically moving shaft. The shaft moves in suitable guides in the cutting-machine. Above the upper end of this shaft a spring or other hammer is fixed, which is moved by a crank, and is driven by a pulley or otherwise.

The Graves Memorial Statue, Liverpool. The marble statue of the late Mr. S. R. Graves, formerly one of the members of Parliament for Liverpool, has now been completed by the sculptor, Sig. Fontana, and arrangements are in progress for placing it in the niche assigned to it in St. George's Hall. The ceremony of unveiling will take place on Wednesday, the 29th inst.

A Plea for an Open Space.—Mr. Francis George Heath, honorary secretary of the Parks Preservation Society, makes an earnest appeal to the trustees of the Sir John Cass charity to save from destruction the open space called "Tyler's Field," in the neighbourhood of South Hackney. Although held by the trustees as private property belonging to the Cassland estate, it has for years been fondly looked upon by the inhabitants of the neighbourhood as land kept sacred from the touch of the builder. "The land in question is some five or six acres in extent, is charmingly surrounded by trees, and beautifully turfed. But buildings are about to be erected over the whole of it."

Christ Church, Waterloo.—A member of this church has presented to the Rev. A. Jones a handsome pulpit, in place of the unsightly one lately in use. The pulpit is designed in the Perpendicular style of Gothic architecture, and consists of a moulded and traceried base and shaft, supporting an open-traceried body, and furnished with a flight of steps, with side handrail. The whole is executed in oak. The balusters of the stairs and movable book-desk are of brass. Messrs. W. & G. Audsley, Liverpool, were the architects, and Mr. Robert Upton executed the work.

New Liberal Club for Brighouse.—At a meeting recently held at Brighouse, a resolution was adopted approving of a scheme for the erection of a new Liberal Club, the amount to be raised in 3,000 shares of 1*l.* each. The architect, Mr. R. F. Rogerson, explained the plans, which showed that on the basement are keeper's kitchen, &c. On the ground-floor are the hall, a porter's room, two offices, refreshment-bar, and lavatory. On the right of the corridor there will be a library and committee-room. On the first-floor, the hall, 30 ft. by 45 ft., having a large platform.

New Belfry at Turriff.—The new belfry at Turriff parish church has just been completed, from the design of Mr. Smith, architect, of Aberdeen, by Mr. William Duguid, builder, Turriff. It stands 14 ft. above the roof of the church, and has a cast-iron finial extending 6 ft. higher. The aperture for the bell is 6 ft. high by 4 ft. broad, and the bell itself is about 3 ft. high by 2 ft. 8 in. wide at the mouth. Its weight is 6¼ cwts., exclusive of fittings. The founders are Messrs. J. Taylor & Co., Loughborough.

The Building of Dwelling Houses in Glasgow.—A Special Committee appointed to report on the "hollow-square" plan of building dwelling-houses, has submitted to the Glasgow Police Board a series of regulations which, it was explained, if carried out would put a stop to the system entirely. The committee also recommended that a representation as to the necessity of a uniform system of building regulations for the large towns of Scotland should be made to the Home Secretary.

Asphalte.—The Brunswick Asphalte Paving Company, now at work in Lee and Charlton, under the direction of Mr. Hirst, its manager, and Mr. J. F. Thorne, the Board's surveyor, have now completed the work in Lawn-terrace, about 6,770 superficial feet; the pathway in front of the shops at Upwood-terrace, Burnt Ash-lane (about 2,090 super. feet), and the piece in front of the North Kent Bank (520 super. feet), making, together with what has already been laid by them elsewhere for the Board of Works, about 63,303 superficial feet.

Proposed Gaol Extension at Manchester. At the last monthly meeting of the Manchester City Council, it was resolved, on the recommendation of the Watch Committee, to add a new fever hospital and infirmary to the City gaol. Alderman Grundy, in bringing the subject forward, said the expense of the gaol extension was expected to be about 22,000*l.*, the hospital for males and females 12,500*l.*, and the supplementary fever hospital 1,200*l.*, making in round numbers 40,000*l.*

Prizes for Designs.—The Linoleum Manufacturing Company (Limited) offer to designers, and students in Art Schools, prizes to the amount of 300*l.* for designs suitable to linoleum floor-cloth manufacture, subject to certain published conditions. The fact that Sir Digby Wyatt, Mr. R. Redgrave, R.A., and Mr. E. J. Poynter, A.R.A., have consented to make the awards suffices to show that the competitors will have fair play.

Smooth Castings.—By a recent invention by M. C. L. Collignon, of Liancourt, it is proposed to manufacture smooth and bright castings by the substitution of tar in lieu of the pulverised coal or founder's blacking hitherto used, in combination with green sand for making iron castings.

Value of City Freeholds.—At the Auction Mart, on Friday last week, Messrs. Sedgwick & Son, of Bedford-row, sold (with other London properties) the fee simple of 24, Cullum-street, Fenchurch-street, covering a superficial area of little over 280 ft., for 2,800*l.*, or about 10*l.* per square foot.

The Radcliffe Infirmary, Oxford.—At a special court of the Governors of this Infirmary, held on the 26th ult., it was resolved to accept the tender of Messrs. Wyatt, amounting to 4,088*l.* for the erection of new infectious wards, from plans by Mr. A. W. Blomfield, architect.

The Walker Art Gallery, Liverpool.—Mr. Philip Eberle has presented to the Town Council of Liverpool, as the directors of the Walker Art Gallery, Mr. A. J. Woolmer's picture of "The Morning after the Battle of Hastings."

Want Places!—The managers of the Dramatic College have been electing a new secretary for the institution. We are confidently informed that the number of applicants exceeded 1,000; the salary being 200*l. per annum.*

TENDERS

For the erection of new buildings in Coleman-street, City, for Mr. E. Burrell. Mr. J. Wimble, architect:—

Hill, Higgs, & Hill	£17,460	0	0
Fish	17,453	0	0
Lawrence	16,205	0	0
Patman & Co.	16,315	0	0
Coleman	16,175	0	0
Killby	15,963	0	0
Brass	15,875	0	0
Merritt & Ashby	15,555	0	0
Scrivener & White	11,766	0	0
Ashby & Horner	11,658	0	0

For restoration of No. 58, Waterloo-road, after fire, Mr. A. Bradley Cooke, architect:—

Hinvest	£685	0	0
Axford (accepted)	639	0	0

Accepted for the erection of a hall, residence, and other buildings, for the Victoria Hall Company (Limited), Reading. Mr. W. Ravenscroft, architect. Quantities supplied:—

Grover (Excavator, Bricklayer, &c.)	£1,585	0	0
East (Carpenter and Joiner)	837	10	0
Gocher (Plumber, &c.)	220	0	0
Huntley, Boome, & Stevens (Smith, Founder, &c.)	137	1	5

For restoration of Cowfold Church, Sussex. Messrs. Hans Price & Grosholz, architects:—

Watson	£2,296	0	0
Stear	2,290	0	0
Oxley	2,000	0	0
Bysh	1,600	0	0
Fowler (accepted)	1,540	0	0

For finishing eleven houses and shops, Holborn Viaduct. Mr. E. N. Clifton, architect:—

Patrick	£34,821	0	0
Macey	34,436	0	0
Holland & Hannen	34,249	0	0
Ashby & Sons	32,900	0	0
Conder	32,585	0	0
Brass	31,592	0	0
Lawrence	30,780	0	0
Peto, Brothers	29,157	0	0

For alterations and repairs to the Mail Coach public-house, No. 1, Camomile-street, for Mr. Alfred Holtham. Mr. W. H. Gatheroole, architect:—

Blenkarn	£288	0	0
Cohen	280	0	0
Banks	230	0	0

For rebuilding Nos. 805 and 805a, Commercial-road, Limehouse. Messrs. Wilson, Son, & Aldwinckle, architects. Quantities supplied:—

Palmer (accepted)	£1,796	0	0

For enlarging Dyce House, Streatham, and converting same into four shops, for Mr. Thomas Kidner. Messrs. H. M. & W. Grellier, architects:—

Walker	£2,162	0	0
Mason	1,687	0	0
Maxwell, Brothers (accepted)...	1,359	0	0

TO CORRESPONDENTS.

J. A. (we do not propose to engrave view, but shall be happy to receive particulars).—F. C. (such heights have been given in a previous volume).—H G.—A. G.—One of the Humbugged.—Another Humbugged by Brentford.—Dr. P.—T. M.—P. P. C.—A. von S.—E. L.—F.—J. B.—A. P.—Mr. W.—W. H. C.—A. R.—A. S.—Another of the Humbugged.—W. T.—H. M. C.—W. G. R.—H. D

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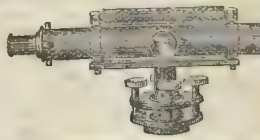
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